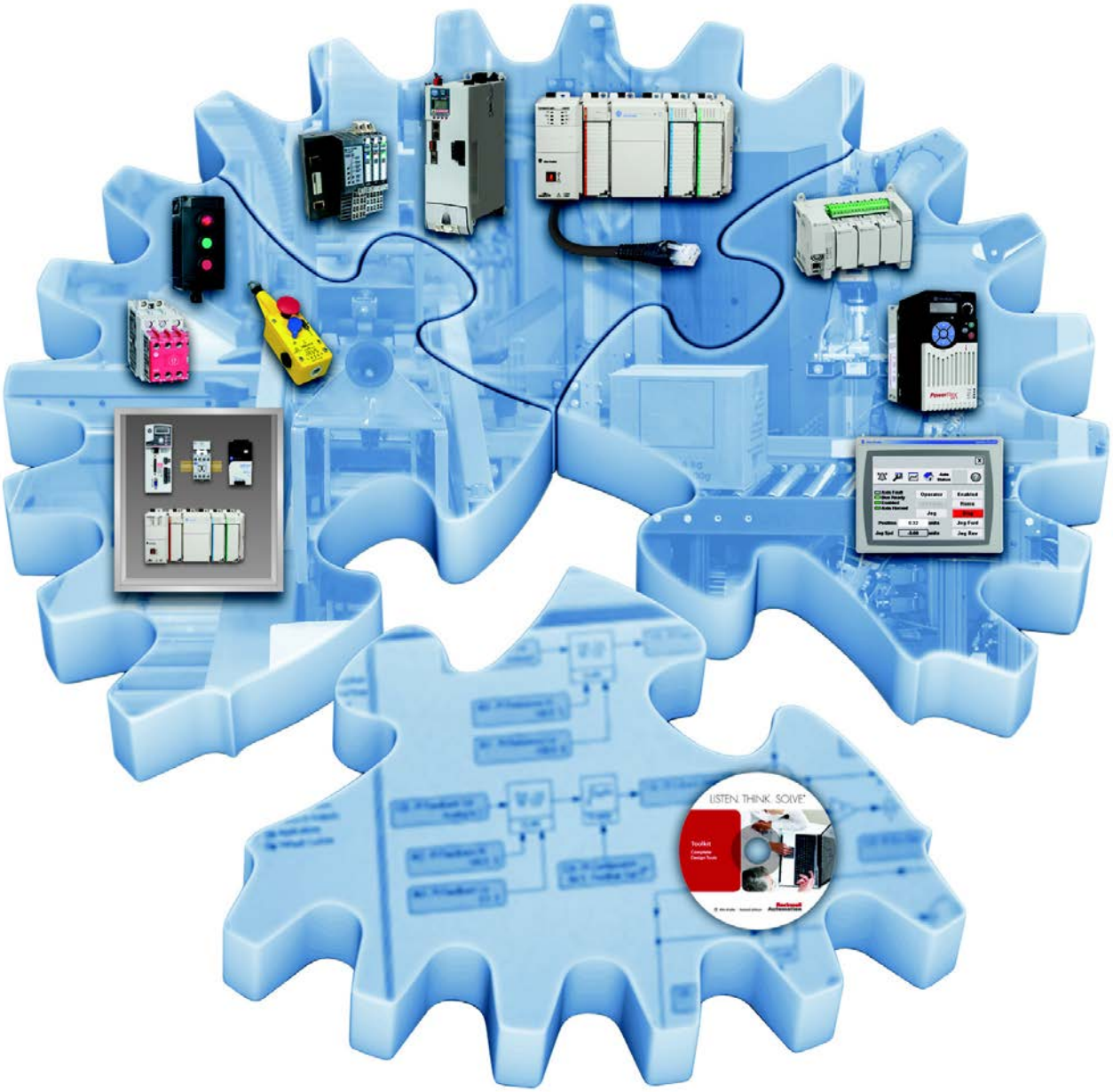
Quick Start

Allen-Bradley

Drives and Motion Accelerator Toolkit



Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

In no event will Rockwell Automation, Inc. be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Rockwell Automation, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

Reproduction of the contents of this manual, in whole or in part, without written permission of Rockwell Automation, Inc., is prohibited.

Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

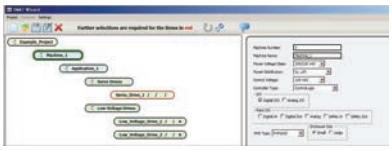
	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

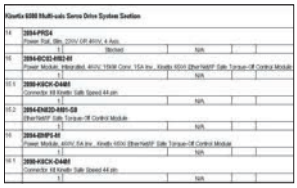
	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

Follow this path to complete your Drives and Motion application.

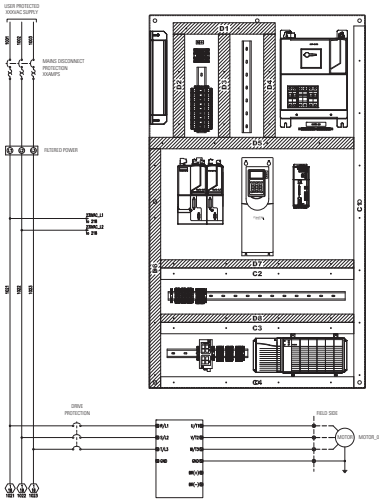
Chapter 1
Initial System Configuration
Using the DMAT Wizard



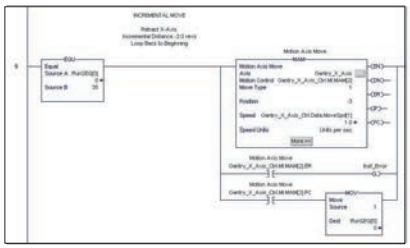
Chapter 2
Bill of Materials Completion



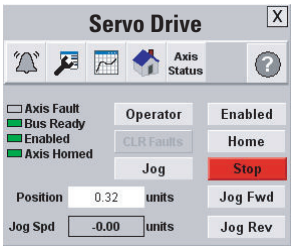
Chapter 3
System Layout and Wiring



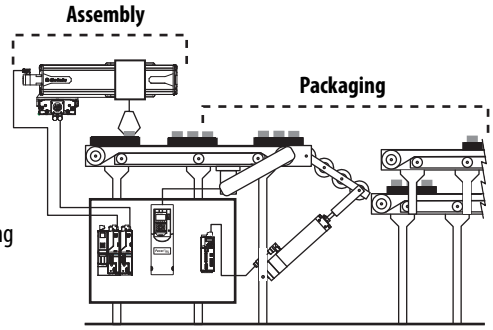
Chapter 4
Logic Configuration



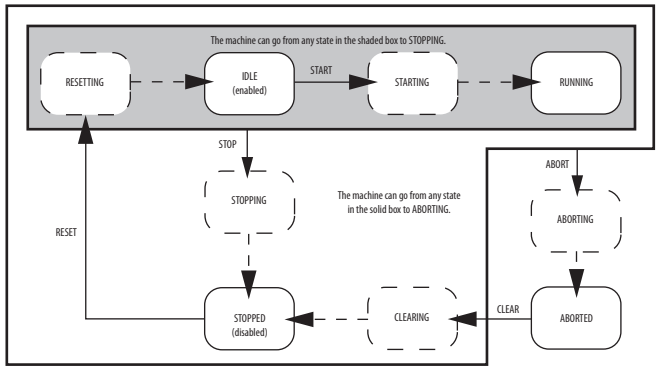
Chapter 5
FactoryTalk View ME Configuration



Chapter 6
System
Commissioning



Chapter 7
System Application Guide



Notes:

This manual contains new and updated information.

New and Updated Information

This table contains the changes made to this revision.

Topic	Page
Added user manual references for E300™ overload relays and ArmorStart® distributed motor controllers	15
Updated Motion Analyzer Software with online dialog boxes	23
Added PowerFlex 527 drives, E300 relays, and ArmorStart motor controllers to Faceplate Displays table	109, 117
Added Kinetix 5500 and PowerFlex 527 to Commissioning CIP Motion Drives	157
Added Commissioning E300 Electronic Overload Relays	170
Added Commissioning ArmorStart LT Distributed Motor Controllers	174
Added Commissioning ArmorStart Distributed Motor Controllers	176
Added E300 Overload Relay Faceplates	208
Added ArmorStart Distributed Motor Controller Faceplates	216
Added E300 overload relays and ArmorStart distributed motor controllers to Module Routine Overview	227
Added PowerFlex 527 to Configure CIP Motion Drive Modules	315
Added E300 Overload Relay Configuration	345
Added ArmorStart Distributed Motor Controller Configuration	352
Added Import and Configure E300 Device Modules	380
Added Import and Configure ArmorStart Distributed Motor Controller Device Modules	387

Notes:

Chapter 4

Logic Configuration

Chapter 5

FactoryTalk View ME Configuration

Chapter 6

System Commissioning

Chapter 7

System Application Guide

Appendix A

Logic Program Overview

Controller, Network, and Device Configuration Without the DMAT Wizard

Appendix G

About This Publication

This quick start provides step by step instructions for using the Drives and Motion Accelerator Toolkit to help you design, install, operate, and maintain a drive system. Included are selection tools, layout and wiring drawings, and pre-configured logic and HMI files to assist you in creating an Integrated Architecture™ solution for your application requirements.

The instructions also show how the Drives and Motion Accelerator Toolkit (DMAT) Wizard can automate the tasks needed to build the files used in the Integrated Architecture solution.

All of the supporting files are included on the Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017, including the DMAT Wizard. The DVD provides drive selection tools; CAD drawings for panel layout and wiring; basic status, control, and diagnostic logic files; FactoryTalk® View ME and SE faceplates, and more. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative. With these tools and the built-in best-practices design, the system designer is free to focus on the design of their machine control and not on design overhead tasks.

You can also download these same supporting files from the Rockwell Automation® Integrated Architecture Tools website, http://www.ab.com/go/iatools on the Beyond Getting Started tab.

IMPORTANT	Before using this quick start and the contents of the Drives and Motion Accelerator Toolkit DVD, read the Terms and Conditions READ ME.pdf on the DVD.

The beginning of each chapter contains the following information. Read these sections carefully before beginning work in each chapter.

- **Before You Begin** - This section lists the steps that must be completed and decisions that must be made before starting that chapter. The chapters in this quick start do not have to be completed in the order in which they appear, but this section defines the minimum amount of preparation required before completing the current chapter.
- **What You Need** - This section lists the tools that are required to complete the steps in the current chapter. This includes, but is not limited to, hardware and software.
- **Follow These Steps** - This illustrates the steps in the current chapter and identifies which steps are required to complete the examples using specific networks.

Conventions

Convention	Meaning	Example
CIP Motion	Used as an abbreviation for Integrated Motion on the EtherNet/IP network. This term describes Rockwell Automation servo drives and high-power AC drives that use CIP Motion and CIP Sync technology from ODVA, all built on the Common Industrial Protocol (CIP) communicating over the EtherNet/IP network. Two drive platforms that apply are Kinetix® 6500 servo drives and PowerFlex® 755 AC drives when used on the EtherNet/IP network.	CIP Motion Drive Configuration
Click	Click left mouse button once (assumes cursor is positioned on object or selection). Click button to initiate action.	Click Browse.
Double-click	Click left mouse button twice in quick succession (assumes cursor is positioned on object or selection).	Double-click the H1 icon.
Right-click	Click right mouse button once (assumes cursor is positioned on object or selection).	Right-click the Fieldbus Networks icon.
Drag and drop	Click and hold the left mouse button on an object, move the cursor to where you want to move the object, and release the mouse button.	Drag and drop the desired block into the Strategy dialog box.
Select	Click to highlight a menu item or list choice.	From the pull-down menu, choose H1-1.
Check/uncheck	Click to select a checkbox option.	Check Consider Case if you want to conduct a case-sensitive search.
>	Shows nested menu selections as menu name followed by menu selection.	Click File>Page Setup>Options.
Expand	Click the + to the left of a given item /folder to show its contents.	In the H1-1 dialog box, expand FFLD.
Enter	Used when you can type from the keyboard or choose from a list.	Enter the catalog number of the product.
Type	Used when the only option is to type from the keyboard.	Type the catalog number of the product.
Press	Press a specific button on the PanelView™ terminal or other component with touch-screen technology.	Press Axis Control.

Required Software

Rockwell Automation Software	Cat. No.	Version	Required For
Studio 5000 Logix Designer® application	9324-RLD300*xx*E	21.00 or later (1)	All Kinetix and PowerFlex drive applications
RSLogix™ 5000 • ControlFLASH™ • BOOTP/DHCP utility (EtherNet/IP) • RSLinx® Classic		19.00 or later (2)	
FactoryTalk View Studio for Machine Edition • FactoryTalk Services • RSLinx Enterprise • RSLinx Classic	9701-VWSTMENE	5.1 or later	PanelView Plus terminals
Motion Analyzer	Rockwell Automation Configuration and Selection Tools website http://www.rockwellautomation.com/en/e-tools or ask your Rockwell Automation sales representative for the Product Selection Toolbox DVD	5.2 or later	Drive/motor sizing
ProposalWorks™		7.5 or later	Bill of materials development
Drives and Motion Accelerator Toolkit DVD	IASIMP-SP017	N/A	CAD files, wiring diagrams, application files, and other support information

(1) When PowerFlex 527 drives are used, version 24.00 or later is required.
(2) When Kinetix 350 servo drives are used, version 20.00 or later is required.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
PowerFlex 4 Adjustable Frequency Drive User Manual, publication 22A-UM001	Provides mounting and wiring instructions for PowerFlex 4-class AC drives. Also provides information on how to set drive parameters and troubleshoot the drive.
PowerFlex 40 Adjustable Frequency Drive User Manual, publication 22B-UM001	
PowerFlex 40P Adjustable Frequency Drive User Manual, publication 22D-UM001	
PowerFlex 70 and 70EC Adjustable Frequency Drive User Manual, publication 20A-UM001	
PowerFlex 400 Adjustable Frequency Drive User Manual, publication 22C-UM001	
PowerFlex 525 Adjustable Frequency AC Drive User Manual, publication 520-UM001	Provides mounting and wiring instructions for PowerFlex 525 AC drives.
PowerFlex 527 Adjustable Frequency AC Drive User Manual, publication 520-UM002	Provides mounting and wiring instructions for PowerFlex 527 AC drives.
PowerFlex 700 Adjustable Frequency Drive User Manual, publication 20B-UM001	Provides mounting and wiring instructions for PowerFlex 7-class AC drives. Also provides information on how to set drive parameters and troubleshoot the drive.
PowerFlex 700H Adjustable Frequency Drive User Manual, publication 20C-PM001	
PowerFlex 700S High Performance Drive, Phase II User Manual, publication 20D-UM006	
PowerFlex 700S High Performance Drive, Phase I User Manual, publication 20D-UM001	
PowerFlex 700 Vector Controlled AC Drives User Manual, publication 20B-UM002	
PowerFlex 750-Series AC Drives Installation Instructions, publication 750-IN001	
PowerFlex Family Selection Guide, publication PFLEX-SG002	Provides drive specifications for the PowerFlex 4-class, 5-class, and 7-class AC drive products.
PowerFlex 70 EtherNet/IP Adapter User Manual, publication 20COMM-UM010	Provides details on how to install, configure, and use the adapter.
PowerFlex 70 DeviceNet Adapter User Manual, publication 20COMM-UM002	
PowerFlex 525 Embedded EtherNet/IP Adapter User Manual, publication 520COM-UM001	
Kinetix 300 EtherNet/IP Indexing Drives User Manual, publication 2097-UM001	Provides mounting, wiring, configuring, and troubleshooting instructions for the Kinetix Motion Control servo drives.
Kinetix 350 Single-axis EtherNet/IP Drives User Manual, publication 2097-UM002	
Kinetix 6200 and Kinetix 6500 Modular Multi-axis Servo Drives User Manual, publication 2094-UM002	
Kinetix 6000 Multi-axis Servo Drives User Manual, publication 2094-UM001	
Kinetix 6000M Integrated Drive-Motor System User Manual, publication 2094-UM003	
Kinetix 2000 Multi-axis Servo Drives User Manual, publication 2093-UM001	
Kinetix 7000 Multi-axis Servo Drives User Manual, publication 2099-UM001	
Ultra™3000 Digital Servo Drives Installation Manual, publication 2098-IN003	Provides mounting and wiring instructions for Ultra3000 digital servo drives.
Ultra3000 Digital Servo Drives Integration Manual, publication 2098-IN005	Provides configuring and troubleshooting instructions for the Ultra3000 digital servo drives.
Kinetix Motion Control Selection Guide, publication GMC-SG001	Overview of Kinetix servo drives, motors, actuators, and motion accessories designed to help make initial decisions for the motion control products best suited for your system requirements.
Kinetix Rotary Motion Specifications, publication GMC-TD001	Product specifications for MP-Series™ (Bulletin MPL, MPM, MPF, MPS), Kinetix 6000M (Bulletin MDF), TL-Series™, RDD-Series™, and HPK-Series™ rotary motors.
Kinetix Linear Motion Specifications, publication GMC-TD002	Product specifications for Bulletin MPAS and MPMA linear stages, Bulletin MPAR, MPAI, and TLAR electric cylinders, and LDC-Series™ and LDL-Series™ linear motors.
Kinetix Servo Drives Specifications, publication GMC-TD003	Product specifications for Kinetix Integrated Motion over the EtherNet/IP network, Integrated Motion over sercos interface, EtherNet/IP networking, and component servo drive families.
Kinetix Motion Accessories Specifications, publication GMC-TD004	Product specifications for Bulletin 2090 motor and interface cables, low-profile connector kits, drive power components, and other servo drive accessory items.

Resource	Description
Kinetix 6000 and Kinetix 6200/6500 Drive Systems Design Guide, publication GMC-RM003	System design guide to determine and select the required (drive specific) drive module, power accessory, connector kit, motor cable, and interface cable catalog numbers for your drive and motor/actuator motion control system. Included are system performance specifications and torque/speed curves (rotary motion) and force/velocity curves (linear motion) for your motion application.
Kinetix 300 and Kinetix 350 Drive Systems Design Guide, publication GMC-RM004	
Kinetix 2000 Drive Systems Design Guide, publication GMC-RM006	
Kinetix 7000 Drive Systems Design Guide, publication GMC-RM007	
Ultra3000 Drive Systems Design Guide, publication GMC-RM008	
E3™ and E3 Plus™ Solid-state Overload Relay User Manual, publication 193-UM002.	Provides mounting and installation instructions for E3 and E3 Plus overload relays and Bulletin 193 EtherNet/IP communication auxiliary modules.
EtherNet/IP Communications Auxiliary User Manual, 193-UM014	
E300 Electronic Overload Relay User Manual, publication 193-UM015	Provides mounting, wiring, configuring, and troubleshooting instructions for E300 (Bulletin 193/592) electronic overload relays.
SMC™-50 Solid-state Smart Motor Controller User Manual, publication 150-UM011.	Provides mounting and installation instructions for SMC-50 soft-starter modules.
ArmorStart LT Distributed Motor Controller User Manual, publication 290E-UM001	Provides installation and wiring instructions for the ArmorStart motor controllers. Also provides information on how to set parameters and troubleshoot the device.
ArmorStart Distributed Motor Controller with EtherNet/IP User Manual, publication 280E-UM001	
Sercos and Analog Motion Configuration and Startup User Manual, publication MOTION-UM001	Information on configuring and troubleshooting your ControlLogix® and CompactLogix™ sercos interface modules.
Motion Coordinate System User Manual, publication MOTION-UM002	Information to create a motion coordinate system with sercos or analog motion modules.
Integrated Motion on the Ethernet/IP Network Configuration and Startup User Manual, publication MOTION-UM003	Information on configuring and troubleshooting your ControlLogix and CompactLogix EtherNet/IP network modules.
Integrated Motion on the Ethernet/IP Network Reference Manual, publication MOTION-RM003	Provides descriptions of the AXIS_CIP_DRIVE attributes and Logix Designer application Control Modes and Methods.

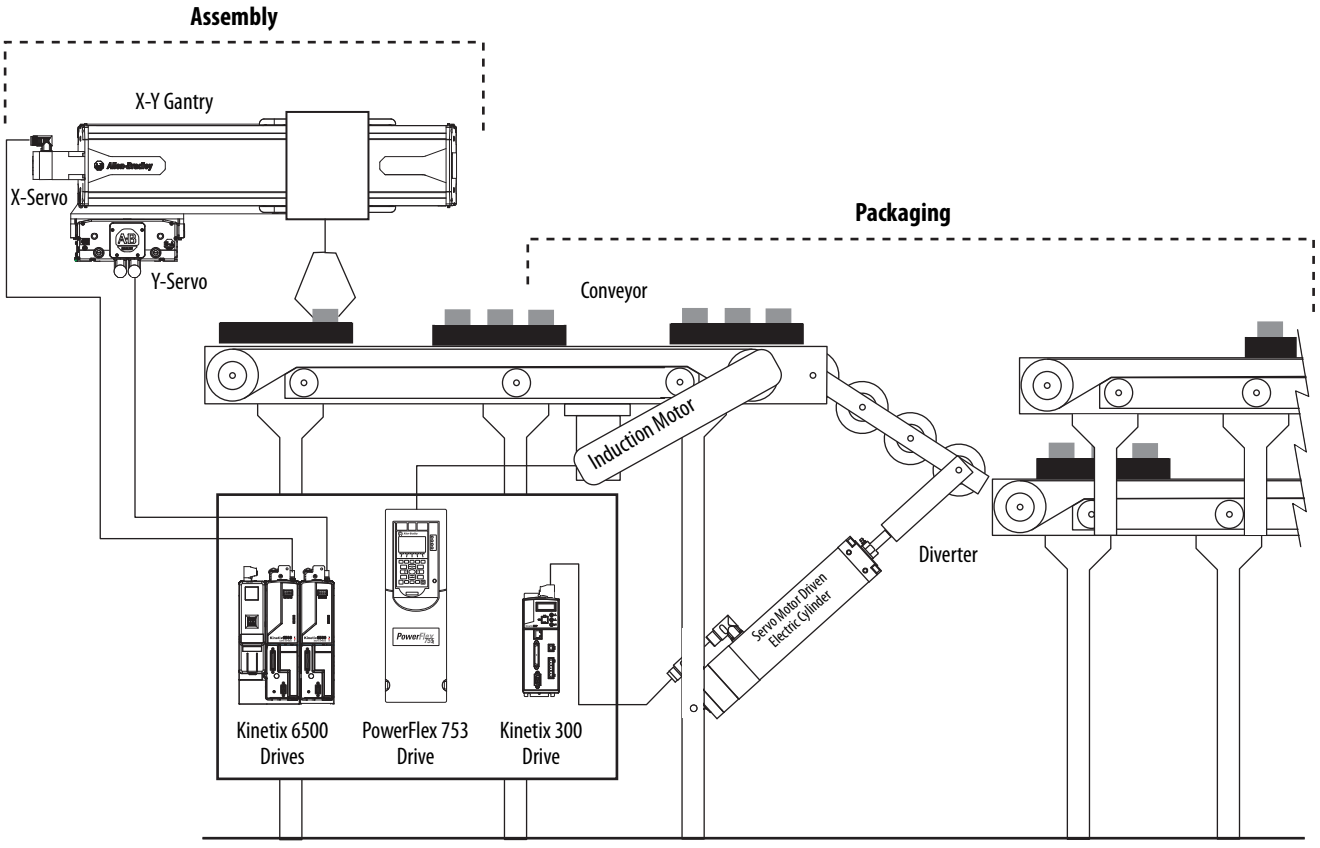
You can view or download publications at http://www.rockwellautomation.com/literature. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Initial System Configuration Using the DMAT Wizard

In this chapter you use the Drives and Motion Accelerator Toolkit (DMAT) Wizard to create an initial bill of materials, assemble a system drawing set, and create a Studio 5000 Logix Designer project file with a preconfigured controller, network, drives and initial system program logic. In addition, you are introduced to several Rockwell Automation system configuration tools that provide assistance in sizing your motor/drive combinations for a variety of load, transmission, and application types.

To assist you in architecture and hardware selection, the Widg-O-matic machine application is referenced in the selection steps. Hardware selection includes all power and control equipment to support two servo drives for the X-Y gantry, one PowerFlex drive for the conveyor, and one Kinetix 300 drive for the packaging diverter.

Widg-O-matic Machine Application Example



Before You Begin

Collect specific application data, for example:

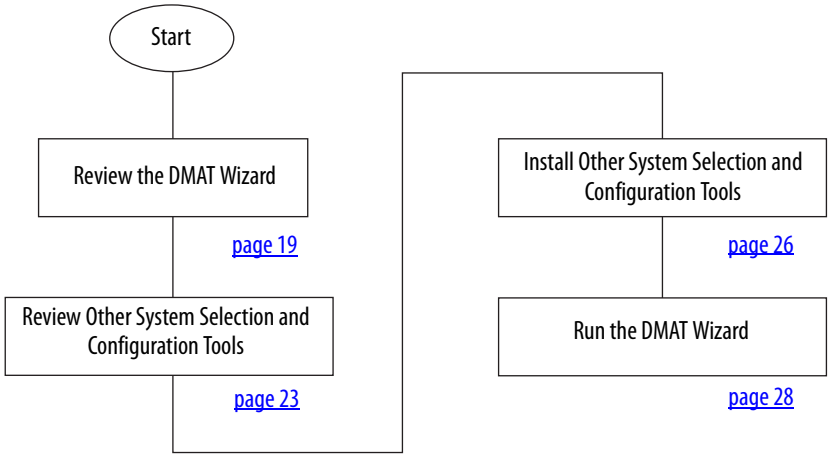
- System Input Voltage
- Ambient temperature and Altitude Specifications
- Transmission Type
- Motor data
- Load Data – Inertia and Cycle Profiles
- Other System Sizing Info

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative.
- PowerFlex Family Selection Guide, publication PFLEX-SG002.
- Kinetix Motion Control Selection Guide, publication GMC-SG001.

Follow These Steps

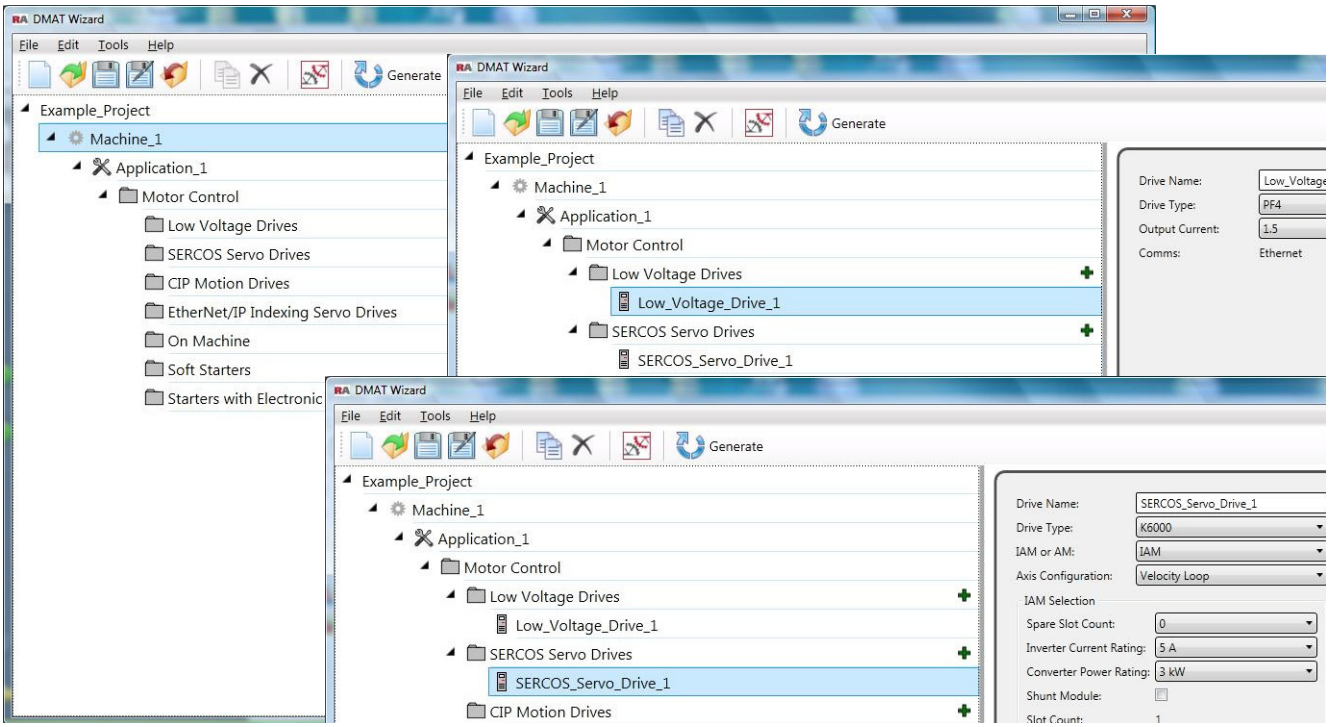
Complete the following steps to create a bill of materials and size your drives and motion system components.



Review the DMAT Wizard

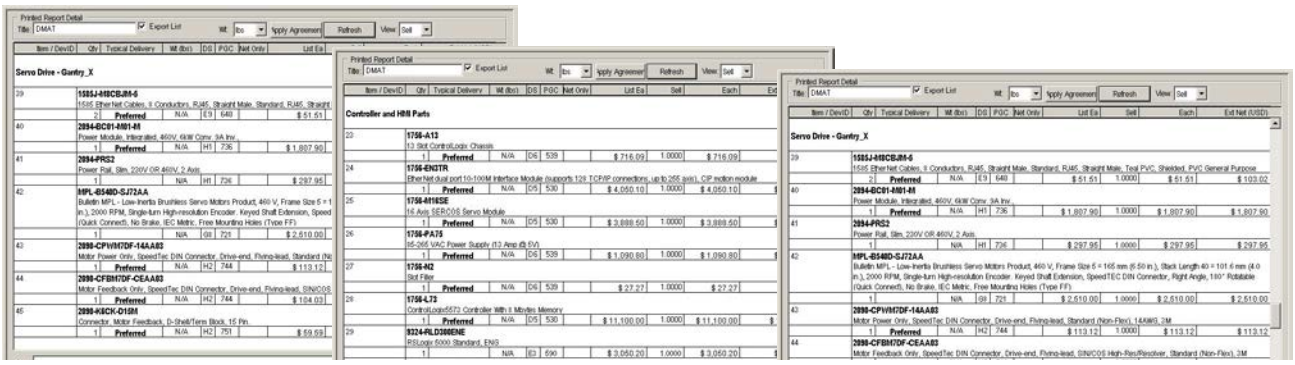
Once you have a general idea of the overall control architecture, relative size, and type of the drives in your system, you can use the DMAT Wizard to create a bill of material, assemble a system drawing set, and create a Logix Designer application project file with a preconfigured controller, network, drives, and initial system program logic. This can be accomplished in minutes by inserting simple system and drive configuration entries and running other system selection tools as needed.

Simple System and Drive Configuration Entries



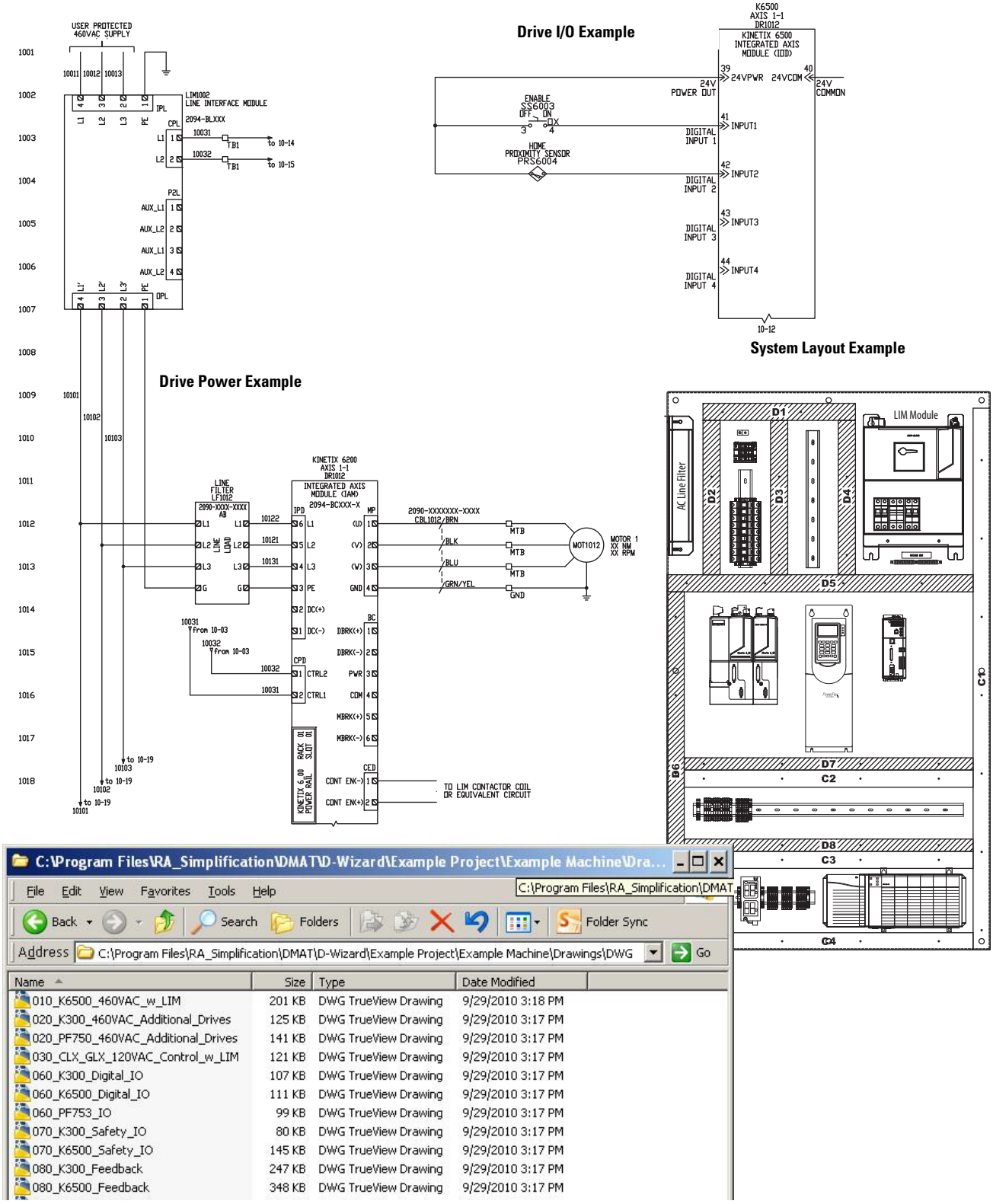
Bill of Material Output

The initial BOM files include power and control distribution equipment, control circuit protection, operator devices, and system drives and accessories.



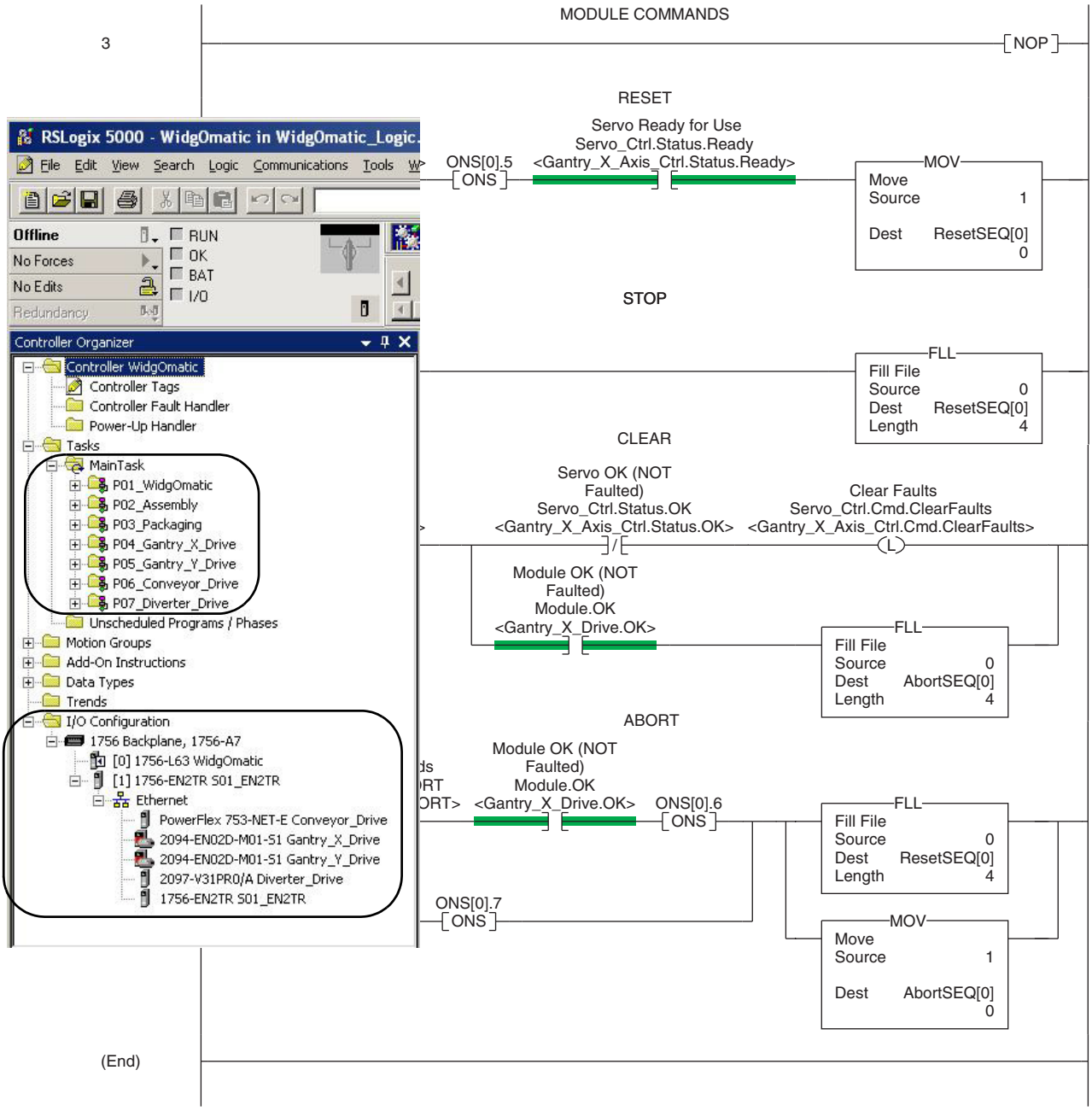
System Drawing Set Output

The assembled system drawing set includes power distribution, drive power and control wiring, communication, and system layout drawings in .dwg, .dxf, or .pdf formats.



Project File Output

The project file includes preconfigured controller, drives, network, and machine/application/ device program logic providing an integrated logic architecture to add your specific application logic to. The preconfigured file saves hours in logic configuration and assembly.



FactoryTalk View Me Project File Output

The FactoryTalk View Me ConfigurationGuide folder contains two files. The FactoryTalk View Me (.apa) file contains the basic screens and parameters needed for a DMAT Wizard application. The folder also includes a Microsoft Word document with custom instructions on how to adapt the example file to your application drive set and prepare it to add any additional screens.

Factory Talk View ME Configuration Guide

This guide was created based on your DMAT Wizard selections and is meant to assist you in designing your Factory Talk View ME application using the DMAT Pre-configured HMI application files. Use this document as a supplement to the *Design From a Preconfigured HMI Application File* section in Chapter 5 of the ***Drives and Motor Accelerator Toolkit Quick Start*** guide*, IASIMP-QS019,*

This document will define specific steps to help you:

- Restore and Open a Preconfigured HMI Application
- Delete Unused Displays
- Delete Unused Parameter Files
- Configure Parameter Files
- Delete Unused Alarm Triggers and Tags
- Configure Goto Display Buttons on Startup Display
- Configure Equipment Status Faceplate Display

Design From a Preconfigured HMI Application File

Restore and Open a Preconfigured HMI Application

1. Navigate to the Panelview Plus 1000 folder
2. Double-click the PVP1000_Application.apa archive file

Delete Unused Displays

List of Required Faceplates

[ALARM]
[DIAGNOSTICS]
[INFORMATION]
CIPMotion Faceplate
K300_Faceplate
PowerFlex_753_755_Faceplate
PVP1000_Startup_Faceplate
PVP1000_StateDiagram_Faceplate
PVP1000_AlarmHistory_Faceplate
PVP1000_EquipmentStatus_Faceplate

Delete Unused Parameter Files

List of Required Parameter Files

CIPMotion_Parameter
K300_Parameter
PF_Parameter
Startup_Parameter
StateDiagram_Parameter
EquipmentStatus_Parameter

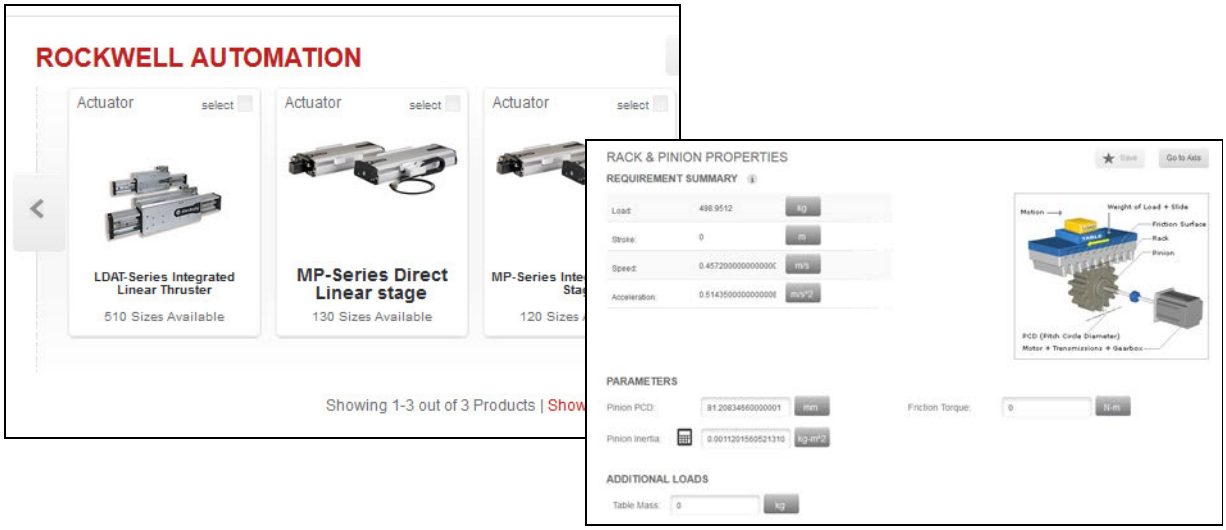
Review Other System Selection and Configuration Tools

Rockwell Automation provides a variety of other system selection and configuration tools.

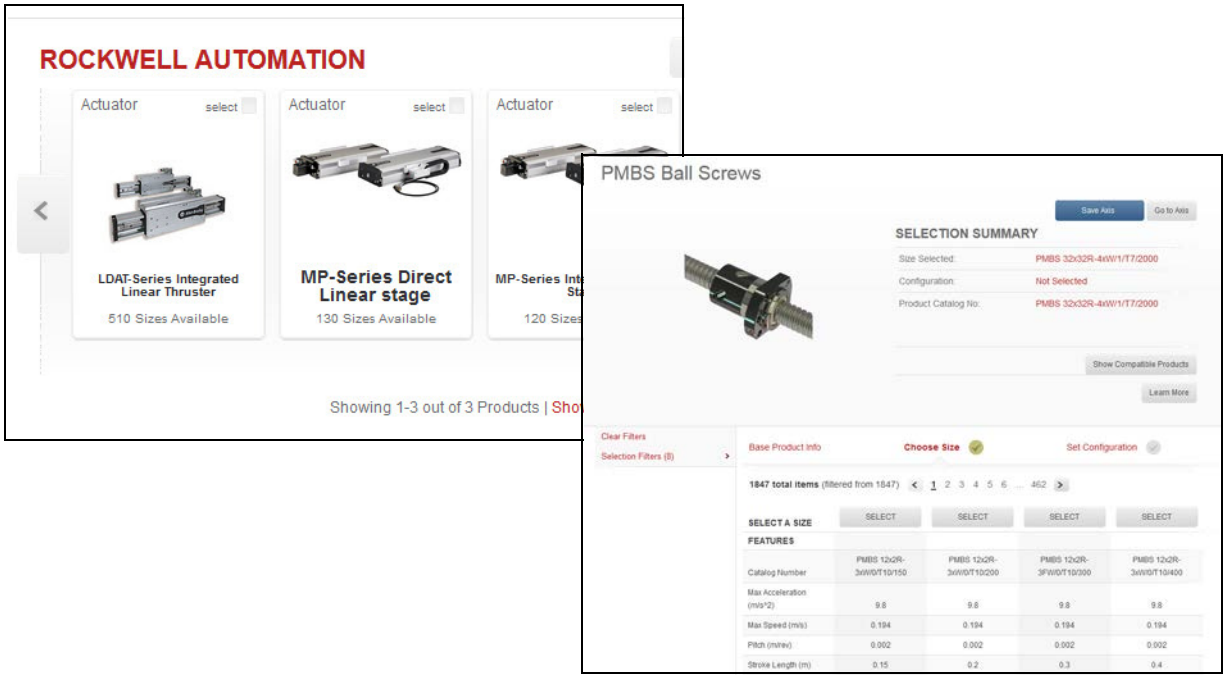
Motion Analyzer Software

Motion Analyzer software is a comprehensive standard-drives and motion-control application sizing tool used for analysis, optimization, selection, and validation. Motion Analyzer software includes configuration of load types, profiles, and mechanisms for a variety of applications.

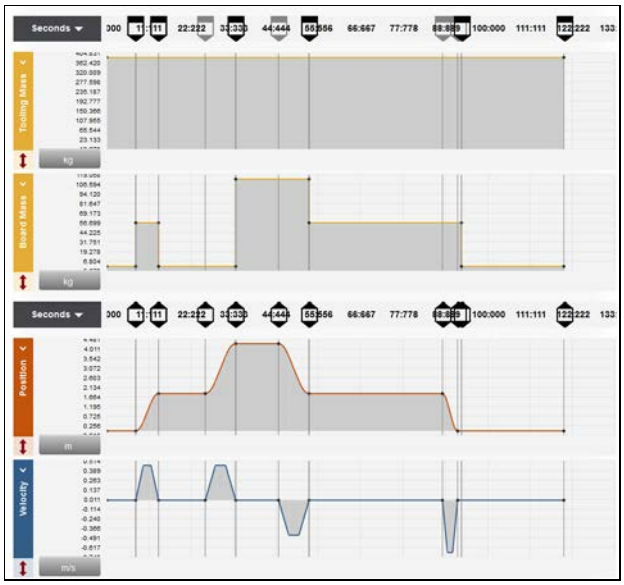
Load Type and Data



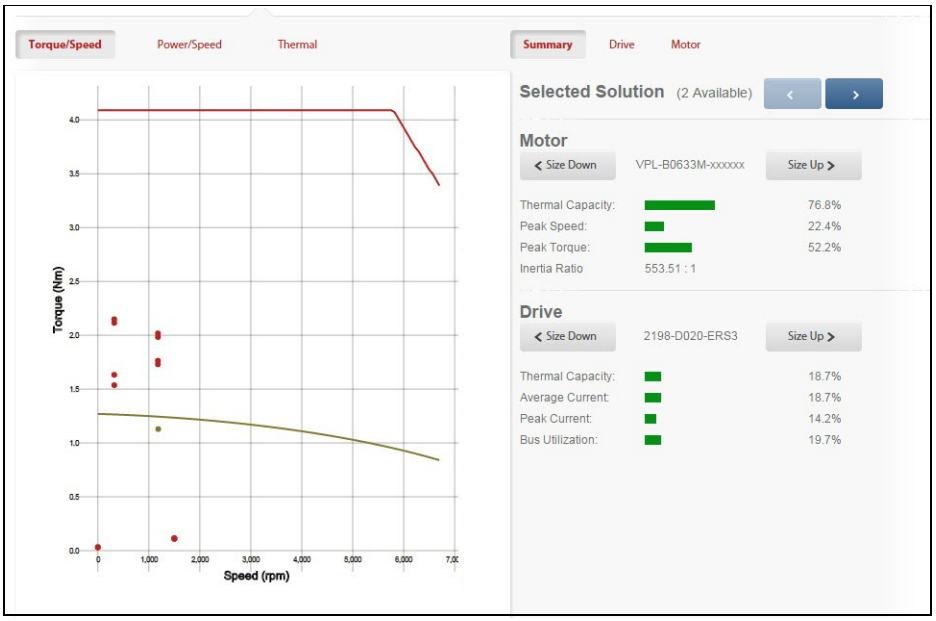
Mechanism Type and Data



Profile Data

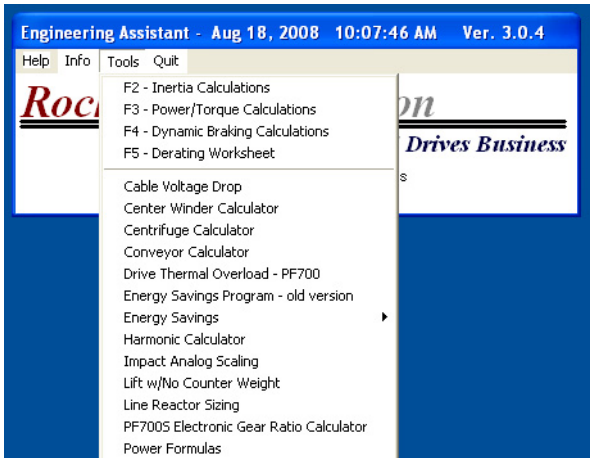


Solution Options



Engineering Assistant Software

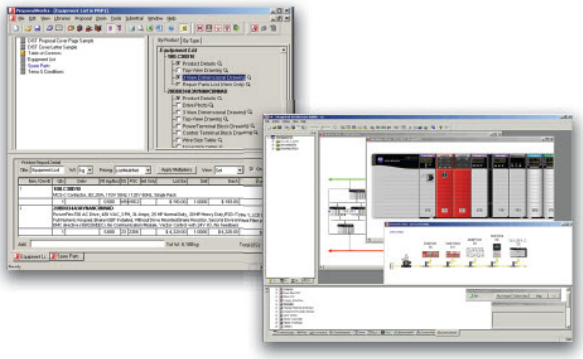
Engineering Assistant software provides inertia, power/torque, braking, and other application specific calculators and formulas to assist you in sizing the motor, drive, and transmission for your application. Use this software as a supplement to Motion Analyzer.



Product Selection Toolbox

Product Selection Toolbox

The Rockwell Automation Product Selection Toolbox (PST) offers a complete suite of user tools for product selection and configuration across product lines from project conception through final design. From push buttons to drives to motor control centers and fully networked control systems, you'll find the product information and configuration assistance you need to help you and your customers succeed with Rockwell Automation.



MotionAnalyzer
Design Motion Control Systems

- Assists the user in selecting correct motor for application, proper drive, and gearbox (if required)
- Effective optimization capabilities allow user to get the most out of the selected motor and drive combination

Current
Program Updater

- Allows users to have the most up-to-date applications, product, price, and supplementary information
- All programs are scheduled for update every three weeks

MCS Star
Design MCS Bus Systems

- Helps you configure Motor Control System starters for rated motor voltages from 230…690V
- Program provides the correct catalog number, wiring diagram, and layout drawing for starters of your choice
- Provides assistance in selecting and dimensioning all of required busbar rack components

CrossWorks
Competitive Cross Reference Program

- Assists in crossing competitive part numbers to Rockwell Automation equivalents
- Gives users the ability to submit crosses directly to PST and they will provide a cross or users can go to: ab.com/e-tools and look up existing cross references in the database

Product Selection & System Design Tools

ProposalWorks
Create Proposals and Submittals

- Provides access to information on a broad range of Allen-Bradley® products and services
- Easy product selection interface to make it a snap to determine the exact catalog numbers for the item you need
- Access to current list pricing, and a comprehensive supplemental product information list
- Contains features, such as product selection wizards, agreement pricing, a spare parts generator, and the ability to separate part numbers to see what Rockwell Automation components comprise them
- All of these features and more can help you select the correct product based on your requirements and give your customers the information they need fast

Integrated Architecture Builder
Automation System Configurator

- Lets you quickly develop Logix/NetLinx control system configurations with BOM and reports
- Integration with configurator allows configuration of PowerFlex drives and ArmorStart motor controllers
- Motion control drive/motor combinations and accessories can be added through links to Motion Analyzer software
- New Ethernet capabilities include Stratix™ switches and physical media with enhanced graphical views
- IAB output can be easily exported to ProposalWorks to take advantage of extended proposal generation features, and supplementary data

CenterONE
Design Low Voltage MCCs

- Intuitive software application designed specifically for configuring Motor Control Centers
- User friendly interface helps reduce error and enables customers to get their MCCs quickly

RailBuilder
Design DIN Mountable Systems

- Simplifies the design of custom terminal block rails
- Allows you to select and place terminal blocks on mounting rail along with specifying labeling of terminal blocks, locating jumper bars between blocks, automatically selecting end barriers, and partition plates

eCADWorks
CAD Drawings Source

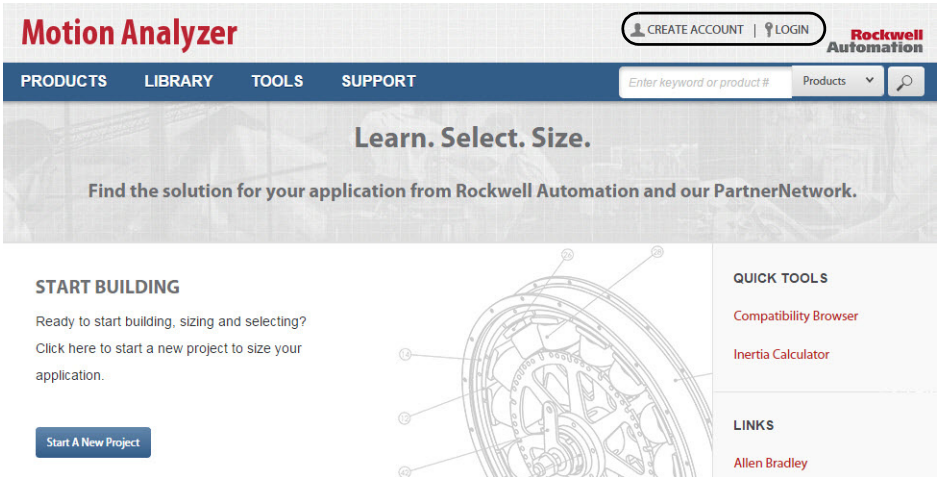
- Allows you select product 3D CAD drawings in AutoCAD software
- Provides you with access to thousands of drawings for a wide range of Allen-Bradley products as well as assistance configuring catalog numbers

Install Other System Selection and Configuration Tools

You can install the system selection and configuration software tools from the Drives and Motion Accelerator Toolkit DVD or download/access them from the Web.

Motion Analyzer Software

To access Motion Analyzer software, go to https://motionanalyzer.rockwellautomation.com. Login or create an account to use the Motion Analyzer system sizing and selection tool.



Install Engineering Assistant Software

Follow these steps to install the Engineering Assistant Software tool from the Drives and Motion Accelerator Toolkit DVD.

1. Navigate to and select the Engineering Assistant Installation application on the toolkit DVD.

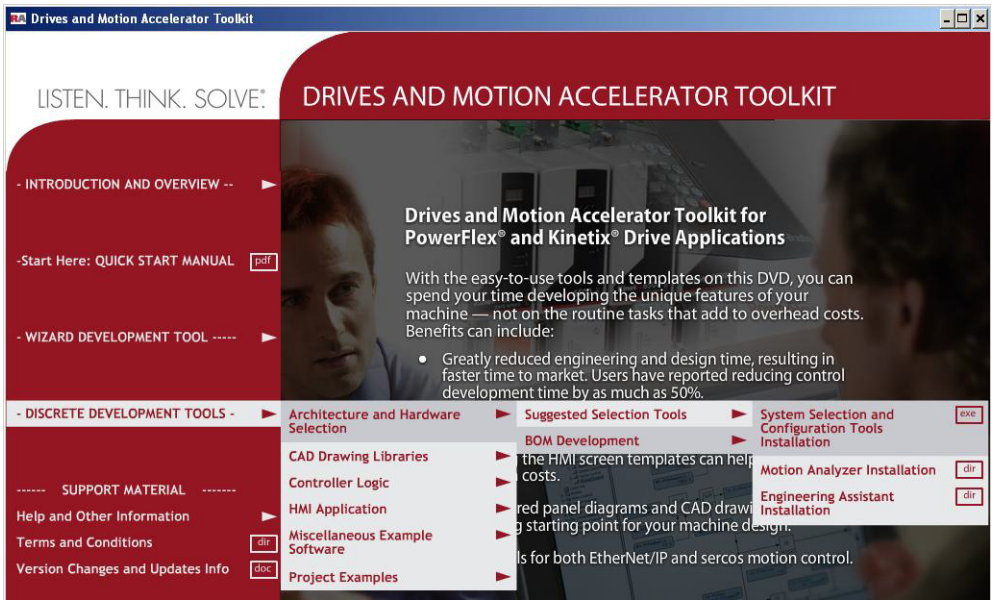
   The initial Engineering Assistant Setup dialog box opens.

2. Click OK and follow installation instructions.

Install Product Selection Toolbox

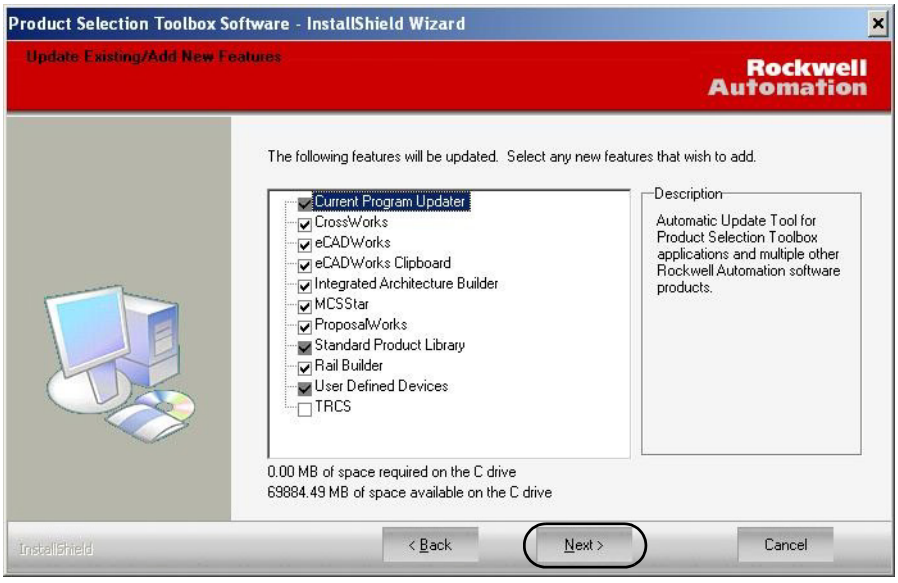
Follow these steps to install desired tools from the Product Selection Toolbox. ProposalWorks software installation is the minimum requirement for completing your system bill of materials in the next chapter.

1. Navigate to and select the System Selection and Configuration Tools Installation application on the Drives and Motion Accelerator Toolkit DVD.



   The Product Selection Toolbox Software InstallShield Wizard opens.

2. Check all features that you wish to have installed.



3. Click Next and follow all install wizard instructions to complete the software installation.

   ProposalWorks software installation is the minimum requirement for completing your system bill of materials in the next chapter.

Run the DMAT Wizard

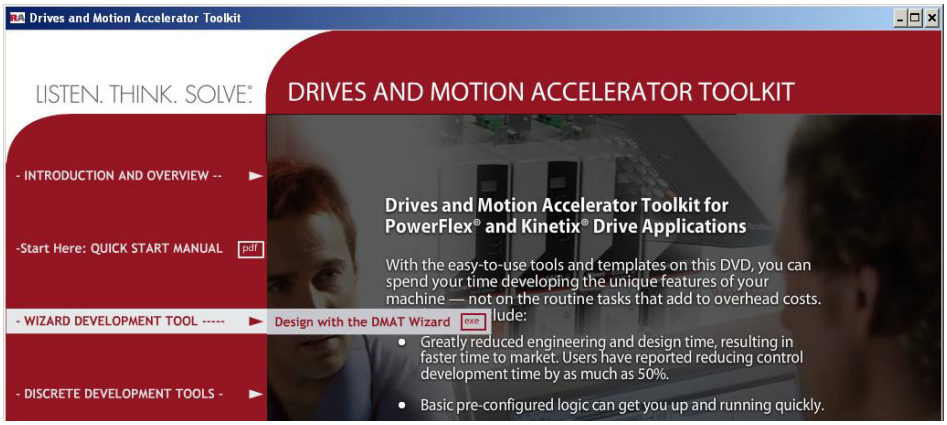
The DMAT Wizard creates an initial bill of materials, assembles a system drawing set, and creates a Logix Designer project file with preconfigured controller, network, drives, and initial system program logic. All of this is created in just minutes by executing the following steps.

If you prefer to build these initial files by using the traditional application tools, skip over this section and go directly to Chapter 2.

Launch the DMAT Wizard

Follow these steps to launch the DMAT Wizard and set up your wizard configuration.

1. Navigate to and select the DMAT Wizard .exe file on the Drives and Motion Accelerator Toolkit DVD image.



   The Open or Create a Project dialog box opens.

2. Click Create New to initiate a new project.

   Another configuration information dialog appears explaining machine, application, and drive configuration.

3. Read configuration information dialog box and click OK to continue.

4. The New Project Wizard dialog box opens.

   a. Enter Project Name.

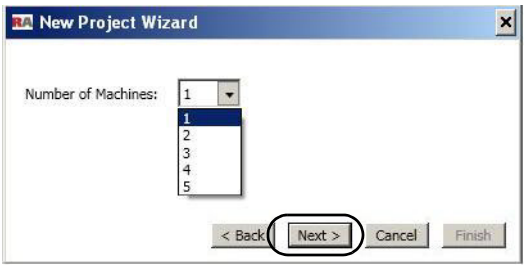
   b. Enter Project Description (optional).

   c. Click Next.

5. From the Number of Machines pull-down menu, choose the number of machines in your project.

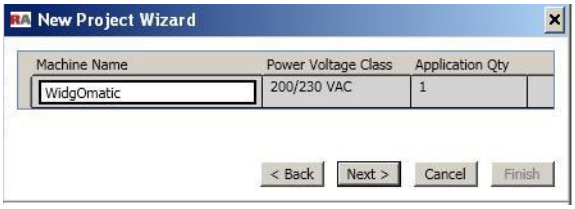
   A machine, as defined by the wizard, is a control system using a single controller and housed in a single enclosure.

6. Click Next.



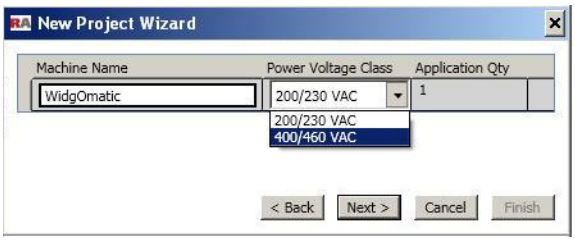
7. Click the Machine Name edit field and enter the desired machine name.

   For the Widg-O-matic example, the machine name entered is WidgOmatic.



8. Click the Power Voltage Class edit field and from the pull-down menu choose the power voltage for your system.

   For the Widg-O-matic example, the voltage level is 400/460V AC.

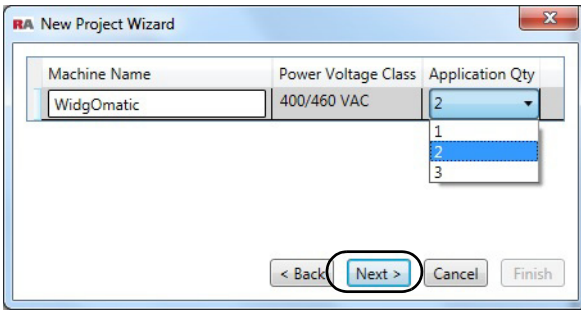


9. Click the Application Qty edit field and from the pull-down menu choose the number of applications you are configuring.

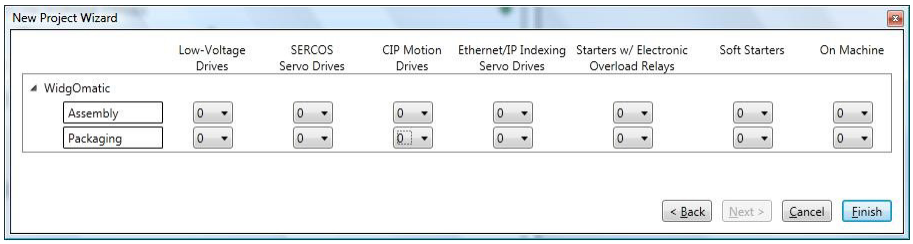
   For the Widg-O-matic example, the quantity is set to 2.

10. Click Next.

    The WidgoMatic machine displays with the number of applications specified in step 9.

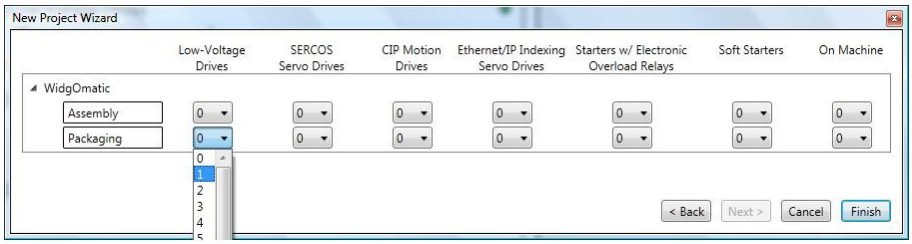


11. Click the Application_*x* edit fields and rename the application names.



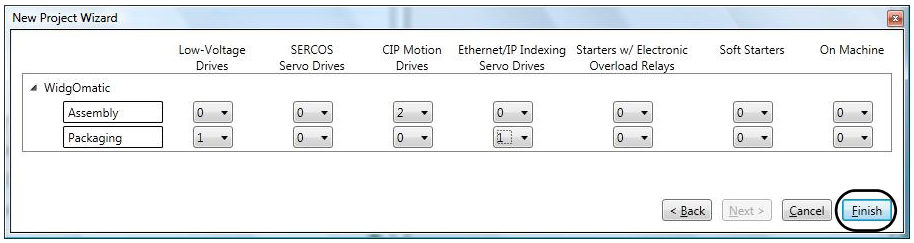
For the Widg-O-matic example, the two applications were renamed Assembly and Packaging.

12. From the Low-Voltage drives pull-down menus, choose the number of low-voltage drives to assign to each application.



For the Widg-O-matic example, the quantity was set to 0 for the Assembly application and 1 for the Packaging application.

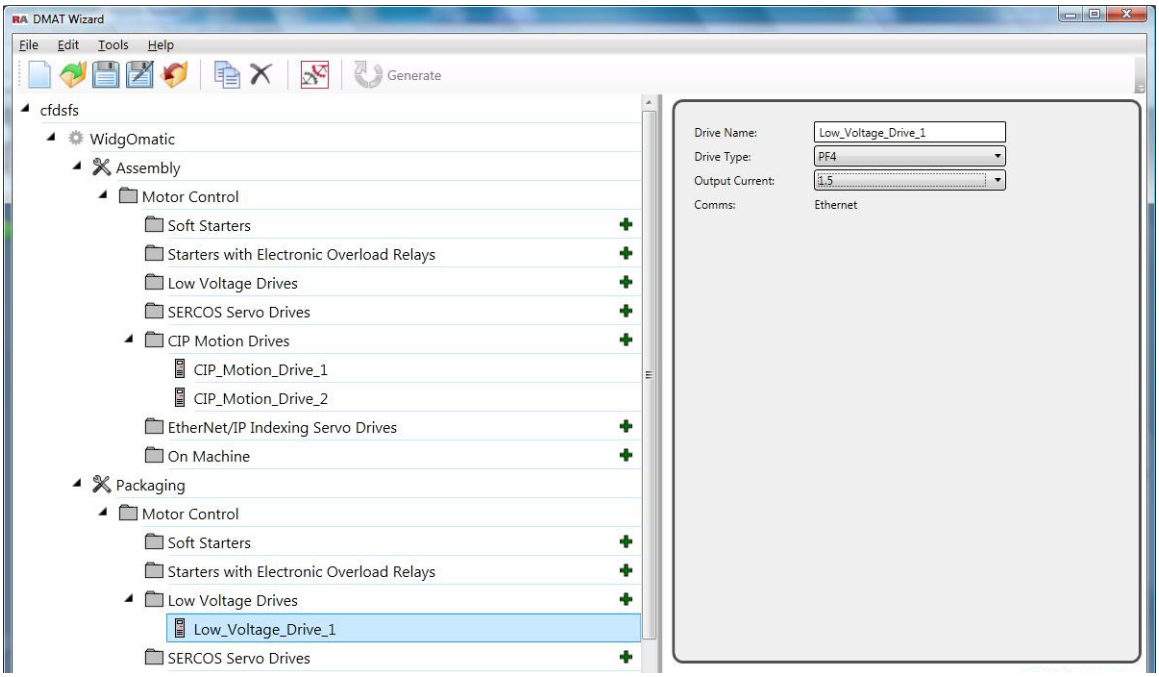
13. From each of the Servo Drives pull-down menus, choose the number of servo drives to assign to each application.



There are three types of servo drives. For the Widg-O-matic example, the CIP Motion Servo Drives quantity was set to 2 for the Assembly application and the EtherNet/IP Indexing Servo Drives quantity was set to 1 for the Packaging application. Also, you can set the number of electronic overload relays and soft-starter modules for your application.

14. Click Finish.

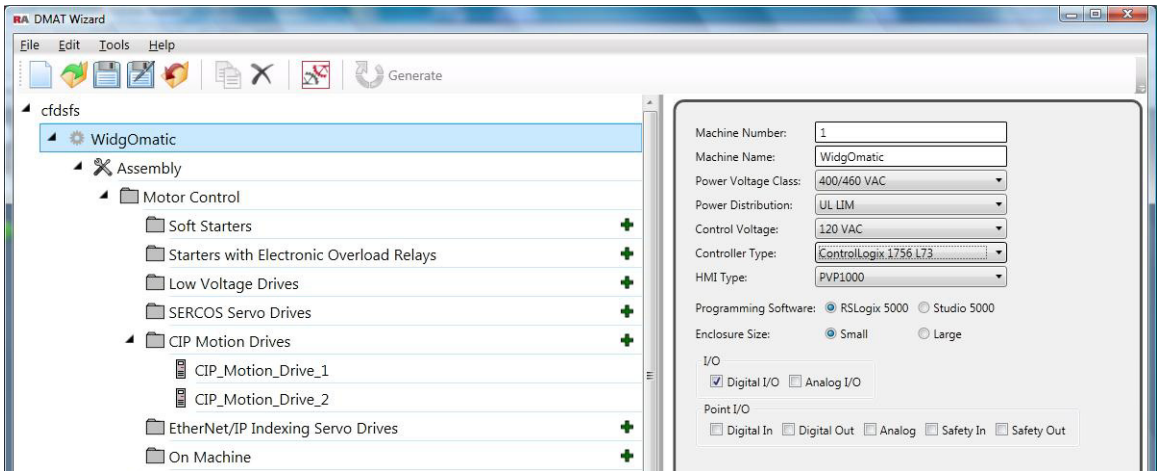
The DMAT Wizard configuration dialog box opens.



Edit the DMAT Wizard Configuration

Follow these steps to continue editing the DMAT Wizard configuration.

1. Edit your Machine Configuration.



   a. Click the machine in your project configuration tree.

      In this example, the machine name is WidgOmatic. The Machine editing window appears to the right of the project tree.

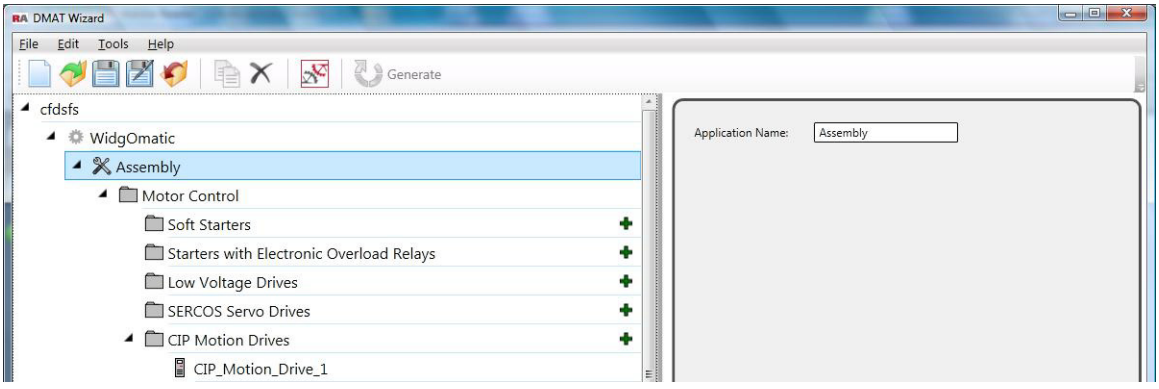
   b. Click the Machine Name edit field to change the machine name.

   c. Click each of the other machine configuration pull-down menus or check boxes and choose the appropriate power and control options.

   d. Select the Programming Software you intend to use for your application.

   e. Repeat step 1 for each of your machines in your project.

2. Edit the Application Names.



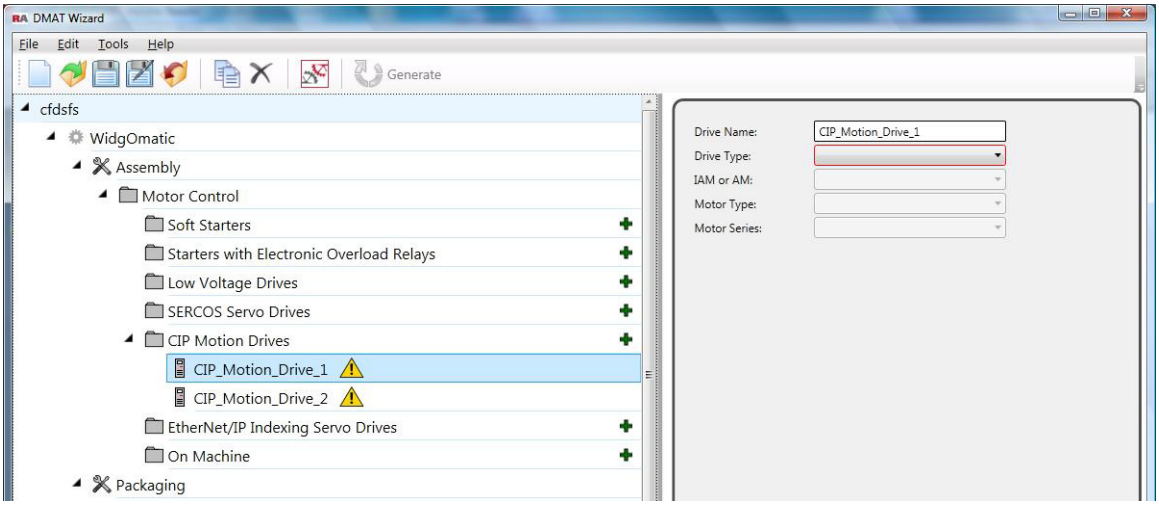
   a. Click an application in the project configuration tree.

      For the WidgOmatic example, Assembly was selected. The Application editing window appears to the right of the project configuration tree.

   b. Click the Application Name edit field to change the application name.

   c. Repeat step 2 for each of the applications in your project.

3. Edit the SERCOS, CIP Motion, and Ethernet/IP Indexing Servo Drive Configurations.



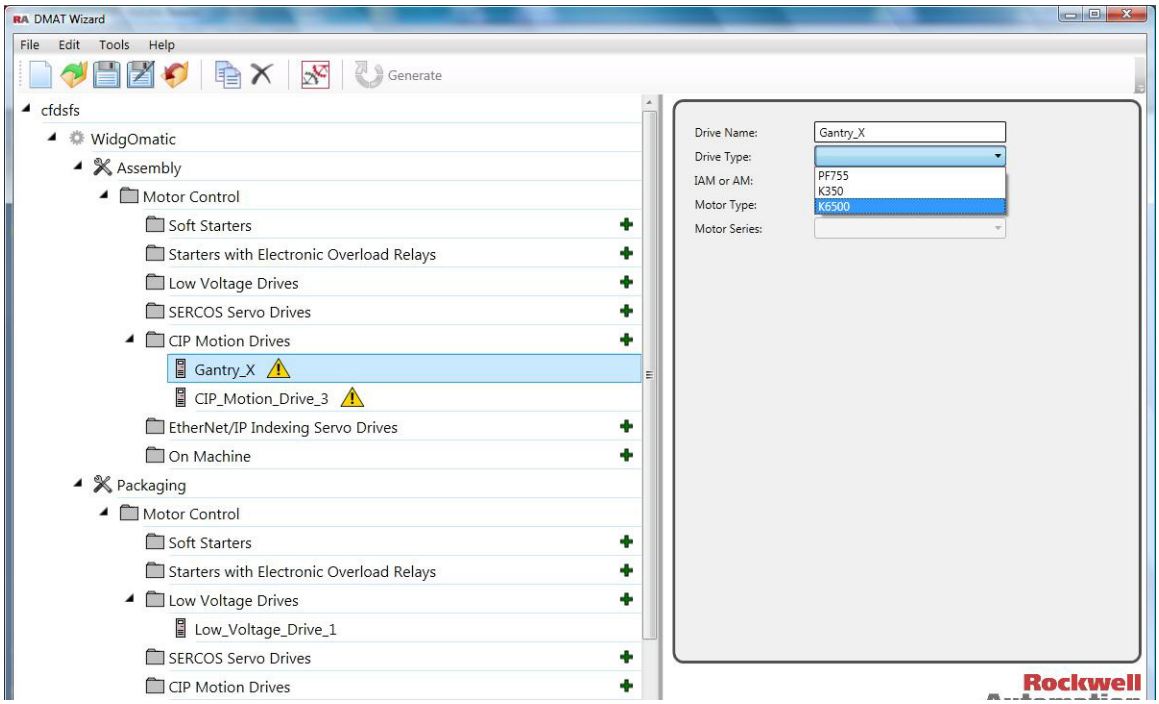
a. Select a servo drive in the project configuration tree.

   For the WidgOmatic example, CIP_Motion_Servo_Drive_1 was selected. The drive editing window appears to the right of the project configuration tree.

b. Click the Drive Name edit field and enter the desired drive name.

   For the WidgOmatic example, Gantry_X was entered as the initial drive name.

c. Click the Drive Type pull-down menu to choose the drive family.

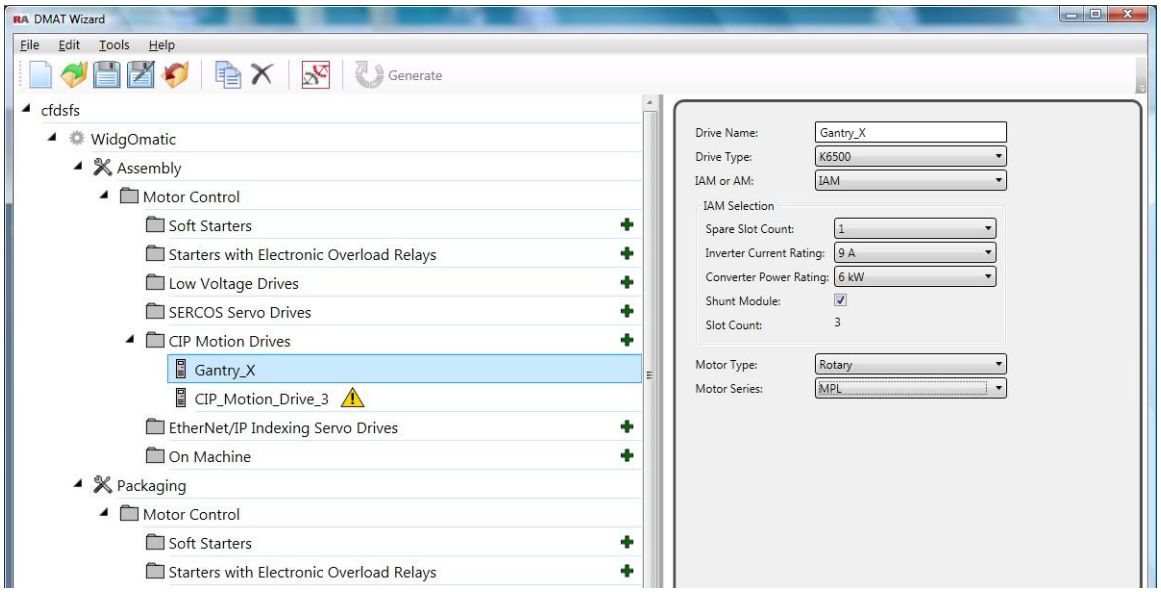


   For the WidgOmatic example, the Kinetix 6500 drive was chosen.

d. For assistance in sizing complex motor/drive combinations, click Motion Analyzer or Kinetix Motion Control Selection Guide, then return to this wizard section to complete your drive/motor configuration.

4. For multi-axis servo drive types, select an integrated axis module (IAM) for the first drive of its type.

   For the WidgOmatic example, the Gantry_X drive is configured as an IAM module.



   a. From the Spare Slot Count pull-down menu, choose the number of spare slots available on the Bulletin 2094 power rail.

   b. From the Inverter Current Rating pull-down menu, choose the inverter current rating for your drive.

   c. From the Converter Power Rating pull-down menu, choose the converter power rating for your drive.

   d. Check Shunt Module if the Bulletin 2094 (rail-mounted) shunt module is included on your power rail.

   e. Note the Slot Count value.

      This is the total number of slots used on the 2094 power rail. You are prompted if the slot count exceeds the power rail capacity.

   f. Check Velocity and Torque Mode Only if you would like the servo drive axis to be configured for Velocity mode.

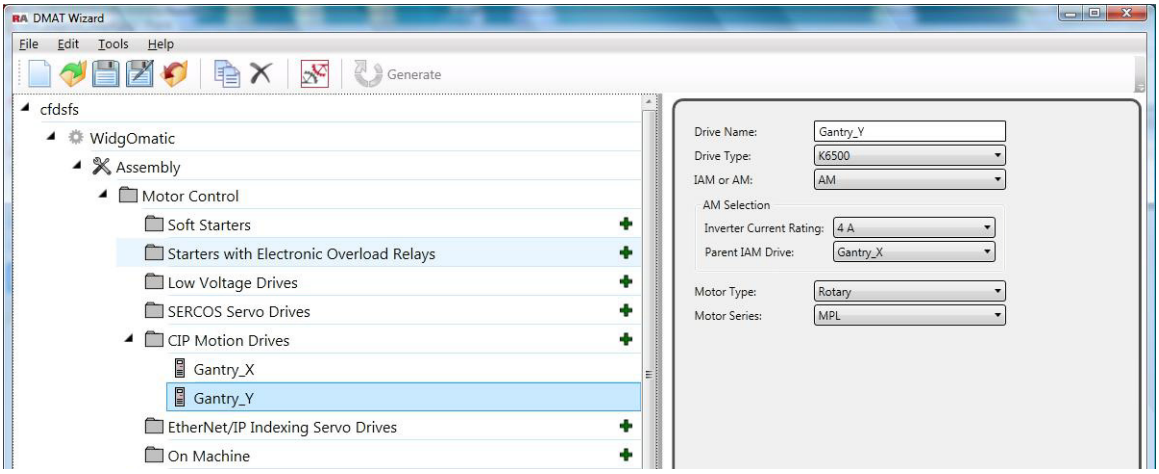
      To select Torque mode, use the Axis Properties configuration in the Logix Designer application. If this box is clear, the axis configuration defaults to Position mode.

   g. From the pull-down menus, choose the Motor Type and Motor Series being paired with the drive.

      For the WidgOmatic example, the Gantry_X drive is configured for the Rotary Motor Type and the MPL Motor Series.

5. For single-axis drive types or secondary multi-axis servo drives, select the appropriate axis module (AM) configuration option.

   For the WidgOmatic example, the Gantry_Y drive is a Kinetix 6500 (K6500) AM module.



   a. From the Inverter Current Rating pull-down menu, choose the inverter current rating for your drive.

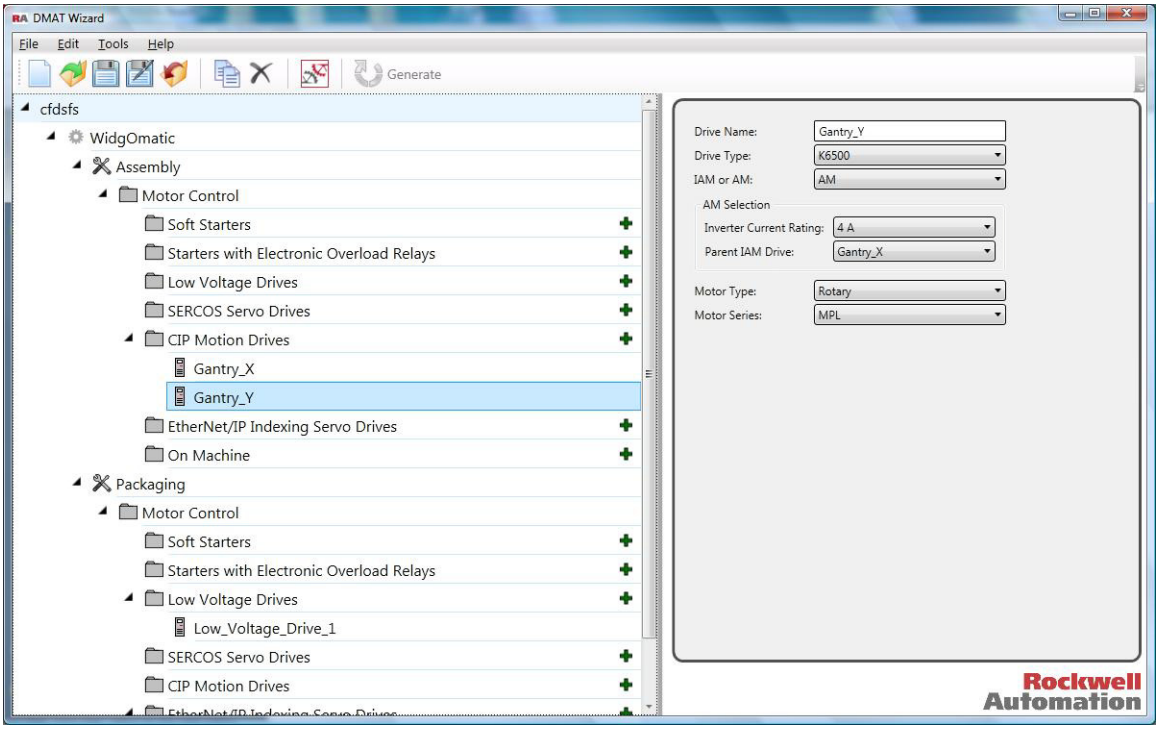
   b. From the Parent IAM Drive pull-down menu, select the parent IAM module this AM module is assigned to (applies to multi-axis systems only).

      AM modules must be assigned to a parent IAM module of the same drive family.

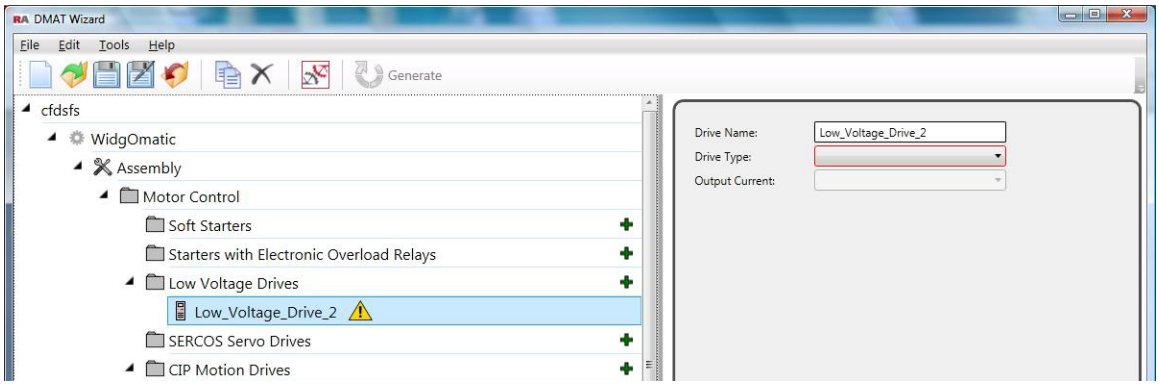
   c. From the pull-down menus, choose the Motor Type and Motor Series being paired with the drive.

      For the WidgOmatic example, the Gantry_Y drive is configured for the Rotary Motor Type and the MPL Motor Series.

   d. Repeat step 3 through step 5 for all of the remaining servo drives in your project.

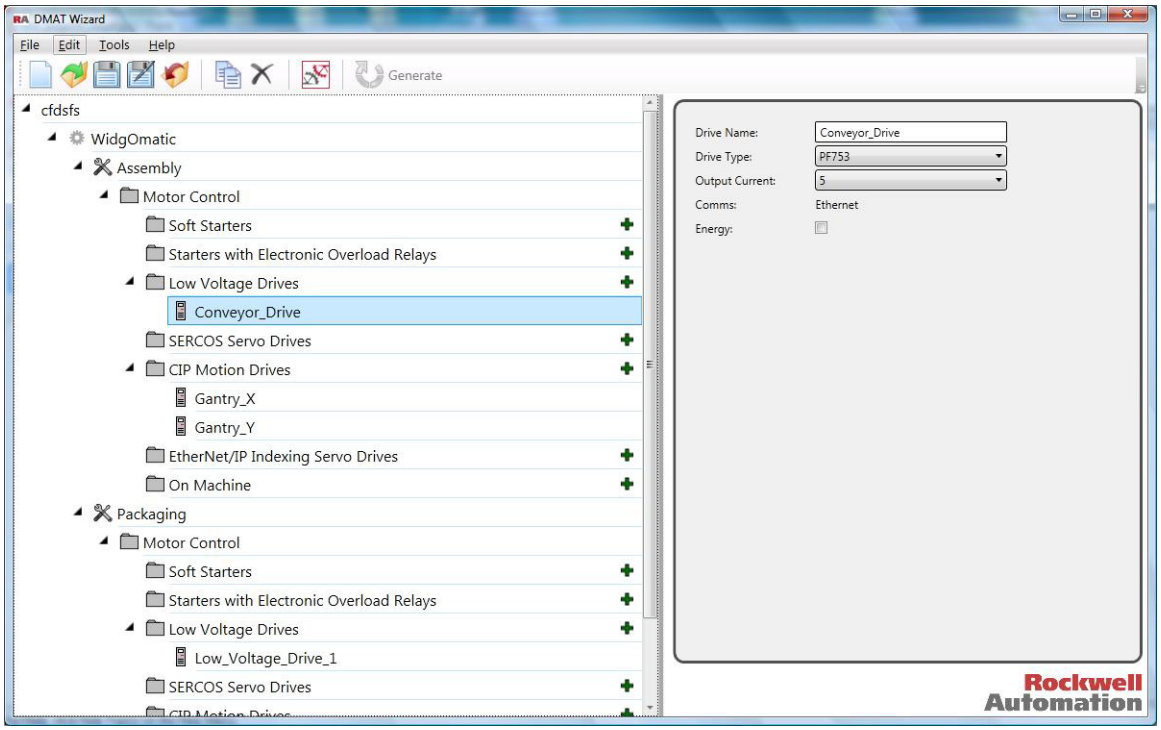


6. Edit the Low-Voltage Drive configurations.



a. Select Low_Voltage_Drive_*x* in the project configuration tree.

   For the WidgOmatic example, Low_Voltage_Drive_1 was selected. The drive editing window appears to the right of the project configuration tree.



b. Click the Drive Name edit field and enter the desired drive name.

   For the WidgOmatic example, Conveyor_Drive was entered as the initial drive name.

c. From the Drive Type pull-down menu, choose the drive family.

   For the WidgOmatic example, the PowerFlex 753 (PF753) drive is selected.

d. Select the appropriate output current for the drive.

e. Repeat step 6 for all of the remaining low-voltage drives in your project.

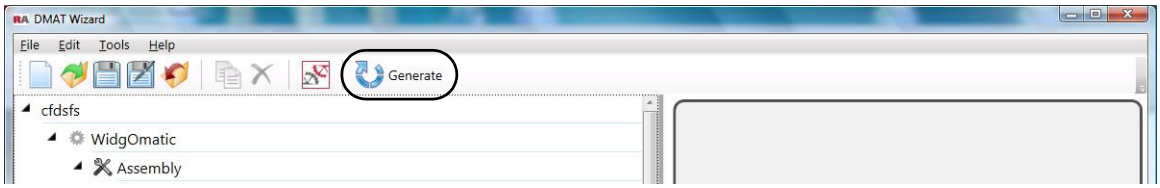
7. Edit all electronic overload relays and soft starter modules in your application.

   Current and other selection pull-down menus are similar to the drive menus.

8. Generate the Output Files.

   Before you can generate a DMAT file, all red highlighted items must be cleared in your configuration.

   a. Click Generate on the DMAT Wizard toolbar.



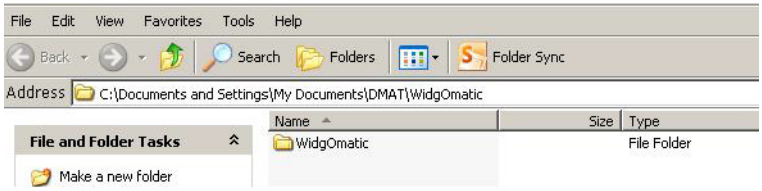
   The Generate Outputs dialog box opens.

   b. Check the Drawing Types you wish to have generated as part of the output files.

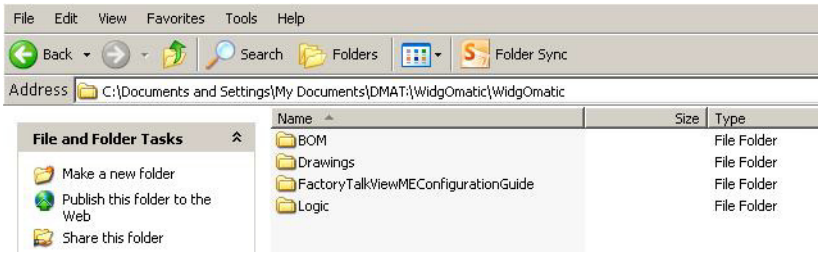
   c. Click Generate.

   The DMAT Wizard generates a folder containing the output files. If the Drives and Motion Accelerator Toolkit was installed in the default directory, you will find the folder located in: C:\Documents and Settings\My Documents\DMAT\<projectname>.

   For the WidgOmatic example, the path is: C:\Documents and Settings\My Documents\DMAT\WidgOmatic.



   d. Double-click the machine folders to view the different output folders and files created.



Bill of Materials Completion

In this chapter you use Rockwell Automation ProposalWorks software to complete the drives and motion system bill of materials that the DMAT Wizard created.

If you chose not to use the DMAT Wizard, follow the procedures in Appendix E to assemble the initial BOM ProposalWorks file before executing the following steps in this chapter. If you do not have ProposalWorks software, you may use the Microsoft Excel file that the DMAT Wizard provides as a starting point in creating a bill of materials with the help of your local Allen-Bradley distributor.

Before You Begin

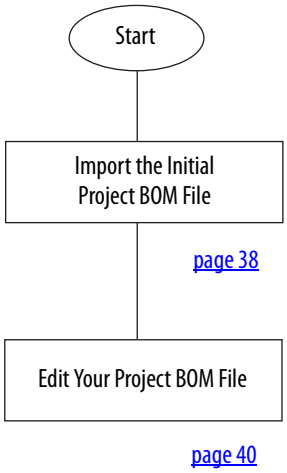
- Complete the initial system configuration using the DMAT Wizard (refer to Chapter 1) or
- Assemble the initial BOM using ProposalWorks software (refer to Appendix E)

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative
- ProposalWorks software, version 7.5 or later, or Microsoft Office Excel 2010
  Download ProposalWorks software from http://www.rockwellautomation.com/en/e-tools/ or ask your local Allen-Bradley distributor for the Product Selection Toolbox DVD.
- The user manual for your Drives and Motion hardware. Refer to Additional Resources on page 15 for publication numbers.

Follow These Steps

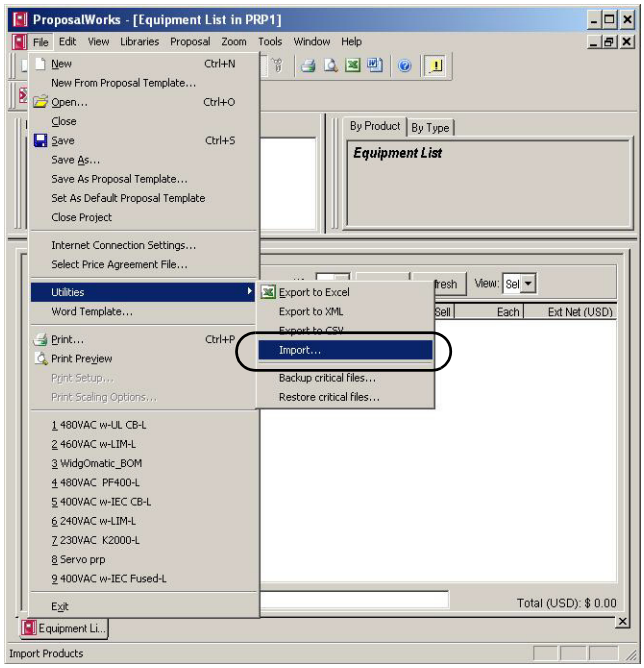
Complete these steps to complete the commissioning process for your drives and motion application.



Import the Initial Project BOM File

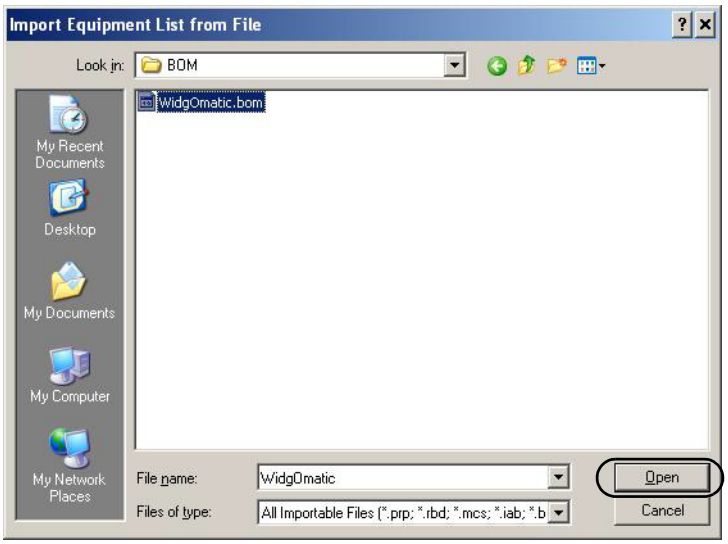
Follow these steps to import the initial project BOM file.

1. Open ProposalWorks software, navigate to File Menu>Utilities, and select Import.



   If you chose to assemble the initial BOM file using ProposalWorks software, open the ProposalWorks (.prp) file you created in Appendix E and skip to step 2.

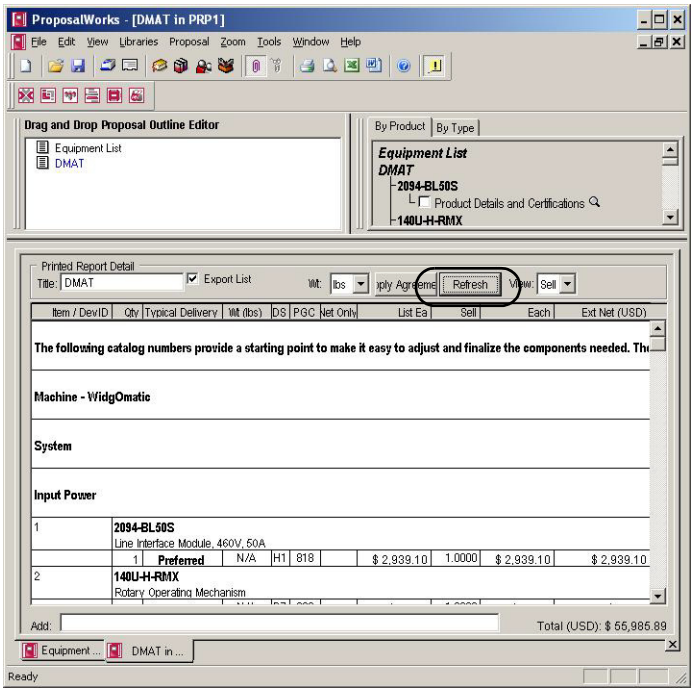
2. Navigate to your projects .bom file and click Open.



If the default DMAT Wizard directory was used, your project's .bom import file is in C:\Documents and Settings*PC Name*\My Documents\DMAT*ProjectName**MachineName*\BOM directory.

The Widg-O-matic example file may be found in: C:\Program Files\RA_Simplification\DMAT\B-Files\6-Project Examples\Widg-O-matic.

The ProposalWorks file opens.



3. Click Refresh to update prices in local currency.

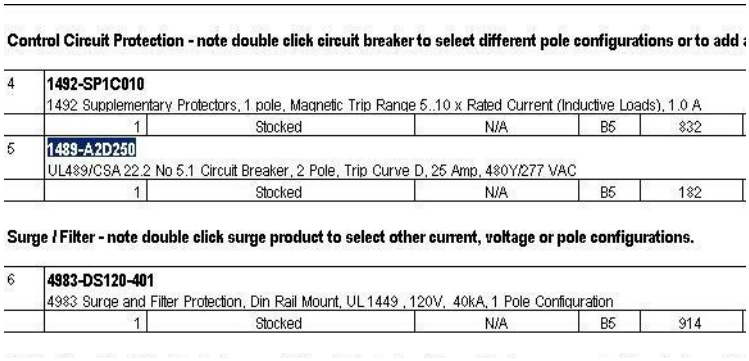
Edit Your Project BOM File

The DMAT Wizard you used in Chapter 1 or the steps you followed in Appendix E created an initial bill of materials (BOM), however, individual preconfigured product listings should be reviewed and possibly edited to fit your specific application needs.

ProposalWorks software includes a variety of specific product configuration tools to make further BOM adjustments easy. These steps provide examples of using ProposalWorks Product Configuration Assistants to edit your initial project BOM file to meet your specific application needs.

Follow these steps to edit the BOM file you imported or assembled for your specific application.

1. Edit a product for your specific application.
   a. Double-click a product catalog number to activate the Product Configuration Assistant.



Control Circuit Protection - note double click circuit breaker to select different pole configurations or to add

4	**1492-SP1C010** 1492 Supplementary Protectors, 1 pole, Magnetic Trip Range 5..10 x Rated Current (Inductive Loads), 1.0 A				
	1	Stocked	N/A	B5	832
5	**1489-A2D250** UL489/CSA 22.2 No 5.1 Circuit Breaker, 2 Pole, Trip Curve D, 25 Amp, 480Y/277 VAC				
	1	Stocked	N/A	B5	182

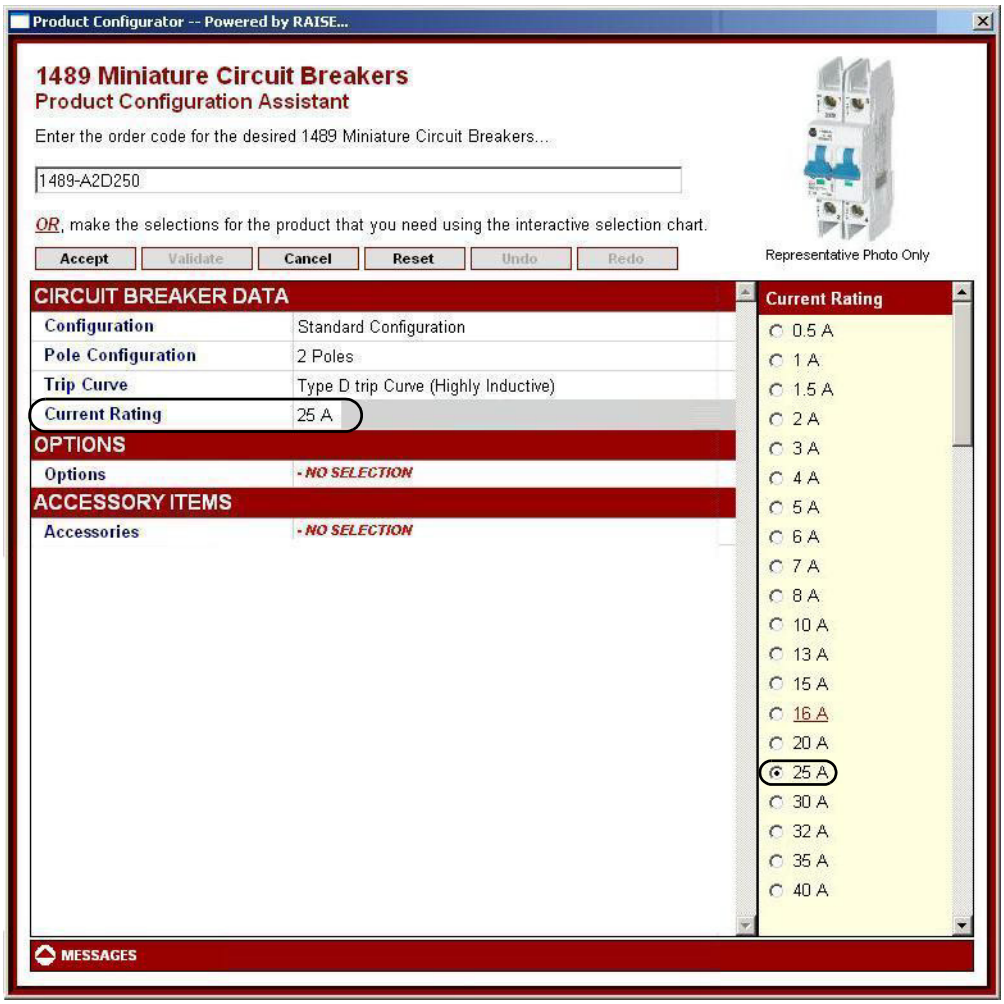
Surge / Filter - note double click surge product to select other current, voltage or pole configurations.

6	**4983-DS120-401** 4983 Surge and Filter Protection, Din Rail Mount, UL1449 , 120V, 40kA, 1 Pole Configuration				
	1	Stocked	N/A	B5	914

In this example, catalog number 1489-A2D250 was selected.

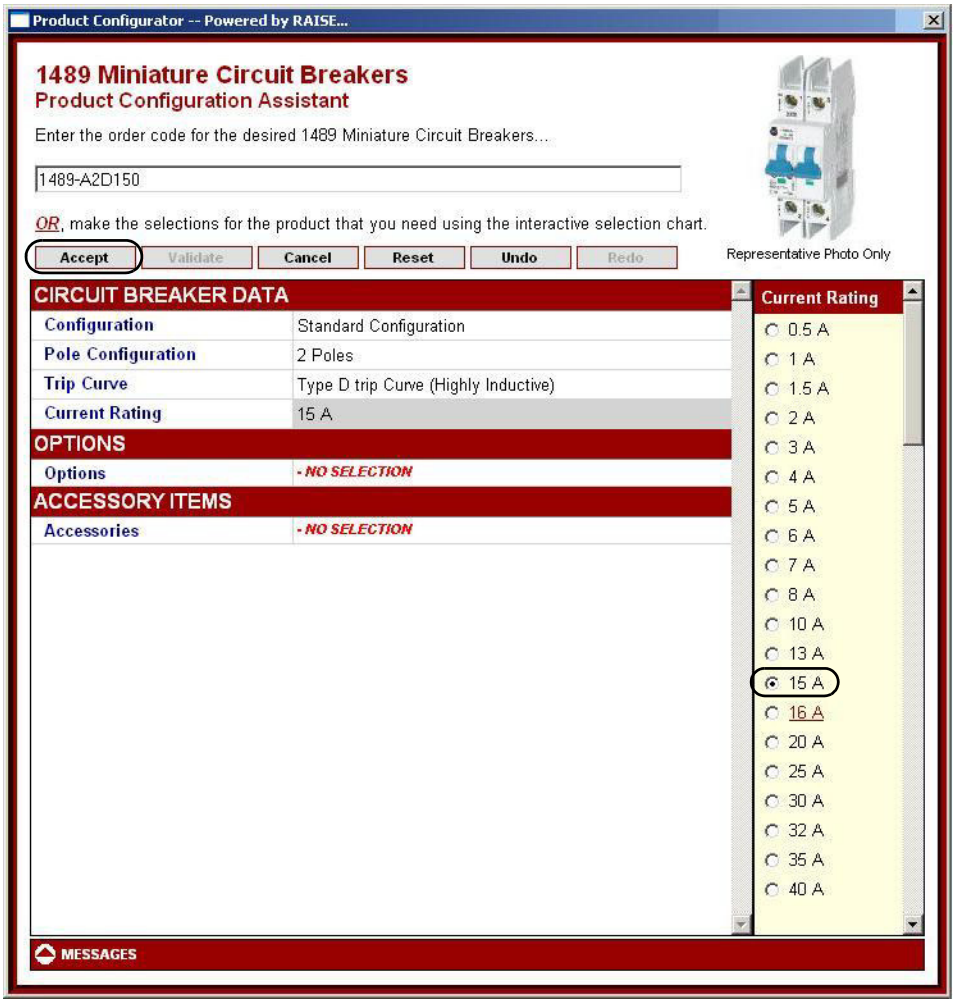
The Product Configuration Assistant dialog box opens. You can browse and select from a variety of product options.

b. Click the Current Rating attribute.



In this example, the Current Rating option is 25 A. For more in-depth product selection information, refer to product selection guides or Motion Analyzer software.

c. For this example, select 15 A under the Current Rating field.
The catalog number field is replaced with 1489-A2D150.



d. Click Accept to make the product change within the Product Configuration Assistant.
The Product Configuration Assistant closes and your BOM file reflects the change.

Control Circuit Protection - note double click circuit breaker to select different pole configurations or to add a

4	**1492-SP1C010**				
	1492 Supplementary Protectors, 1 pole, Magnetic Trip Range 5..10 x Rated Current (Inductive Loads), 1.0 A				
	1	Stocked	N/A	B5	832
5	**1489-A2D150**				
	UL489/CSA 22.2 No 5.1 Circuit Breaker, 2 Pole, Trip Curve D, 15 Amp, 480Y/277 VAC				
	1	Stocked	N/A	B5	182

Surge / Filter - note double click surge product to select other current, voltage or pole configurations.

6	**4983-DS120-401**				
	4983 Surge and Filter Protection, Din Rail Mount, UL 1449 , 120V, 40kA, 1 Pole Configuration				
	1	Stocked	N/A	B5	914

2. Edit a product group for your specific application.

   Product group refers to an item (catalog number) that includes one or more sub items.

   a. Double-click a product group catalog number to activate the Product Configuration Assistant.

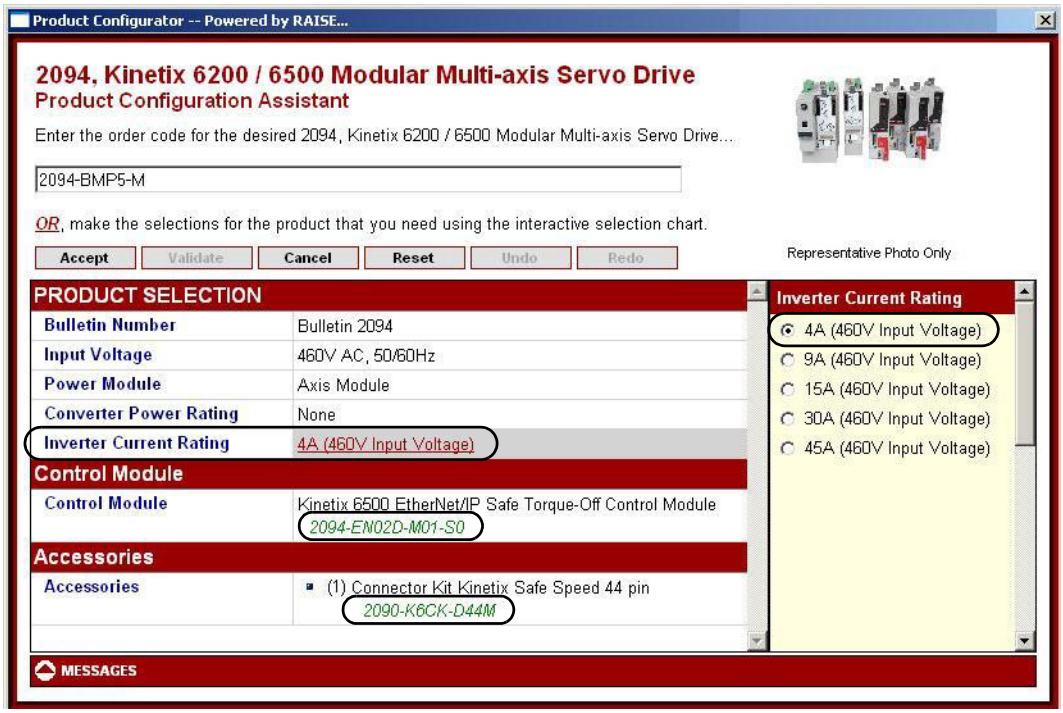
      In this example, item 13 (catalog number 2094-BMP5-M) with sub items 13.1 and 13.2 was selected.

      The Product Configuration Assistant dialog box opens. You can browse and select from a variety of product options.

Kinetix 6500 Multi-axis Servo Drive System Section

11	**2094-PR2**		
*Verify Price in SAP	Power Rail, 230V OR 460V, 2 Axis.		
	1	Non-Stocked	N/A
12	**2094-BC02-M02-M**		
	Power Module, Integrated, 460V, 15kW Conv. 15A Inv., Kinetix 6500 EtherNet/IP Safe T		
	1		N/A
12.1	**2090-K6CK-D44M**		
	Connector Kit Kinetix Safe Speed 44 pin		
	1		N/A
12.2	**2094-EN02D-M01-S0**		
	EtherNet/IP Safe Torque-Off Control Module		
	1		N/A
13	**2094-BMP5-M**		
	Power Module, 460V, 5A Inv., Kinetix 6500 EtherNet/IP Safe Torque-Off Control Module		
	1		N/A
13.1	**2090-K6CK-D44M**		
	Connector Kit Kinetix Safe Speed 44 pin		
	1		N/A
13.2	**2094-EN02D-M01-S0**		
	EtherNet/IP Safe Torque-Off Control Module		
	1		N/A
14	**1585J-M8CBJM-0M3**		
*Verify Price in SAP	1585 EtherNet Cables, 8 Conductors, RJ45, Straight Male, RJ45, Teal PVC, Shielded, P		
	1		N/A
15	**1585J-M8CBJM-5**		
*Verify Price in SAP	1585 EtherNet Cables, 8 Conductors, RJ45, Straight Male, RJ45, Teal PVC, Shielded, P		
	2		N/A

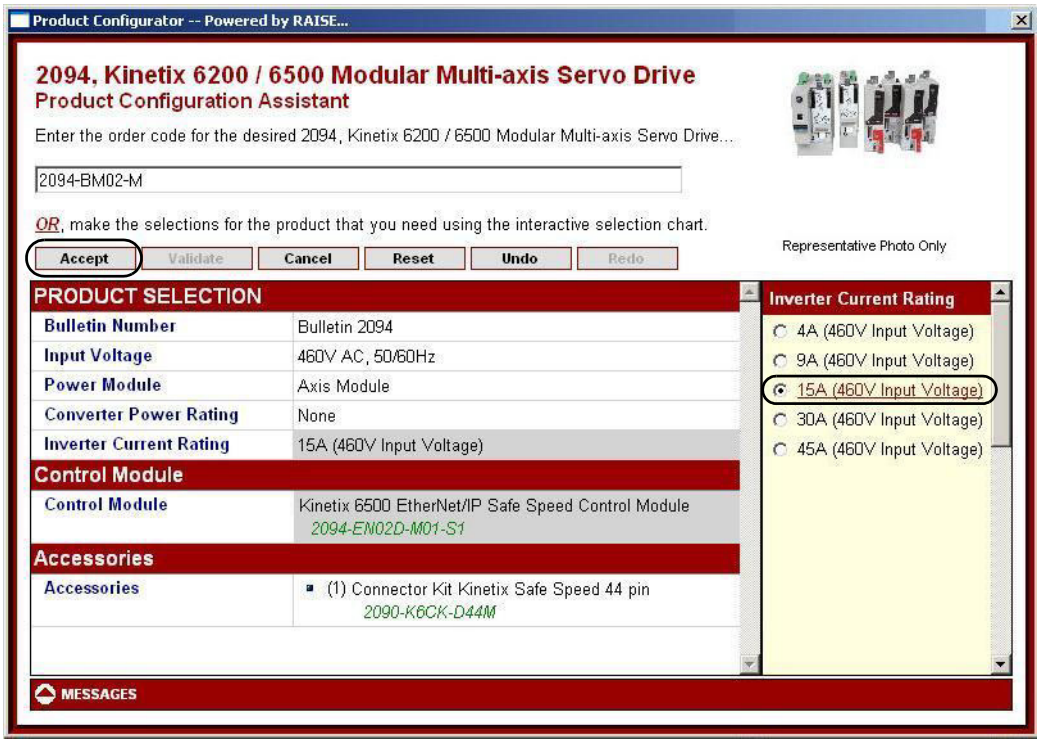
   b. Click the Inverter Current Rating attribute.



In this example, the Inverter Current Rating product option is 4 A. The sub items (13.1 and 13.2) include the control module and connector kit accessory. For more in-depth product selection information, refer to product selection guides or Motion Analyzer software.

c. For this example, select 15 A under the Inverter Current Rating field.

The catalog number field was replaced with 2094-BM02-M. In addition, the 2094-EN02D-M01-S1 control module was chosen to replace the 2094-EN02D-M01-S0.



d. Click Accept to make the product change within the Product Configuration Assistant.

Kinetix 6500 Multi-axis Servo Drive System Section

11	**2094-PR2**			
*Verify Price in SAP	Power Rail, 230V OR 460V, 2 Axis.			
	1	Non-Stocked	N/A	H1
12	**2094-BC02-M02-M**			
	Power Module, Integrated, 460V, 15kW Conv. 15A Inv., Kinetix 6500 EtherNet/IP Safe Torque-Off			
	1		N/A	H1
12.1	**2090-K6CK-D44M**			
	Connector Kit Kinetix Safe Speed 44 pin			
	1		N/A	H1
12.2	**2094-EN02D-M01-S0**			
	EtherNet/IP Safe Torque-Off Control Module			
	1		N/A	H1
13	**2094-BM02-M**			
	Power Module, Axis, 460V, 15A Inv., Kinetix 6500 EtherNet/IP Safe Speed Control Module			
	1		N/A	H1
13.1	**2090-K6CK-D44M**			
	Connector Kit Kinetix Safe Speed 44 pin			
	1		N/A	H1
13.2	**2094-EN02D-M01-S1**			
	EtherNet/IP Safe Speed Control Module			
	1		N/A	H1
14	**1585J-M8CBJM-0M3**			
*Verify Price in SAP	1585 EtherNet Cables, 8 Conductors, RJ45, Straight Male, RJ45, Teal PVC, Shielded, PVC Genera			
	1		N/A	
15	**1585J-M8CBJM-5**			
*Verify Price in SAP	1585 EtherNet Cables, 8 Conductors, RJ45, Straight Male, RJ45, Teal PVC, Shielded, PVC Genera			
	2		N/A	

Sub item (13.2) also reflects the updated catalog number and description.

3. Delete products not required for your specific application.
   a. Select the product or product group not required for your application.

Motors Section

36	**CM201-NV00118AXZCC**					
*Verify Price in SAP	CM201 - Vector Duty Enclosed Small AC Motors, 1 HP, 1800 RPM, C-Face Foot Mounted, Frame Size is 143TC					
	1		59.000	D3	486	
37	**CM227-BK00318AXZCA**					
	CM227 - AC NEMA Frame Inverter Brake Motor, 3 HP, 1800 RPM, C-Face Foot Mounted, Frame Size is 182TC					
	1		120.000	D3	502	
38	**CM203-NV7F517AXZCC**					
*Verify Price in SAP	CM203 - Vector Duty Laminated Steel Frame AC Motors, 7.5 HP, 1750 RPM, C-Face Foot Mounted, Frame Size is FL182C					
	1		210.000	D3	486	

   In this example, items 37 and 38 were selected.

   b. From your keyboard, press delete.

Motors Section

36	**CM201-NV00118AXZCC**				
*Verify Price in SAP	CM201 - Vector Duty Enclosed Small AC Motors, 1 HP, 1800 RPM, C-Face Foot Mounted, Frame Size is 143TC				
	1		59.000	D3	486

   The product or products are deleted from the BOM project file.

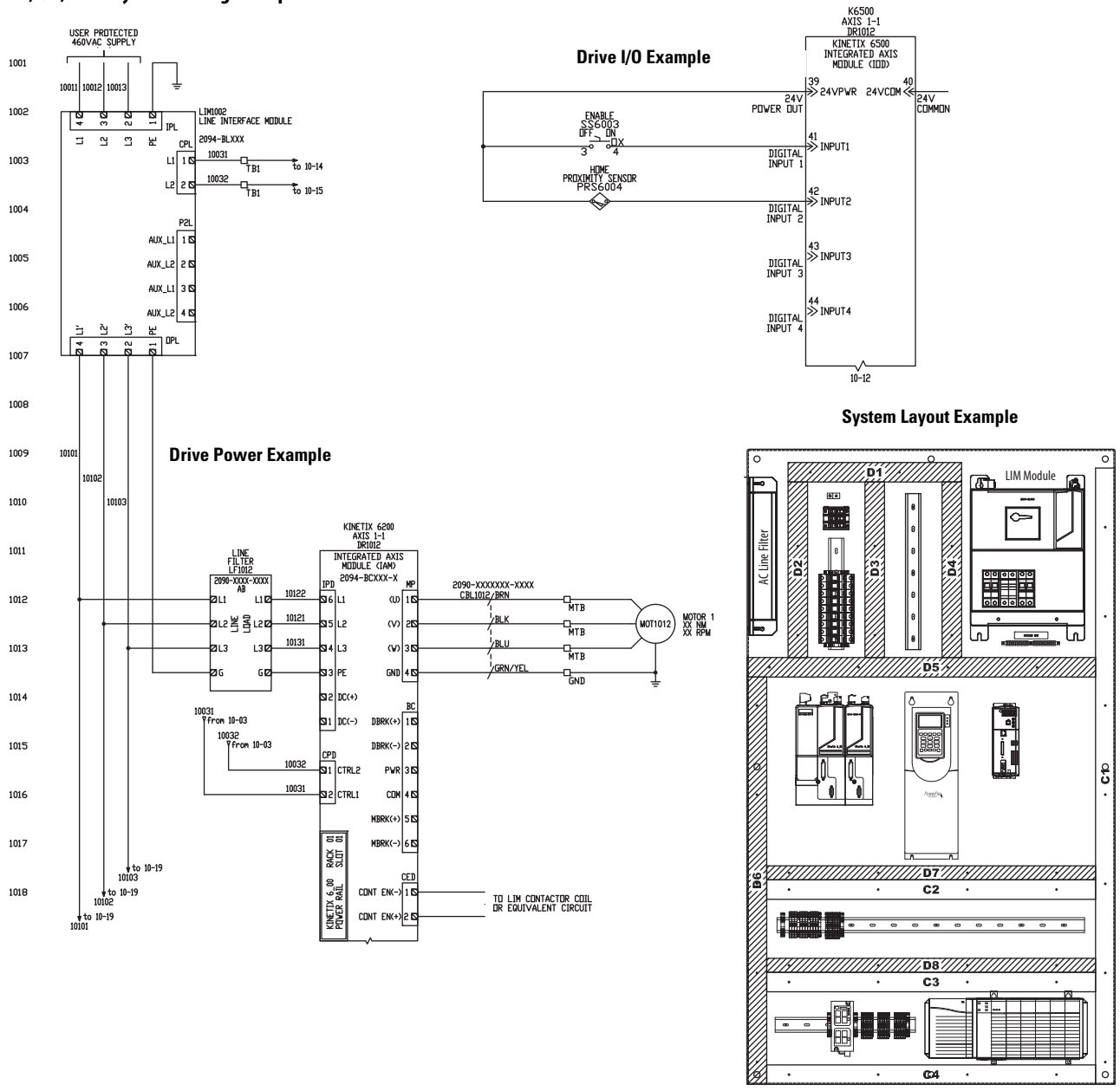
4. Save your edited BOM project file.
5. Send the BOM project file to your Rockwell Automation distributor for a quote.

Notes:

System Layout and Wiring

In this chapter you edit the set of layout and wiring drawings from the DMAT drawing library that the DMAT Wizard created. If you chose not to use the DMAT Wizard, follow the procedures in Appendix F to assemble the initial project drawing set before executing the steps in this chapter.

Power, I/O, and Layout Drawing Examples



To assist you in understanding how to best use the drawing libraries, the Widg-O-matic machine application example is used in the drawing editing steps provided. The Widg-O-matic machine includes the following drive, power, and control devices:

- Two Kinetix 6500 (400V-class) servo drives and motors (home and enable inputs)
- One PowerFlex 753 (400V-class) drive and induction motor
- One Kinetix 300 (400V-class) servo drive and electric cylinder
- One Bulletin 2094 line interface module (LIM)
- One ControlLogix controller and EtherNet/IP network module

Before You Begin

- Complete the initial system configuration using the DMAT Wizard (refer to Chapter 1) or
- Assemble the initial project drawing set without the DMAT Wizard (refer to Appendix F)

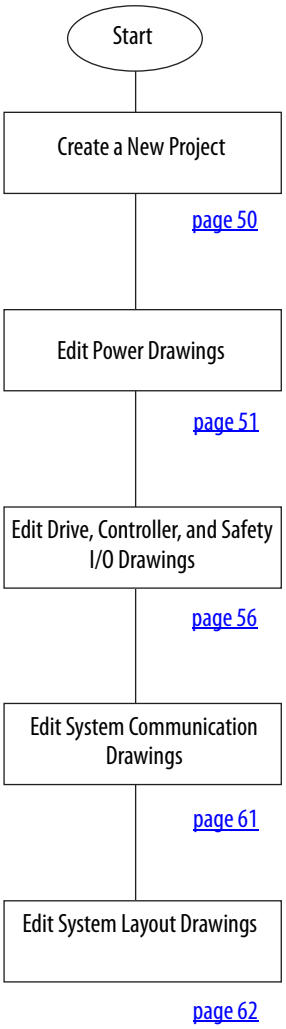
What You Need

- Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017
- AutoCAD Electrical or AutoCAD software to open the DWG or DXF files
- Adobe Reader software to open PDF files
- Line Interface Module Installation Instructions, publication 2094-IN005
- System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001
- System Design for Control of Electrical Noise Video, publication GMC-SP004
- The user manual for your Drives and Motion hardware. Refer to Additional Resources on page 15 for publication numbers.

Follow These Steps

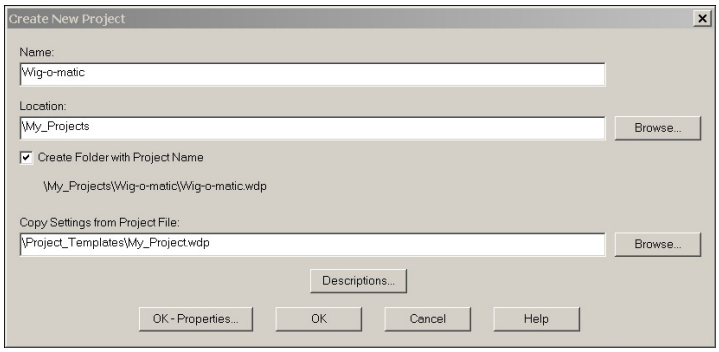
Complete the following steps to create your system layout and wiring drawings. These steps provide general instructions for how to maximize the use of the toolkit's drawing library in creating a complete drives-and-motion system layout and wiring drawing set. AutoCAD or AutoCAD Electrical software is recommended to take full advantage of the drawing editing steps included in this chapter and the library's device wiring references and attributes that move with the devices as you edit your project drawing set. Some of the initial project creation steps are illustrated using AutoCAD Electrical software, but most are generic and can be used with a variety of software drawing packages.

If you chose not to use the DMAT Wizard, follow the instructions in Appendix F before executing the following steps in this chapter.

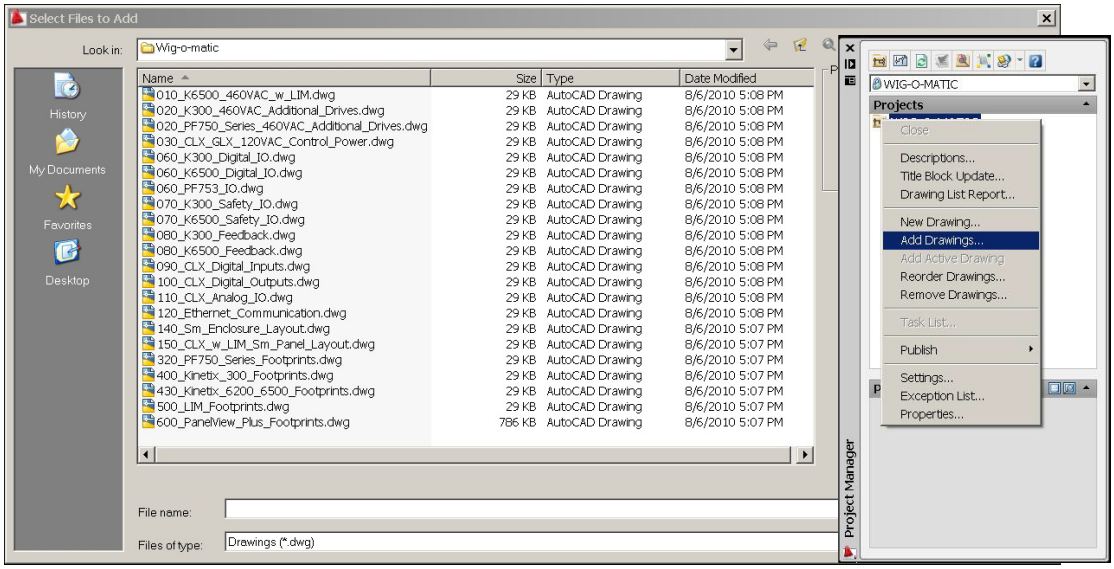


Create a New Project

1. Open your drawing software.
2. Create and name your new project.



3. Add and select the toolkit library drawings assembled by the DMAT Wizard.



4. Navigate to the appropriate DWG or DXF Drawing directory that was created by the DMAT Wizard.

   If the default DMAT Wizard directory was used, your project's drawing set is in C:\Documents and Settings*PC Name*\My Documents\DMAT*ProjectName**MachineName*\Drawings*filetype* directory.

   The Widg-O-matic example drawing files may be found in: C:\Program Files\RA_Simplification\DMAT\B-Files\6-Project Examples\Widg-O-matic\WidgOmatic_CAD*filetype* directory.

   If you chose to assemble the Project Drawing Set without using the DMAT Wizard, navigate to the drawing directory you created in Appendix F.

Edit Power Drawings

1. Open your initial drive power drawing that includes the main power distribution components.

   For the Widg-O-matic machine application example, the 010_K6500_460VAC_w_LIM.dwg file is opened. Refer to the figure on page 52.

2. Delete drives not used in your project.

   For the Widg-O-matic machine application example, only two Kinetix 6500 drives are required, so the third drive is deleted. Refer to the shaded area in the figure on page 52.

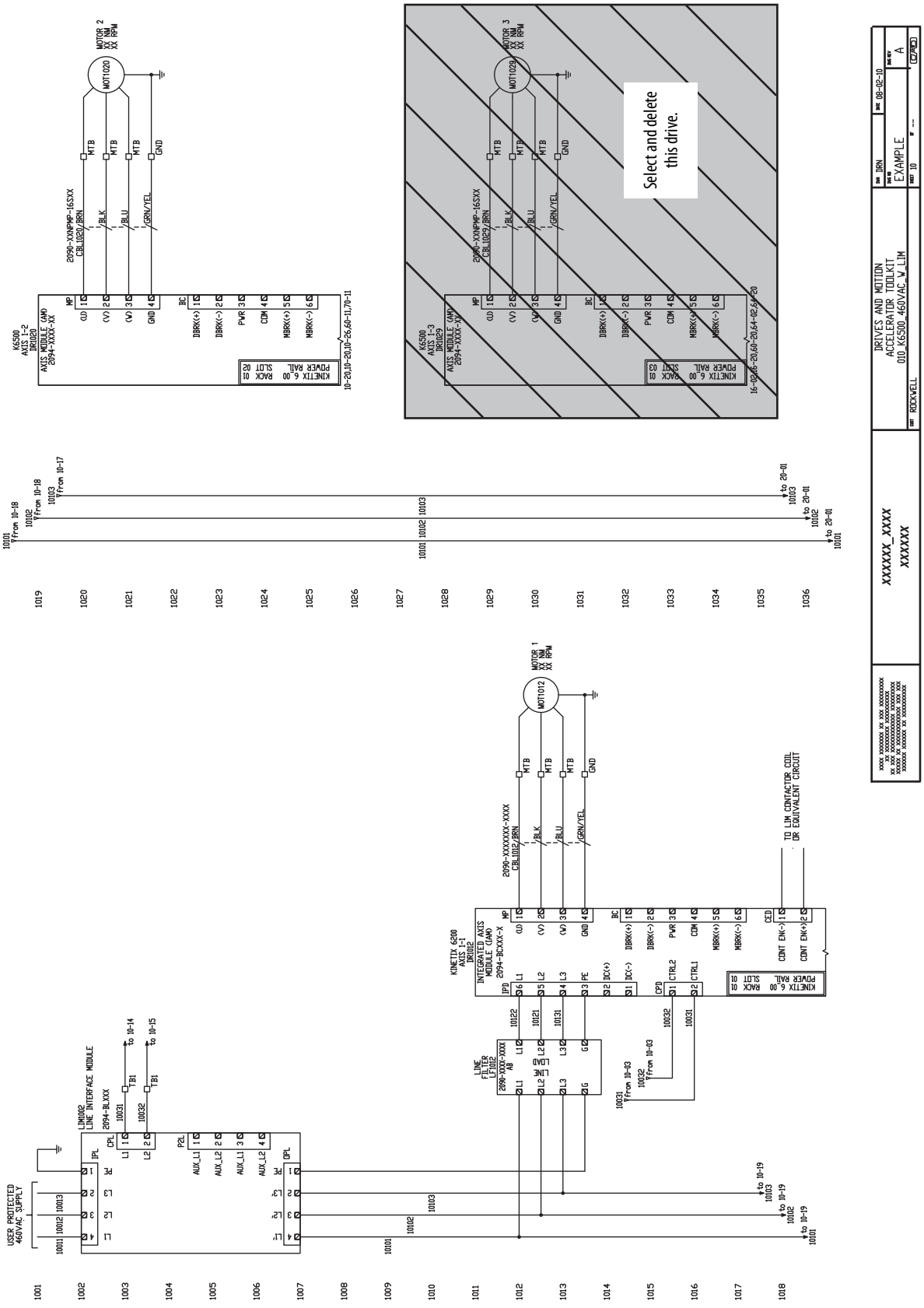
3. Open all additional drive drawings and delete drives not used in your project.

   For the Widg-O-matic machine application example, both the 020_K300_460VAC_Additional_Drives.dwg file and the 020_PF750_Series_460VAC_Additional_Drives.dwg file are opened and unused drives are deleted. Refer to the figures on page 53 and page 54.

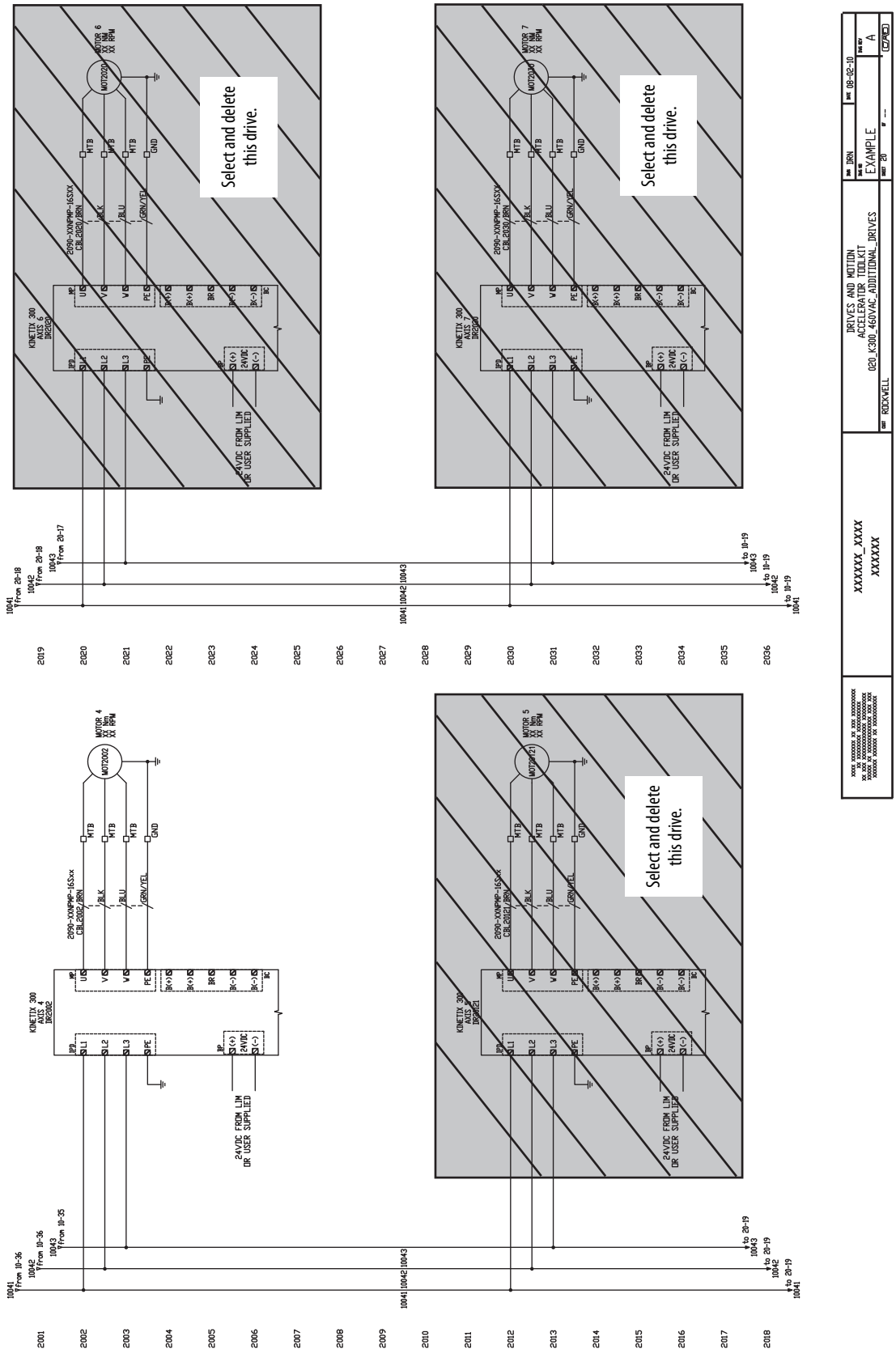
4. Open all controller control power drawings and edit power connections and devices as necessary.

   For the Widg-O-matic machine application example, no changes to the 030_CLX_GLX_120VAC_Control_Power.dwg files were required. Refer to the figure on page 55.

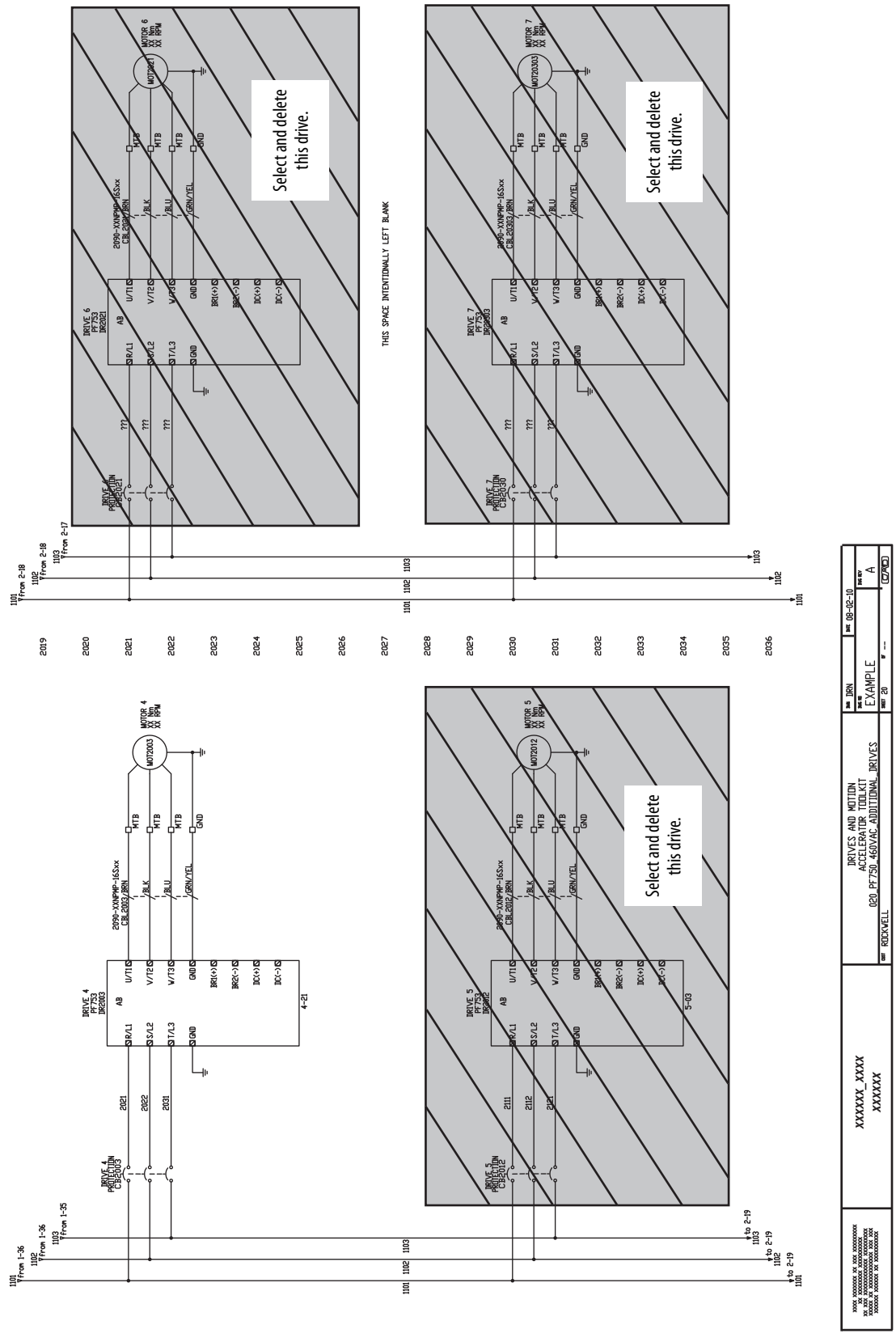
Kinetix 6500 (460V) Drive with LIM Module



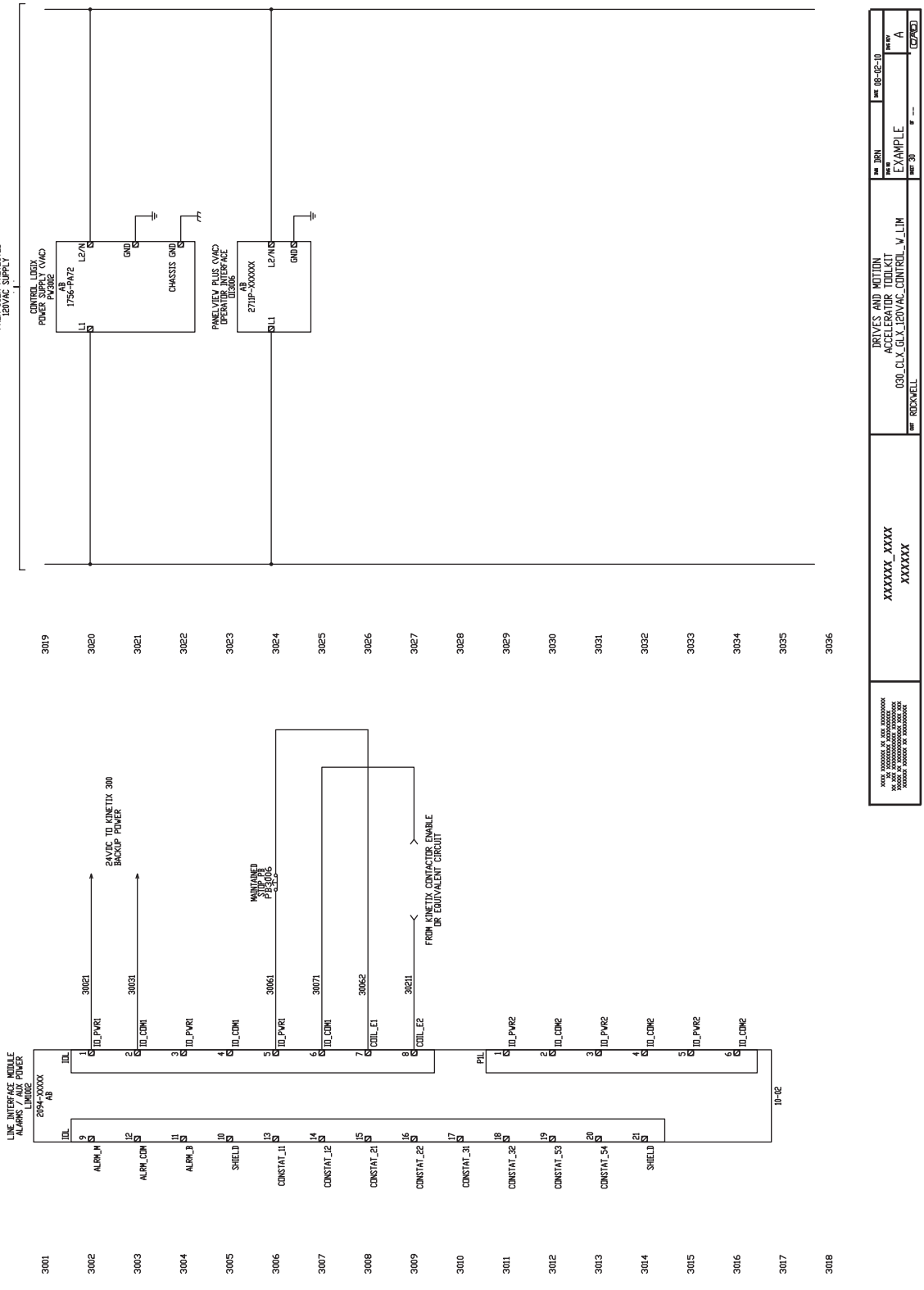
Kinetix 300 (460V) Additional Drives



PowerFlex 750 (460V) Additional Drives



ControlLogix/GuardLogix® (120V) Control Power with LIM Module



Edit Drive, Controller, and Safety I/O Drawings

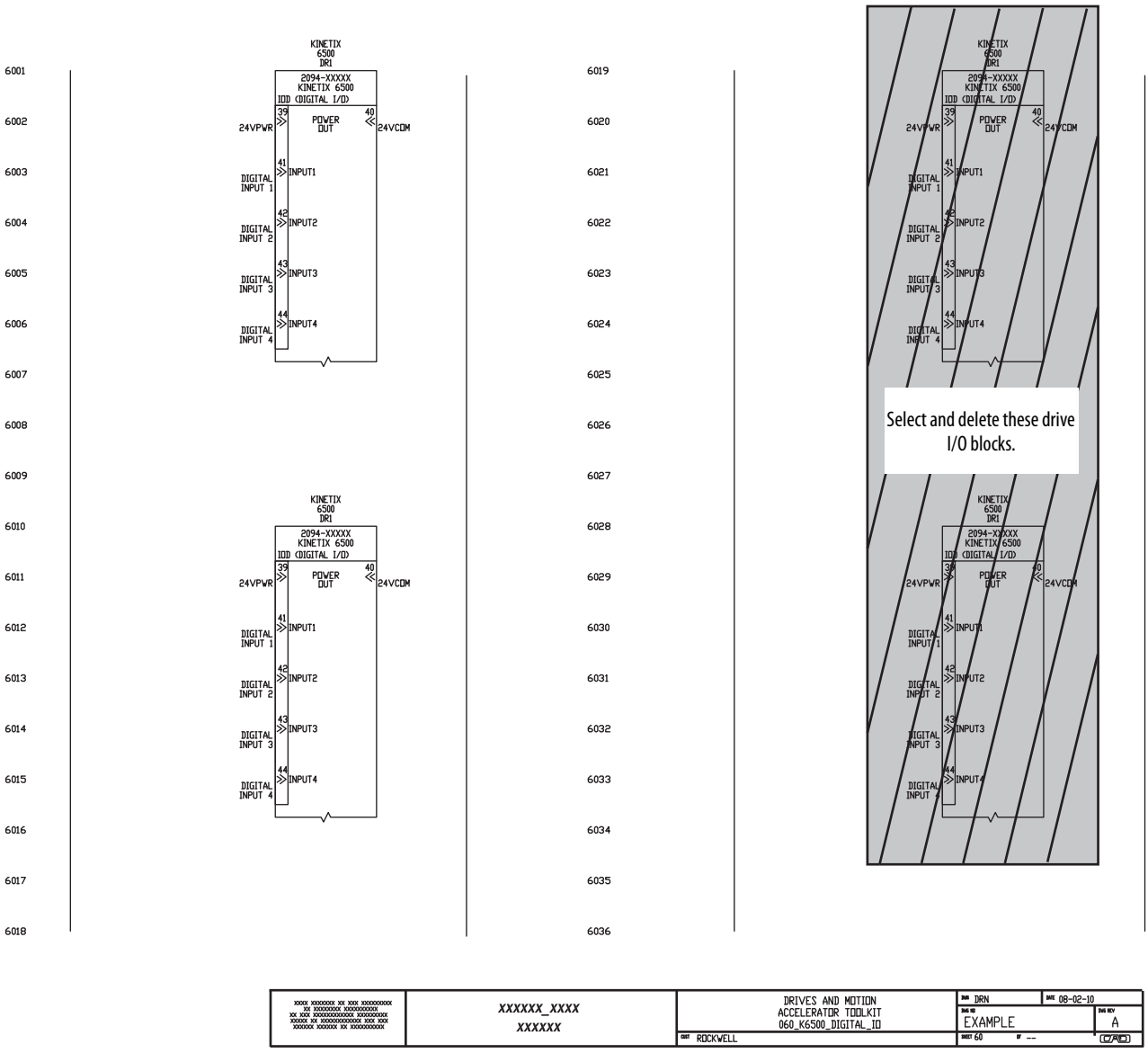
1. Open all drive, controller, and safety I/O drawings as required for your application.

   For the Widg-O-matic machine application example, the 060_K6500_Digital_IO.dwg file is opened.

2. Delete devices not used in your project.

   For the Widg-O-matic machine application example, only two Kinetix 6500 drives are required, so the third and fourth I/O blocks are deleted.

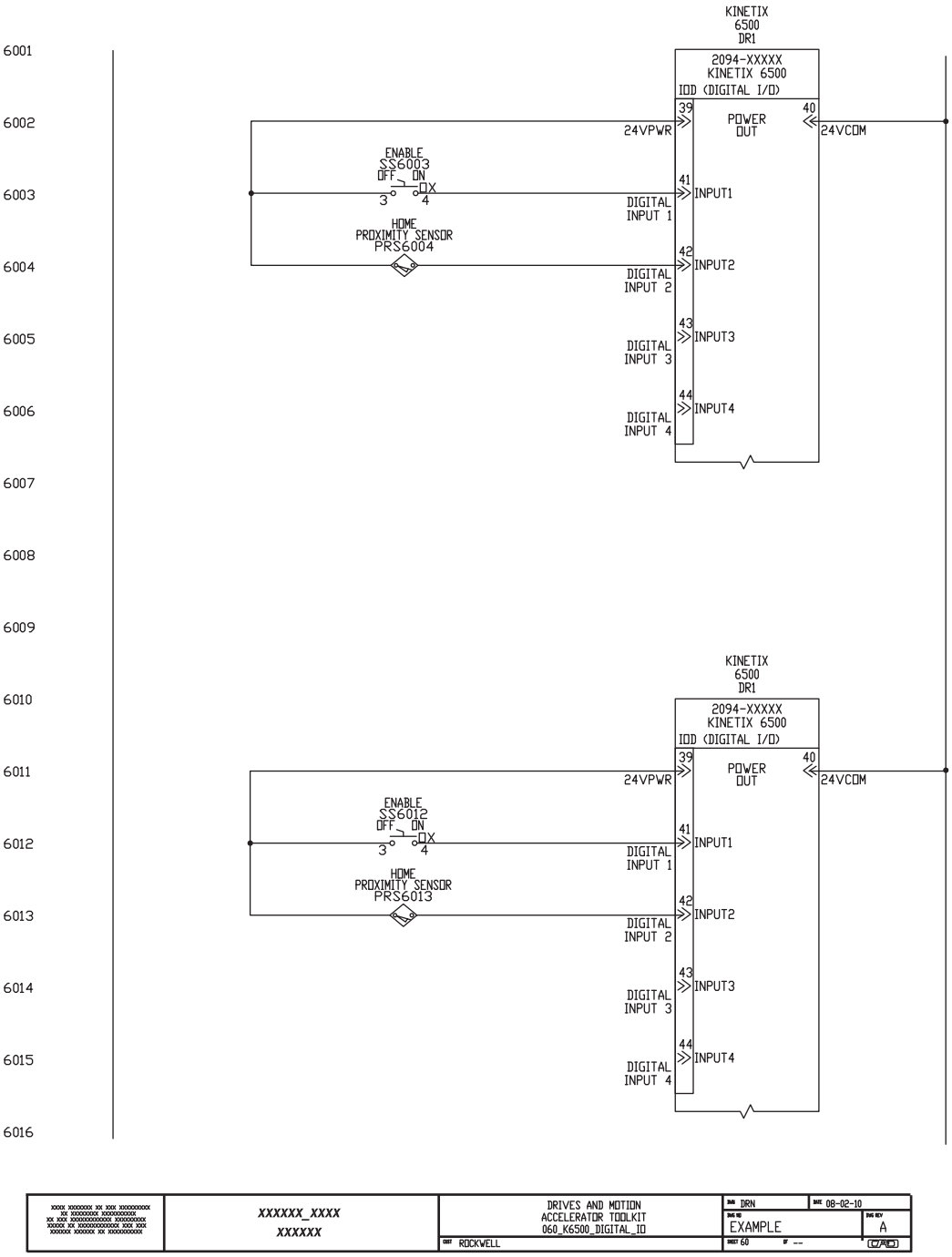
Kinetix 6500 Digital I/O Example



3. Add standard or unique I/O devices and connections required for your application.

   For the Widg-O-matic machine application example, the Enable on-off switches and Home proximity switches are added to both Kinetix 6500 drives (input 1 and 2 respectively).

Kinetix 6500 Drives (add digital I/O devices)



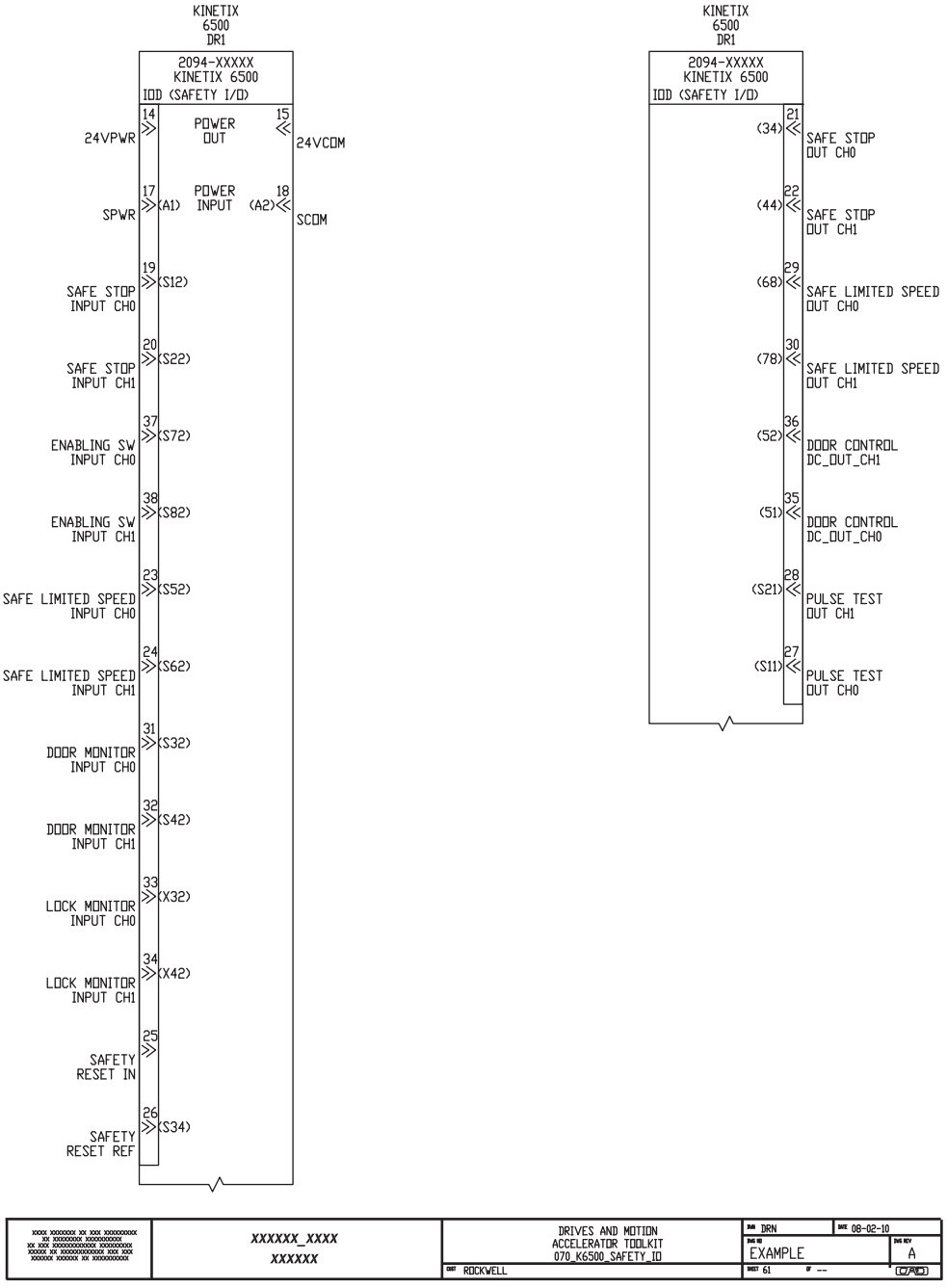
4. Repeat step 1 through step 3 for all I/O drawings within your project.

Additional I/O library drawings, used for the Widg-O-matic machine example, are available from the Drives and Motion Accelerator toolkit DVD. These drawings represent a sample of drive and controller I/O drawings.

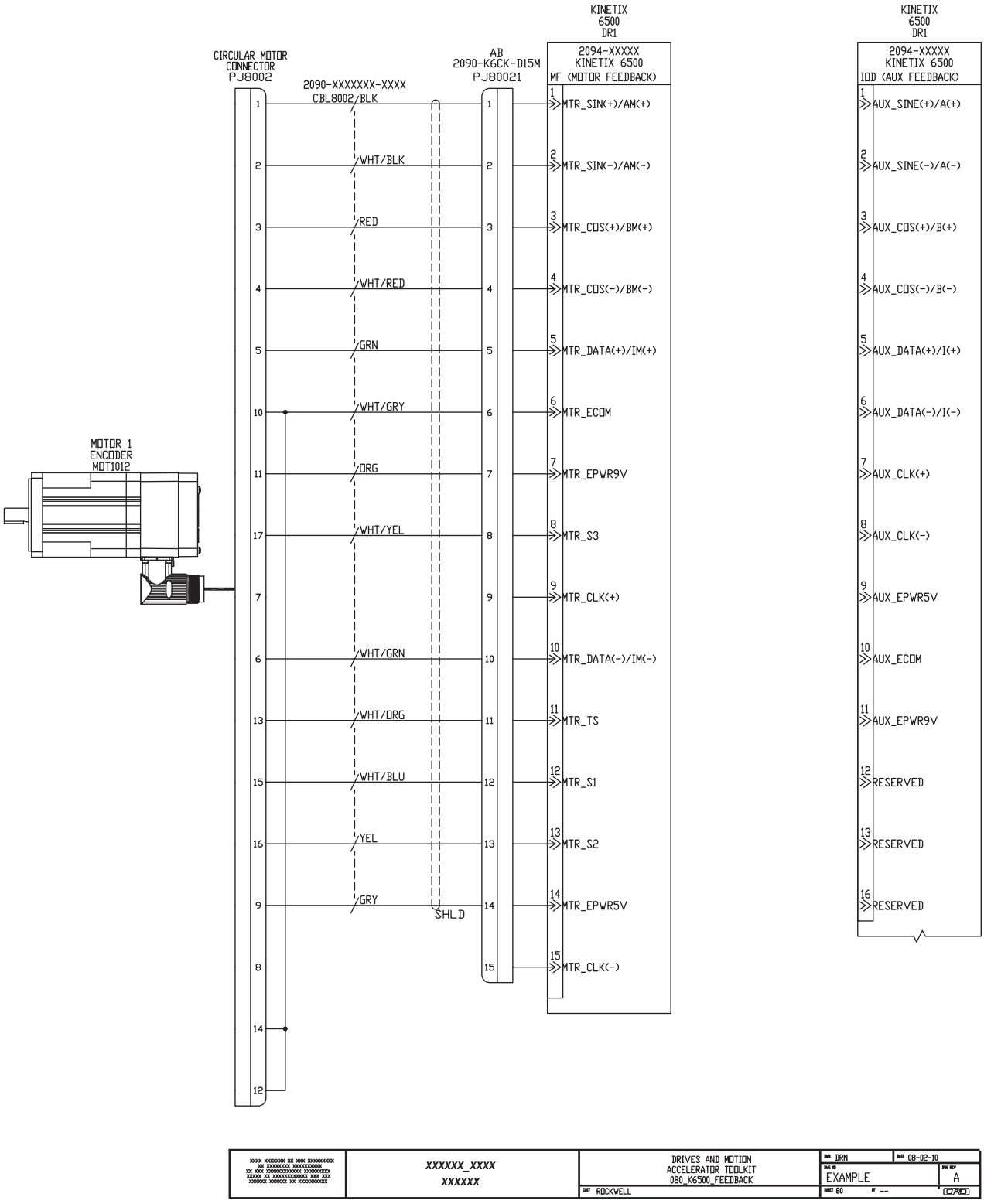
Additional I/O Library Drawing Examples

I/O Library Drawings	File Name	Page
Kinetix 6500 Drive Safety I/O	070_K6500_Safety_IO.dwg	58
Kinetix 6500 Drive Feedback	080_K6500_Feedback.dwg	59
ControlLogix Controller Digital Inputs	090_CLX_Digital_Inputs.dwg	60

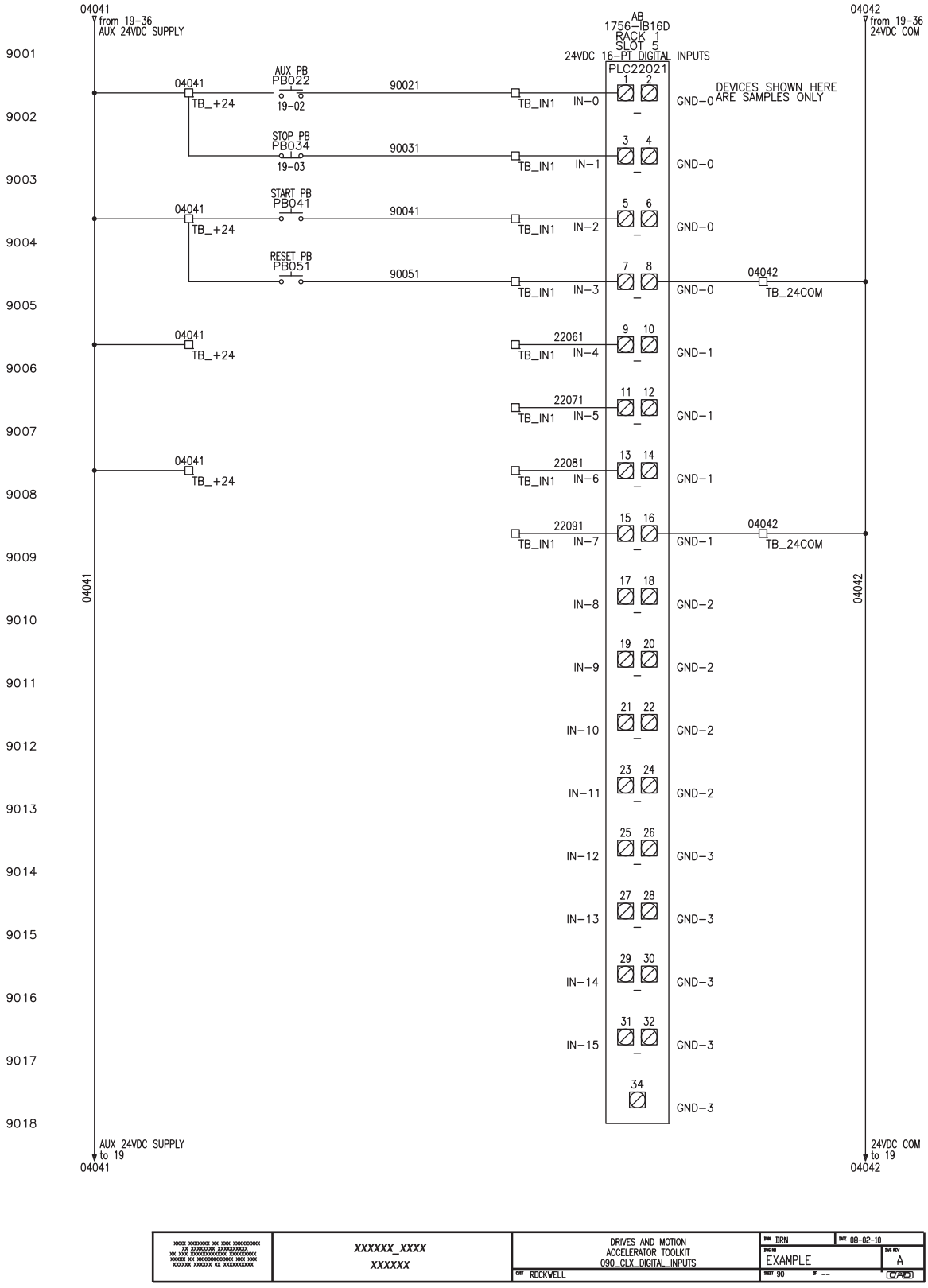
Kinetix 6500 Safety I/O



Kinetix 6500 Feedback



ControlLogix Digital Inputs



xxxx xxxxxxx xx xxx xxxxxxxxx xx xxxxxxxx xxxxxxxxx xx xxx xxxxxxxxxxx xxxxxxxxx xxxxx xx xxxxxxxxxxx xxx xxx xxxxxx xxxxxx xx xxxxxxxxxx	***XXXXXX_XXXX*** ***XXXXXX***	DRIVES AND MOTION ACCELERATOR TOOLKIT 090_CLX_DIGITAL_INPUTS ROCKWELL	DRN 08-02-10 EXAMPLE A SHEET 90 OF --

Edit System Communication Drawings

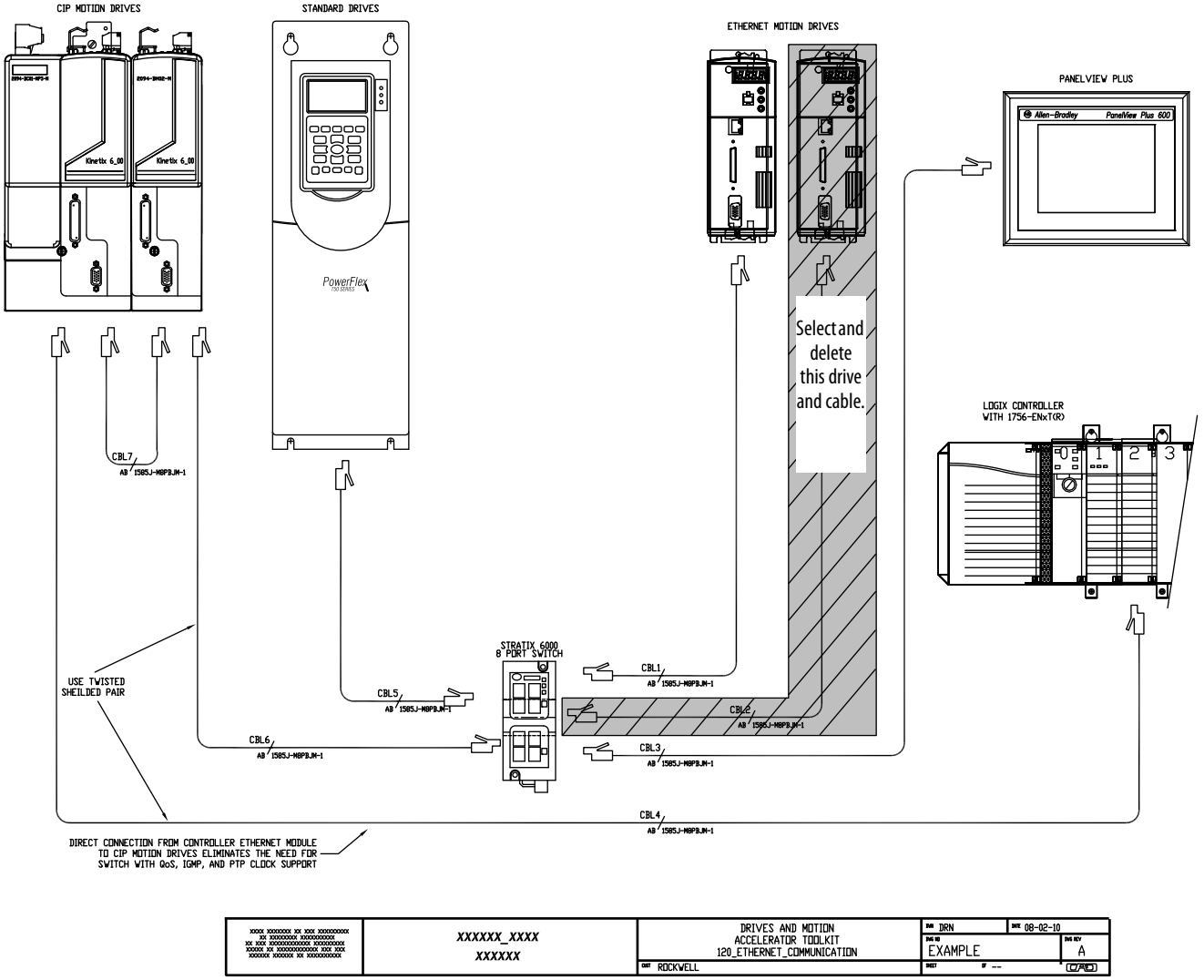
1. Open the communication drawing for your application.

   For the Widg-O-matic machine application example, the 060_120_Ethernet_Communication.dwg file is opened.

2. Delete network devices not used in the project.

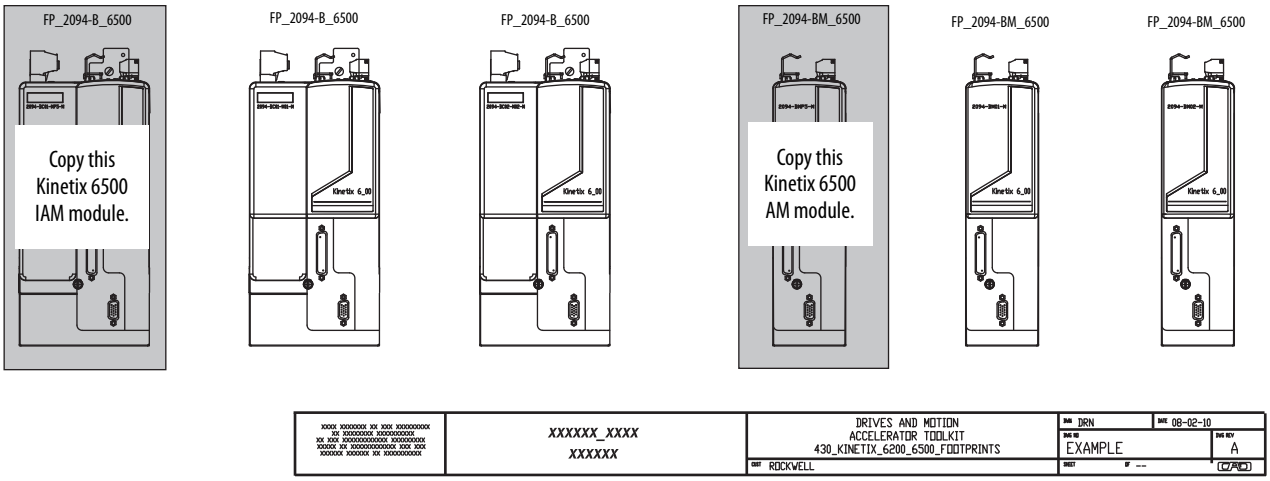
   For the Widg-O-matic machine application example, one of the Kinetix 300 drives and associated cable is deleted.

Ethernet Communication



3. Add any network device footprints required for your application.
   a. Navigate to and open the required footprint drawings that were added to your Project Drawings folder from the toolkit library.
   b. Copy device footprints from the footprint drawings.
      In this example, Kinetix 6500 IAM and AM module footprints are copied.

Kinetix 6200/6500 Footprint Drawings



   c. Paste the device footprints onto your communication drawing.
   d. Re-route or copy cables on the communication drawings to the added devices.

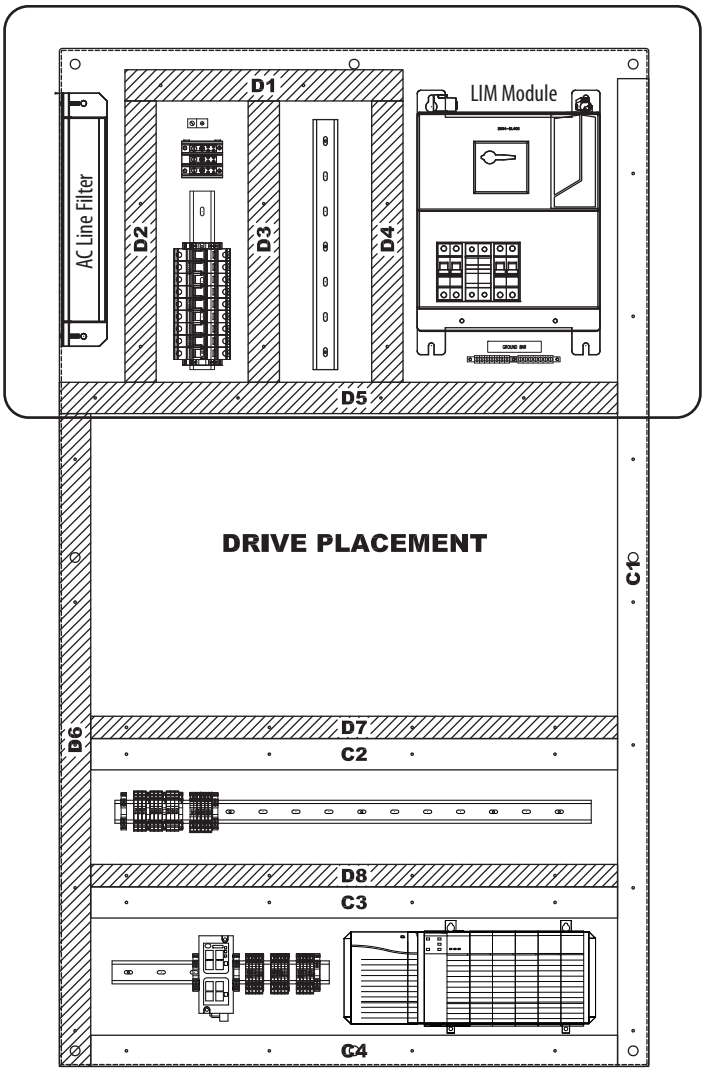
Edit System Layout Drawings

1. Open the panel layout drawing for your application.

   For the Widg-O-matic machine application example, the 150_CLX_w_LIM_Sm_Panel_Layout.dwg file is opened.

   The panel layout includes a power distribution, drives, and control section. The panel is designed to accommodate best-practice techniques used to minimize electrical noise. Refer to the System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001.

Small Panel Layout Drawing (power distribution)



Power Distribution Section

CLEAN C2

CLEAN wireway for noise sensitive device circuits.

DIRTY D6

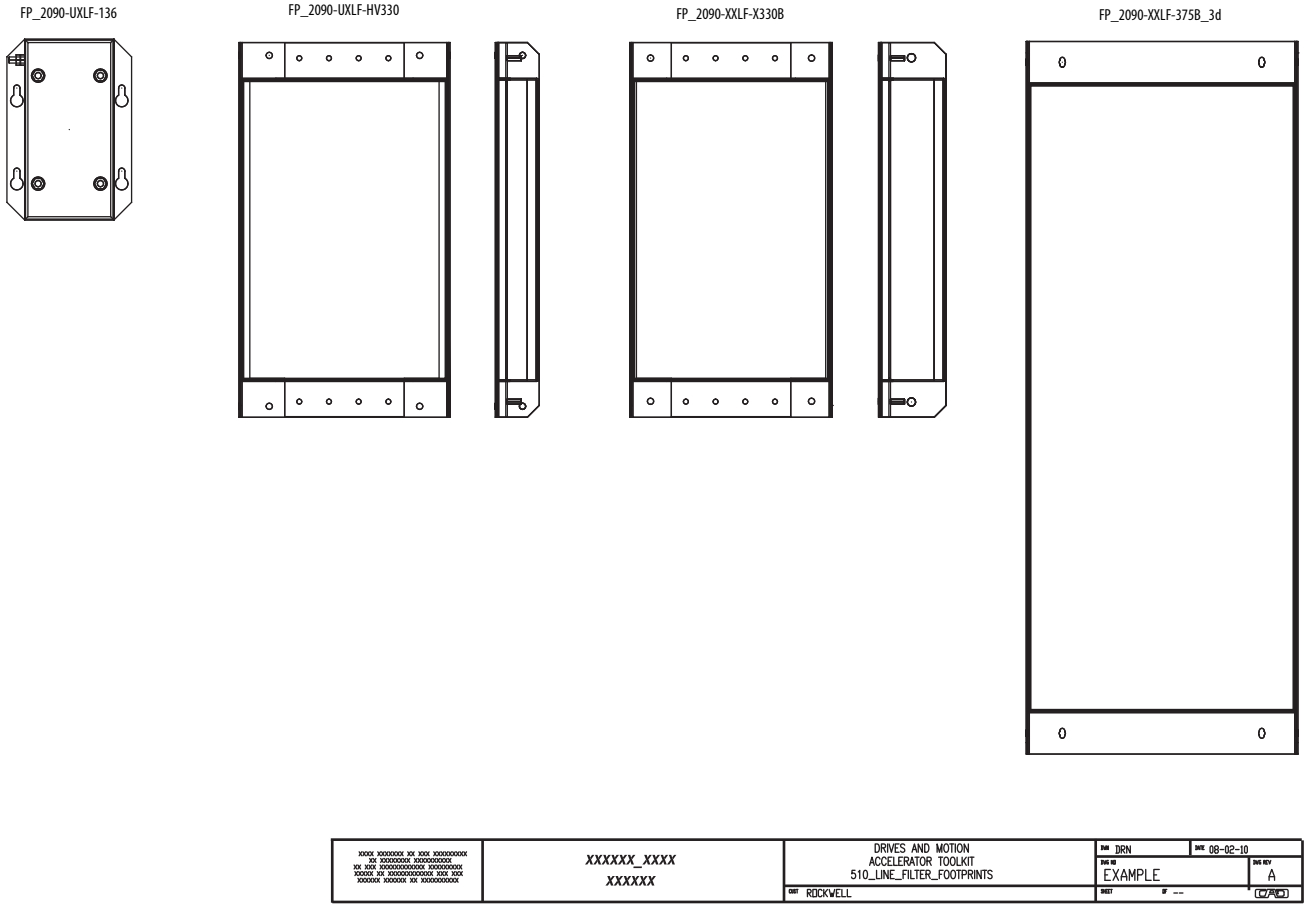
DIRTY wireway for noise generating device circuits.

xxxx xxxxxxxx xx xxx xxxxxxxxxx xx xxxxxxxxx xxxxxxxxx xx xxx xxxxxxxxxxxxx xxxxxxxxx xxxxx xx xxxxxxxxxxxxx xxx xxx xxxxxx xxxxxx xx xxxxxxxxxx	*XXXXXX_XXXX* *XXXXXX*	DRIVES AND MOTION ACCELERATOR TOOLKIT 150_CLX_W_LIM_SM_PANEL_LAYOUT	DRN 08-02-10 EXAMPLE A	
		ROCKWELL	SHEET 20 OF --	

2. Replace or add power components to your panel layout drawing.
   a. Inspect power section on layout drawing for proper component footprints for the project.
   b. Open the associated power footprint drawings that were added to your project drawings from the toolkit library.

      In this example, the 510_Line_Filter_Footprints.dwg file is opened.

Line Filter Footprint Drawing Examples

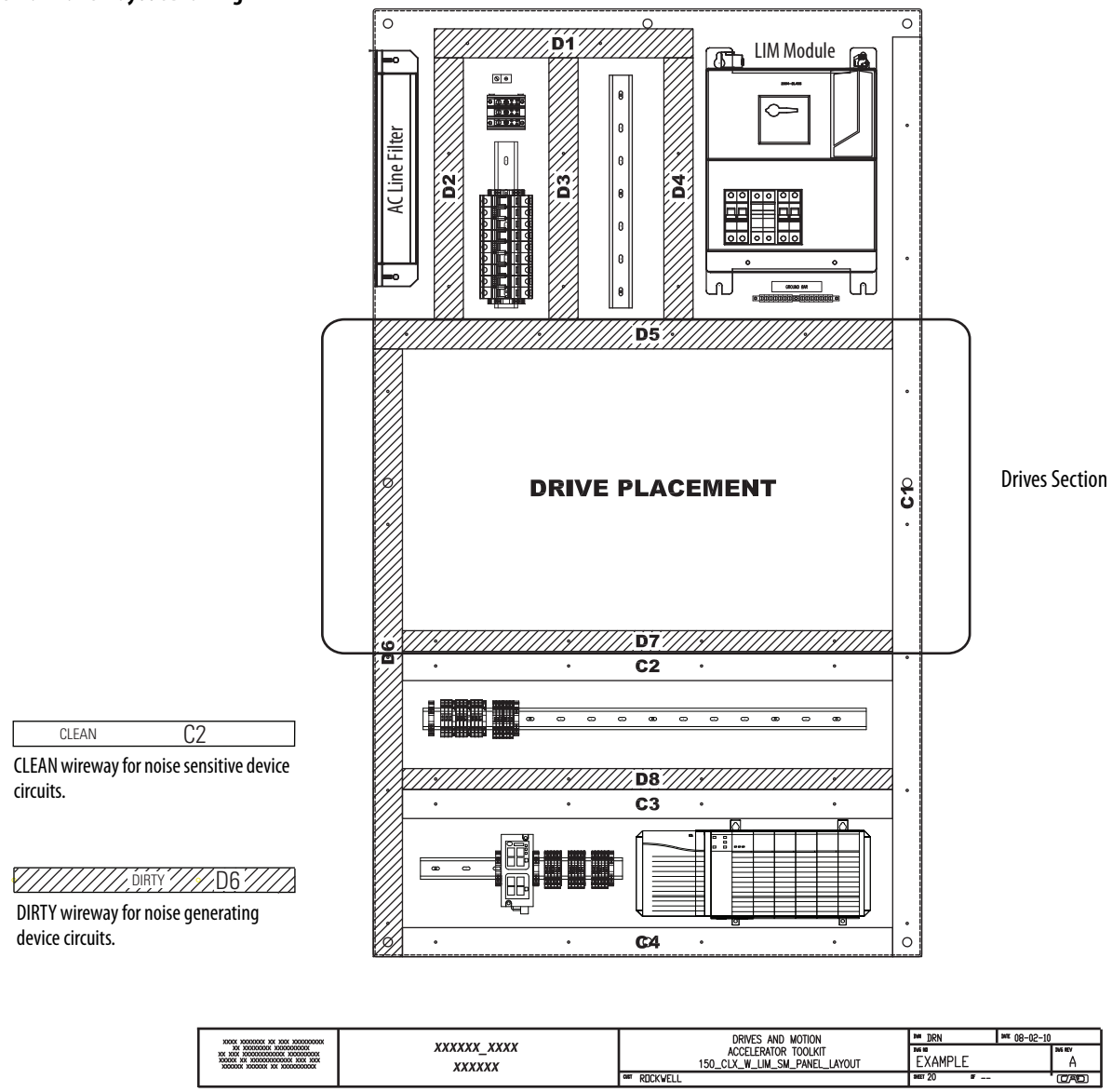


   c. If the desired component is not represented in the current panel layout drawing, copy the proper component footprint from the footprint drawings.
   d. Delete the current component in the panel layout drawing and paste the desired component footprint into its place.
   e. Add any other required power components for your system.

3. Insert drives into the Drives Placement section.

   a. Open the panel layout drawing for your application.

Small Panel Layout Drawing

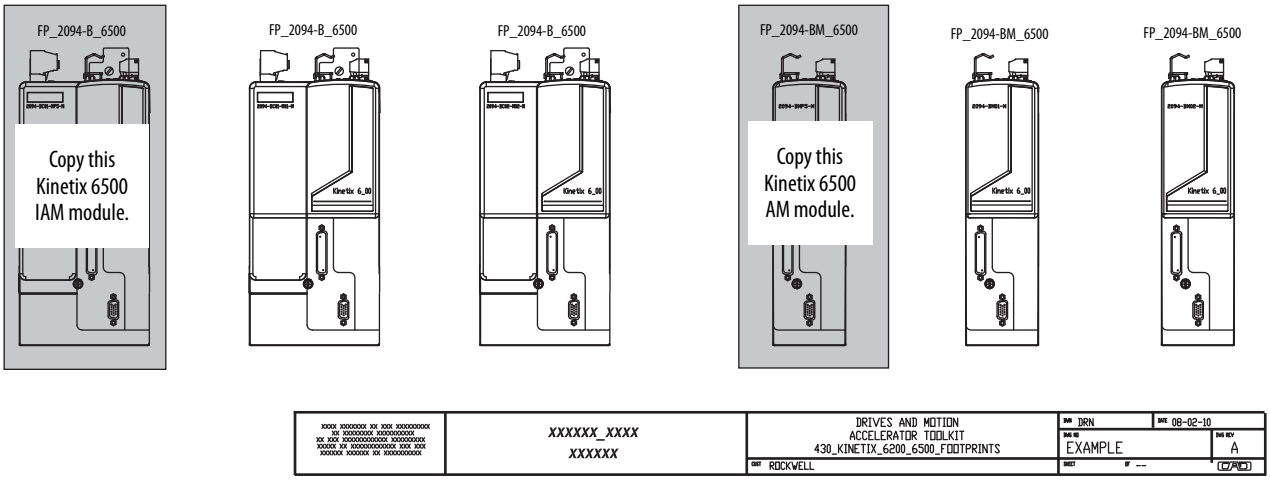


   b. Open the associated drives footprint drawings that were added to your project drawings from the toolkit library.

      For the Widg-O-matic machine application example, the 430_Kinetix_6200_6500_Footprints.dwg file is opened.

   c. Copy the desired drive components from the footprint drawings for your panel layout drawing.

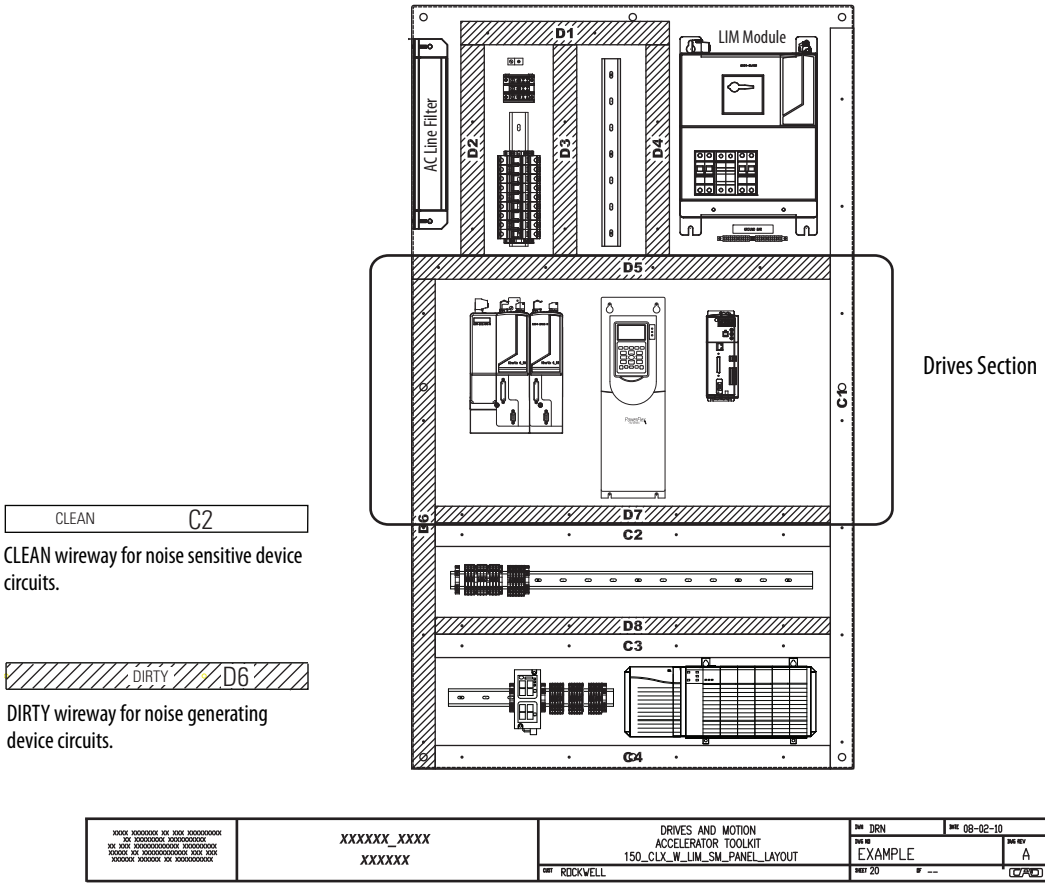
Kinetix 6200/6500 Drive Footprint Drawings



d. Paste the drive footprints onto the panel layout drawing.

For the Widg-O-matic machine application example, two Kinetix 6500 servo drives, one PowerFlex 753 drive, and one Kinetix 300 drive was added to the layout drawing.

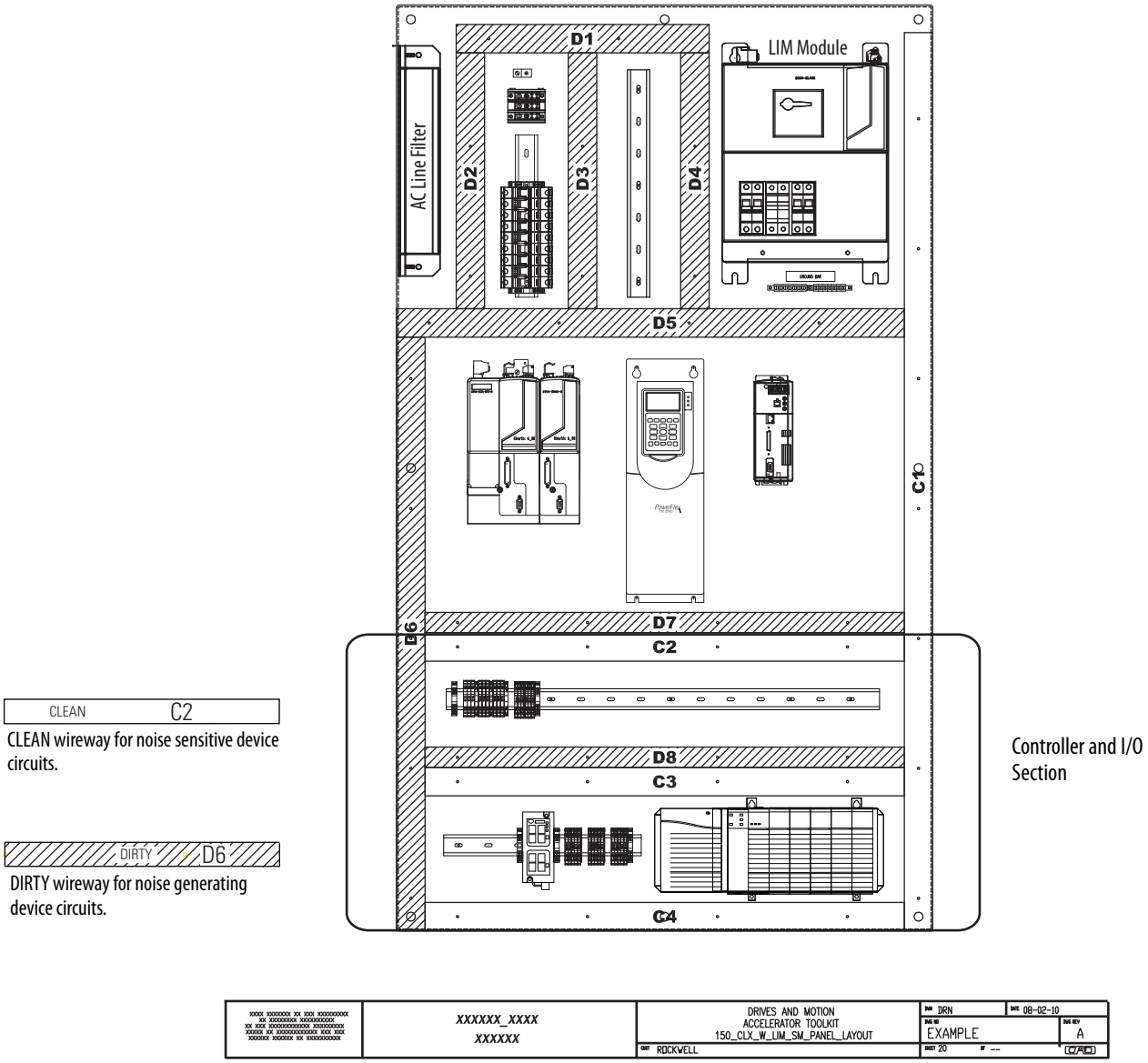
Small Panel Layout Drawing (drive placement)



4. Inspect control section for required control components and proper footprints.

   a. Open the panel layout drawing for your application.

Small Panel Layout Drawing (control)



   b. Inspect controller for required processor, I/O chassis, and I/O and communication modules, and add footprints from the standard library as required.

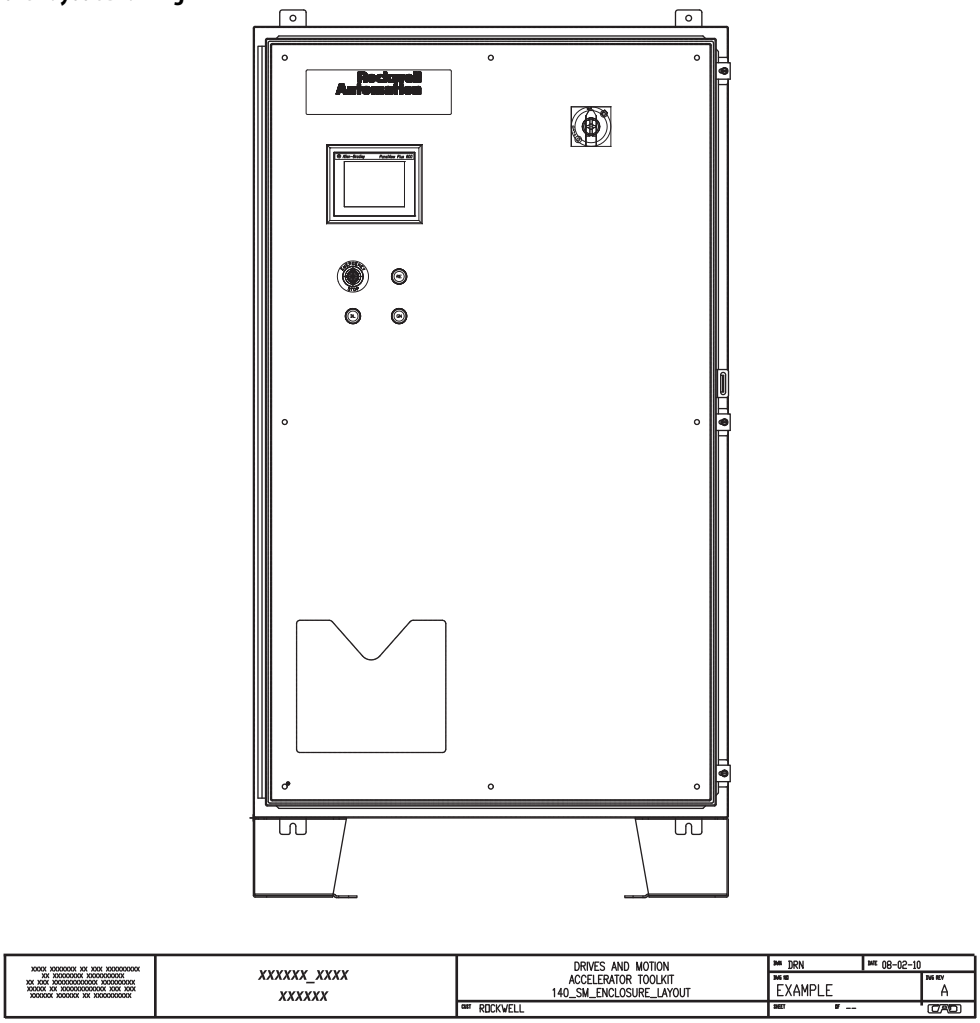
   c. Add any other required control components for your system.

5. Edit your Enclosure Layout Drawing.

   a. Open the enclosure layout drawing for your application.

   For the Widg-O-matic machine application example, the 140_SM_Enclosure_Layout.dwg file is opened.

Small Enclosure Layout Drawing



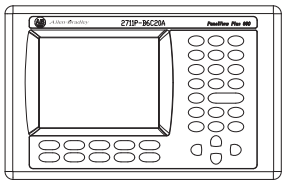
   b. Inspect the drawing for operator equipment required for your system.

   c. Open the associated enclosure footprint drawings that were added to your project drawings from the toolkit library.

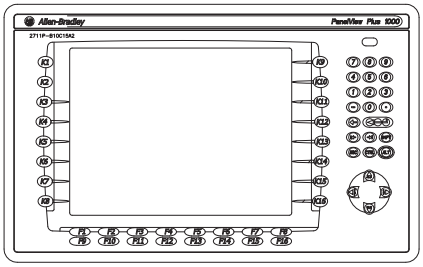
   For the Widg-O-matic machine application example, the 600_PanelView_Plus_Footprints.dwg file is opened.

PanelView Plus Footprint Drawings

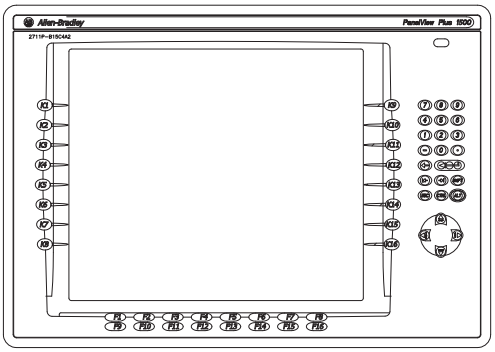
FP_2711P-B6C20A_FRONT



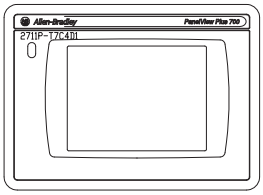
FP_2711P-B10C



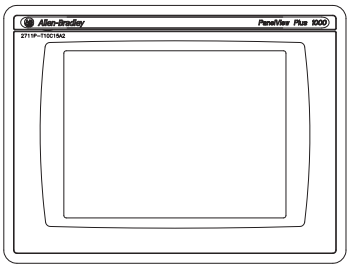
FP_2711P-B15C



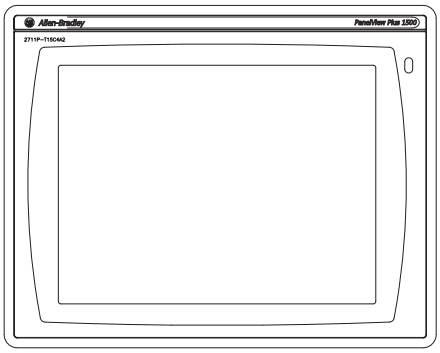
FP_2711P-T7C



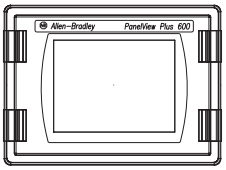
FP_2711P-T10C



FP_2711P-T15C



FP_2711P-T6C



d. Copy the desired enclosure components from the footprint drawings for your enclosure layout drawing.

e. Paste the enclosure component footprints onto your panel layout drawing.

f. Add any other required enclosure components for your system.

Notes:

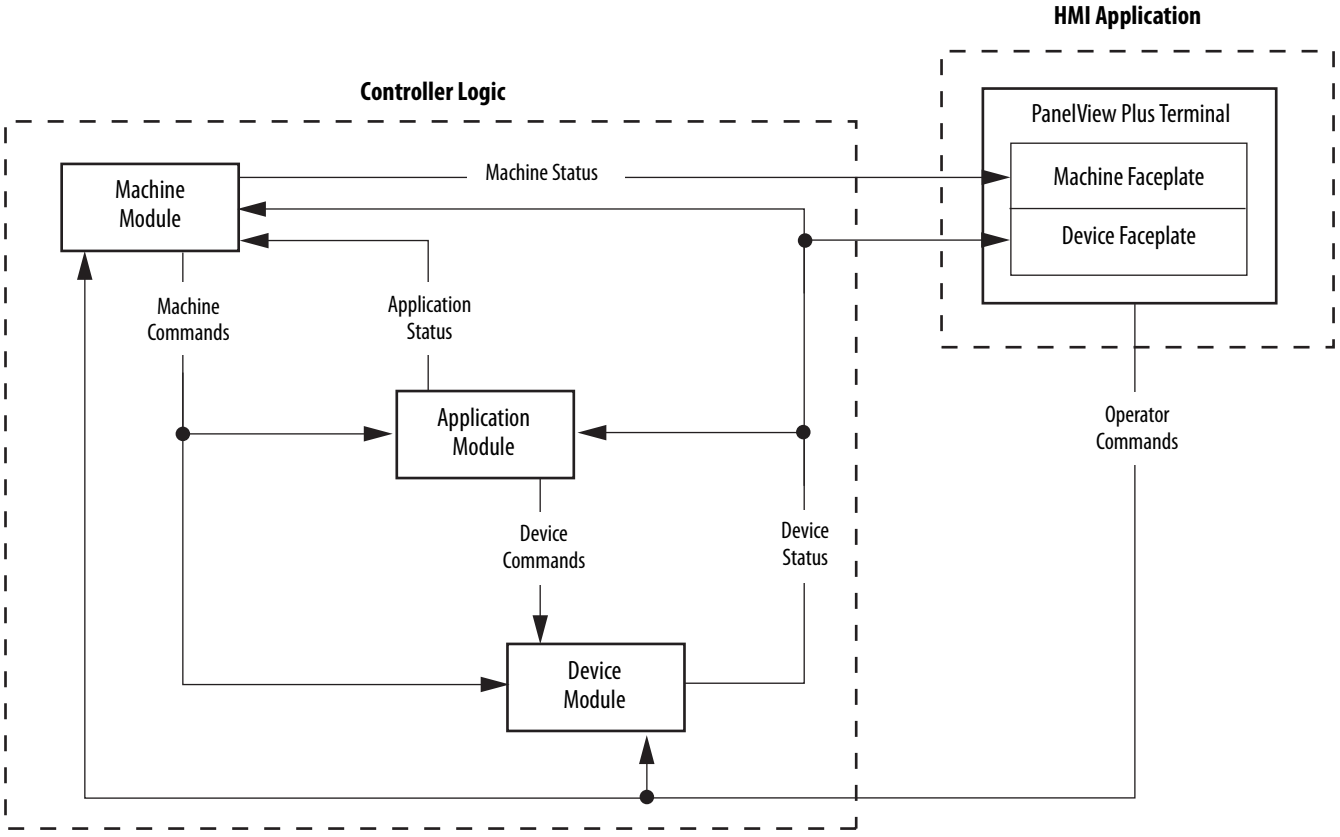
Logic Configuration

In this chapter you edit the preconfigured logic file that the DMAT Wizard created for your specific application.

Besides initial controller, network, and device configurations, the preconfigured logic file includes machine, application, and device logic modules that significantly speed-up your application logic development. In addition, the logic modules include control, status, and diagnostic code that provides information to preconfigured operator interface faceplates that you can run on personal computers or PanelViewPlus terminals.

If you chose not to use the DMAT Wizard or desire to add or edit controller, networks, or drives since the DMAT Wizard was executed, refer to instructions in Appendix G before executing the steps in this chapter.

Logic Modules



The machine module provides a state machine model that coordinates multiple devices and application logic for coordinated drives and motion applications. It provides overall machine commands, for example, start, stop, abort, clear, and reset to the application modules and the individual device modules based on the status of the applications and devices.

The application modules execute the machine commands and provide the more specific application commands to the drives and devices. It also coordinates the machine and application status, and executes the application fault commands. In addition, the toolkit includes motion logic examples to help you create your specific application logic.

The device modules translate the uniform machine and application commands and provide uniform status and diagnostics from the very specific device tags and parameters. This reduces much of the non-inventive code required to control and monitor the many unique devices.

For more information on the machine, application, and device logic modules, refer to Appendix A on page 225.

To assist you in understanding how to best use the preconfigured logic files, the Widg-O-matic machine application is used as an example in all of the logic configuration steps.

Preconfigured Logic Modules Used in Widg-O-matic Example

Module Type	File Names
Machine	Machine_Module
	Device&Application_Status
Application	Application_Module
	Motion_Simple_Move
	PF_Run_Spd
	K300_EIPMove
Device	CIPMotion_Drive_Module
	PF753_Drive_Module
	K300_Drive_Module

Before You Begin

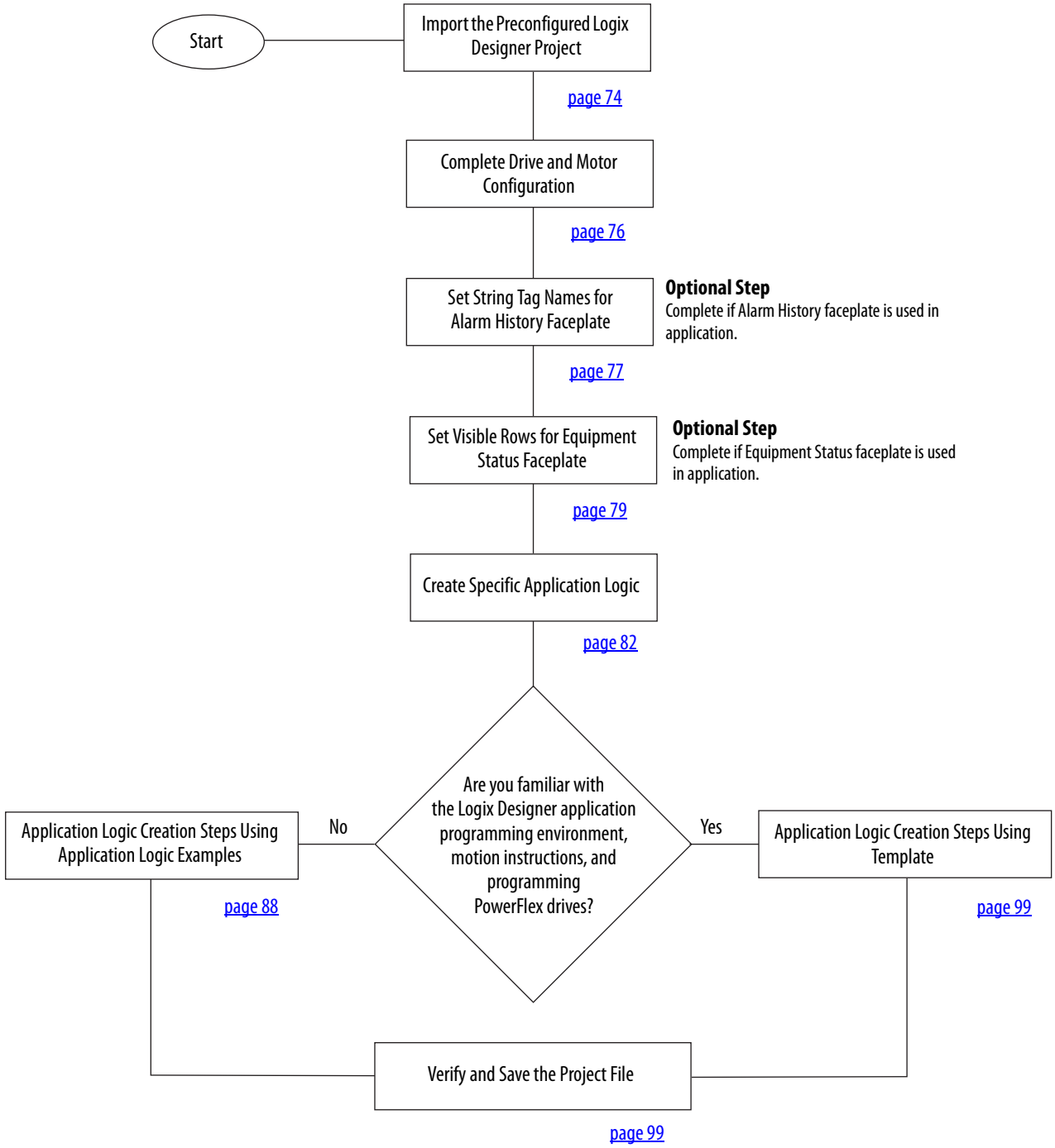
Run the DMAT Wizard (refer to Chapter 1) or complete Appendix G.

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative
- RSLogix 5000 software, version 19.0 or later, or the Logix Designer application, version 21.0 or later.
- RSLogix 5000 software, version 20.0 or later or the Logix Designer application, version 21.0 or later, to configure Kinetix 350 servo drives, and when using ControlLogix 1756-L7*x*S controllers.
- The user manual for your Drives and Motion hardware. Refer to Additional Resources on page 15 for publication numbers.

Follow These Steps

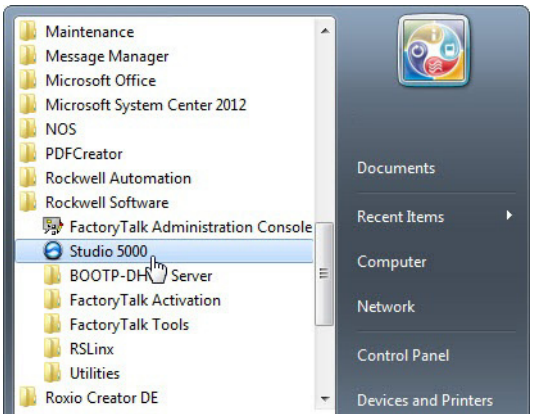
Complete these steps to import and configure logic modules for your drives and motion application.



Import the Preconfigured Logix Designer Project

Follow these steps to open the preconfigured RSLogix 5000 or Studio 5000 Logix Designer project. This procedure is written for the Logix Designer application, but RSLogix 5000 software is similar.

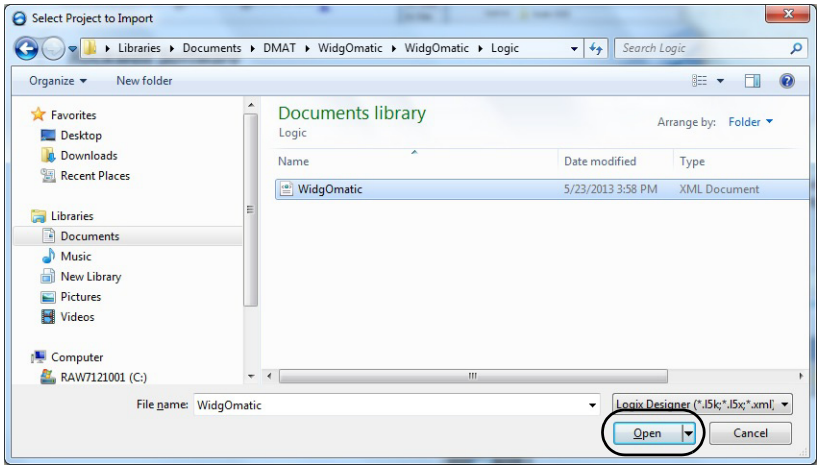
1. From the Start menu, launch the Studio 5000 Logix Designer application.



   The Studio 5000® dialog box opens.

2. Under the Create menu, click From Import.

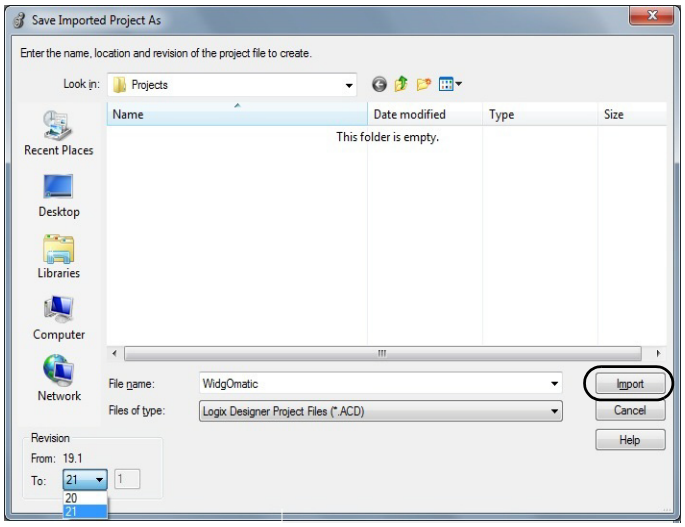
3. Navigate to the Logic directory within the DMAT project.

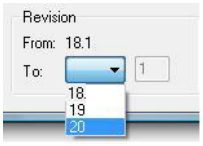


   If the Drives and Motion Accelerator Toolkit was installed in the default directory you will find the XML file in: C:\Documents and Settings\My Documents\DMAT*ProjectName**MachineName*.

For the Widg-O-matic example, the path is:
C:\Program Files\RA_Simplification\DMAT\D-Wizard\WidgOmatic\WidgOmatic\Logic.

4. Select the logic xml file and Click Open.
5. From the Revision pull-down menu, choose the version of RSLogix 5000 software, versions 18, 19, or 20, or the Logix Designer application, version 21 or later, to import into.





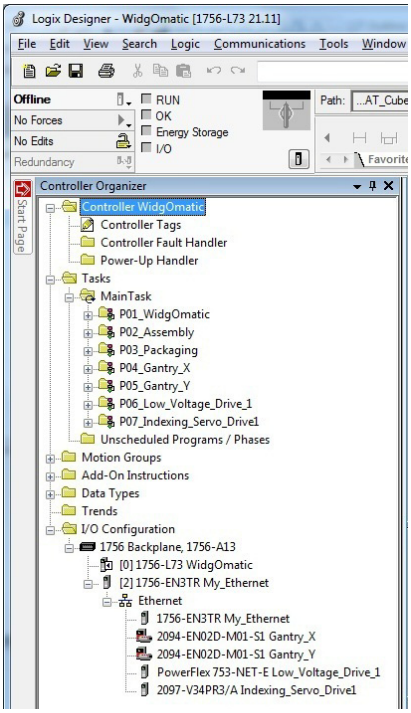
IMPORTANT RSLogix 5000 software must be version 19.0 or later. RSLogix 5000 software, version 20.0 or later, is required to configure Kinetix 350 servo drives and when using ControlLogix 1756-L7*x*S controllers.

6. Click Import to save and open the project as an ACD file.

After the import process is complete, the project opens and the controller organizer displays all of the preconfigured project components including the controller, network, device configurations, the preconfigured logic program files, and the faceplate and control AOI files.

From this point on, you complete the logic module configuration for your specific drives and motion application guided by the remaining sections of this chapter.

To gain a complete understanding of the preconfigured project organization and logic refer to Appendix A on page 225.



Complete Drive and Motor Configuration

The DMAT Wizard uses default values for module properties (creating your axes) and axis properties (configuring your axes). When your application requires modifications to these fields, refer to the appropriate steps in Appendix G.

Changing Default Properties in Appendix G

Procedure	Go To	Do This
Complete CIP motion drive module configuration	step 19 on page 320	Calculate and enter a value for the Bus Capacitance field.
Complete CIP motion axis properties	step 8 on page 324	Review the Scaling, Load, and Actions categories. Make changes, if necessary.
Complete sercos drive module configuration	step 13 on page 328	Calculate and enter a value for the Additional Bus Capacitance field.
Complete sercos drive axis properties	step 8 on page 330	Review the Motor Feedback, Units, Conversion, and Fault Actions tabs. Make changes, if necessary.

Setting Drive Motor Ratings

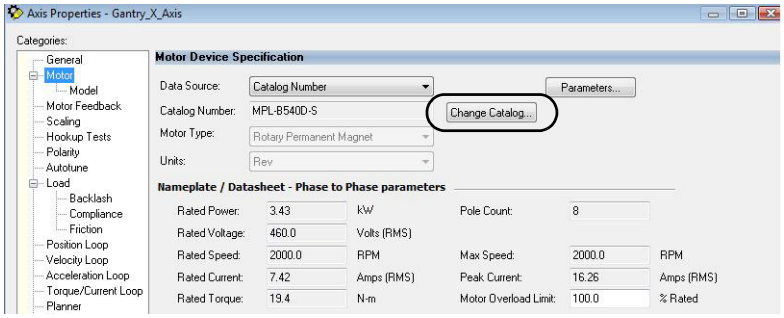
You must manually change the motor series and motor type for each axis imported into your Logix Designer project file. The DMAT Wizard Logix Designer import file sets all drive motor type selections to Rotary, MPL, and to the largest available power rating as default. This is true even if you change the motor series and type in the DMAT Wizard. Those selections are reflected in the BOM only.

Follow these steps to edit the Drive/Motor tab.

1. Under My_MotionGroup in the Controller Organizer, double-click the Servo_Drive_*x*_Axis.

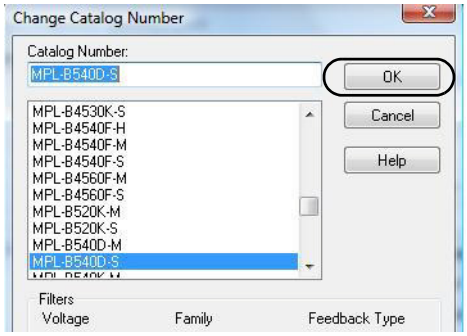
   In the WidgOmatic example, Gantry_X_Axis was selected.

2. In the Axis Properties window, select Motor in the Categories tree.
3. Click Change Catalog.



   The Change Catalog Number dialog box opens.

4. Scroll though the available catalog numbers and select the desired motor catalog number for your actual hardware configuration.
5. Click OK.
6. Repeat for each axis configured in My_MotionGroup.

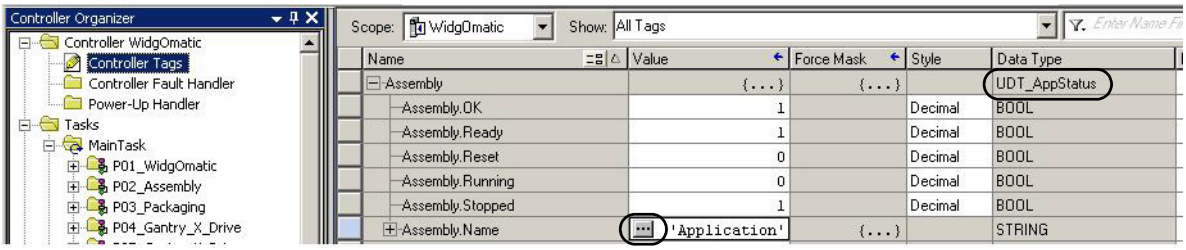


Set String Tag Names for Alarm History Faceplate

If you plan to use the Alarm History faceplate with your HMI application, follow these steps to set the application and device string tag names to match your application and device module names. These string names are used within the alarm messages indicating the device or application origin of the alarm.

1. Expand the Controller folder in your Controller Organizer and double-click Controller Tags.

   The controller tags open in the workspace.

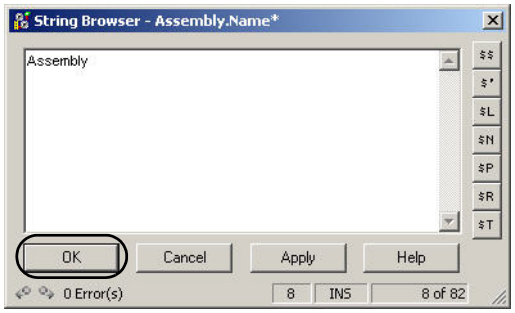


2. Expand one of your application status tags (UDT_AppStatus) and/or module status tags (UDT_ModuleStatus) and select the value field of the string tag named XXX.Name.

   For the Widg-O-matic application example, the Assembly tag (UDT_AppStatus data type) is expanded and the Assembly.Name string tag value field is selected.

3. Click ....

   The String Browser dialog box opens.

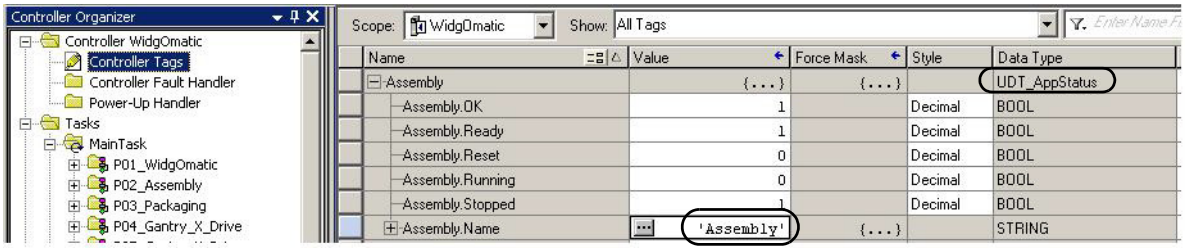


4. Type the name of the associated application or device module.

   This string name is used within the alarm history messages providing the fault origin.

5. Click OK.

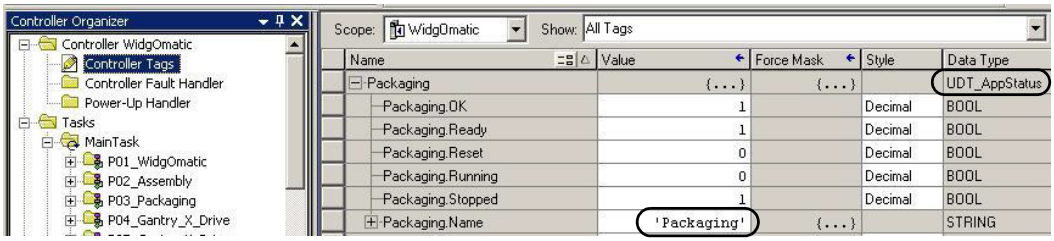
   The string tag value field updates with the name you typed in. For the Widg-O-matic application example, the value is Assembly.



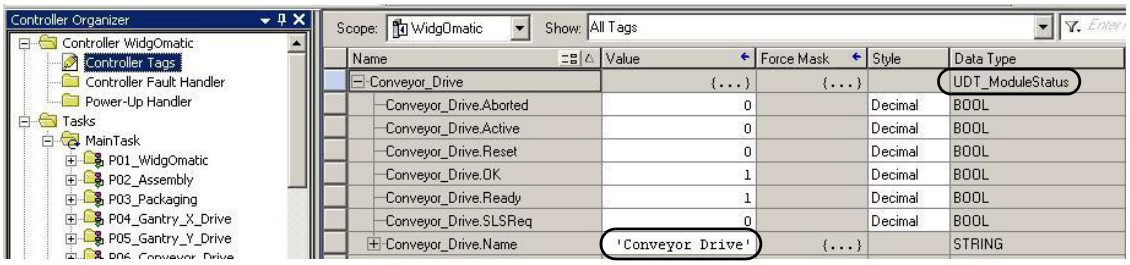
6. Repeat step 1 through step 5 for each application status (UDT_AppStatus) tag and device status (UDT_ModuleStatus) tag within the Controller Tags of your project.

For the Widg-O-matic application example, these application and device string tag names were entered.

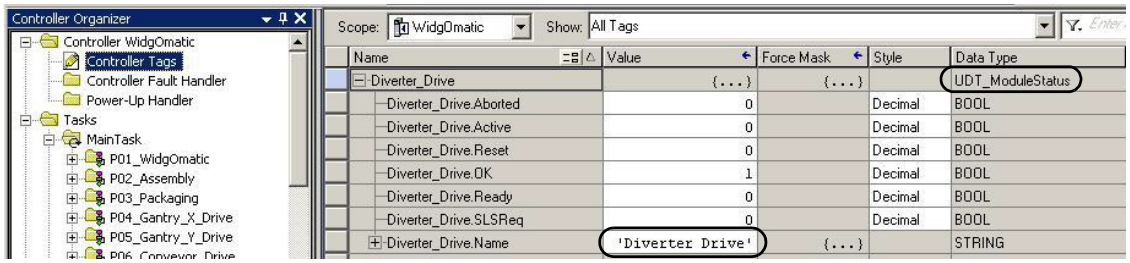
Packaging



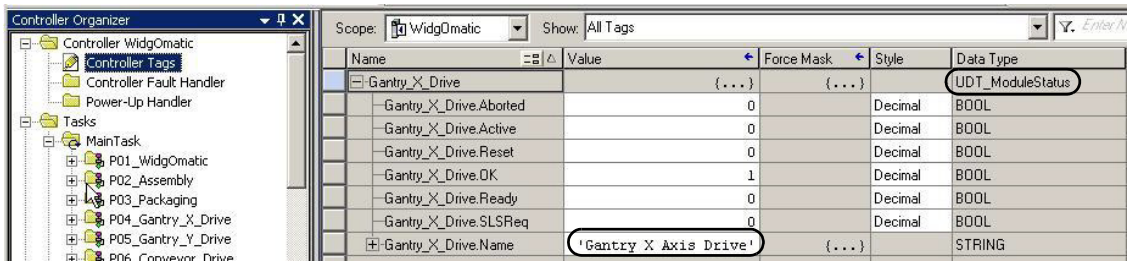
Conveyor_Drive



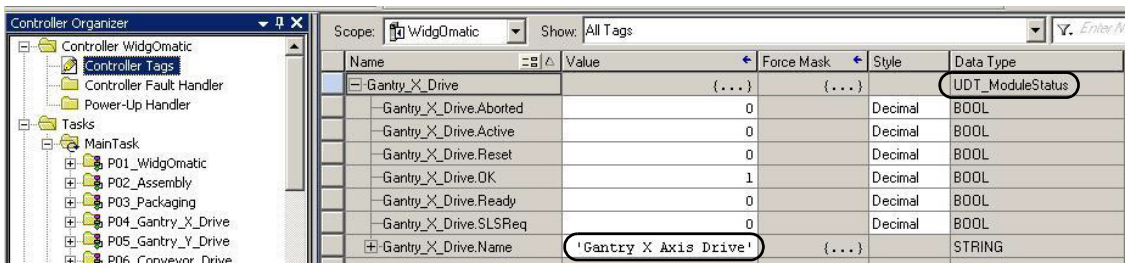
Diverter_Drive



Gantry_X_Drive



Gantry_Y_Drive



Set Visible Rows for Equipment Status Faceplate

If you plan to use the Equipment Status faceplate with your HMI application, follow these steps to set the Inp_NumRowsVis tag value within the faceplate AOI of the device you intend to place in the first row.

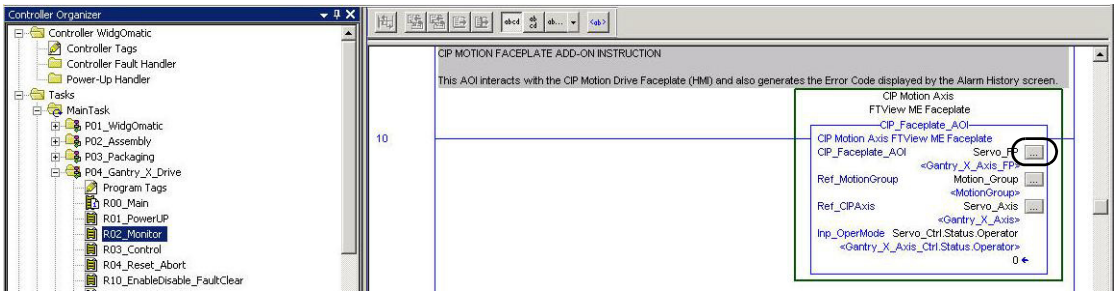
1. Determine how many of the nine available rows you will use in the Equipment Status faceplate.

   Refer to Chapter 5 beginning on page 101 for an overview of the faceplate so you can determine how many status rows you require and what device you would like to place in the first row.

   For the Widg-O-matic application example, all four devices are included in the Equipment Status faceplate, with the Gantry X Axis placed in the first row.

   - Gantry X Axis
   - Gantry Y Axis
   - Conveyor
   - Diverter

2. Open the R02_Monitor routine for the device located in the first row of the Equipment Status faceplate and navigate to the device specific faceplate AOI.



   For the Widg-O-matic application example, the R04_Monitor routine in the P04_Gantry_X_Drive program was opened.

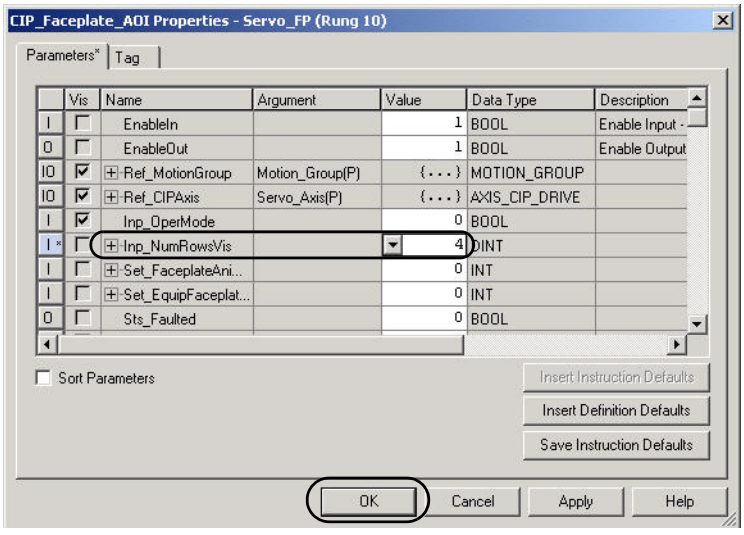
3. Click ... (View Configuration Dialog) to open the AOI properties.

4. Navigate to the Inp_NumRowsVis tag and select the Value.

5. Enter the number of devices you determined in step 1.

   For the Widg-O-matic application example, 4 was entered.

6. Click OK to close AOI properties and complete the update.



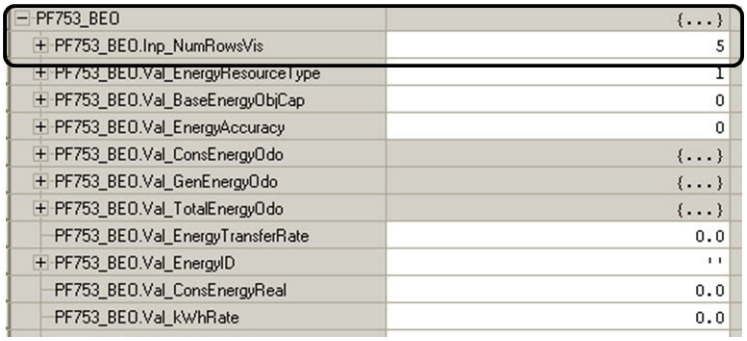
Set Visible Rows for Equipment Status Faceplate for Energy Monitoring

If you plan to use the Equipment Status faceplate with Energy Monitoring in your HMI application, follow these steps to set the Inp_NumRowsVis tag value within the energy object AOI of the device you intend to place in the first row.

1. Determine how many of the nine available rows you will use in the Equipment Status faceplate for Energy.

   Refer to Chapter 5 on page 145 for an overview of the faceplate so you can determine how many status rows you require and what device you would like to place in the first row.

2. Open the controller tags and expand the energy object tag for the device located in the first row of the Equipment Status faceplate for Energy (DriveName_BEO).



3. Enter the number of required rows as the tag value for the Inp_NumRowsVis attribute.

   In this example, the number of required rows is 5.

IMPORTANT You must use the device module routines with energy support if you plan to use the equipment status faceplate for energy monitoring.

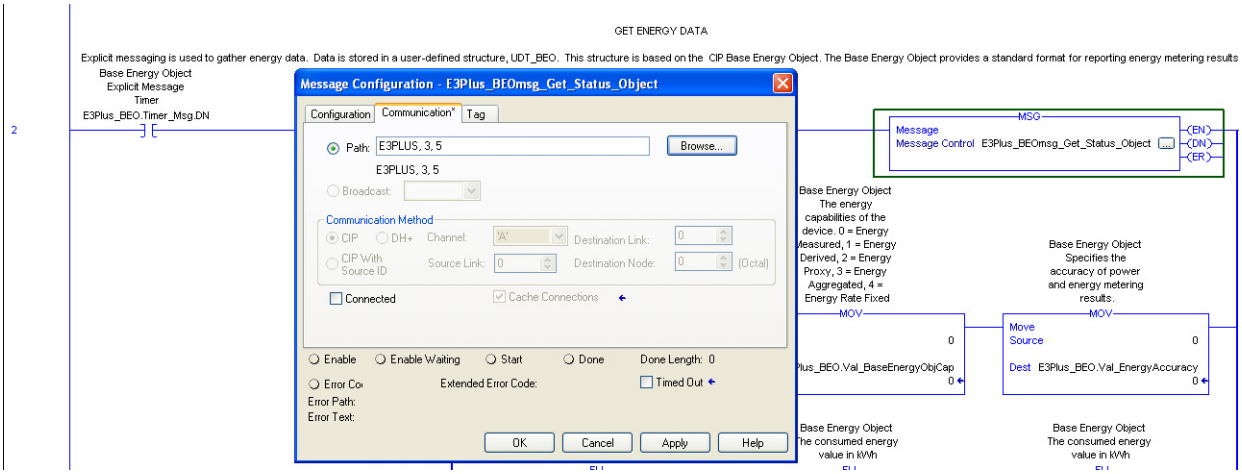
Set MSG Path in the E3 Plus Energy Monitoring Routine

If the device modules with energy monitoring are used, an additional routine is included in the device program named R05_Energy. This routine gathers the energy data and energy related status and stores the data in the base energy object tag (UDT_BEO).

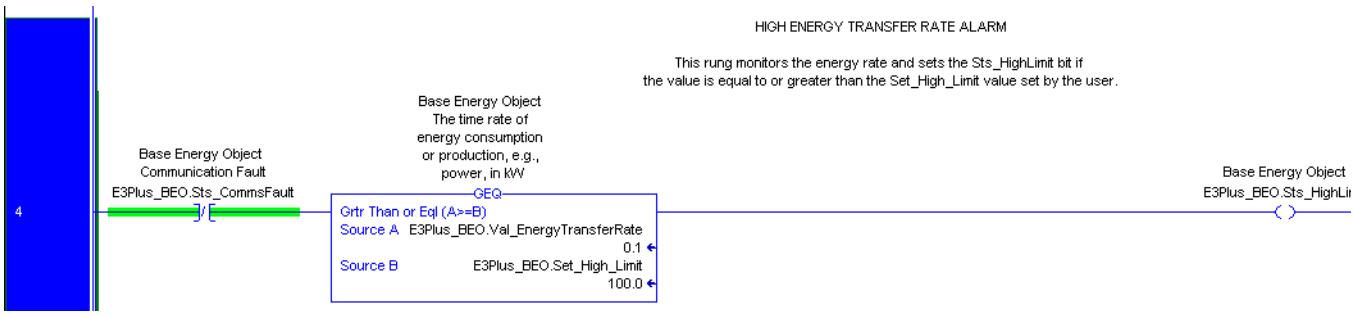
Rung 2 of the energy routine includes at least one explicit message for getting energy attributes from the device (some devices require more than one explicit message). The path for each MSG instruction is configured on import of the device module. However, for E3 Plus device modules, the path must be configured to include the port number of the 193-DNENCAT device (3) and the node address of the E3 Plus overload relay.

Follow these steps to configure the path for your E3 Plus device:

1. Click the ellipse button on the MSG instruction in rung 2 to launch the Message Configuration dialog box.
2. Click the Communication tab.
3. Add the 193-DNENCAT port number and your E3 Plus node address to your path configuration in the following format: _DeviceName, 3, #.
4. Click OK.



Rung 4 of the energy routine monitors the energy rate and sets a status bit if the value exceeds the high alarm limit. The high-alarm limit default setting is 100. Configure this value to set the kW high-alarm limit for your device.



Create Specific Application Logic

Now that you have imported and configured all of the machine, application, and device modules, you can begin creating the specific application logic for your machine. You create your application logic within the R10_ApplicationCode routine of the application module. There are two methods for creating specific application logic for your machine.

The first method involves selecting and importing preprogrammed logic examples into the Application Code routine. These logic examples help familiarize less experienced users with the basics behind motion instructions and/or controlling PowerFlex drives via their add-on profiles. These preprogrammed logic examples are designed to work seamlessly with the application module and can help further reduce programming time.

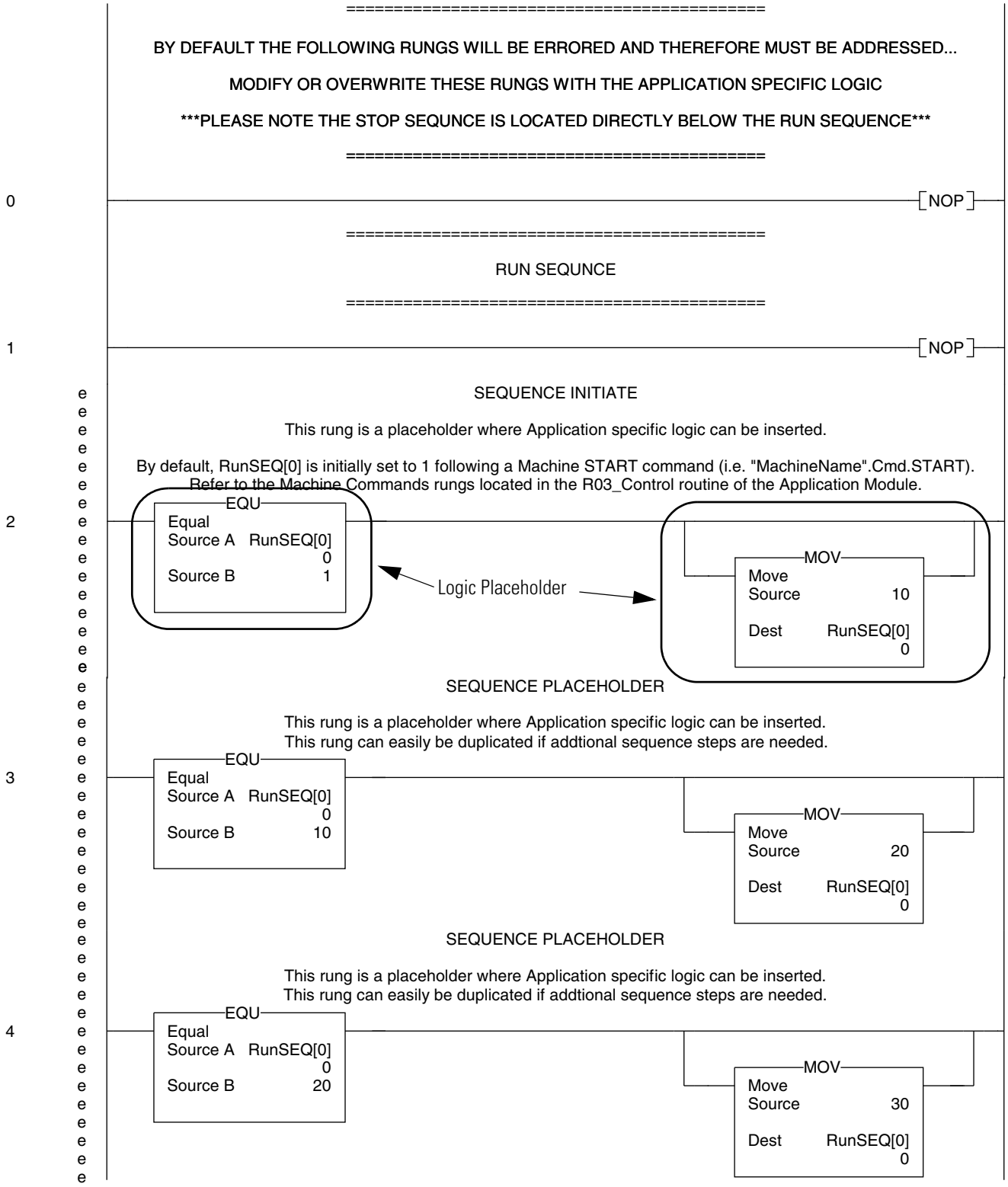
The second method provides a blank template with placeholders if you choose to write your application-specific logic from scratch. This method is recommended for users who feel comfortable with the Studio 5000 Logix Designer programming environment and who also have experience with motion instructions and/or controlling PowerFlex drives via their add-on profiles.

Application Code Logic Template Overview

To assist you in creating specific-application logic that interfaces with the preconfigured machine, application, and device modules, a logic template is included in the R10_ApplicationCode routine of the application module. It includes placeholders for both run and stop sequences. All of the application logic examples also follow this same template.

IMPORTANT Program the stop sequence to make sure all active devices are properly stopped.

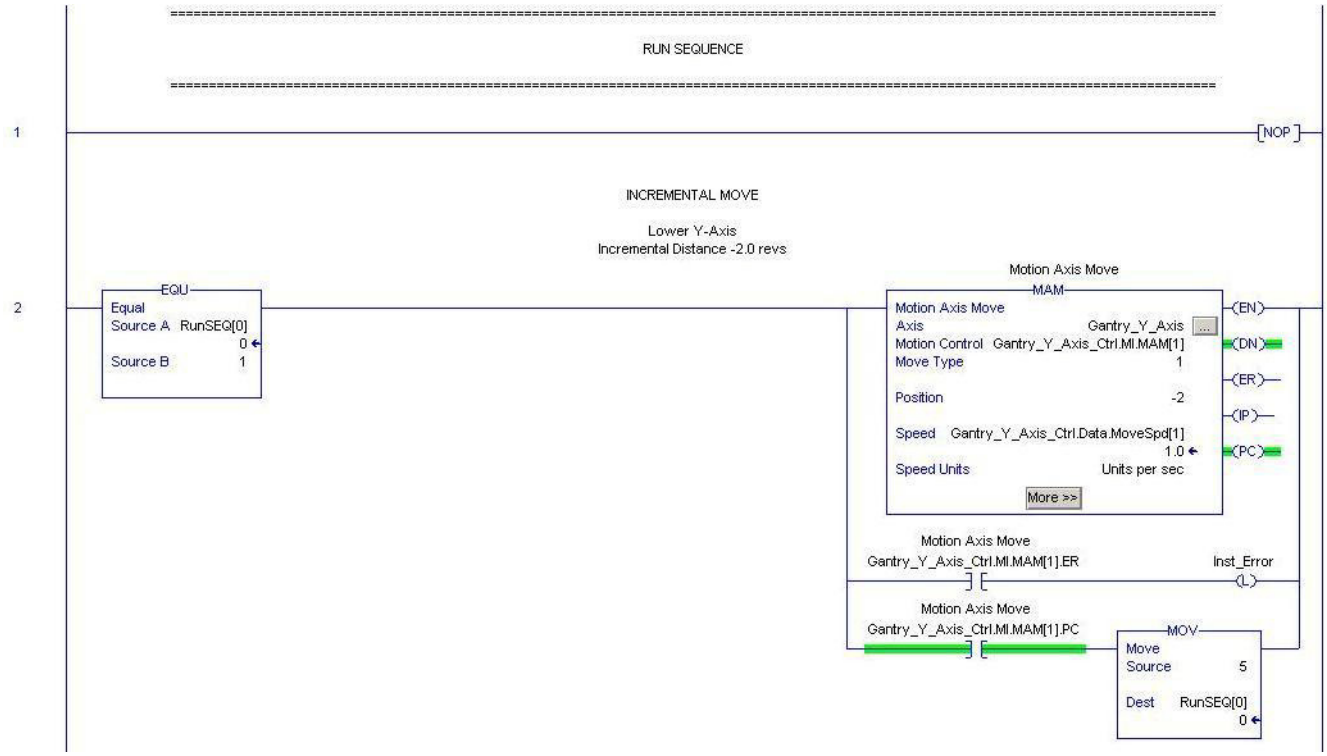
Run Sequence Template



The run sequence is initiated by a machine START command via the start logic in the R03_Control routine of the application module. By default, the run sequence is initiated by placing a value of 1 in the RunSEQ[0] tag. When the RunSEQ[0] tag is set to 1, the first step in the run sequence is executed, starting the run sequence. Each of the rungs in the run sequence provides a placeholder where you can insert application-specific step logic. The Run-sequence logic may include, for example, motion instructions, drive commands, and/or other conditional diagnostic logic.

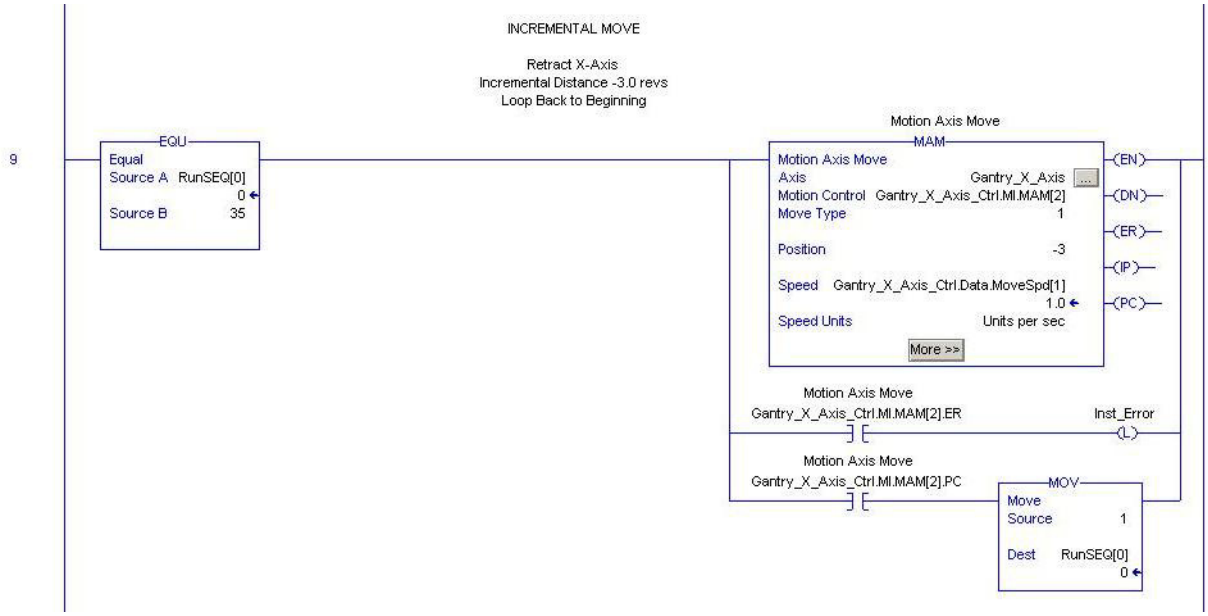
The move (MOV) instruction is a placeholder to advance the run sequence to the next step by incrementing the RunSEQ[0] tag. Each step in the run sequence requires a unique value assigned in ascending order. The steps typically increase by multiples of five or ten. By default, the run-sequence template steps 1...10...20...30, and so on. Before moving to the next step, a predetermined condition must normally be met to make sure the current step is complete.

First Run Sequential Step Example



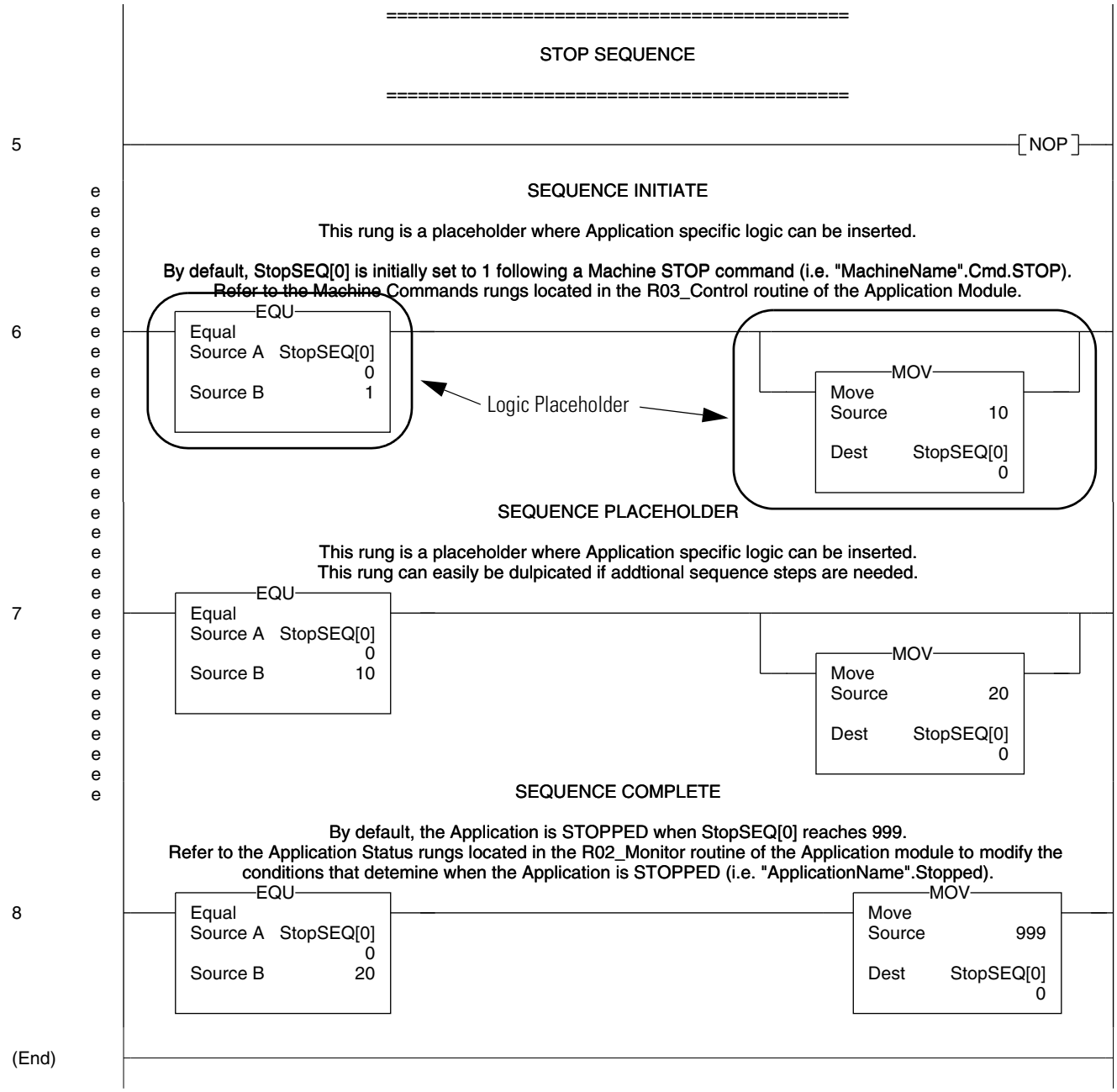
This Widg-O-matic application code first-run step (RunSEQ[0] = 1) example includes a motion axis move (MAM) instruction, an instruction error detection check, and an process complete (PC) check. Before the MOV instruction indexes to the next sequence step (for example, value 5 into RunSEQ[0] tag), the PC check must be met indicating that the move is complete. The instruction error detection check is used to detect a module fault in the application, preventing the run sequence from inadvertently hanging on a step.

Final Run Sequential Step Example



Much like the first run-step example rung, this Widg-O-matic final run step example also includes a motion axis move (MAM) instruction, an instruction error detection check, and an process complete (PC) check. The only difference is that the PC bit is used to reset the RunSEQ[0] tag back to a value of 1, which repeats the motion sequential steps for continuous operation. If continuous operation is not required, the final step could just simply end the Run Sequence or just remain at this step indefinitely.

Stop Sequence Template

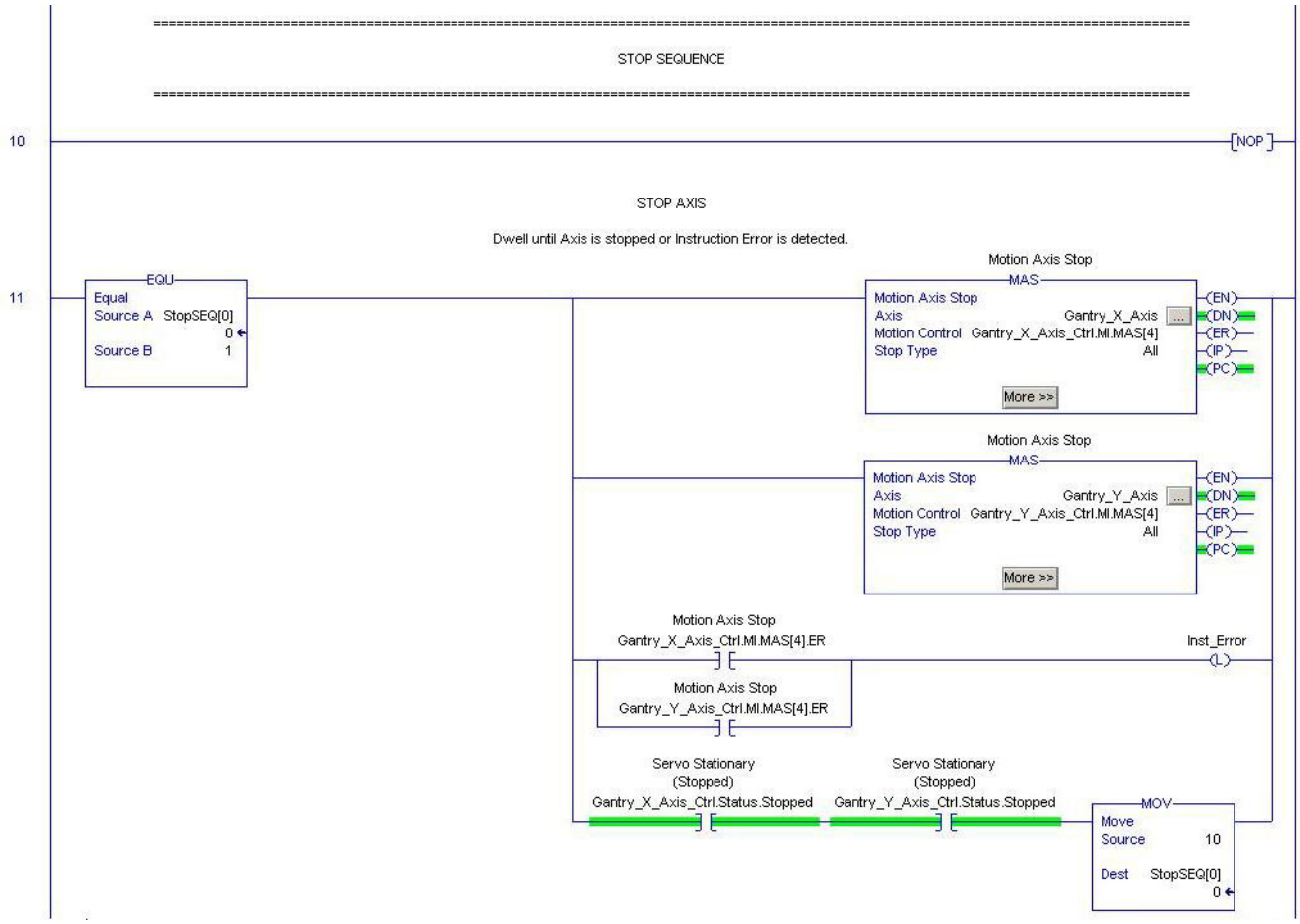


The stop sequence is initiated by a machine STOP command via the stop logic in the R03_Control routine of the application module. By default, the stop sequence is initiated by placing a value of 1 in the StopSEQ[0] tag. When the StopSEQ[0] tag is set to 1, the first step in the stop sequence is executed, starting the stop sequence. Each of the rungs in stop sequence provides a placeholder where application specific step logic can be inserted. The stop sequence logic may include, for example, motion instructions, drive commands and/or other conditional diagnostic logic.

The move (MOV) instruction is a placeholder to advance the stop sequence to the next step by incrementing the StopSEQ[0] tag. Each step in the stop sequence requires a unique value be assigned in ascending order. The steps typically increase by multiples of five or ten. By default, the stop sequence-template steps 1...10...20...30 ...999. Before moving to the next step, a predetermined condition must normally be met to make sure the current step is complete.

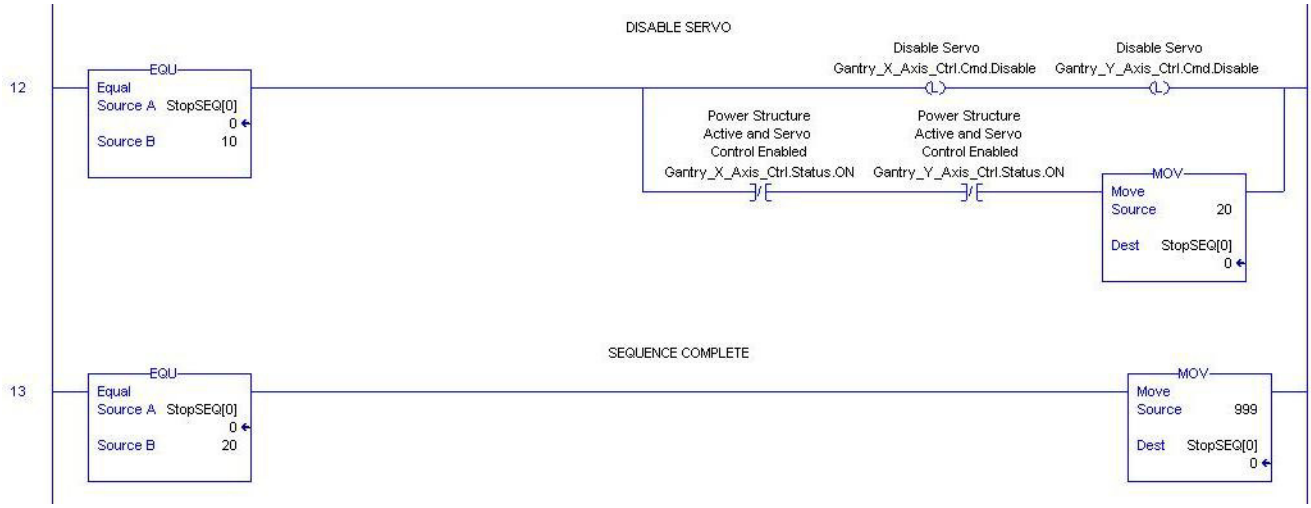
By default, the stop sequence ends when the StopSEQ[0] tag value reaches 999. The StopSEQ[0] tag is then monitored in the R02_Monitor routine of the application module for a value of 999 and then sets the ApplicationName.Stopped tag. The machine module monitors the ApplicationName.Stopped tag to determine when the application was properly stopped.

First Stop Sequential Step Example



This Widg-O-matic first-stop step example includes two motion axis stop (MAS) instructions, an instruction error detection check, and axis stopped check. Before the MOV instructions indexes to the next sequence step (for example, value 10 into the StopSEQ[0] tag), both axes must be stopped. An error detection check is used to detect a module fault in the application module, preventing the stop sequence from inadvertently hanging on a step.

Final Stop Sequential Step and Sequence Complete Example



This Widg-O-matic final-stop step and complete logic example includes logic to disable the two axes and confirm that the axes are disabled before confirming the application is stopped. Identical to the stop-sequence template, the stop-sequence complete rung sets the StopSEQ[0] tag value to 999 which indicates the stop sequence is complete.

Application Logic Creation Steps Using Application Logic Examples

If you are unfamiliar with Rockwell Automation's general Logix5000™ commands, Logix5000 motion commands, PowerFlex parameters, and/or are seeking common application methods for creating specific application logic, use these steps to create your specific application logic.

Toolkit Application Logic Example Overview

The toolkit provides a variety of common application logic examples designed to help you create your specific application logic. The logic examples are organized by the device modules they support.

- K300 Logic Examples – Supporting Kinetix 300 Ethernet drives
- Motion Logic Examples – Supporting CIP Motion, sercos, and virtual motion drives
- PF Logic Examples – Supporting all PowerFlex drives
- Widg-O-matic Example – Supporting a combination of two Kinetix 6500 CIP Motion drives, one PowerFlex 753 drive, and one Kinetix 300 Ethernet drive.

Kinetix 300 Logic Examples

Application Example	File Name	Description
EIP Position	K300_EIPMove_App	Enter position, speed, and accel/decel rates to perform incremental position moves.
EIP Velocity	K300_EIPVel_App	Run Kinetix 300 drive at a speed reference.
Index	K300_Index_App	Configure and run Kinetix 300 drive in indexing mode.

Motion Logic Examples

Application Example	File Name	Description
2-Axis Gear	Motion_Gear_App	Gear two axes together.
Adv/Retard Phasing	Motion_Jog_PhaseMove_App	Perform advance/retard phase moves with a MAM instruction on top of MAJ instruction.
2-Axis PCAM	Motion_PCAM_App	Jog an axis and Position Cam another axis to it.
Simple Move	Motion_Simple_Move_App	Move single axis with MAM instruction by using incremental moves.
Safe Limited Speed	Motion_SLS_App	For single axis, monitor SLS request in module. Reduce speed when SLS request detected.
TCAM	Motion_TCAM_App	Time Cam an axis.

PowerFlex Logic Examples

Application Example	File Name	Description
Run Forward / Reverse	PF_Fwd_Rev_App	Run PowerFlex drive forward, stop, and then run reverse.
Run at Speed	PF_Run_Spd_App	Run PowerFlex drive at a speed reference.
PF525 Run Forward / Reverse	PF525Only_Fwd_Rev_App.L5X	Run PowerFlex drive forward, stop, and then run reverse.
PF525 Run at Speed	PF525Only_Run_Spd_App.L5X	Run PowerFlex drive at a speed reference.

Widg-O-matic Logic Examples

Application Example	File Name	Description	Application Created From
Widg-O-Matic Assembly	WOm_Assy_App1	Execute 2-axis simple moves for gantry.	Motion_Simple_Move_App
Widg-O-Matic Packaging	WOm_Pack_App2	Intermittently run PowerFlex drive for conveyor and execute Kinetix 300 position commands for diverter.	PF_Run_Spd_App K300_EIPMove_App

ArmorStart and ArmorStart LT Examples

Application Example	File Name	Description
Run Forward	AS2X0E_Fwd_App	Run ArmorStart forward.
Run Forward/Reverse	AS2X1E_Fwd_Rev_App	Run ArmorStart forward, stop and then run reverse.
Run For/Rev at Speed	AS2X4E_Fwd_Rev_App (at speed)	Run ArmorStart forward, stop and then run reverse at a speed reference.

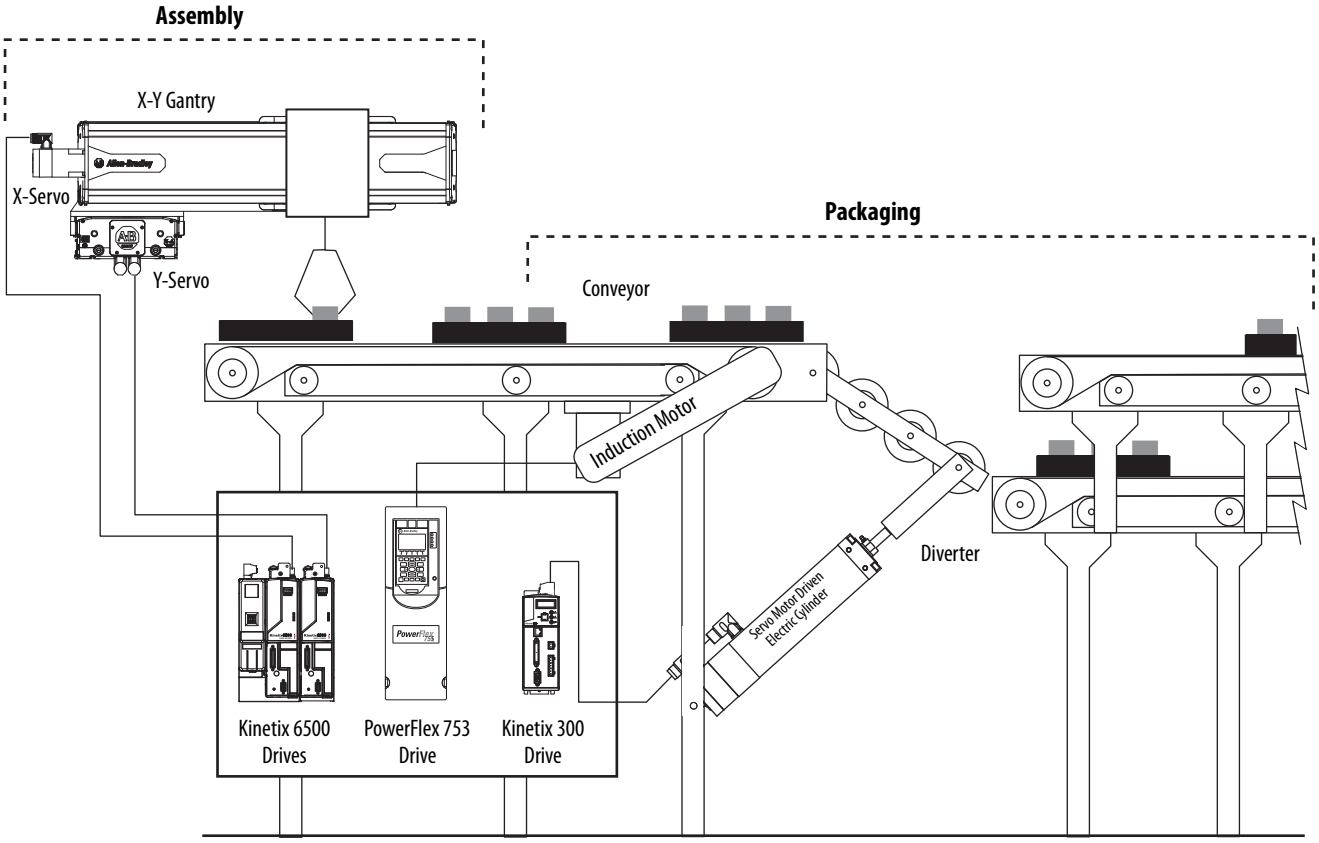
Widg-O-matic Logic Example Overview

To assist you in understanding how to best use the logic examples, the Widg-O-matic machine application is used as an example.

We recommend you study the Widg-O-matic assembly and packaging applications to see the interaction of the machine, application, and device modules within the application logic. The Widg-O-matic examples are created by using basic drives and motion application examples included in the toolkit. After you've studied these examples, create your own applications using the basic drives and motion examples.

The Widg-O-matic application example is an excellent canvas to experiment with the other application examples. The Widg-O-matic example includes two servo axes, one PowerFlex drive, and one Kinetix 300 drive. So, it is possible for you to import and study all of the application examples.

Widg-O-matic Machine Application Example



The Widg-O-matic machine example has two applications (assembly and packaging) and has the following run sequences.

Assembly Application

Step	Simple X-Y Gantry Run Sequence	Value
1	Lower Y-axis, incremental distance	2.0 revs
2	Dwell, time	1.0 s
3	Raise Y-axis, incremental distance	2.0 revs
4	Extend X-axis, incremental distance	3.0 revs
5	Lower Y-axis, incremental distance	2.0 revs
6	Dwell, time	1.0 s
7	Raise Y-axis, incremental distance	2.0 revs
8	Retract X-axis, incremental distance	3.0 revs
9	Repeat and run continuously until the stop sequence is initiated by a machine abort or stop command.	

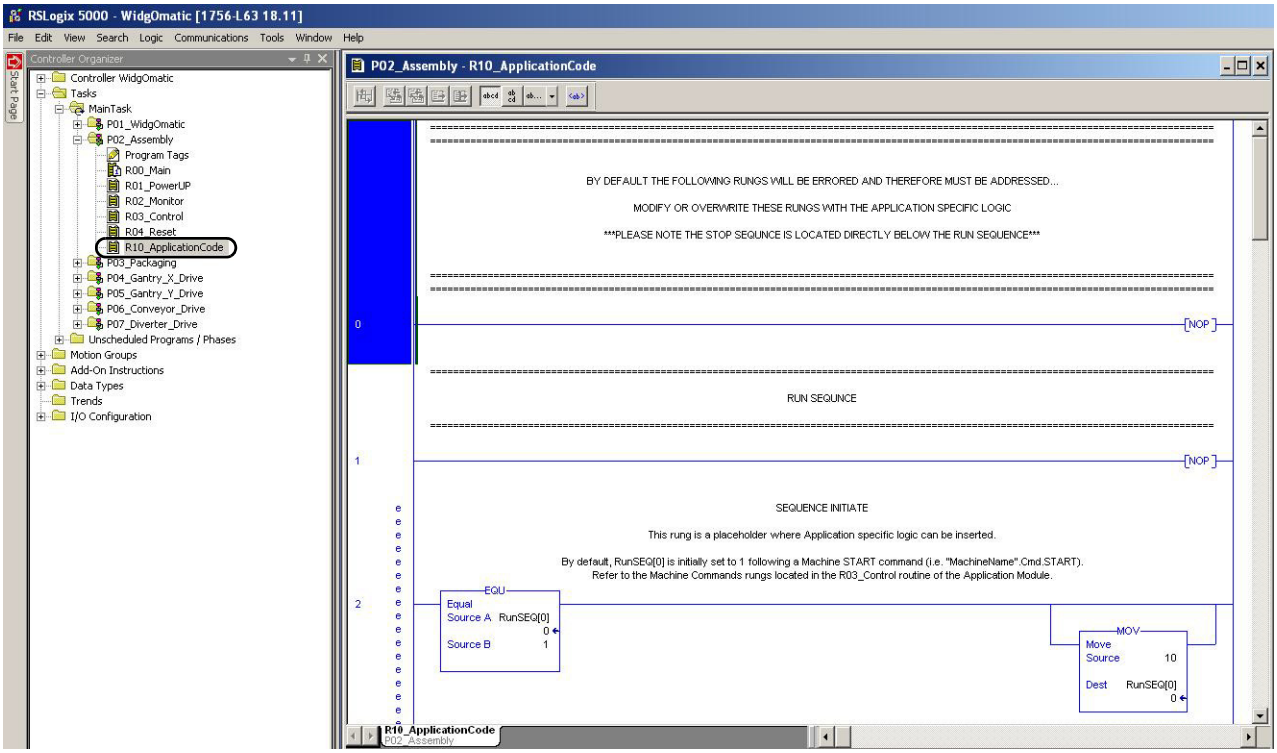
Packaging Application

Step	Conveyor and Diverter Run Sequence	Drive
1	Verify diverter is in EIP Incremental Position mode	Kinetix 300
2	Set conveyor drive direction forward and speed reference at 50 Hz	PowerFlex 753
3	Enable diverter	Kinetix 300
4	Configure diverter position, speed, accel/decel and start an incremental move	Kinetix 300
5	Start conveyor, run at speed 3.0 seconds	PowerFlex 753
6	Stop conveyor	PowerFlex 753
7	Configure diverter position, speed, accel/decel and start an incremental move	Kinetix 300
8	Start conveyor, run at speed 4.0 seconds	PowerFlex 753
9	Stop conveyor	PowerFlex 753
10	Repeat and run continuously until the stop sequence is initiated by a machine abort or stop command.	

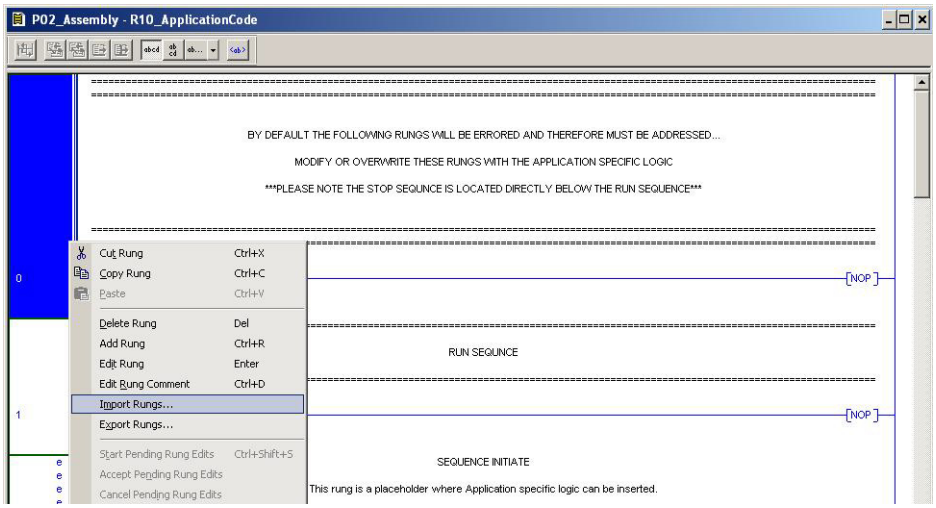
Import Application Logic Examples

Follow these steps to add logic examples to your R10_ApplicationCode routine within your application modules.

1. Expand the Tasks folder in the Controller Organizer.
2. Navigate to and open the R10_ApplicationCode routine within your first application program file.

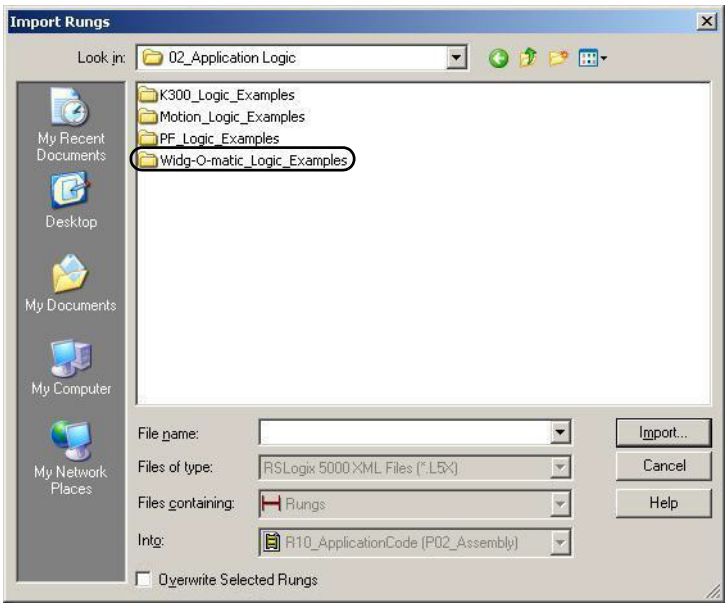


For the Widg-O-matic application example, the R10_ApplicationCode routine within the P02_Assembly program was opened.



3. Select all rungs of the R10_ ApplicationCode routine.
4. Right-click the selected rungs and choose Import Rungs.

5. Navigate to the 02_Application Logic folder within the toolkit's files folder.

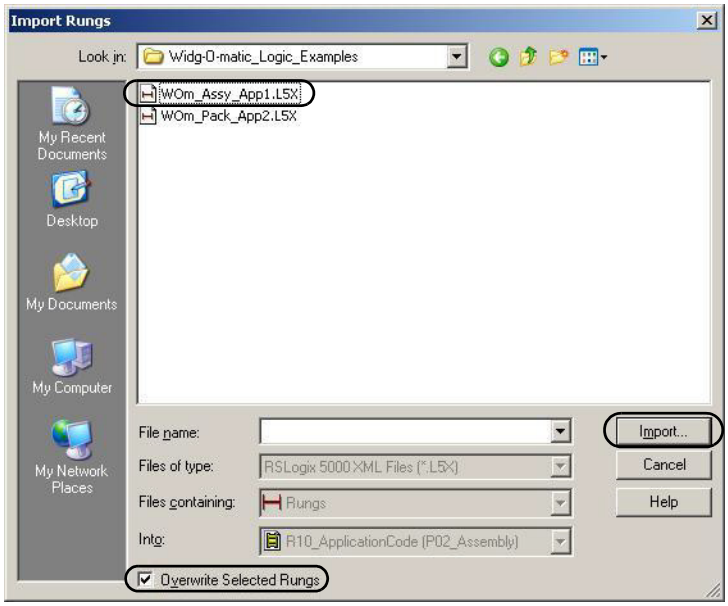


Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\02_Application Logic.

6. Double-click the logic examples folder of choice.

For the Widg-O-matic application example, the Widg-O-matic_Logic_Examples folder was opened.

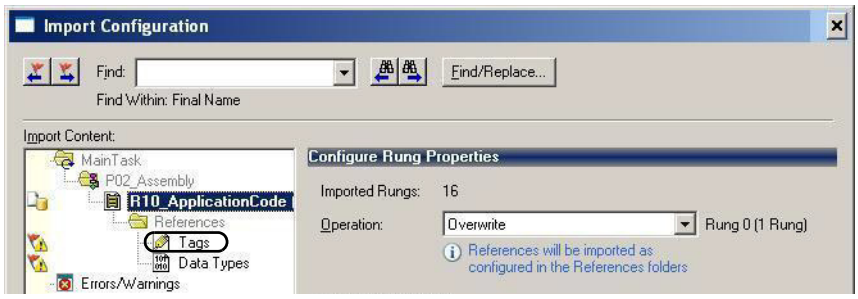
7. Select the desired logic example file to start your application logic.



For the Widg-O-matic application example, the WOm_Assy_App1.L5X file is selected.

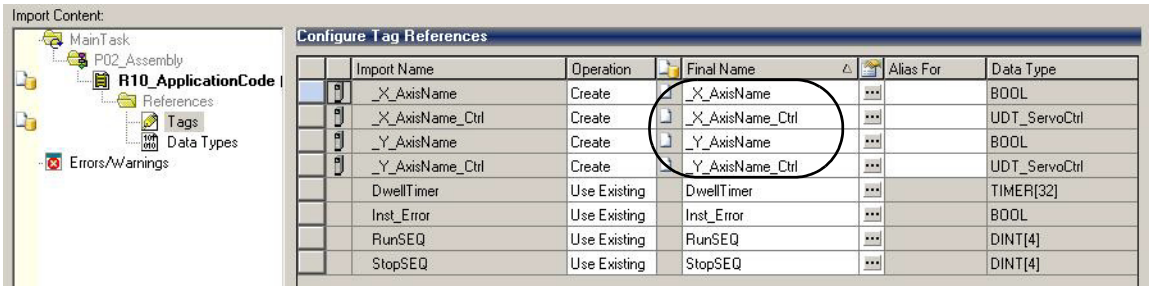
8. Check Overwrite Selected Rungs.
9. Click Import.

The Import Configuration dialog box opens.

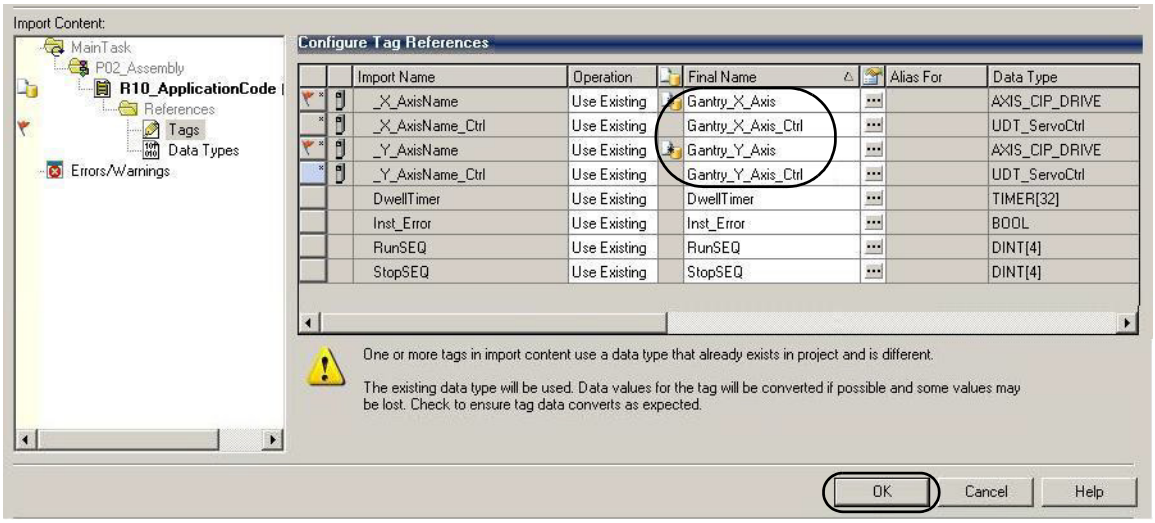


10. Click Tags within the Import Content organizer.

    The Configure Tag References dialog box opens.



11. Replace tag names in the Final Name column with the associated axis or drive names for your application.

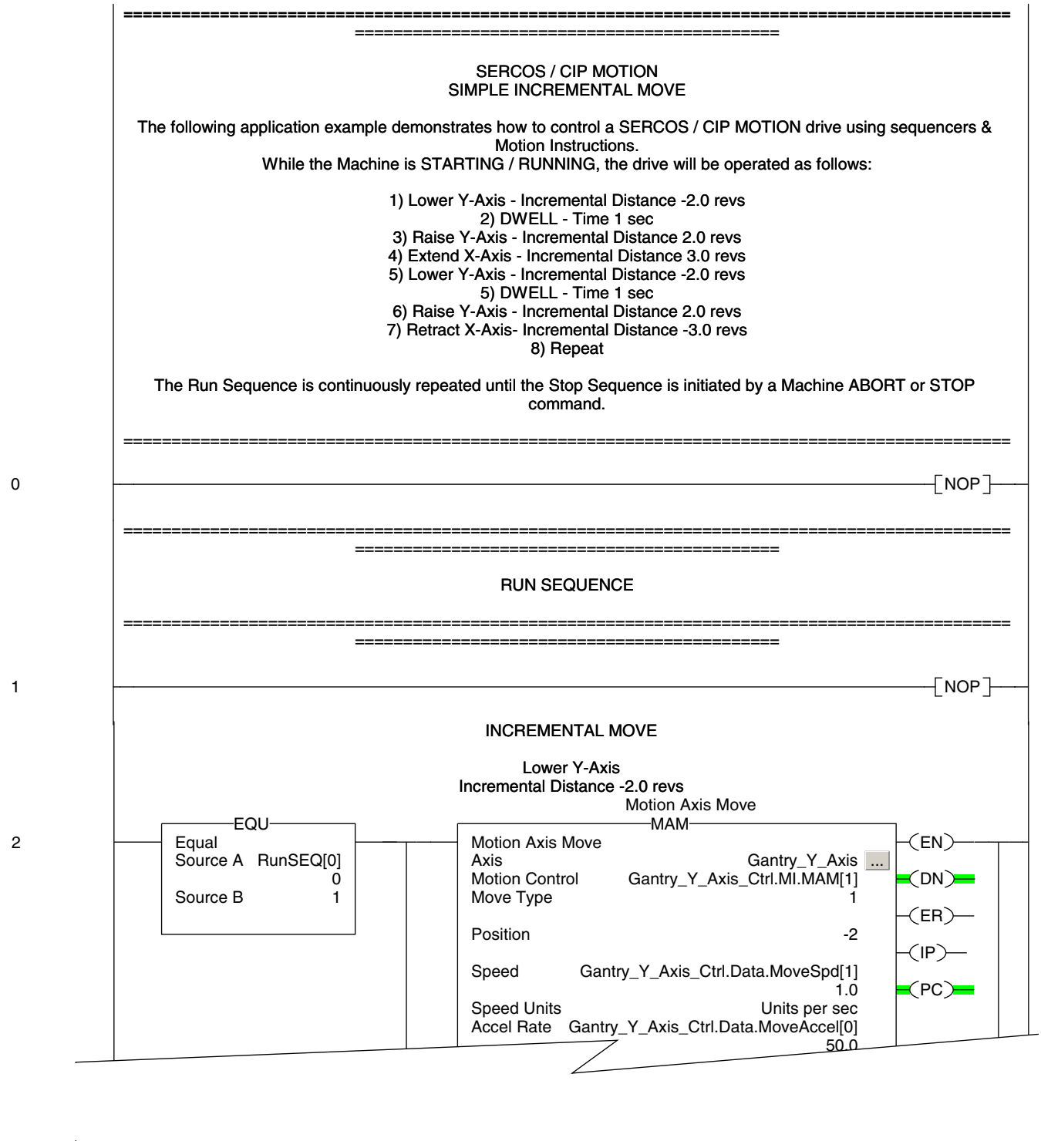


    For the Widg-O-matic application example, _X_AxisName was replaced with Gantry_X_Axis and _Y_AxisName was replaced with Gantry_Y_Axis.

12. Click OK to complete rung import.
13. Repeat step 2 through step 12 for each logic example you wish to import.

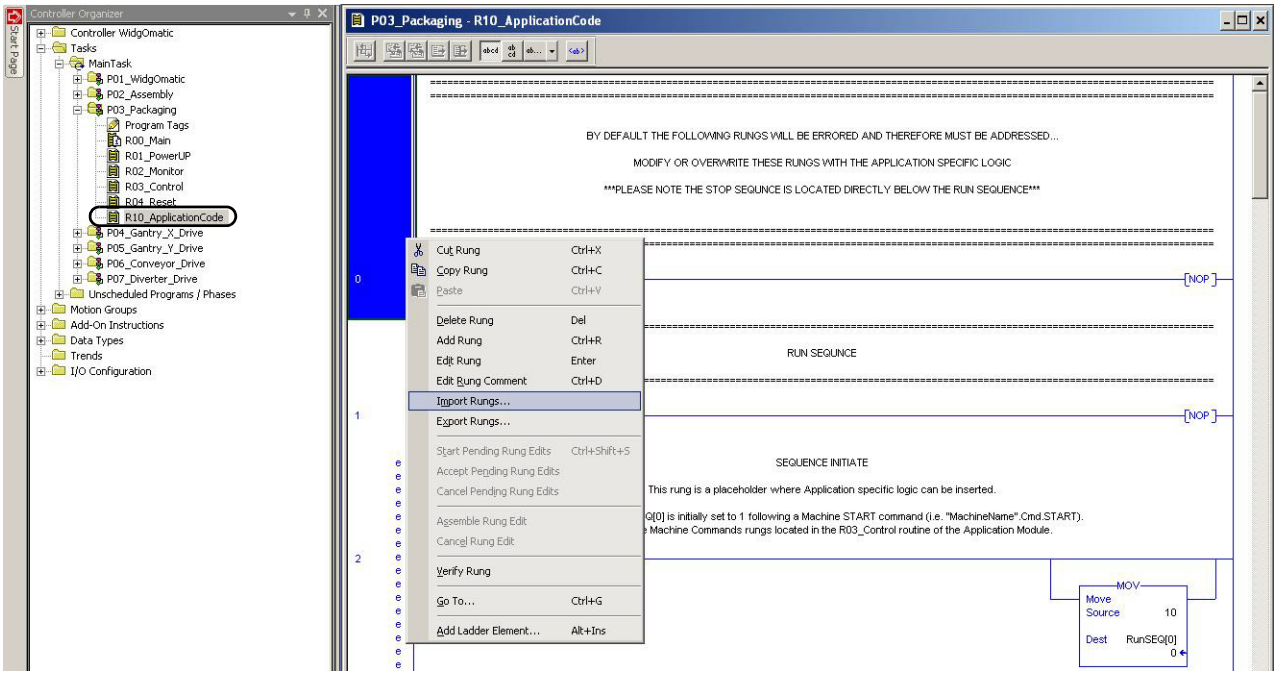
For the Widg-O-matic Assembly application example, the following rungs are imported. The rungs include a series of five incremental moves.

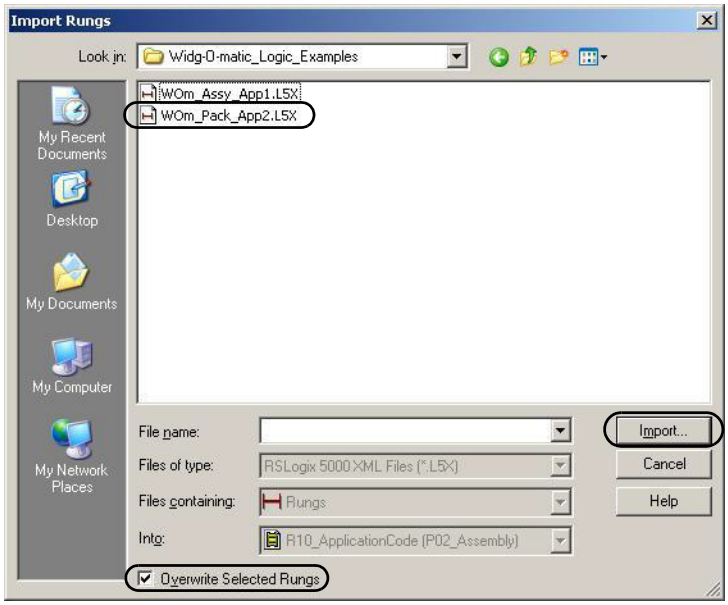
Sercos/CIP Motion Simple Incremental Move



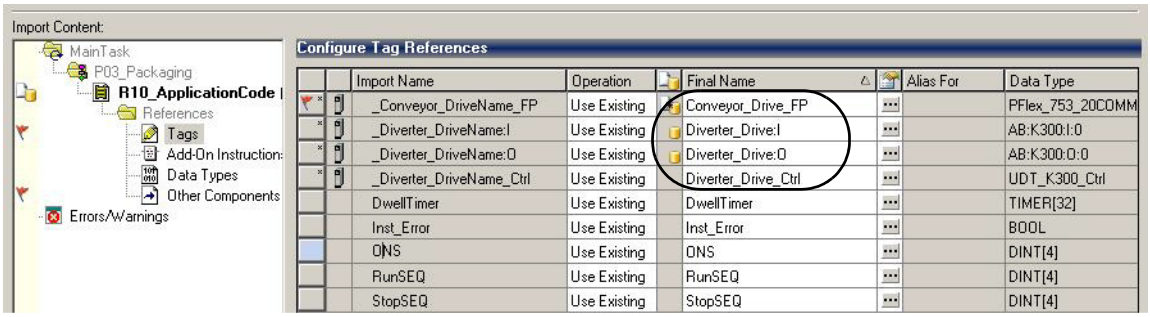
14. Repeat step 1 through step 12 for every application program you have in your drives and motion system.

For the Widg-O-matic application example, the R10_ApplicationCode routine within the P03_Packaging program was also opened and the WOm_Pack_App2.L5X file was imported.

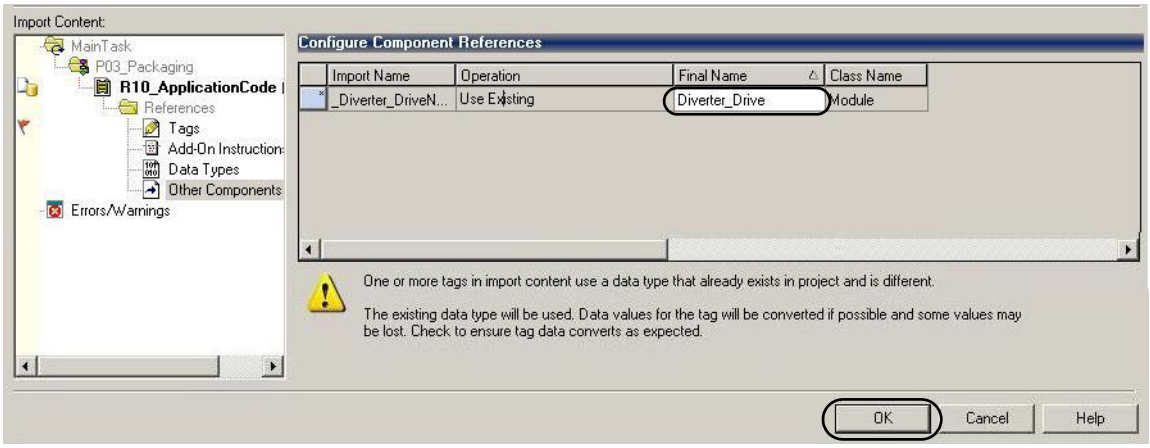




For the Widg-O-matic WOm_Pack_App2.L5X file import, the PowerFlex 753 faceplate _Conveyor_DriveName is replaced with Conveyor_Drive and the Kinetix 300 input, output, and control tag _Diverter_DriveName are replaced with Diverter_Drive.

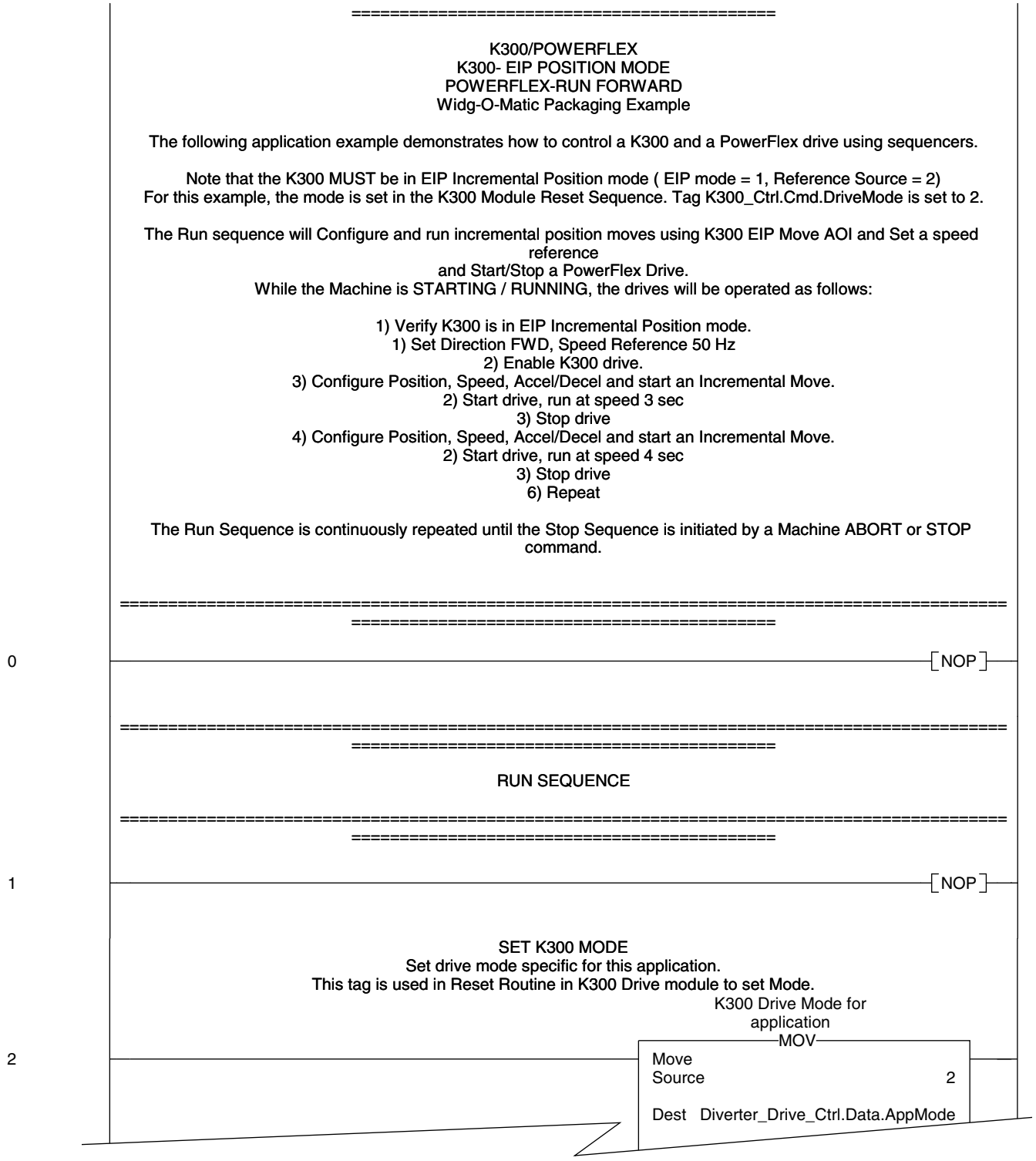


IMPORTANT For application examples with Kinetix 300 devices, it is required that you also configure the component reference tag name for the Kinetix 300 drive.



For the Widg-O-matic packaging example, the following rungs are imported. The rungs include a series of incremental moves for the Kinetix 300 Diverter_Drive and Start/Stop and Speed reference commands for the PowerFlex Conveyor_Drive.

Kinetix 300 and PowerFlex Drives Incremental Move



Application Logic Creation Steps Using Template

If you are familiar with Rockwell Automation's general Logix5000 commands, Logix5000 motion commands, PowerFlex parameters, and have a good idea of your specific run/stop sequences, use these steps to guide you through your specific application logic creation.

1. Formulate and list your run sequence steps.
2. Add your initial run sequence step (RunSEQ[0] = 1) to the R10_ApplicationCode routine of your imported application module.
3. Add remaining run sequence steps (RunSEQ[0] > 1) and interlocks to remaining R10_ApplicationCode routine rungs and adding run sequence rungs as required.
4. Formulate and list your stop sequence steps.
5. Add your initial stop sequence step (StopSEQ[0] = 1) to the R10_ApplicationCode routine of your imported application module.
6. Add remaining stop sequence steps (1 < StopSEQ[0] < 999) and interlocks to remaining R10_ApplicationCode routine rungs and adding stop sequence rungs as required.
7. Add your final stop sequence step (StopSEQ[0] = 999) to the R10_ApplicationCode routine of your imported application module.
8. Determine any special reset logic requirements for your application and edit the R04_Reset Routine in the application module. Refer to Appendix B on page 241 for more information on logic module customization.

   For other common application code requirements, not included in preprogrammed application modules or logic examples, refer to Appendix B on page 241.

Verify and Save the Project File

1. Click  on the Logix Designer application toolbar to verify your controller.

   This software function verifies your controller programs and displays errors/warnings, if any.
2. Make corrections to programs as needed.

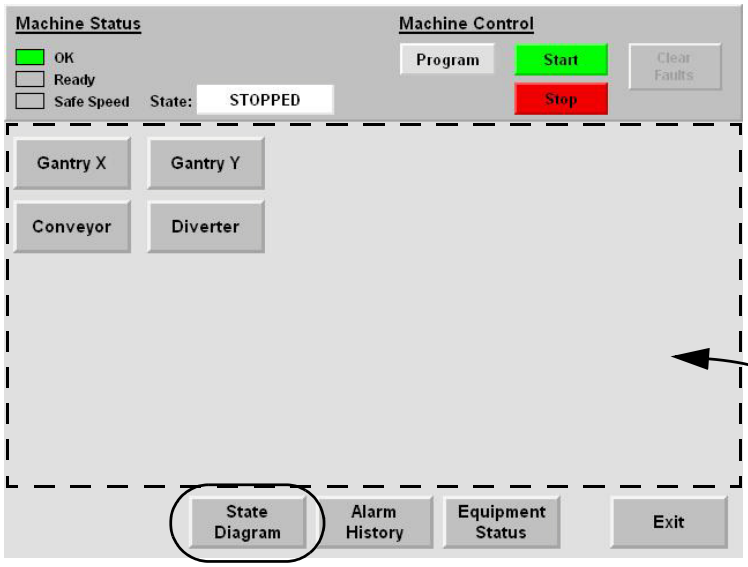
IMPORTANT	If a PowerFlex 70 drive is used as part of the Low Voltage Drive configuration, you need to manually set the data type for each PowerFlex 70 drive AOI.

3. Click  to save your Logix Designer project file.

Notes:

FactoryTalk View ME Configuration

In this chapter you create the operator interface application file for your system using FactoryTalk View Studio software. The toolkit includes a variety of preconfigured machine and device faceplate displays providing status, control, and diagnostics for your drives and motion system. Like the logic modules, the faceplates are designed to be used independently of each other or assembled together based on your specific application requirements.



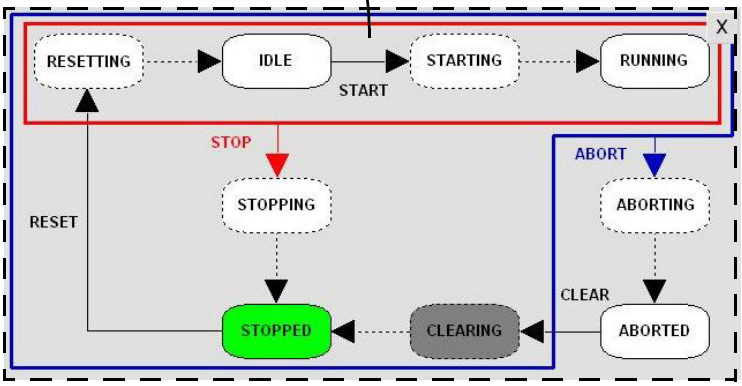
Machine Startup Faceplate Display

This display provides overall machine status and control. It may also be used as the main navigation display for access to the other device, Alarm History, and Equipment Status faceplate displays in your application.

Machine State Diagram Faceplate Display

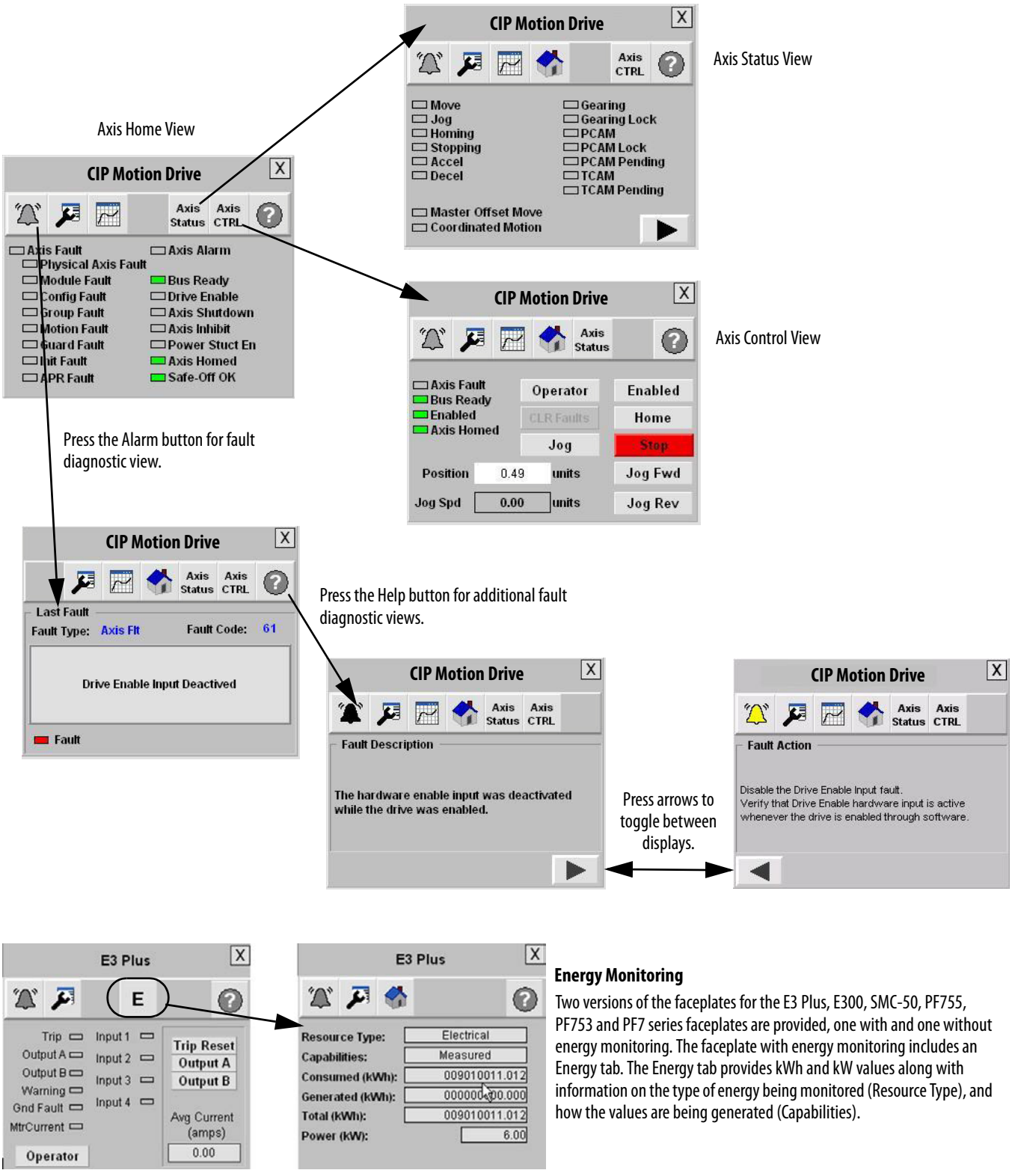
This display provides a graphical machine state status and is configured to fit within the middle section of the Startup display when launched from the State Diagram Goto display button.

This display is sized for use with PanelView Plus 700, or larger, terminals.



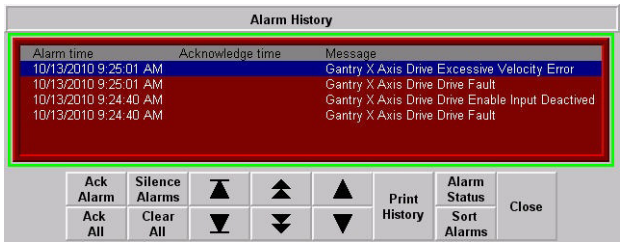
Device Faceplate Display Example

- The device faceplates are complex displays providing status, control, and fault diagnostic views for a specific device.
- The toolkit includes device faceplates for CIP Motion, Sercos interface, PowerFlex, Kinetix 300, SMC-50, E300, and E3 Plus overload relay (with 193-DNENCAT) devices.
- This example shows specific views for the CIP Motion faceplate, other devices are similar, however, differences do exist.



Energy Monitoring

Two versions of the faceplates for the E3 Plus, E300, SMC-50, PF755, PF753 and PF7 series faceplates are provided, one with and one without energy monitoring. The faceplate with energy monitoring includes an Energy tab. The Energy tab provides kWh and kW values along with information on the type of energy being monitored (Resource Type), and how the values are being generated (Capabilities).

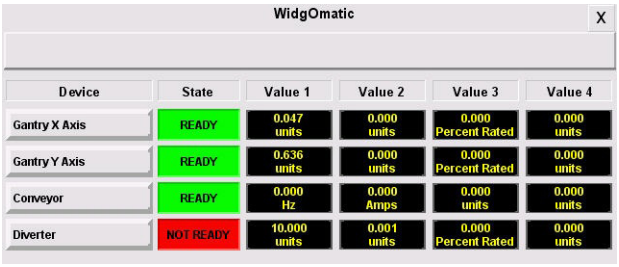


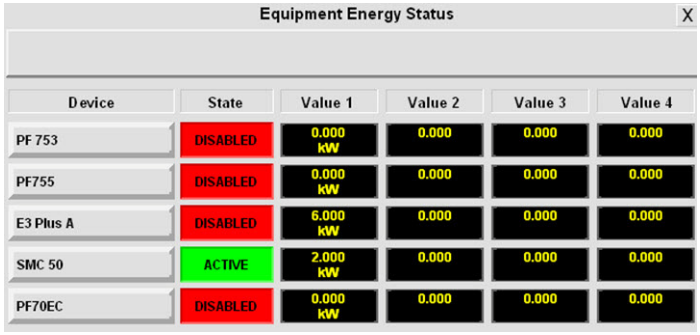
Alarm History Faceplate Display

The Alarm History display provides time and date stamped machine and device faults and alarms.
This display is sized for use in PanelView Plus 700 or larger terminals.

Equipment Status Faceplate Display

This Equipment Status display provides a summary status of the devices in your system and a launch site for your individual device faceplate displays.
This display is sized for use in PanelView Plus 700 or larger terminals.





Equipment Status Faceplate for Energy Monitoring Display

In addition to the standard Equipment Status Faceplate, an additional equipment status faceplate is provided specifically for displaying energy related status. This Equipment Status display for Energy Monitoring provides an energy status summary of the devices in your system and a launch site for your individual device faceplate displays.
This display is sized for use in PanelView Plus 700 or larger terminals.

Before You Begin

- Complete your logic configuration (refer to Chapter 4) or
- Complete Appendix G

What You Need

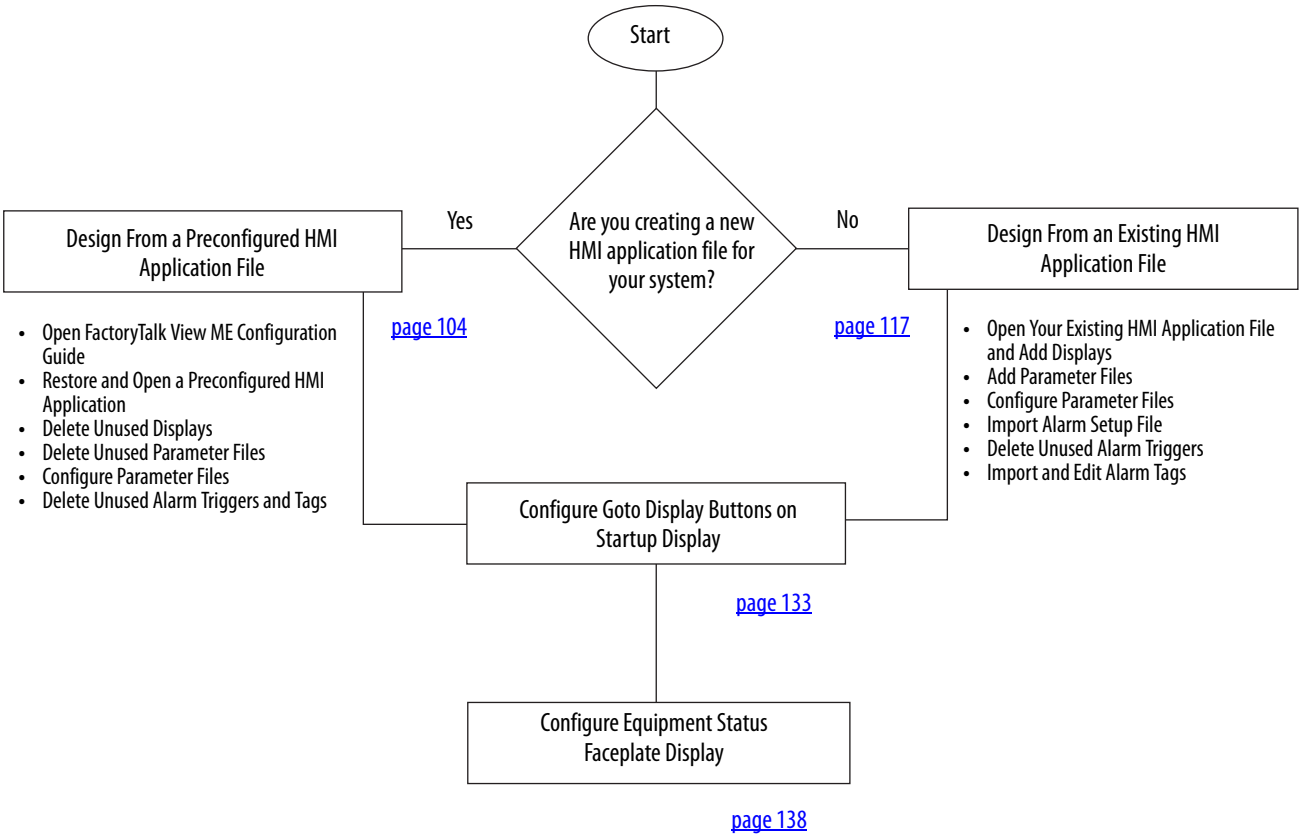
- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative.
- FactoryTalk View Studio software, version 5.1 or later.
- The user manual for FactoryTalk View Studio, Volume 1. Refer to the FactoryTalk View Machine Edition User's Guide, publication VIEWME-UM004.
- The user manual for FactoryTalk View Studio, Volume 2. Refer to the FactoryTalk View Machine Edition User's Guide, publication VIEWME-UM005.

Follow These Steps

This chapter provides two HMI application configuration options:

- Designing from a preconfigured HMI application file
- Designing from an existing HMI application file

Complete these steps to create your Logix5000 controller logic for your drives and motion application.



Design From a Preconfigured HMI Application File

If you are creating a new HMI application file for your system, use this section to configure your application file. Using the preconfigured HMI application file is the most efficient way to create your application file. It includes all of the displays, parameter files, and alarm setup-tags and messages required for all faceplates and devices.

If your existing HMI application file is not too extensive, it may still be more efficient to start from the preconfigured HMI application file and copy your existing application displays, parameter files, and alarm messages. Otherwise, follow the steps in Design From an Existing HMI Application File starting on page 117.

Open FactoryTalk View ME Configuration Guide

If the DMAT Wizard was used to create the initial system configuration, then there is a corresponding FactoryTalk View ME Configuration Guide for your project to assist you in designing your FactoryTalk View ME application.

1. Navigate to your project's FactoryTalk View ME Configuration Guide.

   If the default DMAT Wizard directory was used, you will find your project's FactoryTalk View ME Configuration Guide Microsoft Word doc in C:\Documents and Settings*PC Name*\My Documents\DMAT*ProjectName**MachineName*\FactoryTalkViewMEConfigurationGuide directory.

   The Widg-O-matic example file may be found in: C:\Program Files\RA_Simplification\DMAT\B-Files\6-Project Examples\Widg-O-matic.

2. Open the guide and use it for assistance in the completing the remaining steps in this section.

   Your project file name will be: *ProjectName* FactoryTalk View ME Configuration.

Factory Talk View ME Configuration Guide

This guide was created based on your DMAT Wizard selections and is meant to assist you in designing your Factory Talk View ME application using the DMAT Pre-configured HMI application files. Use this document as a supplement to the *Design From a Preconfigured HMI Application File* section in Chapter 5 of the ***Drives and Motor Accelerator Toolkit Quick Start*** guide, *IASIMP-QS019A-EN-P*.

This document will define specific steps to help you:

- Restore and Open a Preconfigured HMI Application
- Delete Unused Displays
- Delete Unused Parameter Files
- Configure Parameter Files
- Delete Unused Alarm Triggers and Tags
- Configure Goto Display Buttons on Startup Display
- Configure Equipment Status Faceplate Display

Design From a Preconfigured HMI Application File

Restore and Open a Preconfigured HMI Application

1. Navigate to the Panelview Plus 1000 folder
2. Double-click the PVP1000_Application.apa archive file

Delete Unused Displays

List of Required Faceplates

[ALARM]
[DIAGNOSTICS]
[INFORMATION]
CIPMotion Faceplate
K300_Faceplate
PowerFlex_753_755_Faceplate
PVP1000_Startup_Faceplate
PVP1000_StateDiagram_Faceplate
PVP1000_AlarmHistory_Faceplate
PVP1000_EquipmentStatus_Faceplate

Delete Unused Parameter Files

List of Required Parameter Files

CIPMotion_Parameter
K300_Parameter
PF_Parameter
Startup_Parameter
StateDiagram_Parameter
EquipmentStatus_Parameter

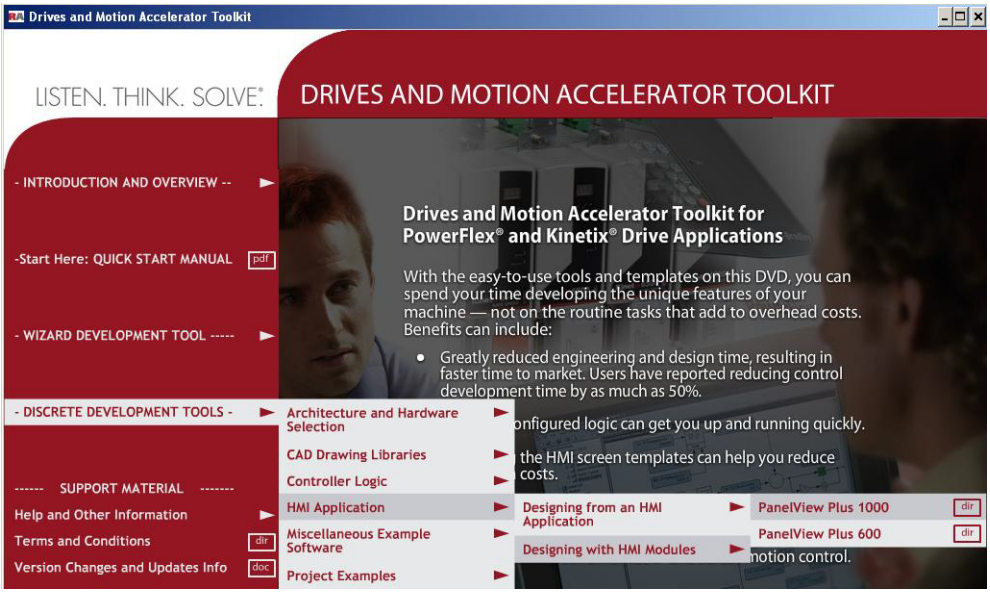
Restore and Open a Preconfigured HMI Application

Follow these steps to restore the preconfigured HMI file and open in FactoryTalk View Studio software.

1. Navigate to the HMI application files within the toolkit's file folder and open either the PanelView Plus 1000 or PanelView Plus 600 folder, based on the terminal size and faceplate requirements of your application.

IMPORTANT	The Equipment Status faceplate is compatible with PanelView Plus 700 or larger terminals. To take full advantage of all faceplates, choose the PanelView Plus 1000 folder.

Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Applications.



For the Widg-O-matic machine application example, the PanelView Plus 1000 folder was selected.

PanelView Plus Terminal and Faceplates Compatibility

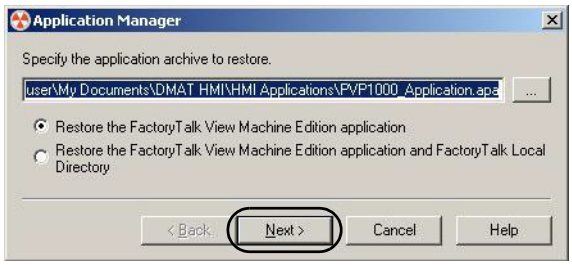
Application Folder	PanelView Plus Terminals Supported	Faceplates Displays
PVP600	• PanelView Plus 400 • PanelView Plus 600	• Machine Startup Display • Machine State Diagram Display • All Device Displays • Alarm History Display
PVP1000	• PanelView Plus 700 • PanelView Plus 1000 • PanelView Plus 1250 (1) • PanelView Plus 1500 (1)	• Machine Startup Display • Machine State Diagram Display • All Device Displays • Alarm History Display • Equipment Status Display

(1) The PanelView Plus 1000 Machine, Alarm History, and Equipment Status faceplate displays are sized at 640x480 (VGA) resolution. If full-sized displays are desired, open display, select all (objects), group, and resize group. Some text editing for new display size may also be required.

2. Double-click the PVP*xxxx*_Application.apa archive file.

For the Widg-O-matic machine application example, the PVP1000_Application.apa file was opened.

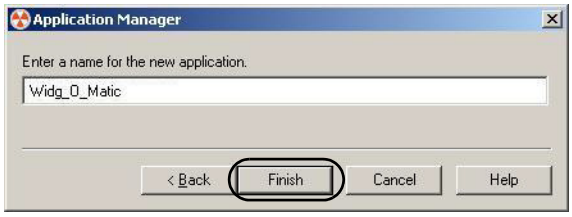
The Application Manager dialog box opens.



3. Verify the application archive to restore and that Restore the FactoryTalk View Machine Edition application is selected.

IMPORTANT	Selecting Restore the FactoryTalk View Machine Edition application and FactoryTalk Local Directory causes the local security settings on your personal computer to substitute for the security setting from the preconfigured application.

4. Click Next.

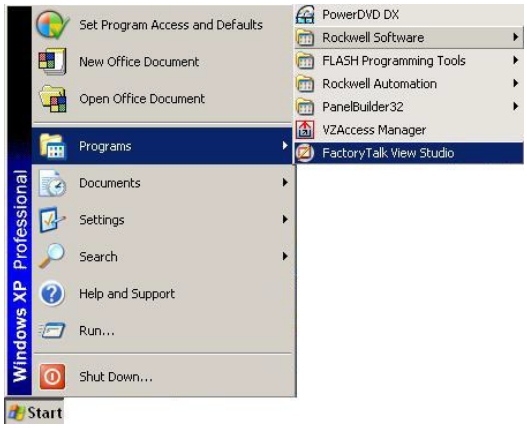


5. Rename the application to match your machine name.

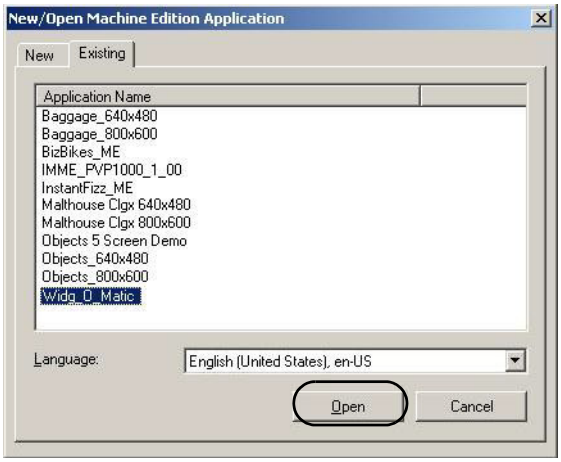
   For the Widg-O-matic machine application example, the application name is Widg_O_Matic.

6. Click Finish.

7. From the Start menu, select Programs>FactoryTalk View Studio.



The New/Open Machine Edition Application dialog box opens.

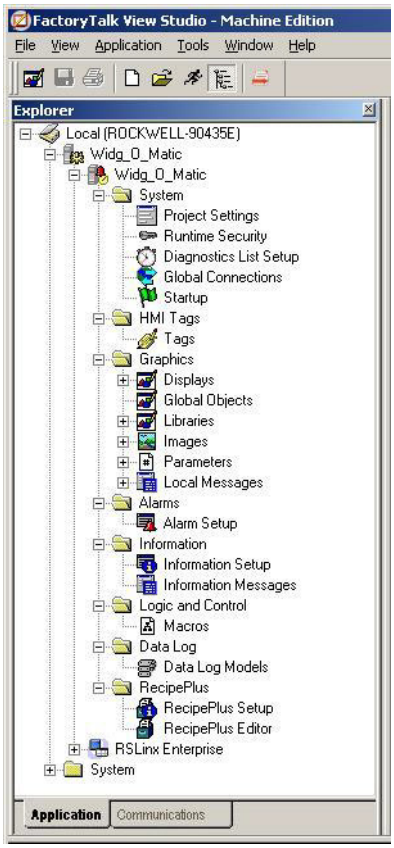


8. From the Existing tab, select the application file that you just restored.

   For the Widg-O-matic machine application example, Widg_O_Matic is selected.

9. Click Open.

   The application opens in FactoryTalk View Studio software.



Delete Unused Displays

Follow these steps to remove displays not used in your application.

1. Determine the required faceplates for your application based on the Faceplate Displays table.

   TIP Only one faceplate display is required for devices/modules of the same type.

Faceplate Displays

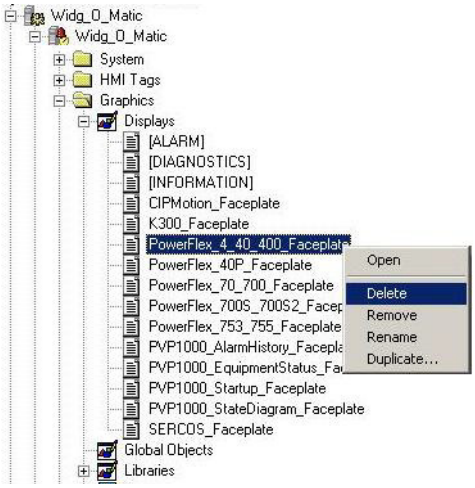
Faceplate Display Name	Parameter File	Supported Devices/Modules	Supported PanelView Plus Terminals
CIPMotion_Faceplate	CIPMotion_Parameter	Kinetix 6500, Kinetix 5500, Kinetix 350, PowerFlex 527, and PowerFlex 755 drives configured as CIP Motion drives	All
E3Plus_Faceplate	E3_Parameter	E3 Plus overload relay	
E3Plus_Faceplate_Energy			
E300_Faceplate	E300_Parameter	E300 Electronic overload relays	
E300_Faceplate_Energy			
K300_Faceplate	K300_Parameter	Kinetix 300 drives	
PowerFlex_4_40_400_Faceplate	PF_Parameter	PowerFlex 4, PowerFlex 40, and PowerFlex 400 drives	
PowerFlex_40P_Faceplate		PowerFlex 40P drives	
PowerFlex_70_700_Faceplate		PowerFlex 70EC and PowerFlex 700VC drives	
PowerFlex_70_700_Faceplate_Energy			
PowerFlex_700S_700S2_Faceplate		PowerFlex 700S2 drives	
PowerFlex_700S_700S2_Faceplate_Energy			
PowerFlex_753_755_Faceplate		PowerFlex 753 and PowerFlex 755 drives	
PowerFlex_753_Faceplate_Energy			
PowerFlex_755_Faceplate_Energy			
PowerFlex_525_Faceplate		PowerFlex 525 drives	
PVP1000_AlarmHistory_Faceplate	Not Required	All devices	• PanelView Plus 700 • PanelView Plus 1000 • PanelView Plus 1250 (1) • PanelView Plus 1500 (1)
PVP1000_EquipmentStatus_Faceplate	EquipmentStatus_Parameter		
PVP1000_Startup_Faceplate	Startup_Parameter	Machine logic module	
PVP1000_StateDiagram_Faceplate	StateDiagram_Parameter	Machine logic module (states)	
PVP600_Startup_Faceplate	Startup_Parameter	Machine logic module	• PanelView Plus 400 • PanelView Plus 600
SERCOS_Faceplate	SERCOS_Parameter	Kinetix 2000, Kinetix 6000, Kinetix 6000M, Kinetix 6200, Kinetix 7000, and Ultra3000-SE drives	All
SMC_50_Faceplate	SMC_50_Parameter	SMC_50 soft starters	
SMC_50_Faceplate_Energy			
ArmorStart_280E_Faceplate	ArmorStart_280E_Faceplate	ArmorStart 280E motor controllers	All
ArmorStart_281E_Faceplate	ArmorStart_281E_Faceplate	ArmorStart 281E motor controllers	
ArmorStart_284E_Faceplate	ArmorStart_284E_Faceplate	ArmorStart 284E motor controllers	
ArmorStart_290E_Faceplate	ArmorStart_290E_Faceplate	ArmorStart LT 290E motor controllers	
ArmorStart_291E_Faceplate	ArmorStart_291E_Faceplate	ArmorStart LT 291E motor controllers	
ArmorStart_294E_Faceplate	ArmorStart_294E_Faceplate	ArmorStart LT 294E motor controllers	

(1) The PanelView Plus 1000 Machine, Alarm History, and Equipment Status faceplate displays are sized at 640x480 (VGA) resolution. If full-sized displays are desired, open display, select all (objects), group, and resize group. Some text editing for new display size may also be required.

For the Widg-O-matic example, these displays are used:

Widg-O-matic Application Example Display Names
PVP1000_AlarmHistory_Faceplate
PVP1000_EquipmentStatus_Faceplate
PVP1000_Startup_Faceplate
PVP1000_StateDiagram_Faceplate
CIPMotion_Faceplate
K300_Faceplate
PowerFlex_753_755_Faceplate

2. Expand the Displays component under the Graphics folder.



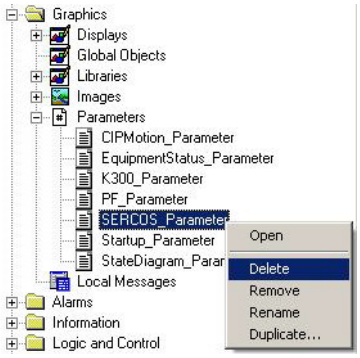
3. Right-click displays not needed in your application and choose Delete.
4. Confirm deleting each un-needed display by clicking Yes.

Delete Unused Parameter Files

Follow these steps to remove parameter files not used in your application.

1. Determine required parameter files for your application based on Faceplate Displays table on page 109.
2. Expand the Parameters component under the Graphics folder.
3. Right-click Parameter files not needed in your application and choose Delete.

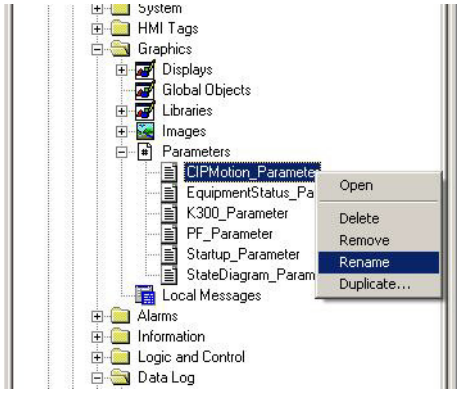
   For the Widg-O-Matic example, the SERCOS_Parameter file is deleted.
4. Confirm deleting each un-needed file by clicking Yes.



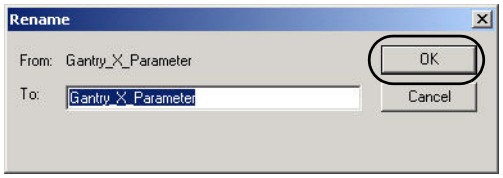
Configure Parameter Files

Follow these steps to configure a parameter file for each device or logic module in your application supported by a faceplate.

1. Right-click a parameter file for a device in your application and choose Rename.



2. Rename the parameter file with the name of the corresponding device in your Logix Designer application.



If more than one device uses the same faceplate then another parameter of the same type must be duplicated and renamed. Refer to step 4 and step 5 on page 112.

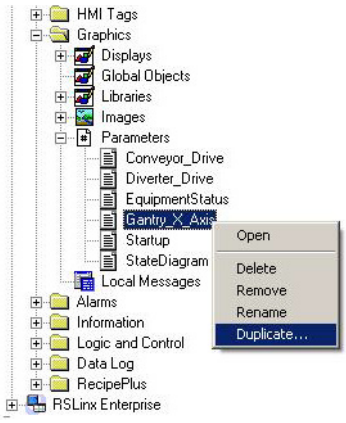
For the Widg-O-Matic example, these are the parameter files:

Base Parameter File Name	Widg-O-matic Parameter File Name
CIPMotion_Parameter	Gantry_X_Axis
	Gantry_Y_Axis
PF_Parameter	Conveyor_Drive
K300_Parameter	Diverter_Drive
EquipmentStatus_Parameter	EquipmentStatus
Startup_Parameter	Startup
StateDiagram_Parameter	StateDiagram

3. Click OK.

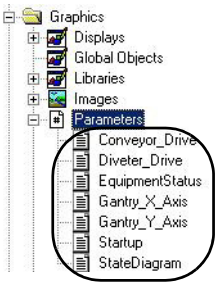
4. To create another parameter file based on an existing one, right-click the parameter file and choose Duplicate.

   For the Widg-O-matic machine application example, Gantry_X_Axis and Gantry_Y_Axis use the same CIP_Motion_Faceplate, but require individual parameter files. For example, Gantry_X_Axis is duplicated and renamed to Gantry_Y_Axis in step 5.



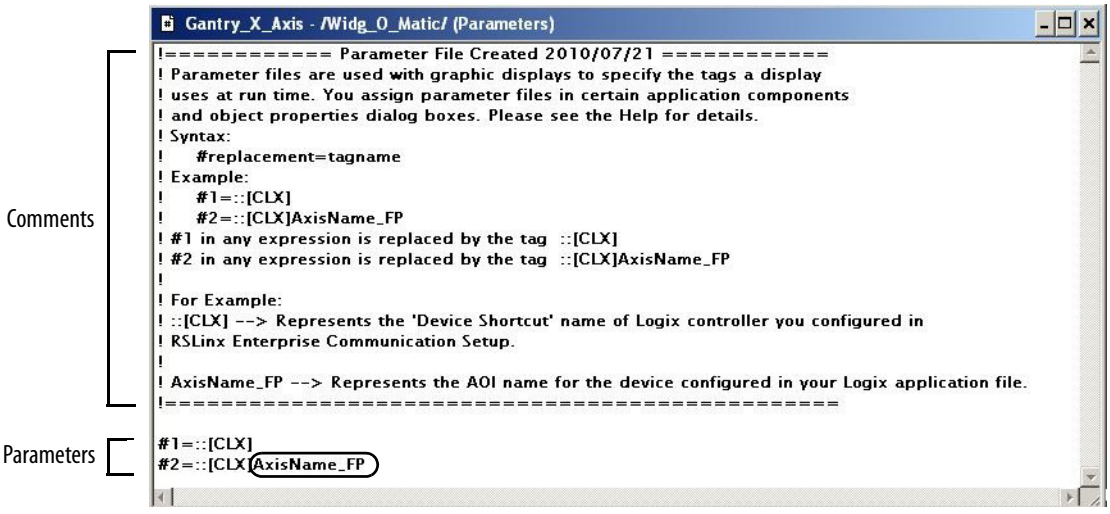
5. Rename the parameter file as needed for your application.
6. Click OK.
7. Repeat step 1 through step 6 for each device or logic module parameter file.

   This is the completed Widg-O-matic renamed parameter file listing.



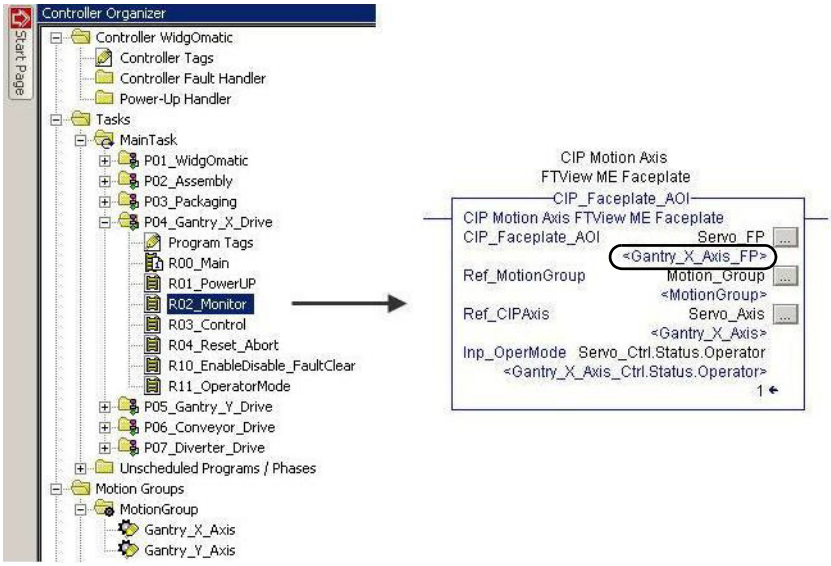
8. Assign the parameters in each of the parameter files.

   In each parameter file, there are references to controller links (shortcuts) or specific tag names. The '!' before any text indicates that line is a comment and each parameter file contains instructions on how to configure it. The '#' before a number indicates a parameterized tag.

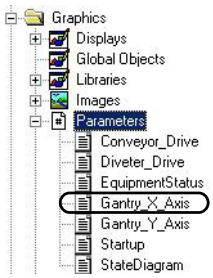


   For example, in the Widg-O-matic Gantry_X_Axis parameter file Parameter #1 contains the shortcut name [CLX]. This should match the shortcut name created in your RSLinx Enterprise communication setup. Parameter #2 represents the tag name for the specific Faceplate AOI, within your Logix Designer project, which the faceplate requests data from.

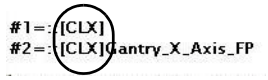
The Widg-O-matic Gantry_X_Axis parameter #2 is assigned to the faceplate AOI tag named Gantry_X_Axis_FP found in the R02_Monitor routine of the P04_Gantry_X_Drive program.



a. Double-click the parameter file to open it.



b. Enter your application controller's shortcut name in all parameters.



TIP Less editing is required when assigning HMI alarm tags if you name your controller shortcut [CLX]. Refer to Chapter 6 on page 149 for configuring your controller shortcuts in RSLinx Enterprise communication setup.

c. Enter the associated faceplate AOI tag name of the device or module for this faceplate parameter.

d. Close parameter file and acknowledge the Save Changes dialog box.

9. Repeat step 8 for each of your device or module faceplate parameters.

For the Widg-O-Matic example, the parameters are edited as follows:

Widg-O-Matic Parameter File	Parameter File Configuration
Gantry_X_Axis	#1=::[CLX]
	#2=::[CLX]Gantry_X_Axis_FP
Gantry_Y_Axis	#1=::[CLX]
	#2=::[CLX]Gantry_Y_Axis_FP
Conveyor_Drive	#1=::[CLX]Conveyor_Drive_FP
Diverter_Drive	#1=::[CLX]
	#2=::[CLX]Diverter_Drive_FP
EquipmentStatus	#1=::[CLX]Gantry_X_Axis_FP
	#2=::[CLX]Gantry_Y_Axis_FP
	#3=::[CLX]Conveyor_Drive_FP
	#4=::[CLX]Diverter_Drive_FP
	#5=::[CLX]Diverter_Drive_FP
	#6=::[CLX]Diverter_Drive_FP
	#7=::[CLX]Diverter_Drive_FP
	#8=::[CLX]Diverter_Drive_FP
	#9=::[CLX]Diverter_Drive_FP
Startup	#1=::[CLX]
	#2=::[CLX]WidgOmatic
StateDiagram	#1=::[CLX]WidgOmatic

The Equipment Status faceplate requires that parameters are set for all rows #1…9 even if they are not visible. Typically, the last visible row parameter is entered in the remaining parameters. For example, Diverter_Drive_FP parameter entered for #4…9.

Refer to Configure Equipment Status Faceplate Display on page 138 for more information.

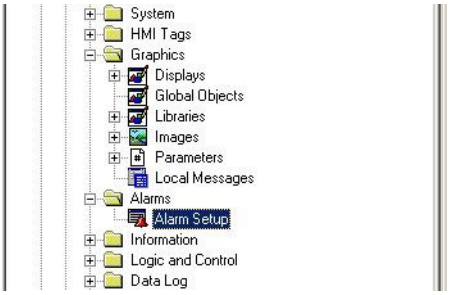
Delete Unused Alarm Triggers and Tags

Follow these steps to delete any alarm triggers for hardware devices not used in your application. This could improve performance of your PanelView Plus terminal communication.

IMPORTANT These steps must be completed if a machine module is not used in your Logix Designer project.

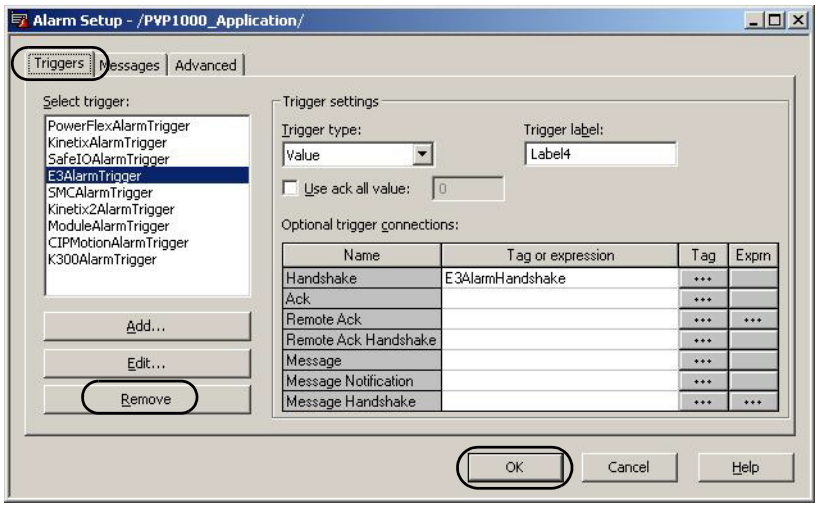
1. Expand the Alarms folder.
2. Double-click Alarm Setup.

   The Alarm Setup dialog box opens.



3. Click the Triggers tab.
4. Select any unused alarm trigger tags from the Select trigger organizer.

   Unused trigger tags are any associated devices not configured in your Logix Designer project.

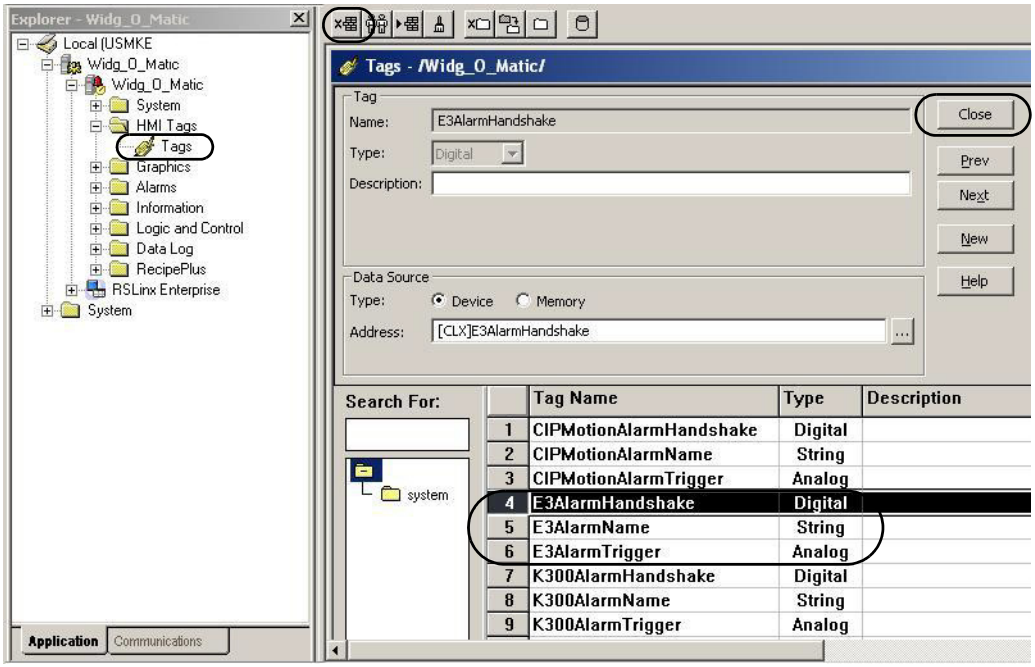


   For the Widg-O-matic application example, these alarm triggers are used, so all other trigger tags can be removed.

Alarm Triggers Used
PowerFlexAlarmTrigger
ModuleAlarmTrigger
CIPMotionTrigger
K300AlarmTrigger

5. Click Remove.
6. Repeat step 4 and step 5 for all unused trigger tags.
7. Click OK in the Alarm Setup dialog box to save edits.

8. Expand the HMI Tags folder and double-click Tags.



The HMI Tags editor appears in the workspace.

9. Select each of the *xxx*AlarmHandshake, *xxx*AlarmName, and *xxx*AlarmTrigger tags associated with each of the Alarm Triggers that were deleted in the previous steps.

   For example, the circled tags are the three tags you would delete if the E3AlarmTrigger had been deleted previously.

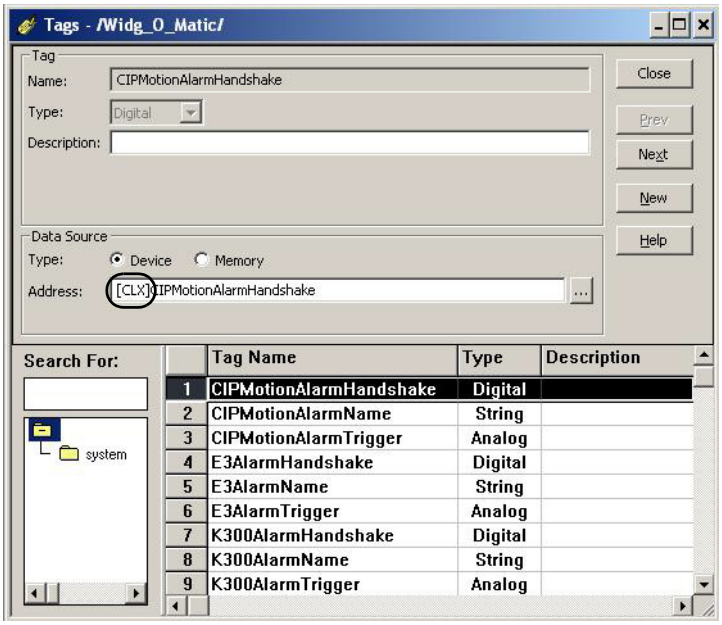
10. Click  to delete the tags.

11. Repeat step 8 through step 10 for all unused Alarm tags associated with unused Alarm Triggers.

TIP Less editing is required when assigning HMI alarm tags if you name your controller shortcut [CLX]. Refer to Chapter 6 on page 149 for configuring your controller shortcuts in RSLinx Enterprise communication setup.

12. Click Close to complete tag editing.

TIP Because you used the pre-configured HMI file instructions, you can skip Design From an Existing HMI Application File, and go directly to Configure Goto Display Buttons on Startup Display starting on page 133.



Design From an Existing HMI Application File

If your existing HMI application file is not too extensive, it may still be more efficient to start from the preconfigured HMI application file and copy your existing application displays, parameter files, and alarm messages. Refer to Design From a Preconfigured HMI Application File starting on page 104.

Otherwise, follow the steps in this section to add the HMI components to your existing FactoryTalk View Machine Edition application file.

Open Your Existing HMI Application File and Add Displays

TIP Only one faceplate display is required for devices/modules of the same type.

1. Determine the required faceplates for your application based on the Determine the required faceplates for your application based on the table. table.

Faceplate Displays

Faceplate Display Name	Parameter File	Supported Devices/Modules	Supported PanelView Plus Terminals
CIPMotion_Faceplate	CIPMotion_Parameter	Kinetix 6500, Kinetix 5500, Kinetix 350, PowerFlex 527, and PowerFlex 755 drives configured as CIP Motion drives	All
E3Plus_Faceplate	E3_Parameter	E3 Plus overload relay	
E3Plus_Faceplate_Energy			
E300_Faceplate	E300_Parameter	E300 Electronic overload relays	
E300_Faceplate_Energy			
K300_Faceplate	K300_Parameter	Kinetix 300 drives	
PowerFlex_4_40_400_Faceplate	PF_Parameter	PowerFlex 4, PowerFlex 40, and PowerFlex 400 drives	
PowerFlex_40P_Faceplate		PowerFlex 40P drives	
PowerFlex_70_700_Faceplate		PowerFlex 70EC and PowerFlex 700VC drives	
PowerFlex_70_700_Faceplate_Energy			
PowerFlex_700S_700S2_Faceplate		PowerFlex 700S2 drives	
PowerFlex_700S_700S2_Faceplate_Energy			
PowerFlex_753_755_Faceplate		PowerFlex 753 and PowerFlex 755 drives	
PowerFlex_753_Faceplate_Energy			
PowerFlex_755_Faceplate_Energy			
PowerFlex_525_Faceplate		PowerFlex 525 drives	
PVP1000_AlarmHistory_Faceplate	Not Required	All devices	• PanelView Plus 700 • PanelView Plus 1000 • PanelView Plus 1250 (1) • PanelView Plus 1500 (1)
PVP1000_EquipmentStatus_Faceplate	EquipmentStatus_Parameter		
PVP1000_Startup_Faceplate	Startup_Parameter	Machine logic module	
PVP1000_StateDiagram_Faceplate	StateDiagram_Parameter	Machine logic module (states)	
PVP600_Startup_Faceplate	Startup_Parameter	Machine logic module	• PanelView Plus 400 • PanelView Plus 600

Faceplate Displays (continued)

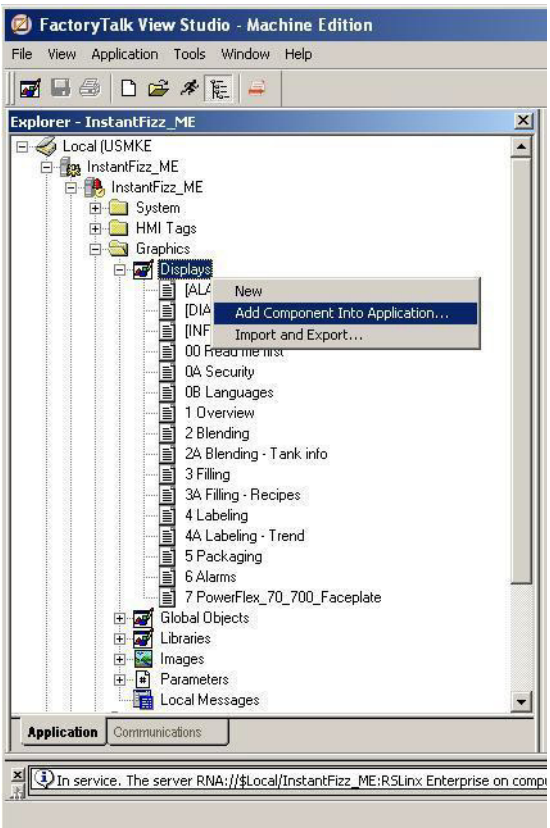
Faceplate Display Name	Parameter File	Supported Devices/Modules	Supported PanelView Plus Terminals
SERCOS_Faceplate	SERCOS_Parameter	Kinetix 2000, Kinetix 6000, Kinetix 6000M, Kinetix 6200, Kinetix 7000, and Ultra3000-SE drives	All
SMC_50_Faceplate	SMC_50_Parameter	SMC_50 soft starters	
SMC_50_Faceplate_Energy			
ArmorStart_280E_Faceplate	ArmorStart_280E_Faceplate	ArmorStart 280E motor controllers	All
ArmorStart_281E_Faceplate	ArmorStart_281E_Faceplate	ArmorStart 281E motor controllers	
ArmorStart_284E_Faceplate	ArmorStart_284E_Faceplate	ArmorStart 284E motor controllers	
ArmorStart_290E_Faceplate	ArmorStart_290E_Faceplate	ArmorStart LT 290E motor controllers	
ArmorStart_291E_Faceplate	ArmorStart_291E_Faceplate	ArmorStart LT 291E motor controllers	
ArmorStart_294E_Faceplate	ArmorStart_294E_Faceplate	ArmorStart LT 294E motor controllers	

(1) The PanelView Plus 1000 Machine, Alarm History, and Equipment Status faceplate displays are sized at 640x480 (VGA) resolution. If full-sized displays are desired, open display, select all (objects), group, and resize group. Some text editing for new display size may also be required.

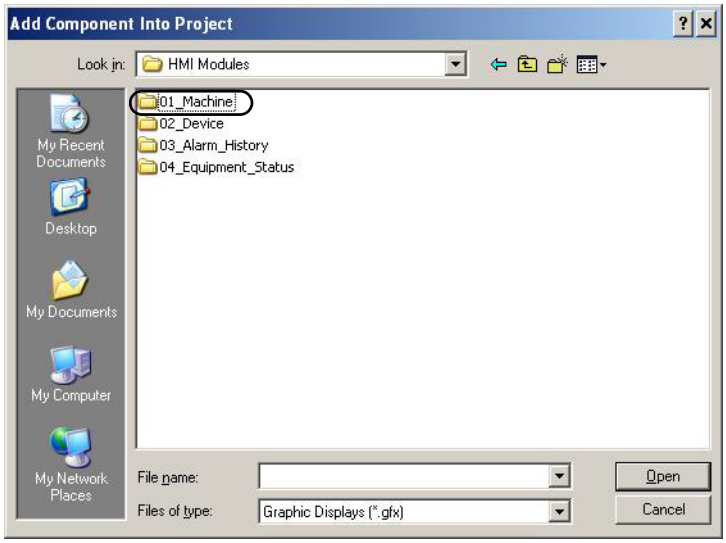
2. Launch FactoryTalk View Studio software and open your existing application file.

   For this example, the InstantFizz_ME application file is opened.

3. Right-click Displays within Graphics folder and select Add Component Into Application.



4. Navigate to the HMI Modules folder within the toolkit's files folder.

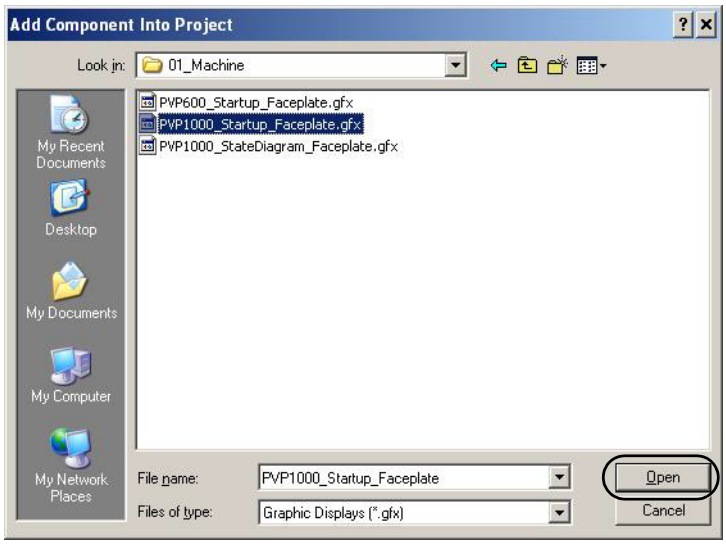


Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules.

5. Select the folder representing the type of the first faceplate you desire to add.

For this example, the 01_Machine folder was selected for the PVP1000_Startup_Faceplate file.

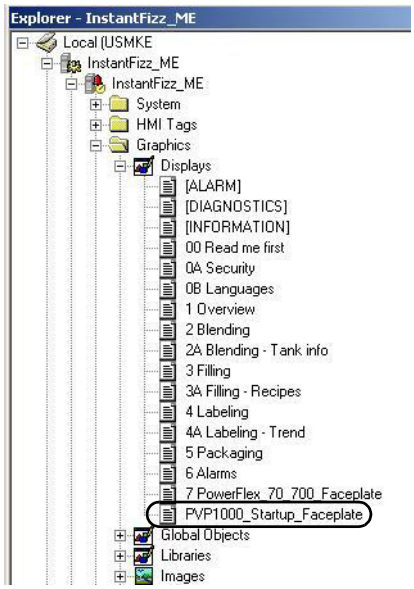
6. Select the faceplate display file you desire to add.



For this example, the PVP1000_Startup_Faceplate.gfx was selected

7. Click Open.

The selected display is added to the Displays folder.



8. Repeat step 3 through step 7 for each faceplate required for your application.

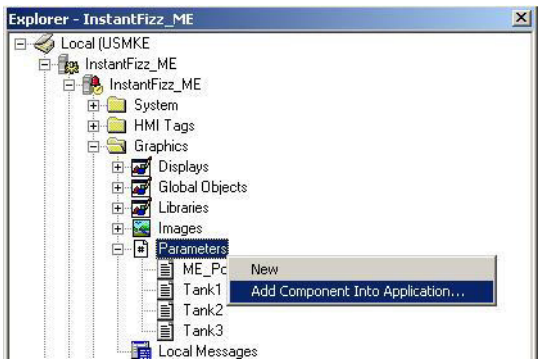
TIP Only one faceplate is required for multiple device/modules of the same type. For example, if your application has two Kinetix 6500 drives requiring a faceplate, only one CIPMotion_Faceplate.gfx display is required.

Add Parameter Files

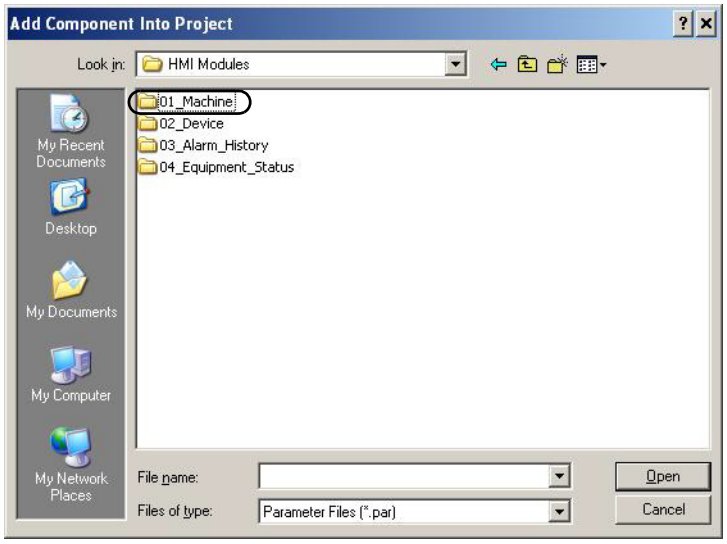
1. Determine required parameter files for your application.

   Refer to the Determine the required faceplates for your application based on the Determine the required faceplates for your application based on the table. table. table on page 117 for the parameter file required for each faceplate.

2. Right-click Parameters within the Graphics folder and select Add Component Into Application.



3. Navigate to the HMI Modules folder within the toolkit's files folder.

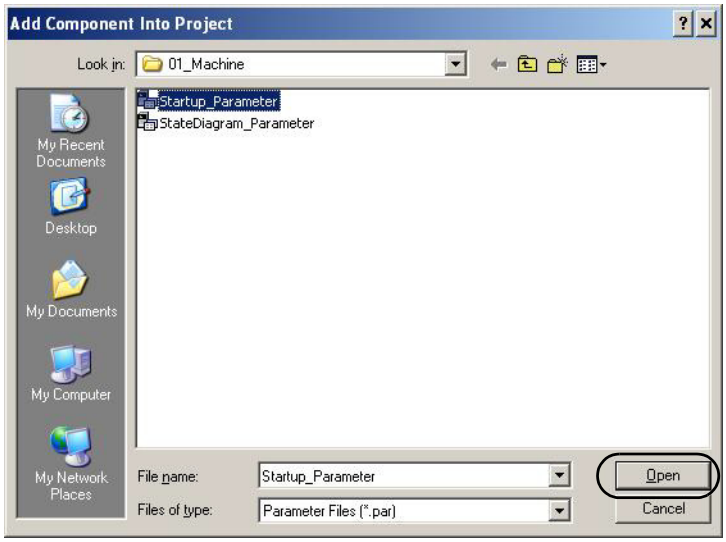


   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules.

4. Select the folder representing the type of the first parameter you desire to add.

   For this example, the 01_Machine folder was selected for the Startup_Parameter supporting the PVP1000_Startup_Faceplate.

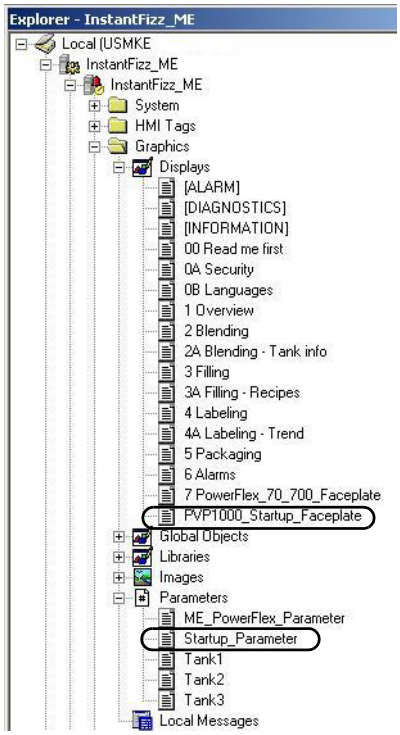
5. Select the parameter file you desire to add.



For this example, Startup_Parameter.par was selected to support the PVP1000_Startup_Faceplate added earlier.

6. Click Open.

The selected parameter is added to the Parameter folder.

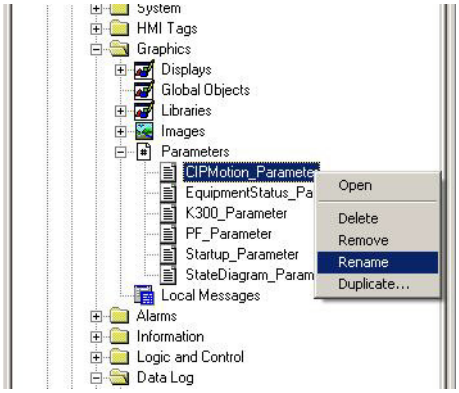


7. Repeat step 2 through step 6 for each parameter file required for your application.

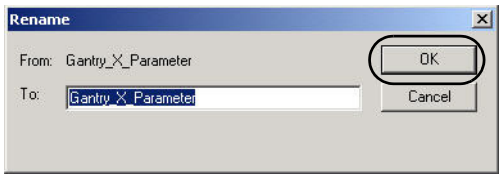
Configure Parameter Files

Follow these steps to configure a parameter file for each device or logic module in your application supported by a faceplate.

1. Right-click a parameter file for a device in your application and choose Rename.



2. Rename the parameter file with the name of the corresponding device in your Logix Designer application.



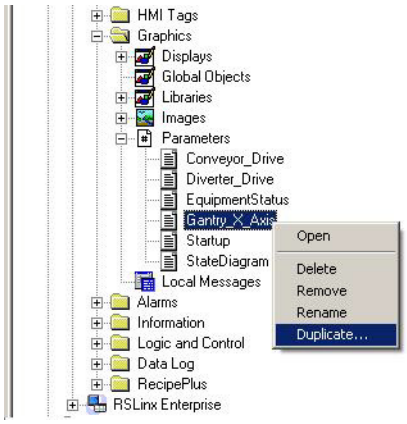
If more than one device uses the same faceplate then another parameter of the same type must be duplicated and renamed. Refer to step 4 and step 5 on page 112.

For the Widg-O-Matic example, these are the parameter files:

Base Parameter File Name	Widg-O-matic Parameter File Name
CIPMotion_Parameter	Gantry_X_Axis
	Gantry_Y_Axis
PF_Parameter	Conveyor_Drive
K300_Parameter	Diverter_Drive
EquipmentStatus_Parameter	EquipmentStatus
Startup_Parameter	Startup
StateDiagram_Parameter	StateDiagram

3. Click OK.

4. To create another parameter file based on an existing one, right-click the parameter file and choose Duplicate.

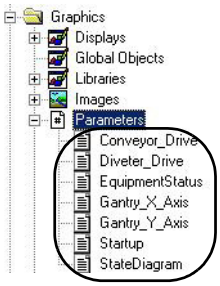


For the Widg-O-matic machine application example, Gantry_X_Axis and Gantry_Y_Axis use the same CIP_Motion_Faceplate, but require individual parameter files. For example, Gantry_X_Axis is duplicated and renamed to Gantry_Y_Axis in step 5.

5. Rename the parameter file as needed for your application.

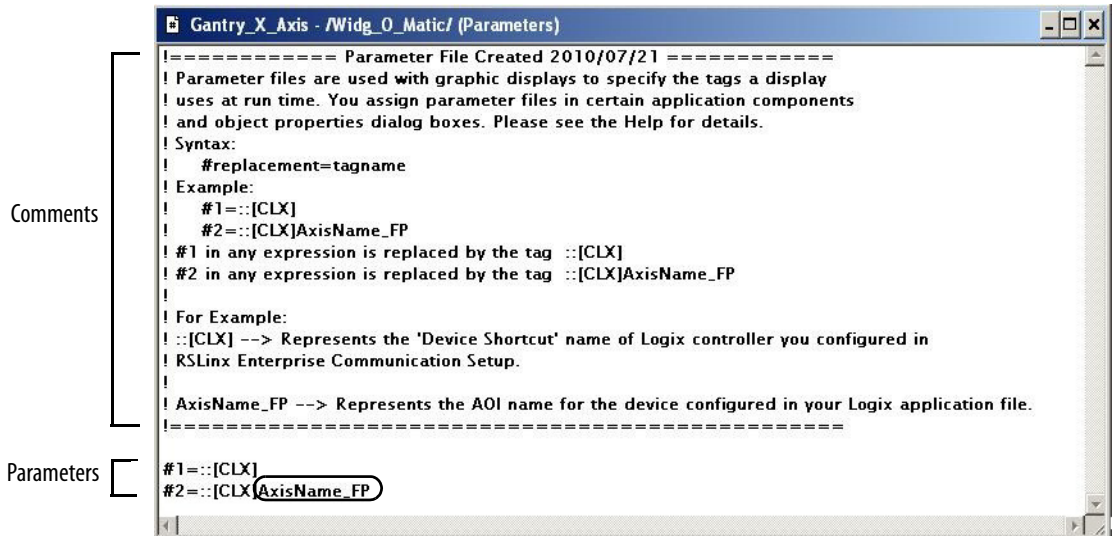
6. Click OK.
7. Repeat step 1 through step 6 for each device or logic module parameter file.

   This is the completed Widg-O-matic renamed parameter file listing.



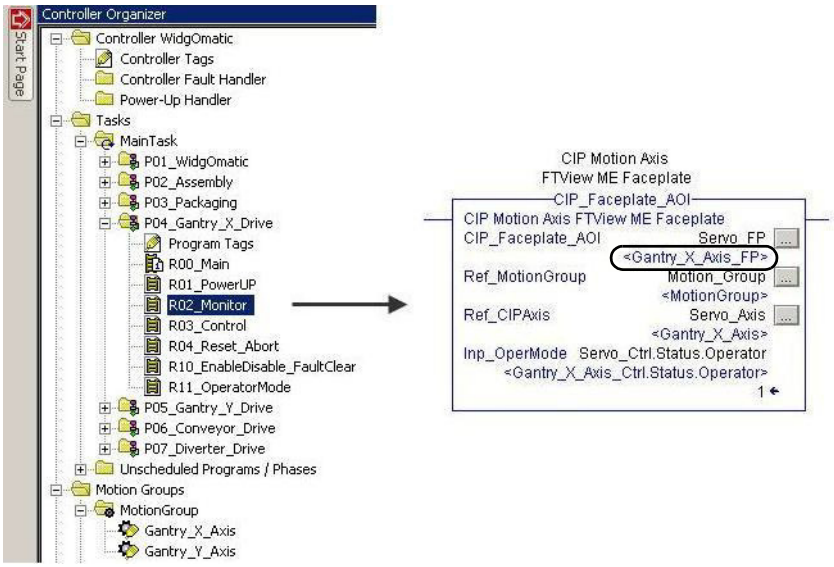
8. Assign the parameters in each of the parameter files.

In each parameter file, there are references to controller links (shortcuts) or specific tag names. The '!' before any text indicates that line is a comment and each parameter file contains instructions on how to configure it. The '#' before a number indicates a parameterized tag.

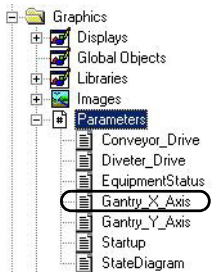


For example, in the Widg-O-matic Gantry_X_Axis parameter file Parameter #1 contains the shortcut name [CLX]. This should match the shortcut name created in your RSLinx Enterprise communication setup. Parameter #2 represents the tag name for the specific Faceplate AOI, within your Logix Designer project, which the faceplate requests data from.

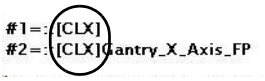
The Widg-O-matic Gantry_X_Axis parameter #2 is assigned to the faceplate AOI tag named Gantry_X_Axis_FP found in the R02_Monitor routine of the P04_Gantry_X_Drive program.



a. Double-click the parameter file to open it.



b. Enter your application controller's shortcut name in all parameters.



TIP Less editing is required when assigning HMI alarm tags if you name your controller shortcut [CLX]. Refer to Chapter 6 on page 149 for configuring your controller shortcuts in RSLinx Enterprise communication setup.

c. Enter the associated faceplate AOI tag name of the device or module for this faceplate parameter.

d. Close parameter file and acknowledge the Save Changes dialog box.

9. Repeat step 8 for each of your device or module faceplate parameters.

For the Widg-O-Matic example, the parameters are edited as follows:

Widg-O-Matic Parameter File	Parameter File Configuration
Gantry_X_Axis	#1=::[CLX]
	#2=::[CLX]Gantry_X_Axis_FP
Gantry_Y_Axis	#1=::[CLX]
	#2=::[CLX]Gantry_Y_Axis_FP
Conveyor_Drive	#1=::[CLX]Conveyor_Drive_FP
Diverter_Drive	#1=::[CLX]
	#2=::[CLX]Diverter_Drive_FP
EquipmentStatus	#1=::[CLX]Gantry_X_Axis_FP
	#2=::[CLX]Gantry_Y_Axis_FP
	#3=::[CLX]Conveyor_Drive_FP
	#4=::[CLX]Diverter_Drive_FP
	#5=::[CLX]Diverter_Drive_FP
	#6=::[CLX]Diverter_Drive_FP
	#7=::[CLX]Diverter_Drive_FP
	#8=::[CLX]Diverter_Drive_FP
	#9=::[CLX]Diverter_Drive_FP
Startup	#1=::[CLX]
	#2=::[CLX]WidgOmatic
StateDiagram	#1=::[CLX]WidgOmatic

The Equipment Status faceplate requires that parameters are set for all rows #1…9 even if they are not visible. Typically, the last visible row parameter is entered in the remaining parameters. For example, Diverter_Drive_FP parameter entered for #4…9.

Refer to Configure Equipment Status Faceplate Display on page 138 for more information.

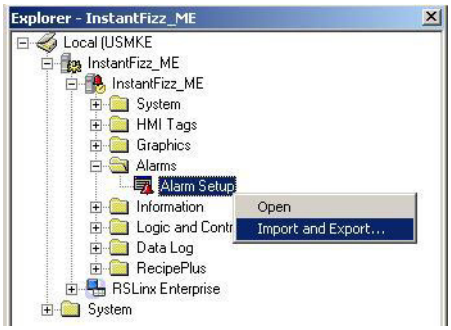
Import Alarm Setup File

Importing the Alarm Setup file is optional and required only if you are using the Alarm History faceplate in your application.

IMPORTANT When importing the Alarm Setup file, your existing alarm configuration is lost. When prompted to backup your existing alarm configuration, you can choose to save it as an XML file.

1. Right-click Alarm Setup within Alarms folder and choose Import and Export.

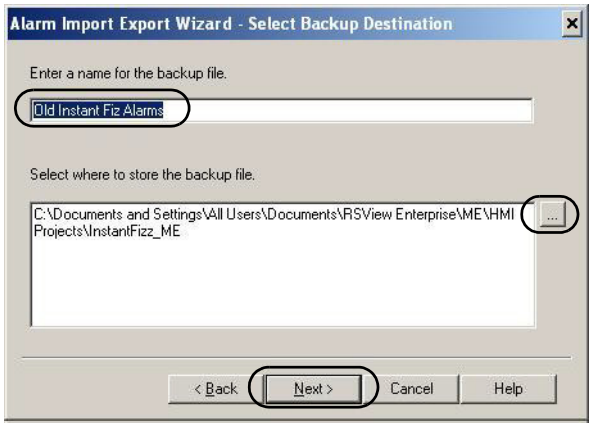
   The Alarm Import Export Wizard opens.



2. Select Import alarm configuration into application.
3. Click Next.

4. Select Yes, if you have an existing Alarm Configuration.
5. Click Next.

6. In the backup file name field, type a backup file name.
7. Click ... to browse for the backup file destination.
8. Click Next.

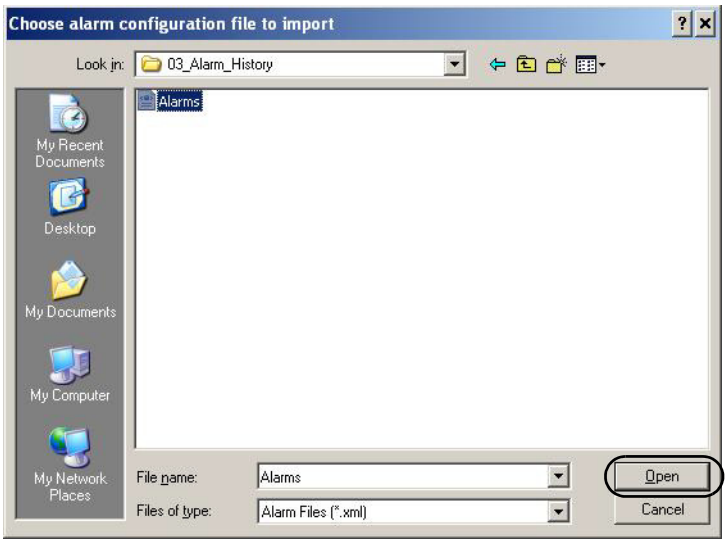


9. Navigate to the 03_Alarm_History folder within the toolkit's files folder.

   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules.

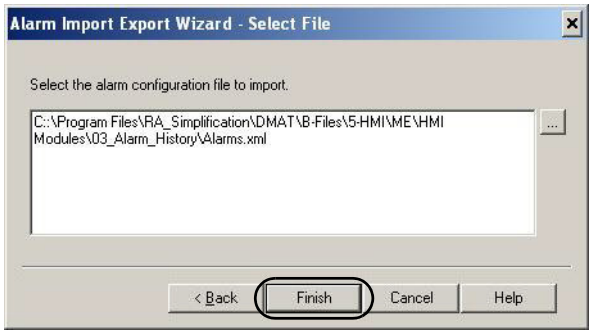
10. Select the Alarms.xml file.

11. Click Open.

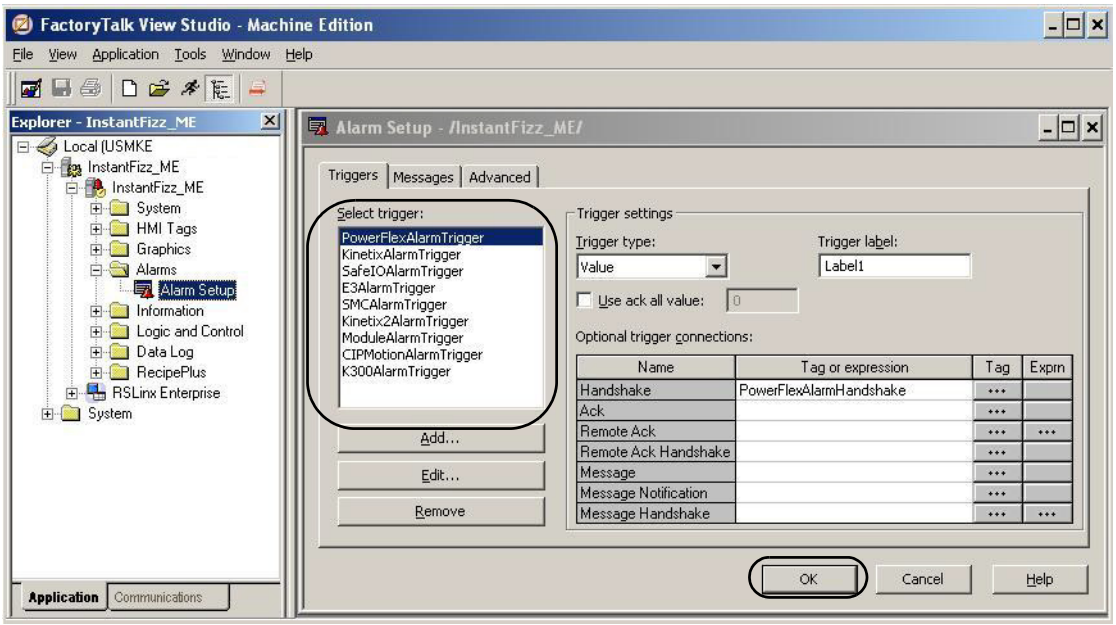


The Alarm Import Export Wizard opens.

12. Click Finish.



13. Expand the Alarms folder and double-click Alarm Setup to verify import.



The triggers listed within the Triggers tab appear as shown.

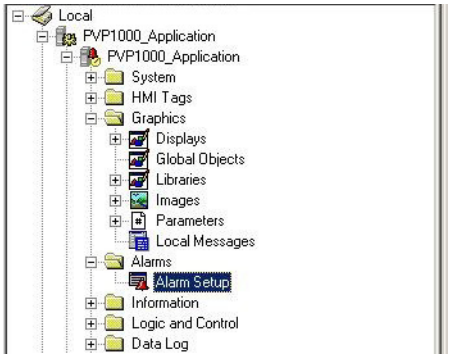
14. Click OK to close the Alarm Setup dialog box.

Delete Unused Alarm Triggers

IMPORTANT Deleting Unused Alarm Triggers is optional and applies only if you have imported the Alarm Setup file in the last section.

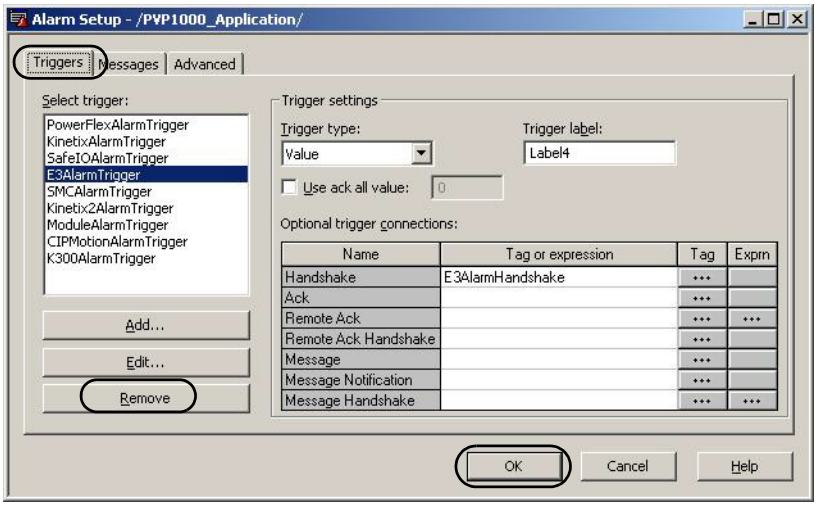
Follow these steps to delete any alarm triggers for hardware devices not used in your application. This could improve performance of your PanelView Plus terminal communication.

1. Expand the Alarms folder.
2. Double-click Alarm Setup.



The Alarm Setup dialog box opens.

3. Click the Triggers tab.



4. Select any unused alarm trigger tags from the Select trigger organizer.

   Unused trigger tags are any associated devices not configured in your Logix Designer project.

   For the Widg-O-matic application example, these alarm triggers are used, so all other trigger tags can be removed.

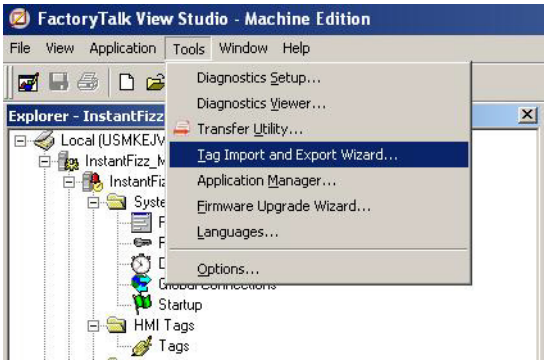
Alarm Triggers Used
PowerFlexAlarmTrigger
ModuleAlarmTrigger
CIPMotionTrigger
K300AlarmTrigger

5. Click Remove.
6. Repeat step 4 and step 5 for all unused trigger tags.
7. Click OK in the Alarm Setup dialog box to save edits.

Import and Edit Alarm Tags

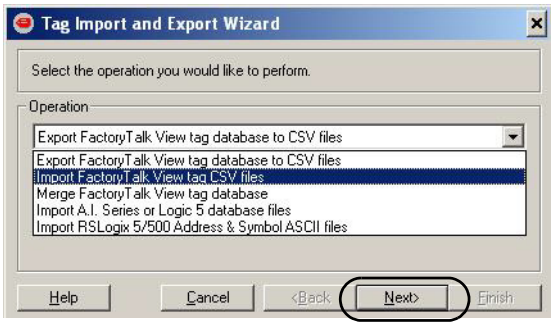
Importing and editing Alarm Tags is optional and required only if you intend to use the Alarm History faceplate in your application.

1. From the Tools menu, choose Tag Import and Export Wizard.

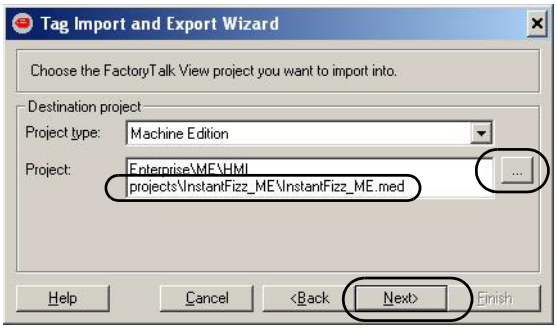


   The Tag Import and Export Wizard dialog box opens.

2. From the Operation pull-down menu, select Import FactoryTalk View tag CSV files.
3. Click Next.



4. Click ... to browse for your existing FactoryTalk View.med project file.
5. Click Next.

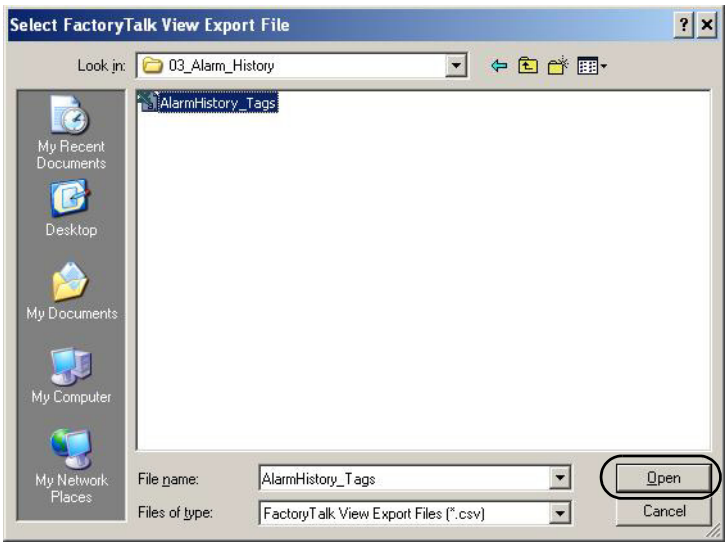


6. Click ... to browse for the 03_Alarm_History folder within the toolkit's files folder.

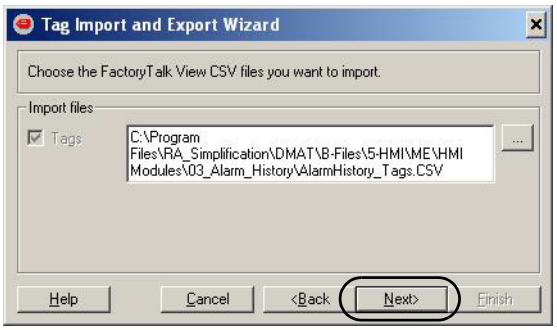
   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules\03_Alarm_History.

   The Select FactoryTalk View Export File dialog box opens.

7. Select AlarmHistory_Tags.
8. Click Open.



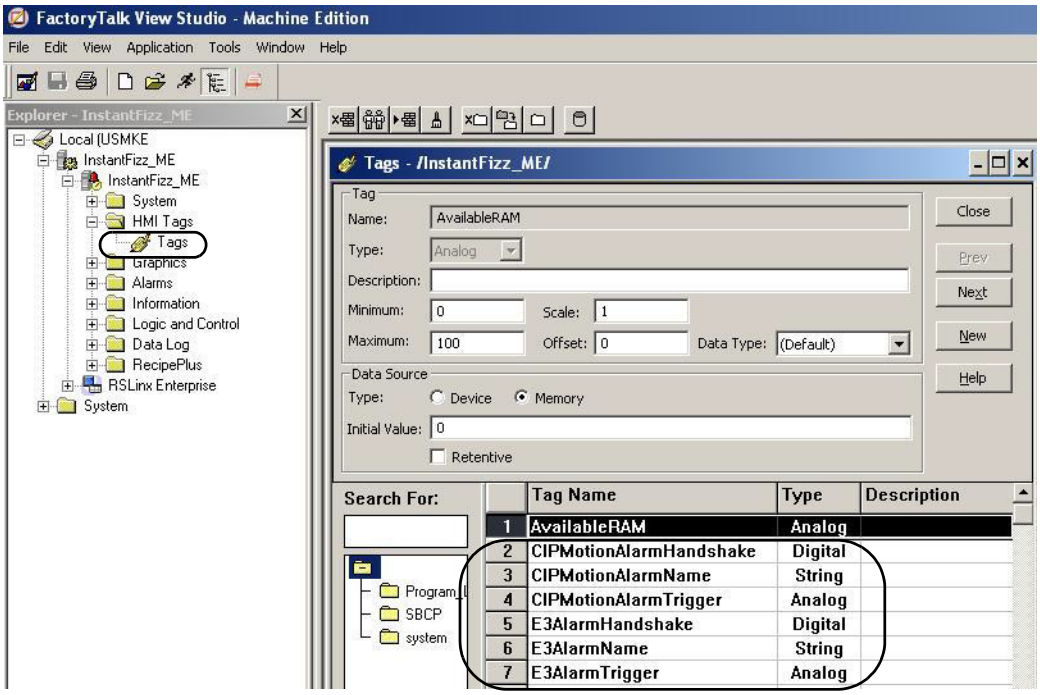
9. Verify selected file and Click Next.



10. Select Skip existing and Click Next.

11. Click Finish to execute import.
12. Close database confirmation dialog box.

13. Expand the HMI tags folder in project Explorer™ and double-click Tags.

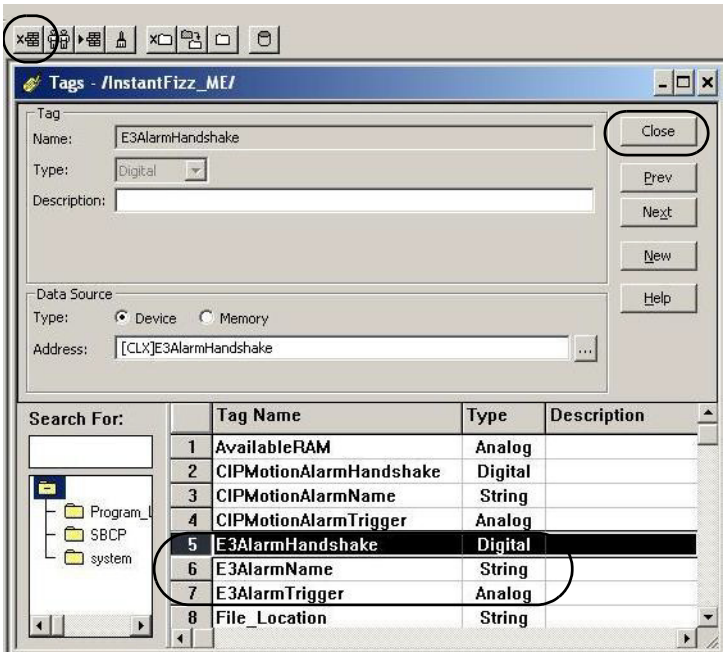


The HMI Tags editor appears in the workspace.

14. Verify a number of Alarm Tags have been added to the HMI tags listing.

15. Select each of the *xxx*AlarmHandshake, *xxx*AlarmName, and *xxx*AlarmTrigger tags associated with each of the Alarm Triggers that were deleted in the previous section.

    For example, the circled tags are three tags you would delete if the E3AlarmTrigger had been deleted previously.



16. Click  to delete the tags.

17. Repeat step 15 through step 16 for all unused Alarm tags associated with unused Alarm Triggers.

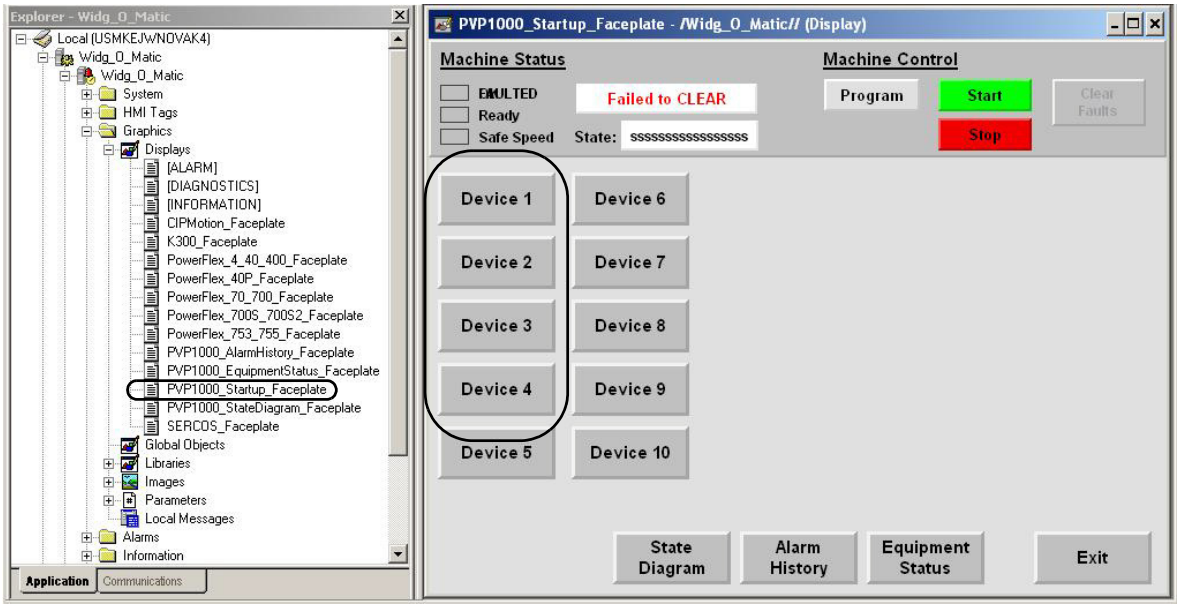
18. Click Close to complete tag editing.

Configure Goto Display Buttons on Startup Display

There are ten Goto Display button placeholders on the PVP1000_Startup_Faceplate display and six on the PVP600_ Startup_Faceplate display. If more display buttons are required, simply duplicate one and configure it for the additional display.

Follow these steps to configure Goto Display buttons for each of the device faceplates on your machine startup display.

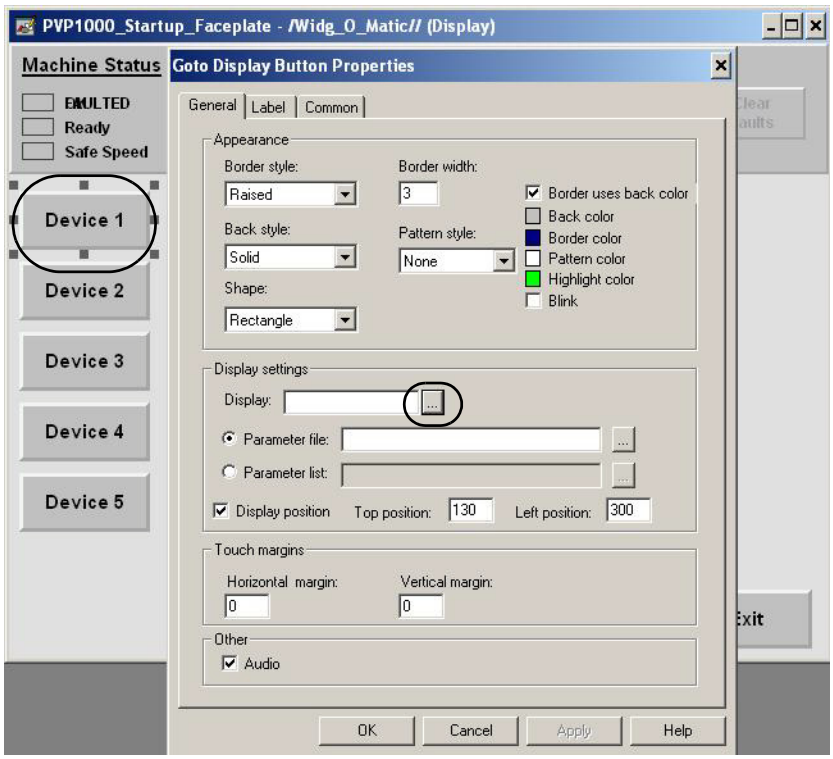
1. Expand the Displays folder and double-click PVP*xxxx*_Startup_Faceplate display.



   For the Widg-O-matic machine application example, the PVP1000_Startup_Faceplate display is opened. In this example, device buttons 1...4 will be configured for the Gantry X, Gantry Y, Conveyor, and Diverter device faceplates.

2. Double-click one of the device buttons.

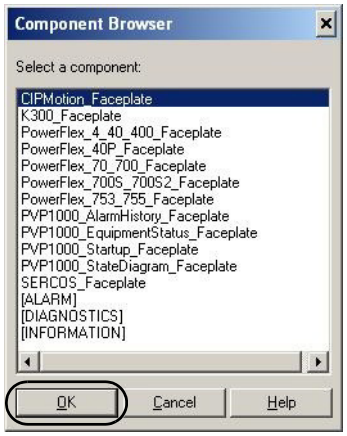
The Goto Display Button Properties dialog box opens.



3. Click ... to browse for the desired display.

   For the Widg-O-matic machine application example, the Device 1 button is selected and configured to launch a faceplate for the Gantry X device.

   The display Component Browser dialog box opens.

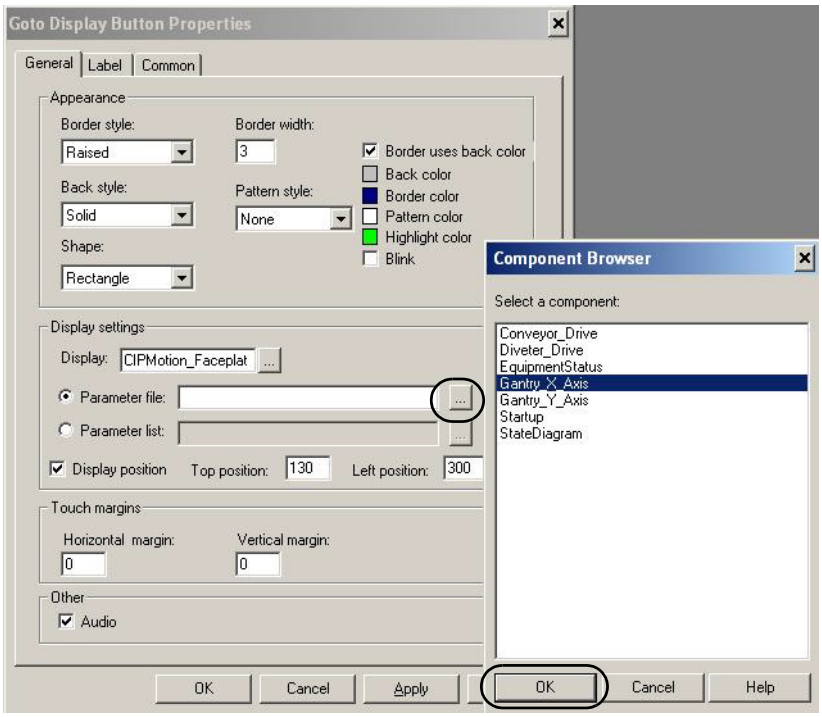


4. Select the desired display to launch when this device button is pressed.

   For the Widg-O-matic machine application example, the CIPMotion_Faceplate display is selected as it supports the Gantry X device (Kinetix 6500 drive). Refer to the Determine the required faceplates for your application based on the Determine the required faceplates for your application based on the table. table. table on page 117 for faceplate supported devices.

5. Click OK to close the Component Browser dialog box.

6. Click ... to browse for the Parameter file.



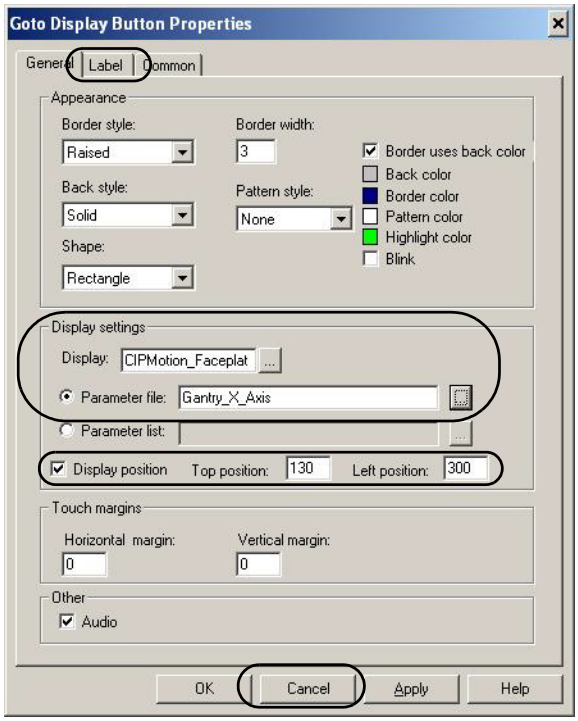
The component Component Browser dialog box opens.

For the Widg-O-matic machine application example, the Device 1 button is assigned to the Gantry_X_Parameter that populates the Gantry_X tag data into the CIPMotion_Faceplate display when launched.

7. Click OK to close the Component Browser dialog box.

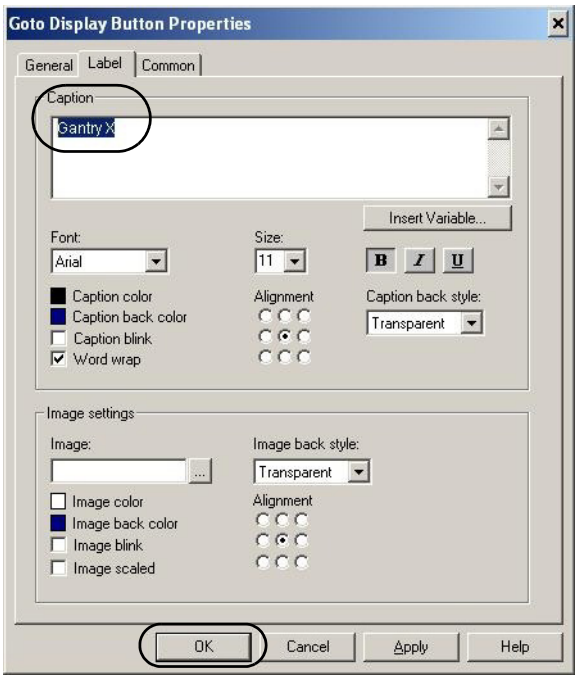
The Goto Display Button Properties dialog box updates with the Display and Parameter file settings you just entered.

8. Set Display position settings as needed.
9. Click the Label tab to configure the desired button caption text.

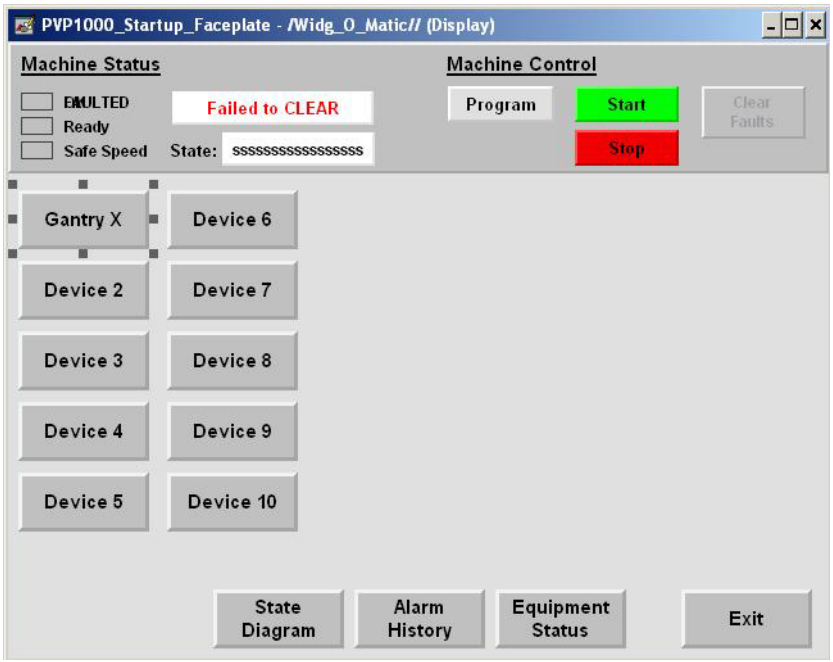


10. The Label tab dialog box opens.
11. Type the desired text in Caption field.

    For the Widg-O-matic machine application example, Gantry X is entered.
12. Click OK to save button properties.



The display updates with button changes. Device 1 is now Gantry X.

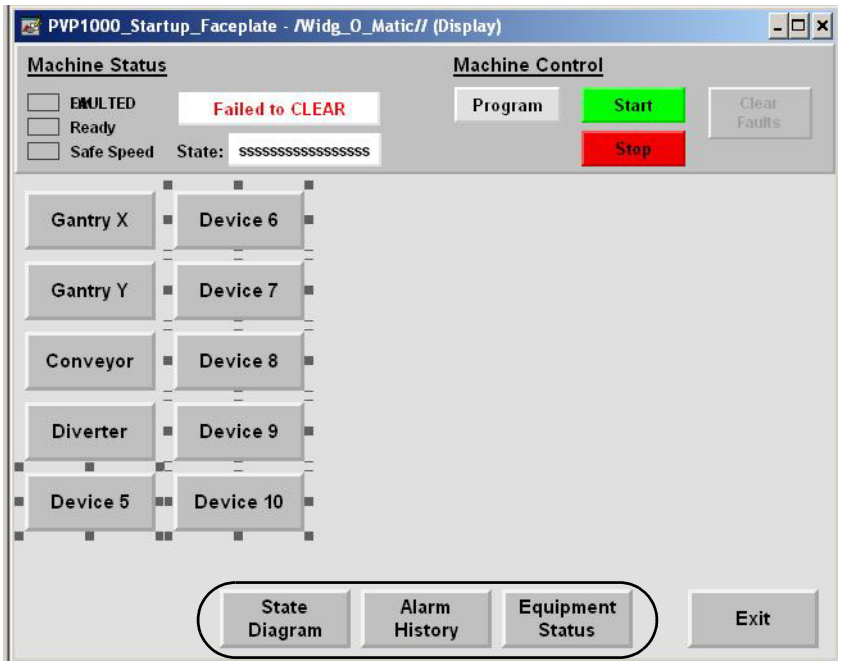


13. Repeat step 2 through step 12 for each Goto Display Button required for your application.

    For the Widg-O-matic machine application example, the four Goto display buttons were configured.

Device Goto Display Button	Display Setting	Parameter Setting
Gantry X	CIPMotion_Faceplate	Gantry_X_Axis
Gantry Y	CIPMotion_Faceplate	Gantry_Y_Axis
Conveyor	PowerFlex_753_755_Faceplate	Converyor_Drive
Diverter	K300_Faceplate	Diverter_Drive

14. Select all unused Goto Display buttons and delete.



15. Select the State Diagram, Alarm History, and Equipment Status Goto display buttons and verify their display settings or delete them if not required.

System Goto Display Button	Default Display	Default Parameter
State Diagram	PVP*xxx*_StateDiagram_Faceplate	StateDiagram_Parameter
Alarm History	PVP1000_AlarmHistory_Faceplate	None required
Equipment Status	PVP1000_EquipmentStatus_Faceplate	EquipmentStatus_Parameter

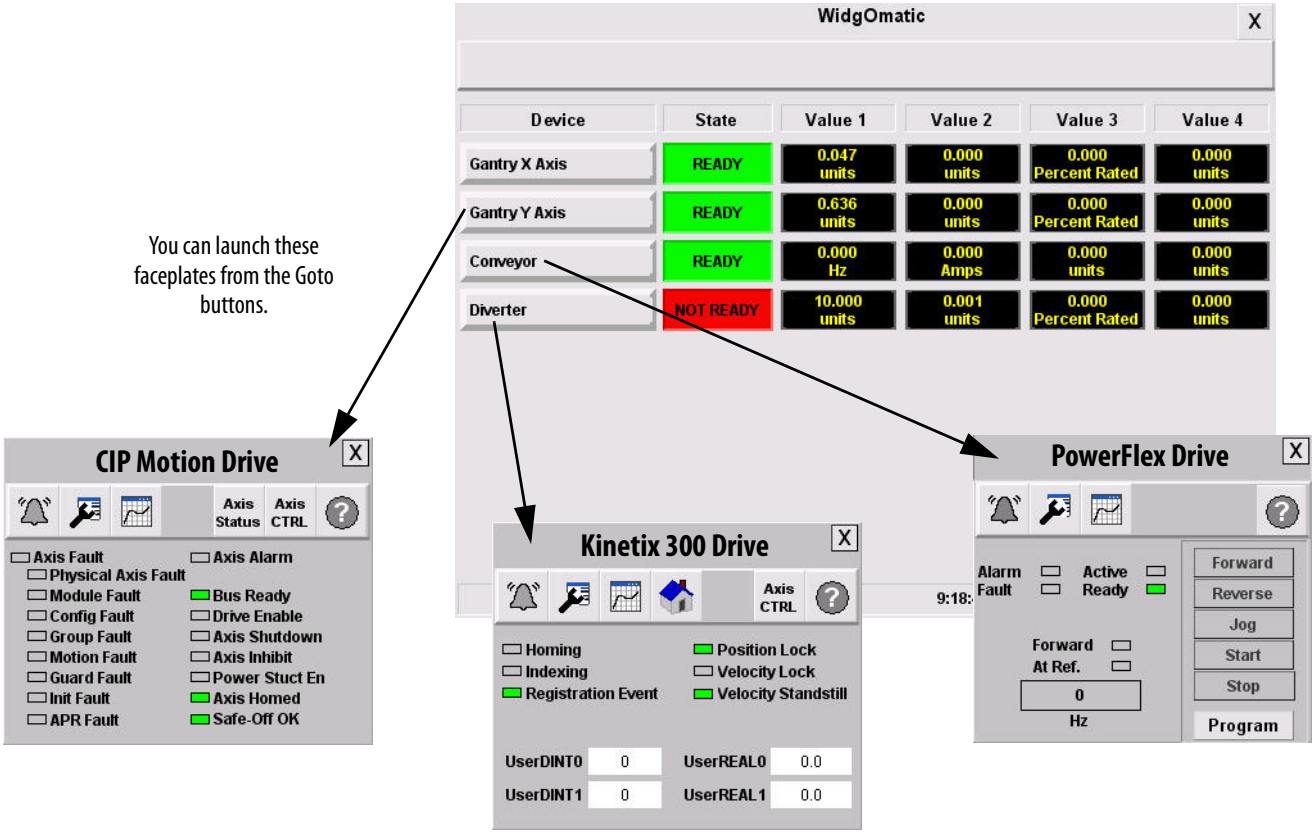
Configure Equipment Status Faceplate Display

The Equipment Status faceplate display provides a summary status of the devices in your system and another launch site for your individual device faceplates.

IMPORTANT This section is optional and necessary only if you intend to use the Equipment Status faceplate.

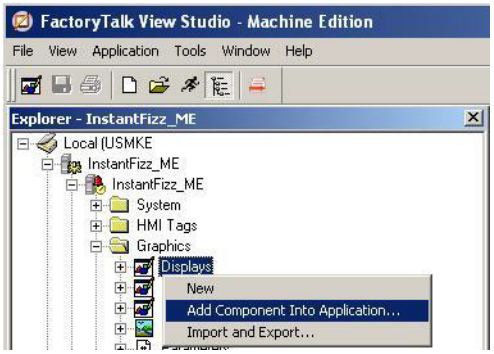
The Equipment Status faceplate files let you quickly load and configure a summary display of preconfigured status and diagnostic displays or faceplates for FactoryTalk View Machine Edition. The Equipment Status faceplate works in conjunction with individual device faceplates and provides a single summary display of all of the device faceplates that may be configured for an application. You can configure up to nine device faceplates to run with the Equipment Status faceplate and you can launch each device faceplate directly from it.

Example of Equipment Status Display Configured with Four Device Faceplates

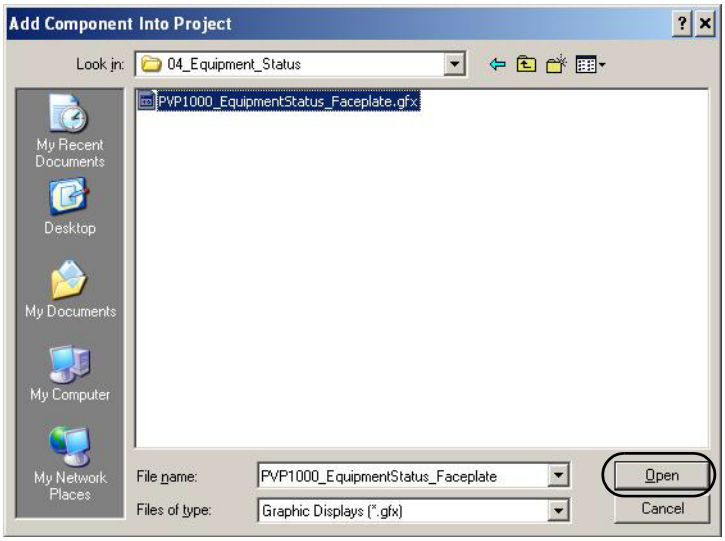


Add the Equipment Status Faceplate Display

1. Right-click Displays within the Graphics folder and select Add Component Into Application.



2. Navigate to the 04_Equipment_Status folder within the toolkit's files folder.

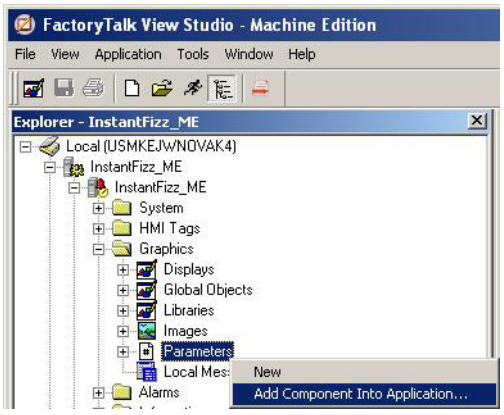


   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules\04_Equipment_Status.

3. Select the PVP1000_EquipmentStatus_Faceplate.gfx file.
4. Click Open.

Add the ME_Equipment_Parameter File

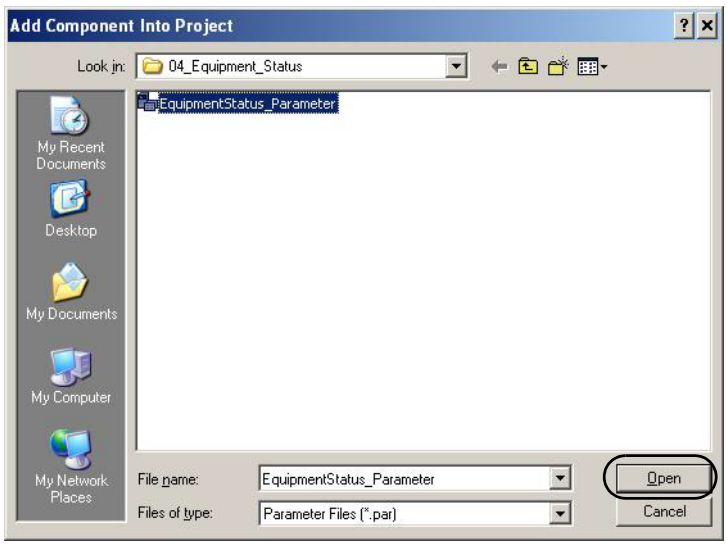
1. Right-click Parameters within the Graphics folder and select Add Component Into Application.



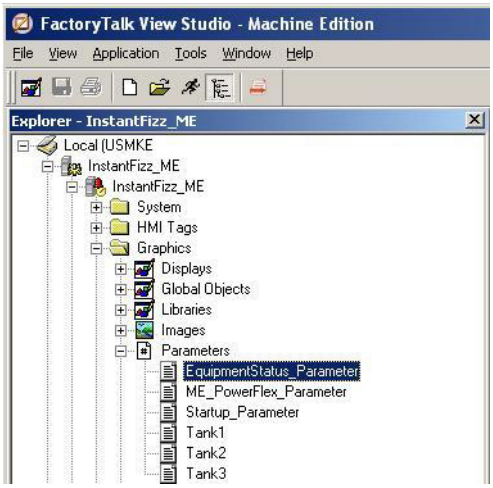
2. Navigate to the 04_Equipment_Status folder within the toolkit's files folder.

   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules\04_Equipment_Status.

3. Select the EquipmentStatus_Parameter.par file.
4. Click Open.

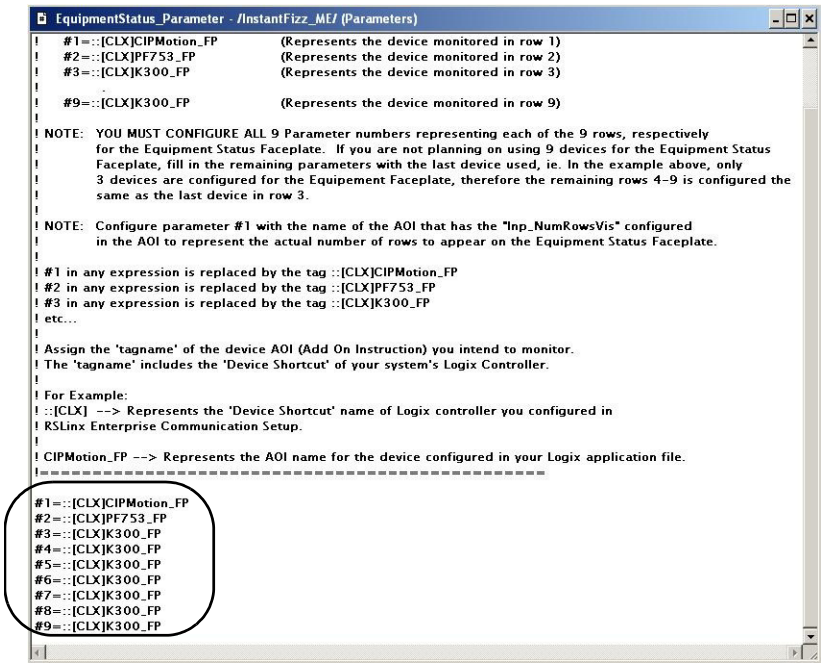


5. Verify the ME_Equipment_Parameter file appears under Parameters.
6. Double-click ME_Equipment_Parameter to open the parameter editor.



The EquipmentStatus_Parameter dialog box opens.

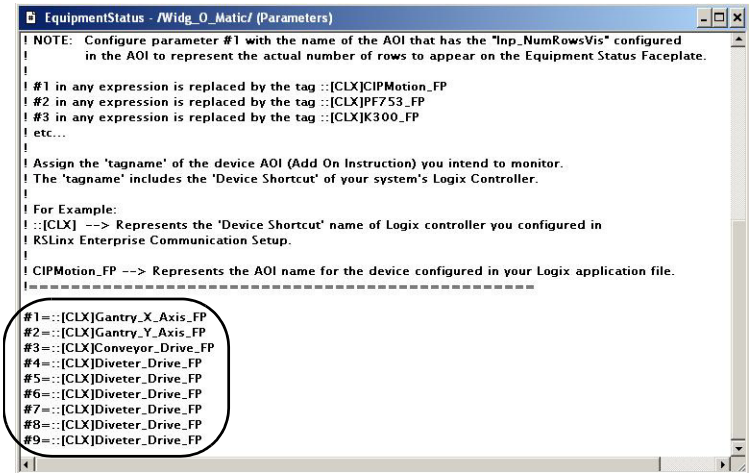
7. Assign device faceplate AOI tags to all nine parameters.



Each parameter #1...9 corresponds to the device AOI tag name of each Equipment Status faceplate Row #1...9. You must assign the #1 parameter to a device faceplate AOI that includes the Inp_NumRowsVis assignment that was configured in Chapter 4.

The remaining parameters #2...9 must be assigned to valid device faceplate AOI tag names for the Equipment Status faceplate to operate without errors, even if corresponding Equipment Status faceplate rows are not being used or assigned to non-preconfigured devices. It is recommended to fill in the unused parameters with the last valid AOI tag name.

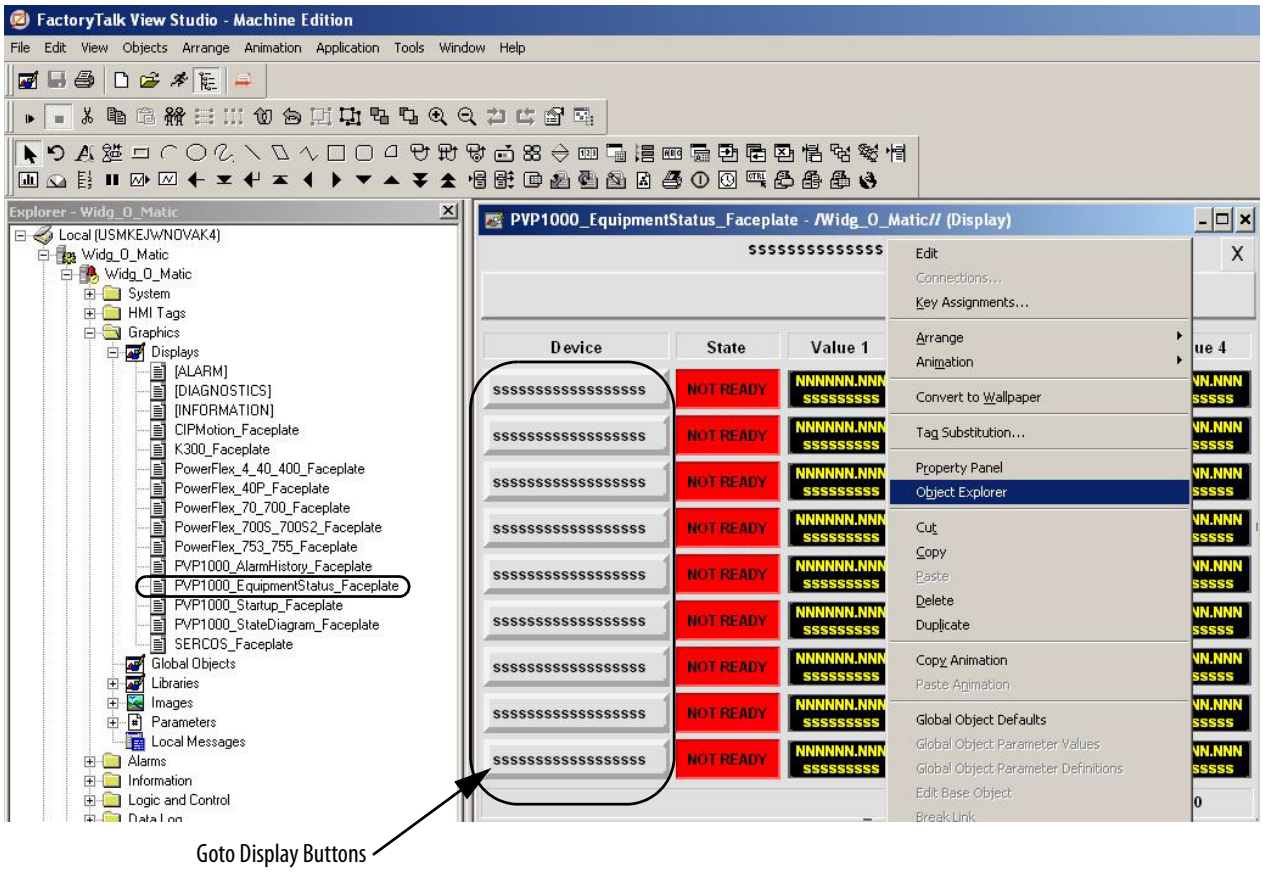
In the Widg-O-matic example, we are only using four rows, therefore, parameter #1...4 are assigned to the corresponding device AOI tags that we display in rows #1...4. The remaining parameters, #5...9, are assigned to the #4 row device AOI tag name, [CLX]Diverter_Drive_FP, as a place holder for those faceplate objects in the non-visible rows #5...9.



8. Close the EquipmentStatus_Parameter dialog box and acknowledge the Save Changes dialog box.

Configure Goto Buttons on the Equipment Status Faceplate

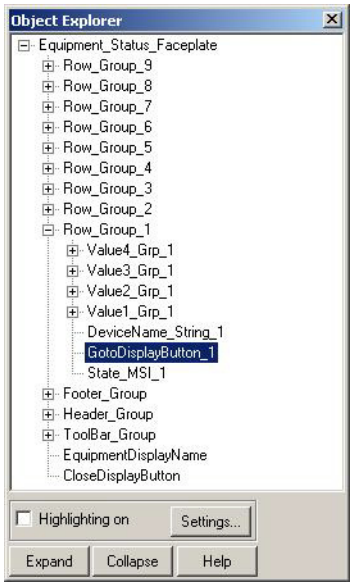
1. Expand Displays within the Graphics folder and double-click PVP1000_EquipmentStatus_Faceplate.



2. Right-click the display and choose Object Explorer.

   The Object Explorer dialog box opens.

3. Expand Row_Group_1 and double-click GotoDisplayButton_1.



   The Goto Display Button Properties dialog box opens.

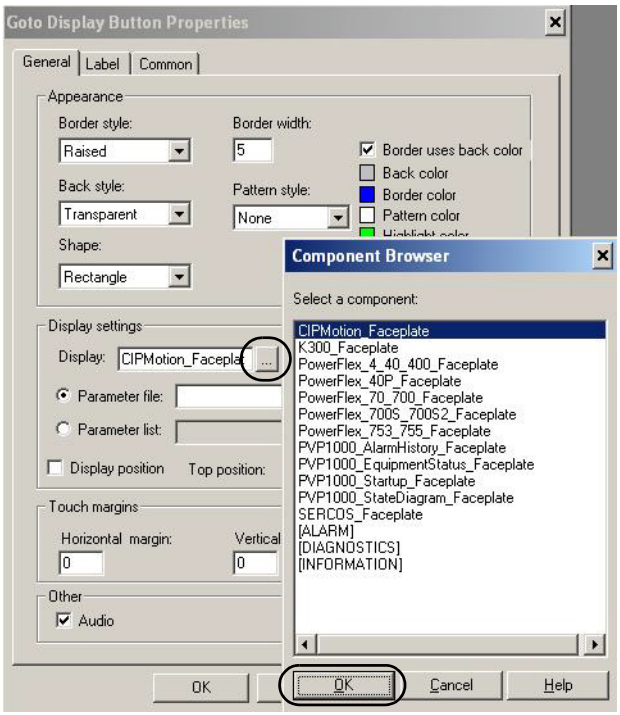
4. Click … to browse the display faceplates.

   The Component Browser opens.

5. Select the faceplate display to launch from the first row Goto display button.

   For the Widg-O-matic application example, the CIPMotion_Faceplate is selected.

6. Click OK to close the Component Browser dialog box.



7. Click … to browse the parameter files.

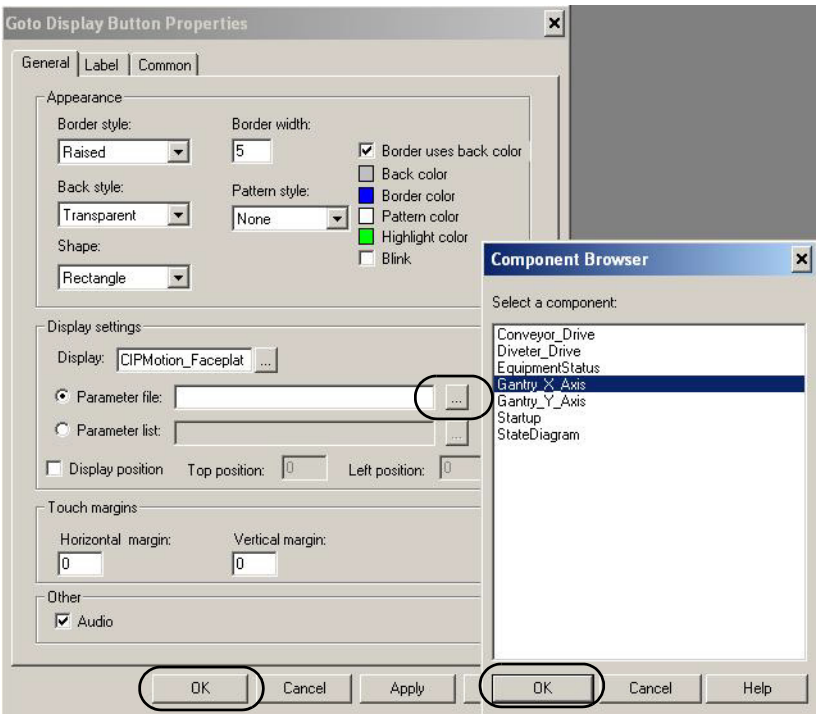
   The Component Browser opens.

8. Select the parameter associated with the display to be launched from the first row Goto display button.

   For the Widg-O-matic application example, the Gantry_X_Axis parameter is selected.

9. Click OK to close the Component Browser dialog box.

10. Click OK to save your edits to the Goto Display Button Properties dialog box.



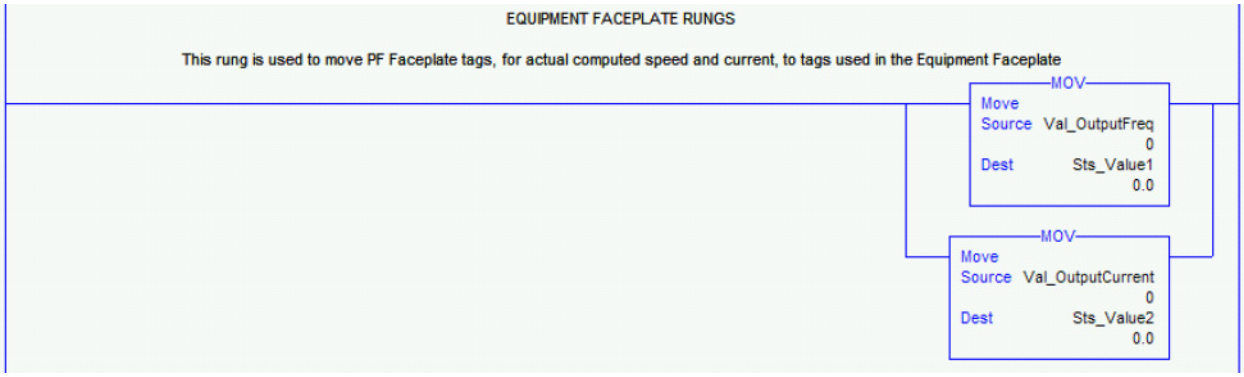
11. Repeat steps step 3 through step 10 for each Goto Display Button used in the Equipment Status faceplate.

    Unused buttons can remain on the display, but won't be visible based on the Inp_NumRowsVis tag value set in Chapter 4.

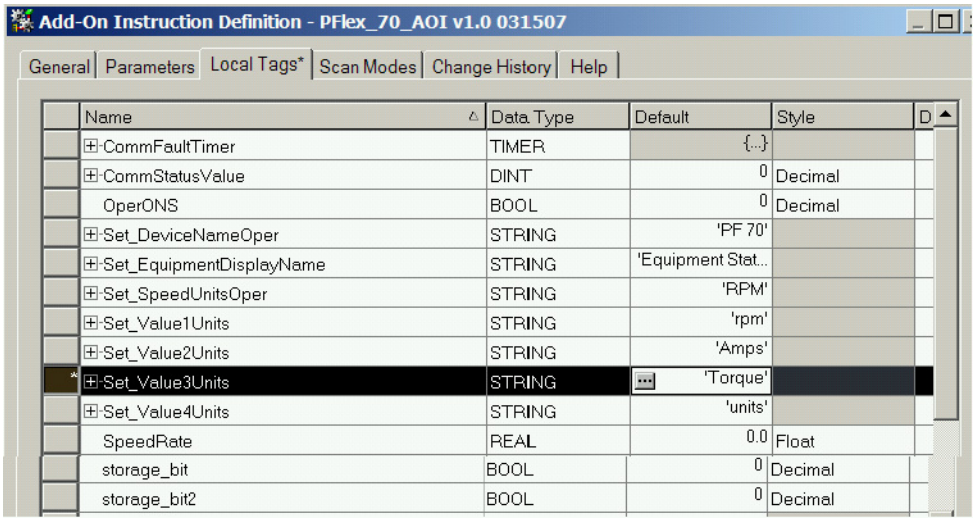
Configure Additional Device Value Columns

Not all device faceplates used with the Equipment Status faceplate are configured to display four Value fields. If unused value fields are needed then additional logic will need to be added to the existing device AOI to move the additional AOI tag values to the corresponding Sts_Value*xx* tags.

In this example, pre-configured logic within a PowerFlex faceplate AOI is used to write values to Values 1 and 2. Simply add additional MOV instructions to move other values to Values 3 and 4 if desired.



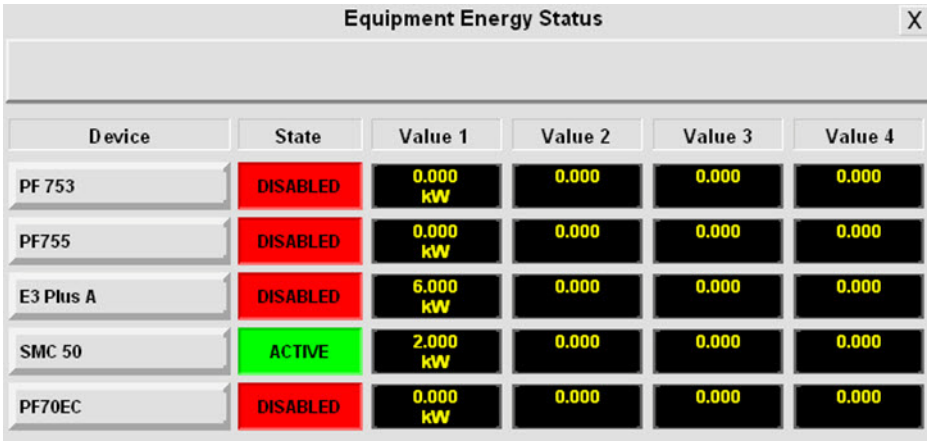
The same is true for the units displayed for each additional Value field desired. You can write Logic to move a string value to the SetValueXUnits tag in the AOI, or you can set the default string for this tag by locating it in the Local tags section of the AOI as shown below.



Configure Equipment Status Faceplate for Energy Monitoring

The Equipment Status Faceplate for Energy display provides a summary of the energy status of the devices in your system and also provides another launch site for your individual device faceplates.

This equipment status display works in the same manner as the standard Equipment Status faceplate described in the previous section, however, it displays only energy related data.



IMPORTANT You must use the device module routines with energy support to support the equipment status faceplate for energy.

Add the Equipment Status Faceplate for Energy Display

1. Right-click Displays within the Graphics folder and select Add Component Into Application.
2. Navigate to the 04_Equipment_Status folder within the toolkit's files folder.

   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules\04_Equipment_Status.
3. Select the PVP1000_EquipmentStatus_Faceplate_Energy.gfx
4. Click Open.

Add the ME_Equipment_Parameter File

1. Right-click Parameters within the Graphics folder and select Add Component Into Application.
2. Navigate to the 04_Equipment_Status folder within the toolkit's files folder.

   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\5-HMI\ME\HMI Modules\04_Equipment_Status.
3. Select the Energy_EquipmentStatus_Parameter.par file.
4. Click Open.
5. Verify the Energy_EquipmentStatus_Parameter file appears under Parameters.

6. Double-click Energy_EquipmentStatus_Parameter to open the parameter editor.

   The Energy_EquipmentStatus_Parameter dialog box opens.

7. Configure all nine parameters with your shortcut name and drive name.

   The equipment status faceplate display for energy reads data from both the device faceplate AOI tag (DriveName_FP) and the device energy object AOI tag (DriveName_BEO). The parameters combine with _FP and _BEO within the faceplate as required.

```
!============ Parameter File Created 2013/01/06 ============
!
!This parameter file is for use with the Equipment_Status_Faceplate_Energy display
!
!=============================================================================
! Use this parameter file in conjunction with a Goto display button that represents the Equipment Energy Status Display
! that you intend to monitor.  Simply assign this parameter file within the Goto display button's Properties - Display Settings.
!
! General Parameter Syntax:
!    #replacement=::[controller shortcut]device name
! Example:
!    #1=::[CLX]My_PowerFlex_Motor_1          (This will represent the device monitored in row 1 of the Equipment Faceplate)
!    #2=::[CLX]My_PowerFlex_Motor_2          (This will represent the device monitored in row 2 of the Equipment Faceplate)
!    #3=::[CLX]My_Kinetix_Axis_1             (This will represent the device monitored in row 3 of the Equipment Faceplate)
!    #4=::[CLX]My_E3_Plus_Motor_3            (This will represent the device monitored in row 4 of the Equipment Faceplate)
!     ..............
!    #9=::[CLX]My_E3_Plus_Motor_3            (This will represent the device monitored in row 9 of the Equipment Faceplate)
!
! **NOTE: YOU MUST CONFIGURE ALL 9 Parameter numbers representing each of the 9 rows, respectively
!         for the Equipment Status Faceplate.  If you are not planning on using 9 devices for the Equipment Status
!         Faceplate, fill in the remaining parameters with the last device used, ie. In the example above, only
!         4 devices are configured for the Equipement Faceplate, therefore the remaining rows 5-9 are configured the
!         same as the last device in row 4.
! **NOTE: Configure parameter #1 with the name of the device that has the "Inp_NumRowsVis" configured in its energy
!         object tag (_BEO) to represent the actual number of rows to appear on the Equipment Status Faceplate.
! **NOTE: The parameters will be combined with _FP or _BEO within the faceplate to form valid tagnames.
!=============================================================================

  #1=::[CLX]PF753
  #2=::[CLX]PF755
  #3=::[CLX]E3PLUS
  #4=::[CLX]SMC50
  #5=::[CLX]PF70EC
  #6=::[CLX]PF70EC
  #7=::[CLX]PF70EC
  #8=::[CLX]PF70EC
  #9=::[CLX]PF70EC
```

   Each parameter #1...9 corresponds to the device to be displayed in each Equipment Status faceplate Row #1...9.

   You must assign the #1 parameter to a device that includes the Inp_NumRowsVis assignment in its energy object tag (DriveName_BEO.Inp_NumRowsVis).

⊟ PF753_BEO	{...}
⊞ PF753_BEO.Inp_NumRowsVis	5
⊞ PF753_BEO.Val_EnergyResourceType	1
⊞ PF753_BEO.Val_BaseEnergyObjCap	0
⊞ PF753_BEO.Val_EnergyAccuracy	0
⊞ PF753_BEO.Val_ConsEnergyOdo	{...}
⊞ PF753_BEO.Val_GenEnergyOdo	{...}
⊞ PF753_BEO.Val_TotalEnergyOdo	{...}

   The remaining parameters #2...9 must be assigned to valid device names for the Equipment Status faceplate to operate without errors, even if corresponding Equipment Status faceplate rows are not being used. It is recommended to fill in the unused parameters with the last valid AOI tag name.

Configure Goto Buttons on the Equipment Status Faceplate with Energy

To configure the goto buttons on the equipment status faceplate with energy, follow the same steps as shown on Configure Goto Buttons on the Equipment Status Faceplate, beginning on page 142, for the standard equipment status faceplate.

Notes:

System Commissioning

In this chapter you download your Logix5000 and PanelView Plus applications, prepare and tune your drive hardware, verify network communications, and verify general operator/program control.

Before You Begin

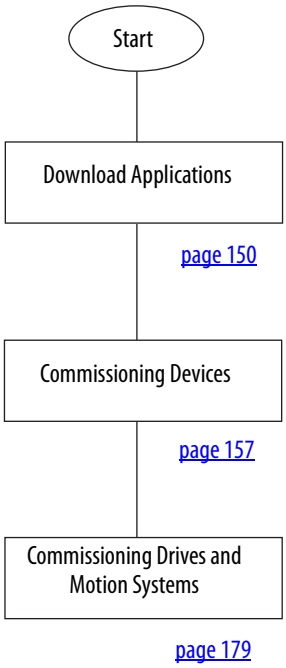
- Complete your logic configuration (refer to Chapter 4) or complete Appendix G
- Complete your FactoryTalk View Machine Edition configuration (refer to Chapter 5)

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative
- RSLogix 5000 software, version 19.0 or later, or the Logix Designer application, version 21.0 or later.
- RSLogix 5000 software, version 20.0 or later or the Logix Designer application, version 21.0 or later, to configure Kinetix 350 servo drives, and when using ControlLogix 1756-L7*x*S controllers.
- FactoryTalk View Studio software, version 5.10 or later
- The user manual for your Drives and Motion hardware. Refer to Additional Resources on page 15 for publication numbers.

Follow These Steps

Complete these steps to complete the commissioning process for your drives and motion application.



Download Applications

This section provides general steps for downloading the Logix Designer project to the controller, and downloading the FactoryTalk View project to the PanelView Plus terminal.

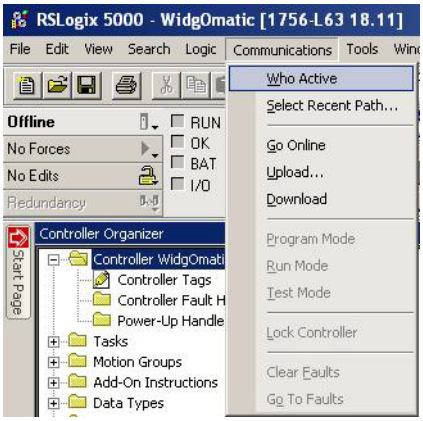
Download Logix Designer Project

Follow these steps to download your Logix Designer project file to the Logix5000 controller.

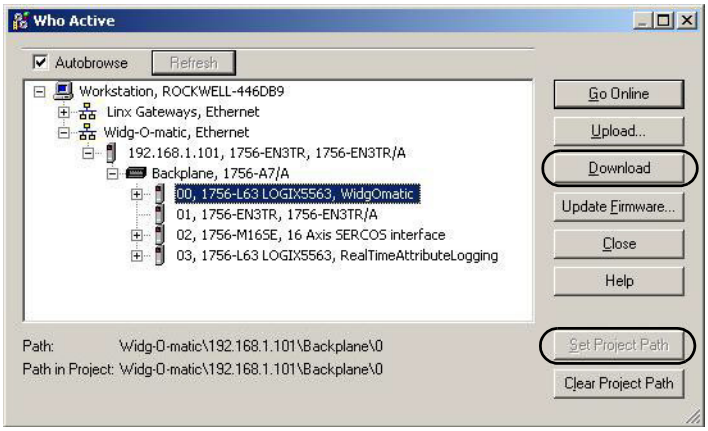
IMPORTANT The download steps assume controller power and communication wiring is connected, controller power is applied and RSLinx communication driver is configured. Refer to Appendix D, on page 257, for more information on these topics.

1. Open your Logix Designer project file.

2. From the Communications menu, choose Who Active.

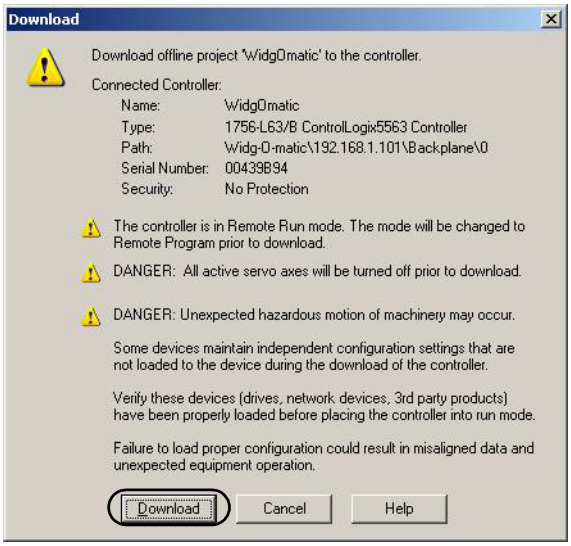


The Who Active dialog box opens.



3. Browse to and select your Logix5000 controller and click Set Project Path.
4. Verify the key switch on your controller module is in the REM (remote) position.
5. Click Download.

   The Download dialog box opens.



6. Click Download.
7. From the Communications menu, choose Run mode to switch the controller to Run mode.

Configure and Download FactoryTalk Project to PanelView Plus Terminal

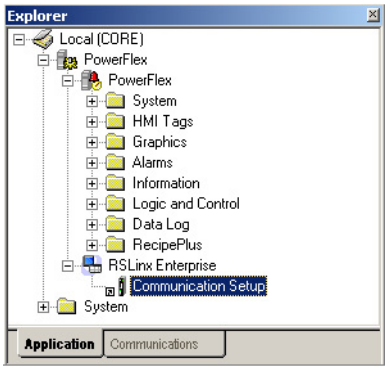
IMPORTANT These download steps assume PanelView Plus power and communication wiring is connected, PanelView Plus terminal power is applied.

Create a New RSLinx Enterprise Configuration

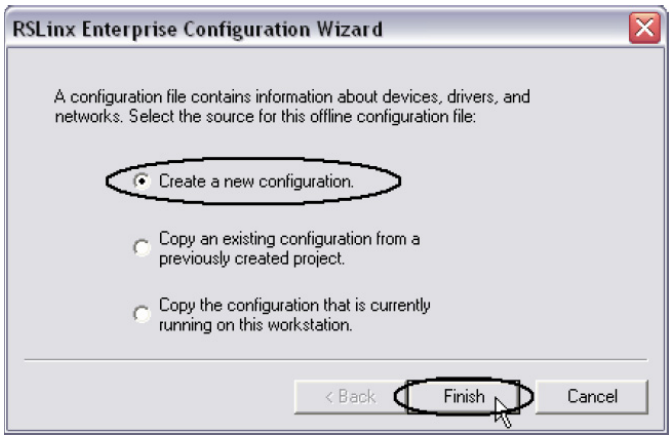
In this example, we use RSLinx Enterprise software to configure communication between your personal computer and/or PanelView Plus terminal and your system's Logix5000 controller.

Follow these steps to create a New RSLinx Enterprise configuration.

1. Open your HMI project file in FactoryTalk View Studio software.
2. Expand RSLinx Enterprise and double-click Communication Setup



The RSLinx Enterprise Configuration Wizard opens.



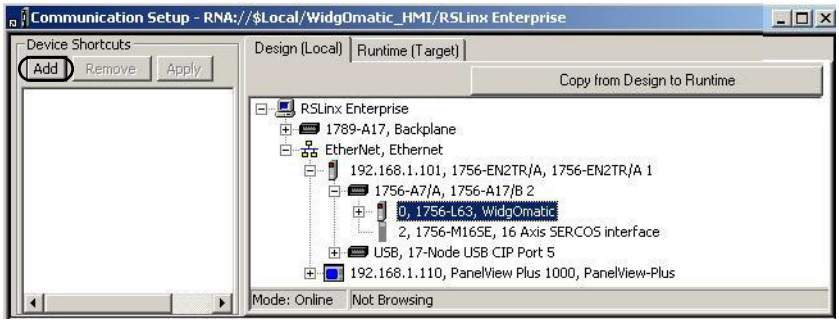
3. Select Create a new configuration.
4. Click Finish.

Configure Design (Local) Communication

The local tab in Communication Setup reflects the view of the topology from the RSLinx Enterprise server on the development computer. In this example, the development computer is configured to communicate with an L63 ControlLogix controller via Ethernet.

Follow these steps to setup the Design Time path.

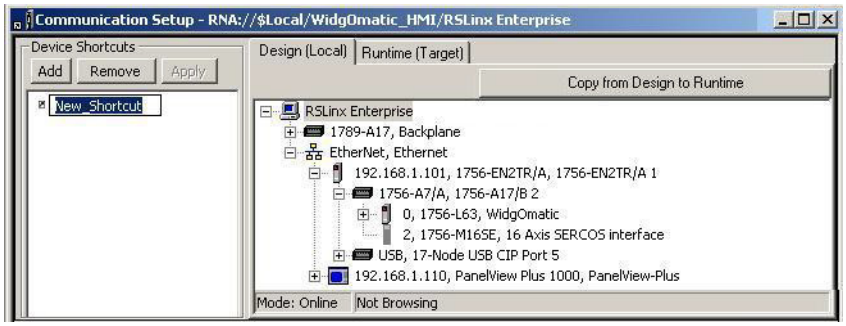
1. Expand your system's Ethernet network.
2. Expand your system's Ethernet module.
3. Expand your controller bus or backplane.
4. Select your system's controller.



In this example, the controller is a ControlLogix 1769-L63 controller.

5. Click Add.

   A new device shortcut appears.
6. Name the shortcut.

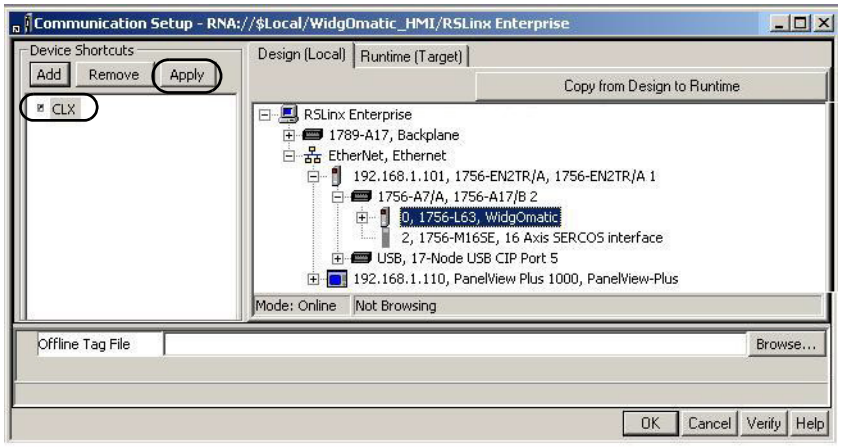


For this example, the shortcut is named CLX.

7. Select the new device shortcut and the controller.

   For this example, CLX shortcut and 1756-L63 controller is selected.
8. Click Apply.

   A verification dialog box appears showing that the shortcut was assigned to the design path.
9. Close the verification dialog box.



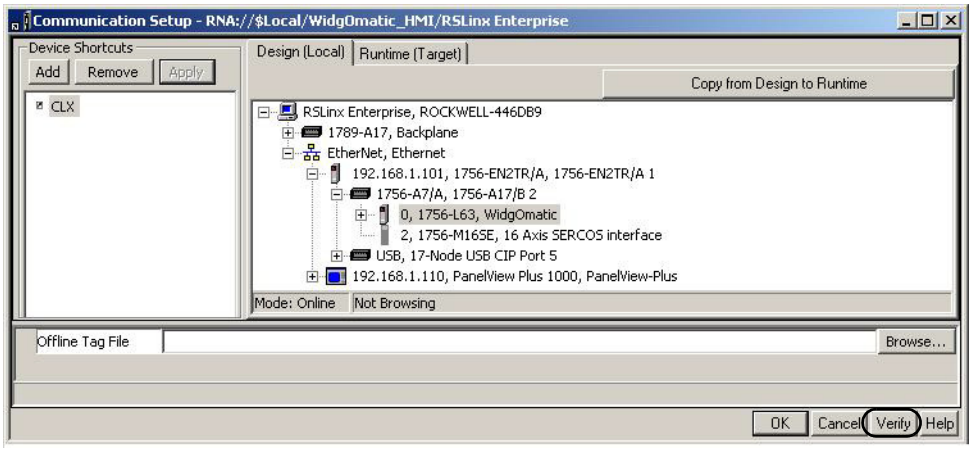
The Apply button dims indicating the shortcut is attached to the path.

Configure Runtime (Target) Communication

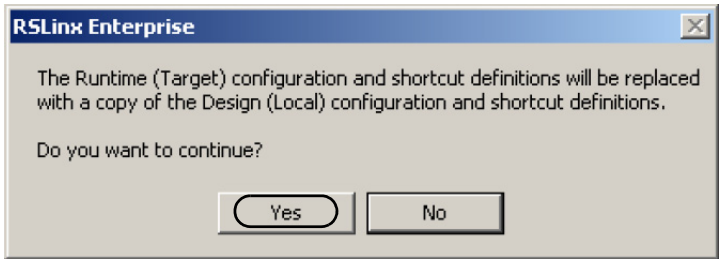
The target tab displays the offline configuration from the perspective of the device that will be running the application and comprises the topology that will be loaded into a PanelView Plus or PanelView Plus CE terminal.

Follow these steps to copy the configuration from Design time to Runtime.

1. Click Copy from Design to Runtime.

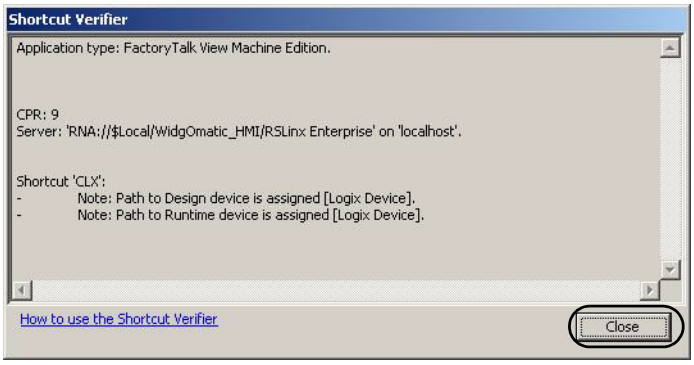


   This RSLinx Enterprise dialog box opens.



2. Click Yes.
3. Click Verify to make sure communication is setup correctly.

   The Shortcut Verifier dialog box opens.

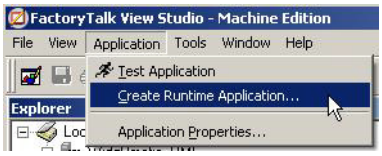


4. Verify that the path to the Design device and the Runtime device are assigned.
5. Click Close.
6. Click OK to save the configuration.

Create Your FactoryTalk View Runtime Application File

Follow these steps to create a runtime file for downloading to a PanelView Plus terminal.

1. From the Application menu, choose Create Runtime Application.

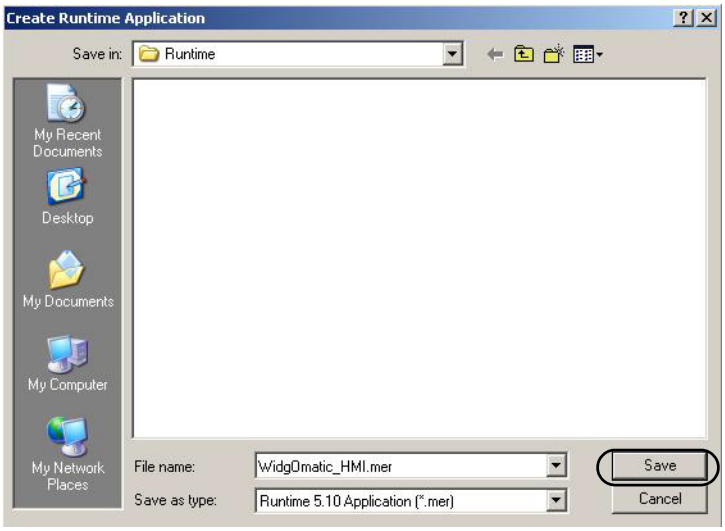


   The Create Runtime Application dialog box opens.

2. From the Save as type pull-down menu, choose Runtime 5.10 Application (*.mer).
3. Enter a File Name for the application.

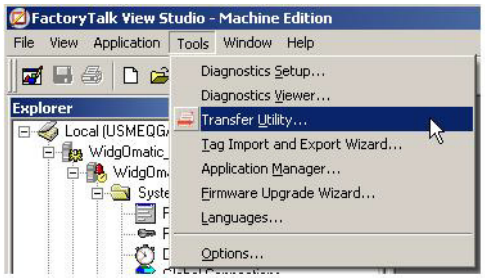
   For the Widg-O-matic application example, the file name is WidgOmatic_HMI.mer.
4. Click Save.

   The Runtime application (*.mer) file is created. This may take a few minutes.

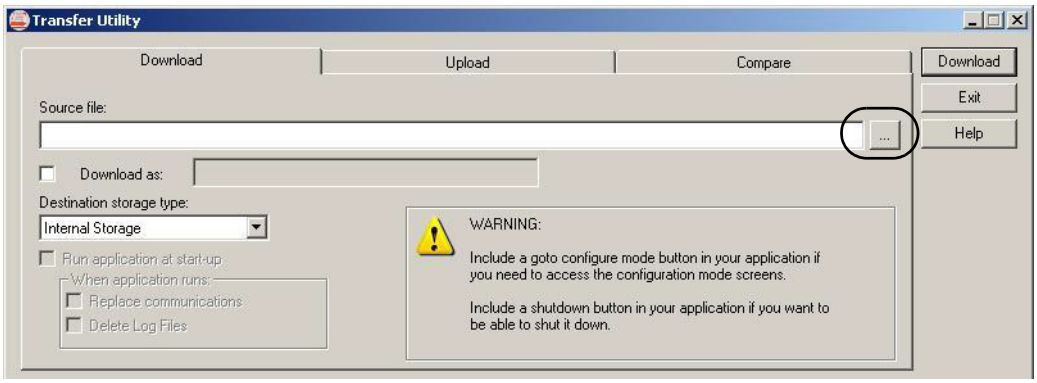


Download Runtime File to PanelView Plus Terminal

1. Open FactoryTalk View Studio Machine Edition software.
2. From the Tools menu, choose Transfer Utility.

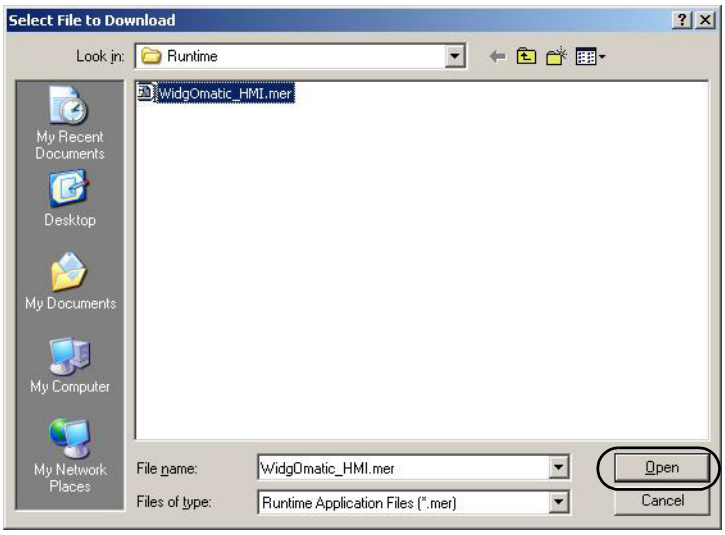


   The Transfer Utility window opens.



3. Click … and browse to the runtime file.

   The Select File to Download dialog box opens.

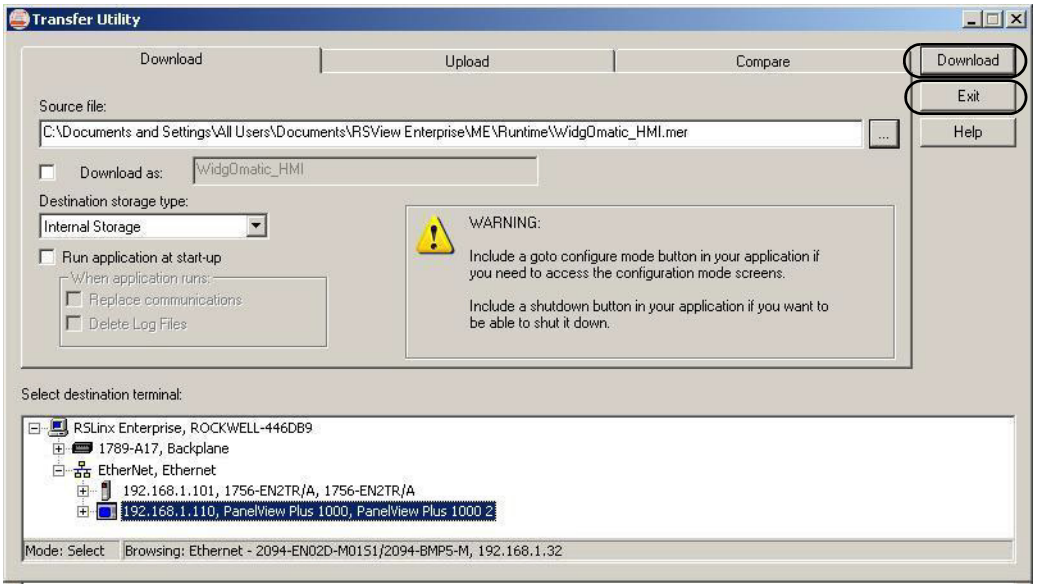


4. Select the runtime file you created earlier.

   For the Widg-O-matic application example, WidgOmatic_HMI is selected.

5. Click Open.

6. Select the PanelView Plus terminal.



7. Click Download.

   The file transfers to the PanelView Plus terminal.

8. Click OK when transfer is complete and prompted to do so.

9. Click Exit, to close the Transfer Utility window.

10. From the File menu, choose Exit to close FactoryTalk View software.

Commissioning Devices

This section provides general procedures for preparing and verifying the function of CIP Motion, sercos, and PowerFlex drives, electronic overload relays, and ArmorStart distributed motor controllers.

IMPORTANT These commissioning procedures assume that drive power and communication wiring is connected and a personal computer with the Logix Designer application and internet browser is available.

Commissioning CIP Motion Drives

These CIP Motion drive commissioning procedures apply to Kinetix 6500, Kinetix 5500, Kinetix 350, PowerFlex 527, and PowerFlex 755 drives.

For more information on drive commissioning for these CIP Motion drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Set the Base Address

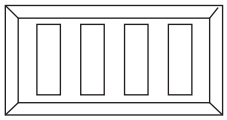
- For the Kinetix 6500 drives, set the base EtherNet/IP address on the IAM power module by using the node address switches. In multi-axis configurations, these switches set the addresses for all of the drives on the power rail.
- For Kinetix 5500 and PowerFlex 527 drives, set the EtherNet/IP address via the drive display soft menus and navigation buttons. Set parameters via path Network>Static IP>IP address.

  IMPORTANT You must cycle control power to make Kinetix 5500 and PowerFlex 527 network configuration changes persistent.

- For the Kinetix 350 drives, set the EtherNet/IP address via the drive display and keypad. Set parameters IP_1, IP_2, IP_3, and IP_4.
- For the PowerFlex 755 drives, set the base address using the rotary switches on the main control board.

Apply Power to the Drive

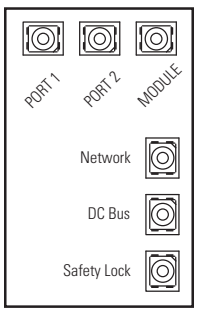
For the Kinetix 6500 drives, apply control power to the IAM power module and observe the four-character display. If the four-character display is ON, apply three-phase power.



Four-character Display

Control Module Status Indicators

Status Indicator	Status
Module	Steady green (normal operation)
Network	Steady green (normal operation)
Bus	Flashing green (bus power is up, drive disabled, no major faults)

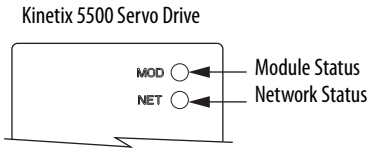


Kinetix 6500 Status Indicators

For the Kinetix 5500 drives, apply power as required for your system configuration and observe the two status indicators.

Module Status Indicator

Condition	Status
Steady Off	No power applied to the drive.
Steady Green	Drive is operational. No faults or failures.
Flashing Green	Standby (drive not configured).
Flashing Red	Major recoverable fault. The drive detected a recoverable fault, for example, an incorrect or inconsistent configuration.
Steady Red	Major fault. The drive detected a non-recoverable fault.
Flashing Green/Red	Self-test. The drive performs self-test during powerup.



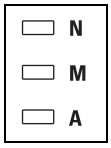
Network Status Indicator

Condition	Status
Steady Off	No power applied to the drive or IP address is not configured.
Flashing Green	Drive connection is not established, but has obtained an IP address.
Steady Green	Drive connection is established. Normal operation.
Flashing Red	Connection timeout. One or more of the connections, for which this drive is the target, has timed out.
Steady Red	Duplicate IP address. IP address specified is already in use.
Flashing Green/Red	Self-test. The drive performs self-test during powerup.

For the Kinetix 350 drives, apply 120, 240, or 460V AC mains input power to the IPD connector. If logic power is from (24V DC) back-up power, apply backup power to the BP connector first and then apply input power.

Drive Status Indicators

Status Indicator	Status	Status
Network	Flashing red/green or flashing green	Self-test/no connections
	Steady green	Communication is ready
	Steady or flashing red	Communication error
Module	Flashing red/green or flashing green	Self-test/standby
	Steady green	Operational condition
	Steady or flashing red	Drive is faulted
Axis	Flashing red/green, flashing green, flashing amber	Self-test/initialization
	Steady green	Operational condition
	Steady or flashing red	Drive is faulted

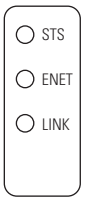


Kinetix 350
Status Indicators

For the PowerFlex 755 drives, apply control power first, if using an auxiliary power supply option, and then apply three-phase drive power.

Drive Status Indicators

Status Indicator	Status
STS	Flashing green (normal operation)
ENET	Solid green (no faults or failures)
LINK	Flashing green



PowerFlex 755 Status Indicators

For the PowerFlex 527 drives, apply power and wait for the startup sequence to complete. Verify that the MOD and NET status indicators are steady green.

Drive Status Indicators

Status Indicator	Status
MOD	Steady green (no faults or failures)
NET	Steady green (no faults or failures)
LINK A, LINK B	Flashing green

PowerFlex 527 Status Indicators

Four-character Status Indicator Display

The Kinetix 6500 and PowerFlex 755 drive displays should be scrolling STOPPED. The drives may take up to 60 seconds to reach the STOPPED (ready) state.

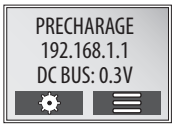
Kinetix 6500 and PowerFlex 755 Status Display

Four-character Message	Drive Status
BOOT, INIT, LOAD, DONE, TEST	The drive is initializing. This sequence of four-character words continues to scroll up to three times.
Scrolling FW Version: *x.xxx*	The drive is scrolling the current drive firmware revision.
Scrolling IP = 192.168.1.1	The drive is scrolling the drive IP address.
Scrolling CONFIGURING	The drive is receiving configuration information from the controller.
Scrolling STANDBY	The drive is trying to establish communication with the Logix5000 EtherNet/IP module.
Scrolling STOPPED	The drive is fully configured, but the control loops are not enabled.
Scrolling error code message	The drive is faulted. Refer to drive user manual.

The Kinetix 350 four-character display should be displaying -00-.

LCD Display

For the Kinetix 5500 drives, the home screen displays PRECHARGE after completing the startup sequence.

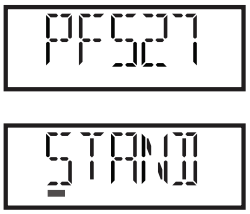


Kinetix 5500
Home Screen Display

Axis States on the Home Screen

Axis State	Description
STANDBY	The drive is waiting to receive configuration information from the controller.
CONNECTING	The drive is trying to establish communication with the EtherNet/IP controller.
CONFIGURING	The drive is receiving configuration information from the controller.
SYNCING	The drive is waiting for a successful Group Sync service.
STOPPED	The drive is fully configured, but the control loops are not enabled.
PRECHARGE	The drive is ready for mains input power.
STARTING	The drive is enabled and checking various conditions before entering the RUNNING or TESTING state. For example, the drive checks the Brake Release delay time during the STARTING state.
RUNNING	• The drive is enabled, configured with an active control mode, and actively tracking a command. • The drive is configured for No Control and is fully operational.
TESTING	The drive is actively executing a test procedure, for example, a hookup test.
STOPPING	The drive is decelerating to a stop as the result of a disable.
ABORTING	The drive is decelerating to a stop as the result of a fault or an abort request.
MAJOR FAULTED	The drive is faulted due to an existing or past fault condition.
START INHIBITED	The drive has an active condition that inhibits it from being enabled.
SHUTDOWN	The drive has been shut down.

The PowerFlex 527 drive initializes upon startup and status information scrolls across the LCD display. After initialization, the Device/Axis state is shown on the LCD display. In this example, the current state is STANDBY.



PowerFlex 527
LCD Display

Device State	Description
STANDBY	The drive is waiting to receive configuration information from the controller.
CONNECTING	The drive is trying to establish communication with the EtherNet/IP controller.
CONFIGURING	The drive is receiving configuration information from the controller.
SYNCING	The drive is waiting for a successful Group Sync service.
CONN_TIMEOUT	The drive is trying to establish communication with the EtherNet/IP controller, but the connection has timed out.
DUPLICATE_IP	The drive has detected another device on the network with the same IP address.
FWUPDATE	The drive is updating the firmware.

Axis States	Description
INITIALIZING	The drive is waiting to receive configuration information from the controller.
PRECHARGE	The drive is ready for mains input power.
STOPPED	The drive is fully configured, but the control loops are not enabled.
STARTING	The drive is enabled and checking various conditions before entering the RUNNING or TESTING state. For example, the drive checks the Brake Release delay time during the STARTING state.
RUNNING	• The drive is enabled, configured with an active control mode, and actively tracking a command. • The drive is configured for No Control and is fully operational.
TESTING	The drive is actively executing a test procedure, for example, a hookup test.
STOPPING	The drive is decelerating to a stop as the result of a disable.
ABORTING	The drive is decelerating to a stop as the result of a fault or an abort request.
MAJOR FAULTED	The drive is faulted due to an existing or past fault condition.
START INHIBITED	The drive has an active condition that inhibits it from being enabled.
SHUTDOWN	The drive has been shut down.

Test and Tune the Axis

Use the Logix Designer application to access Axis Properties and run the Hookup test and Tune test.

- The Hookup test verifies encoder connections and direction.
- The tuning values for position units, velocity gains, acceleration, and deceleration rates are set in Axis Properties based on the drive/motor combination and motor inertia only. The Autotuning procedure calculates the gain values dynamically after determining inertia.

For more information on test and tune procedures, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning Sercos Drives

These sercos interface drive commissioning procedures were written specifically for Kinetix 6200 drives. The Kinetix 6000, Kinetix 2000, Kinetix 7000, and Ultra3000 sercos drive configuration steps are similar. You can also use the Kinetix 6000M integrated drive-motor (IDM) system when the IDM power interface module (IPIM) is added to the Kinetix 6000 power rail.

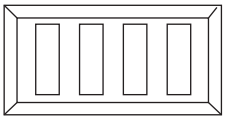
For more information on drive commissioning for sercos drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Set the Base Address

Set the base sercos address on the IAM power module by using the node address switches. In multi-axis configurations these switches set the addresses for all of the drives on the power rail.

Apply Power to the Drive

Apply control power to the IAM power module and observe the four-character display. If the four-character display is ON, apply three-phase power.



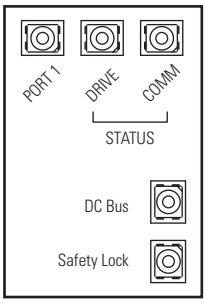
Four-character Status Indicator

Four-character Status Indicator Display

Four-character Status Indicator	Status
Scrolling CP-0	The drive is looking for a closed sercos ring (phase 0). Wait for CONFIGURING or take corrective action.
Scrolling CP-1	The drive is looking for active nodes (phase 1). Wait for CONFIGURING or take corrective action.
Scrolling CP-2	The drive is configuring nodes for communication (phase 2). Wait for CONFIGURING or take corrective action.
Scrolling C O N F I G U R I N G	The drive is configuring device specific parameters (phase 3). When phase 4 is reached the drive displays the drive state.
Scrolling drive state (for example, S H U T D O W N or S T O P P E D)	The drive is configured and active (phase 4).
Scrolling error code message	Drive is faulted.

Control Module Status Indicators

Status Indicator	Status
Drive	Steady green (normal operation)
Comm	Steady green (no faults or failures)
Bus	Flashing green (bus power is up, drive disabled, no major faults)



Kinetix 6200 Status Indicators

Test and Tune the Axis

Use the Logix Designer application to access Axis Properties and run the Hookup test and Tune test.

- The Hookup test verifies encoder connections and direction.
- The tuning values for position units, velocity gains, acceleration, and deceleration rates are set in Axis Properties based on the drive/motor combination and motor inertia only. The Autotuning procedure calculates the gain values dynamically after determining inertia.

For more information on test and tune procedures for sercos drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning PowerFlex 7-class Drives

These commissioning procedures cover PowerFlex 70EC, PowerFlex 700, PowerFlex 753, and PowerFlex 755 drives.

For more information on drive commissioning, refer to the appropriate user manual listed in Additional Resources on page 15.

Apply Power to the Drive

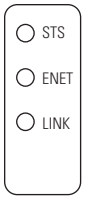
Apply control power first if using an auxiliary power supply option, and then apply three-phase drive power.

Status Indicators

Verify the drives are ready.

PowerFlex 755 Drive Status Indicators

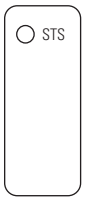
Status Indicator	Status
STS	Flashing green
ENET	Solid green
LINK	Flashing green (indicating network activity)



PowerFlex 755
Status Indicators

PowerFlex 753 Drive Status Indicators

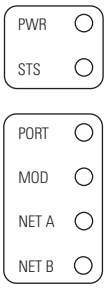
Status Indicator	Status
STS	Flashing green



PowerFlex 753
Status Indicators

PowerFlex 700 Drive Status Indicators

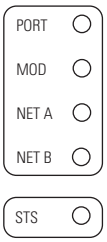
Status Indicator	Status
Pwr	Solid green
STS	Flashing green
Port	Flashing green (depending on communication module)



PowerFlex 700
Status Indicators

PowerFlex 70 EC Drive Status Indicators

Status Indicator	Status
STS	Flashing green
Port	Flashing green (depending on communication module)



PowerFlex 70EC
Status Indicators

Start-up Routines

Start-up routines are available for the PowerFlex 7-class drives through Assisted Start-Up on the HIM module or the Start-Up Wizard from one of the software tools. The start-up routines do not apply for a PowerFlex 755 drive used in CIP Motion applications.

- The drive-mounted HIM module provides an assisted start-up and will step through configuration and tuning.
- A software-based start-up wizard is available in DriveExplorer™ software, DriveTools™, or with the Custom Download AOP for the PowerFlex 7-class drives. The start-up wizard steps through configuration and tuning.

For more information on drive start-up routines for PowerFlex 7-class drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning PowerFlex 5-class Drives

These commissioning procedures apply to PowerFlex 525 AC drives.

For more information on drive commissioning, refer to the appropriate user manual listed in Additional Resources on page 15.

Apply Power to the Drive

Apply single or three-phase power to the respective PowerFlex 525 AC drive.

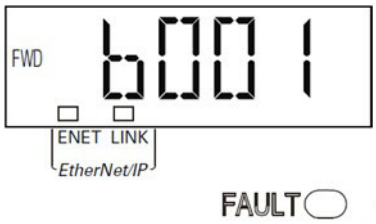
Status Indicators

Verify that the drives are ready.

PowerFlex 525 Status Indicators

Display	Display State	Description
ENET	Off	Adapter is not connected to the network.
	Steady	Adapter is connected to the network and the drive is controlled through Ethernet.
	Flashing	Adapter is connected to the network, but the drive is not controlled through Ethernet.
LINK	Off	Adapter is not connected to the network.
	Steady	Adapter is connected to the network, but not transmitting data.
	Flashing	Adapter is connected to the network and transmitting data.
FAULT	Flashing red	Indicates the drive is faulted.

PowerFlex 525 Status Indicators



Start-up Routines

The drive integral keypad and LCD display can assist in configuration and start-up by organizing the commonly used parameters into the basic group. A software-based start-up wizard is available in Connected Components Workbench™ software, or with the RSLogix 5000 / Studio 5000 Add-On Profile (AOP) for the PowerFlex 525 AC drive. The start-up wizard steps you through configuration and tuning.

For more information on the PowerFlex 525 drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning PowerFlex 4-class Drives

These commissioning procedures apply to PowerFlex 4, PowerFlex 40, PowerFlex 40P, and PowerFlex 400 drives.

For more information on drive commissioning, refer to the appropriate user manual listed in Additional Resources on page 15.

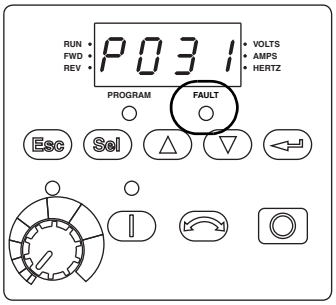
Apply Power to the Drive

Apply control power first if using an auxiliary power supply option, and then apply three-phase drive power.

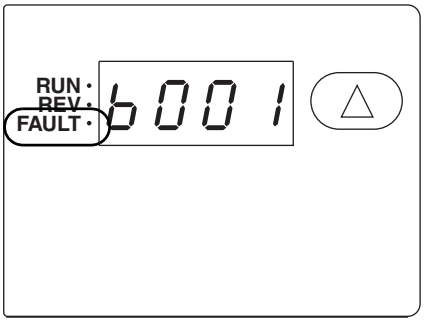
Status Indicators

Drives are ready when the Fault status indicator is off.

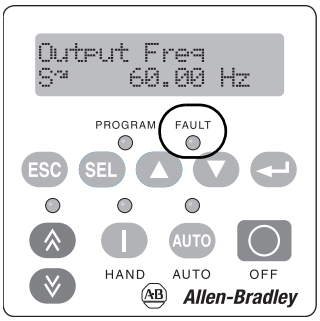
PowerFlex 4, 40, 40P, and 400 Drive Status Indicators



PowerFlex 4 or 40 Drives
Status Indicators



PowerFlex 40P Drives
Status Indicators



PowerFlex 400 Drives
Status Indicators

Start-up Routines

The drive integrated keypad can assist in configuration and start-up by organizing the commonly used parameters into the basic group. An assisted start-up routine is available for the PowerFlex 4-class drives through the Start-Up Wizard from one of the software tools. The software-based start-up wizard is available in DriveExplorer software, DriveTools, or with the Custom Download AOP for the PowerFlex 4-class drives. The start-up wizard steps through configuration and tuning.

For more information on drive start-up routines for PowerFlex 4-class drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning Kinetix 300 Drives

These commissioning procedures apply specifically to the Kinetix 300 drives.

For more information on drive commissioning for Kinetix 300 drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Apply Power to the Drive

If using separate 24V DC logic power, apply 24V DC and observe the four-character display. If the four-character display is ON, apply mains drive power. If not using separate 24V DC logic power, apply mains drive power.

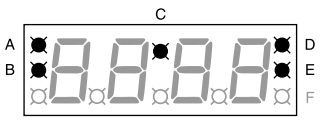
Status Indicators

Verify the drives are ready.

Four-character Display Status Indicators

Status Indicator	Function	Description
A	Enable	Orange status indicator means that the drive is enabled (running).
B	Regen	Yellow status indicator means the drive is in Regeneration mode.
C	Data entry	Yellow status indicator flashes when changing.
D	Drive fault	Red status indicator illuminates upon a drive fault.
E	Comm activity	Green status indicator flashes to indicate communication activity.

Kinetix 300 Status Indicators



Configure the Drive

Use MotionView OnBoard software to configure the drive/motor combination and the mode required for your application.

Test and Tune the Drive

Use MotionView OnBoard software to run the Hookup test and Tune test.

- For testing the drive if using an incremental encoder, use MotionView OnBoard software to perform the Check Phasing test. This test isn't required if using an absolute encoder.
- For tuning the drive, use MotionView OnBoard software to perform Autotuning. The Auto Tune procedure calculates the gain values dynamically after determining inertia. To perform Auto Tune, the drive must be in Auto Tune mode.

For more information on test and tune procedures for Kinetix 300 drives, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning E3 Plus Overload Relays

These commissioning procedures apply specifically to the E3 Plus overload relays when communicating with the 193-DNENCAT module.

For more information on commissioning for E3 Plus overland relays, refer to the appropriate user manual listed in Additional Resources on page 15.

Apply Power to the Relay

When power is applied to the DeviceNet connector, the trip relay closes if no fault exists, and the NETWORK STATUS indicator flashes green. When the E3 Plus overload relay has been allocated by a Master, the NETWORK STATUS indicator turns solid green. If a fault exists, the TRIP/WARN status indicator flashes.

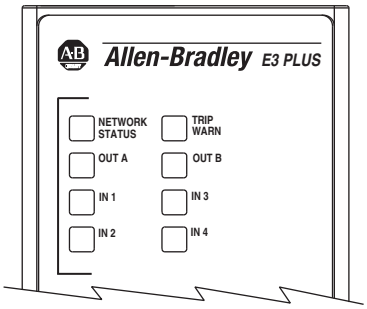
Status Indicators

The E3 Plus overload relay provides the following status indicators.

E3 Plus Status Indicators

Status Indicator	Function	Description
Network Status	DeviceNet network status	Refer to the E3 and E3 Plus Solid-state Overload Relay User Manual, publication 193-UM002.
Trip/Warn	Device status	The Trip/Warn status indicator indicates device status by flashing a red trip code or an amber warning code. The flash pattern followed by a pause identifies the specific trip or warning. Refer to the E3 and E3 Plus Solid-state Overload Relay User Manual, publication 193-UM002.
OUT A	Output command status	The amber OUT A or OUT B status indicator illuminates when the output is commanded on. However, an illuminated status indicator does not guarantee that the output is actually on.
OUT B		
IN 1	Customer-supplied contact status	The amber IN1, IN2, IN3, or IN4 status indicator illuminates when a customer-supplied contact is closed.
IN 2		
IN 3		
IN 4		

E3 Plus Status Indicators



DeviceNet Commissioning

1. Launch RSNetWorx for DeviceNet software.
2. Add the E3 Plus overload relay to your network configuration.
3. Open the Motor Overload folder and double-click the desired E3 Plus overload relay.
4. Assign the node number and desired name for the E3 Plus overload relay.
5. Click the Parameters tab.

6. Set the following parameters:

IMPORTANT You must set these parameters or the AOI will not verify in your Logix Designer application.

Parameter	Value
59, Output Assembly	105
60, Input Assembly	100
61, Assy Word 0 Param	21 (Param 21 supplies status of Inputs and Outputs)
62, Assy Word 1 Param	4 (Param 4 supplies Avg current)
63, Assy Word 2 Param	14 (Param 14 supplies Trip Status)
64, Assy Word 3 Param	15 (Param 15 supplies Warning Status)

7. Refer to the E3 and E3 Plus Solid-state Overload Relay User Manual, publication 193-UM002, to determine which trips and warnings to enable and which corresponding parameter limits to configure.
8. Add the DeviceNet scanner to your network.
9. Assign the desired name and node number for the scanner.
10. Click the Scanlist tab.
11. Select your E3 Plus overload relay from the Available Devices dialog box and using the arrows, move the E3 Plus overload relay to the Scanlist dialog box.

Commissioning E300 Electronic Overload Relays

These commissioning procedures apply specifically to the E300 electronic overload relays.

For more information on drive commissioning for E300 electronic overload relays, refer to the appropriate user manual listed in Additional Resources on page 15.

Set the IP Address

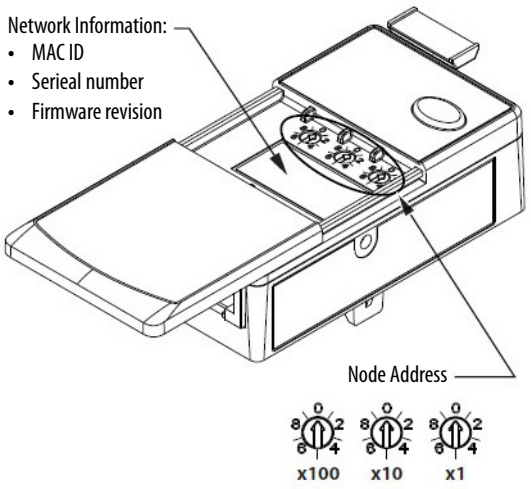
1. Slide the relay cover down revealing the node address switches and network display.

   The IP address is set to 999 and DHCP is enabled as the factory default settings.
2. Set the network address by adjusting the three rotary switches.

   Valid IP addresses are 001 through 254. When the switches are set to a valid number, the IP address will be 192.168.1.*xxx* (where *xxx* represents the last octet set on the switches).

   The subnet mask is set to 255.255.255.0 and the gateway address is set to 0.0.0.0.
3. Cycle power to the E300 relay by removing/replacing the 120V AC connector behind the EtherNet/IP ports.

IMPORTANT You must cycle power when the IP address switches are used for the new setting to take effect.



Node Address	Function
001…254	Set IP address to 192.168.1.*xxx*
255…887 889…999	Set IP address via DHCP or use static IP address
888	Reset to factory defaults
000	Administrative mode

Apply power to the E300 Electronic Overload Relay

Refer to the E300 Electronic Overload Relay User Manual, publication 193-UM015, and apply power to your E300 device.

Interpret Status Indicators

Observe the status indicators to make sure the device is ready. The E300 relay provides status indicators and a reset button on the front of the module.

E300 Front Panel Status Indicators

E300 Electronic Overload Relay Status Indicators

Status Indicator	Display State	Description
POWER	Blinking green	Device ready, Operation mode.
	Solid green	Device active, current detected, Run mode.
	Solid red	Device error.
	Blinking red	Communication error.
	Blinking red/green	Copy cat in progress.
TRIP/WARN	Blinking red	Trip event.
	Blinking yellow	Warning event.
MS (module status)	None	Module is not receiving power.
	Green, red, not illuminated sequence	Normal power-up sequence.
	Blinking green	Module is not being scanned by the EtherNet/IP master.
	Solid green	Normal operating state. Module is allocated to a master.
	Blinking red	One or more EtherNet/IP connections timed out. Module is faulted.
	Solid red	Diagnostics test failed on power-up or reset.
NS (network status)	None	Module is not receiving power.
	Green, red, not illuminated sequence	Normal power-up sequence.
	Blinking green	Module is online, but with no connections established.
	Solid green	Normal operating state. Module is allocated to a master.
	Blinking red	One or more EtherNet/IP connections timed out.
	Solid red	Diagnostics test failed on power-up or reset: • Internal fault • Duplicate IP address • Communication error
LINK1, LINK2	None	Module is not properly connected to the EtherNet/IP network.
	Blinking green	The EtherNet/IP network is properly connected.
	Solid green	EtherNet/IP network is communicating.

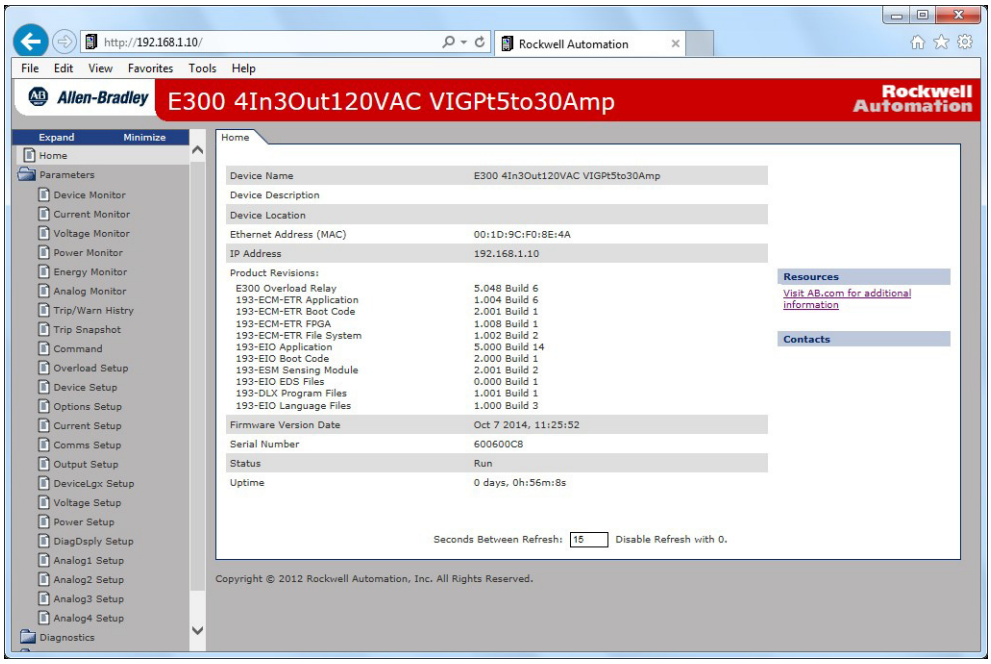
Configure the E300 Electronic Overload Relay

Follow these steps to configure your E300 device using the E300 Web server.

1. Turn all three of the node-address rotary switches to 0.

   This sets the device in Administrative mode.
2. Cycle power on the device by removing/replacing the 120V AC connector behind the EtherNet/IP ports.
3. Enter the IP address of the E300 relay (192.168.1.10) in the browser's URL window.
4. Press Enter to access the web server.

   The device is now in Administrative mode. You can modify parameter settings by using the E300 Web server.



For more information on the E300 Web server and parameter setup, refer to the appropriate user manual listed in Additional Resources on page 15.

Commissioning SMC-50 Soft Starter Modules

These commissioning procedures apply specifically to the SMC-50 soft starter modules.

For more information on drive commissioning for SMC-50 soft starters, refer to the appropriate user manual listed in Additional Resources on page 15.

Apply Power to the Relay

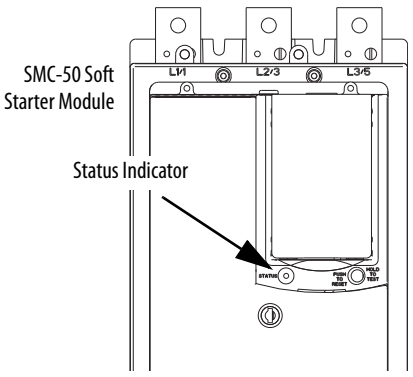
Apply power to the SMC-50 soft starter module.

Status Indicators

The SMC-50 soft starter has one status indicator on the front of the module that displays fault and alarm codes as described in the following table.

SMC-50 Module Status Indicator

Color	Device Mode	SMC-50 Module Status
Green	Running	Running without an alarm
Green/amber	Running	Running with an alarm
Green/flashing	Ready	Ready (no inhibit and no fault) without an alarm
Amber/flashing	Ready	Ready (no inhibit and no fault) with tuning enabled on the next start
Amber	Ready	Ready with alarm (no tuning enabled)
Red/amber	Inhibit	Inhibited, cannot start due to a Stop command
Red	Faulted	A non-resettable fault has occurred
Red/flashing	Faulted	A resettable fault has occurred
Red/green	Download	Firmware is being downloaded



Startup Routines

Start-up routines are available for the SMC 50 soft starter through the Start-Up Configuration Tool on the 20-HIM-A6, 20-HIM-C6S module, or the Start-Up Wizard available in DriveExplorer software. The start-up wizard steps through general configuration.

For more information on the SMC-50 soft-starter startup routine, refer to the SMC-50 Solid-state Smart Motor Controller User Manual, publication 150-UM011.

Commissioning ArmorStart LT Distributed Motor Controllers

These commissioning procedures apply specifically to the Bulletin 290E, 291E and 294E ArmorStart LT distributed motor control devices.

For more information on drive commissioning for ArmorStart LT distributed motor controllers, refer to the appropriate user manual listed in Additional Resources on page 15.

Set the IP Address

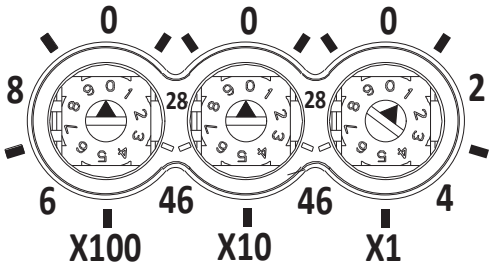
1. Remove the protective caps from the IP address rotary switches on the front of the module.

   The IP address is set to 999 and DHCP is enabled as the factory default settings.
2. Set the network address by adjusting the three rotary switches.

   Valid IP addresses are 001 through 254. When the switches are set to a valid number, the IP address will be 192.168.1.*xxx* (where *xxx* represents the last octet set on the switches).

   The subnet mask is set to 255.255.255.0 and the gateway address is set to 0.0.0.0.
3. Cycle power to the ArmorStart device.

IMPORTANT	You must cycle power when the IP address switches are used for the new setting to take effect.



In this example, the final octet is set to 001 (DHCP).

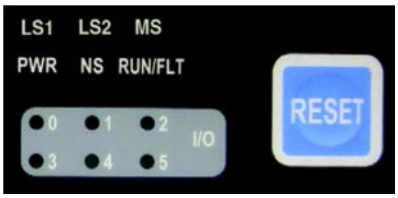
Apply power to the ArmorStart LT

Refer to the ArmorStart LT Distributed Motor Controller User Manual, publication 290E-UM001, and apply power to your ArmorStart LT device.

Interpret Status Indicators

Observe the status indicators to make sure the device is ready. The ArmorStart LT motor controller provides status indicators and a reset button on the front of the module.

ArmorStart LT Front Panel Status Indicators



ArmorStart LT Status Indicators

Indicator	Description	Color_1	Color_2
PWR	The bicolor (green/yellow) status indicator indicates the state of the control voltage.	• Solid green indicates switched and unswitched control power is within its specified limits and has the proper polarity. • Off indicates switched and/or unswitched power is not present.	• Solid yellow is indicates switched or unswitched control power is outside its specified limits or has incorrect polarity. • Flashing yellow indicates line voltage is not present (Bulletin 294 units only).
RUN/FLT	The bicolor (green/red) status indicator combines the functions of the Run and Fault status indicators.	Solid green indicates a Run command is present.	Blinking red indicates a prescribed fault pattern when a protection fault (trip) condition is present.
NS (network status)	• The bicolor (green/red) network status indicator indicates the status of the Integrated Motion over EtherNet/IP network connection. • Flashing bicolor (red/green) status indicator indicates a self-test on power up.	• Flashing green indicates an IP address is configured, no integrated motion connections are established, and an Exclusive Owner connection has not timed out. • Steady green indicates at least one integrated connection is established and an Exclusive Owner connection has not timed out.	• Flashing red indicates the connection has timed out. • Steady red indicates a duplicate IP address is detected.
LS1 and LS2 (Link1 and Link2)	The bicolor (green/yellow) status indicators indicate the Link/Activity status of each EtherNetIP port.	Solid green indicates a link is established at 100 Mbps.	Solid yellow indicates a link is established at 10 Mbps.
MS (module status)	The bicolor (green/red) status indicator indicates the status of the module.	• Flashing green indicates the device has not been assigned an IP address. • Steady green indicates the device is configured and operational.	• Flashing red indicates a resettable protection fault exists or the node address switches have been changed without a power cycle and do not match the in-use configuration. • Steady red indicates a non-resettable protection fault exists.
I/O (status indicators 1…5)	These six yellow status indicators (numbered 0…5) indicate the status of the input/output connectors. One indicator for each I/O point.	Yellow indicates the input is valid or output is on.	Indicator is off when input is not valid or the output is not turn on.
Reset	The blue reset button causes a protection fault reset to occur.	–	–

Commissioning ArmorStart Distributed Motor Controllers

These commissioning procedures apply specifically to the Bulletin 280E, 281E, and 284E ArmorStart distributed motor control devices.

For more information on drive commissioning for ArmorStart distributed motor controller, refer to the appropriate user manual listed in Additional Resources on page 15.

Set the IP Address

1. Remove the protective caps from the IP address rotary switches in the I/O section of the module.

   The IP address is set to 999 and DHCP is enabled as the factory default settings.

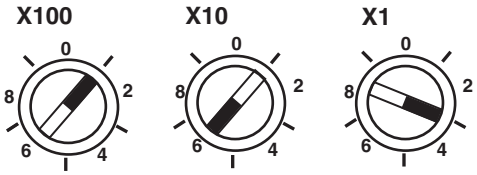
2. Set the network address by adjusting the three rotary switches.

   Valid IP addresses are 001 through 254. When the switches are set to a valid number, the IP address will be 192.168.1.*xxx* (where *xxx* represents the last octet set on the switches).

   The subnet mask is set to 255.255.255.0 and the gateway address is set to 0.0.0.0.

3. Cycle power to the ArmorStart device.

IMPORTANT You must cycle power when the IP address switches are used for the new setting to take effect.



In this example, the final octet is set to 153 (DHCP).

Apply power to the ArmorStart

Refer to the ArmorStart Distributed Motor Controller User Manual, publication 280E-UM001, and apply power to your ArmorStart device.

Interpret Status Indicators

Observe the control module status indicators to make sure the device is ready. The ArmorStart motor controller provides four status indicators and a reset button on the front of the module.

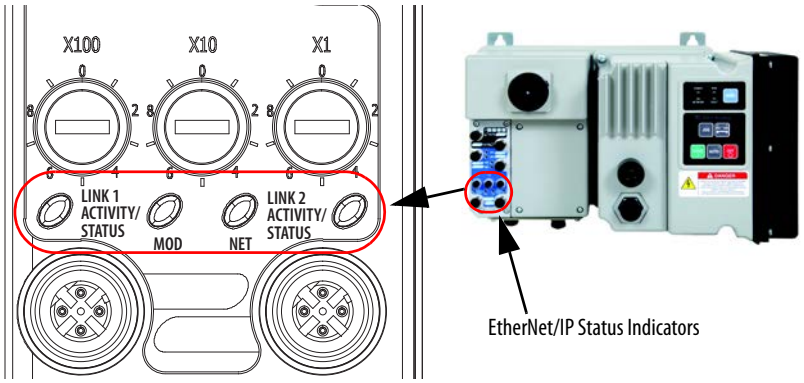
ArmorStart Front Panel Status Indicators

Push RESET for local trip reset.

ArmorStart Status Indicators

Status Indicator	Status	Recommended Action
POWER	Solid green indicates switched control power is present and has the proper polarity.	Make sure 24V DC is present on A1 and A2. Check if the local disconnect is in the OFF position.
RUN	Solid green when a start command and control power is present.	Make sure 24V DC is present on A1 and A3. Check if the user is properly commanding to RUN via Instance 162 or 166. See the ArmorStart Distributed Motor Controller User Manual, publication 280E-UM001, for status indicator troubleshooting information.
NETWORK	This bicolor status indicator is used to indicate the status of the internal network connection.	See the Network Status Indicator table on page 178, for more information.
FAULT	When the unit is faulted, the unit responds with a specific blink pattern to identify the fault.	See the ArmorStart Distributed Motor Controller with EtherNet/IP User Manual, publication 280E-UM001, for more information.

Observe the EtherNet/IP status indicators to make sure the device is ready.



Refer to these tables on the next page for status indicator descriptions:

- Link 1 or Link 2 Port Activity/Status (LINK 1 and LINK 2)
- Module Status Indicator (MOD)
- Network Status Indicator (NET)

Link 1 or Link 2 Port Activity/Status

Status	Description	Recommended Action
OFF	No link established	Verify network cabling, and correct, as needed.
Green	Link established at 100 Mbps	None
Flashing green	Transmit or receive activity present at 100 Mbps	None
Yellow	Link established at 10 Mbps	None
Flashing yellow	Transmit or receive activity present at 10 Mbps	None

Module Status Indicator

Status (1)	Description	Requirement		
Steady OFF	No power	If no power is supplied to the device, the module status indicator shall be steady OFF.		
Steady Green	Device operational	If the device is operating correctly, the module status indicator shall be steady green.		
Flashing Green	Standby	If the device has not been configured, the module status indicator shall be flashing green.		
Flashing Red	Minor fault	• If the device has detected a recoverable minor fault, the module status indicator shall be flashing red. • An incorrect or inconsistent configuration would be considered a minor fault.		
Steady Red	Major fault	0	EEPROM Fault	Non-volatile memory value out of range for a local parameter or a write failure detected. This fault is also reflected by a solid red module status indicator.
		1	Internal Comm2	The internal communication connection has timed out. This fault is also reflected by a flashing red module status indicator.
		2	Hardware Fault	Internal diagnostics checks failed. This fault is also reflected by a solid red module status indicator.
		3	Control Module	• An illegal or unsupported control module product code or revision has been detected. • No control module is detected on power up. This fault is also reflected by a solid red module status indicator
		4…15	Reserved	Reserved
Flashing Green/ Red	Self-test	While the device is performing its power up testing, the module status indicator shall be flashing green/red.		

(1) Refer to Parameter 63 “Base Trip” for the Base Module Trip Status.

Network Status Indicator

Status	Description	Requirement
Steady OFF	No power, no IP address	If the device does not have an IP address (or power is OFF), the network status indicator shall be steady OFF.
Flashing Green	No connections	If the device has no established connections, but has obtained an IP address, the network status indicator shall be flashing green.
Steady Green	Connected	If the device has at least one established connection (even to the message router), the network status indicator shall be steady green.
Flashing Red	Connection timeout	• If one or more of the connections (for which this device is the target) has timed out, the network status indicator shall be flashing red. • This shall be left if only all timed out connections are reestablished or if the device is reset.
Steady Red	Duplicate IP	If the device has detected that the IP address is already in use, the network status indicator shall be steady red.
Flashing Red/ Green	Self-test	While the device is performing its power up testing, the network status indicator shall be flashing green/red.

Commissioning Drives and Motion Systems

This section provides general procedures for verifying the function of a completed Drives and Motion Accelerator Toolkit system.

IMPORTANT These commissioning procedures assume all applications are downloaded, all system devices are commissioned, a personal computer with the Logix Designer application is available, and a PanelView Plus terminal is powered and connected to the system's EtherNet/IP network.

Verify Network Communication

Verify network communication between HMI terminal, Logix5000 controller, and devices.

HMI Terminal to Logix5000 Controller Communication

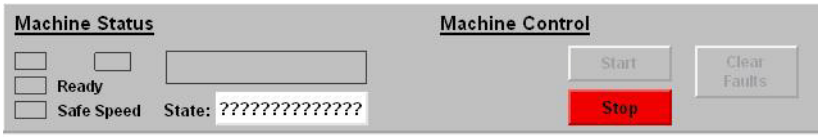
To determine if communication is lost between the HMI terminal and Logix5000 controller, look for:

- Error messages on the diagnostic display
- Wireframes on the display.

If there are communication problems with the controller, the diagnostic display lists messages (for example, CIP Connection Error). If the HMI terminal can communicate with the controller, but it cannot read/write specific tags, the diagnostic display lists similar messages (for example, Error Writing to *xxxxx*_Tag).

The HMI terminal displays wireframes and "?????" on objects with tags it cannot read from the controller.

HMI Terminal Display



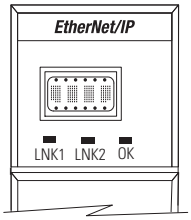
A few of the most common problems are:

- Hardware problem such as a Ethernet cable disconnected.
- Communication path not properly configured in FactoryTalk View software, Communication Setup.
- Tag names in the parameter files not matching the tag names in the controller.

Controller to Device Communication

Verify controller to device communication by observing the indicators on the controller's communication module and the devices in the controller's I/O tree.

Observe the controller's communication module. Refer to the user manual for the specific module you are using.

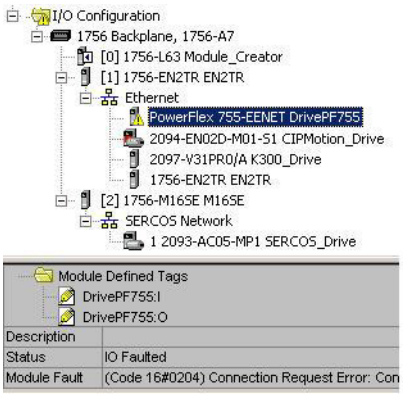


1756-EN2TR
Ethernet Module

Ethernet Module Status Indicators

Status Indicator	Status
OK	Solid green
LNK1	Flashing green (indicates network activity)
LNK2	Off (flashing green if in a Device Level Ring configuration)

Open your Logix Designer project, go online with the controller, and observe the devices in the I/O tree. A device with a yellow exclamation mark (!) indicates a fault. The fault could be a configuration fault, a device fault, or a communication fault. View the quick pane in the Controller Organizer to determine fault.



Clearing Faults

After all of the devices are connected and functioning on the network, clear faults to put the machine in a STOPPED state.

HMI Clear Faults

When the controller powers-up and the program goes into Run mode, the machine is faulted and in the ABORTED state. Refer to Appendix A, on page 225, for more information on the logic program modules.

You can attempt to clear the machine faults by pressing the Clear Faults push button on the HMI terminal. If there are no faults, the machine state goes to STOPPED. Refer to Chapter 5, on page 101, for more information on the HMI application programming.

HMI Test Faults

Test the functionality of the state machine, device modules, and fault handling by simulating faults. By creating a fault, the machine state should go to ABORTED and a fault should be logged on the HMI Alarm History faceplate. Try creating a fault for each of the device modules in the system. You can create a fault by unplugging an encoder cable or communication cable on a drive or servo. Verify that the machine goes to the ABORTED state. After each fault, correct the simulated fault and verify that you can clear the faults. The machine goes to the STOPPED state after the faults are cleared.

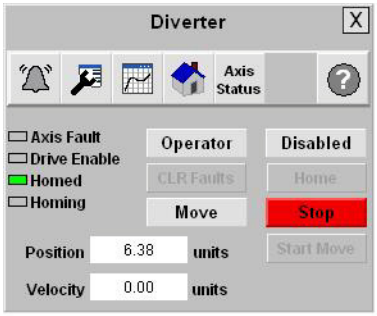
Refer to Chapter 7 on page 183 for more information on the faceplate fault diagnostic views.

Operator (manual) Control

Before attempting to run the machine, manually move or jog the drives if your configuration allows. With the faults cleared and the machine state in STOPPED mode, put the machine in OPERATOR mode. You can select each of the drives to manually move or jog. Test the Start/Stop mode, speed, and direction of each device.

Open one of the device faceplates. While in OPERATOR mode, manually jog or move the drive.

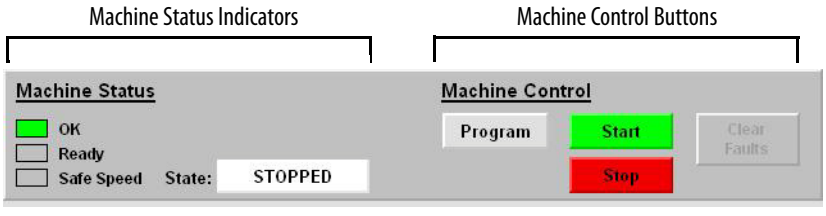
Refer to Chapter 7 on page 183 for more information on how device control buttons function.



Program (automatic) Control

With the faults cleared and the machine state in STOPPED mode, you can put the machine in PROGRAM mode. By pressing the Start push button on the machine faceplate, the controller runs the machine according to the application program.

IMPORTANT Care must be taken to provide safety and protect against machine damage by stepping through a planned start-up procedure.



Notes:

System Application Guide

This chapter guides you through the pre-configured FactoryTalk View Machine Edition application faceplates providing you with an understanding of the status, control, and diagnostic operation of the faceplate displays.

Before You Begin

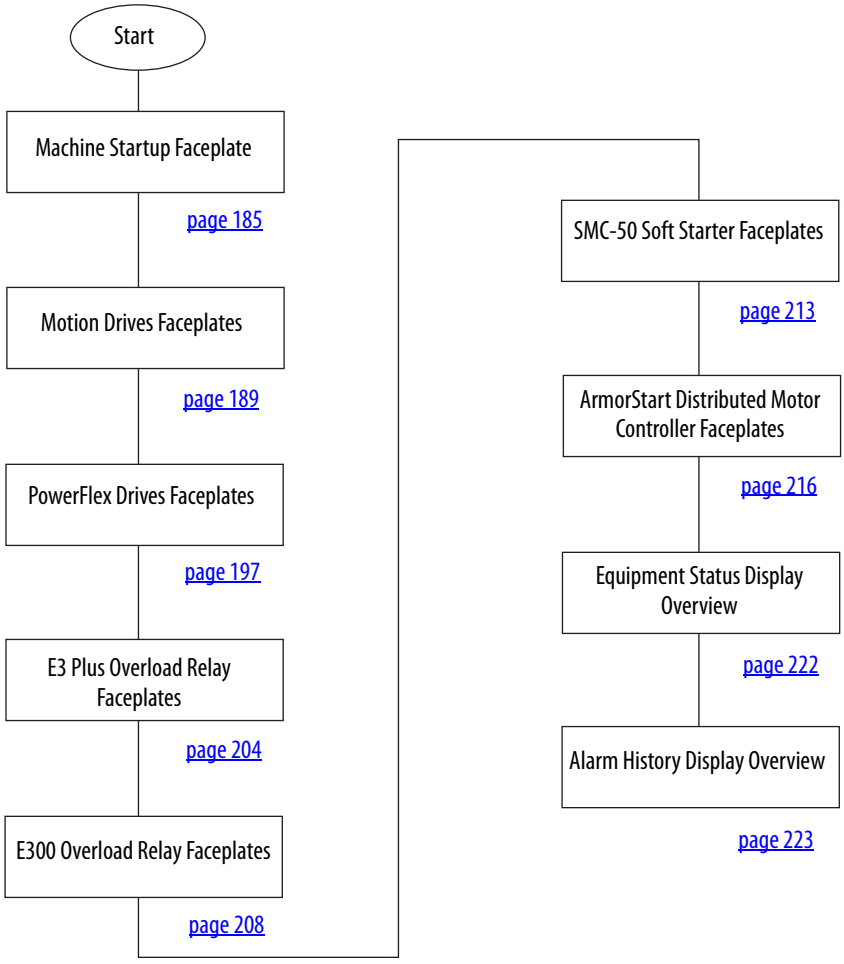
- Complete your logic configuration (refer to Chapter 4).
- Complete your FactoryTalk View Machine Edition configuration (refer to Chapter 5).
- Complete your Logix5000 and PanelView Plus application downloads (refer to Chapter 6).

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative.
- Hardware installation and wiring complete with power applied.
- Logix Designer project file downloaded to the Logix5000 controller and controller set to run.
- FactoryTalk View ME runtime application file downloaded to the PanelView Plus terminal. Run Application activated on terminal.

Follow These Steps

Complete these display overview steps to run the preconfigured application and gain an understanding of the drives and motion system operation.



Machine Startup Faceplate

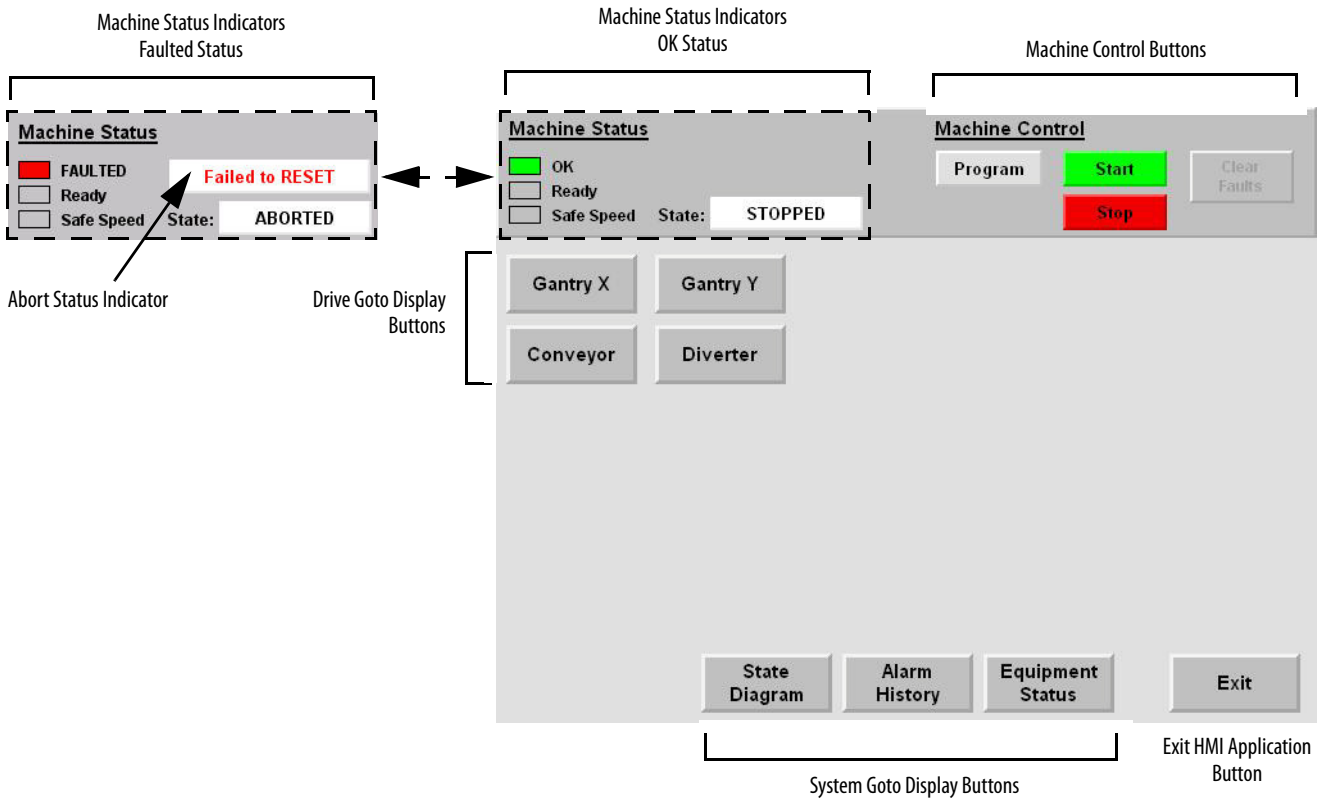
The Machine Startup faceplate display provides general machine status and control. It is also configured as the main navigation display for access to the other devices, the Alarm History faceplate display, and the Equipment Status faceplate display.

Machine Status

The Machine Status indicators (OK and Faulted) provide general machine status (refer to the figure below). The specific indicator functions are included in the Machine Status Indicators table on page 186.

In this example, there are seven Goto display buttons configured. There is one Goto display button for each of the four drives, the State Diagram, the Equipment Status display, and the Alarm History display. Pressing any of the Goto display buttons launch the associated display.

IMPORTANT If the Machine Startup display is not visible or errors are reported on either the Logix5000 controller or PanelView Plus terminal, refer to previous chapters to check system wiring and configuration settings.

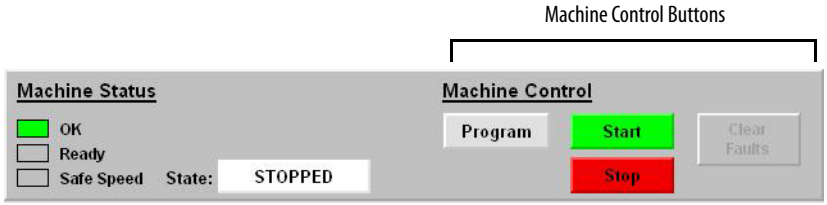


Machine Status Indicators

Status Indicator	Color/Value	Description
OK	Green	No machine faults detected.
Faulted	Red	Machine fault detected.
Abort Status	Power Up	Displays additional diagnostic information for machine ABORT condition.
	Module Not Ready	
	Module Fault	
	Failed to RESET	
	Failed to START	
	Failed to STOP	
	Failed to CLEAR	
Ready	Green	Machine is ready to run. By default, the machine will be in one of the following states: IDLE, STARTING or RUNNING
	Grey	Machine is not ready to run.
Safe Speed	Green	Safe speed condition is currently active in at least one device module.
	Grey	Safe speed condition is not currently active.
State	ABORTING	Displays the current machine state.
	ABORTED	
	CLEARING	
	RESETTING	
	IDLE	
	STARTING	
	RUNNING	
	STOPPING	
	STOPPED	

Machine Control

The Machine control buttons provide Operator Start, Stop, and Mode control.



Program/Operator Mode

Follow these steps to start and stop the motion system in Program control mode.

1. Press the Operator control mode button so that Program is displayed.

   Program is now the active mode.

2. Press Start.

   The required axes and drives are enabled and homed. The machine state goes to IDLE.

3. Press Start (again).

   The required axes enable and begin operating according to the Logix Designer application. When the system is running, Start appears dimmed. The machine state goes to RUNNING.

4. Press Stop.

   The system stops.

   IMPORTANT The machine must be in a stopped state to switch modes.

5. Press the Control mode button until Operator is displayed in the Control field.

   In Operator control, you can use one of the faceplate displays to manually control one of the drives.

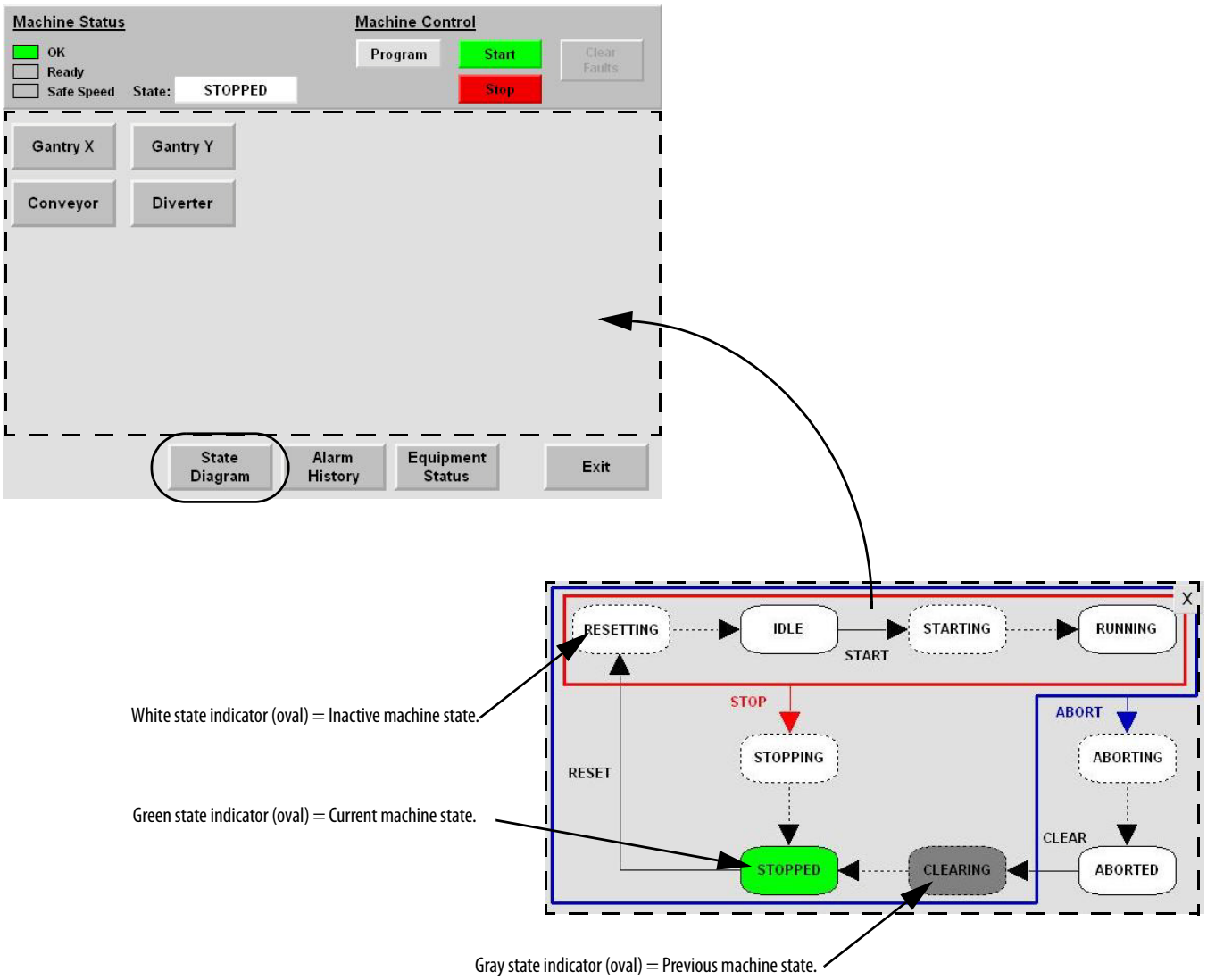
Machine Control Buttons

Control Button	Button Function
Program/Operator	Toggles the control mode between Program and Operator. Operator mode permits manual control of the drives from the faceplate. Program mode operates the drive according to the Logix Designer application. The active control mode is displayed on the button. If control mode is switched from Program to Operator while the machine is RUNNING, the machine is STOPPED.
Start	When in Program control mode, pressing Start will RESET the machine and place it into IDLE. The Start button is disabled when in Operator control mode. Pressing START when the machine is in IDLE places it into RUNNING.
Stop	When in Program control mode, pressing Stop brings the machine to a controlled stop. The machine must be stopped before you can switch to the other mode.
Clear Faults	The Clear Faults button attempts to clear faults on all axes. The condition that caused the fault must be corrected, otherwise the machine will remain in ABORTED.

IMPORTANT Start and Stop buttons on your PanelView Plus terminal do not replace a hardwired start/stop control circuit for safety purposes. Your system should also include an emergency start/stop control circuit.

State Diagram Faceplate Display

This display provides a graphical machine state status and is configured to fit within the middle section of the Machine Startup display when launched from the State Diagram Goto display button.



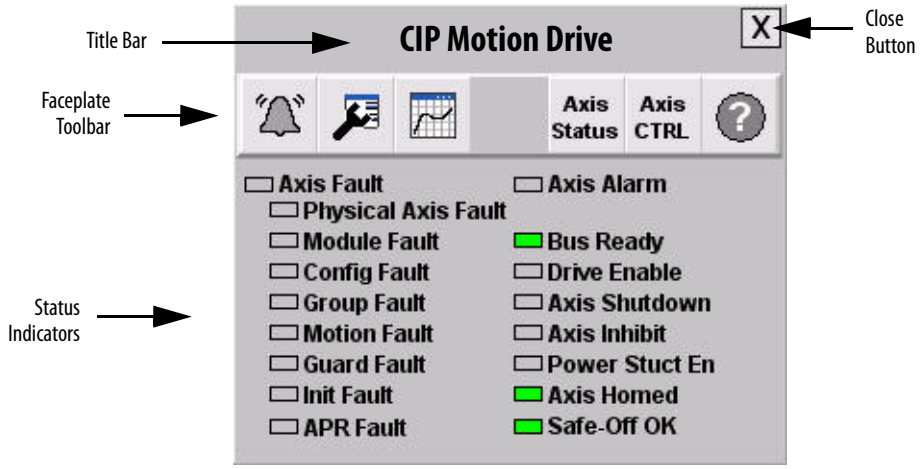
The State Diagram faceplate provides a quick reference for machine operators summarizing the relationship between machine states. Refer to Appendix A on page 225 for more information on the individual states.

Motion Drives Faceplates

The Motion drives faceplates are typically launched from the Machine Startup or Equipment Status faceplate's corresponding Goto display buttons.

TIP The Kinetix 300, sercos interface, and CIP Motion faceplates are similar in layout and the information they show, although differences do exist. The examples shown in this section are for CIP Motion drives.

Home View



Faceplate Toolbar Buttons

Function Button	Icons	Description
Alarm		The Alarm button indicates a drive fault condition and activates fault diagnostic views. A grey bell indicates normal status, with no faults. A yellow flashing bell indicates a fault condition.
Configuration		The Configuration button lets you edit the faceplate name or name of the device.
Trending		The Trending button shows you position, velocity, and current/torque trends.
Axis Status		From the Axis Status display you can view general motion, axis, and drive status.

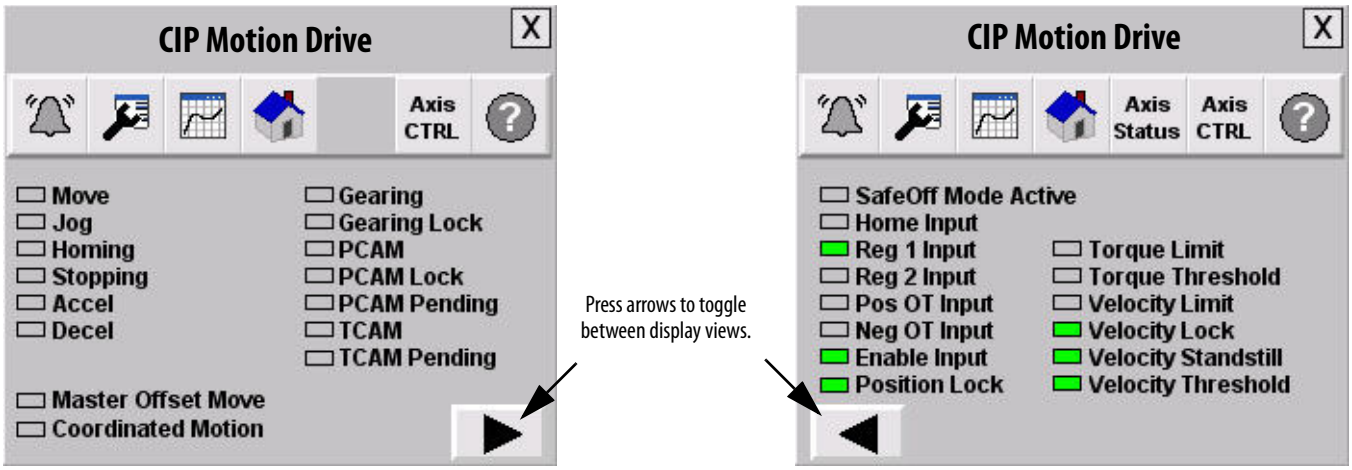
Function Button	Icons	Description
Axis Control		From the Axis Control display you can home, enable, disable, reset an axis fault, and manually control the drive.
Help		The Help button provides information for the existing view.
Close		Click the Close button to close the faceplate.

Axis Status Views

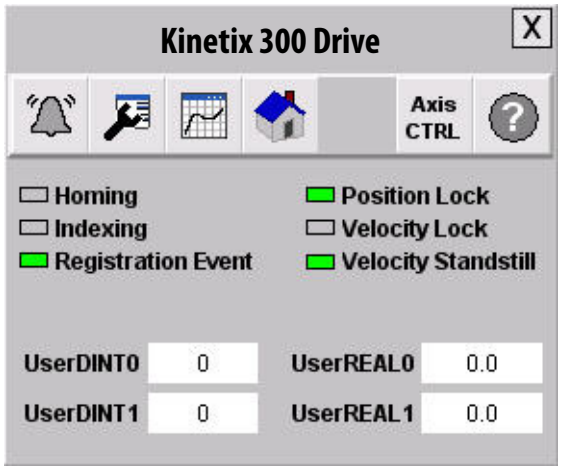
The Axis Status views let you display general motion, axis, and drive status.

- Green = ON state
- Gray = OFF state

CIP Motion Axis Status Views

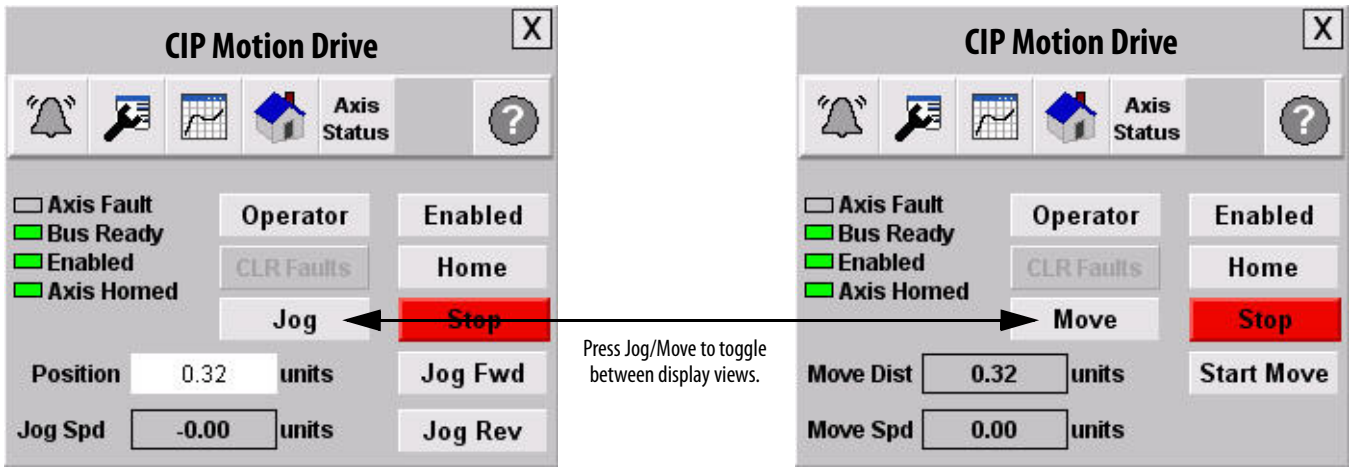


Kinetix 300 Axis Status View



The Kinetix 300 faceplate contains only one axis status view and is slightly different from the CIP Motion and sercos faceplates. The Kinetix 300 axis status view also displays the four Input Assembly Links that are transmitted from the drive to the controller.

Axis Control Views



General Status/Control Buttons

Button/Indicator	Description	Conditions Required for Each Manual Control Button	
		CIP Motion/ Sercos Drives	Kinetix 300 Drives
Program/Operator	Toggles the control mode between Program and Operator mode. Operator mode permits manual control of the drive from the faceplate. Program mode operates the drive according to the Logix Designer application. The active control mode is displayed on the button.	Machine cannot be in the STARTING or RUNNING state	
Disabled/Enabled	Toggles the drive between the enabled and disabled states. The active state of the drive is displayed on the button.	Operator Mode	
CLR Faults	Clears any active drives faults. The button appears dimmed when no active faults are present in the drive.	• Operator Mode • Active Drive Fault	
Home	CIP Motion and sercos drives: The reset sequence is initiated. By default, the reset sequence typically executes a motion axis home (MAH) instruction. Kinetix 300 drives: A start homing command is sent to the drive.	Operator Mode	• Operator Mode • Drive Enabled
Move/Jog	Toggles manual control between Move and Jog. Move mode, by default, performs an incremental position move based on the Move Position and Speed setpoints. Jog mode, by default, jogs the drive in the desired direction (forward/reverse) based on the Jog Speed.	• Operator Mode • Drive Enabled	

Move Status/Control Buttons

Button/Indicator	Description	Conditions Required for Each Manual Control Button	
		CIP Motion/ Sercos Drives	Kinetix 300 Drives
Move Dist	Dual purpose control. Displays the actual position feedback of the drive. Also launches the numeric keypad to enter the desired Move Distance.	• Operator Mode • Drive Enabled • Move Selected	
Move Spd	Dual purpose control. Displays the actual speed feedback of the drive. Also launches the numeric keypad to enter the desired Move Speed.	• Operator Mode • Drive Enabled • Move Selected	
Start Move	Initiates or starts the manual move.	• Operator Mode • Drive Enabled • Move Selected	

Jog Status/Control Buttons

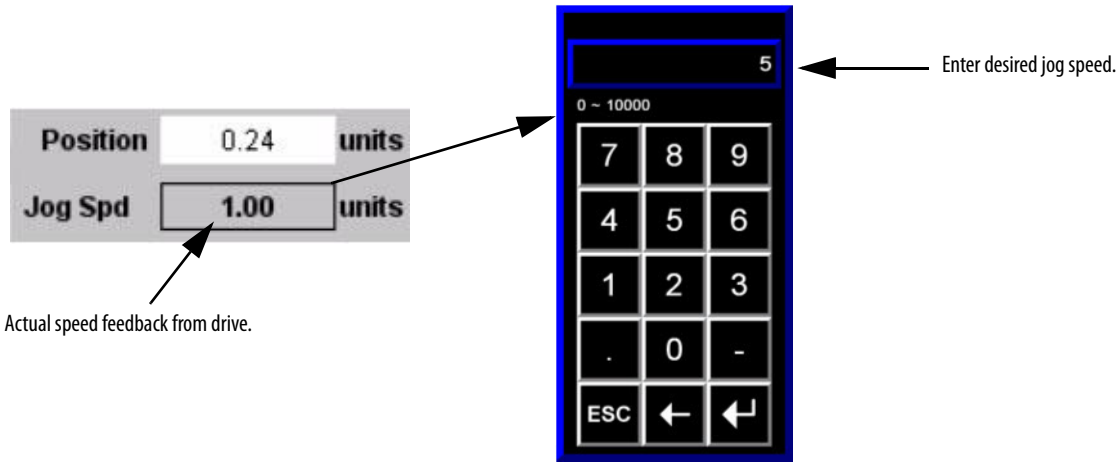
Button/Indicator	Description	Conditions Required for Each Manual Control Button	
		CIP Motion/ Sercos Drives	Kinetix 300 Drives (1)
Position	Displays the actual position of the drive.	• Operator Mode • Drive Enabled • Jog Selected	• Operator Mode • Jog Selected
Jog Spd	Dual purpose control. Displays the actual speed feedback of the drive. Also launches the numeric keypad to enter the desired Jog Speed.	• Operator Mode • Drive Enabled • Jog Selected	• Operator Mode • Jog Selected
Jog Fwd	Jogs the drive in the forward direction while the button is held. The drive stops immediately once the button is released.	• Operator Mode • Drive Enabled • Jog Selected	• Operator Mode • Jog Selected
Jog Rev	Jogs the drive in the reverse direction while the button is held. The drive stops immediately once the button is released.	• Operator Mode • Drive Enabled • Jog Selected	• Operator Mode • Jog Selected

(1) For the Kinetix 300 drive in Jog control mode, Drive Enable is not applicable.

Jog Speed, Move Distance, and Speed Controls

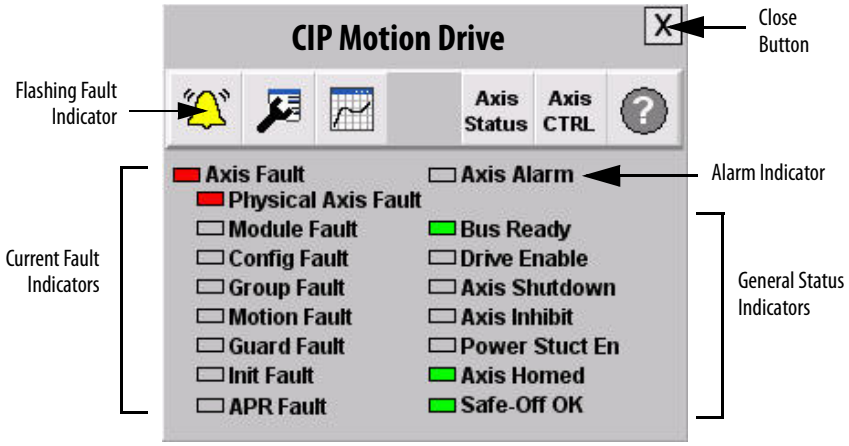
Jog Spd, Move Dist, and Move Spd are both indicators and keypad input buttons. For example, the Jog Spd indicator displays the actual speed feedback of the drive, not the desired jog speed. However, by clicking the indicator you launch the keypad input object where you can enter the desired jog speed.

Dual Purpose Controls



Fault Indication View

The Alarm button indicates a drive fault condition and activates the fault diagnostic views.



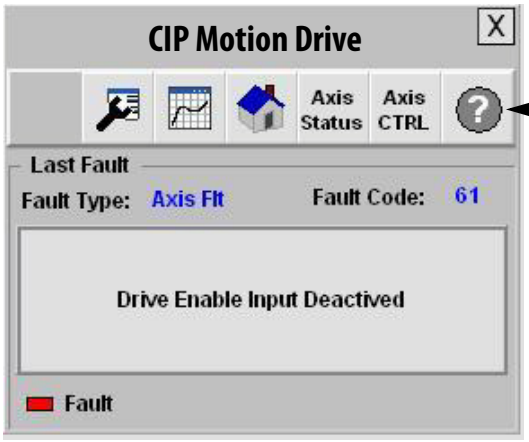
Fault Indication View

Toolbar Button	Color Indicator	Description	Action
Alarm	Grey	Normal state	None
	Flashing yellow	Fault	Follow fault action screen

To access the detailed fault information and action displays, press the alarm button on the toolbar.

Fault Diagnostic Views

Last Fault View

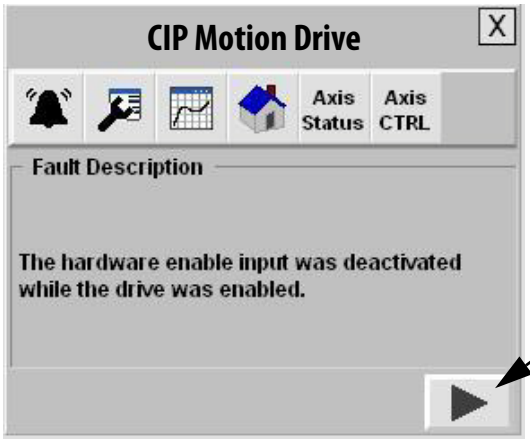


Help Button

Press Help to go to Fault Description views.

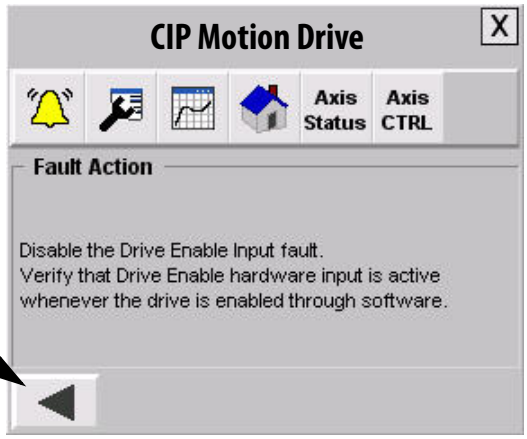
The Last Fault view is displayed when you press Alarm. The specific error being reported by the module is indicated.

Fault Description View



Press arrows to toggle between display views.

Fault Actions View



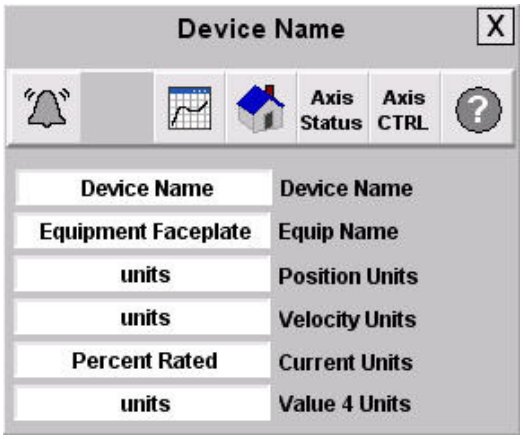
This diagnostic information is triggered by the reported module error code. The input and output error code information provided is in accordance with the fault descriptions and actions found in the drive specific user manual.

Configuration View

The configuration button takes you to a display to edit the faceplate name or device descriptions.

You can enter display names and units as required for your application. Some of the labels are used on the Equipment Status faceplate.

Pressing any of the name or device descriptions launches an ASCII keypad for text entry. Pressing Enter on the keypad completes editing.

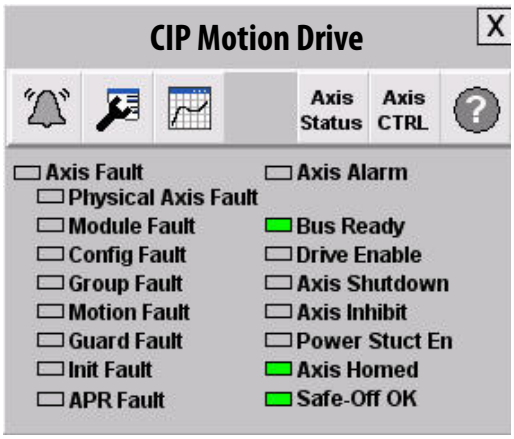


Trend Views

Follow these steps to discover the trend views.

1. Press the trend toolbar button to access the trend faceplate views.

   The trend views let you monitor the position, velocity and current values.

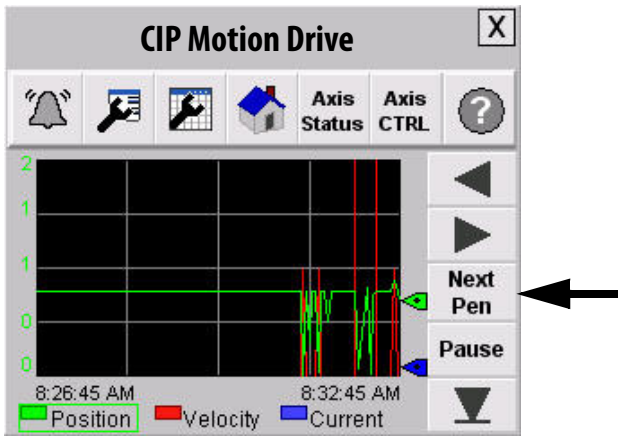


2. Press the Next Pen button to shift between the position, velocity, and current/torque trends.

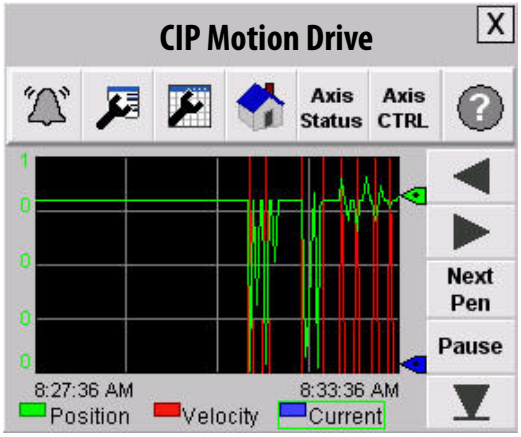
   The Y-axis scale is automatically adjusted based on the trend pen you select.

   In this example, the Position trend is selected.

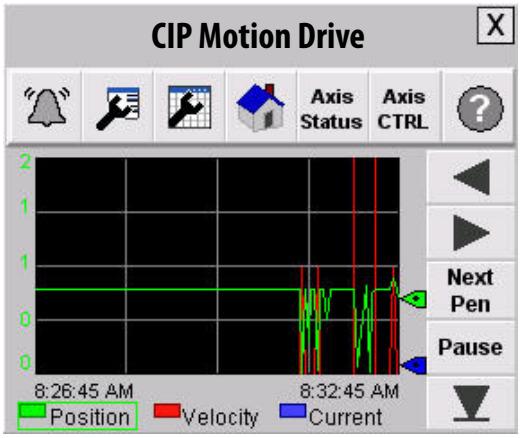
   The green box around position, velocity, and current/torque indicates the selected pen.



In this example, the Current trend is selected and the Y-axis scale is adjusted accordingly.



3. Press the trend configuration toolbar button  to set the minimum and maximum values of the trend Y-axis scale.

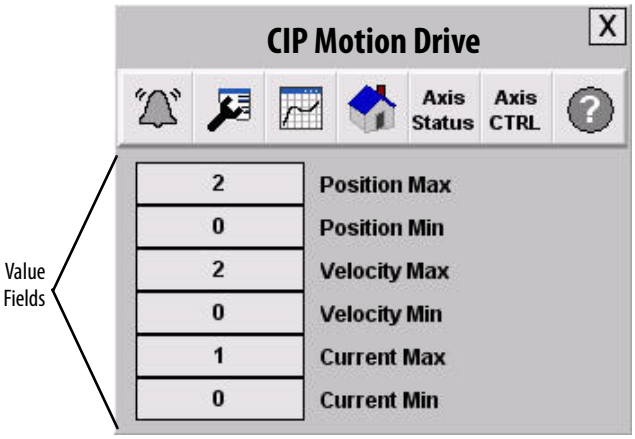


The trend scale configuration screen opens.

4. Press the value fields to modify.

   A popup keyboard opens for value entry.

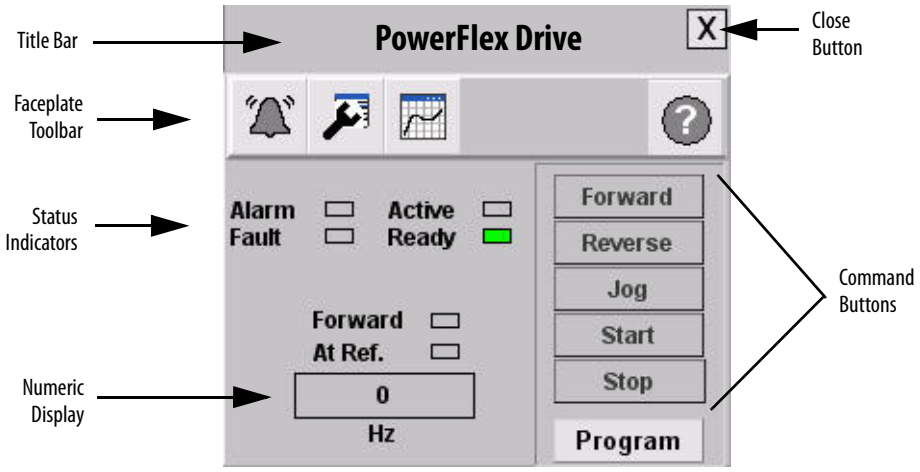
5. Press the Enter key on the keyboard, when entry is complete.



PowerFlex Drives Faceplates

The PowerFlex drives faceplates are typically launched from the corresponding Machine Startup or Equipment Status faceplate's Goto display button.

Home View



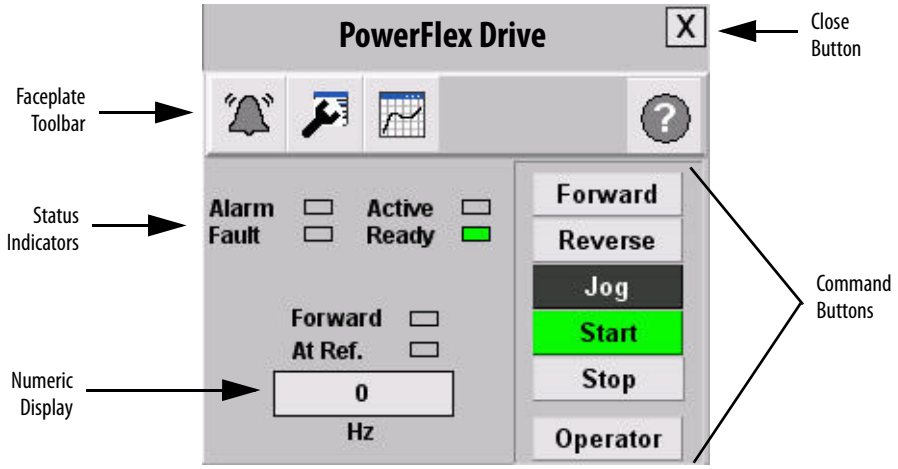
Faceplate Status/Control Buttons

Button	Icons	Description
Alarm [1]		The Alarm button indicates a drive fault condition and activates fault diagnostic views. A grey bell indicates normal status, with no faults. A red flashing bell indicates a fault condition.
Configuration		The Configuration button lets you edit the PowerFlex faceplate name or name of the device.
Trending		The Trending button shows you voltage, current, and speed trends.
Help		The Help button provides information for the existing view.
Close		Click the Close button to close the faceplate.
Program/Operator		Toggles the control mode between Program and Operator. Operator mode permits manual control of the drives from the faceplate. Program mode operates the drive according to the Logix Designer application. The active control mode is displayed on the button. If control mode is switched from Program to Operator while the machine is RUNNING, the machine is STOPPED.
Numeric Display		Click the Numeric Display button to access numeric entry keypad.

(1) There is no Alarm indication on the PowerFlex 525 drive faceplate because the PowerFlex 525 drive does not support alarms.

Control View

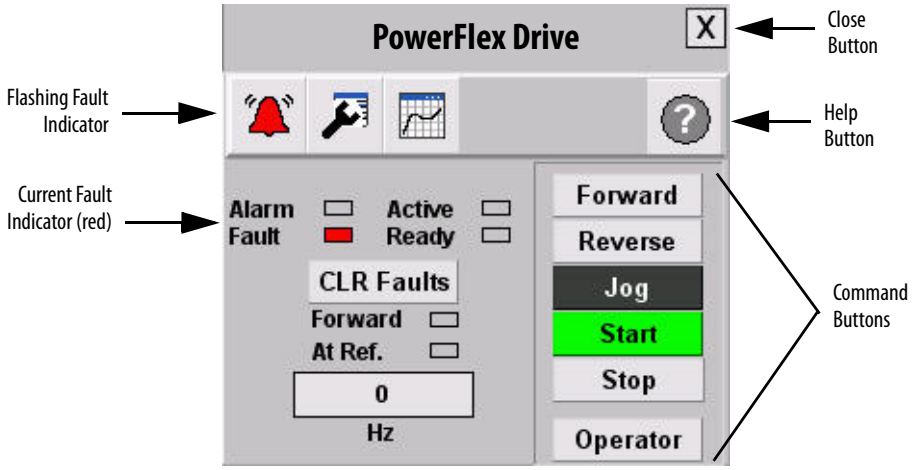
The overview faceplate places the logic program in control by default. For an operator to take control, press the Program button. The text on the button changes to Operator and the drive command buttons (Start and Stop, for example) are enabled.



Forward, Reverse, Jog, Start, and Stop command buttons let the operator perform the normal drive functions as the names suggest. You can also enter a speed reference by pressing the numeric display.

Fault Indication View

The Alarm button indicates a drive fault condition and activates the fault diagnostic views.



Fault Indication View

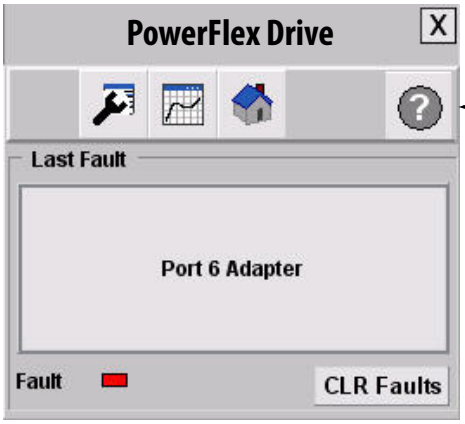
Toolbar Button	Color Indicator	Description	Action
Alarm (1)	Grey	Normal state	None
	Flashing red	Fault	Follow fault action screen

(1) There is no Alarm indication on the PowerFlex 525 drive faceplate because the PowerFlex 525 drive does not support alarms.

To access the detailed fault information and action displays, press the alarm button on the toolbar.

Fault Diagnostic Views

Last Fault View

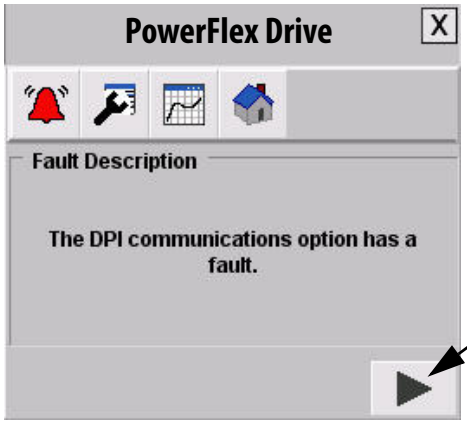


Help Button

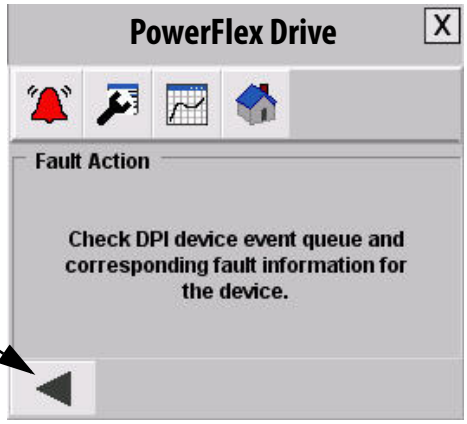
Press Help to go to Fault Description views.

The Last Fault view is displayed when you press Alarm. The specific error being reported by the module is indicated.

Fault Description View



Fault Actions View



This diagnostic information is triggered by the reported module error code. The input and output error code information provided is in accordance with the fault descriptions and actions found in the drive specific user manual.

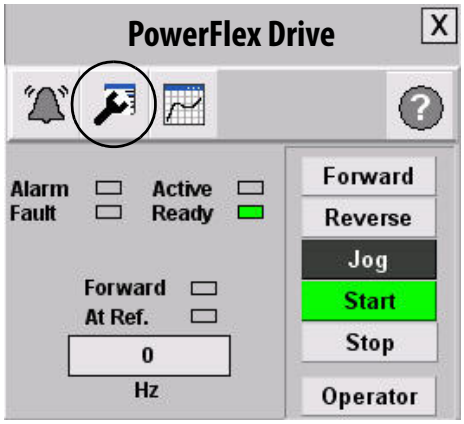
Press arrows to toggle between display views.

Configuration Views

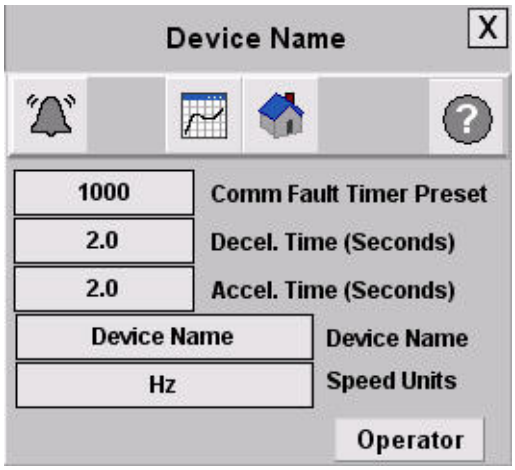
You can use the Configuration button to edit the faceplate name or device descriptions.

1. Press the Configuration button on the toolbar.

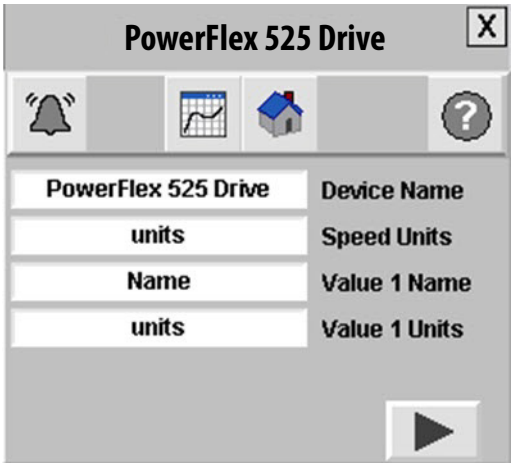
   The Configuration button becomes highlighted.

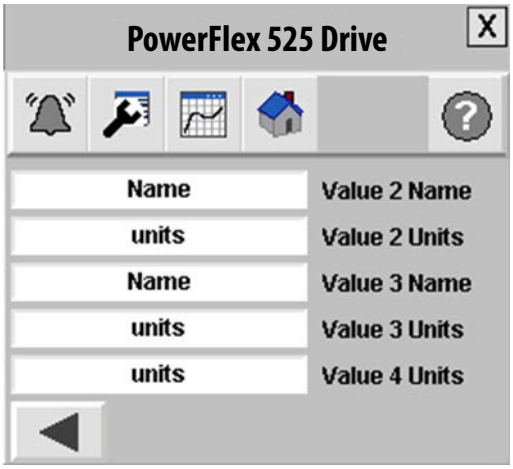


2. Press the title bar, drive name, or value fields that you need to modify.



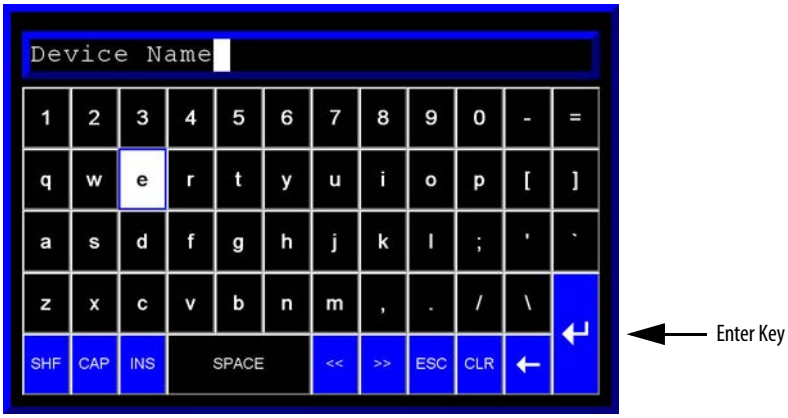
These HMI faceplates apply to the PowerFlex 525 drives and are used for assigning the device name and units to the faceplate and the speed units and pens associated with them.





A popup keyboard opens.

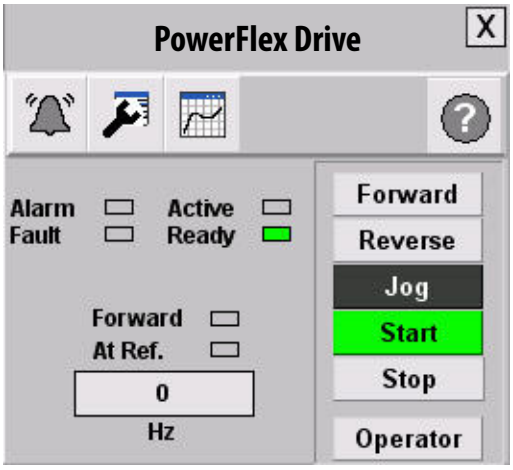
3. Type the desired text or values.
4. Press the Enter key.



Trend Views

1. Press the trend toolbar button  to access the trending faceplate view.

   The trend views let you monitor the voltage, current, and speed values.

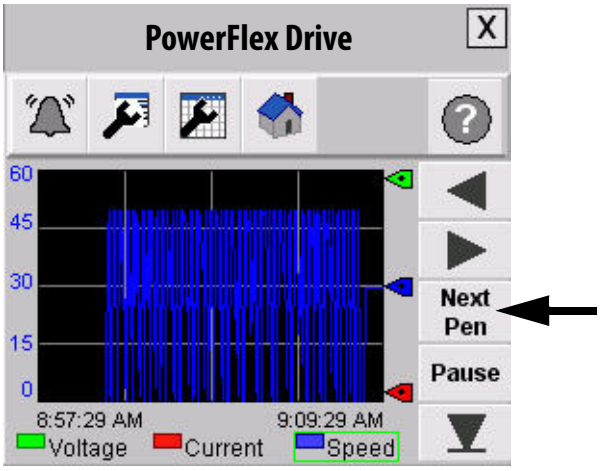


2. Press the Next Pen button to shift between the voltage, current, and speed trends.

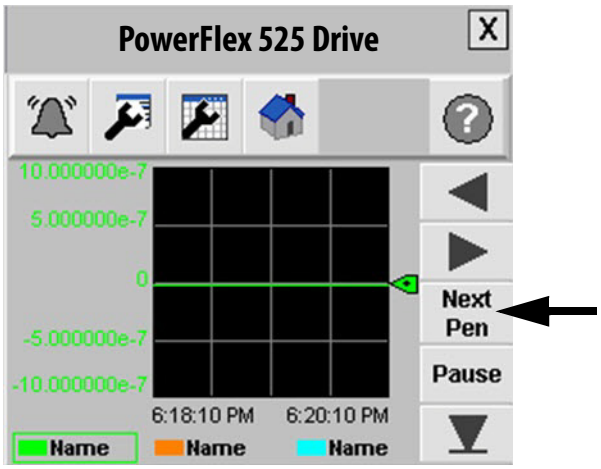
   The Y axis scale is automatically adjusted based on the trend pen you select.

   In this example, the Speed trend is selected.

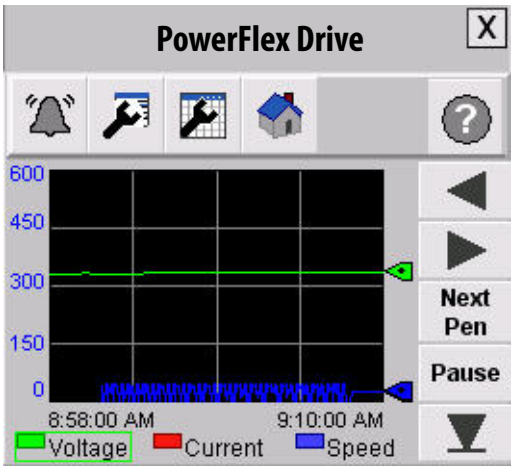
   The green box around Voltage, Current, and Speed indicates the selected pen.



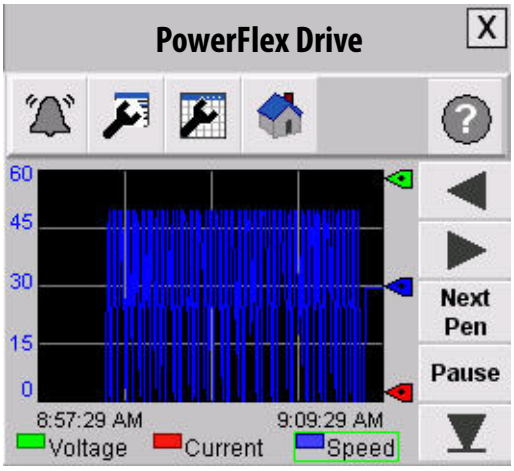
This HMI faceplate applies to the PowerFlex 525 drives.



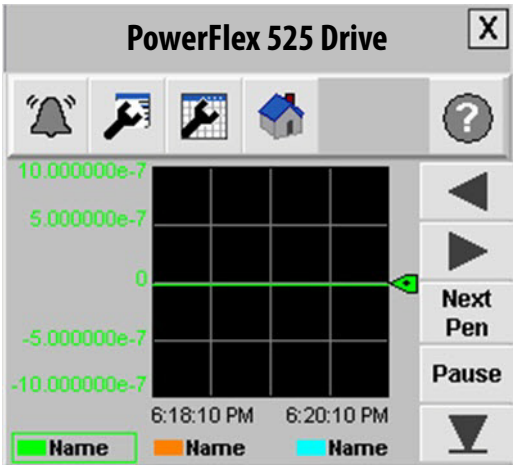
In this example, the Voltage trend is selected and the Y-axis scale is adjusted accordingly.



3. Press the trend configuration toolbar button  to set the minimum and maximum values of the trend scale.

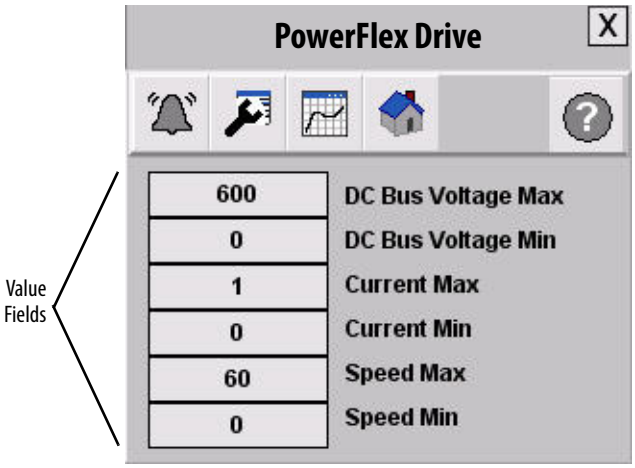


This HMI faceplate applies to the PowerFlex 525 drives.



The trend scale configuration screen opens.

4. Press the value fields to modify.



This HMI faceplate applies to the PowerFlex 525 drives.

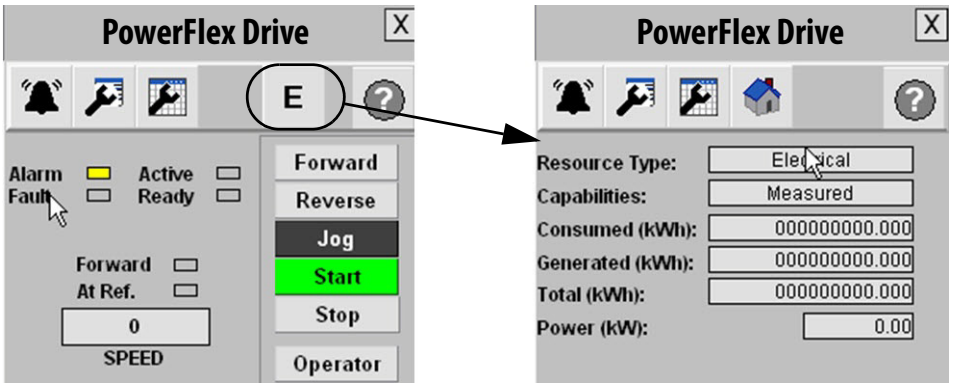
A popup keyboard opens for value entry.

5. Press the Enter key on the keyboard, when entry is complete.

Energy Status Views

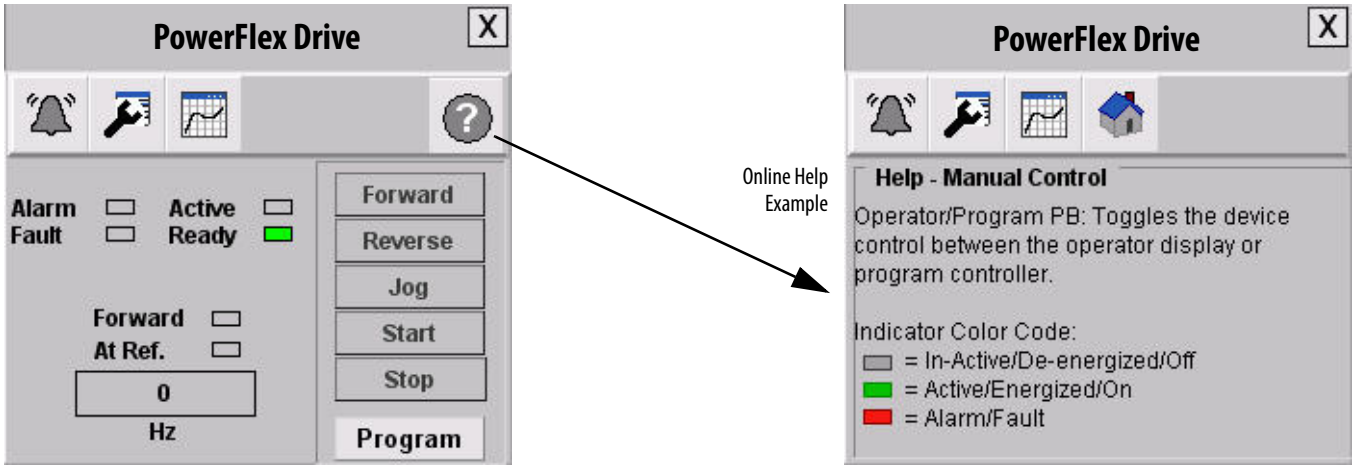
If the PowerFlex Drive faceplate with the Energy Monitoring option is used, there will be also be an Energy tab available on the toolbar.

Press the energy toolbar button **E** to access the energy status faceplate view.



Online Help Views

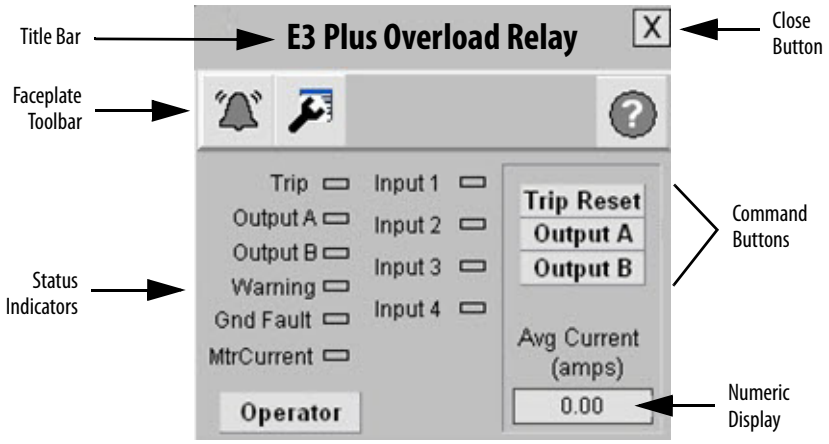
Press the Help button on any view to access the online help information.



E3 Plus Overload Relay Faceplates

The E3 Plus overload relay faceplate is typically launched from the corresponding Machine Startup or Equipment Status faceplate's Goto display button.

Home/Control View

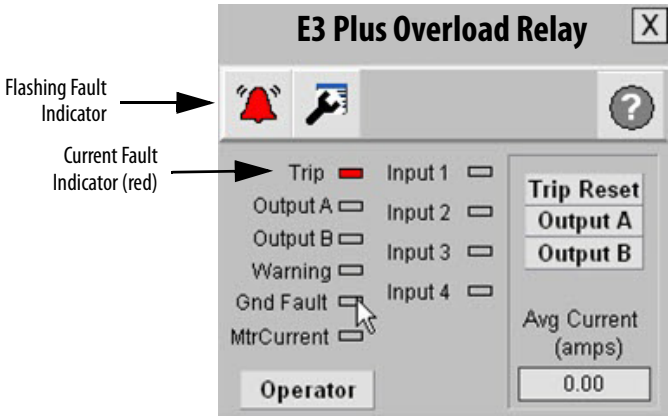


Faceplate Status/Control Buttons

Button	Icons	Description
Alarm		The Alarm button indicates a fault condition and activates fault diagnostic views. A grey bell indicates normal status, with no faults. A red flashing bell indicates a fault condition.
Configuration		The Configuration button lets you edit the E3 Plus overload relay faceplate name or name of the device.
Help		The Help button provides information for the current view.
Close		Click the Close button to close the faceplate.
Status Indicators		Grey = OK, normal, off Red = Tripped Yellow = Warning/Outputs commanded closed/user device inputs closed Green = Active load present
Program/Operator		Toggles the control mode between Program and Operator. Operator mode permits manual control of the relay from the faceplate. Program mode operates the relay according to the Logix Designer application. The active control mode is displayed on the button.
Command Buttons		The command buttons are enabled when in Operator mode. Trip Reset, Output A, and Output B let the operator perform the E3 Plus overload relay functions as the names suggest.

Fault Indication View

The Alarm button indicates a drive fault condition and activates the fault diagnostic views.



Fault Indication View

Toolbar Button	Color Indicator	Description	Action
Alarm	Grey	Normal state	None
	Flashing yellow	Warning	None
	Flashing red	Fault	Follow fault action screen

To access the detailed fault information and action displays, press the alarm button on the toolbar.

Fault Diagnostic Views

Last Fault View

Help Button

Press Help to go to Fault Description views.

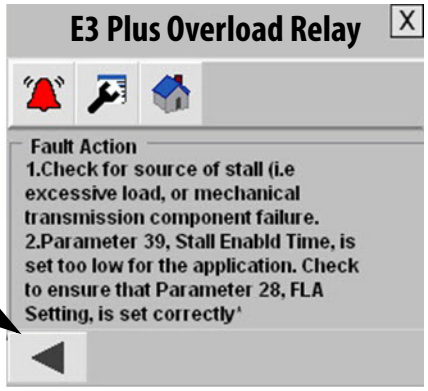
The Last Fault view is displayed when you press Alarm. The specific error being reported by the module is indicated.

Fault Description View

This diagnostic information is triggered by the reported module error code. The input and output error code information provided is in accordance with the fault descriptions and actions found in the E3 Plus overload relay user manual.

Press arrows to toggle between display views.

Fault Action View

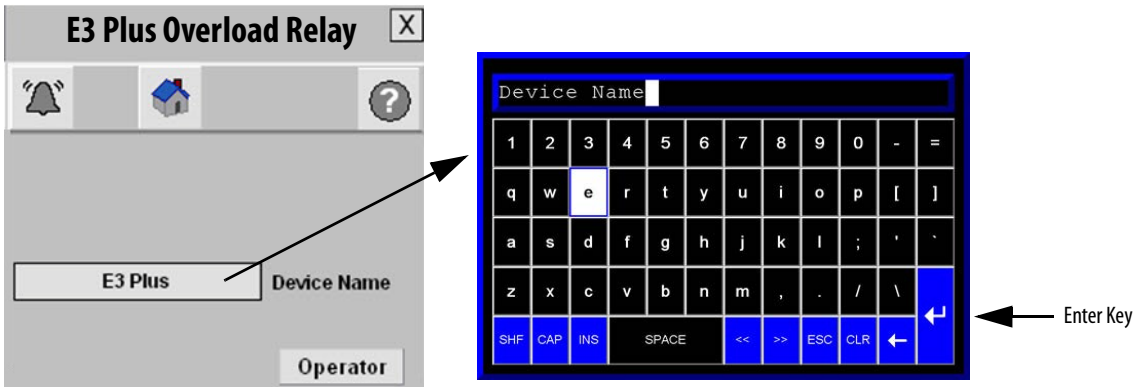


Configuration View

You can use the Configuration button to edit the faceplate name or device descriptions.

1. Press  on the faceplate toolbar to launch the Configuration view.

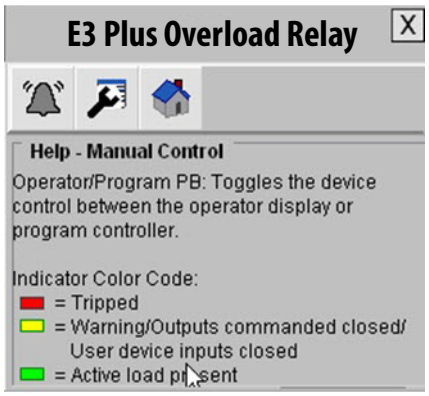
   The only parameter that is configurable from the E3 Plus faceplate is the faceplate/device name.



2. Click the string entry box to launch the keyboard popup.
3. Type the desired text.
4. Press Enter.

Online Help Views

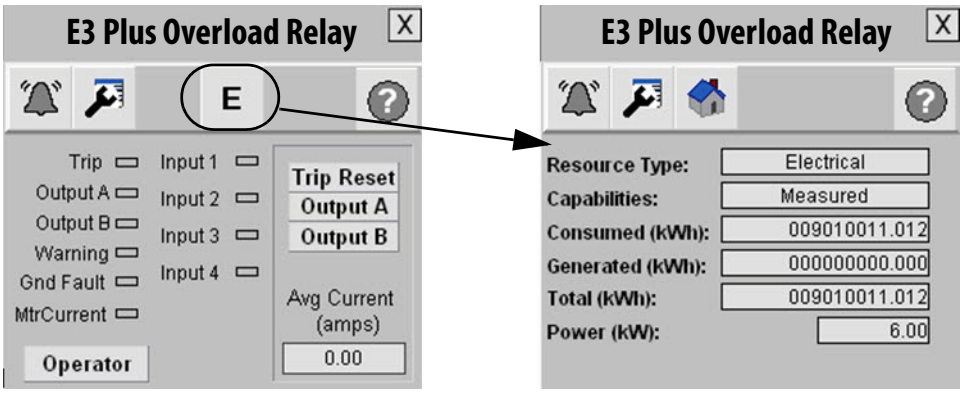
Press  on the faceplate toolbar of any view to access the online help information.



Energy Status Views

If the E3 Plus overload relay faceplate with the Energy Monitoring option is used, the Energy tab also appears on the faceplate toolbar.

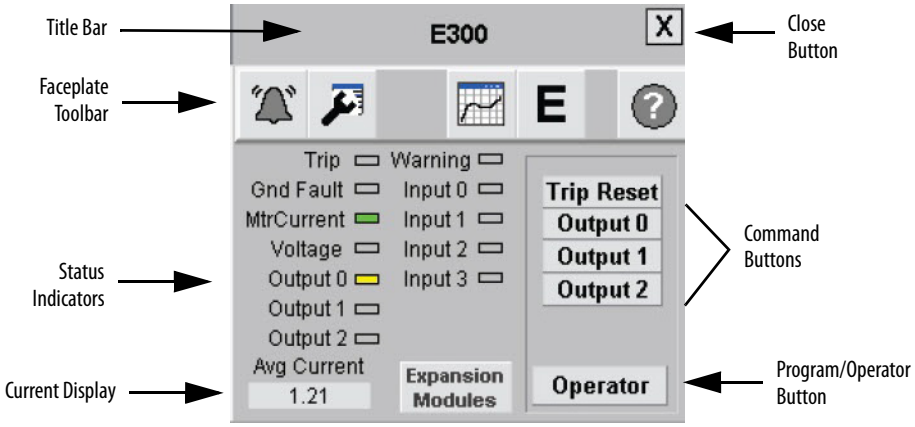
Press **E** on the Energy faceplate toolbar to access the energy status faceplate view.



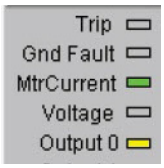
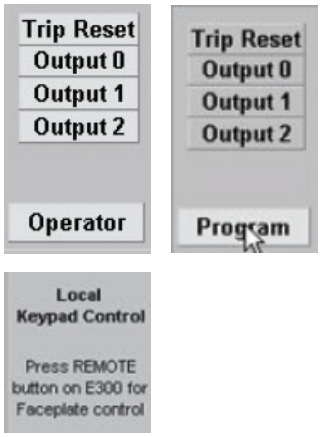
E300 Overload Relay Faceplates

The E300 overload relay faceplate is typically launched from the corresponding Machine Startup or Equipment Status faceplate's Goto display button.

Home/Control View



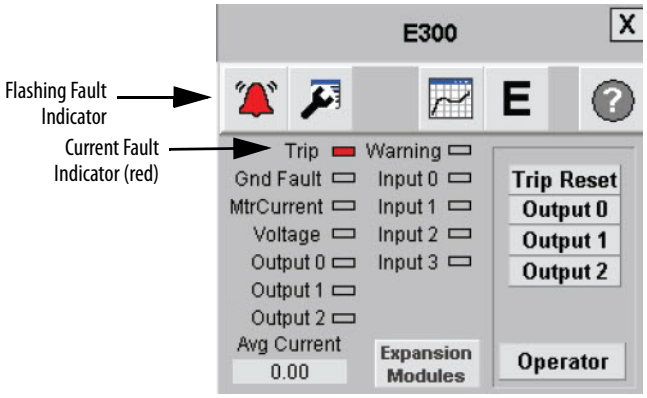
Faceplate Status/Control Buttons

Button	Icons	Description
Alarm		The Alarm button indicates a fault condition and activates fault diagnostic views. A grey bell indicates normal status, with no faults. A red flashing bell indicates a fault condition.
Configuration		The Configuration button lets you edit the E3 Plus overload relay faceplate name or name of the device.
Trending		The Trending button displays a trend of the current and % TCU.
Energy		The Energy button displays a list of energy related data values.
Help		The Help button provides information for the current view.
Close		Click the Close button to close the faceplate.
Status Indicators (1)		Grey = Inactive/De-energized/OFF Green = ON Yellow = Energized/Warning Red = Alarm/Fault
Program/Operator		Toggles the control mode between Program and Operator. Operator mode permits manual control of the relay from the faceplate. Program mode operates the drive according to the Logix Designer application. The active control mode is displayed on the button.
Command Buttons (1)		Command buttons are available for performing a trip reset and energizing outputs from the faceplate. The command buttons are enabled when the E300 relay is in Remote mode and Operator mode is selected by the operator. If the E300 relay is in Remote mode, but Program mode is selected, the buttons are disabled. If the E300 relay is not in Remote mode, the buttons are not visible and the faceplate indicates that the device is currently under Local Keypad Control.
Expansion Modules		The Expansion Modules button is available when there are expansion modules configured. Clicking this button displays the status of inputs and outputs on the expansion modules. The number of expansion modules shown updates dynamically, based on the module properties defined in the controller.

(1) The number of inputs and outputs displayed, changes dynamically based on the module properties defined in the controller.

Fault Indication View

The Alarm button indicates a drive fault condition and activates the fault diagnostic views.



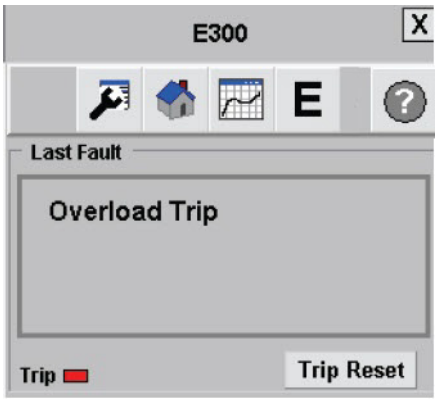
Alarm Fault Indications

Color Indicator	Description	Action
Grey	Normal state	None
Flashing yellow	Warning	Follow fault action screen
Flashing red	Fault	Follow fault action screen

To access the detailed fault information and action displays, press the alarm button on the toolbar.

Fault Diagnostic Views

Last Fault View



Help Button

Press Help to go to Fault Description views.

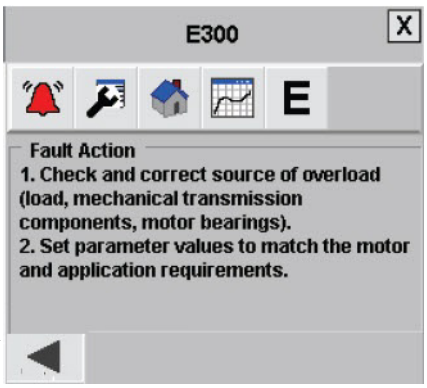
The Last Fault view is displayed when you press Alarm. The specific error being reported by the module is indicated.

Fault Description View

This diagnostic information is triggered by the reported module error code. The input and output error code information provided is in accordance with the fault descriptions and actions found in the E300 overload relay user manual.

Press arrows to toggle between display views.

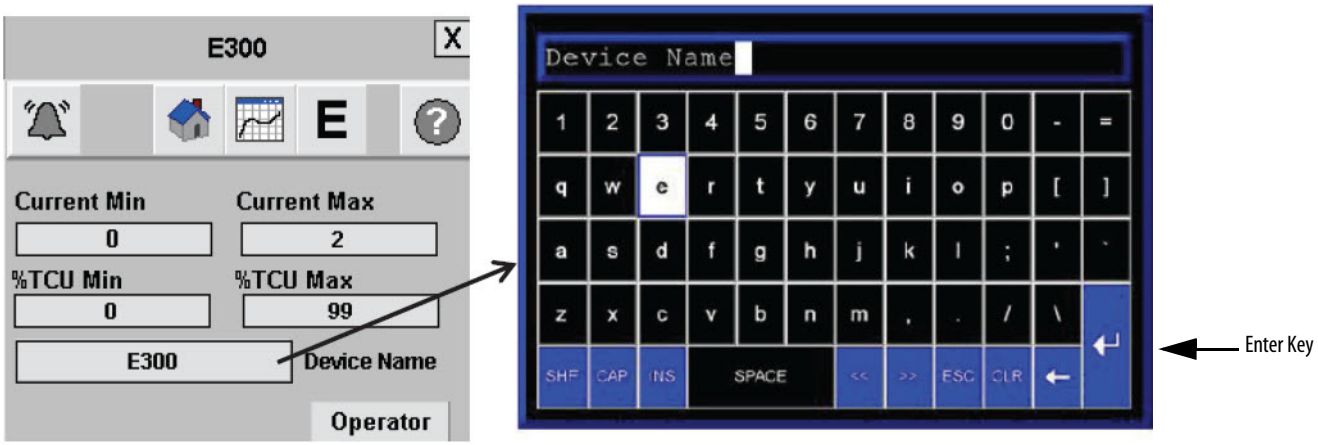
Fault Action View



Configuration View

You can use the Configuration button to edit the faceplate name or device descriptions.

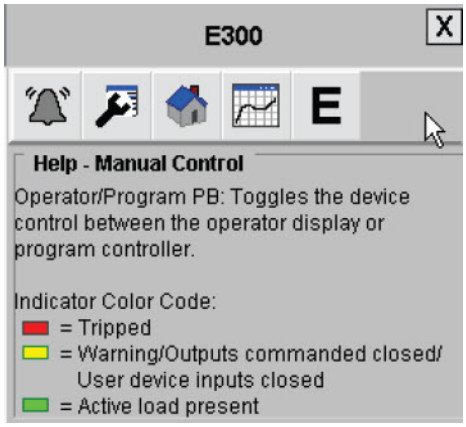
1. Press  on the faceplate toolbar to launch the Configuration view.



2. Click the string entry box to launch the keyboard popup.
3. Type the desired text.
4. Press Enter.

Online Help Views

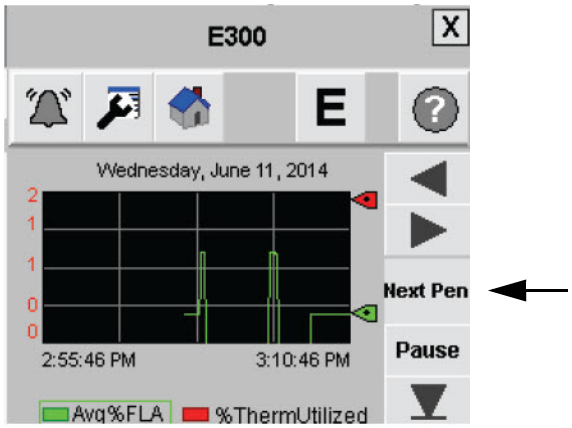
Press  on the faceplate toolbar of any view to access the online help information.



Trend View

The Trend view displays a trend of either the average current or the % Thermal Capacity Utilized (TCU).

1. Press  on the toolbar to access the trending faceplate view.

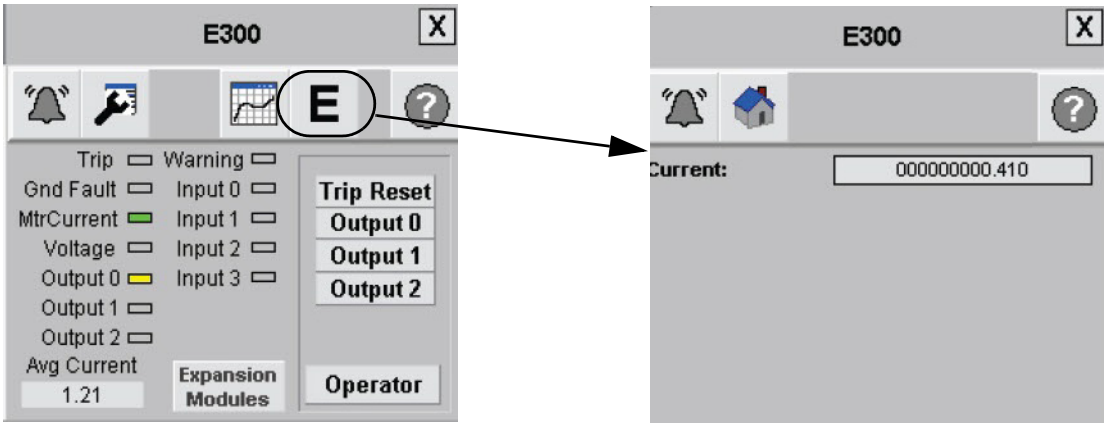


2. Press the Next Pen button to toggle between trend views.
3. Press  on the configuration toolbar to set the minimum and maximum display range.

Energy Status View

If the E300 overload relay faceplate with the Energy Monitoring option is used, the Energy tab also appears on the faceplate toolbar.

Press  on the Energy faceplate toolbar to access the energy status faceplate view.

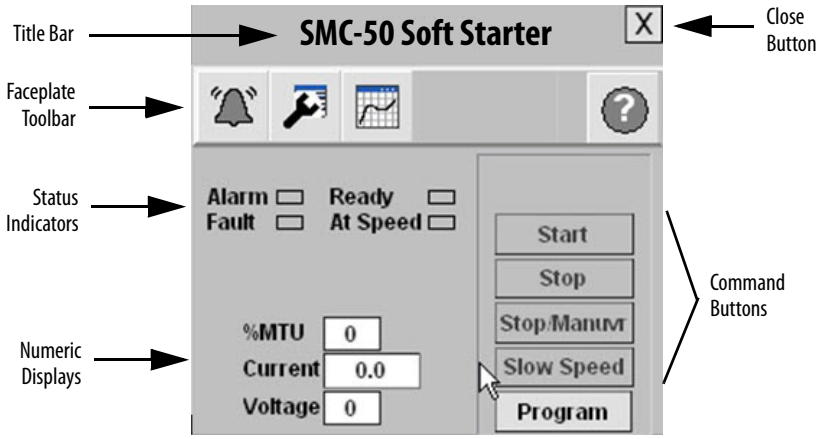


The energy data displayed is dependent on the module definition configured in the controller. If you do not have a voltage-sensing module configured, only the current is displayed on the energy tab.

SMC-50 Soft Starter Faceplates

The SMC-50 soft starter faceplate is typically launched from the corresponding Machine Startup or Equipment Status faceplate's Goto display button.

Home/Control View

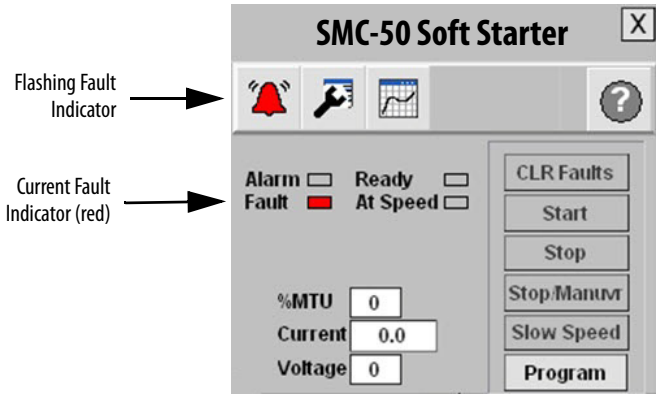


Faceplate Status/Control Buttons

Button	Icons	Description
Alarm		The Alarm button indicates a fault condition and activates fault diagnostic views. A grey bell indicates normal status, with no faults. A red flashing bell indicates a fault condition.
Configuration		The Configuration button lets you edit the SMC-50 communication fault timer, slow speed percent, and faceplate/device name.
Trend		The Trending button shows you voltage, current, and MTU trends.
Help		The Help button provides information for the current view.
Close		Click the Close button to close the faceplate.
Status Indicators		Grey = Inactive/De-energized/Off Green = Active/Energized/On Red = Alarm/Fault
Program/Operator		Toggles the control mode between Program and Operator. Operator mode permits manual control of the SMC-50 soft starter from the faceplate. Program mode operates the drive according to the Logix Designer application. The active control mode is displayed on the button.
Command Buttons		The command buttons are enabled when in Operator mode. Start, Stop, Stop Maneuver, and Slow Speed buttons let you perform the SMC-50 soft starter functions as the names suggest.

Fault Indication View

The Alarm button indicates a drive fault condition and activates the fault diagnostic views.



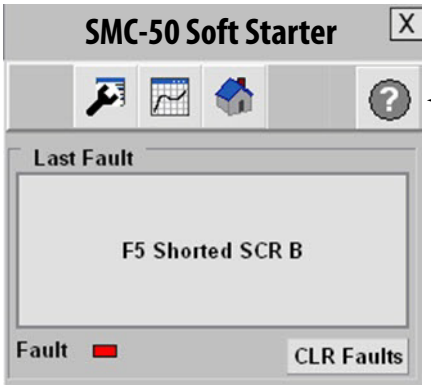
Alarm Fault Indications

Color Indicator	Description	Action
Grey	Normal state	None
Flashing red	Fault	Follow fault action screen

To access the detailed fault information and action displays, press the alarm button on the toolbar.

Fault Diagnostic Views

Last Fault View



Help Button

Press Help to go to Fault Description views.

The Last Fault view is displayed when you press Alarm. The specific error being reported by the module is indicated.

Fault Description View

This diagnostic information is triggered by the reported module error code. The input and output error code information provided is in accordance with the fault descriptions and actions found in the SMC-50 soft starter user manual.

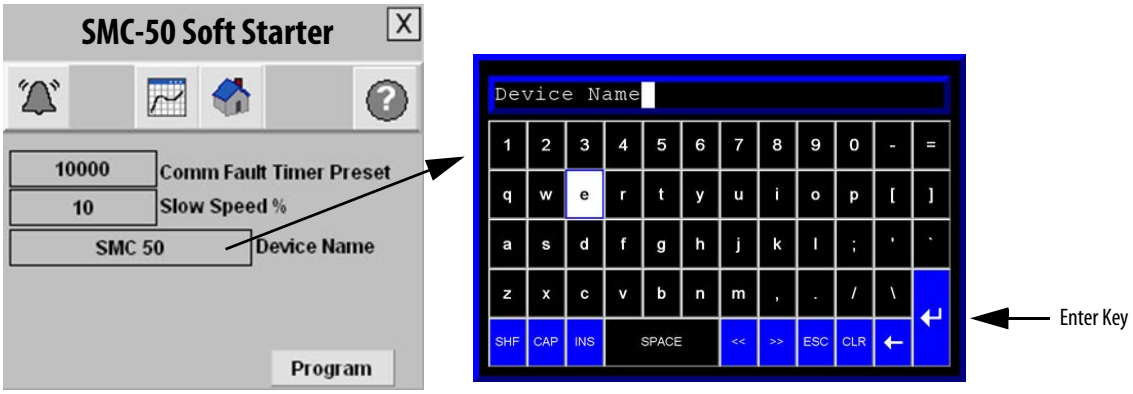
Press arrows to toggle between display views.

Fault Action View

Configuration View

You can use the Configuration button to edit the faceplate name or device descriptions.

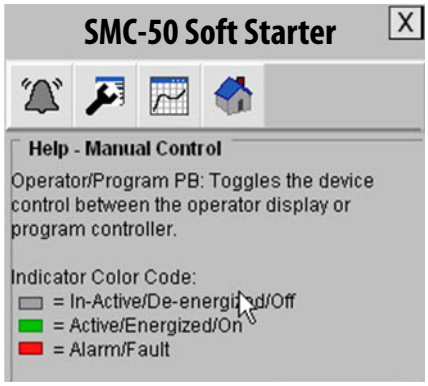
1. Press  on the faceplate toolbar to launch the Configuration view.



2. Click the string entry box to launch the keyboard popup.
3. Type the desired text.
4. Press Enter.

Online Help Views

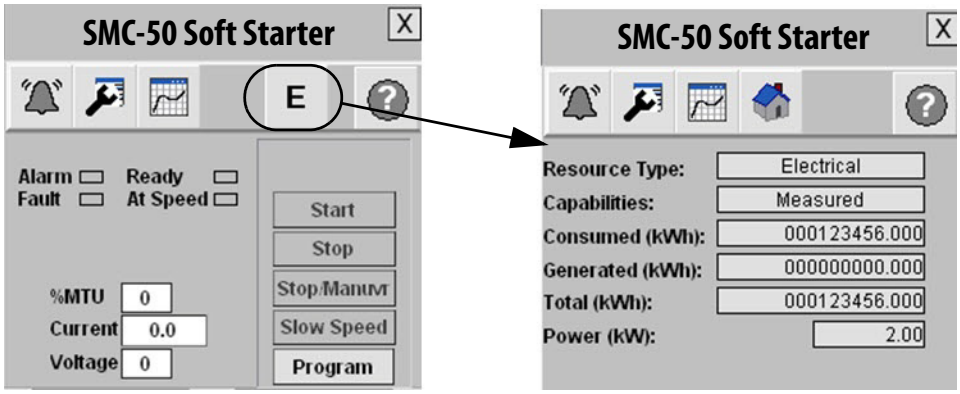
Press  on the faceplate toolbar of any view to access the online help information.



Energy Status Views

If the SMC-50 soft starter faceplate with the Energy Monitoring option is used, the Energy tab also appears on the faceplate toolbar.

Press **E** on the Energy faceplate toolbar to access the energy status faceplate view.

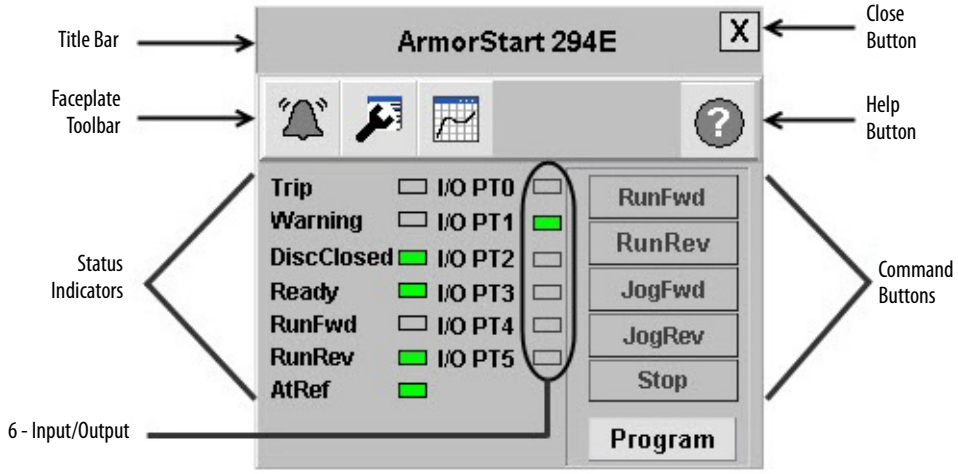


ArmorStart Distributed Motor Controller Faceplates

The ArmorStart faceplates are typically launched from the corresponding Machine Startup or Equipment Status faceplate's Goto display button.

IMPORTANT	This faceplate is only for the ArmorStart Bulletin 294E. Each ArmorStart device has its own faceplate with similar functions.

Home View



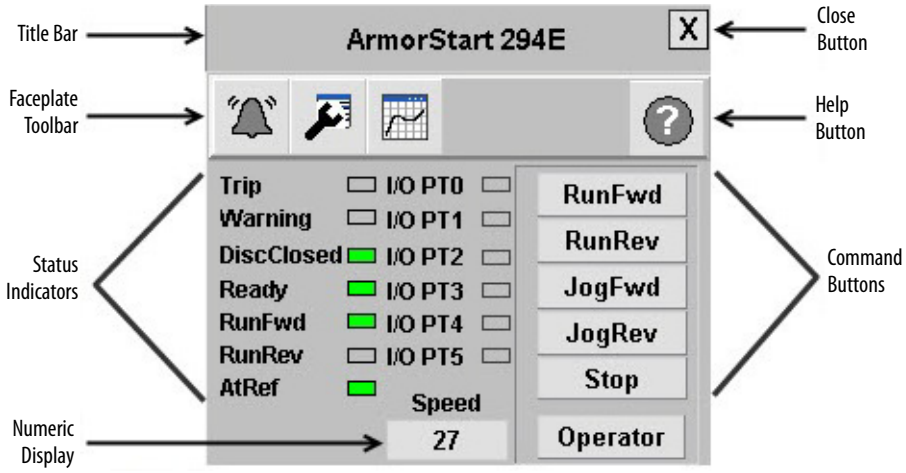
Faceplate Status/Control Buttons

Button	Icons	Description
Alarm		The Alarm button indicates a fault condition and activates fault diagnostic views. A grey bell indicates normal status, with no faults. A red flashing bell indicates a fault condition.
Configuration		The Configuration button lets you edit the ArmorStart faceplate name or name of the device.
Help		The Help button provides information for the current view.
Trending		The Trending button shows you voltage, current, and speed trends.
Close		Click the Close button to close the faceplate.
Status Indicators		Grey = OK, normal, off Red = Tripped Yellow = Warning/Outputs commanded closed/user device inputs closed Green = Active load present
Program/Operator		Toggles the control mode between Program and Operator. Operator mode permits manual control of the relay from the faceplate. Program mode operates the relay according to the Logix Designer application. The active control mode is displayed on the button.

Control View

The overview faceplate places the logic program in control by default. For an operator to take control, press the Program button. The text on the button changes to Operator and the drive command buttons (Run and Jog, for example) are enabled.

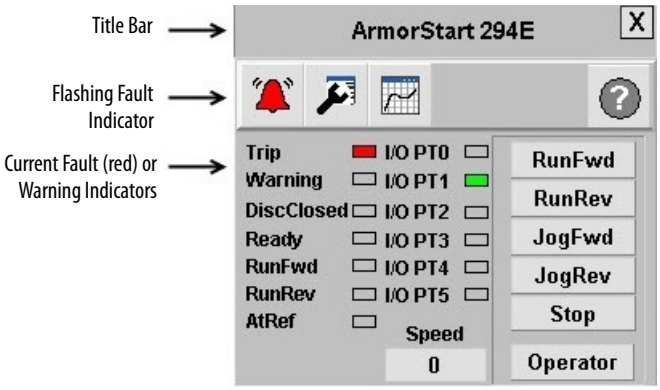
IMPORTANT This faceplate is only for the ArmorStart Bulletin 294E. Each ArmorStart device has its own faceplate with similar functions.



RunFwd, RunRev, JogFwd, JogRev, and Stop command buttons let the operator perform the normal functions as the names suggest. You can also enter a speed reference by pressing the numeric display.

Fault Indication View

The Alarm button indicates an ArmorStart fault condition and activates the fault diagnostic views.



Alarm Fault Indications

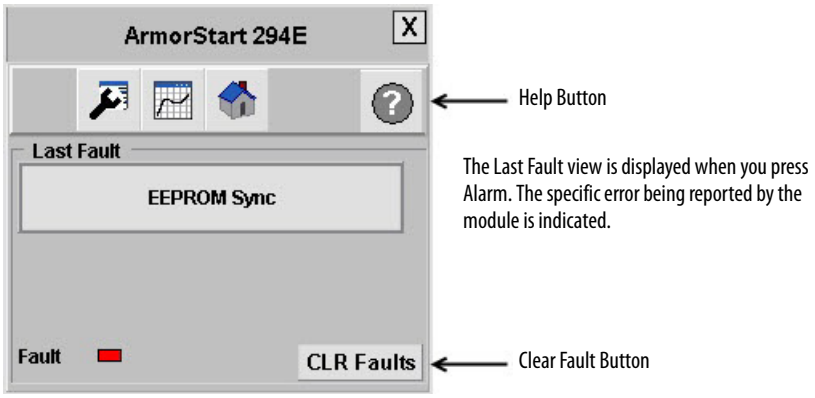
Color Indicator	Description	Action
Grey	Normal state	None
Flashing red	Fault	Follow fault action screen

To access the detailed fault information and action displays, press the alarm button on the toolbar.

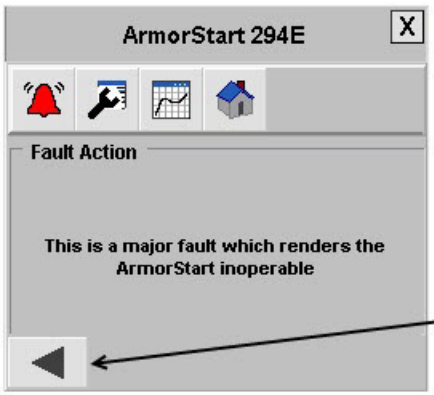
IMPORTANT These faceplates are only for the ArmorStart Bulletin 294E. Each ArmorStart device has its own faceplate with similar functions.

Fault Diagnostic Views

Last Fault View



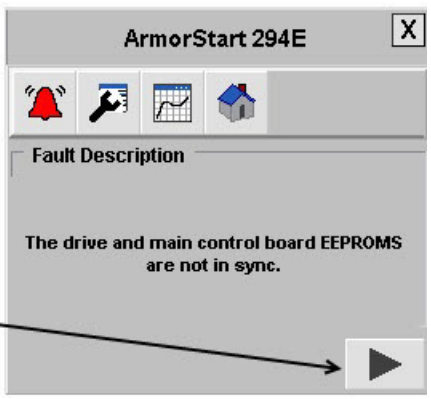
Fault Action View



This diagnostic information is triggered by the reported module error code. The input and output error code information provided is in accordance with the fault descriptions and actions found in the drive specific user manual.

Press arrows to toggle between display views.

Fault Description View



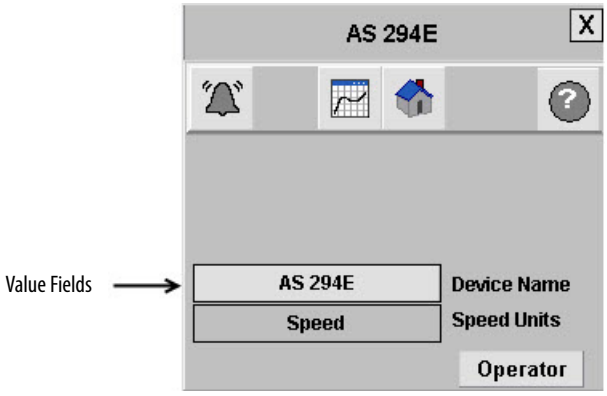
Configuration Views

You can use the Configuration button to edit the faceplate name or device descriptions.

IMPORTANT	This faceplate is only for the ArmorStart Bulletin 294E. Each ArmorStart device has its own faceplate with similar functions.

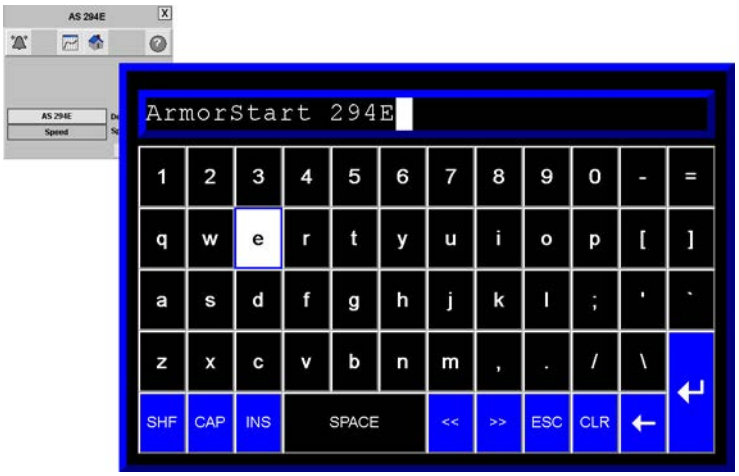
1. Press  on the faceplate toolbar to launch the Configuration view.

2. Press the title bar, drive name, or value fields that you need to modify.



3. Type the desired text and press the Enter key.

   This faceplate is for assigning the device name and units of the faceplate.

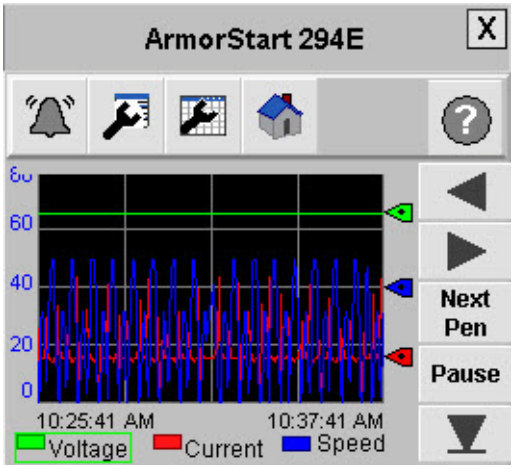


Trend Views

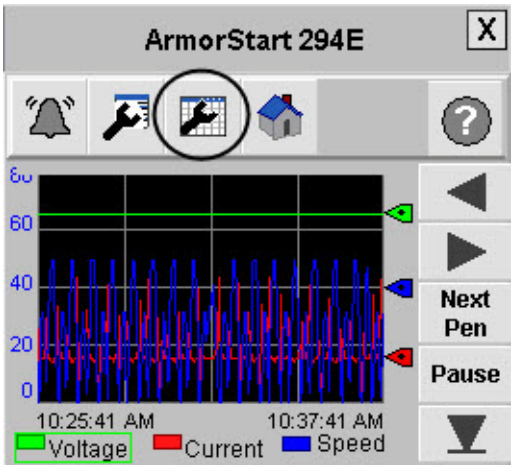
IMPORTANT This faceplate is only for the ArmorStart Bulletin 294E. Each ArmorStart device has its own faceplate with similar functions.

1. Press  on the toolbar to access the trending faceplate view.

   The trend views let you monitor the voltage, current, and speed values.



2. Press  on the toolbar to set the minimum and maximum values of the trend scale.



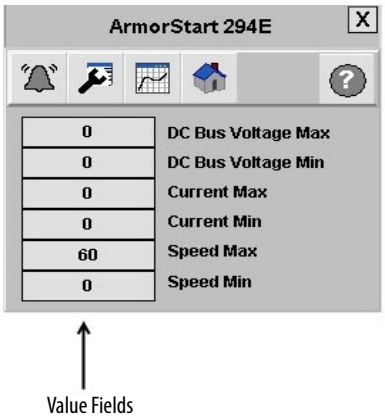
3. Press the value fields to modify.

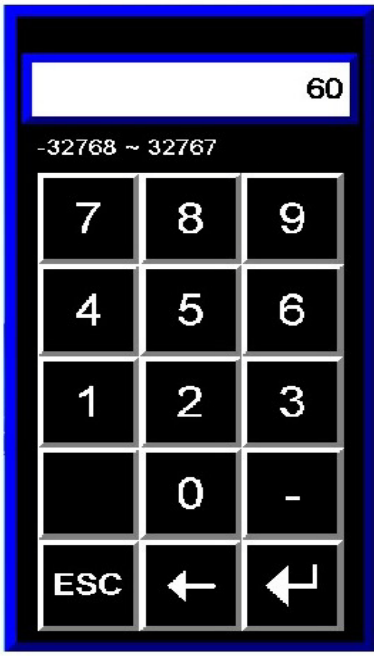
   A popup keyboard opens for value entry.

4. Press the value fields to modify.

   A popup keyboard opens for value entry.

5. Press the Enter key on the keyboard, when entry is complete.

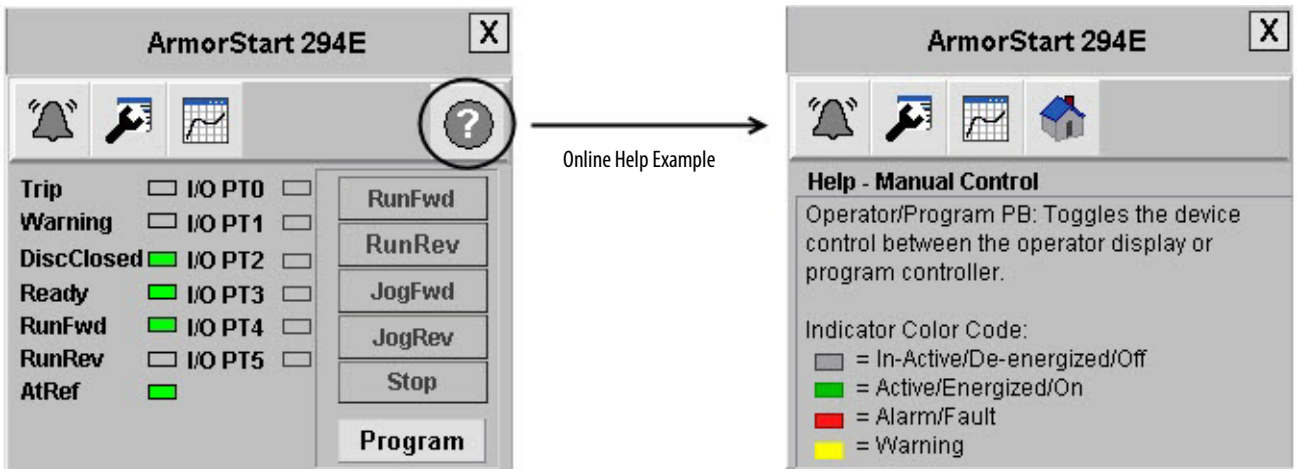




Online Help Views

IMPORTANT This faceplate is only for the ArmorStart Bulletin 294E. Each ArmorStart device has its own faceplate with similar functions.

Press  on the faceplate toolbar of any view to access the online help information.

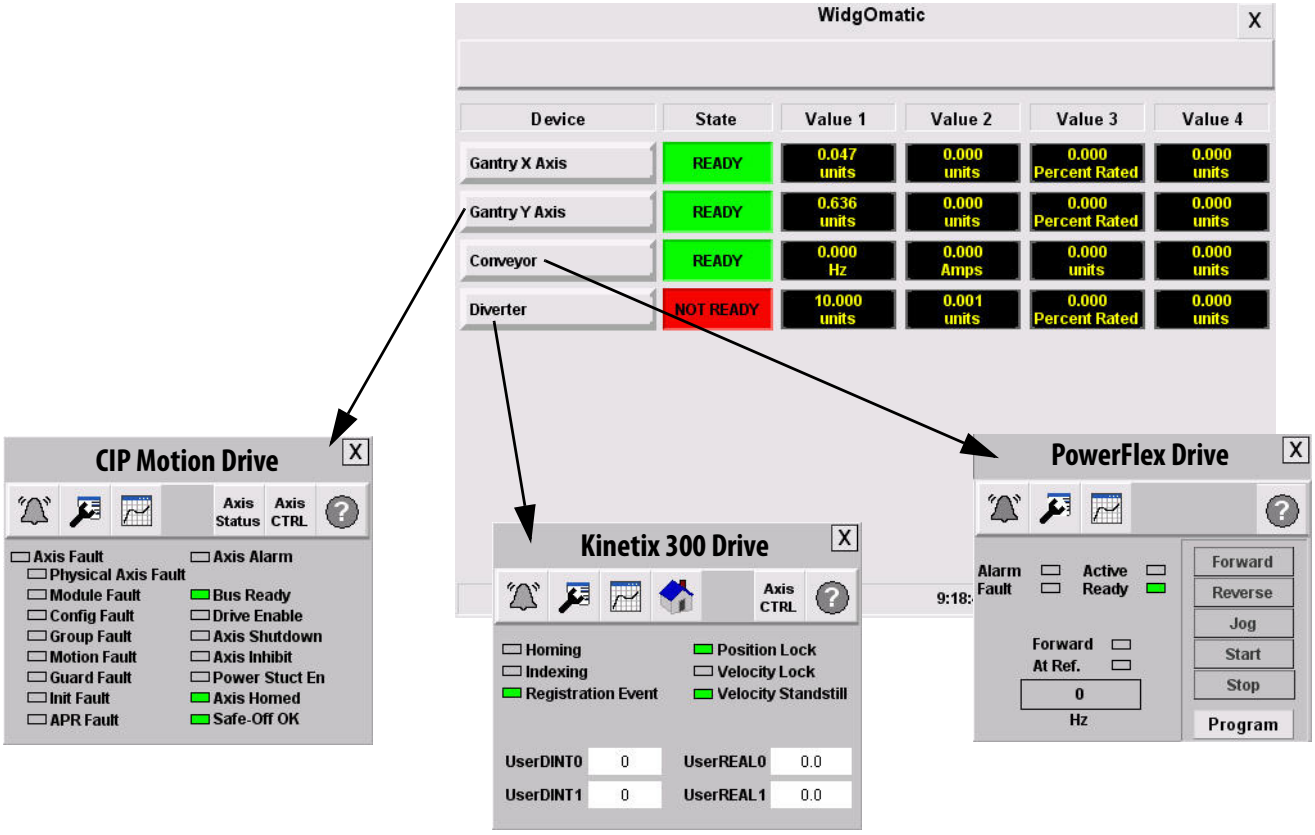


Equipment Status Display Overview

The Equipment Status faceplate files let you quickly load and configure a summary display of preconfigured status and diagnostic displays or faceplates for FactoryTalk View Machine Edition. The Equipment Status faceplate works in conjunction with individual device faceplates and provides a single summary display of all of the faceplates that may be configured for an application. You can configure up to nine device faceplates to run with the Equipment Status faceplate and you can launch each device faceplate directly from it.

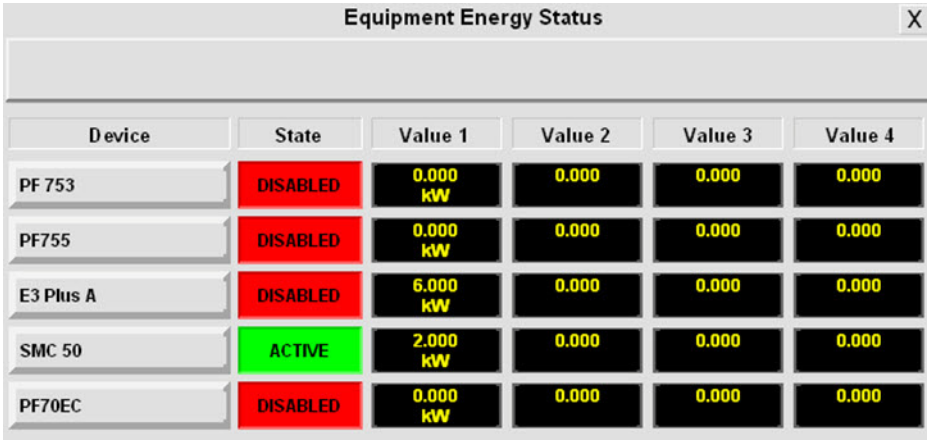
In this example, the drives from the Widg-O-matic example were added to the Equipment Status display. Click the device buttons to open the associated device faceplates.

Equipment Status Example - Widg-O-matic Drives Added



Equipment Status Display for Energy Overview

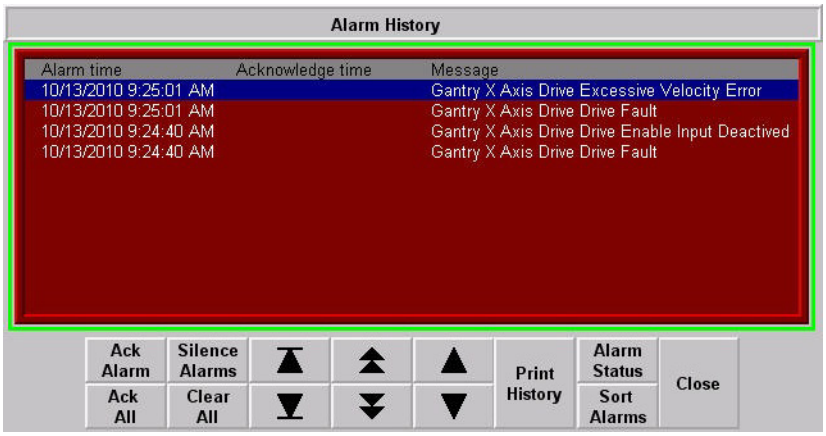
The Equipment Status Display for Energy provides a summary of the energy status for all of the devices configured for an application. It also provides a central place for launching the device faceplates. You can configure up to nine devices to run with the Equipment Status Display for Energy faceplate.



Alarm History Display Overview

The Alarm History display provides time and date stamped machine and device faults, and alarms when launched from the Alarm History Goto display button on the Machine Startup faceplate display.

Alarm History Faceplate Display Example



In this example, a number of faults are displayed from a CIP Motion drive named Gantry X Axis.

Refer to FactoryTalk View Machine Edition User Manual Volume 1, publication VIEWME-UM004 for Alarm History alarm button operation and configuration.

Notes:

Logic Program Overview

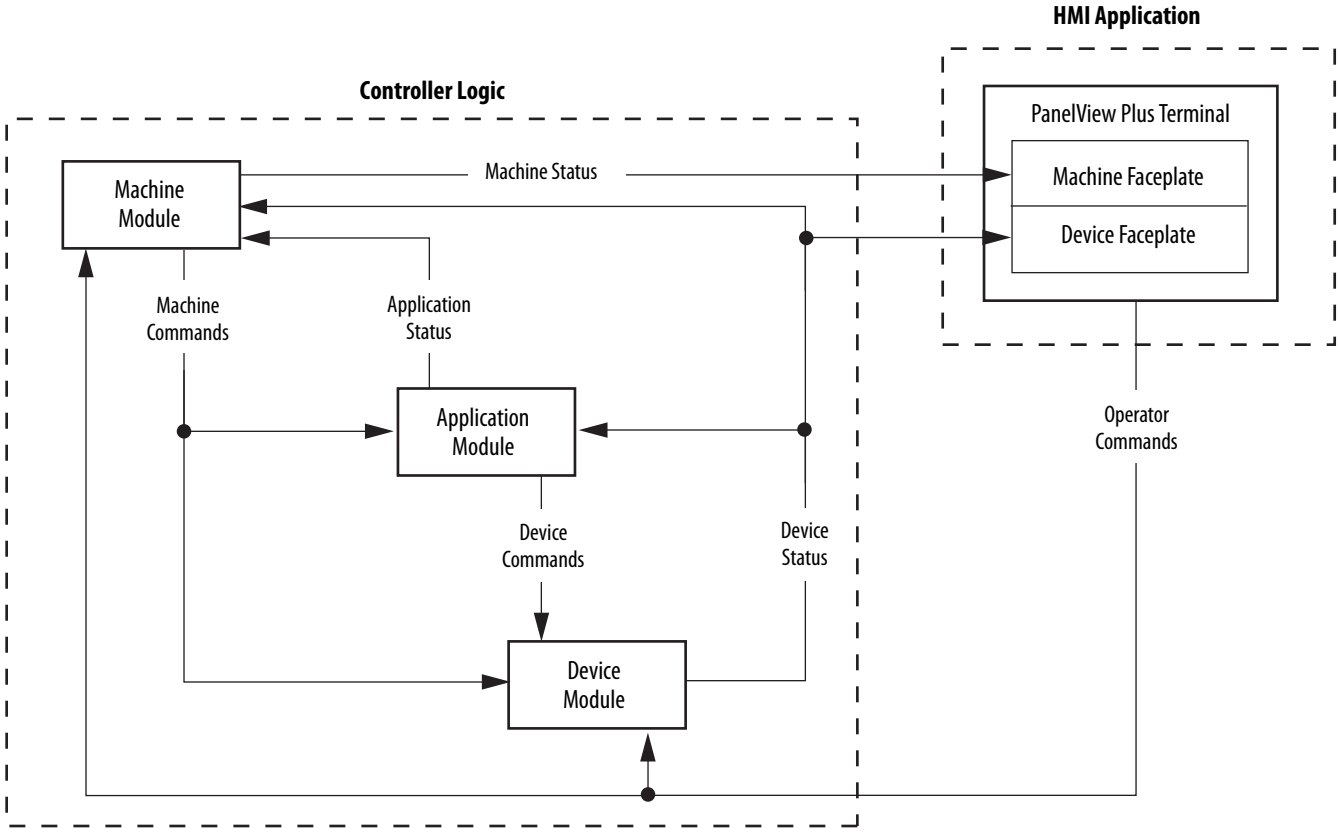
The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017, was developed around a modular concept. Modularity lets you decide which components to incorporate into your machine, providing greater flexibility and a custom fit. The preconfigured logic is specifically designed around this modular concept and consists of three main logic modules.

Logic Module Overview

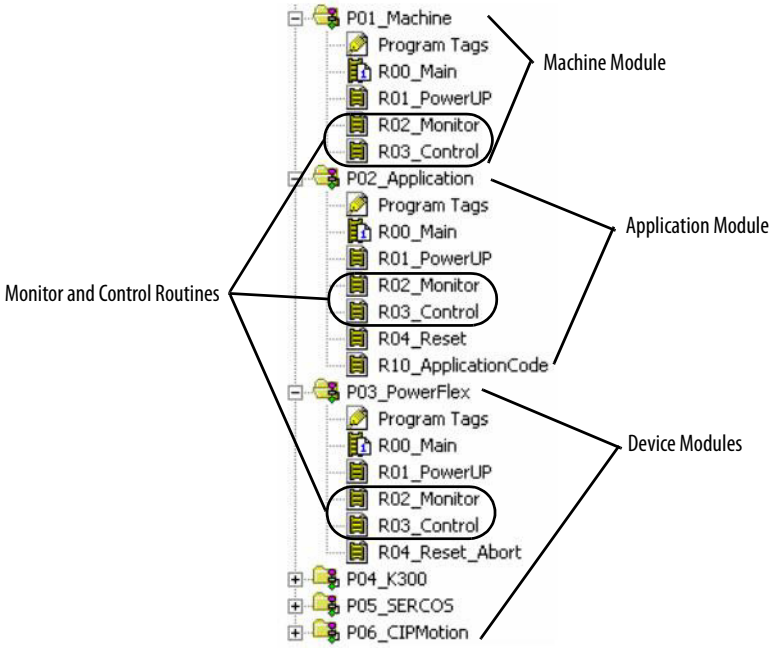
Logic Module Type	Function
Machine	The machine module contains the high level control for the entire machine. The machine module was built around a simple state machine that you can customize to fit most applications. The machine module broadcasts out commands and receives feedback information from each of the application and device modules. Based on the feedback information, the machine will react accordingly. In addition, the machine module provides a high level interface with the HMI, accepting commands like Start, Stop, and Clear Faults. It provides status info to the HMI terminal like current state of the machine (for example, RUNNING versus STOPPED).
Application	The application modules contain all of the application specific code. This is where a majority of the customizing is expected to occur and is essentially a programming space where you spend a significant portion of your efforts to develop proprietary logic specific to your application.
Device	Device modules contain all of the logic to control the essential functions required by the device. For example, an Integrated Motion servo drive like the Kinetix 6500 requires logic (MSO and MSF instructions) to enable and/or disable the servo drive. This logic reduces the programming effort required by most applications providing more time for the proprietary logic needed for the application. Typically, the device module consists of a physical drive, but could also consist of a virtual or feedback-only axis. Device modules can also consist of multiple devices (for example, a drive) and perhaps a feedback device (for example, a sensor).

Machine/Application/Device Module Relationship

The machine module monitors the current state of the overall machine and based on the state and/or requests from the HMI terminal, broadcasts out commands to both the application and device modules. The individual modules perform a predefined task based on the command. Some of the commands may be ignored depending on the module type.



Each of the modules are defined as individual programs in the Logix Designer application.

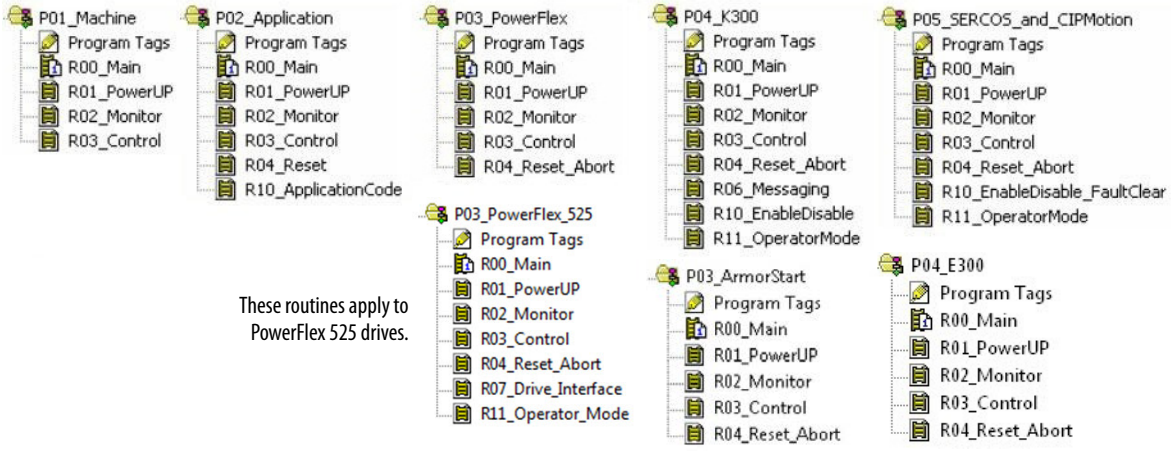


Each program contains all of the necessary logic to interact with the other configured modules. This interface between each of the modules is accomplished via the Monitor and Control routines located in each of the programs. The machine commands and corresponding module status is routed through the Monitor and Control routines. This lets the modules operate independently in a modular structure.

Module Routine Overview

Each module is broken down into routines that contain logic for a specific function. Each module contains a monitor and control routine that provides a common interface between the machine and the application / device modules. Each of the routines main functions are listed below:

Module Routine Listing Examples



Module Routine Overview

Logic Module Type	Routine	Function
Machine	R00_Main	Dispatch routine, calls all of the other routines in the program.
	R01_PowerUp	Initializes parameters following power up or controller first scan.
	R02_Monitor	• Summarizes the status from all of the dependent modules (for example, application and device modules). • Detects Abort and/or Stop conditions. • Provides machine status information to HMI terminal.
	R03_Control	• Provides main interface with HMI terminal requests (for example, Start/Stop/Clear Faults pushbuttons). • Contains the state machine logic.
Application	R00_Main	Dispatch routine, calls all of the other routines in the program.
	R01_PowerUp	Initializes parameters following power up or controller first scan.
	R02_Monitor	• Summarizes the status for the application module (for example, OK, Ready, Running, Stopped). • Detects module faults (for example, Failed to RESET, Failed to RUN).
	R03_Control	Receives machine commands and initiates the corresponding sequences (for example, RESET, RUN and STOP sequences).
	R04_Reset	Contains the RESET sequence logic, used to prepare the application to run.
	R10_ApplicationCode	• Typical location for the application specific logic. • Contains the RUN and STOP sequences.
PowerFlex SMC-50 E3 Plus E300 ArmorStart	R00_Main	Dispatch routine, calls all of the other routines in the program.
	R01_PowerUP	Initializes parameters following power up or controller first scan.
	R02_Monitor	• Summarizes the status for the device module (for example, OK, Ready, Reset). • Detects module faults (for example, Failed to RESET, Failed to CLEAR, Module Not Ready). • Contains the faceplate add-on instruction (AOI) for the HMI terminal faceplate.
	R03_Control	Receives machine commands and initiates the corresponding sequences (for example, RESET and ABORT sequences)
	R04_Reset_Abort	• Contains place holder for application specific reset logic if required. • Contains the ABORT sequence which makes sure that the drives contained within the module are stopped and disabled. The ABORT sequence also makes sure that other devices are placed into a desired state.
	R05_Energy (applies only if the device module with energy monitoring is used)	• Gets the energy data from the device using explicit messaging. • Monitors the communication status and sets alarm and status bits related to energy.
	R07_Drive_Interface (applies to PowerFlex 525 drives only)	• Contains the drive status, command, and communication logic for PowerFlex 525 drives. • Contains place holder for drive specific datalink logic if required.
	R11_OperatorMode (applies to PowerFlex 525 drives only)	Contains the Operator or Manual mode logic for the PowerFlex 525 drives. This logic is initiated via requests made from drive faceplate located on the HMI terminal.

Module Routine Overview (continued)

Logic Module Type	Routine	Function
Kinetix 300	R00_Main	Dispatch routine, calls all of the other routines in the program.
	R01_PowerUP	Initializes parameters following power up or controller first scan.
	R02_Monitor	• Summarizes the status for the device module (for example, OK, Ready, Reset). • Detects module faults (for example, Failed to RESET, Failed to CLEAR, Module Not Ready). • Contains the faceplate add-on instruction (AOI) for the HMI terminal faceplate.
	R03_Control	Receives machine commands and initiates the corresponding sequences (for example, RESET and ABORT sequences)
	R04_Reset_Abort	• Contains the RESET sequence logic, used to prepare the application to run. • Contains the ABORT sequence which makes sure that the drives contained within the module are stopped and disabled. The ABORT sequence also makes sure that other devices are placed into a desired state.
	R06_Messaging	Contains all of the explicit messaging logic required for the Kinetix 300 drive.
	R10_EnableDisable	Contains the enable, disable, clear faults logic for the Kinetix 300 drive.
	R11_OperatorMode	Contains the Operator or manual mode logic for the Kinetix 300 drive. This logic is initiated via requests made from drive faceplate located on the HMI terminal.
Sercos or CIP Motion	R00_Main	Dispatch routine, calls all of the other routines in the program.
	R01_PowerUP	Initializes parameters following power up or controller first scan.
	R02_Monitor	• Summarizes the status for the device module (for example, OK, Ready, Reset). • Detects module faults (for example, Failed to RESET, Failed to CLEAR, Module Not Ready). • Contains the faceplate add-on instruction (AOI) for the HMI terminal faceplate.
	R03_Control	Receives machine commands and initiates the corresponding sequences (for example, RESET and ABORT sequences)
	R04_Reset_Abort	• Contains the RESET sequence logic, used to prepare the application to run. • Contains the ABORT sequence which ensures that the drives contained within the module are stopped and disabled. The ABORT sequence can also make sure that other devices are placed into a desired state.
	R10_EnableDisable	Contains the enable, disable, clear faults logic for the drives.
	R11_OperatorMode	Contains the Operator or Manual mode logic for the drive. This logic is initiated via requests made from drive faceplate located on the HMI terminal.

Machine Module

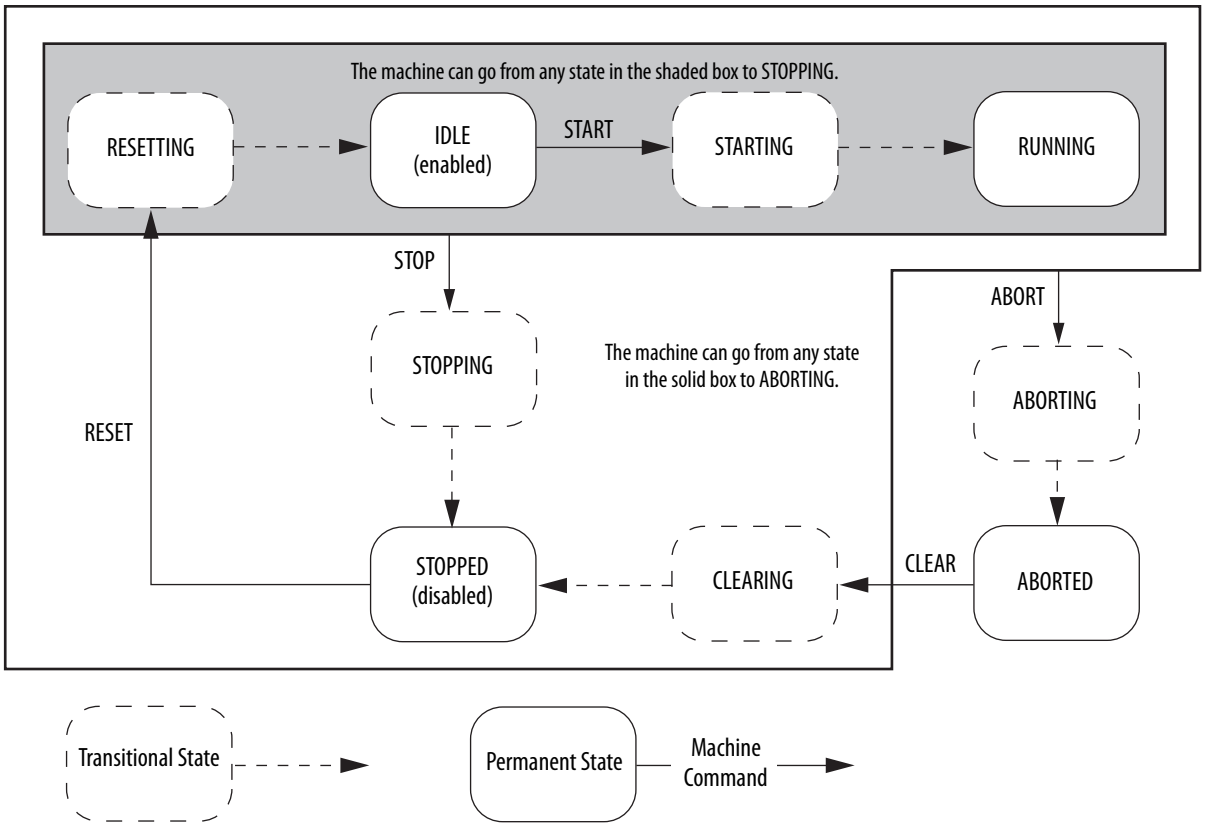
The machine module contains the high level control for the entire machine. The machine module was built around a simple state machine that you can customize to fit most applications. The machine module broadcasts out commands and receives feedback information from each of the application and device modules. Based on the feedback information, the machine will react accordingly.

In addition, the machine module provides a high level interface with the HMI, accepting commands like Start, Stop, and Clear Faults. It provides status info to the HMI terminal like current state of the machine (for example, RUNNING versus STOPPED).

Machine States

By default, the machine program module operates based on this overall state diagram.

Machine State Diagram



The machine module uses the Transitional States to move between Permanent States. Typically, the machine only remains on a Transitional State for brief period of time. If the machine module detects an error during a Transitional State or if the application or device modules fail to transition within an allotted time (10 seconds by default), the machine module issues an ABORT command. The fail safe transition timer makes sure the overall machine does not become stuck in a Transitional State. It also helps to provide diagnostic information to determine which module is not transitioning properly.

You can fully customize the state machine, letting you change the relationship between states and the state names, and add or remove states if needed. Refer to Appendix B on page 241 for information on how to customize the state machine.

Default Machine States

Machine State	State Type	Description
ABORTING	Transitional	Broadcasts the ABORT command until confirmation that all of the application and device modules are aborted. The ABORTING state is triggered based on feedback from the modules. Default ABORT conditions that place the machine in the ABORTTING state include: • Power-up detected (for example, controller first scan) • Modules not ready while the machine is in STARTING and/or RUNNING states • Modules detected a fault condition • Modules failed to RESET • Modules failed to START • Modules failed to STOP • Modules failed to CLEAR
ABORTED	Permanent	All application and device modules are aborted (for example, stopped and disabled). Typically, this state indicates a fault condition.
CLEARING	Transitional	Broadcasts the CLEAR command until confirmation that all of the application and device modules are ok (for example, all active drive and/or modules have been cleared) within the allotted time. Otherwise, an ABORT condition is generated. Once all of the modules are ok, the machine is placed into the STOPPED state.
RESETTING	Transitional	Broadcasts the RESET command until confirmation that all of the application and device modules are reset within the allotted time. Otherwise, an ABORT condition is generated.
IDLE	Permanent	All application and device modules are reset or ready to run (for example, enabled or homed). Typically, this state that the machine is ready to run and awaits a START command.
STARTING	Transitional	Broadcasts the RESET command until confirmation that all of the application modules are running within the allotted time. Otherwise, an ABORT condition is generated.
RUNNING	Permanent	All application modules are running.
STOPPING	Transitional	Broadcasts the STOP command until confirmation that all of the application modules are stopped within the allotted time. Otherwise, an ABORT condition is generated.
STOPPED	Permanent	All application modules are stopped and all modules (application and/or device) are ready.

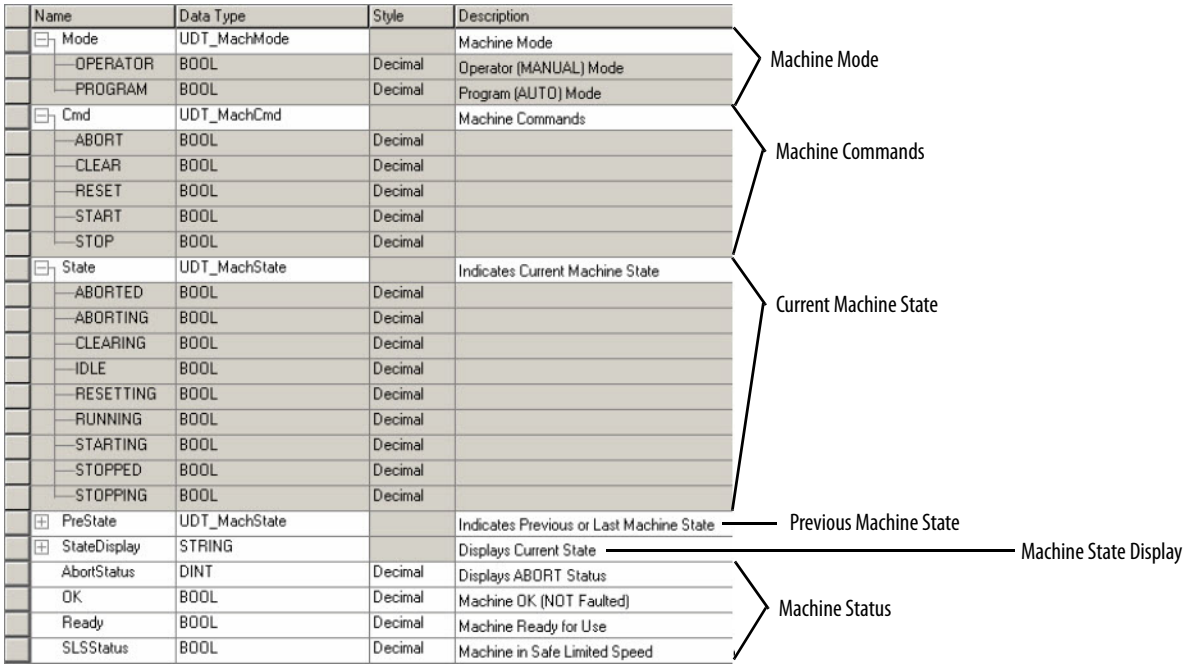
Default Machine Commands

Machine Command	Application Module Response	Device Module Response
ABORT	Halts the application RUN sequence (if active) and initiates the STOP sequence. The STOP sequence attempts to stop and disable all active drives.	Halts the device module RESET sequence (if active) and initiates the device module ABORT sequence. The ABORT sequence makes sure the drives contained within the module are stopped and disabled. The ABORT sequence can also be used to make sure other devices are placed into a desired state.
CLEAR	Attempts to clear any active faults that exist in the modules.	Attempts to clear any active faults that exist in either the module and/or drive.
RESET	Initiates the application RESET sequence, which prepares the application and/or devices to run. Use this for the coordinated reset of multiple modules.	Initiates the device module RESET sequence, which prepares the device module to run.
START	Initiates the application RUN sequence. Customize the RUN sequence to fit the needs of your application.	Ignored (1)
STOP	Halts the application RUN sequence (if active) and initiates the STOP sequence. The STOP sequence attempts to stop and disable all active drives.	Halts the device module RESET sequence.

(1) By default, these commands are ignored by the module. However, you can change the relationship of each module to best fit the needs of the application.

Machine Control Module Tags

The machine control data type, UDT_MachCtrl, comprises the overall machine control and status, including the state machine. The user-defined data type consists of these components.



Machine Tags

Tag Group	Function
Machine mode	Additional modes can be added to the machine. By default, the modes included are: • OPERATOR or manual mode • PROGRAM or auto mode
Machine commands	Broadcast machine commands that direct all of the dependent modules (for example, application and device modules).
Current machine state	Indicates the current state of the overall machine. Only one state can set at even given time.
Previous machine state	Indicates the previous machine state. Used primarily by the application and device modules to determine Transitional State faults.
Machine state display	String tag that can be used to indicate the current machine state.
Machine status	Indicates miscellaneous machine status information.

Device and Application Status Rung Tags and Logic

The device and application status rungs provide feedback information to the machine module and consists of these components.

Device Module Status

Name	Data Type	Style	Description
Aborted	BOOL	Decimal	Module Aborted
Active	BOOL	Decimal	Module Active (Enabled / Running)
Reset	BOOL	Decimal	Module Reset
OK	BOOL	Decimal	Module OK (NOT Faulted)
Ready	BOOL	Decimal	Module Ready for Use
SLSReq	BOOL	Decimal	Module Safe Limited Speed Request
⊞ Name	STRING		Module Name

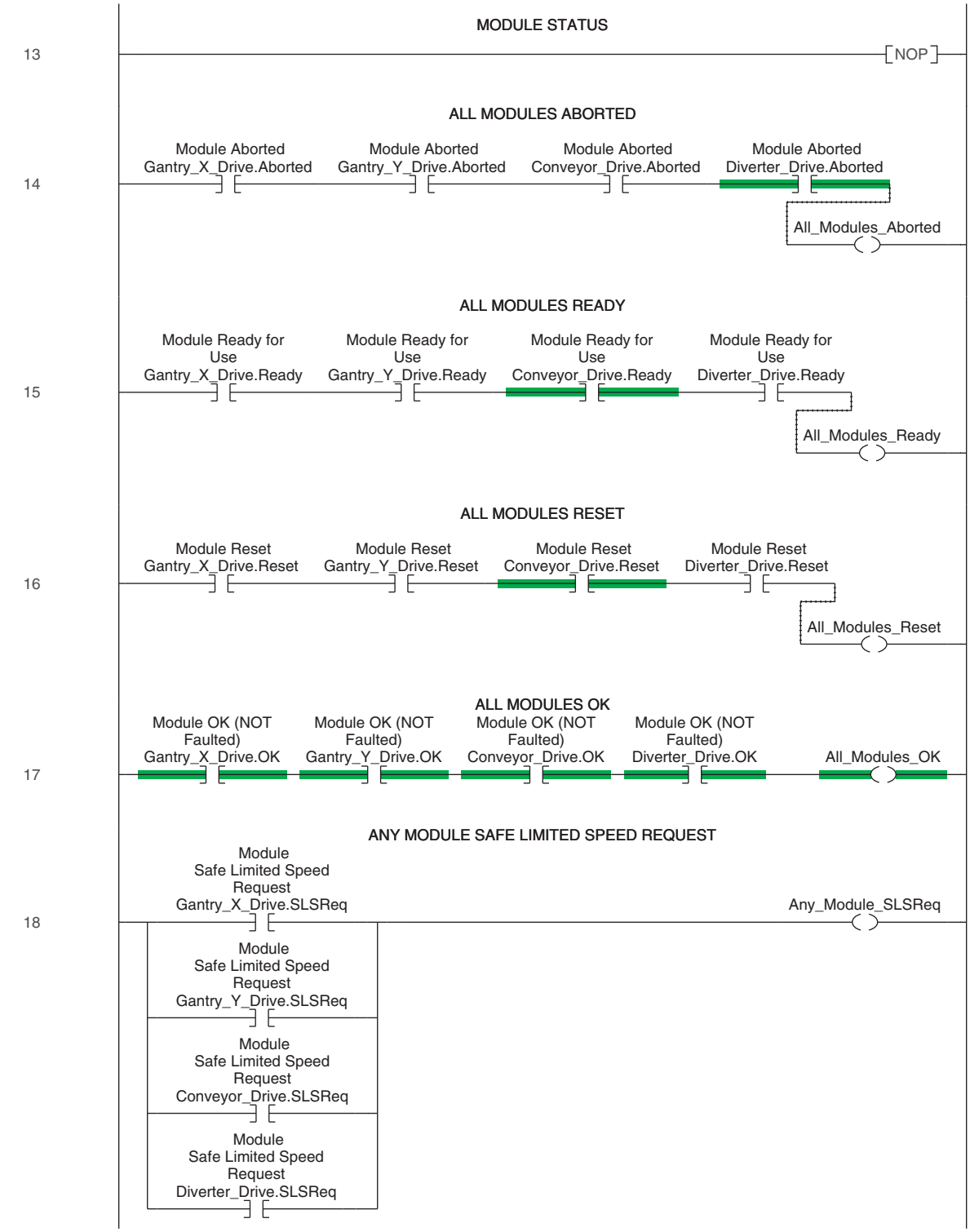
Application Module Status

Name	Data Type	Style	Description
OK	BOOL	Decimal	Application OK (NOT Faulted)
Ready	BOOL	Decimal	Application Ready for Use
Reset	BOOL	Decimal	Application Initialized
Running	BOOL	Decimal	Application Running
Stopped	BOOL	Decimal	Application Stopped
⊞ Name	STRING		Application Name

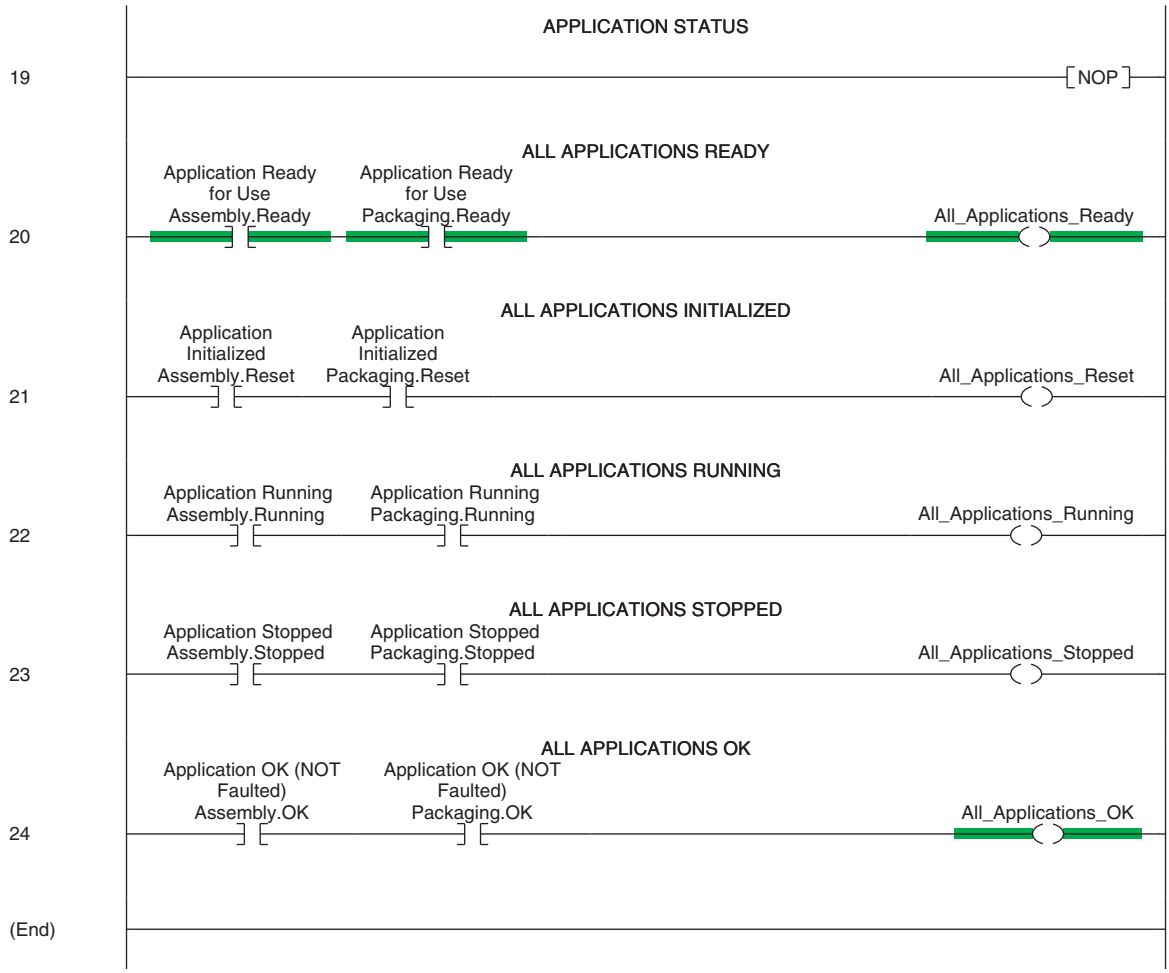
The status bits are set in the Monitor routine of the corresponding modules. These status bits are vital to the machine module, as they are used to determine the overall status of the machine. They help the machine transition between states or detect a fault and respond accordingly. All of the module status information is summarized in the Monitor routine of the machine module.

For these Widg-O-matic application examples, the rungs are found in the R02_Monitor routine of the P01_WidgOmatic machine program.

Widg-O-matic Device and Application Status Rung Example



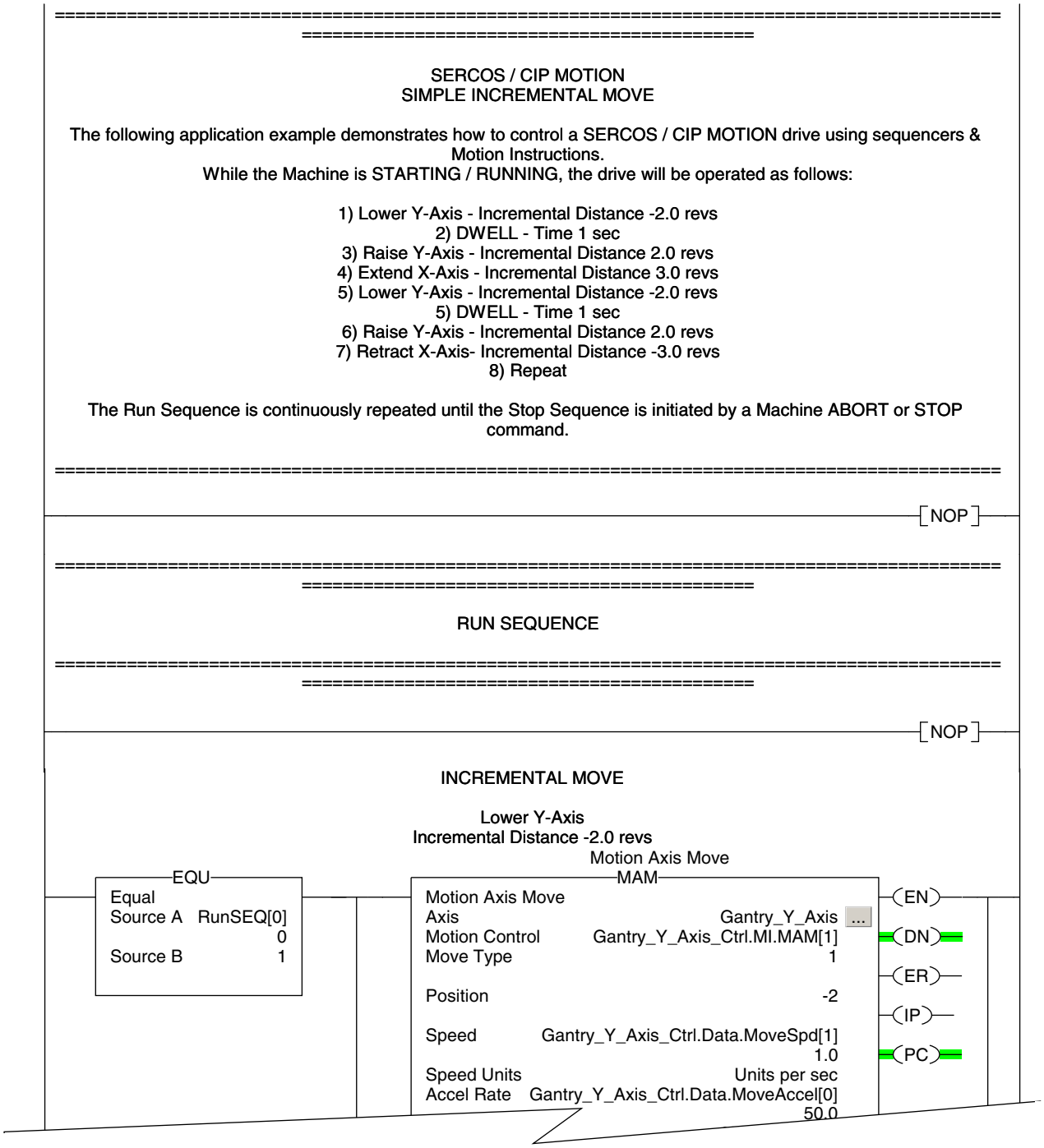
Widg-O-matic Device and Application Status Rung Example (continued)



Application Modules

The application modules contain all of the application specific code. This is where a majority of the customizing is expected to occur and is essentially a programming space where you spend a significant portion of your efforts to develop proprietary logic specific to your application.

In this example, application code is shown for the Widg-O-matic machine's assembly application.



Device Modules

Device modules contain all of the logic to control the essential functions required by the device. For example, an Integrated Motion servo drive like the Kinetix 6500 requires logic (MSO and MSF instructions) to enable and/or disable the servo drive. This logic reduces the programming effort required by most applications providing more time for the proprietary logic needed for the application.

Typically, the device module consists of a physical drive, but could also consist of a virtual or feedback-only axis. Device modules can also consist of multiple devices (for example, a drive) and perhaps a feedback device (for example, a sensor).

Device Module Tags

The application and individual device modules interact with each other via device specific control tags that include both command and status information. The control tags consist of these data types.

Device Tags

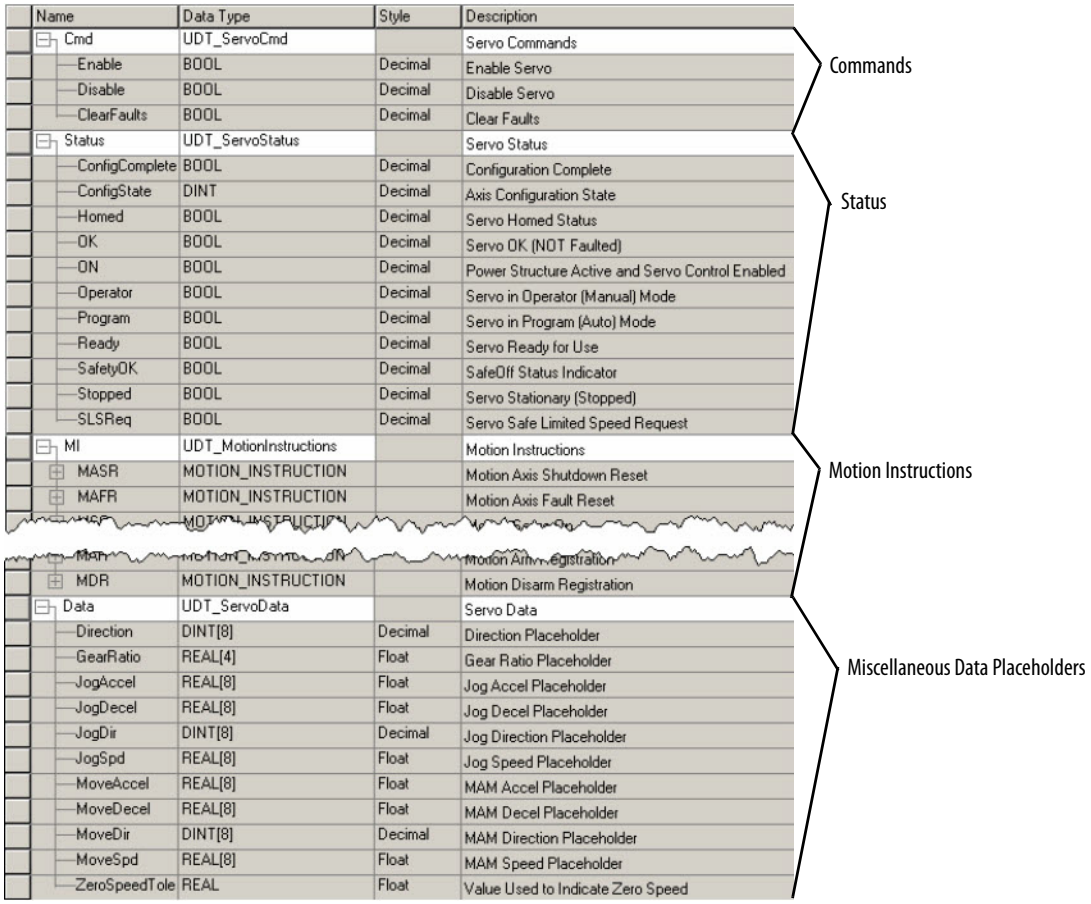
Device Classifications	Covered Products	Data Type
PowerFlex drives	• PowerFlex 4-class drives, for example, 4, 40, 40P • PowerFlex 7-class drives, for example, 70EC, 700VC • PowerFlex 750-Series drives for example, 753, 755 • PowerFlex 520-Series drives for example, 525	Product specific add-on defined (AOI) data type: PFlex_XXX_AOI Where XXX refers to the specific PowerFlex drive
Kinetix 300 drives	Kinetix 300	User-defined type: UDT_K300_Ctrl
Sercos physical axis	• Kinetix 2000 • Kinetix 6000 • Kinetix 6000M • Kinetix 6200 • Kinetix 7000	User-defined type: UDT_ServoCtrl
Sercos feedback-only axis	Applicable sercos drives	User-defined type: UDT_ServoCtrl
CIP Motion physical axis	• Kinetix 6500 • PowerFlex 755	User-defined type: UDT_ServoCtrl
CIP Motion frequency control	PowerFlex 755, PowerFlex 527, and Kinetix 5500	User-defined type: UDT_FreqCtrl
CIP Motion feedback-only axis	Applicable CIP motion drives	User-defined type: UDT_ServoCtrl
Virtual axis	N/A	User-defined type: UDT_ServoCtrl
SMC-50 solid-state soft starters	SMC-50 solid-state soft starters	Add-on defined (AOI) data type: SMC_50_AOI
E3 Plus overload relay with communications auxiliary (193-DNENCAT) device	E3 Plus overload relay with 193-DNENCAT module	Add-on defined (AOI) data type: E3_CommsAux_rev6_AOI
PowerFlex drives, SMC-50 soft starters, and E3 Plus overload relays with energy monitoring	• PowerFlex 7-class drives, for example, 70EC, 700VC • PowerFlex 750-Series drives, for example, 753, 755 • SMC-50 solid-state soft starters • E3 Plus overload relay with 193-DNENCAT module	In addition to the device AOI tags, a user defined data type is used to provide energy monitoring: UDT_BEO
ArmorStart distributed motor controllers	• ArmorStart LT 290E, 291E, and 294E • ArmorStart 280E, 281E, and 284E	ArmorStart product specific add-on defined (AOI) data type: AS_2*xx*E_AOI ArmorStart ST product specific add-on defined (AOI) data type: (1) AS_2*xx*E_AOI_wIPS or AS_2*xx*E_AOI_woIPS Where *xx* refers to the specific ArmorStart motor control

(1) With or without internal power supply (IPS).

All of the data types listed above can be modified to fit specific needs of your application. However, modifications to the data types could have an impact on the device module and/or other preprogrammed logic, especially during import of additional device modules.

For example, the UDT_ServoCtrl data type that is used by the integrated motion drives (CIP Motion and sercos interface based drives) consists of these tags.

CIP Motion UDT_ServoCtrl Tag Listing



Name	Data Type	Style	Description
Cmd	UDT_ServoCmd		Servo Commands
Enable	BOOL	Decimal	Enable Servo
Disable	BOOL	Decimal	Disable Servo
ClearFaults	BOOL	Decimal	Clear Faults
Status	UDT_ServoStatus		Servo Status
ConfigComplete	BOOL	Decimal	Configuration Complete
ConfigState	DINT	Decimal	Axis Configuration State
Homed	BOOL	Decimal	Servo Homed Status
OK	BOOL	Decimal	Servo OK (NOT Faulted)
ON	BOOL	Decimal	Power Structure Active and Servo Control Enabled
Operator	BOOL	Decimal	Servo in Operator (Manual) Mode
Program	BOOL	Decimal	Servo in Program (Auto) Mode
Ready	BOOL	Decimal	Servo Ready for Use
SafetyOK	BOOL	Decimal	SafeOff Status Indicator
Stopped	BOOL	Decimal	Servo Stationary (Stopped)
SLSReq	BOOL	Decimal	Servo Safe Limited Speed Request
MI	UDT_MotionInstructions		Motion Instructions
MASR	MOTION_INSTRUCTION		Motion Axis Shutdown Reset
MAFR	MOTION_INSTRUCTION		Motion Axis Fault Reset
MDR	MOTION_INSTRUCTION		Motion Disarm Registration
Data	UDT_ServoData		Servo Data
Direction	DINT[8]	Decimal	Direction Placeholder
GearRatio	REAL[4]	Float	Gear Ratio Placeholder
JogAccel	REAL[8]	Float	Jog Accel Placeholder
JogDecel	REAL[8]	Float	Jog Decel Placeholder
JogDir	DINT[8]	Decimal	Jog Direction Placeholder
JogSpd	REAL[8]	Float	Jog Speed Placeholder
MoveAccel	REAL[8]	Float	MAM Accel Placeholder
MoveDecel	REAL[8]	Float	MAM Decel Placeholder
MoveDir	DINT[8]	Decimal	MAM Direction Placeholder
MoveSpd	REAL[8]	Float	MAM Speed Placeholder
ZeroSpeedTole	REAL	Float	Value Used to Indicate Zero Speed

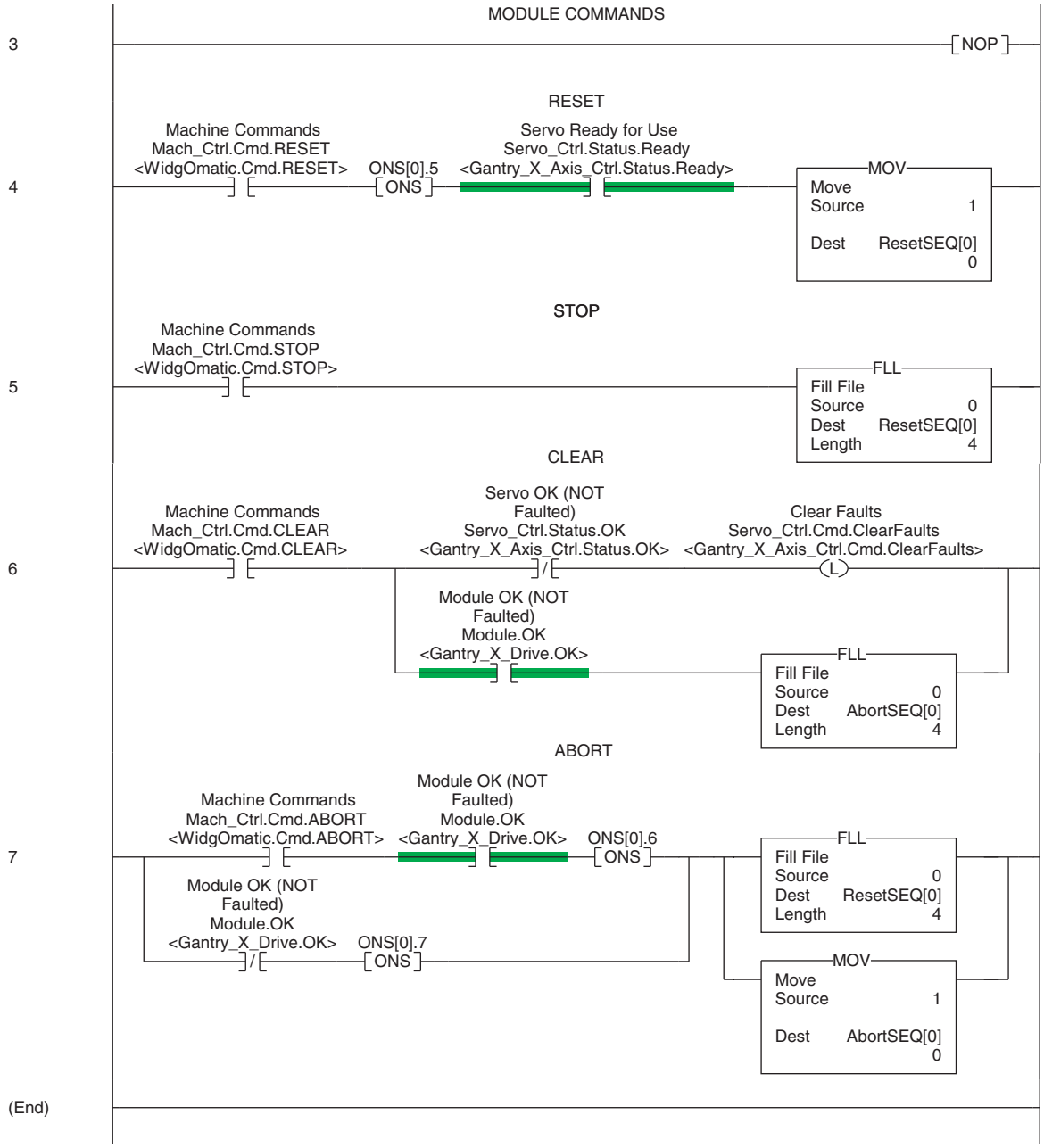
UDT_ServoCtrl Tags

Tag Group	Function
Commands	The command tags initiate preprogrammed logic in the device module. The command tags can be set (latch - OTL) in either the device and/or application module, and the device module will perform the requested action. The device module also clears the command bit (unlatch – OTU). For example, if the Enable bit is latched, the corresponding device module executes a Motion Servo On (MSO) instruction and unlatches the Enable bit.
Status	The Status tags are updated by the device module and contain commonly used information that can be referenced by both the device and application modules. For example, if the ON status bit is set, the application or device module knows that the drive is fully enabled.
Motion instructions	Placeholders for Motion Instructions. This provides one central group of Motion Instructions that can be used by both the application and device module.
Miscellaneous data placeholders	Placeholders for commonly used data for the application and device modules. The data placeholder tags are set by default in the PowerUP routine located in the device module.

The user-defined type for the Kinetix 300 drives and the add-on defined data type for the PowerFlex drives serve similar function as the UDT_ServoCtrl data type, however their layouts differ. Refer to the specific data types for more information.

Device Module Control Logic Example

In this example, the R03_Control routine for a CIP motion device module initiates and/or clears the Reset and Abort sequences. The routine also attempts to clear any active faults.



Refer to the toolkit directory C:\Program Files\RA_Simplification\DMAT\B-Files\6-Project Examples\WidgOmatic folder for a complete example of a logic program.

Notes:

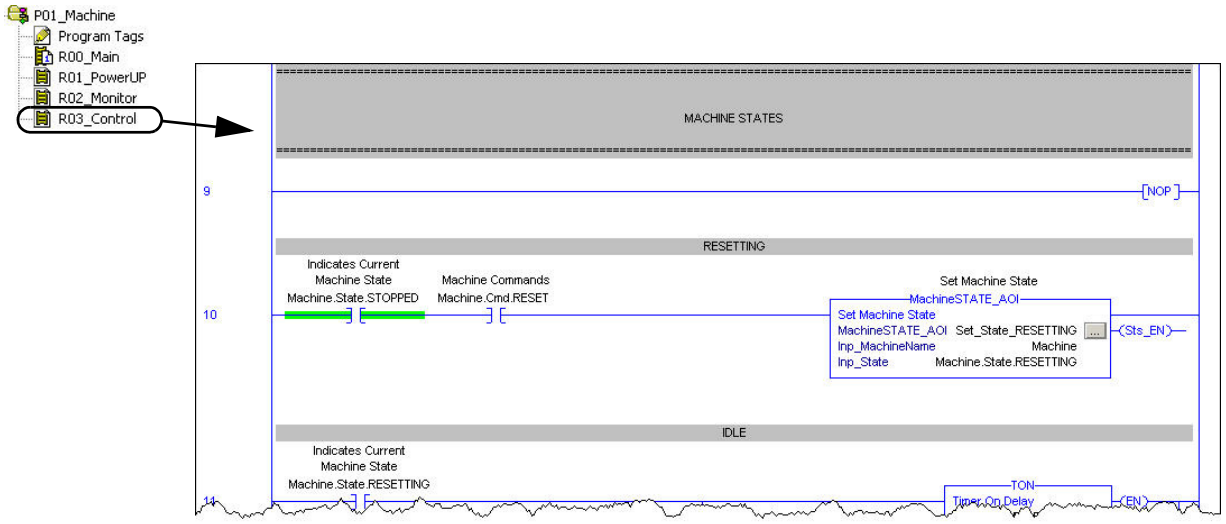
Logic Module Customization

The toolkit logic modules are designed with a basic set of machine states, faults, alarms, and reset logic common to most applications. Knowing that specific application requirements dictate exceptions and additions, the ability to customize is also included in the logic module design.

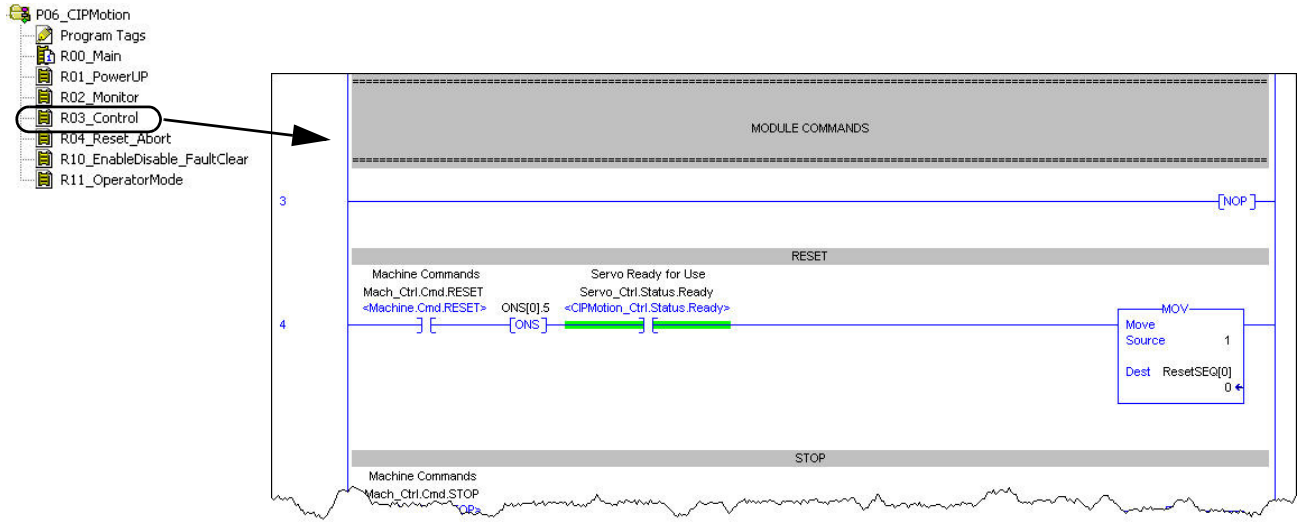
This appendix includes common modification recommendations for the customization of machine states, faults, alarms, and reset logic.

Machine State Customization

You may wish to modify state names, add or remove states, or even change the relationship between states to fit your application. The state machine logic resides in the R02_Monitor and R03_Control routines located in the machine module.



The application and device modules interact with the state machine via their R02_Monitor and R03_Control routines.

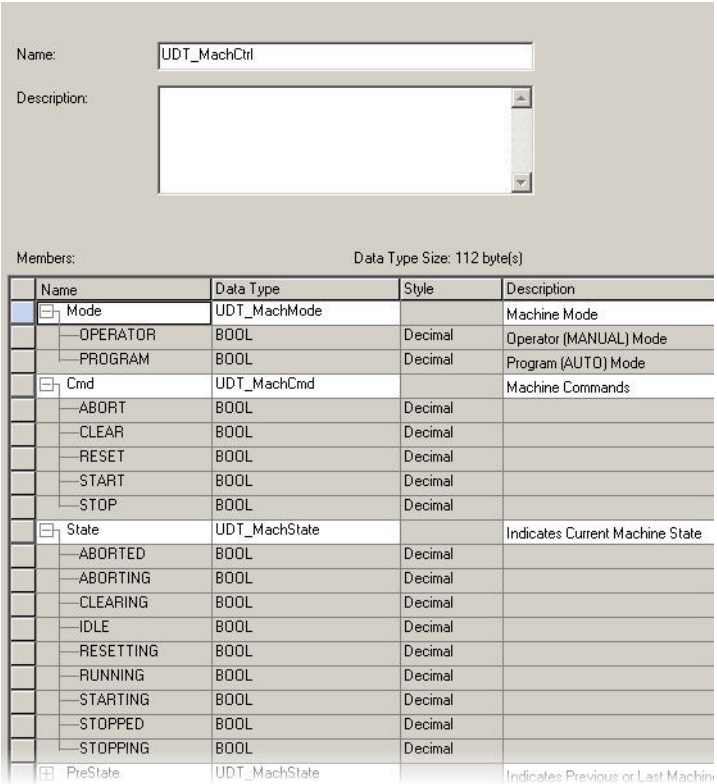


For example, the device modules accept commands and react accordingly. Therefore, changes to the state machine can impact the individual application and device modules. Refer to Appendix A, Logic Program Overview, on page 225, for more information on the state machine and how it interacts with the application and device modules.

The core for the state machine is built around the UDT_MachCtrl data type.

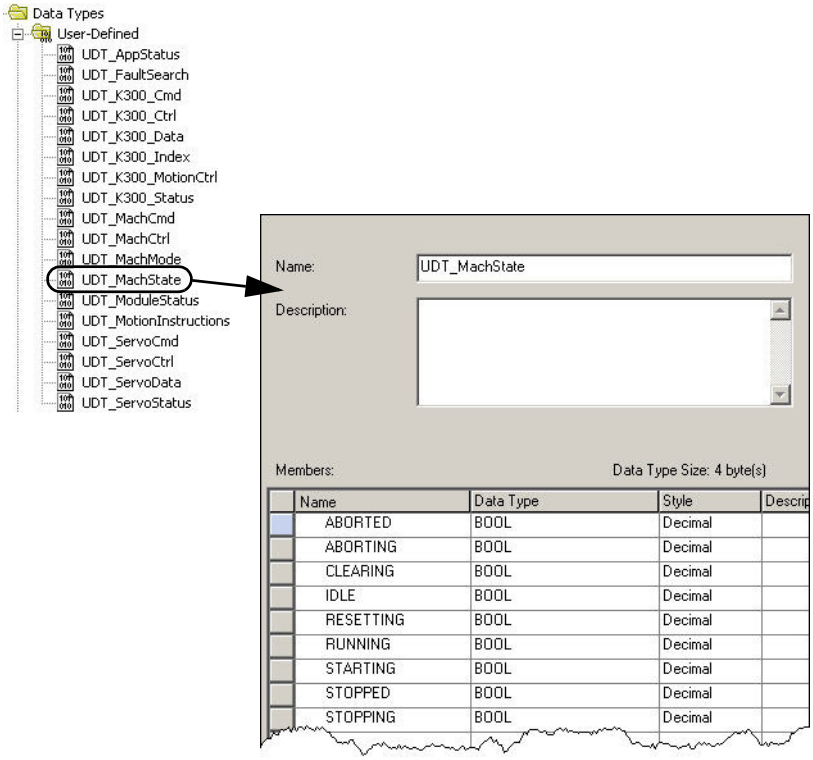
The UDT_MachCtrl data type consists of three sub data-types that directly impact the state machine.

- Mode = UDT_MachMode
- Command = UDT_MachCmd
- State = UDT_MachState



Name	Data Type	Style	Description
Mode	UDT_MachMode		Machine Mode
OPERATOR	BOOL	Decimal	Operator (MANUAL) Mode
PROGRAM	BOOL	Decimal	Program (AUTO) Mode
Cmd	UDT_MachCmd		Machine Commands
ABORT	BOOL	Decimal	
CLEAR	BOOL	Decimal	
RESET	BOOL	Decimal	
START	BOOL	Decimal	
STOP	BOOL	Decimal	
State	UDT_MachState		Indicates Current Machine State
ABORTED	BOOL	Decimal	
ABORTING	BOOL	Decimal	
CLEARING	BOOL	Decimal	
IDLE	BOOL	Decimal	
RESETTING	BOOL	Decimal	
RUNNING	BOOL	Decimal	
STARTING	BOOL	Decimal	
STOPPED	BOOL	Decimal	
STOPPING	BOOL	Decimal	
PreState	UDT_MachState		Indicates Previous or Last Machin

Modifications to the state, command, or mode need to be made to the corresponding data types. For example, to modify the state names, open and edit the UDT_MachState data type.



Tag and Logic Modification Recommendations

This table contains some of the common modifications to consider for the state machine. The modifications and corresponding recommended actions are meant to highlight the more significant updates that are needed. Additional updates could also be necessary.

Modification	Description	Recommended Actions
State Names	Simple change to the state name. The number of states and relationship between states remain unaltered. Example: Change RUNNING state to PRODUCING.	• Modify the UDT_MachState data type. • Update the corresponding MachineSTATE_AOI embedded state name. (1) • Update the HMI file as needed. (2)
Command Names	Simple change to the command name. Their intended function remains unaltered. Example: Change RESET command to INITIALIZE.	• Modify the UDT_MachCmd data type. • Update the HMI file as needed. (2)
Mode Names	Simple change to the mode name. The number of modes and their intended function remain unaltered. Example: Change OPERATOR mode to MANUAL.	• Modify the UDT_MachMode data type. • Update the HMI file as needed. (2)
Add/Remove States	Adding additional states or removing states. The operation of the state machine will change to accommodate an increase or decrease in states. Example: Add a new state called PAUSED.	• Modify the UDT_MachState data type. • Modify the machine module monitor and control routines as needed. • If necessary, add/remove commands to support the changes in the states. Refer to Add/Remove Commands modification. • If new states were added, then update the corresponding MachineSTATE_AOI embedded state name. • Update the HMI file as needed. (2)
Add/Remove Commands	Adding additional commands or removing commands. Typically, increases or decreases in commands are required to support corresponding changes (+/-) with states. Example: Add a new command called PAUSE to support a new state called PAUSED.	• Modify the UDT_MachCmd data type. • Modify the machine module monitor and control routines as needed. • Modify the application and device modules monitor and control routines as needed. Typically, changes in commands require changes in the module status (UDT_AppStatus and UDT_ModuleStatus). For example, if you add a new command called PAUSE, then you should add a new status response from the modules called Paused. • Update the HMI file as needed. (2)
Add/Remove Modes	Adding additional modes or removing modes. Example: Add a new mode called THREAD.	• Modify the UDT_MachMode data type. • Modify the machine module monitor and control routines as needed. • Modify the application and device modules monitor and control routines as needed. • Update the HMI file as needed. (2)
State-to-State Relationships	Changing the conditions that enable transitions between states. Example: Update logic to transition from STOPPED directly to STARTING, bypassing IDLE.	• Modify the machine module monitor and control routines as needed. • Modify the application and device modules monitor and control routines as needed. • Update the HMI file as needed. (2)

(1) Refer to State Display Tag Modifications, on page 245, for more information.

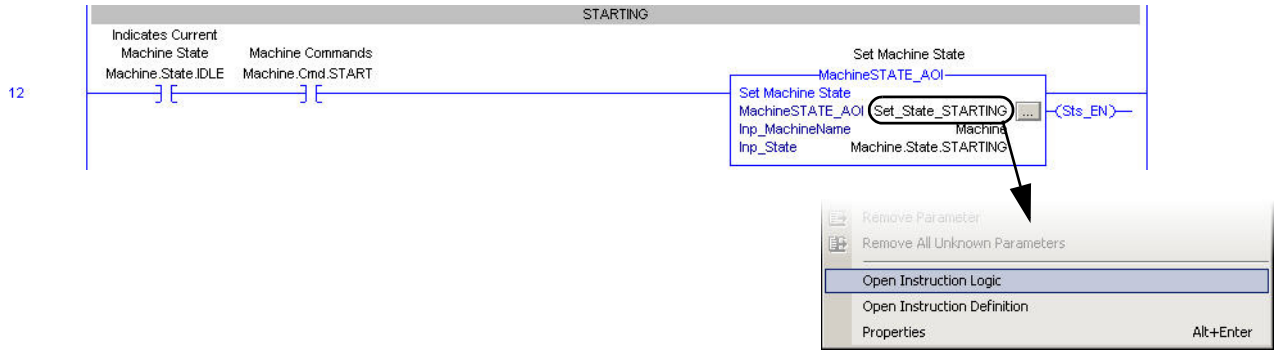
(2) Refer to Chapter 5, on page 101, for more information on the HMI terminal layout and function.

State Display Tag Modifications

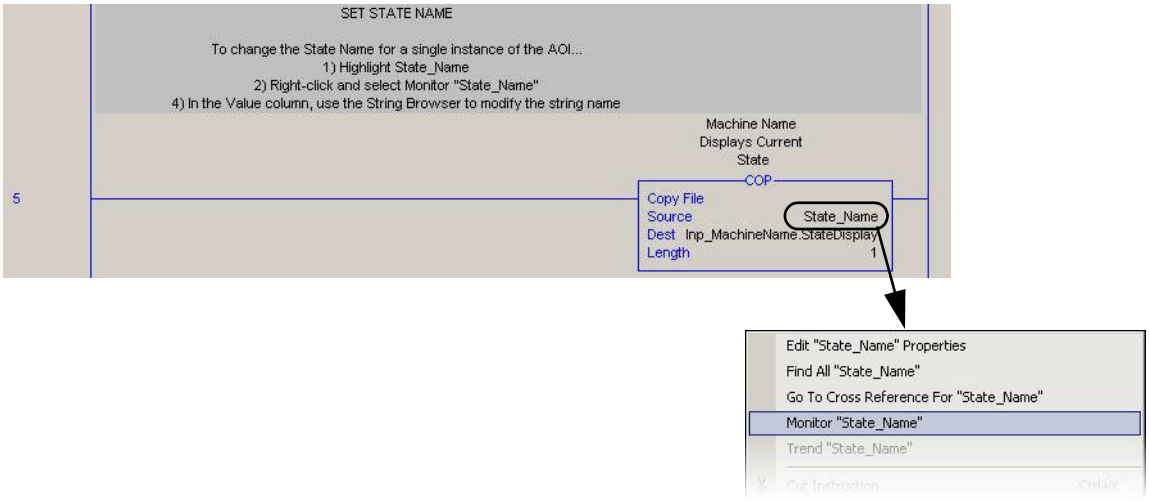
Each instance of any MachineSTATE_AOI instruction contains an embedded string tag that sets the Machine.StateDisplay tag following a state change. The Machine.StateDisplay tag is referenced by the HMI to display the current or active machine state.

Follow these steps to modify the embedded string tag.

1. Right-click the AOI tag name and choose Open Instruction Logic.



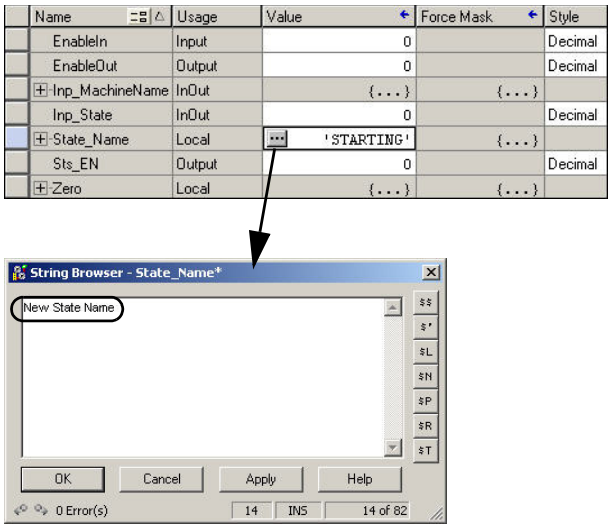
2. Navigate to rung 5, right-click State_Name, and choose Monitor “State_Name”.



3. Use the String Browser to modify or set the State_Name.

   The new state name should match the updated state set by the MachineSTATE_AOI instruction. For example, if the MachineSTATE_AOI instruction places the machine into the Machine.State.PRODUCING state, then the corresponding State_Name tag should be set to PRODUCING.

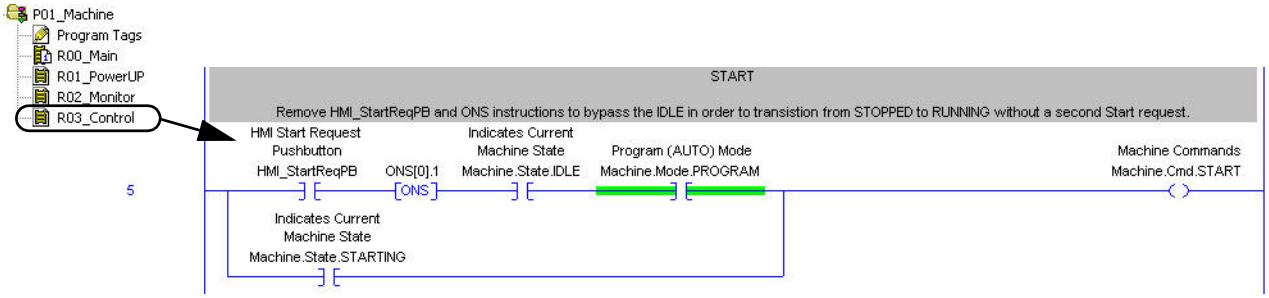
   Each instance of any MachineSTATE_AOI needs to be set or updated based on changes to the machine states.



Bypass Idle State Modifications

By default, the state machine transitions from STOPPED to IDLE when Start is pressed on the HMI terminal. While in IDLE, typically all of the modules are reset and ready to run. Sercos and CIP Motion axes, for example, are enabled and holding position at this point. When Start is pressed a second time, the machine transitions from IDLE to RUNNING and motion begins. If your machine is not required to dwell on the IDLE state, but instead transitions to the RUNNING state, then make this edit:

1. Navigate to rung 5 in the R03_Control routine for the machine module.

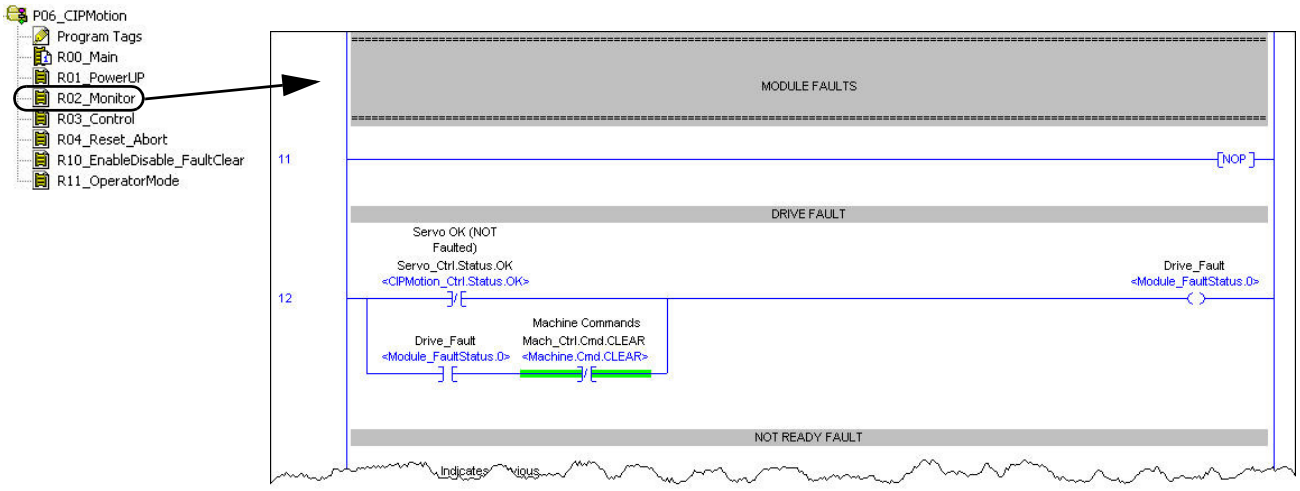


2. Delete the XIC and ONS instructions.

   The IDLE state was not removed. Instead, the state machine transitions instantly from IDLE into STARTING without requiring a second start request. To you, the operator, it will appear as if the IDLE state was removed or bypassed altogether.

Module Fault Customization

The application and device module R02_Monitor routines contain module fault logic.



Module faults are intended to act as a diagnostic tool to cover not only a drive or device fault, but also module specific faults. You can add custom module fault logic to provide additional diagnostic information based on your application. The default module specific faults are listed below.

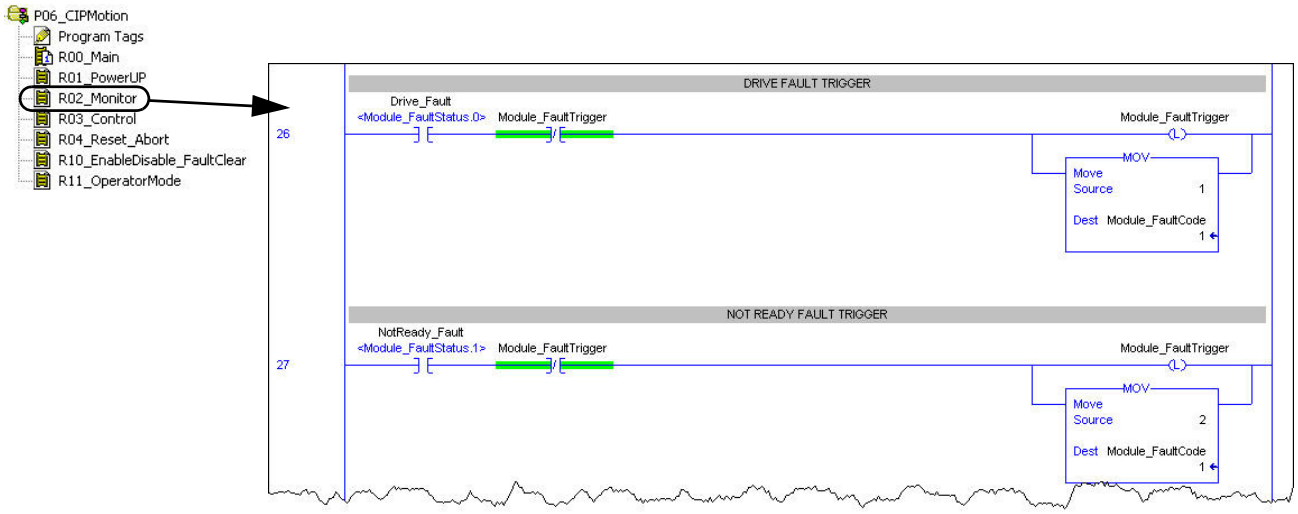
Module Faults

Fault Description	Module Usage	Alarm History Fault Code
Drive Fault	Device Module	1
Not Ready	• Application Module • Device Module	2
Failed to Clear	• Application Module • Device Module	3
Failed to Reset	• Application Module • Device Module	4
Failed to Start	Application Module	5
Failed to Stop	Application Module	6
Safety Fault	Device Module	7
User Alarm	Reserved	8…19 (1)
Instruction Error	• Application Module • Device Module	20

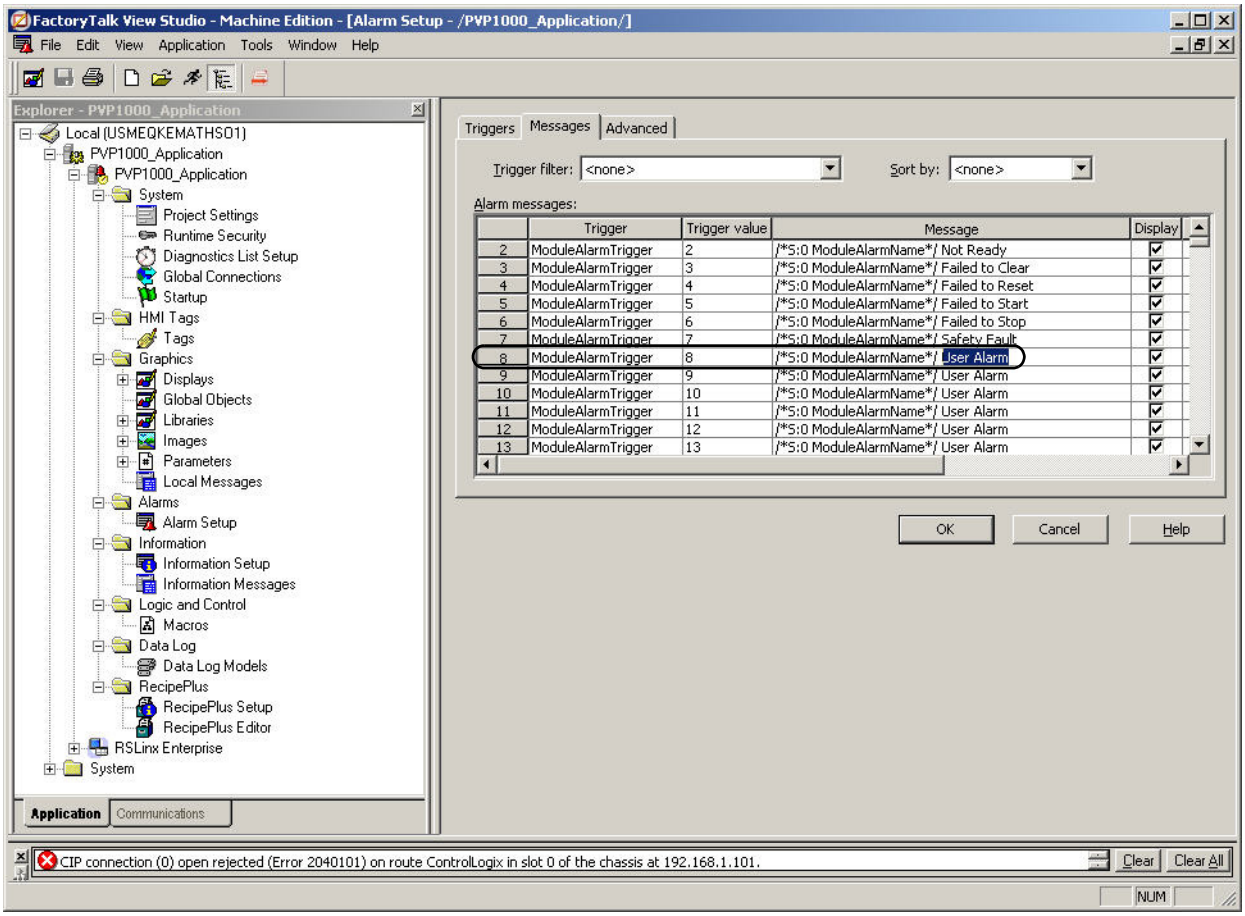
(1) Alarm History fault codes 8…19 are placeholders. You can use them to quickly add custom user-defined module faults. Refer to Chapter 5, FactoryTalk View ME Configuration, on page 101, for more information on the Alarm History faceplate and its function.

All of the device modules also contain a general drive fault. The Drive Fault is in addition to the drive specific faults. For example, when a CIP Motion drive faults for an Excessive Position Error, both the drive specific fault (Excessive Position Error) and general fault (Drive Fault) are displayed on the HMI Alarm History faceplate. This general Drive Fault is also triggered when a drive faults, but does not provide specific fault information, for example, PowerFlex 4-class drives.

To add new module faults to the Alarm History faceplate, navigate to the fault trigger rungs and add the logic for your new fault with the appropriate fault code number.

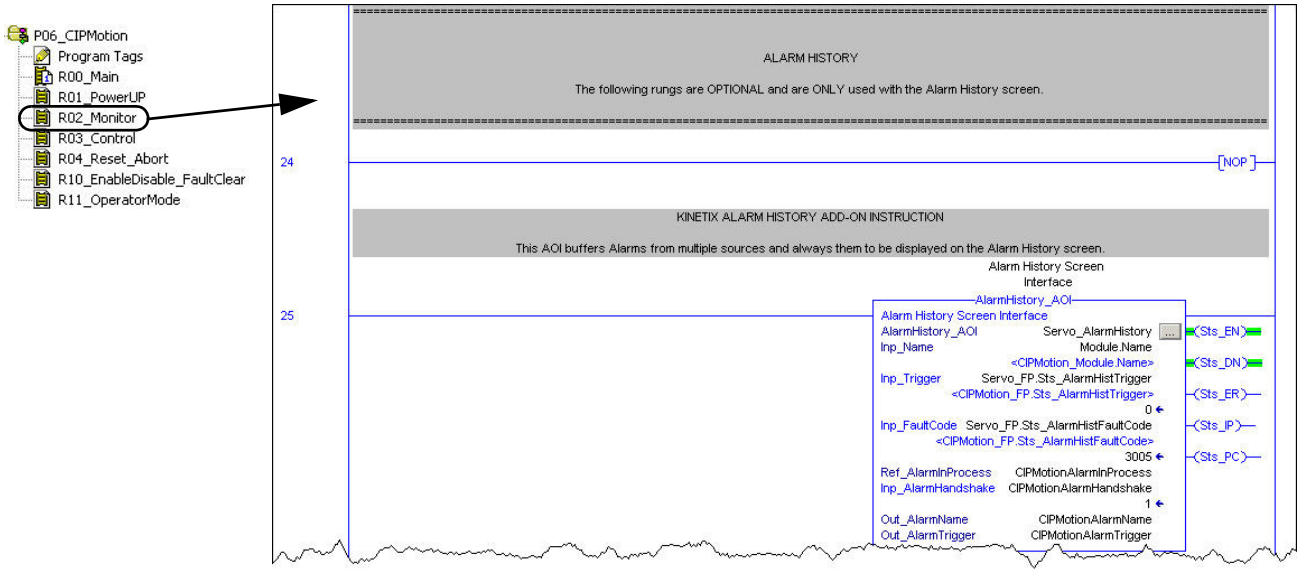


In addition to adding the logic for the new module faults, the alarm message within the HMI application needs to be entered for the associated trigger value.



Alarm History Faceplate Logic Modification

The alarm history rungs, located in the application and device module R02_Monitor routines, support the HMI Alarm History faceplate.



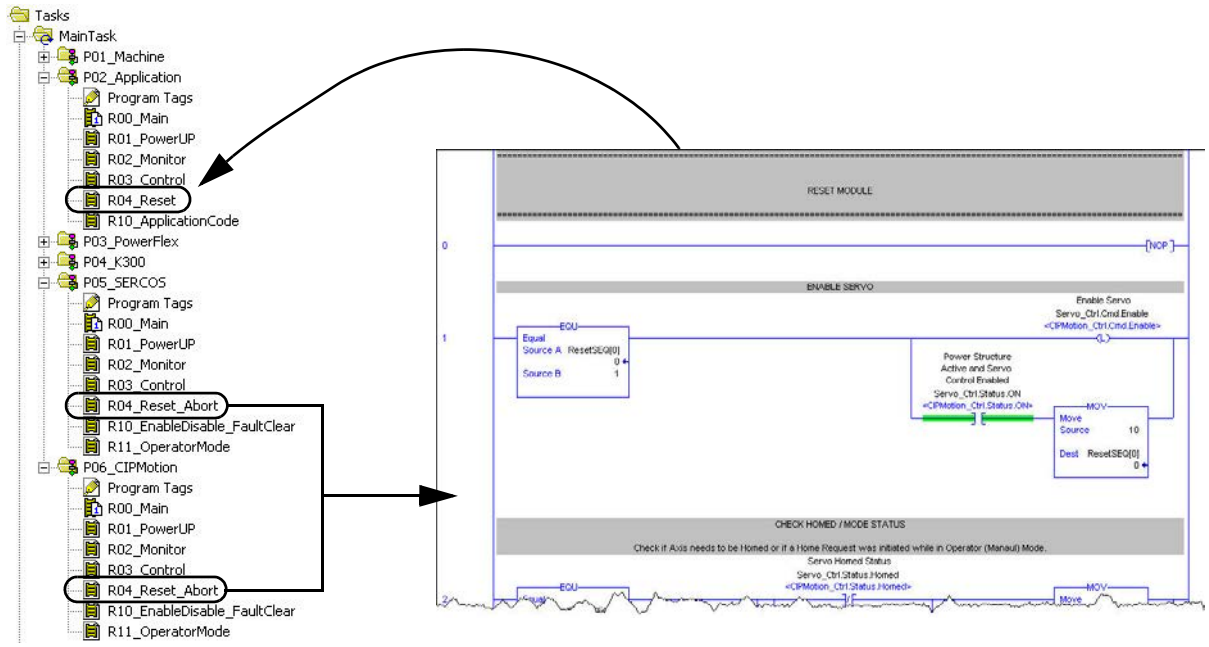
If your HMI application does not include the Alarm History faceplate, then you can remove this logic from the monitor routine for each module. You can locate the Alarm History faceplate logic rungs just below the Alarm History header, in the rung comments.

To remove logic, select Alarm History rungs in each R02_Monitor routine of each application and device module and press the delete key or menu item.

Coordinated Reset Customization

By default, each device module is pre-programmed with reset logic that is designed to prepare the module and the devices it contains (drives, for example) to run. For a sercos or CIP Motion axis, this might mean the reset logic will home the axis. This approach is well suited for applications where the individual device modules reset independently. However, some applications require multiple device modules to reset in a coordinated manner. For example, when two or more sercos and/or CIP Motion axes are homed in sequential order to avoid mechanical interference.

The recommended method to achieve a coordinated reset is to remove the reset-sequence logic from each of corresponding device module R04_Reset_Abort routines and insert it into the application R04_Reset routine.



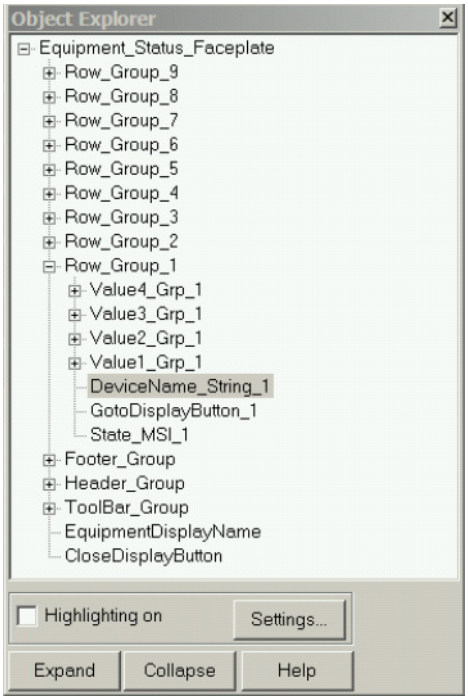
The reset logic from each device module can be blended together into a single reset sequence in the application module. Also, your application may contain device modules that can be reset independently while others may need a coordinated reset. In these cases, you only need to relocate the reset logic for the device modules that require the coordinated reset.

Add Other Devices to the Equipment Status Faceplate

In this appendix you add devices that do not have pre-configured faceplates, such as a discrete device (solenoid or valve).

Add Devices to the Equipment Status Faceplate

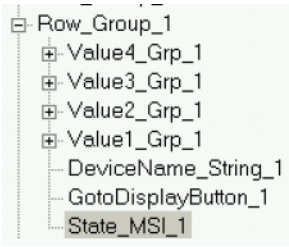
1. Go to the Object Explorer dialog box and select which Row_Group you wish to display the Non-preconfigured Device in.
2. Find the DeviceName_String_*x* object for that row.



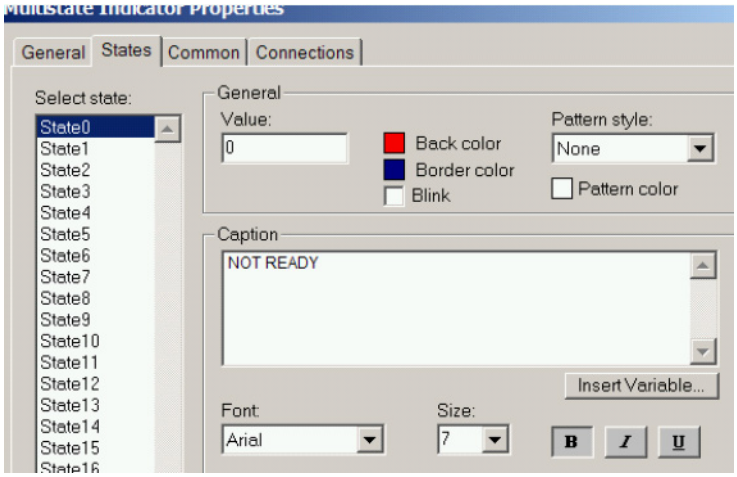
3. Double-click DeviceName_String_*x* object to open the String Display Properties and go to the Connections tab.

4. Assign a new controller tag by clicking the Tag browser and search for a controller tag containing the string name you want to display or you can type a static name in the tag field by enclosing in quotes, for example, “Furnace 1”.

5. Go to the State_MSI object and double-click to open its properties.



6. Click the States tab.

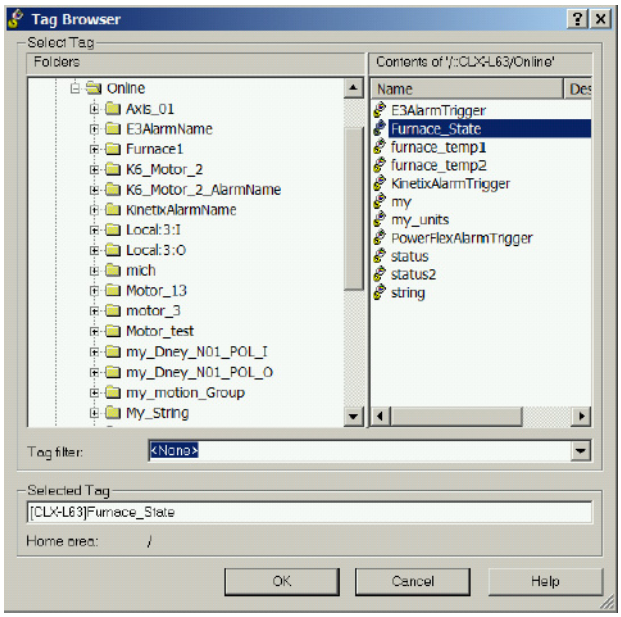


This Multistate Indicator has been pre-configured with 18 device states. When the tag assigned to the MSI becomes a certain value, the MSI displays the appropriate caption.

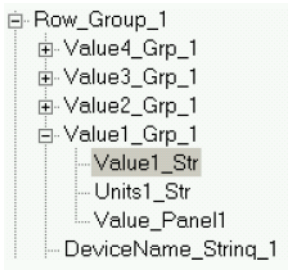
7. You can use the pre-existing captions and create logic in your controller to move the appropriate value to your device tag or edit the captions and values to meet your needs.

8. Click the Connections tab and assign a device tag to the MSI by clicking the Tag browser.
9. For your specific application, you may need to consider deleting any states you are not using to avoid any unwanted captions being displayed.

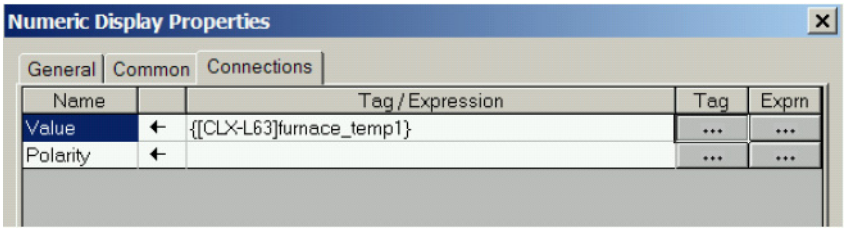
   Lastly, there are four Value groups for each row that contain a numeric display and a string object to display units that you can configure.



10. Expand the Value1_Grp group.



11. Double-click the Value1_Str object to open its properties. Click the Connections tab and assign a tag to the Numeric Display object.

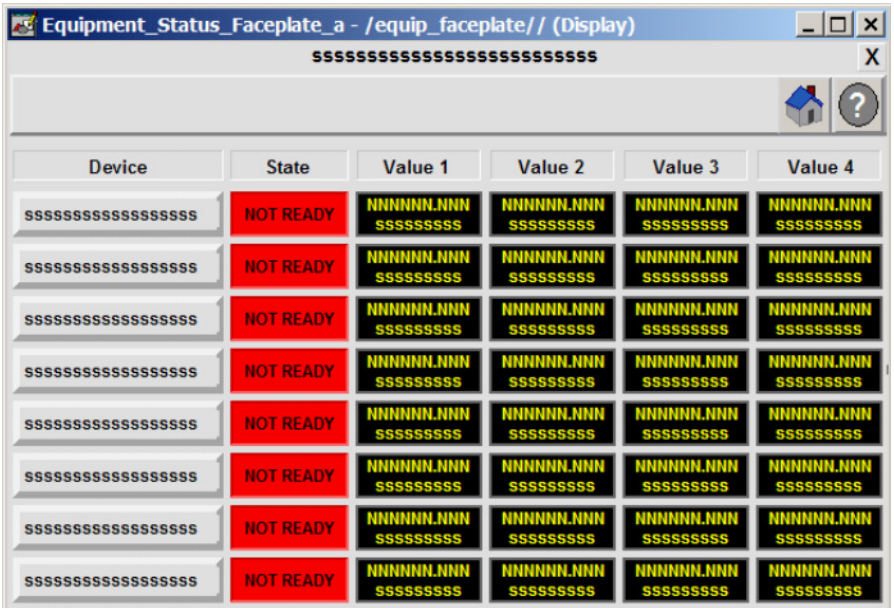


12. Double-click the Units1_Str object to open its properties. Click the Connections tab and assign a tag in the controller that contains a String for the units, or simply type in a static sting by enclosing in quotes. In this example, “degrees” is the tag name.

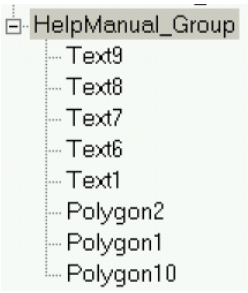
13. Repeat step 11 and step 12 for each Value*x*_Grp group in your row.

Add Optional Faceplate Views

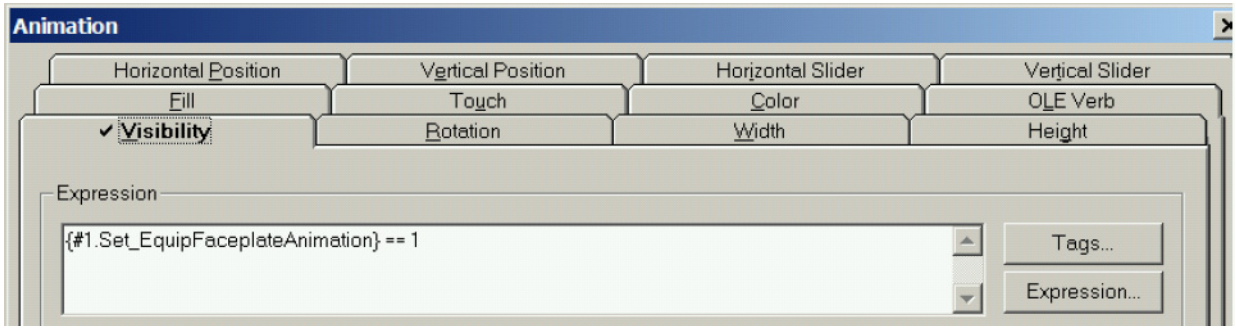
This example shows two additional faceplate toolbar buttons added to the Equipment Status faceplate that toggle between the existing main Equipment_Status_Faceplate Group (Home Button) and a new Help Object Group (Help Button).



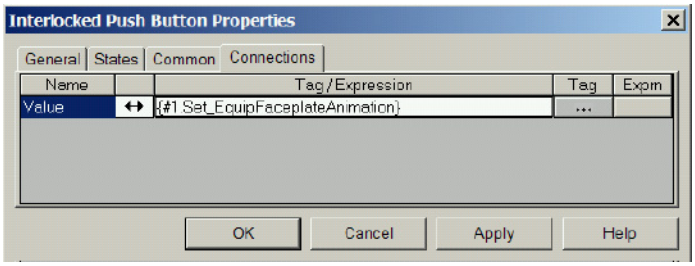
1. Create a new object group, for example, HelpManual_Group, to be launched and add the objects within that group you wish to display when Help toolbar button is pressed.



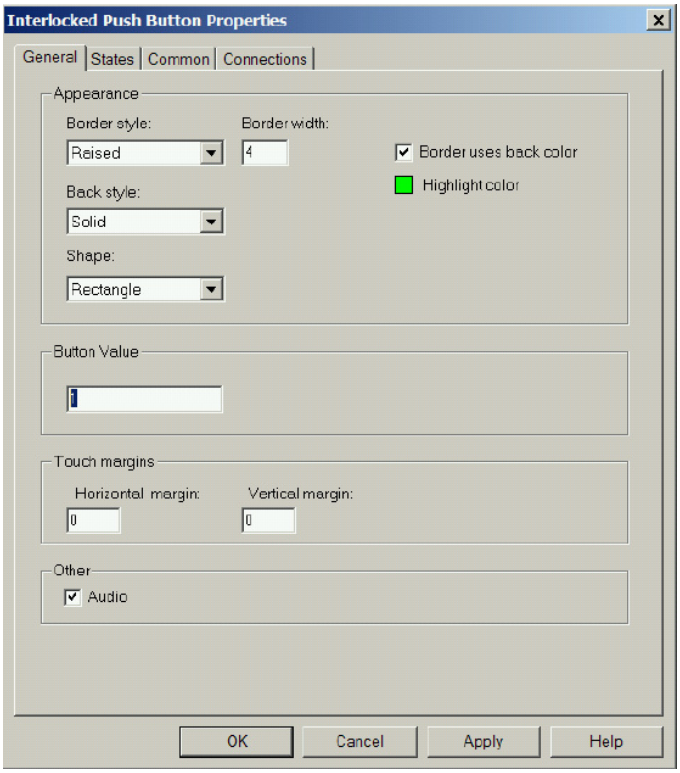
2. Right-click the new group and choose Animation>Visibility.
3. Set the Visibility animation to be true when the Set_EquipFaceplateAnimation tag in the AOI becomes a certain value, for example, 1.



4. Create an Interlocked Pushbutton on toolbar (see example) that will activate visibility of the new Object Group.
5. Set the Connection or tag tied to this button to {#1.Set_EquipFaceplateAnimation}.



6. Set the button value to the number assigned in the group animation in step 3.



7. Create another Interlocked Pushbutton on the toolbar (Home button in this example) that will activate visibility of the existing Equipment_Status_Faceplate Group.

   The pre-configured visibility value for this group is 0.
8. Repeat step 1 through step 7 for additional faceplate object groups you wish to visually activate by faceplate toolbar buttons.

Notes:

Logix Designer Communication and Controller Configuration

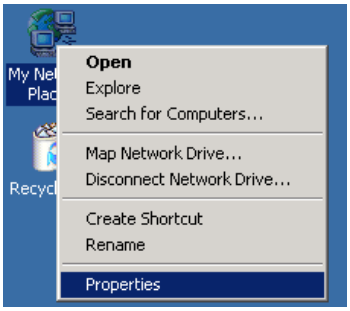
In this appendix you configure your personal computer and controller communication, configure your controller, and create a new project using the Logix Designer application.

Configure Personal Computer Communication Properties

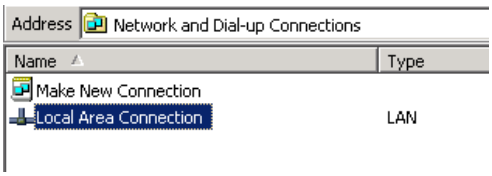
In this section you set and verify the IP address of the personal computer running your program.

Set the IP Address

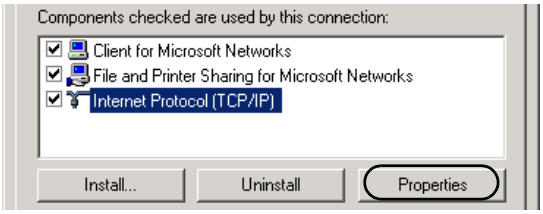
1. On your desktop, right-click My Network Places and select Properties.



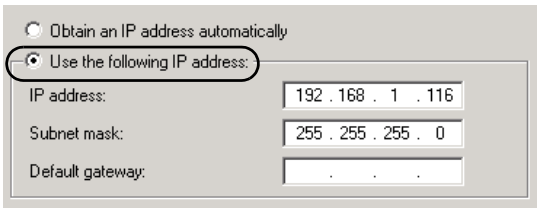
2. Double-click Local Area Connection.



3. On the General tab, select Properties.
4. Verify Internet Protocol (TCP/IP) is checked and selected.
5. Click Properties.



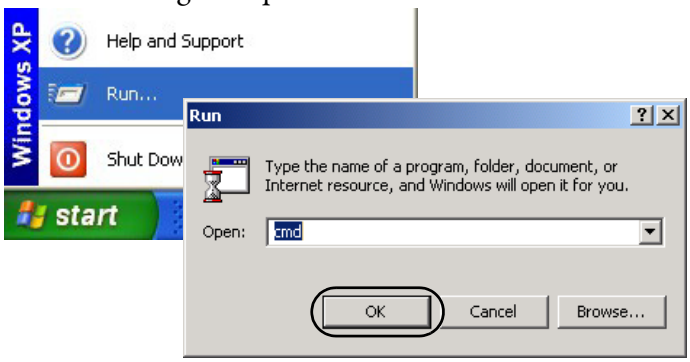
6. Select Use the following IP address.
7. Enter the IP address and Subnet mask as shown or enter your address.
8. Click OK.
9. Close all network windows.



Verify Your IP Address

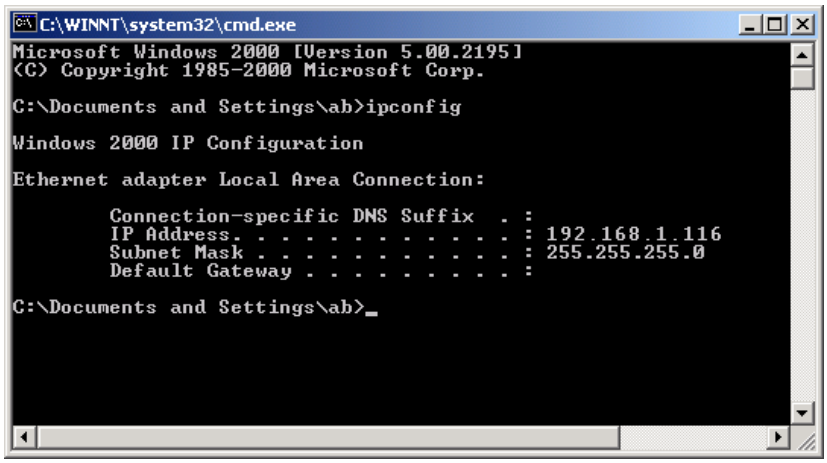
1. From the Start menu, select Run.

   The Run dialog box opens.



2. Enter cmd.
3. Click OK.

   The Windows IP Configuration dialog box opens.

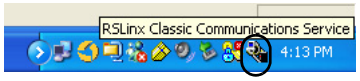


4. Enter ipconfig at the prompt.
5. Press Enter.
6. Verify that the IP address and Subnet Mask match what you entered.

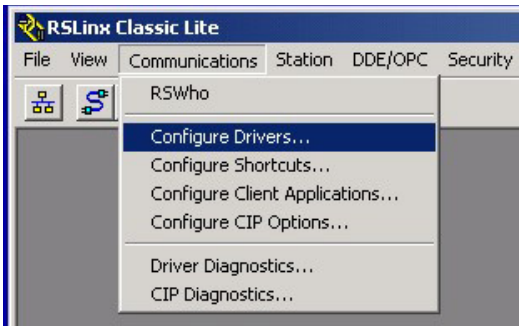
   If these numbers do not match what you entered, contact your network administrator.
7. Close the cmd.exe window.

Configure the EtherNet/IP Driver

1. Click the RSLinx icon in the system tool tray to start the RSLinx Classic software.

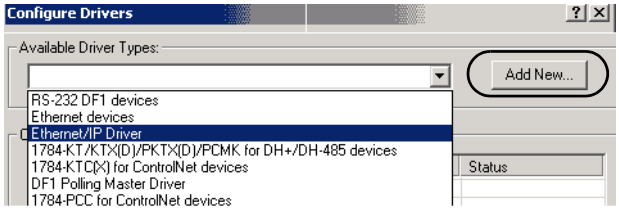


2. From the Communications menu, choose Configure Drivers.

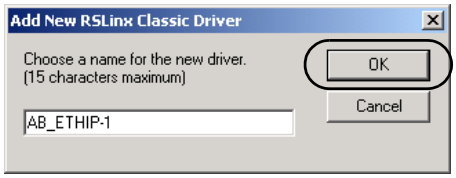


The Configure Drivers dialog box opens.

3. From the Available Driver Types pull-down menu, choose EtherNet/IP Driver**.**
4. Click Add New.

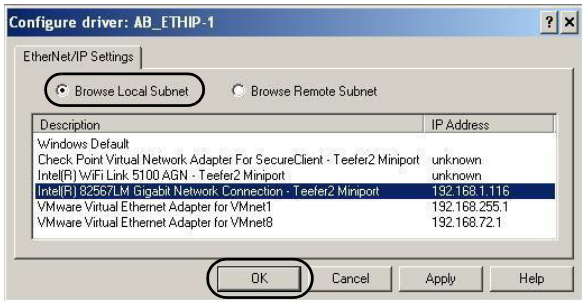


5. Click OK to accept the default name.



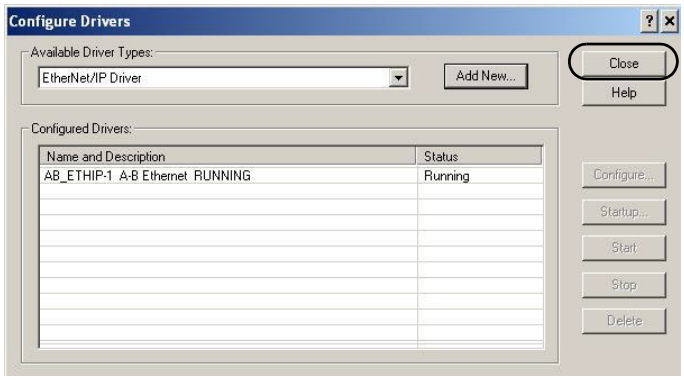
The Configure Driver dialog box opens.

6. Select Browse Local Subnet and associated personal computer EtherNet/IP port.
7. Click OK.



The EtherNet/IP driver is added to the Configured Drivers list.

8. Verify that the status of the driver indicates Running.
9. Click Close.

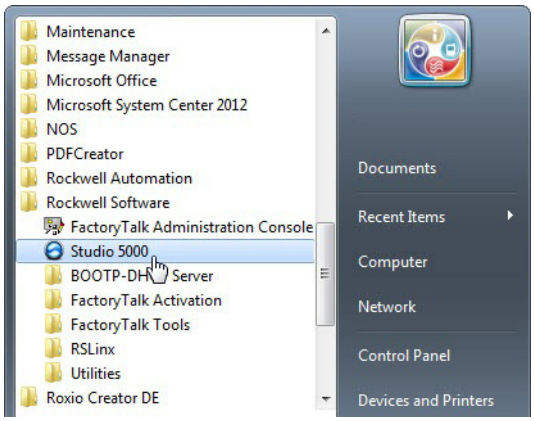


Configure the Logix5000 Controller

Check the Web for Firmware Updates

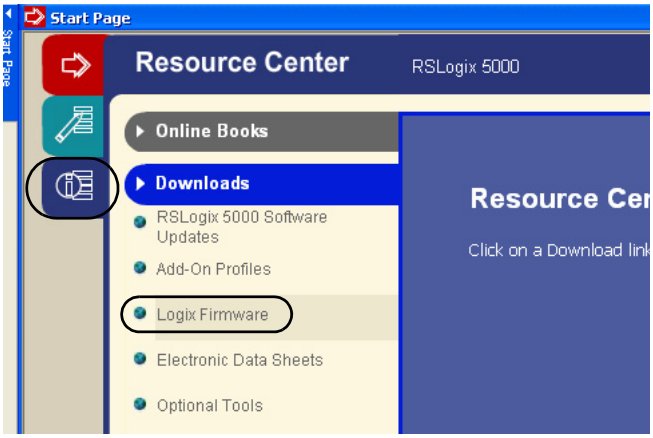
Follow these steps to check for ControlFLASH firmware updates.

1. From the Start menu, launch the Studio 5000 Logix Designer application.

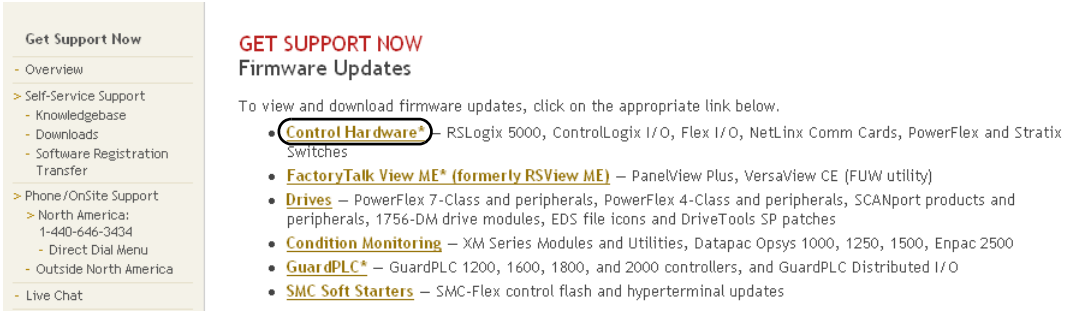


   The Start Page opens.

2. Click the Resource Center icon on the Start Page.
3. Choose Downloads>Logix Firmware.



   The Get Support Now webpage opens.

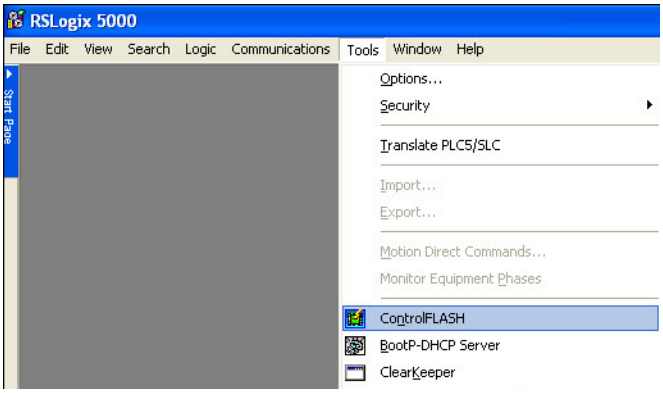


4. Click Control Hardware to access the controller firmware.
5. Follow the webpage instructions to download firmware.

Load the Controller Firmware

TIP This procedure shows how to load firmware in the controller using a serial connection. It is faster to load the firmware using an EtherNet/IP connection. For details, see the controller installation instructions.

1. Apply input power to the CompactLogix controller power supply.
2. From the Tools menu, select ControlFLASH.

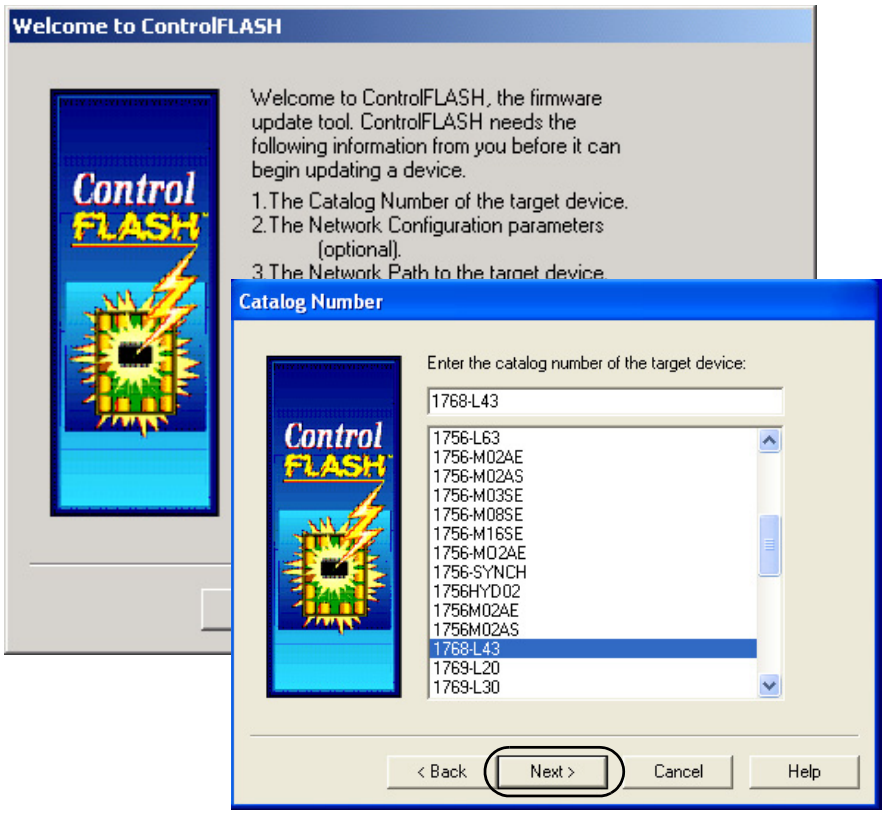


   The Welcome to ControlFLASH dialog box opens.

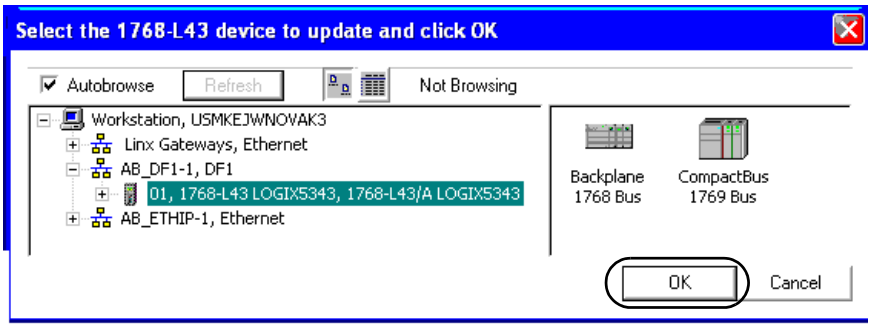
3. Click Next.
4. Select your controller catalog number.

   In this example, 1768-L43 is the controller catalog number. The steps to download other Logix5000 controller firmware are similar.

5. Click Next.



6. Under AB_DF1-1, select the 1768-L43 controller.
7. Click OK.



8. Move the controller keyswitch to Program.

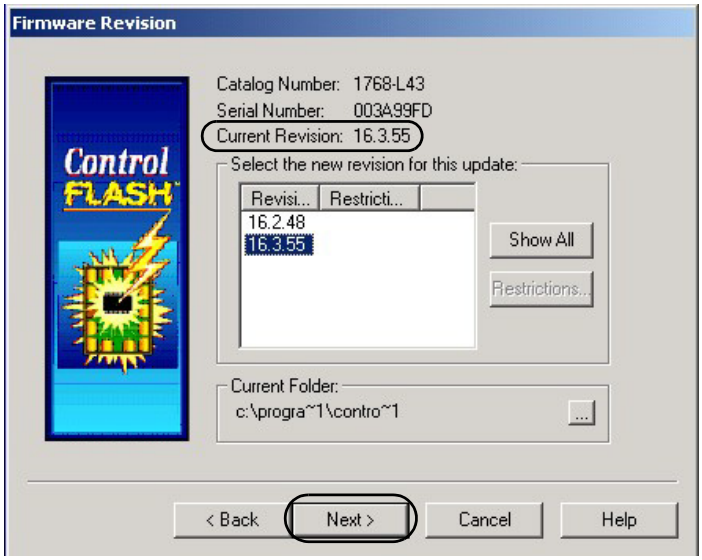
9. Compare the current drive firmware revision to the latest revision listed.

   If the Current Revision matches the newest Revision listed, then your controller already has the latest firmware and a firmware update is not needed.

   a. Click Cancel to abort the firmware upgrade.

   b. Go to Assign IP Addresses on page 263.

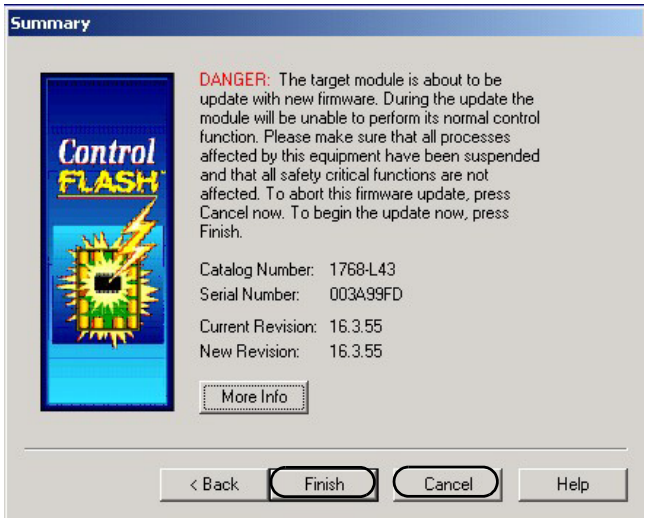
   If the Current Revision does not match the latest revision listed, click Next.



TIP If you are unsure which revision to use, select the latest.

10. Click Finish, then click Yes to start the firmware update.

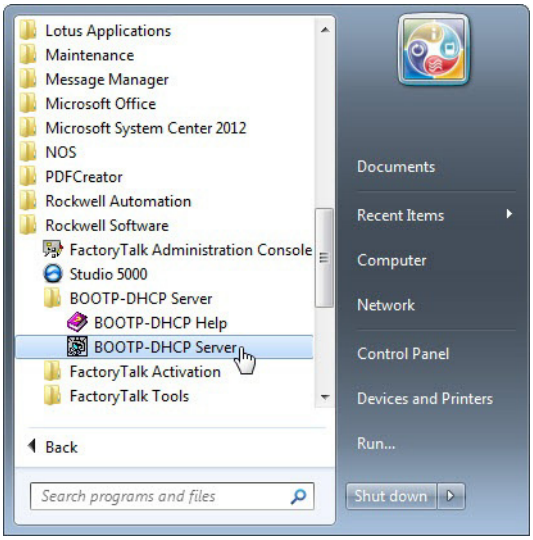
    When the controller is updated, the status box displays Update Complete.
11. Click Ok.
12. Click Cancel to close the ControlFLASH software.
13. Click Yes.



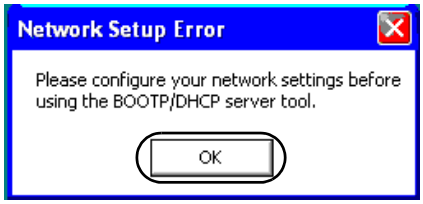
Assign IP Addresses

The BOOTP/DHCP Server utility is used to assign IP addresses to most devices in this quick start, except the PanelView Plus terminal. The BOOTP/DHCP utility is installed during the Logix Designer application installation.

1. From the Start menu, launch the BOOTP/DHCP Server utility.



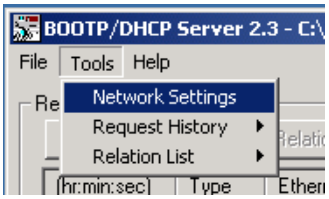
If you are running this utility for the first time, the Network Setup Error dialog box opens.



a. Click OK.

b. Enter the subnet mask from step 7 on page 257.

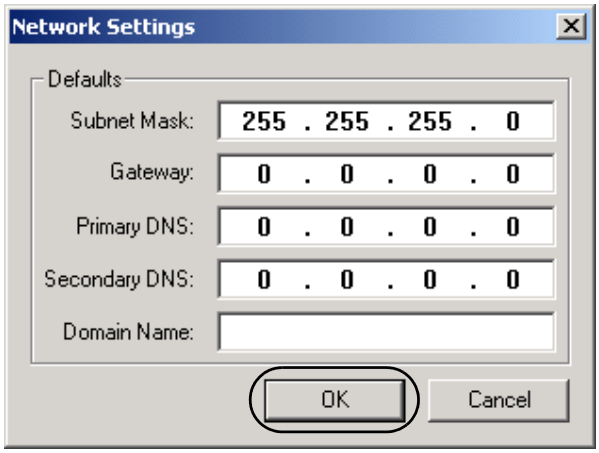
If you are not running this utility for the first time, select Tools>Network Settings.



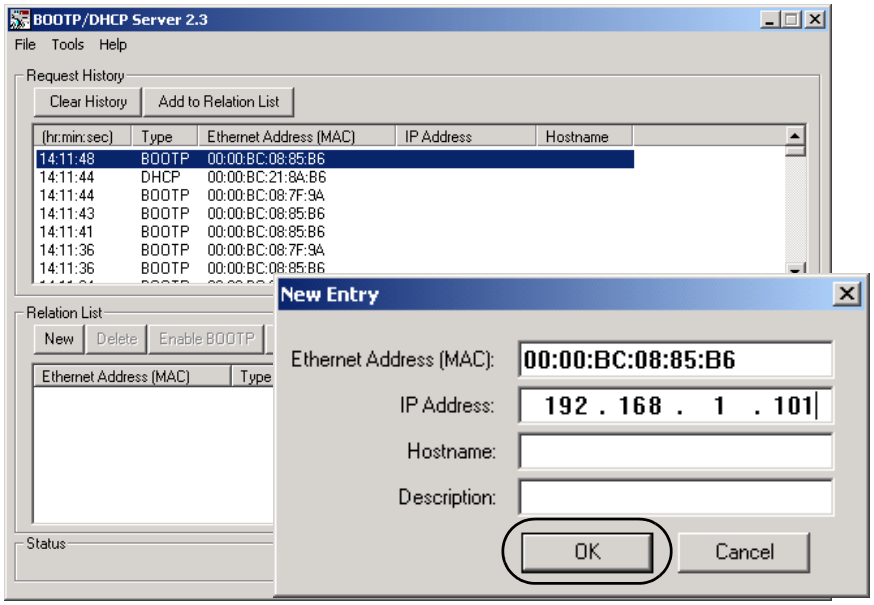
2. Click OK.

The Request History field displays all devices in your network that need IP addresses.

The EtherNet/IP (MAC) addresses correspond to the pre-loaded addresses and typically are marked on the device labels.



3. Double-click a request from one of the devices.

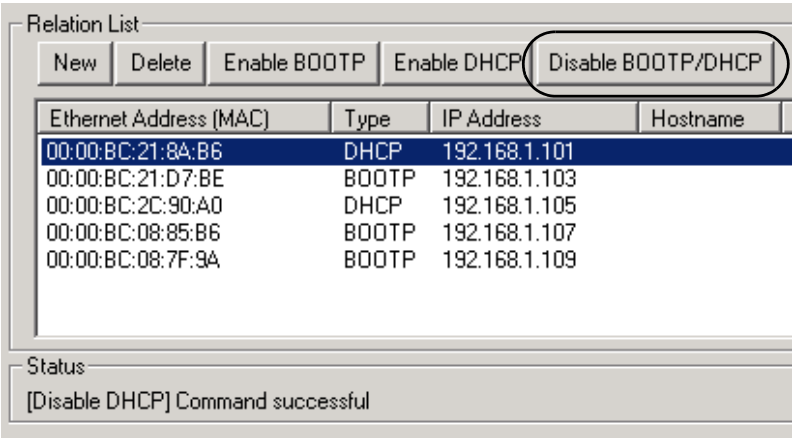


4. Enter a unique IP address for each device.
5. Click OK.

   If you are not on an isolated network, obtain the IP addresses from your network administrator.
6. Repeat step 3 through step 5 for each device, except the PanelView Plus terminal.

IMPORTANT If you cycle power, the device will not retain its IP address unless you disable BOOTP/DHCP.

7. Select the first device in the Relation List field.



8. Click Disable BOOTP/DHCP.
9. Repeat step 7 through step 8 for all devices except the PanelView Plus terminal.
10. Close the BOOTP/DHCP utility.

    If prompted to save changes, click No.

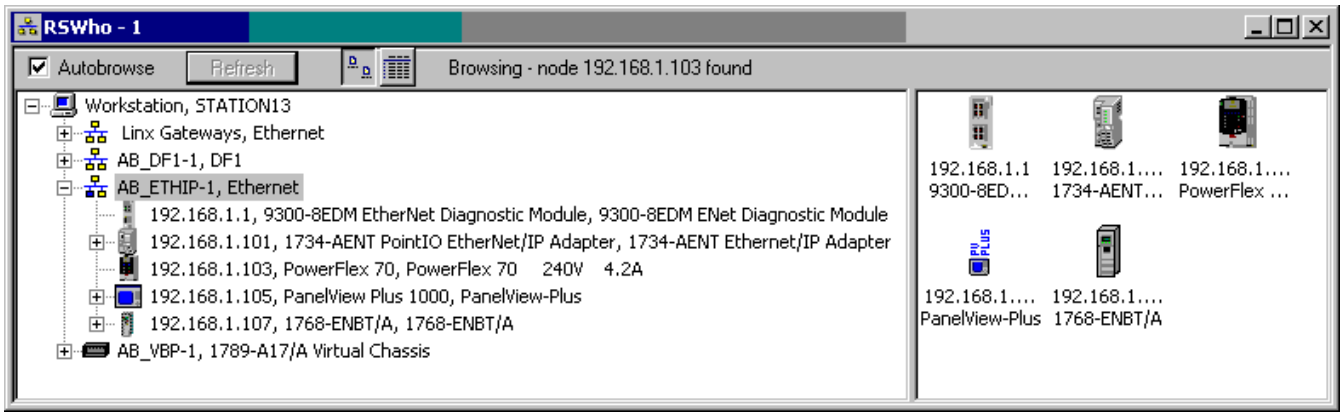
Browse the EtherNet/IP Network Devices

Follow these steps to verify that all your network devices are present in RSLinx Classic software.

1. Click the RSWho icon to view the EtherNet/IP driver and devices on the network.

2. Verify that all your network devices are detected.

   In this example, there are five network devices. The network configuration for your specific application will be different.



Notes:

Create and Add BOM Device Modules Without the DMAT Wizard

In this appendix you select an initial preconfigured BOM file without using the DMAT Wizard and import BOM device modules to an existing ProposalWorks file.

Before You Begin

Collect specific application data, for example:

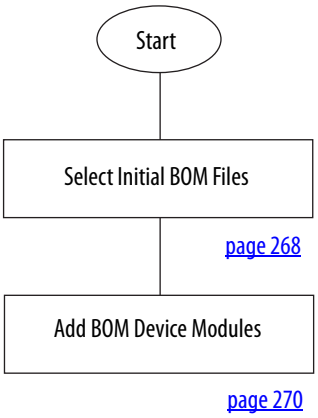
- System Input Voltage
- Ambient temperature and Altitude Specifications
- Transmission Type
- Motor data
- Load Data – Inertia and Cycle Profiles
- Other System Sizing Info

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative.
- PowerFlex Family Selection Guide, publication PFLEX-SG002.
- Kinetix Motion Control Selection Guide, publication GMC-SG001.

Follow These Steps

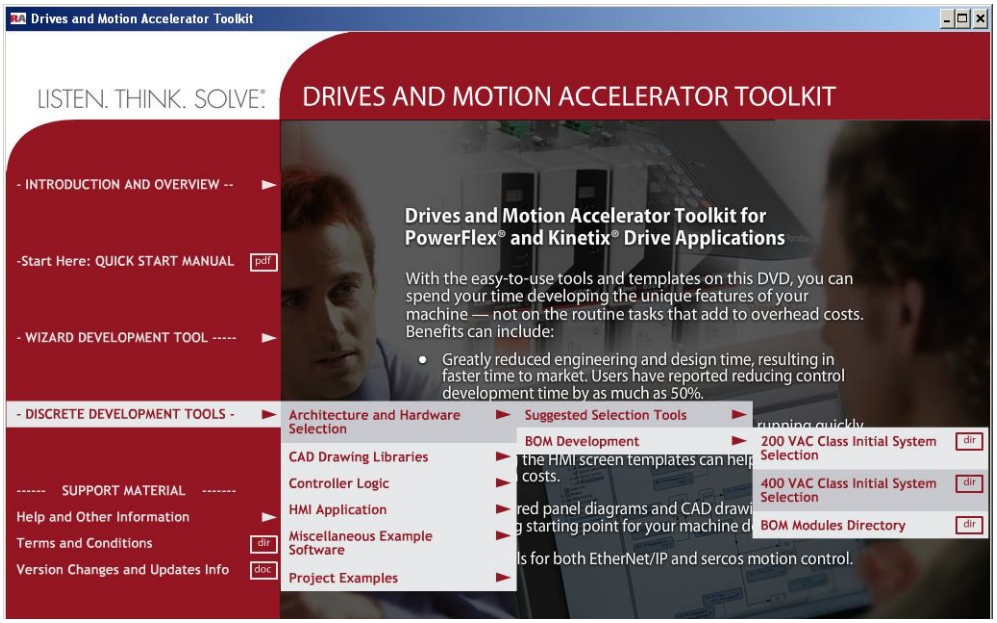
Complete the following steps to create a bill of materials and size your drives and motion system components.



Select Initial BOM Files

Follow these steps to select your initial BOM files.

1. Open and rename the initial ProposalWorks BOM file.
   a. Navigate to and select the appropriate voltage class directory, based on your system power voltage, within the BOM development folder.
      For the Widg-O-matic example, 400 VAC Class directory is selected.



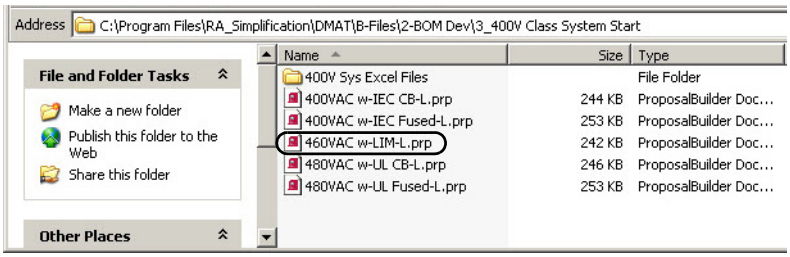
   The Voltage Class System Start folder opens.

b. Double-click the ProposalWorks file based on your power distribution hardware preferences.

Initial ProposalWorks File Selection

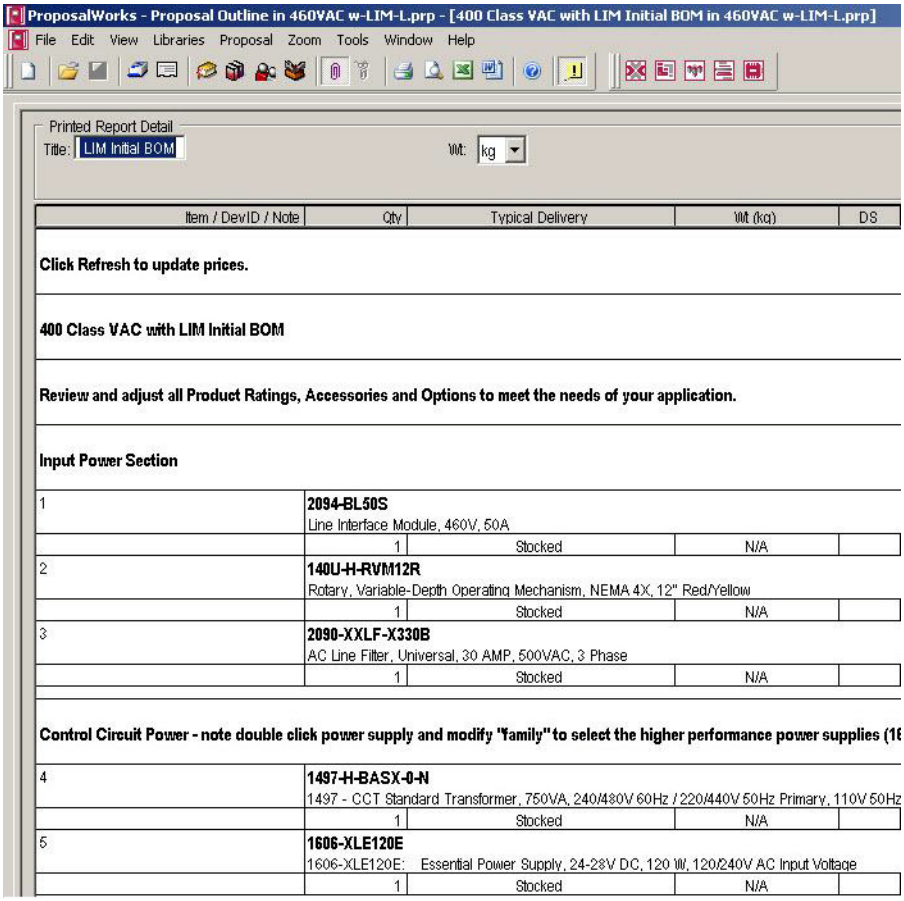
ProposalWorks Initial BOM File	Distribution Equipment Type	Overcurrent Protection Type
*xxx*VAC w-IEC CB-L.prp	IEC	Circuit breaker
*xxx*VAC w-IEC Fused-L.prp	IEC	Fuse
*xxx*VAC w-LIM-L.prp	UL, using Line Interface Module (LIM)	Circuit breaker with LIM module
*xxx*VAC w-UL CB-L.prp	UL	Circuit breaker
*xxx*VAC w-UL Fused-L.prp	UL	Fuse

For the Widg-O-matic application example, the 400VAC w-LIM-L.prp file is selected.



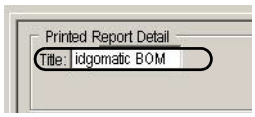
ProposalWorks software launches and the selected file opens.

The initial BOM files include power and control distribution equipment, control circuit protection, operator devices, and terminal blocks.



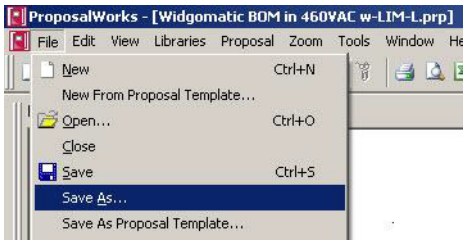
2. Rename project title in the Title field.

For the Widg-O-matic application example, the 400 Class VAC with LIM Initial BOM file was renamed Widgomatic_BOM.



3. Rename and save the BOM project file.

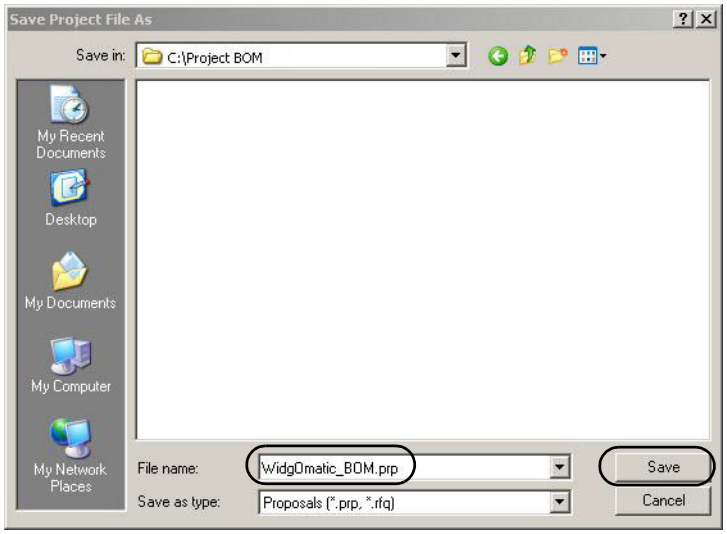
   a. Click the File menu and choose Save As.



   b. Type a new BOM project file name.

   By creating a new BOM project file specifically for your application, you preserve the initial toolkit BOM file for future reference.

   In this example, the 400 Class VAC with LIM Initial BOM file was renamed WidgOmatic_BOM.

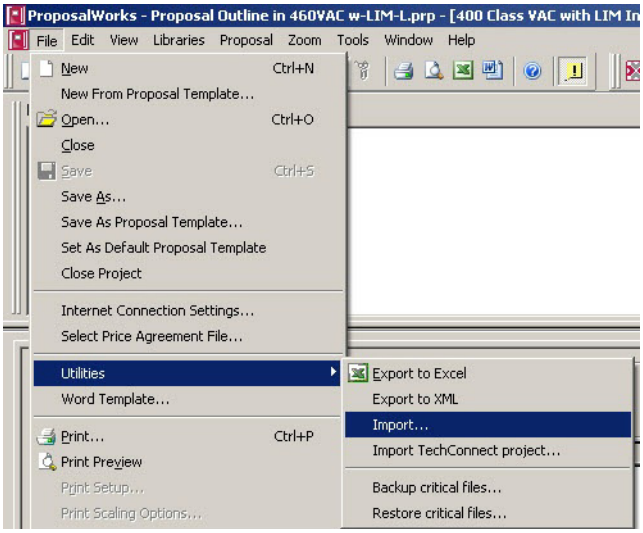


Add BOM Device Modules

Follow these steps to add BOM device modules.

1. Import drive BOM files.

   a. Click File and choose Utilities>Import.



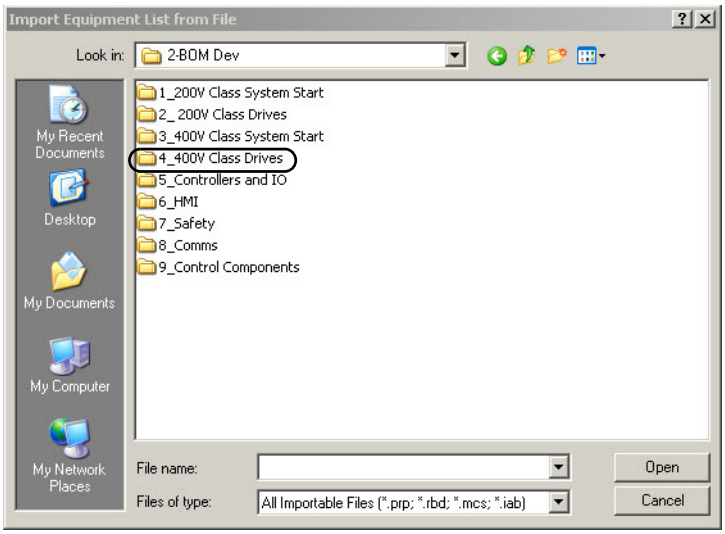
   The Import Equipment List from File dialog box opens.

b. Navigate to the 2-BOM Dev folder within the toolkit's Files folder.

   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\2-BOM Dev.

c. Double-click the 2_ 200V Class Drives or 4_400V Class Drives folder based on your system power voltage.

   For the Widg-O-matic machine application example, the 4_400V Class Drives folder is selected.



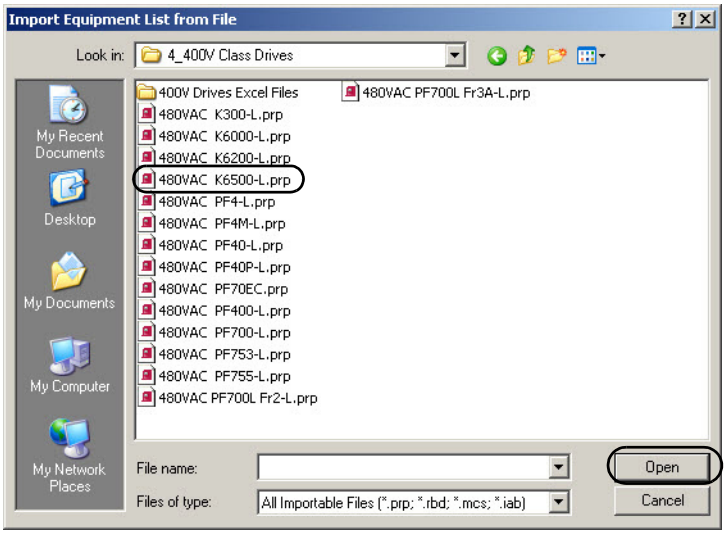
d. Select the file matching your initial drive family included in your application.

   For the Widg-O-matic machine application example, the 480VAC K6500-L file.prp file is selected for the two Kinetix 6500 X-Y gantry drives in system.

e. Click Open.

   The Import Completion Confirmation dialog box opens.

f. Click OK.



The selected drive equipment is added to the end of the initial BOM file.

2. Repeat step 1 for each drive family in your system.

   For the Widg-O-matic application example, the 480VAC PF753-L.prp and 480VAC K300-L.prp Drive BOM files are also imported into the initial BOM file to accommodate the conveyor and diverter drives in the system.

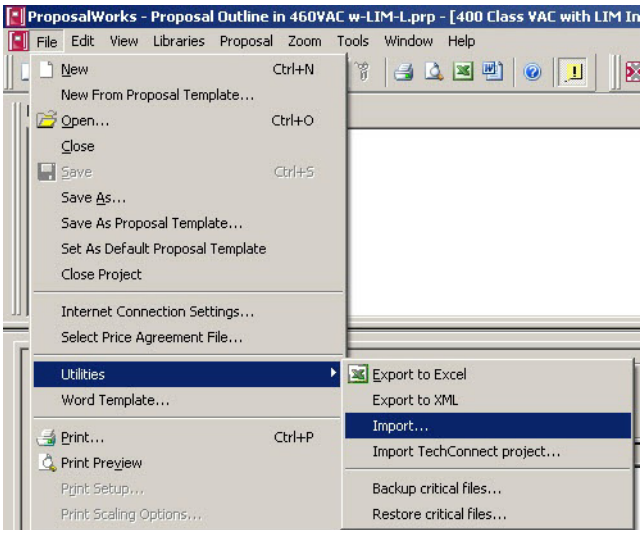
400 V Class VAC Kinetix 6500 Initial BOM

Kinetix 6500 Multi-axis Servo Drive System Section

14	**2094-PRS4** Power Rail, Slim, 230V OR 460V, 4 Axis.				
	1	Stocked	N/A		
15	**2094-BC02-M02-M** Power Module, Integrated, 460V, 15kW Conv. 15A Inv., Kinetix 6500 EtherNet/IP Safe Torque-Off Control Modu				
	1		N/A		
15.1	**2090-K6CK-D44M** Connector Kit Kinetix Safe Speed 44 pin				
	1		N/A		
15.2	**2094-EN02D-M01-S0** EtherNet/IP Safe Torque-Off Control Module				
	1		N/A		
16	**2094-BMP5-M** Power Module, 460V, 5A Inv., Kinetix 6500 EtherNet/IP Safe Torque-Off Control Module				
	1		N/A		
16.1	**2090-K6CK-D44M** Connector Kit Kinetix Safe Speed 44 pin				
	1		N/A		

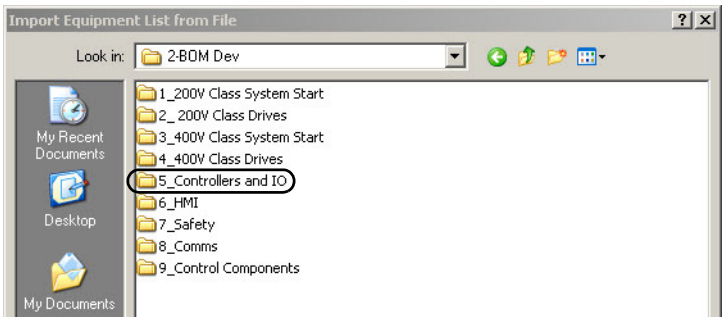
3. Import controller and I/O BOM files.

a. Click File and choose Utilities>Import.



The Import Equipment List from File dialog box opens.

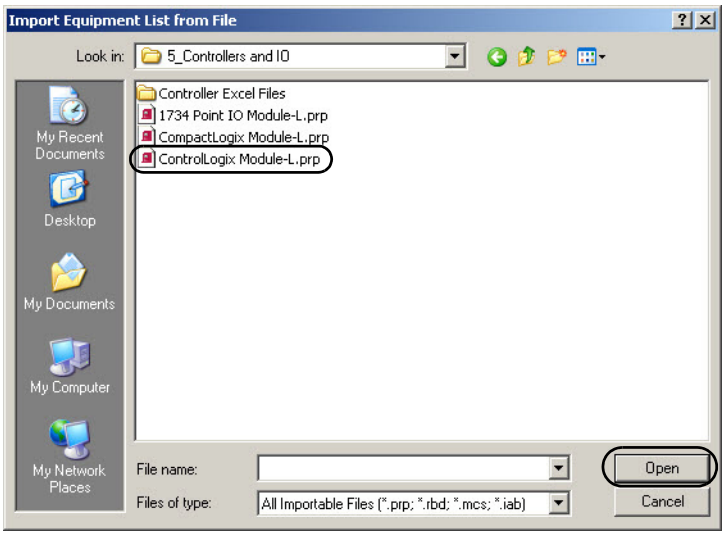
b. Navigate to the 2-BOM Dev folder within the toolkit's Files folder.



Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\2-BOM Dev.

c. Double-click the 5_Controllers and IO folder.

d. Select the CompactLogix Module-L.prp or ControlLogix Module-L.prp file based on the controller family required for your application.



For the Widg-O-matic machine application example, the ControlLogix Module-L.prp file is selected for support of the two Kinetix 6500 CIP Motion drives in the system.

A variety of Logix5000 controllers can be used in your drives and motion application. Logix5000 controller selection is based on drive capacity and general performance. Refer to the Controller and Drive Capacity table and the appropriate selection guide to assist in controller selection.

Controller and Drive Capacity

Logix5000 (1) Controller Type	EtherNet/IP CIP Motion Drives	Sercos interface Drives	Kinetix 300 Drives	PowerFlex Drives
	Kinetix 6500	Kinetix 6200, Kinetix 6000, Kinetix 6000M, Kinetix 2000, Kinetix 7000, and Ultra3000		
	Drives, (2) max	Drives, (2) max	Drives, (2) max	Drives, (2) max
1768-L2*x*	–	–	6	6
1768-L3*x*	–	–	16	16
1768-L43, 1768-L43S	–	4	20	32
1768-L45, 1768-L45S	–	8	20	32
1756-L6*x*, (3) 1756-L6*x*S (3)	100	100	128	128
1756-L7*x* (3)	100	100	128	128

(1) Based on controller firmware, revision 18, and RSLogix 5000 software, version 18.
(2) Maximum drive quantity based on CIP or TCP connections and I/O packets for a singe communication module.
(3) Based on 1756-EN*x*T*x* EtherNet/IP communication module.

e. Click open.

The Import Completion Confirmation dialog box opens.

f. Click OK.

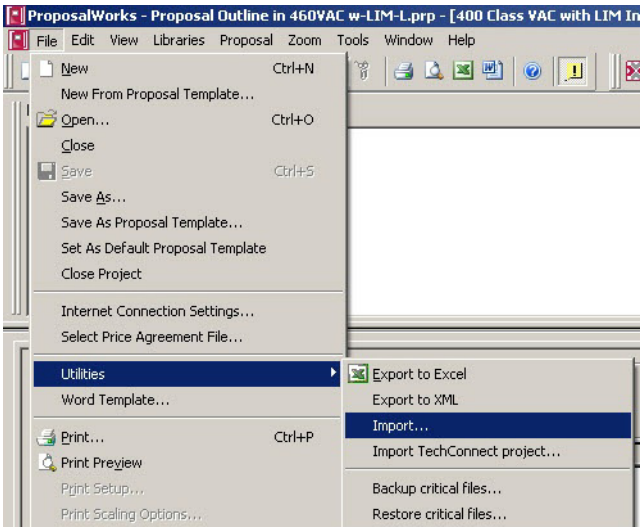
Logix Controller Section

42 *Verify Price in SAP	**1756 ControlLogix System Group Selection**					
	1					
42.1	**1756-IF8** Analog Input - Current/Voltage 8 Pts (36 Pin)					
	1	Stocked	N/A			
42.2	**1756-OF4** Analog Output - Current/Voltage 4 Pts (20 Pin)					
	1	Stocked	N/A			
42.3	**1756-A13** 13 Slot ControlLogix Chassis					
	1	Stocked	N/A			
42.4	**1756-EN2TR** EtherNet dual port 10-100M Interface Module (supports 128 TCP/IP connections, up to 8 axis), Ring and Linear topologies					
	1	Stocked	N/A			
42.5	**1756-IA16** 79-132 VAC Input 16 Pts (20 Pin)					
	1	Stocked	N/A			
42.6	**1756-OA8** 74-265 VAC 2 Amp Output 8 Pts (20 Pin)					
	1	Stocked	N/A			
42.7	**1756-IB16** 10-31 VDC Input 16 Pts (20 Pin)					
	1	Stocked	N/A			
42.8	**1756-OB8** 10-30 VDC 2 Amp Output 8 Pts (20 Pin)					
	1	Stocked	N/A			
42.9	**1756-M08SE** 8 Axis SERCOS Servo Module					
	1	Stocked	N/A			

The selected controller and corresponding I/O hardware is added to the end of the initial BOM file.

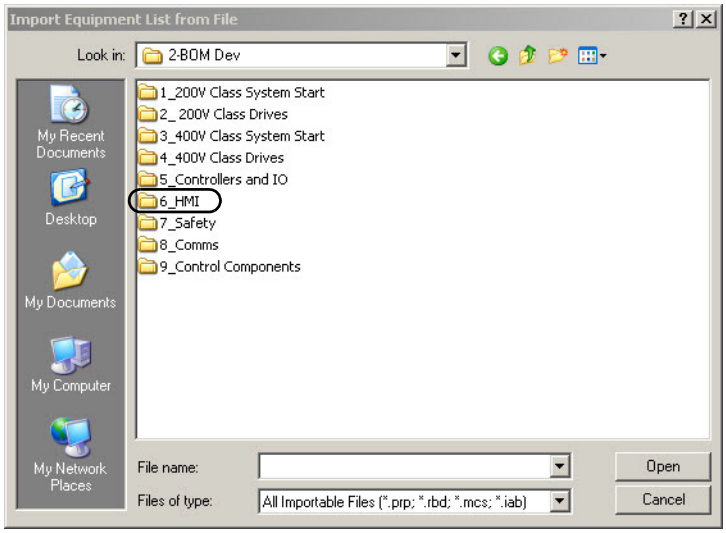
4. Import HMI BOM files.

   a. Click File and choose Utilities>Import.



   The Import Equipment List from File dialog box opens.

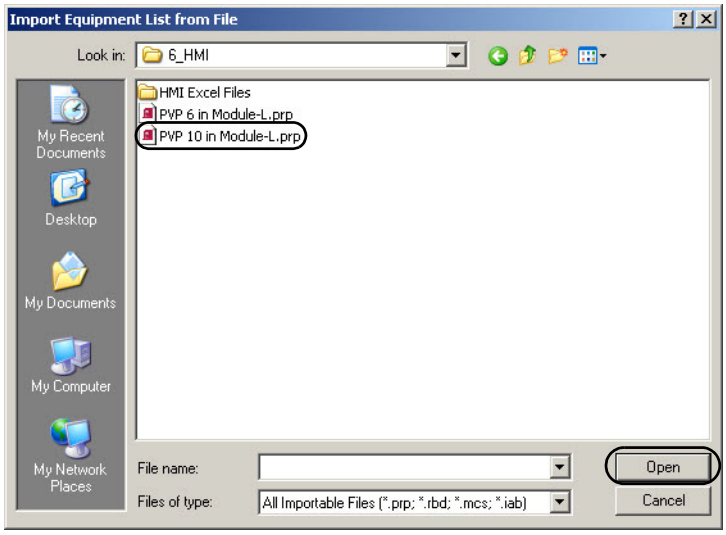
   b. Navigate to the 2-BOM Dev folder within the toolkit's Files folder.



   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\2-BOM Dev.

   c. Double-click the 6_HMI folder.

d. Select the PVP 6 in Module-L.prp or PVP 10 in Module-L.prp file based on the relative size of your PanelView Plus required for your application.



For the Widg-O-matic machine application example, the PVP 10 in Module-L.prp file is selected for support of a PanelView Plus 1000 terminal in the system.

e. Click Open.

The Import Completion Confirmation dialog box opens.

f. Click OK.

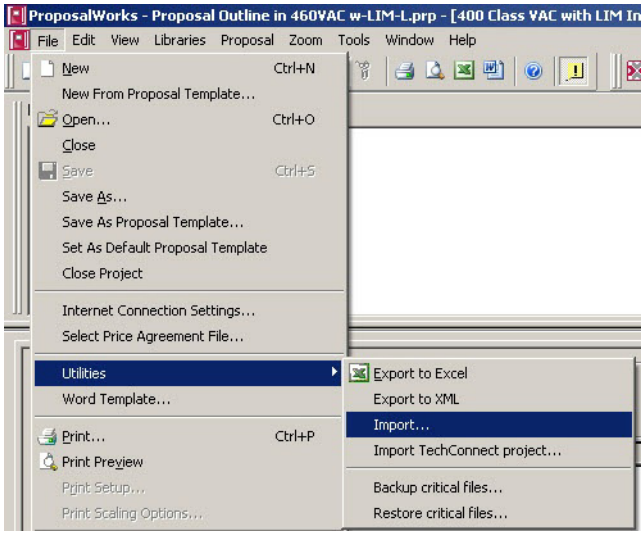
The selected PanelView Plus hardware is added to the end of the initial BOM file.

10 inch HMI Initial BOM

44	**2711P-T10C4A1**				
	PanelView Plus 1000 Touch, Standard Communications (Ethernet & RS-232), AC power, 64 MB Flash/ 64 MB RAM				
	1	Stocked	N/A		
45	**2711P-CBL-EX04**				
	Ethernet CAT5 crossover cable (industrial grade) 4.3 m (14 ft)				
	1	Stocked	N/A		

5. Import the Ethernet communication BOM file.

a. Click File and choose Utilities>Import.

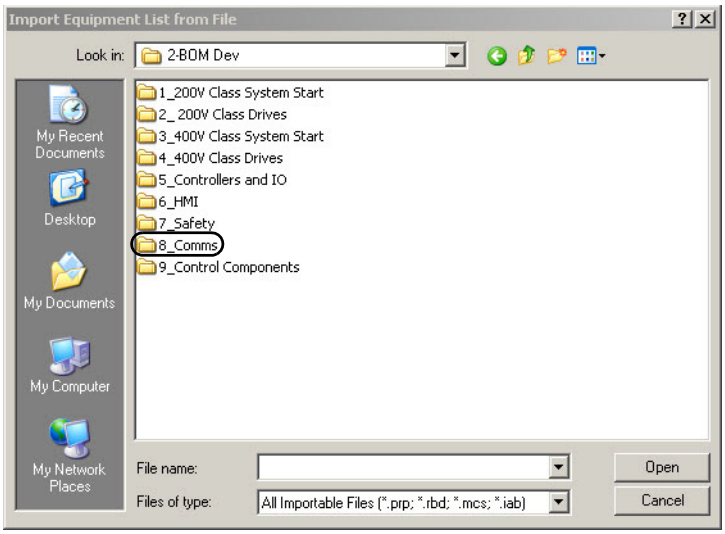


The Import Equipment List from File dialog box opens.

b. Navigate to the 2-BOM Dev folder within the toolkit's Files folder.

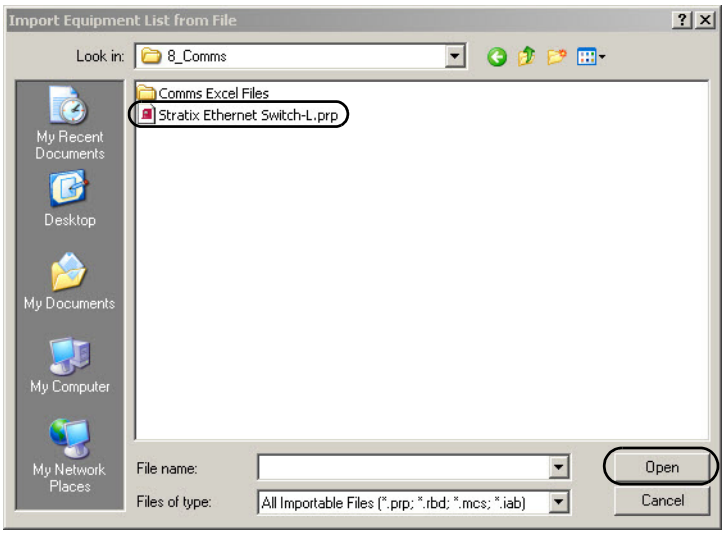
   Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\2-BOM Dev.

c. Double-click the 8_Comms folder.



d. Select the Stratix Ethernet Switch-L.prp file.

e. Click Open.



The Import Completion Confirmation dialog box opens.

f. Click OK.

Stratix Ethernet Switch Initial BOM

30	**1783-US05T** Stratix 2000 Switch, Unmanaged, 5 Copper Ports					
	1	Stocked	N/A			
31	**1783-EMS08T** Stratix 6000 Switch, Entry-Level Managed, 8-port					
	1	Stocked	N/A			
32	**1585J-M4TBJM-5** 1585 EtherNet Cables, 4 Conductors, RJ45, Straight Male, RJ45, Teal Robotic TPE, UL CMB, CMX, cUL, CMG, Standard TIA 568-B					
	1	Stocked	N/A			

The Ethernet switch and cable hardware is added to the end of the initial BOM file.

6. Save your assembled BOM file.

Assemble Project Drawing Set Without the DMAT Wizard

This appendix provides you with the steps necessary to assemble a project drawing set from the toolkit library without using the DMAT Wizard.

The libraries are organized into power, control, safety, I/O, and communication wiring/panel layout sections. These steps let you easily assemble all of the wiring and layout drawings for your specific system and minimize editing of your drawing set.

TIP If you do not have CAD software that is compatible with the dwg/dxf formats, the pdf files provide an excellent reference library for wiring all your system devices.

Before You Begin

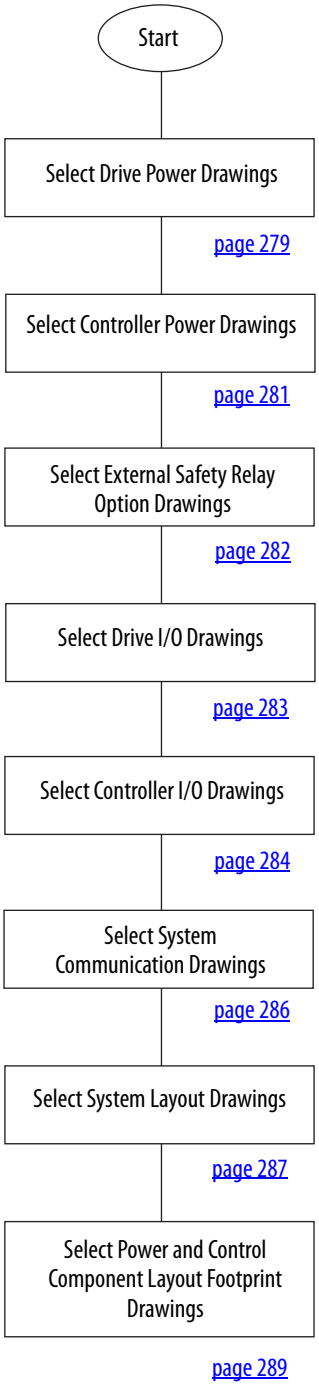
Complete your system layout and wiring (refer to Chapter 2).

What You Need

- Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative.
- AutoCAD Electrical software to open the DWG or DXF files
- Adobe Reader software to open PDF files
- Line Interface Module Installation Instructions, publication 2094-IN005
- System Design for Control of Electrical Noise Reference Manual, publication GMC-RM001
- System Design for Control of Electrical Noise Video, publication GMC-SP004
- The user manual for your Drives and Motion hardware. Refer to Additional Resources on page 15 for publication numbers.

Follow These Steps

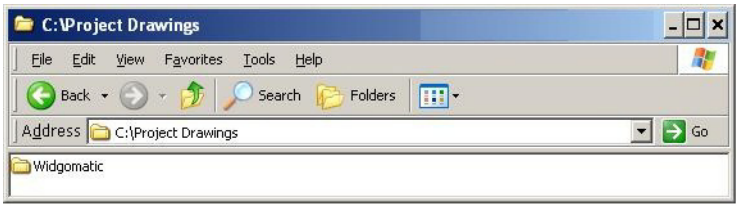
Complete the following steps to configure your Logix5000 integrated motion application.



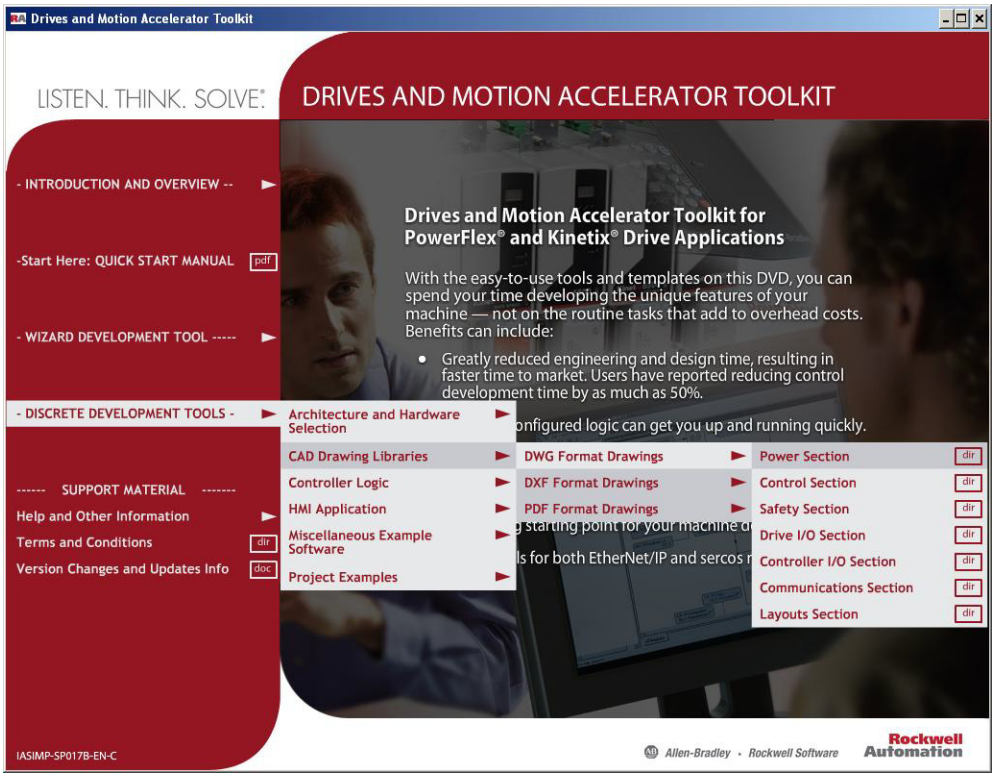
Select Drive Power Drawings

1. Create a project folder.

   For the Widg-O-matic machine example, the Widgomatic folder was created.



2. Browse to the CAD Drawing Libraries folder on the Drives and Motion toolkit DVD.
3. Navigate to the desired file type (DWG, DXF, or PDF) folder and select Power Section.

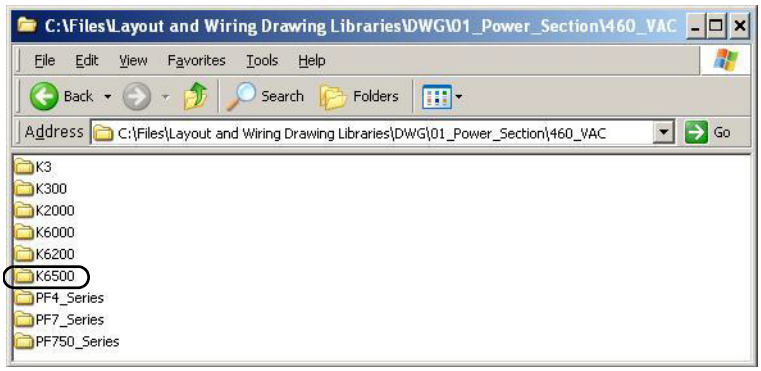


4. Double-click the voltage folder matching your system voltage.

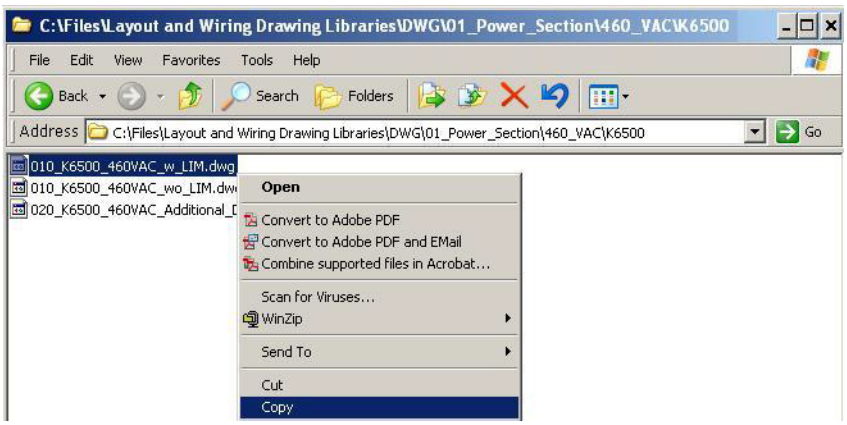
   For the Widg-O-matic example, the 460_VAC folder was opened.

5. Double-click the folder matching the initial drive family included in your application.

   For the Widg-O-matic machine application example, the Kinetix 6500 drive folder was opened.



Copy the power drawing for your drive family based on the Power Distribution Layout table.

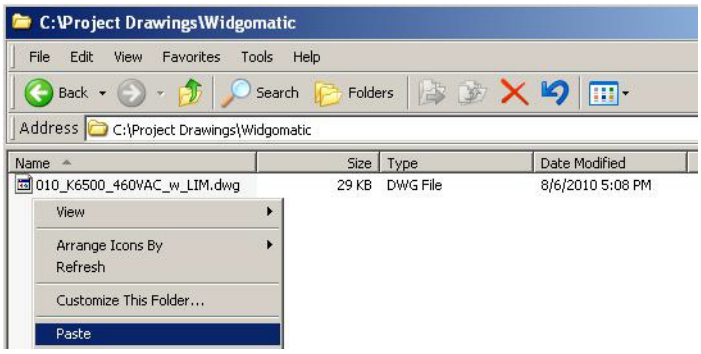


Power Distribution Layout

Power Distribution Layout Options	Power Drawing
Initial drives including a Bulletin 2094 line interface module (LIM) for main power/control distribution (includes 3 drives)	010_*xxxx_xxx*VAC_w_LIM.*xxx*
Initial drives including traditional main power distribution components (includes 3 drives)	010_*xxxx_xxx*VAC_wo_LIM.*xxx*
Additional drive drawings without main power distribution components (includes 4 drives)	020_*xxxx_xxx*VAC_Additional_Drives.*xxx*

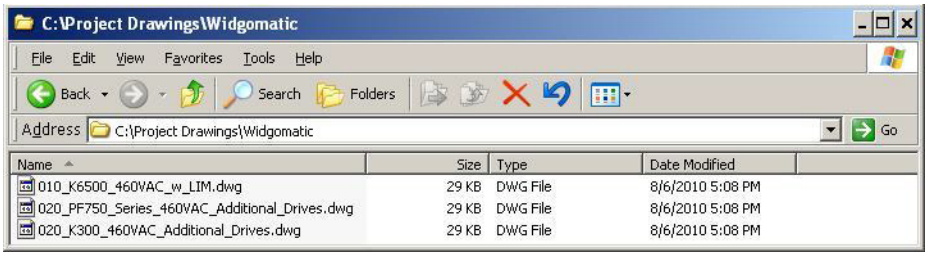
For the Widg-O-matic machine application example, the Kinetix 6500 drawing with LIM module was selected. Because the Kinetix 6500 drive is the initial drive family, a LIM module was selected as the main power distribution component. The LIM module can also supply power to the other drives in the system.

6. Paste the drawing you copied into the Project Drawings folder.



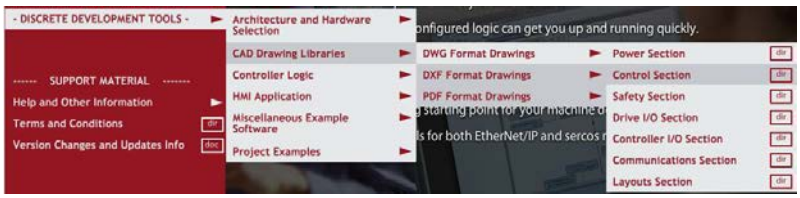
7. Copy and paste the 020_*xxxx_xxx*VAC_Additional_Drives.*xxx* drawing if you have more than three drives of the same family and for every four additional drives you have in your system.
8. Repeat step 5 through step 7 for every drive family in your system.

   For the Widg-O-matic machine application example, the following drawings were copied to accommodate the two Kinetix 6500 servo drives, one PowerFlex 753 drive, and one Kinetix 300 drive.



Select Controller Power Drawings

1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Control Section.



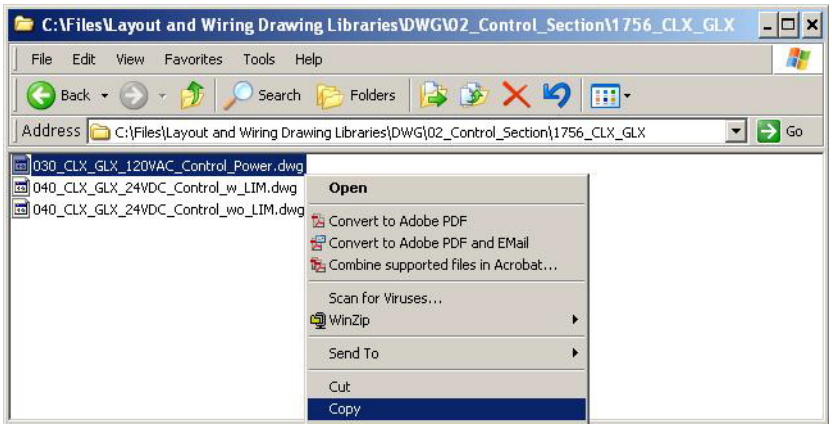
2. Double-click the controller folder matching your actual Rockwell Automation Logix5000 controller based on the Logix5000 Controller Selection table.

Logix5000 Controller Selection

Logix5000 Controller Options	Supported Drive Families	Controller Folder
ControlLogix or GuardLogix controllers	All PowerFlex drives and all sercos and CIP motion drives	1756-CLX_GLX
L4*x* CompactLogix or L4*x*S Compact GuardLogix controllers	All PowerFlex drives and all sercos interface drives up to 8 drives, total	1768_CMLX_GMLX
L3*x* CompactLogix or L3*x*S Compact GuardLogix controllers	All PowerFlex drives	1769_CMLX_GMLX

For the Widg-O-matic machine application example, the 1756_CLX_GLX folder was chosen because only the ControlLogix platform currently supports the Kinetix 6500 CIP motion drives.

3. Copy the controller drawing for your actual controller platform based on the Controller Power Distribution Layout table.

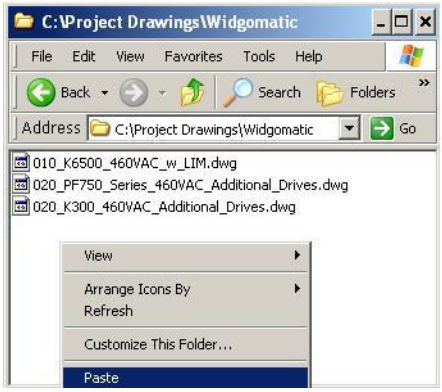


Controller Power Distribution Layout

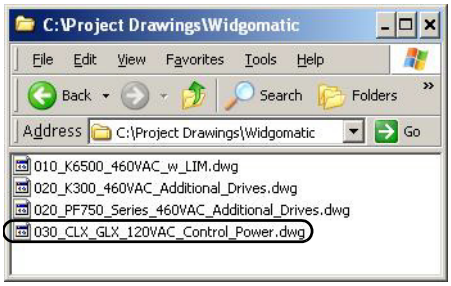
Controller Power Distribution Layout Options	Power Drawing
120V AC controller power supply	03*x_xxxx_xxx*_120VAC_Control_Power.*xxx*
24V DC controller power supply when using a LIM module for main power/control	04*x_xxxx_xxx*_24VDC_Control_w_LIM.*xxx*
24V DC controller power supply when using traditional power distribution components for main power/control	04*x_xxxx_xxx*_24VDC_Control_wo_LIM.*xxx*

For the Widg-O-matic machine application example, the 120V AC drawing was chosen.

4. Paste the drawing into your Project Drawings folder.



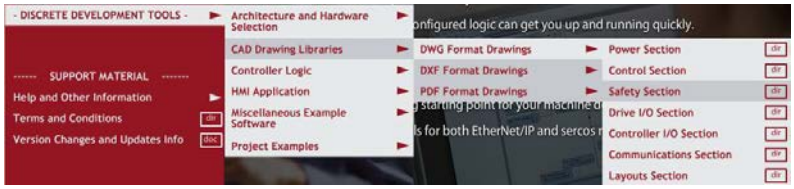
For the Widg-O-matic machine application example, the 030_CLX_GLX_120VAC_Control Power.dwg file was copied to accommodate the ControlLogix controller.



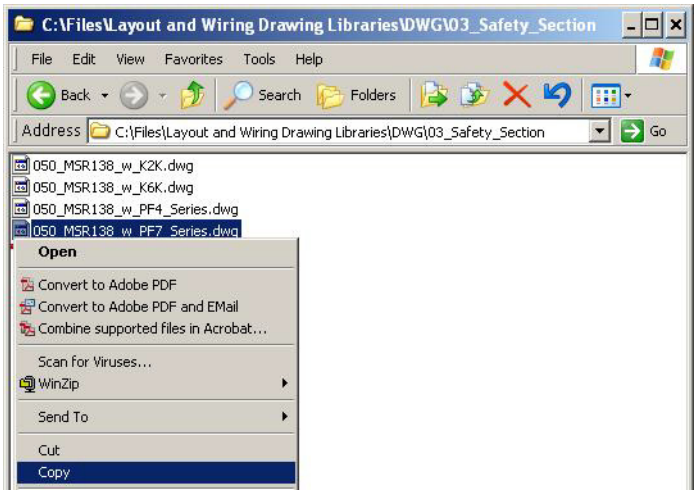
5. Repeat step 2 through step 4 for every controller family in your system.

Select External Safety Relay Option Drawings

1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Safety Section.

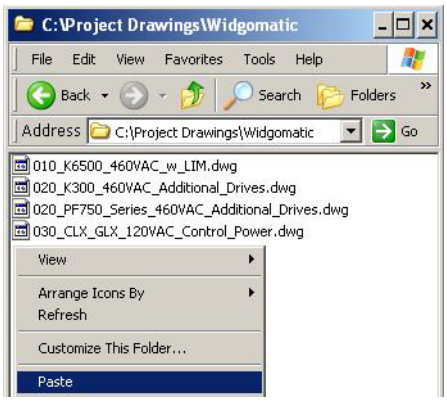


2. Copy the External Safety Relay Option drawings for your specific system hardware.



For the Widg-O-matic machine application example, no external safety drawings were selected because the built-in drive safety I/O was used.

3. Paste the drawing into your Project Drawings folder.

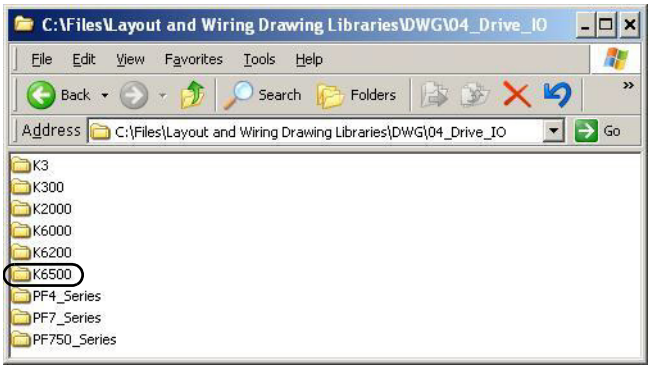


Select Drive I/O Drawings

1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Drive I/O Section.

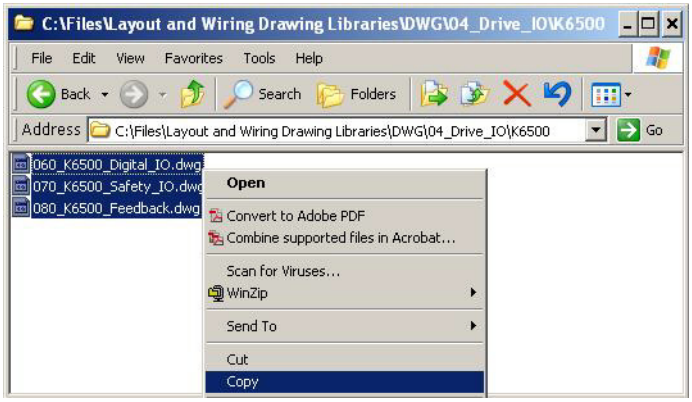
2. Double-click the folder matching your initial drive family.

   For the Widg-O-matic machine application example, the K6500 folder was selected for the Kinetix 6500 drives.

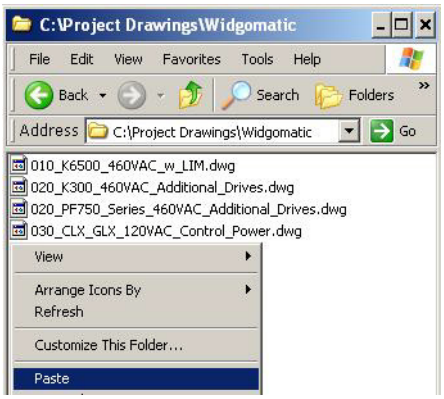


3. Copy the drive I/O drawings required for your specific application.

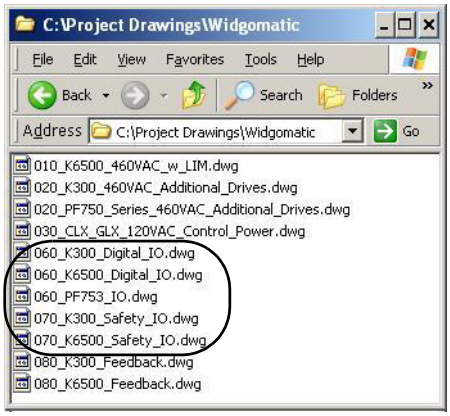
   For the Widg-O-matic machine application example, all of the drive I/O drawings were selected.



4. Paste the drawings into your Project Drawings folder.
5. Repeat step 2 through step 4 for every drive in your system with safety options.



For the Widg-O-matic machine application example, the following drive I/O drawings were copied to accommodate the two Kinetix 6500 servo drives, one PowerFlex 753 drive, and one Kinetix 300 drive.

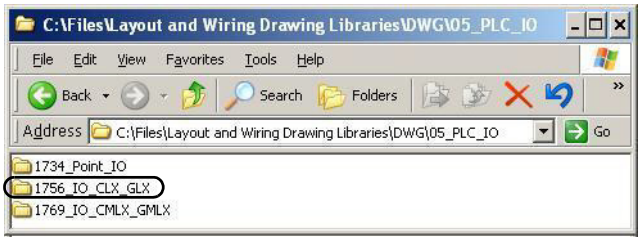


Select Controller I/O Drawings

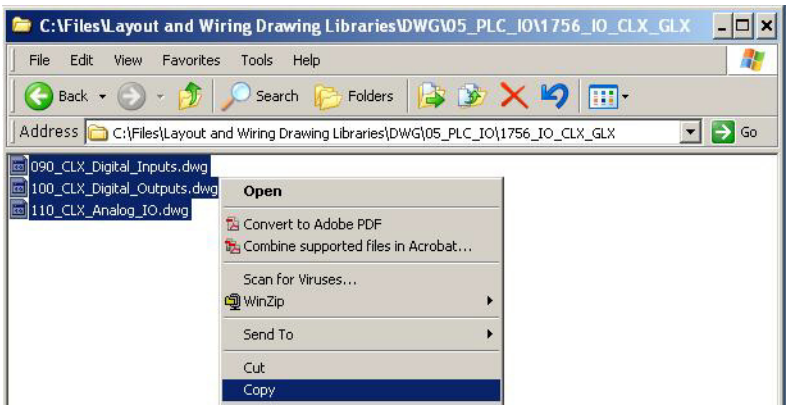
1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Controller I/O Section.

2. Double-click the folder matching your Controller I/O.

For the Widg-O-matic machine application example, the 1756_IO_CLX_GLX folder was selected supporting the 1756 ControlLogix controller I/O modules.

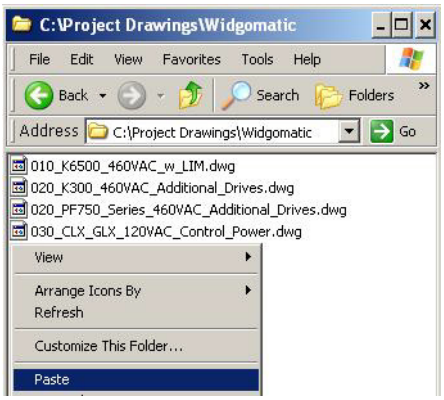


3. Copy the controller I/O drawings required for your specific application.



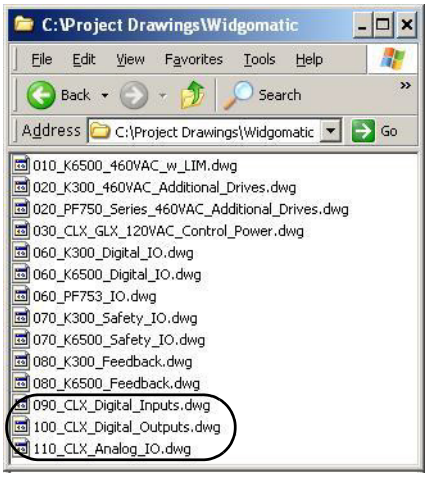
For the Widg-O-matic machine application example, all of the 1756 I/O drawings were selected.

4. Paste the drawings into your Project Drawings folder.



5. Repeat step 2 through step 4 for every unique controller in your system.

For the Widg-O-matic machine application example, the following controller I/O drawings were copied to accommodate the 1756 ControlLogix controller I/O.



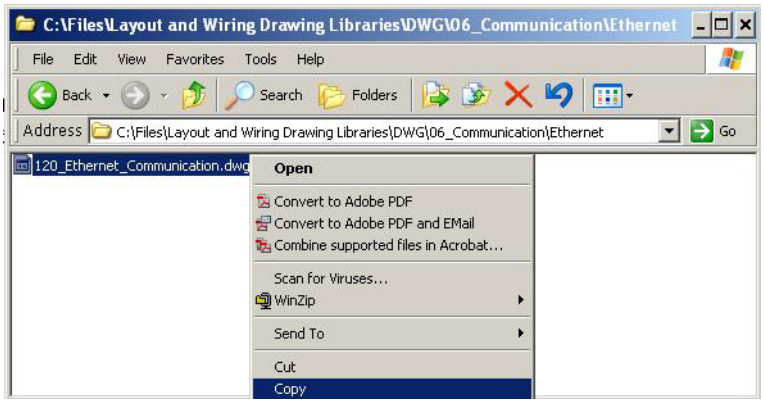
Select System Communication Drawings

1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Communications Section.

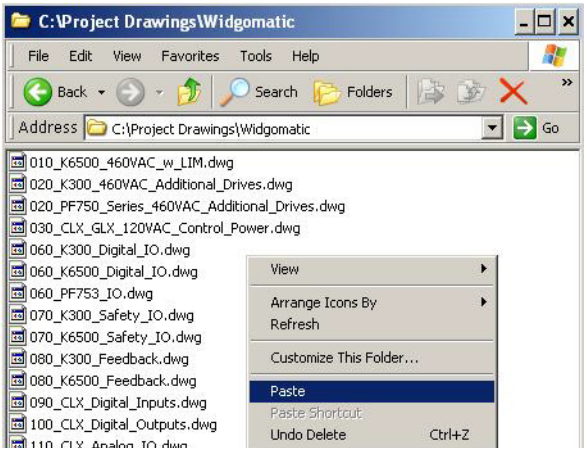
2. Double-click the folder matching your drive communication network.

For the Widg-O-matic machine application example, the Ethernet folder was selected supporting Ethernet communication on the two Kinetix 6500 servo drives, one PowerFlex 753 drive, and one Kinetix 300 drive.

3. Copy the communication network drawing required for your drive communication.

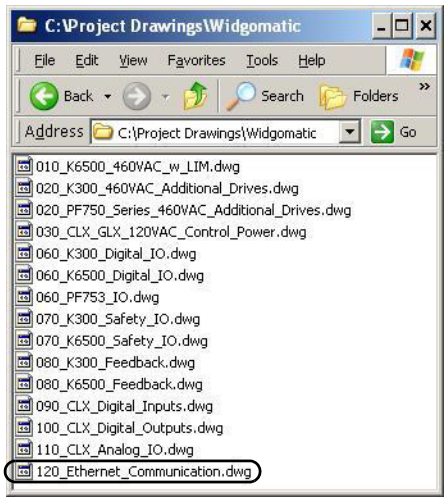


4. Paste the drawings into your Project Drawings folder.



5. Repeat step 2 through step 4 for your HMI and other device communication in your system, if different than your drive communication network.

For the Widg-O-matic machine application example, the Ethernet communication drawing was copied to accommodate all of the drives and HMI terminals in the system.

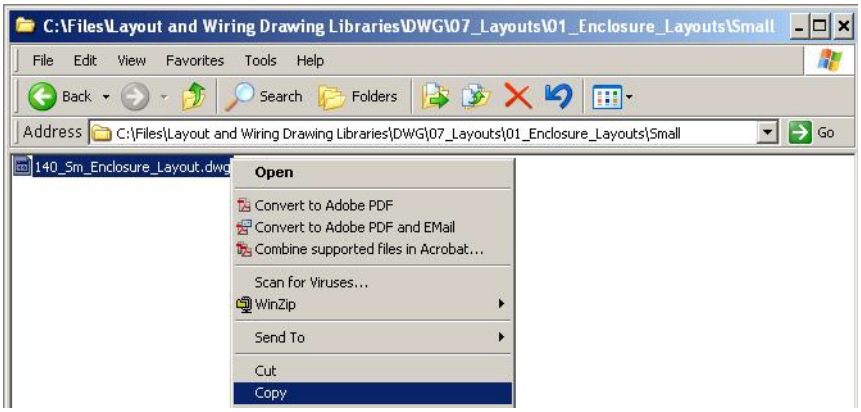


Select System Layout Drawings

1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Layouts Section.

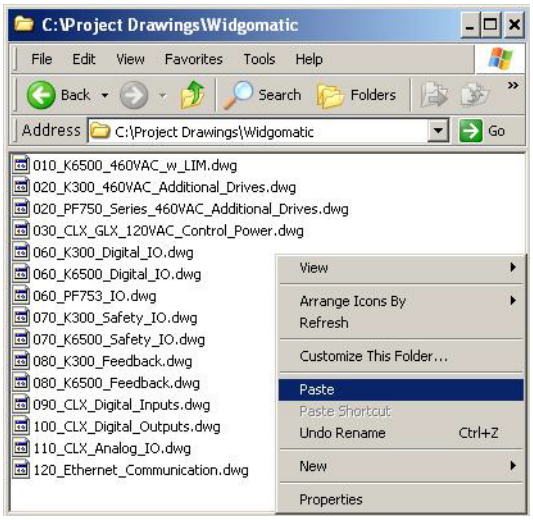
2. Double-click the 01_Enclosure_Layouts folder and open either the Large (60”x60”x12”) or Small (60”x36”x12”) enclosure folder based on your system enclosure needs.

For the Widg-O-matic machine application example, the Small enclosure folder was selected.



3. Right-click the 140_*xx*_Enclosure_Layout.*xxx* drawing required for your application and choose Copy.

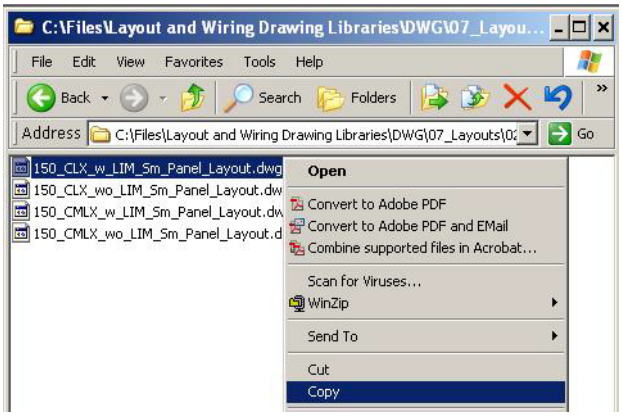
4. Paste the enclosure layout drawing into your Project Drawings folder.



5. Double-click the 02_Subpanel_Layouts folder and open either the Large (Approx. 56”x 56”) or Small (57”x 33”) subpanel folder based on your enclosure selection and system subpanel needs.

For the Widg-O-matic machine application example, the Small subpanel folder was selected.

6. Right-click the appropriate drawing, based on the Subpanel Selection Layout table, and choose Copy.

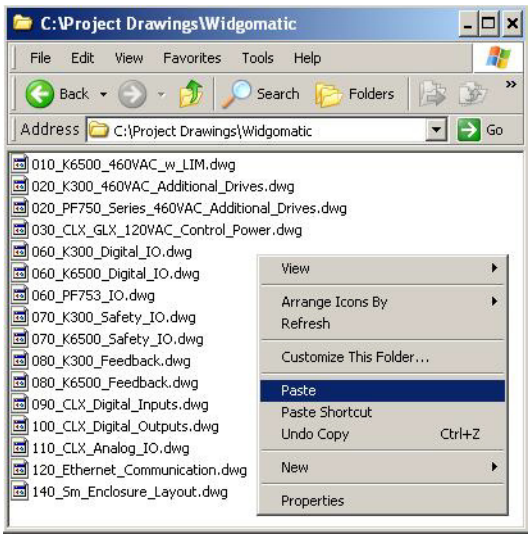


Subpanel Selection Layout

Logix5000 Controller Family	Power Distribution Layout	Sub-panel Drawing
ControlLogix or GuardLogix Controllers	LIM module for three-phase/control power distribution	150_CLX_w_LIM_*xx*_Panel_Layout.*xxx*
	Traditional three-phase/control power distribution components	150_CLX_wo_LIM_*xx*_Panel_Layout.*xxx*
CompactLogix or Compact GuardLogix Controllers	LIM module for three-phase/control power distribution	150_CMLX_w_LIM_*xx*_Panel_Layout.*xxx*
	Traditional three-phase/control power distribution components	150_CMLX_wo_LIM_*xx*_Panel_Layout.*xxx*

For the Widg-O-matic machine application example, the 150_CLX_w_LIM_Sm_Panel_Layout.dwg file was selected.

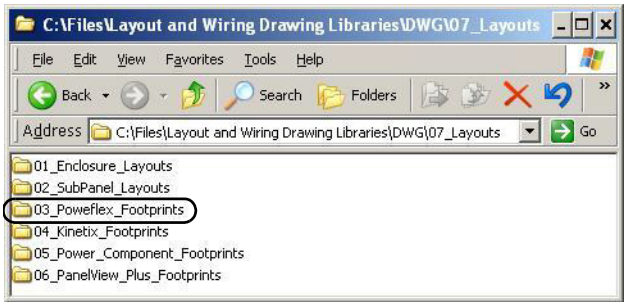
7. Paste the subpanel drawing into your Project Drawings folder.
8. Repeat step 2 through step 7 for every unique enclosure you have in your system.



Select Power and Control Component Layout Footprint Drawings

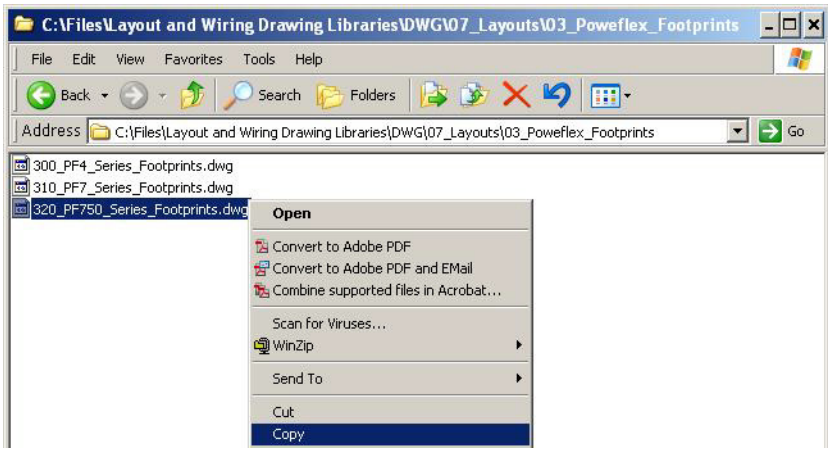
1. Navigate to the desired (DWG, DXF, or PDF) file type folder on the toolkit DVD and select Layouts Section.

2. Double-click the 03_Poweflex_Footprints, 04_Kinetix_Footprints, 05_Power_Component_Footprints, or 06_PanelView_Plus_Footprints folder to access the corresponding power or control component footprints within your system for later insertion into your subpanel or communication drawings.



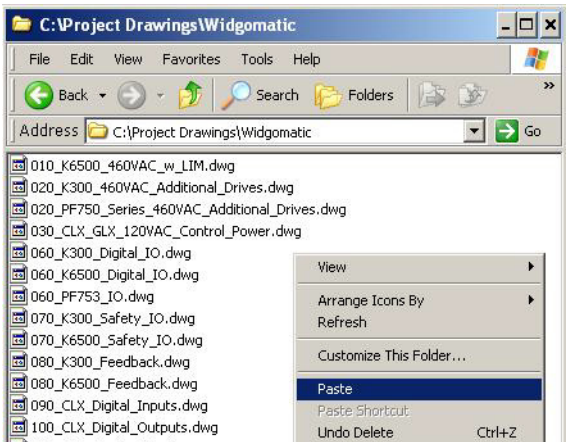
For the Widg-O-matic machine application example, the 03_Poweflex_Footprints folder was initially selected.

3. Copy the footprint drawings that match your specific component's family or series.



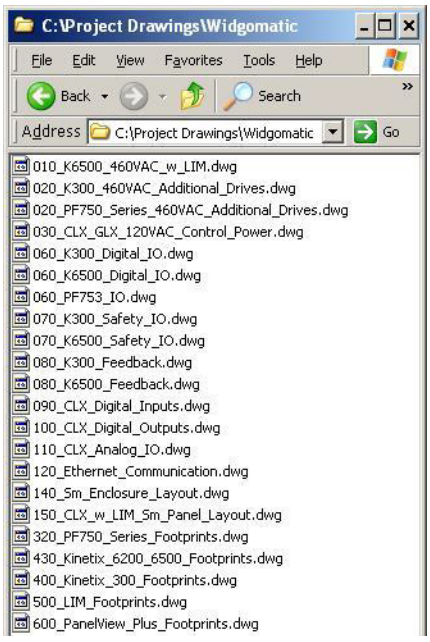
For the Widg-O-matic machine application example, the 320_PF750_Series_Footprints.dwg file was copied to accommodate the layout of the PowerFlex 753 drive onto the Subpanel.

4. Paste the drawing or drawings into your Project Drawings folder.



5. Repeat step 2 through step 4 to select your other Kinetix, Power Component, and PanelView Plus footprint drawings.

These project library drawing files comprise the initial drawing set used to create the Widg-O-matic machine application project drawings.



Controller, Network, and Device Configuration Without the DMAT Wizard

In this appendix you configure your controller, network, and device hardware; then import the machine, application, and device modules into your Logix Designer application without using the DMAT Wizard or making edits after the initial file is created.

Before You Begin

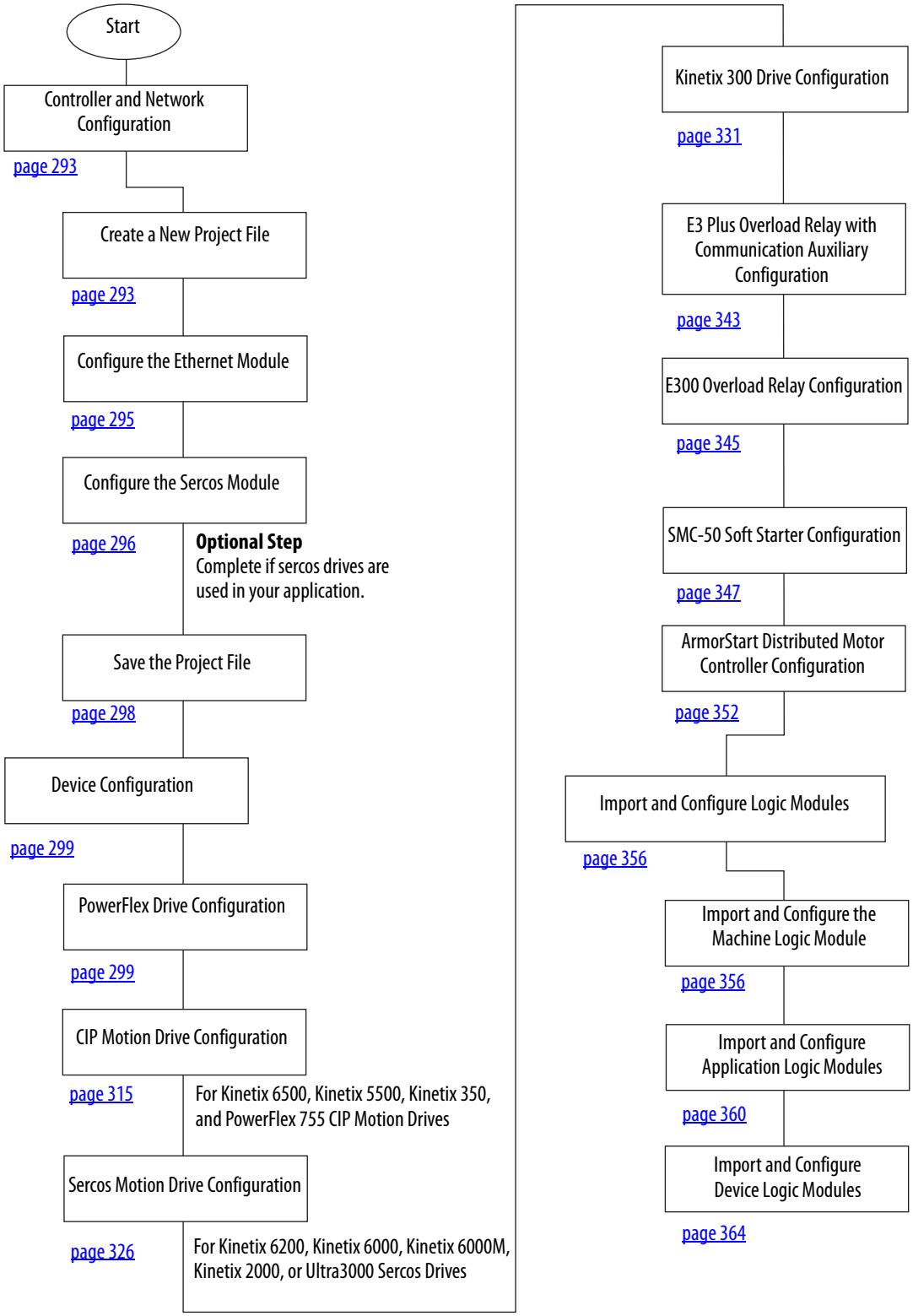
- Complete your system architecture and hardware selection (refer to Chapter 1 and Appendix E).
- Complete your system layout and wiring (refer to Chapter 3 and Appendix F).

What You Need

- The Drives and Motion Accelerator Toolkit DVD, publication IASIMP-SP017. For a copy of the DVD, contact your local Rockwell Automation distributor or sales representative.
- RSLogix 5000 software, version 18.0 or later, or the Logix Designer application, version 21.0 or later, for Kinetix 300, Kinetix 6500, PowerFlex 753, and PowerFlex 525 drives.
- RSLogix 5000 software, version 19.0 or later, or the Logix Designer application, version 21.0 or later, for PowerFlex 755 CIP Motion drives and ArmorStart distributed motor controllers.
- RSLogix 5000 software, version 20.0 or later, or the Logix Designer application, version 21.0 or later, for Kinetix 350 servo drives.
- Logix Designer application, version 24.0 or later, for PowerFlex 527 drives.
- Sercos and Analog Motion Configuration and Startup User Manual, publication MOTION-UM001
- CIP Motion Configuration and Startup User Manual, publication MOTION-UM003
- ControlFLASH Firmware Upgrade Kit Quick Start, publication 1756-QS105
- The user manual for your Drives and Motion hardware. Refer to Additional Resources on page 15 for publication numbers.

Follow These Steps

Complete the following steps to configure your Logix5000 integrated motion application.



Controller and Network Configuration

In this section you configure your controller, create a new project file, and setup communication for your Drives and Motion application.

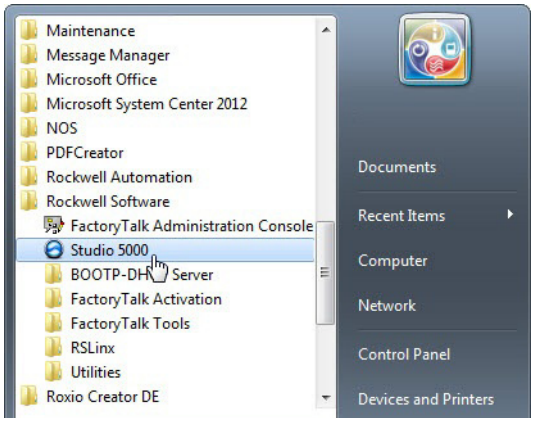
Create a New Project File

Throughout this chapter the controller and network configuration procedures are written specifically for a 1756-L7*x* ControlLogix controller and Bulletin 1756 communication modules. Steps for other Logix5000 controllers and communication modules are similar.

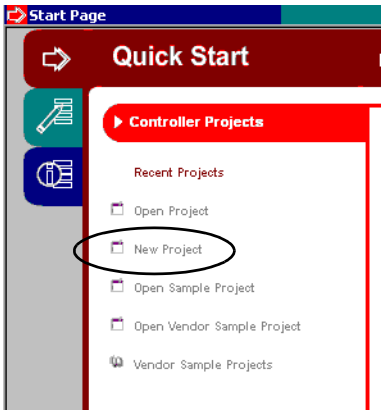
IMPORTANT	For best performance, 1756-L7*x* ControlLogix controllers are recommended for use with CIP motion drive systems.

IMPORTANT	If you are creating a new project and have not configured your personal computer communication or controller hardware, refer to Appendix D, beginning on page 257.

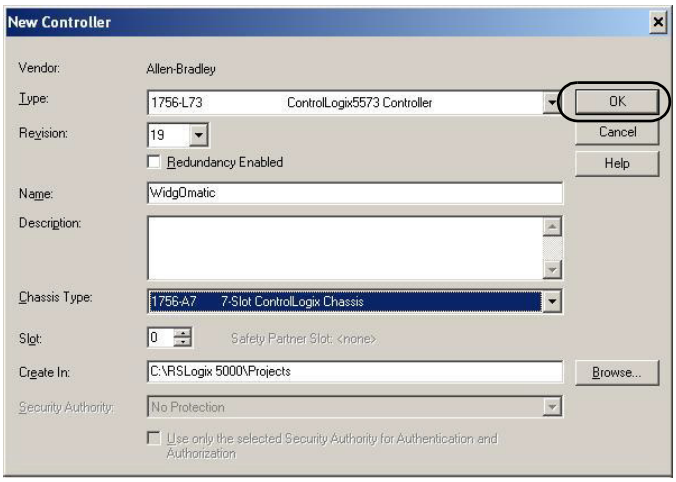
1. From the Start menu, launch the Studio 5000 Logix Designer application.



2. Click New Project.

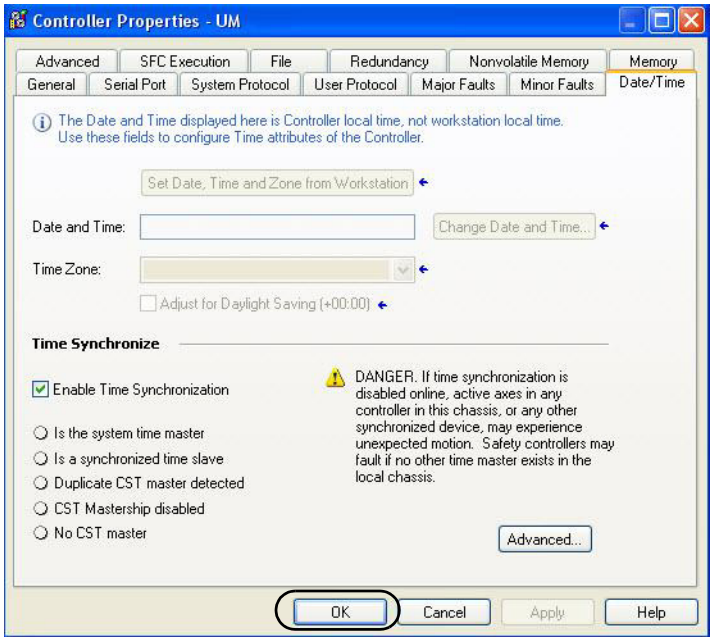


The New Controller dialog box opens.



3. Configure the new controller.
   a. From the Type pull-down menu, choose the controller type.
   b. From the Revision pull-down menu, choose the revision.
   c. Type the file Name.
   d. From the Chassis Type pull-down menu, choose the chassis.
   e. Enter the Logix5000 processor slot (leftmost slot = 0).
4. Click OK.
5. From the Edit menu, choose Controller Properties.

   The Controller Properties dialog box opens.



6. Click the Date/Time tab.
7. Check Enable Time Synchronization.

   This enables time synchronization for the controller. Time synchronization is needed for CIP Motion.

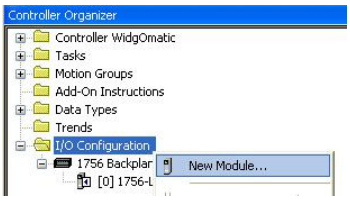
IMPORTANT	All controllers and communication modules must have time synchronization enabled to participate in CIP Sync.

8. Click OK.

Configure the Ethernet Module

Follow these steps to configure Ethernet communication for your HMI terminal, PowerFlex drive, Kinetix 300, Kinetix 5500, and Kinetix 6500 servo drives.

1. Expand I/O Configuration in the Controller Organizer.
2. Right-click I/O Configuration and choose New Module.

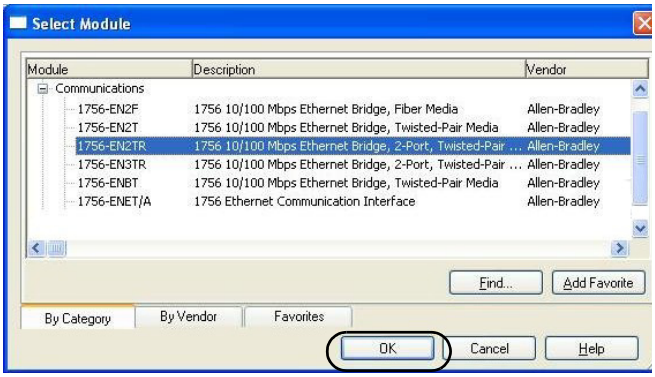


   The Select Module dialog box opens.

3. Expand the Communications category and select your 1756 Ethernet module.

   For systems using Integrated Motion on the EtherNet/IP network, 1756-EN2*x* or 1756-EN3*x* module are required.

   In this example, the 1756-EN2TR module is selected.



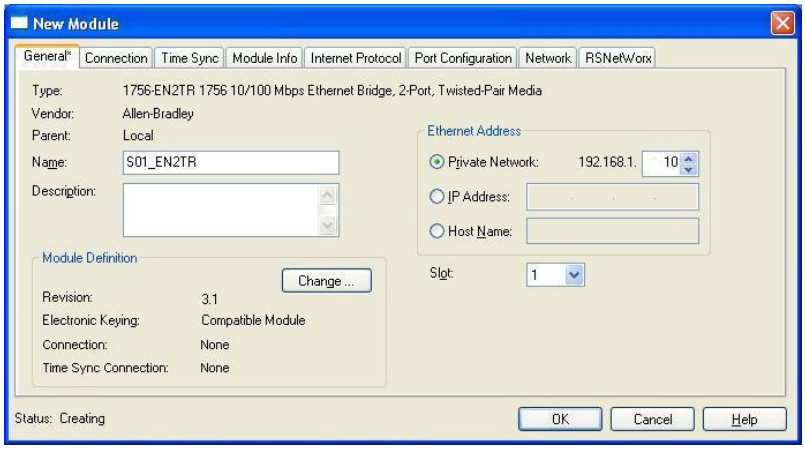
4. Click OK.

   The New Module dialog box opens.

5. Configure the new module.
   a. Type the module Name.
   b. Enter the Logix5000 EtherNet/IP module slot (leftmost slot = 0).
   c. Select an Ethernet Address option.

      In this example, the Private Network address is selected.

   d. Enter the address of your EtherNet/IP module.

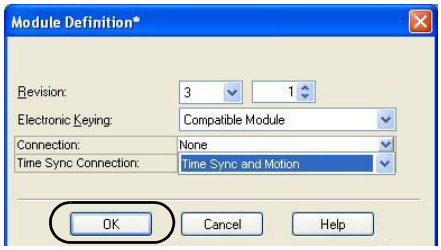


   In this example, the last octet of the address is 10.

6. Click Change in the Module Definition area.

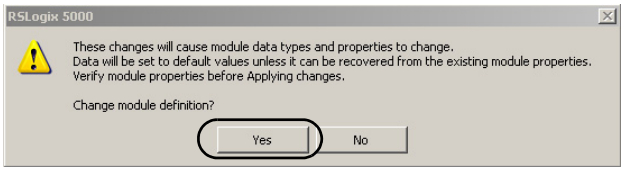
The Module Definition dialog box opens.

7. From the Time Sync Connection pull-down menu, choose Time Sync and Motion.

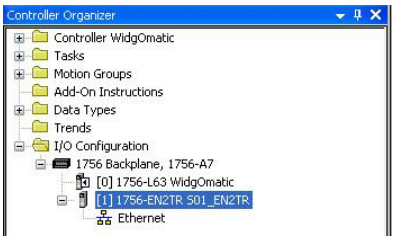


IMPORTANT Time Sync functionality is what enables motion control on an Ethernet network. Without this setting, you won't be able to run your motion application.

8. Click OK to close the Module Definition dialog box.
9. Click Yes when prompted to confirm your module definition changes.
10. Click OK to close the New Module dialog box.



Your new module appears under the I/O Configuration folder in the Controller Organizer.



Configure the Sercos Module

Follow these steps to configure sercos communication, for Kinetix 6200, Kinetix 6000, Kinetix 6000M, Kinetix 2000, Kinetix 7000, or Ultra3000 sercos drives used in your application.

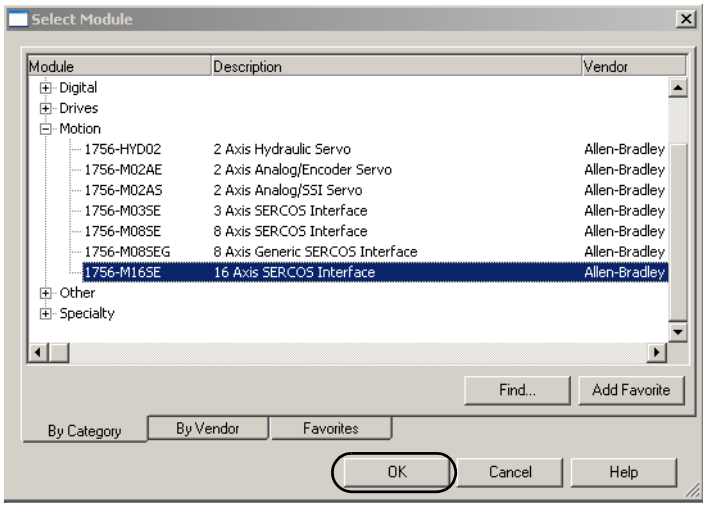
1. Right-click I/O Configuration in the Controller Organizer and choose New Module.

   The Select Module dialog box opens.

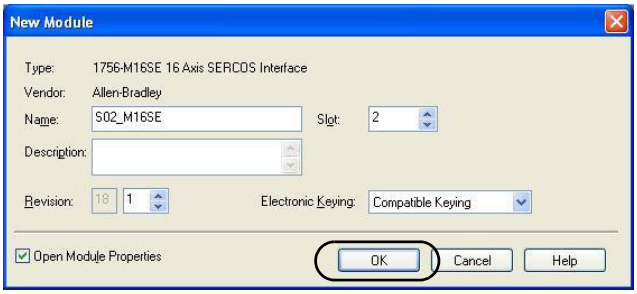
2. Expand the Motion category and select 1756-M*xx*SE or 1768-M04SE as appropriate for your actual hardware configuration.

   In this example, the 1756-M16SE module is selected.

3. Click OK.

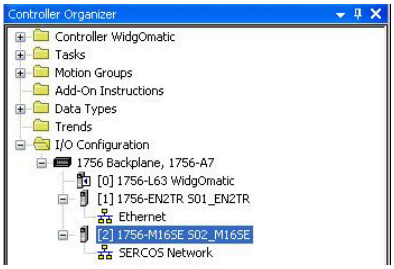


The New Module dialog box opens.

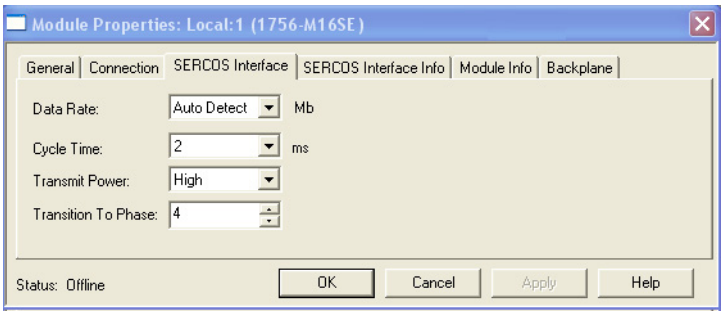


4. Configure the new module.
   a. Type the module Name.
   b. Enter the Logix5000 sercos module slot (leftmost slot = 0).
   c. Check Open Module Properties.
5. Click OK.

   Your new module appears under the I/O Configuration folder in the Controller Organizer.



6. Click the SERCOS Interface tab and reference the Sercos Data Rate table.



Sercos Data Rate

Logix5000 Sercos Module	Number of Axes	Data Rate
1756-M03SE	Up to 3	4 or 8 Mbps
1756-M08SE	Up to 8	
1756-M16SE	Up to 16	
1768-M04SE	Up to 4	

7. From the Data Rate pull-down menu, match the DIP switch setting on the drive module or choose Auto Detect.

8. From the Cycle Time pull-down menu, choose the Cycle Time according to this table.

Sercos Cycle Time

Data Rate	Number of Axes	Cycle Time
4 Mbps	Up to 2	0.5 ms
	Up to 4	1 ms
	Up to 8	2 ms
	No support for axes 9…16	
8 Mbps	Up to 4	0.5 ms
	Up to 8	1 ms
	Up to 16	2 ms

TIP The number of axes/module is limited to the number of axes as shown in step 6.

9. From the Transmit Power pull-down menu, match the DIP switch setting on the drive module.
10. Enter the Transition to Phase setting.

    The Transition to Phase default setting is 4 (phase 4). The Transition to Phase setting stops the ring in the phase specified.
11. Click OK to close the Modules Properties dialog box.

Save the Project File

When you configured the ControlLogix controller you named your (.acd) application file. In this example, the file name is WidgOmatic. Before closing the Logix Designer application, save your file.

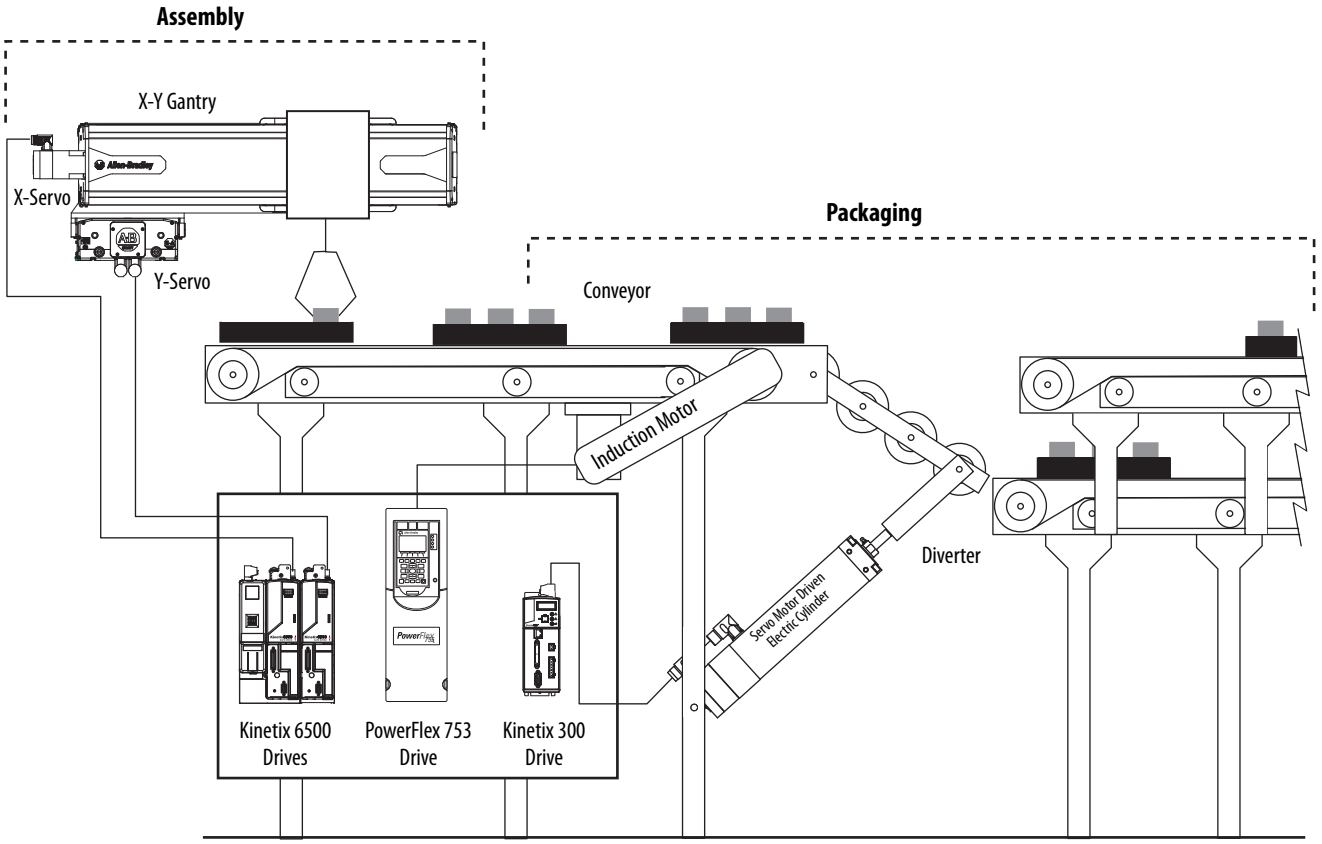
Click  to save your Logix Designer application file.

Device Configuration

In this section you configure your Drives and Motion hardware by using the Logix Designer application and MotionView OnBoard software.

To assist you in device configuration, the Widg-O-matic machine application example is referenced in the device configuration steps. Two servo drives are configured for the X-Y gantry assembly section, one PowerFlex drive is configured for the conveyor, and one Kinetix 300 drive is configured for the packaging diverter.

Widg-O-matic Machine Application Example



PowerFlex Drive Configuration

PowerFlex drive configuration applies to all 4-class and 7-class drives and includes these procedures:

- Update PowerFlex Add-On Profiles
- PowerFlex 525 Add-On Profiles
- Add and Configure PowerFlex Drives
- Set PowerFlex Drive Parameters
- Download Drive Parameters

Update PowerFlex Add-On Profiles

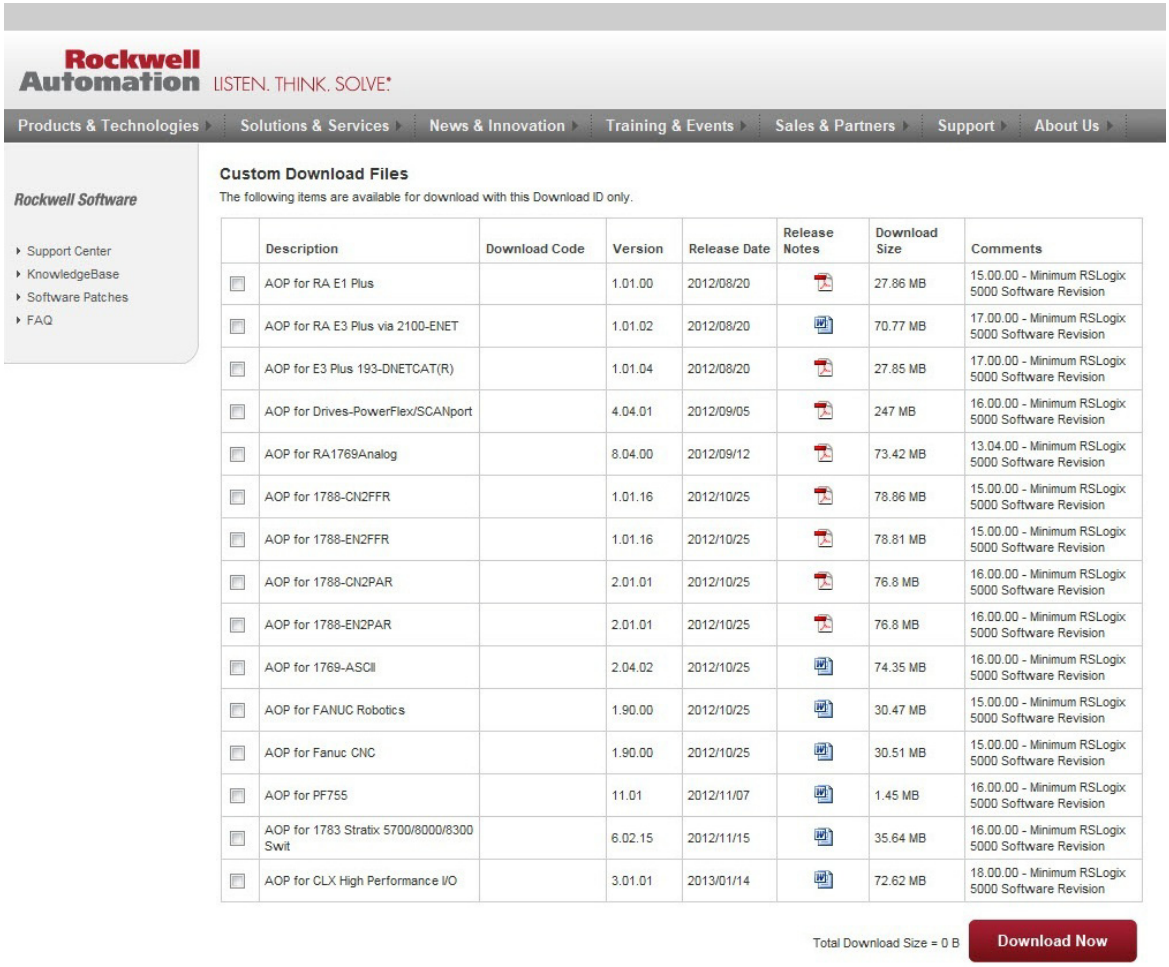
IMPORTANT The PowerFlex Add-On Profiles are independent of RSLogix 5000 software or Logix Designer application releases. Update your PowerFlex Add-On Profiles to make sure your application runs correctly.

Add-On profiles (AOP) are available for download at the Custom Downloads Add-On Profiles website: https://download.rockwellautomation.com/esd/download.aspx?downloadid=addonprofiles

Follow these steps to download PowerFlex Add-On profiles.

1. Login to the Custom Download Add-On Profiles website.

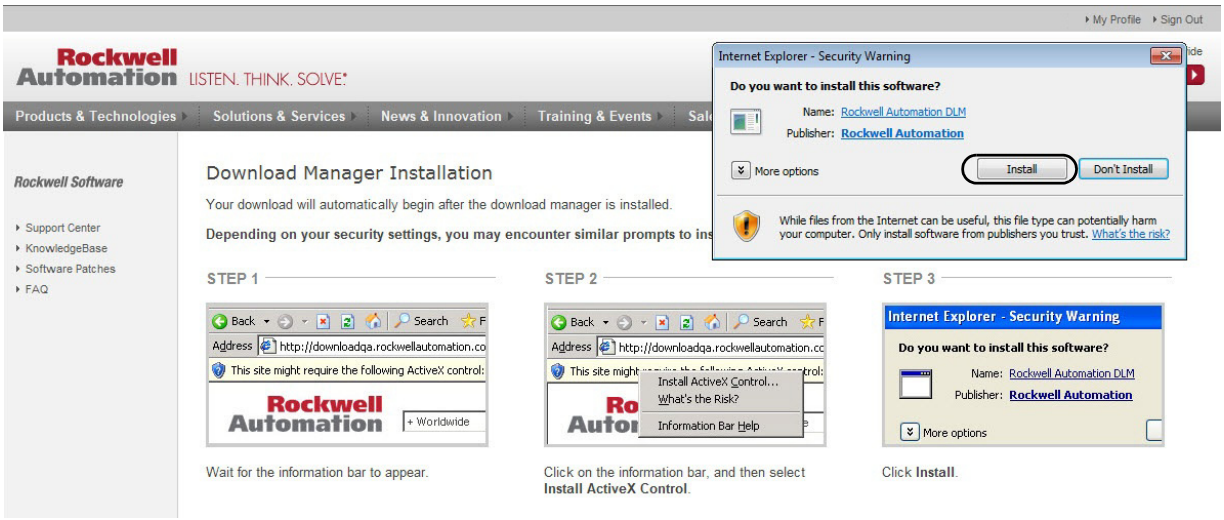
   The Custom Download Files dialog box opens.



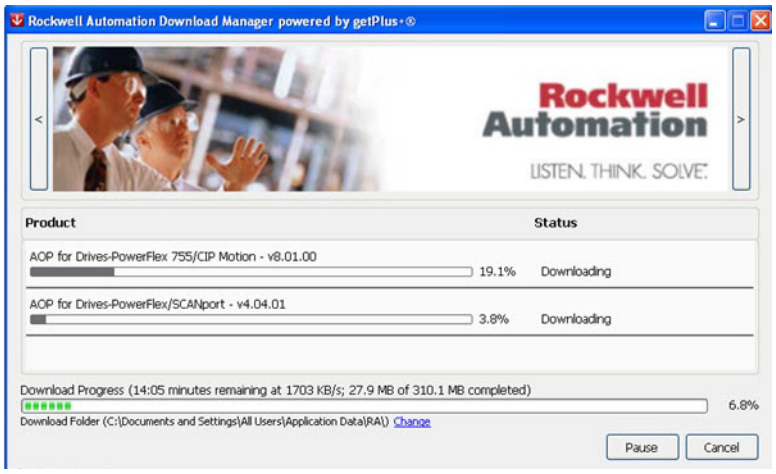
	Description	Download Code	Version	Release Date	Release Notes	Download Size	Comments
☐	AOP for RA E1 Plus		1.01.00	2012/08/20		27.86 MB	15.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for RA E3 Plus via 2100-ENET		1.01.02	2012/08/20		70.77 MB	17.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for E3 Plus 193-DNETCAT(R)		1.01.04	2012/08/20		27.85 MB	17.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for Drives-PowerFlex/SCANport		4.04.01	2012/09/05		247 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for RA1769Analog		8.04.00	2012/09/12		73.42 MB	13.04.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1788-CN2FFR		1.01.16	2012/10/25		78.86 MB	15.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1788-EN2FFR		1.01.16	2012/10/25		78.81 MB	15.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1788-CN2PAR		2.01.01	2012/10/25		76.8 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1788-EN2PAR		2.01.01	2012/10/25		76.8 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1769-ASCII		2.04.02	2012/10/25		74.35 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for FANUC Robotics		1.90.00	2012/10/25		30.47 MB	15.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for Fanuc CNC		1.90.00	2012/10/25		30.51 MB	15.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for PF755		11.01	2012/11/07		1.45 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1783 Stratix 5700/8000/8300 Swit		6.02.15	2012/11/15		35.64 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for CLX High Performance I/O		3.01.01	2013/01/14		72.62 MB	18.00.00 - Minimum RSLogix 5000 Software Revision

2. Check the AOP for Drives-PowerFlex 755/CIP Motion profile and/or the AOP for Drives-PowerFlex/SCANport™ profile, as required per your project.
3. Click Download Now and accept the user license agreement.

If prompted to install the Download Manager, allow the installation



4. Note the location of the download folder.



5. Extract the AOP zip file and run Setup.

PowerFlex 525 Add-On Profiles

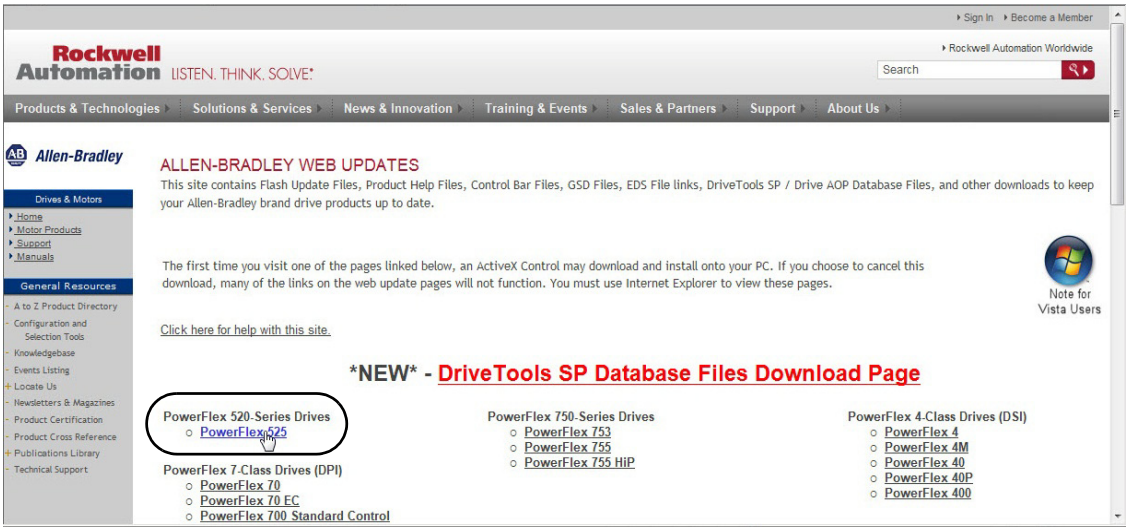
IMPORTANT The PowerFlex 525 Add-On Profiles are independent of the Custom Download AOP files. Update your PowerFlex Add-On Profiles to make sure your application runs correctly.

The PowerFlex 525 Add-On Profile is available for download at the Allen-Bradley Web Updates website: http://www.ab.com/support/abdrives/webupdate/index.html

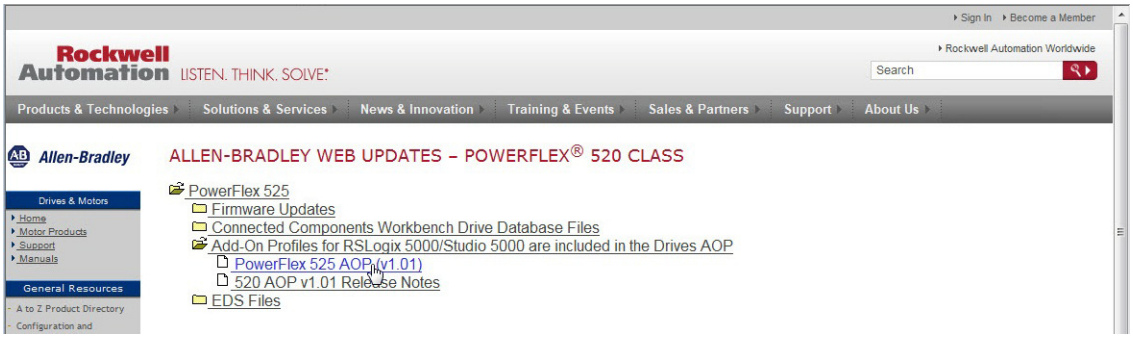
Follow these steps to download PowerFlex 525 Add-On profile.

1. Go to the Allen-Bradley Web Updates website.

   The Allen-Bradley Web Updates dialog box opens.



2. Click PowerFlex 525.



3. Click Add-On Profiles for RSLogix 5000/Studio 5000 are included in the Drives AOP> PowerFlex 525 AOP (v1.01) and follow the download instructions.
4. Extract the RA_PF5ClassAOP_Ver_1.01 zip file and run the MPSetup file.

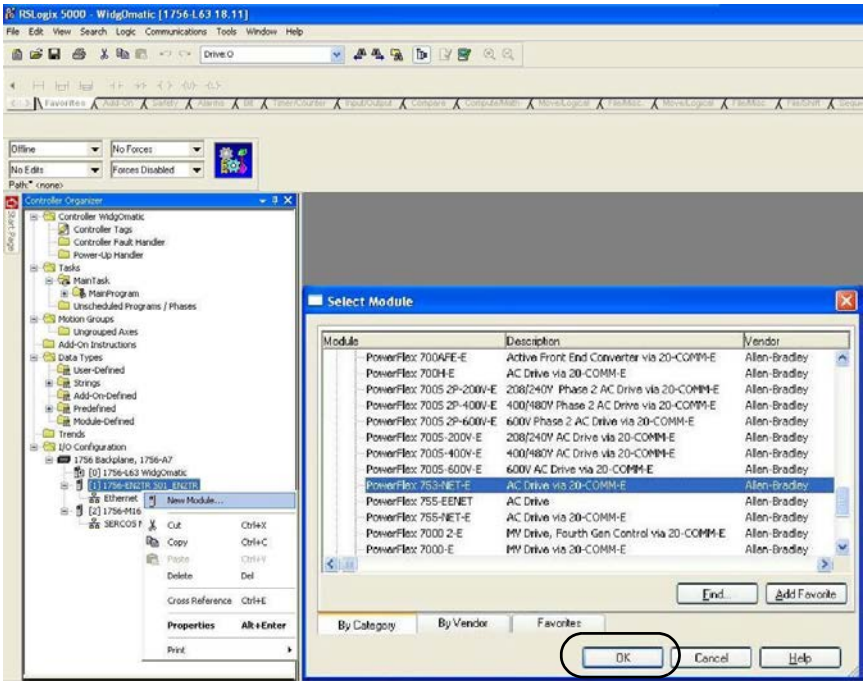
Add and Configure PowerFlex Drives

Follow these steps to add and configure each individual drive you intend to have in your system. For the Widg-O-matic machine application example, you configure a PowerFlex 753 drive.

1. Open your Logix Designer project file created in the previous section (for the Widgomatic example, the project file name was Widgomatic.acd).
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.
3. Right-click the network communication module for your PowerFlex drive and select New Module.

   For the Widg-O-matic example, the 1756-EN2TR module is selected.

   The Select Module dialog box opens.
4. Expand the Drives category and select the appropriate PowerFlex drive module.

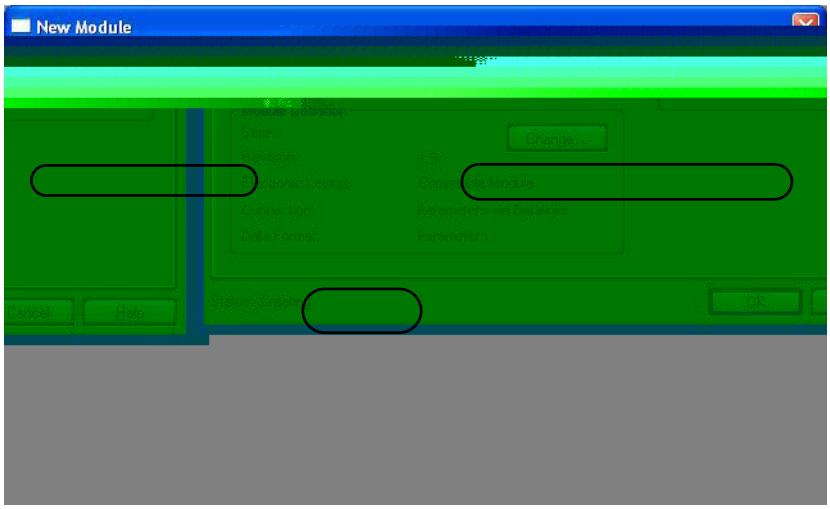


   For the Widg-O-matic example, the PowerFlex 753 drive is selected for the conveyor drive.
5. Click OK.

   The New Module dialog box opens.
6. Configure the new module.
   a. Type the module Name.
   b. Select an Ethernet Address option.

      In this example, the Private Network address is selected.
7. In the Module Definition field click Change.

   The Module Definition dialog box opens.



8. Configure module definitions.

   The Module Definition dialog box lets you configure and access drive data beyond standard I/O. Four examples are shown.

   a. Enter major and minor revisions appropriate for your drive hardware.

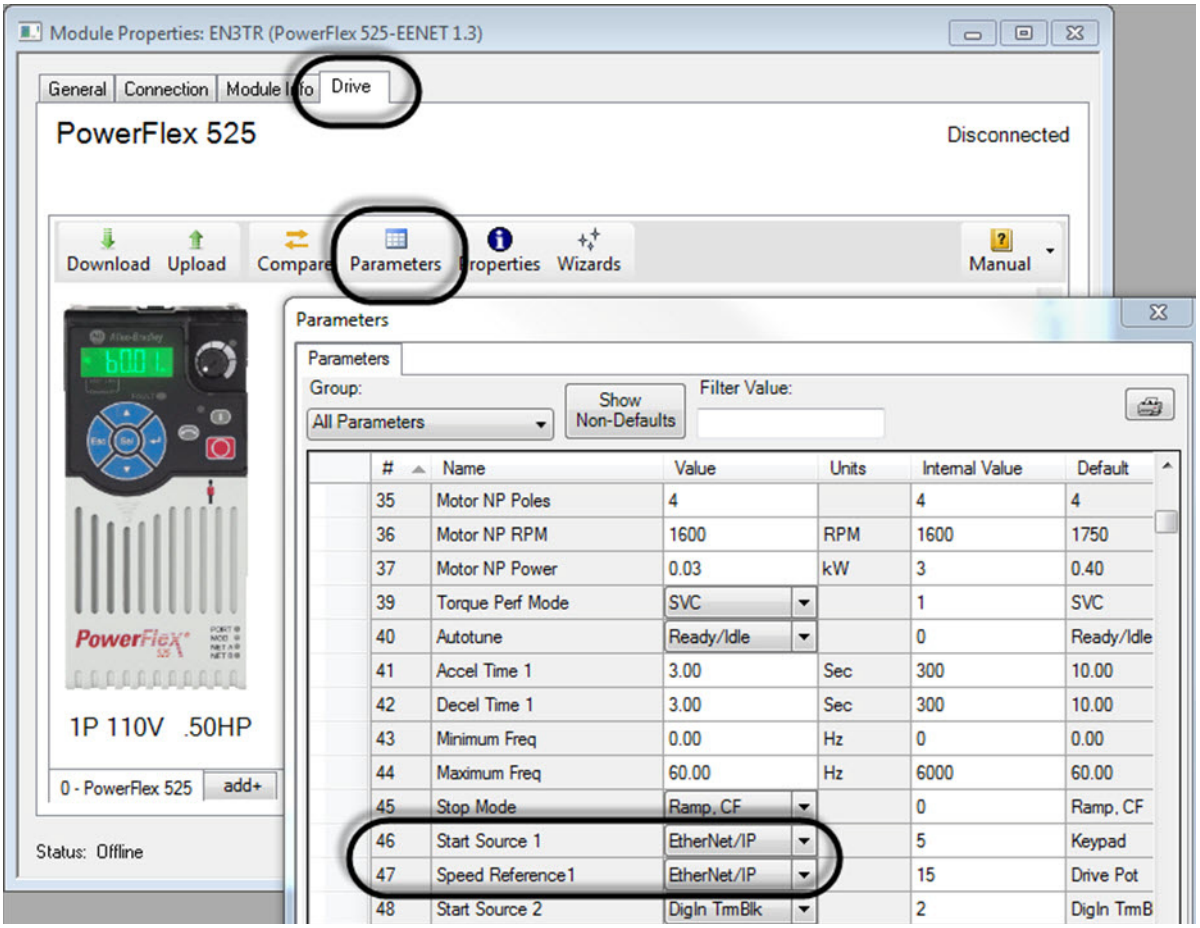
   b. Enter drive rating appropriate for your drive hardware and AC input voltage.

   c. Set datalink definitions for the intended drive.

IMPORTANT	The datalinks listed for their respective drives must be configured exactly as shown for successful faceplate AOI import and operation. If additional datalinks are required for your application, modifications to the corresponding AOIs may be required.

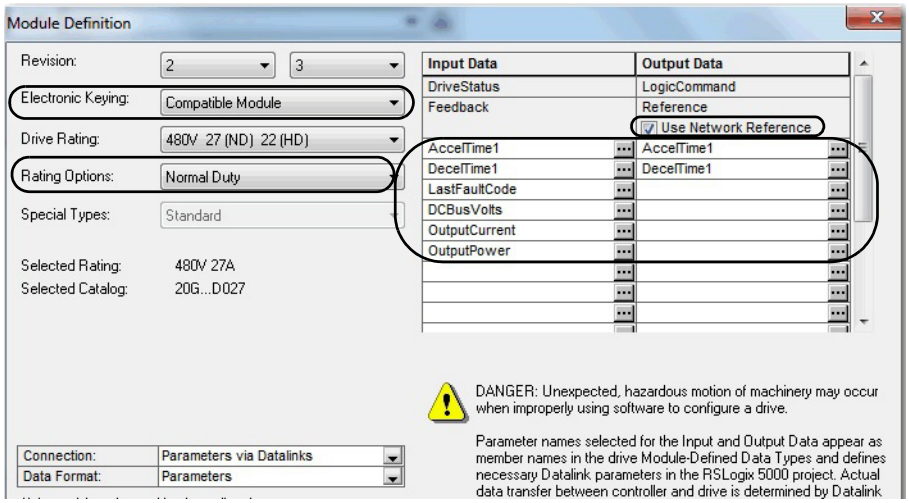
   d. Check Use Network Reference.

IMPORTANT	Use Network Reference must be checked to automatically set the speed reference, DPI™, and start source parameters to the Ethernet port. To configure the PowerFlex 525 drive to accept commands and report status via an Ethernet network, set P046 - [Start Source 1] and P047 - [Speed Reference 1] to EtherNet/IP.

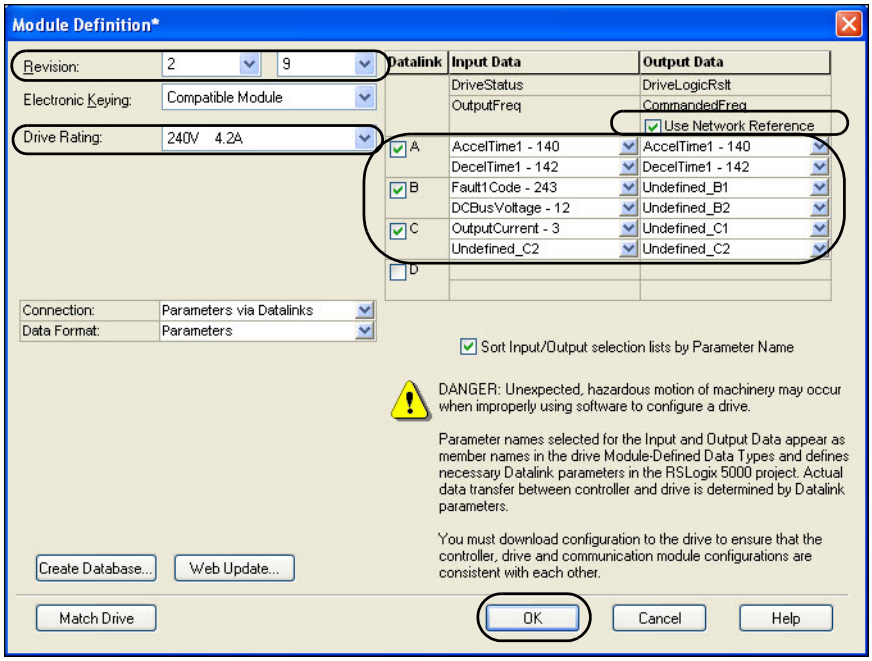


e. Click OK to close the Module Definition dialog box.

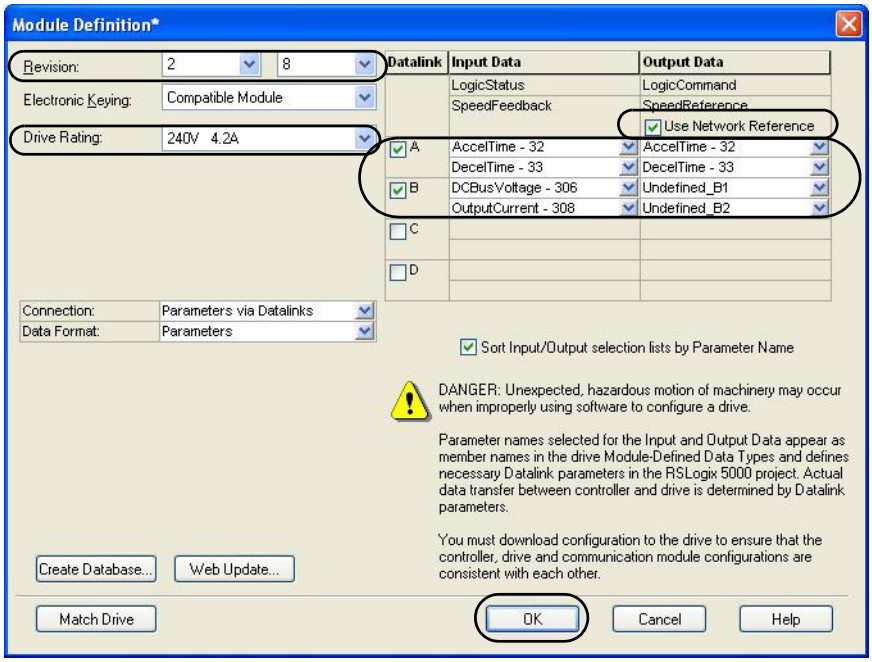
This Module Definition example applies to PowerFlex 750 Series drive datalinks and specifically shows the PowerFlex 753 module definitions for the Widg-O-matic machine example.



This Module Definition example applies to PowerFlex 70, PowerFlex 70EC, and PowerFlex 700 datalinks.

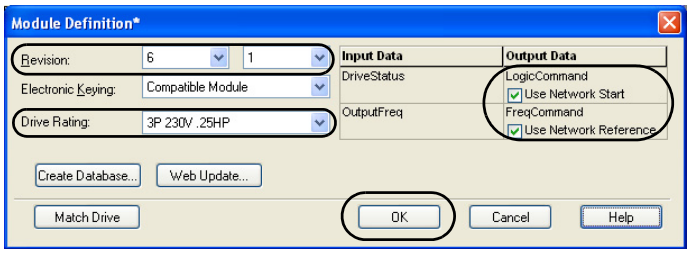


This Module Definition example applies to PowerFlex 700S 2P datalinks.



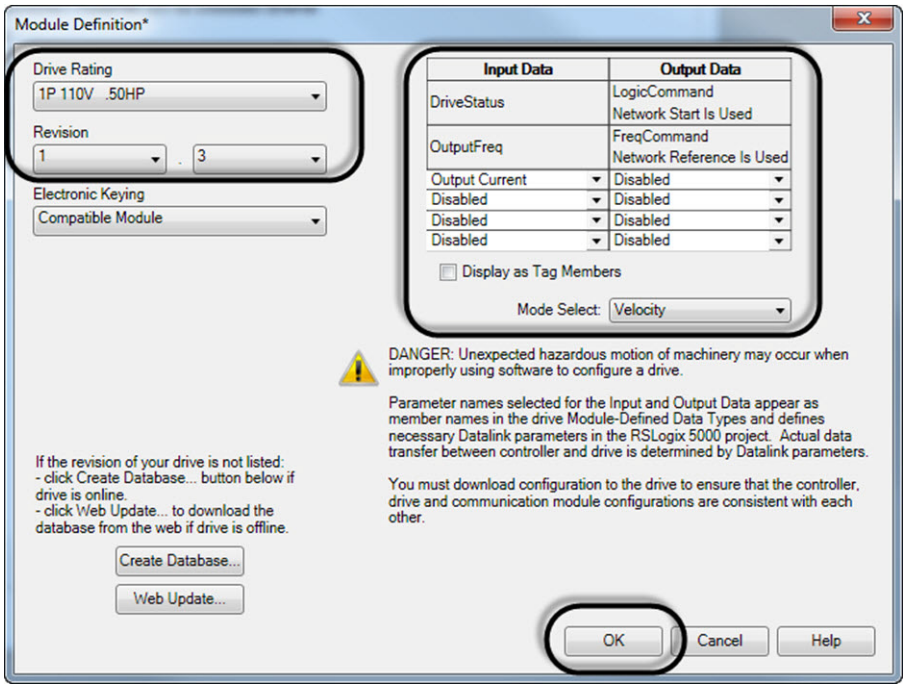
IMPORTANT The PowerFlex 4-class drives do not support datalinks. Therefore, the corresponding PowerFlex 4 faceplates do not require datalink configuration.

This Module Definition example applies to the PowerFlex 4-class drives.



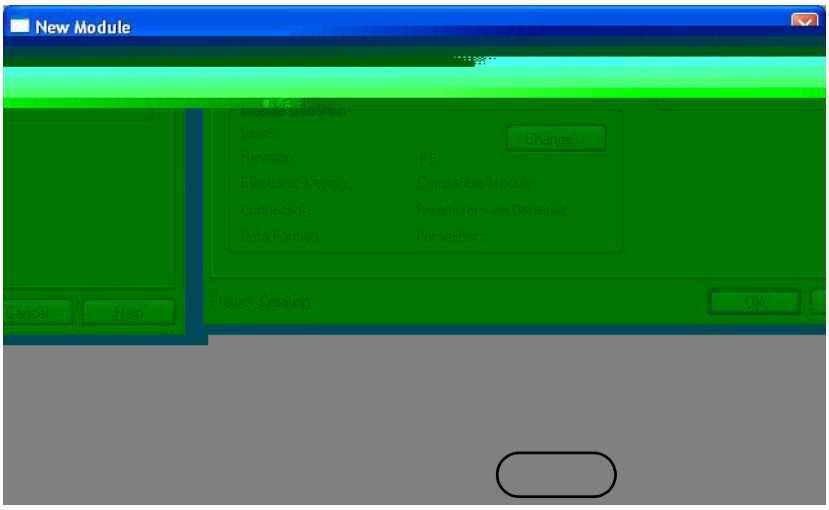
IMPORTANT For PowerFlex 4-class drive configuration, in addition to checking Use Network Reference, you must also check Use Network Start to control the drive from the Ethernet network port.

This Module Definition example applies to the PowerFlex 525 EENET drives.



IMPORTANT The PowerFlex 525 drive supports up to four (4) datalinks IN and OUT, but is not required for the PowerFlex 525 faceplate functionality. The Output Current datalink is used to provide a reference/placeholder in the logic of the device module to scale datalink values accordingly.

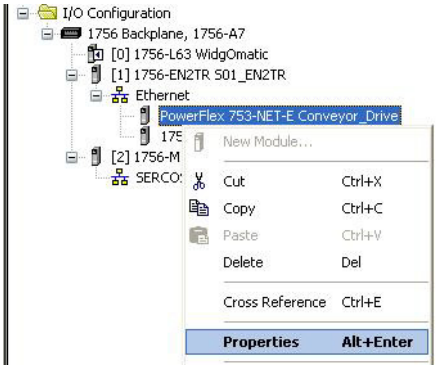
9. Click OK to close the New Module dialog box.



Set PowerFlex Drive Parameters

PowerFlex drive parameter settings are specific to your application and should be reviewed carefully before running your drive application. In this procedure, you use the Startup Wizard to set the most commonly configured parameters.

1. Right click the PowerFlex drive under I/O Configuration and choose Properties.



   For the Widg-O-matic example, the PowerFlex 753 drive is selected.

   The Module Properties dialog box opens.

2. Click the Drive tab.

   The Drive tab dialog box opens.

3. Click (startup wizard).

   The Startup Wizard provides access to commonly used parameter groups and helps you setup the drive for the connected motor.

   The Available Wizards dialog box opens.

4. Select the Startup Wizard and Click Select.

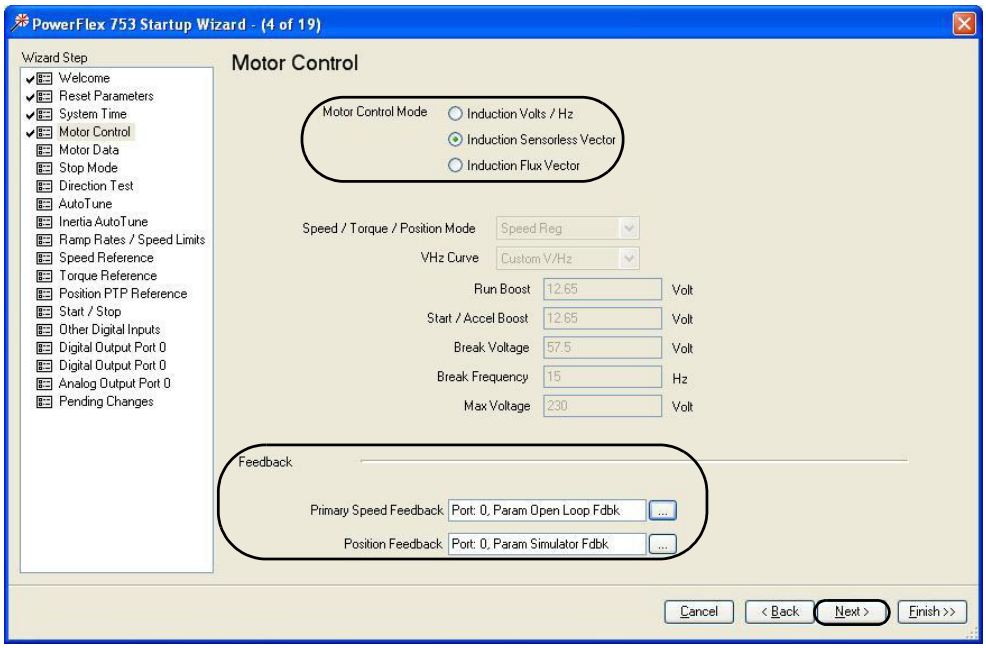
   For the Widg-O-matic machine application example, the PowerFlex 753 Startup Wizard was chosen.

5. Click Yes when the Wizard Launch Confirmation dialog box opens.

The Startup Wizard dialog box opens. These steps guide you through configuration of the most critical PowerFlex 753 parameter groups. Other PowerFlex drives may have fewer parameter groups.

6. Click Next to proceed through the Welcome, Reset Parameters and System Time wizard steps.

The Motor Control wizard step opens.

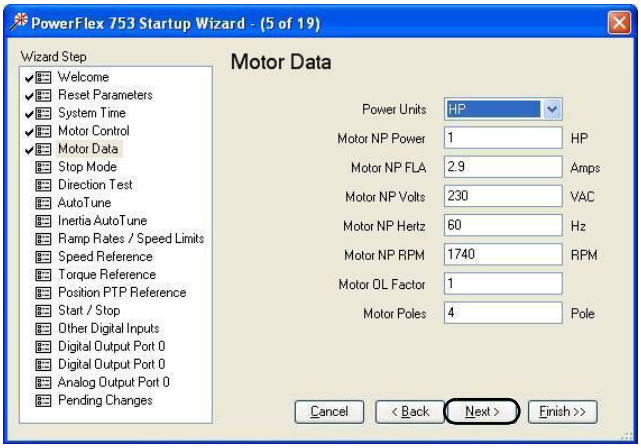


7. Select the appropriate Motor Control Mode and Feedback options for your application.

TIP If motor is unavailable at setup time, select Simulator Fdbk to use the internal simulation feedback capabilities of the drive.

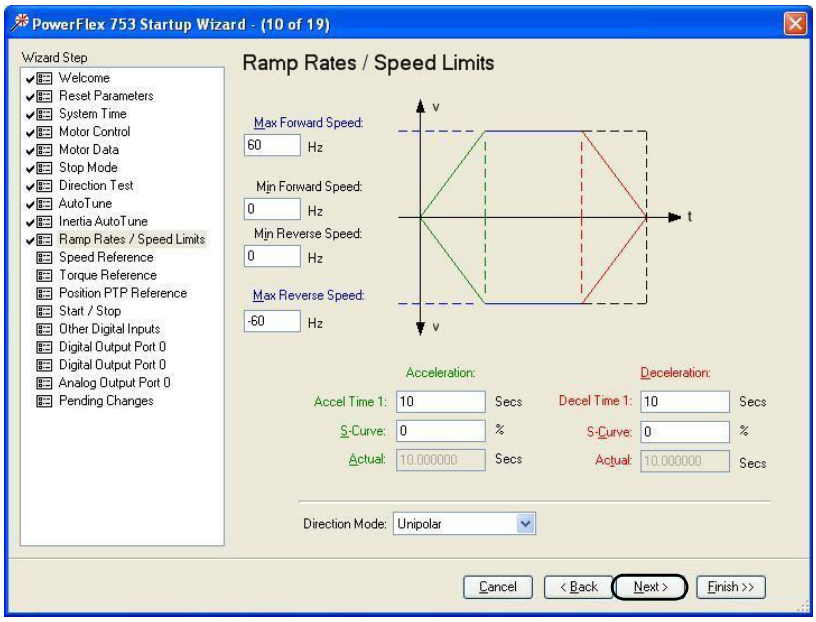
8. Click Next.

The Motor Data wizard step opens.



9. Enter motor data values appropriate for your application.
10. Click Next to proceed through Stop Mode, Direction Test, AutoTune, and Inertia AutoTune wizard steps.

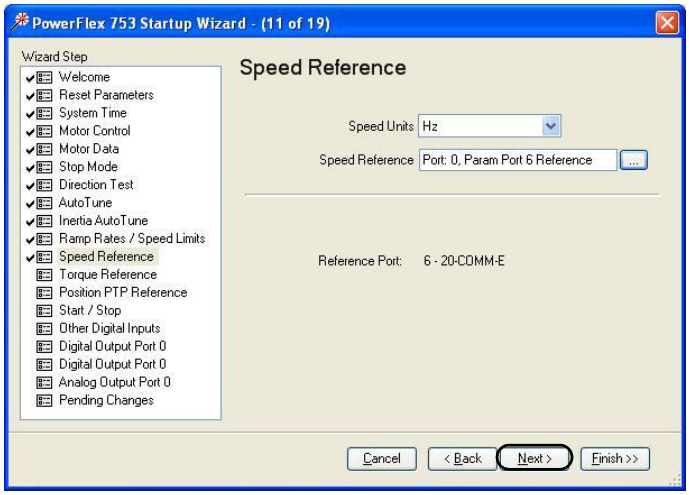
    The Ramp Rates / Speed Limits wizard step opens.



11. Enter the Max/Min Forward Speed, Max/Min Reverse Speed, and Acceleration/Deceleration parameters as appropriate for your application.
12. Click Next.

The Speed Reference wizard step opens.

13. Set the Speed Reference parameters appropriate for your application and drive hardware.

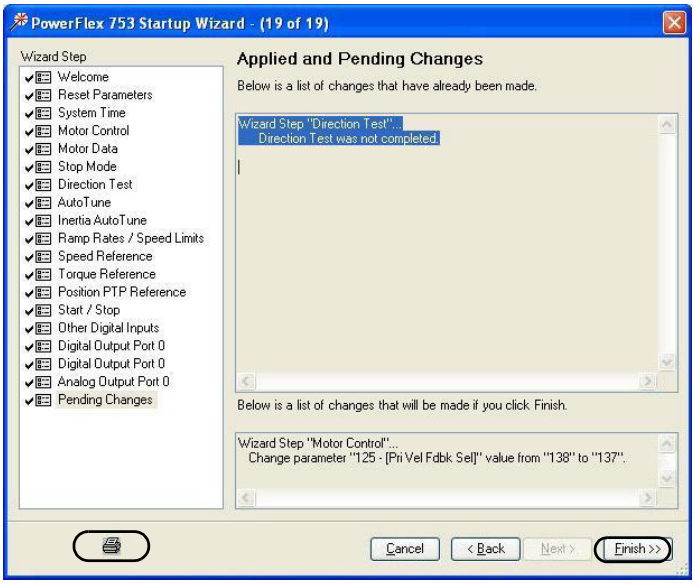


TIP The drive speed reference parameter is automatically set when Use Network Reference is checked in the Module Definition dialog box. Refer to step 8 on page 304.

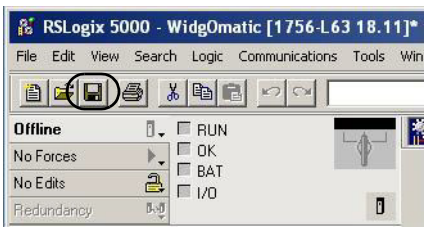
14. Continue to Click Next until you reach the Applied and Pending Changes wizard step.

All applied and pending changes are listed.

15. Click to print your list of changes.
16. Click Finish to accept the changes.



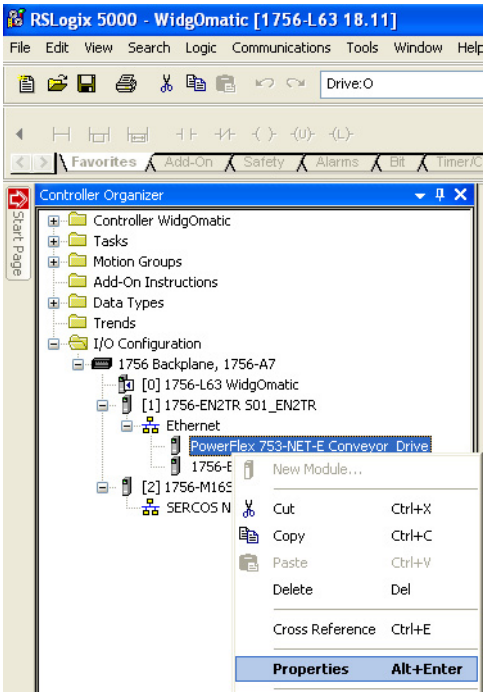
17. Click OK in the Module Properties dialog box to save the drive configuration.
18. Click to save your Logix Designer application file.



Download Drive Parameters

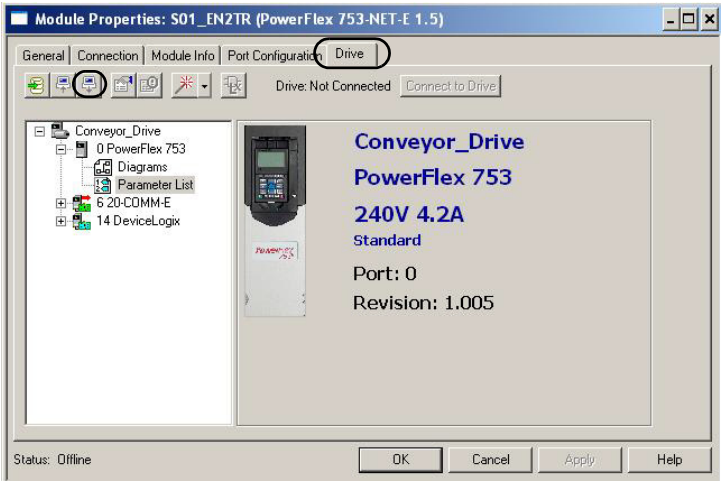
IMPORTANT Before downloading drive parameters, you must configure personal computer communication properties and EtherNet/IP driver. Refer to Appendix D on page 257 for more information.

1. Expand the I/O Configuration folder in the Controller Organizer.



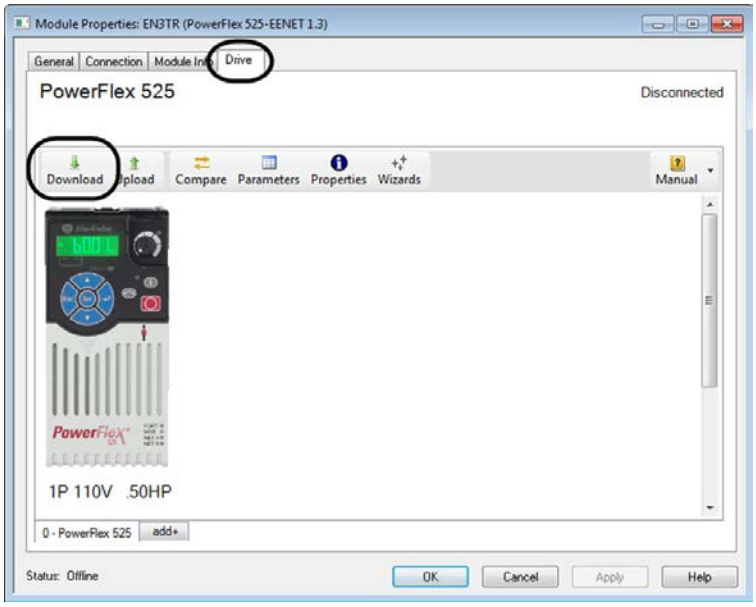
2. Right-click your PowerFlex drive and select Properties.

   The Module Properties dialog box opens.



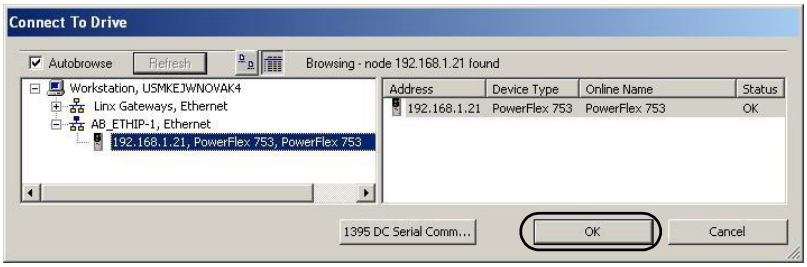
3. On the Drive tab, click the Download Parameter icon.

This Drive tab applies to the PowerFlex 525 drives.



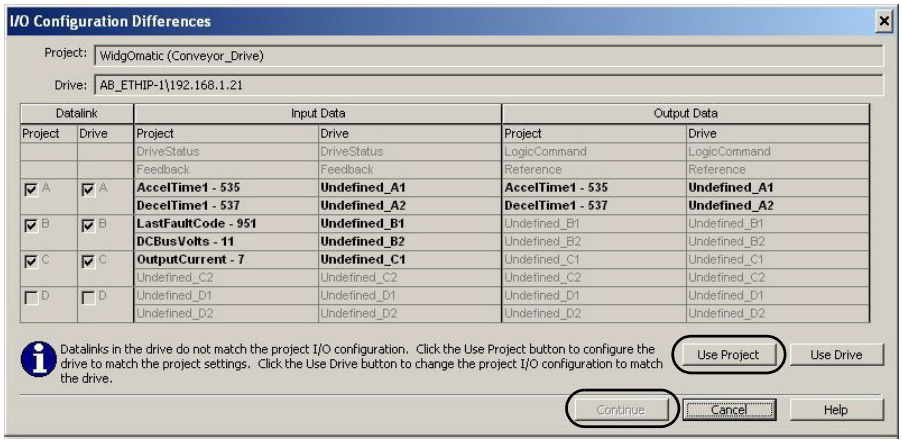
The Connect To Drive dialog box opens.

4. Expand the Ethernet communication tree and select the desired PowerFlex drive.
5. Click OK.



Multiple data download status dialog boxes open. Download may take several minutes.

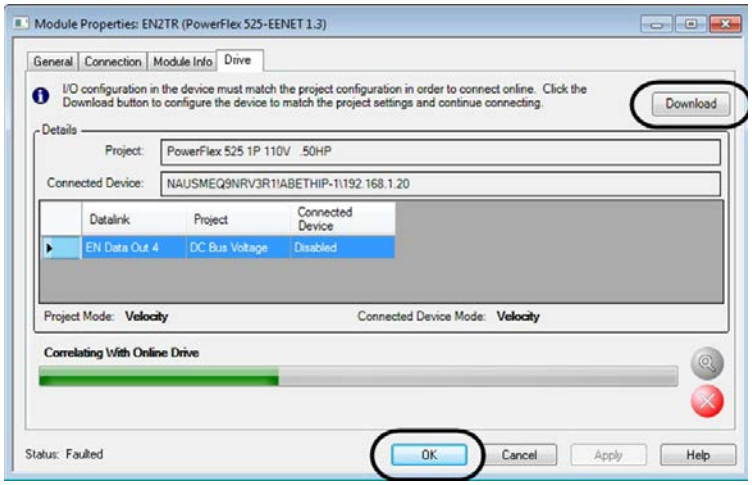
The I/O Configuration Differences dialog box opens.



This I/O configuration dialog box applies to all PowerFlex drives (except PowerFlex 525).

This I/O configuration dialog box applies to the PowerFlex 525 drives.

To Configure	Go To
PowerFlex 525 drives	step a
All other PowerFlex drives	step 6



a. Click Download.

b. Click OK.

c. Click OK to close the Module Properties dialog box.

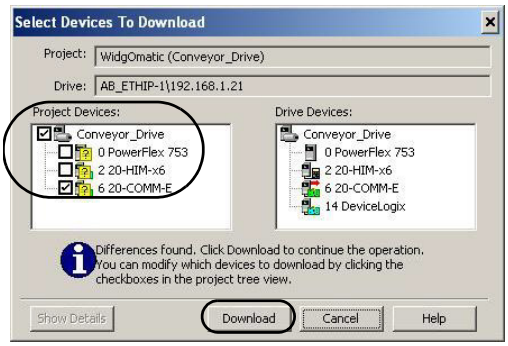
d. Skip to step 11.

6. Click Use Project.

7. Click Continue.

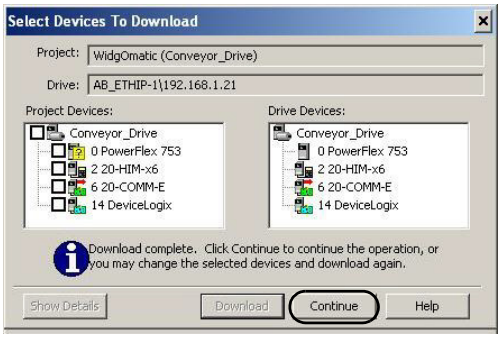
   The Select Devices To Download dialog box opens.

   Project devices that are different than the target drive devices are checked automatically.



8. Click Download.

9. Click Continue.



10. Click OK to close the Module Properties dialog box.

11. Click  to save your Logix Designer application file.

CIP Motion Drive Configuration

CIP Motion drive configuration applies to all Kinetix 6500 drive modules, Kinetix 5500 drives, Kinetix 350 drives, PowerFlex 527, and PowerFlex 755 CIP Motion drives. These procedures are included:

- Configure CIP Motion Drive Modules
- Configure the Motion Group
- Configure Axis Properties

These CIP motion drive configuration steps were written specifically for Kinetix 6500 drives. The Kinetix 5500, Kinetix 350, PowerFlex 527, and PowerFlex 755 CIP Motion drive configuration steps are similar. Examples for each drive family are given when significant differences exist.

For more information on drive configuration, refer to the appropriate user manual listed in Additional Resources on page 15.

Configure CIP Motion Drive Modules

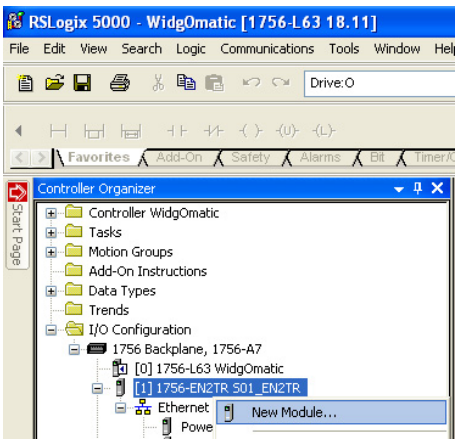
Required Configuration Software

Drive Family	Drive Cat. No.	Configuration Software	Version
Kinetix 6500	2094-EN02D-M01-S*x*, 2094-BC*xx*-M*xx*-M, and 2094-BM*xx*-M	RSLogix 5000	18 or later
		Logix Designer application	21 or later
Kinetix 5500	2198-H*xxx*-ERS	Logix Designer application	21 or later
Kinetix 350	2097-V3*x*PR*x*-LM	RSLogix 5000	20 or later
		Logix Designer application	21 or later
PowerFlex 755	CIP Motion drives	RSLogix 5000	19 or later
		Logix Designer application	21 or later
PowerFlex 527	25C-*x*N1*x*4	Logix Designer application	24 or later

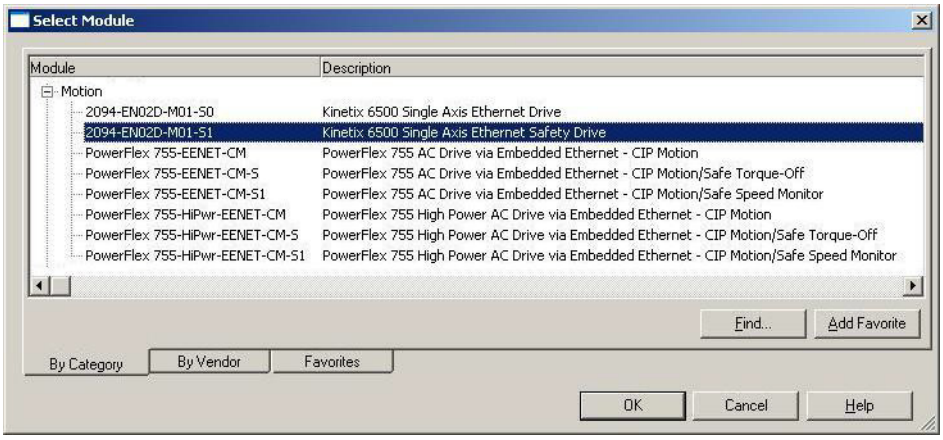
Follow these steps to configure the CIP Motion drive modules.

1. Open your Logix Designer project file created in Appendix F.
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.
3. Right-click the network communication module for your CIP Motion drive and choose New Module.

   For the Widg-O-matic example, the 1756-EN2TR module is selected.



The Select Module dialog box opens.



4. Expand the Motion category and select your CIP Motion module as appropriate for your actual hardware configuration.

   For the Widg-O-matic example, the 2094-EN02D-M01-S1 control module is selected for both axes of the X-Y Gantry.

5. Click OK.

   The New Module dialog box opens.

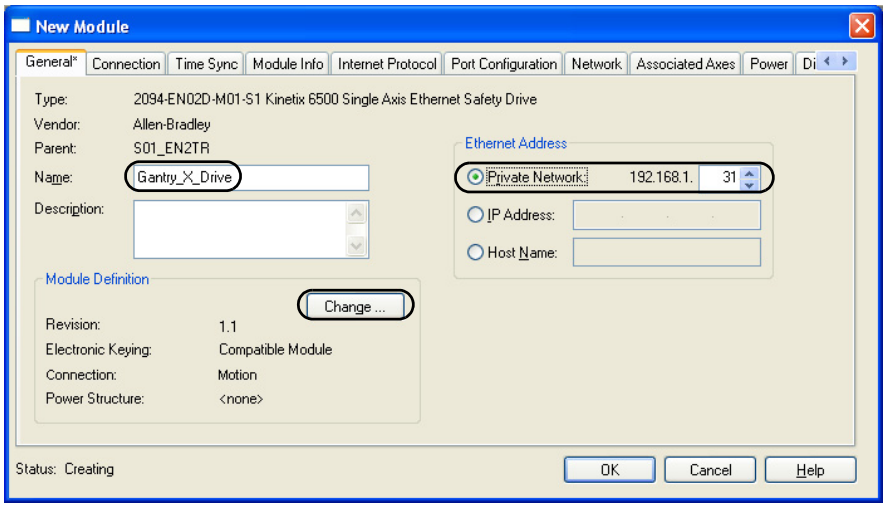
6. Configure the new control module.

   a. Type the module Name.

   b. Select an Ethernet Address option.

      In this example, the Private Network address is selected.

   c. Enter the address of your EtherNet/IP module.



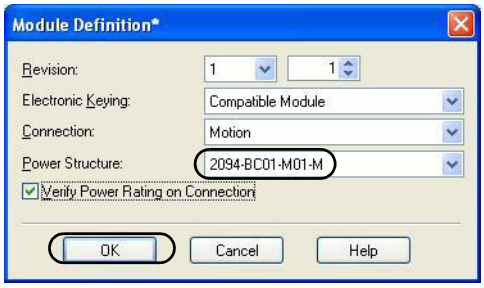
   For the Widg-O-matic application example, the last octet of the IP address is given in this table. The value you enter here must match the base node address of the Kinetix 6500 IAM power module,

Widg-O-matic X-Y Gantry Ethernet Address Configuration

Module Name	Ethernet IP Address
Gantry_X_Drive	191.168.1.31
Gantry_Y_Drive	191.168.1.32

7. Click Change in the Module Definition area.

The Module Definition dialog box opens.



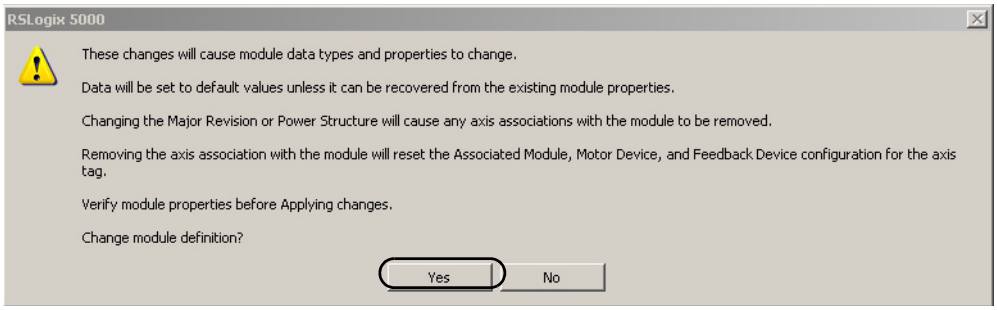
8. From the Power Structure pull-down menu, choose the power module appropriate for your application.

Widg-O-matic X-Y Gantry Power Module Configuration

Module Name	Power Module Type	Power Structure Cat. No.
Gantry_X_Drive	IAM	2094-BC01-M01-M
Gantry_Y_Drive	AM	2094-BMP5-M

IMPORTANT For PowerFlex 755 CIP Motion drives, you must also choose the motor feedback device. Refer to your PowerFlex 755 user manual, publication 750-UM001, for more information.

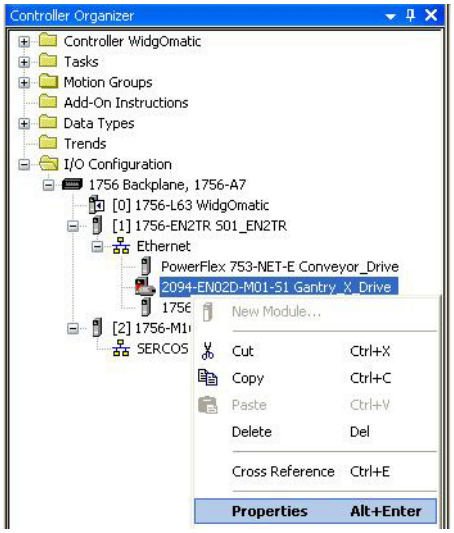
9. Click OK to close the Module Definition dialog box.
10. Click Yes when prompted to confirm your module definition changes.



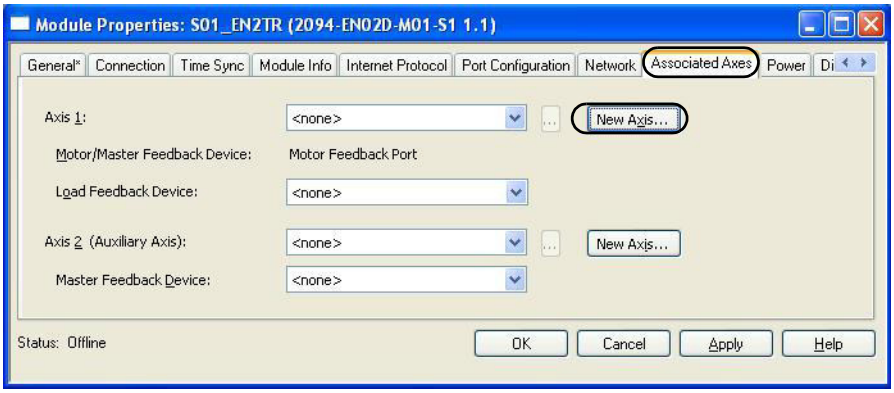
11. Click OK to close the New Module dialog box and save the configuration.

    The new CIP Motion drive module appears under the EtherNet/IP module in the I/O Configuration folder.

12. Right-click the new CIP Motion module you just created and choose Properties.

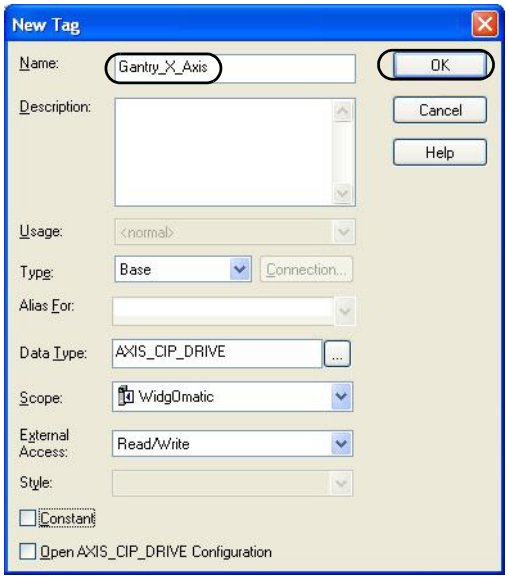


The Module Properties dialog box opens.



13. Click the Associated Axes tab.
14. Click New Axis.

    The New Tag dialog box opens.



15. Create the axis tag.
    a. Type the axis Name.
    b. Accept the Type, Data Type, Scope, and External Access default values.
    c. Click OK.

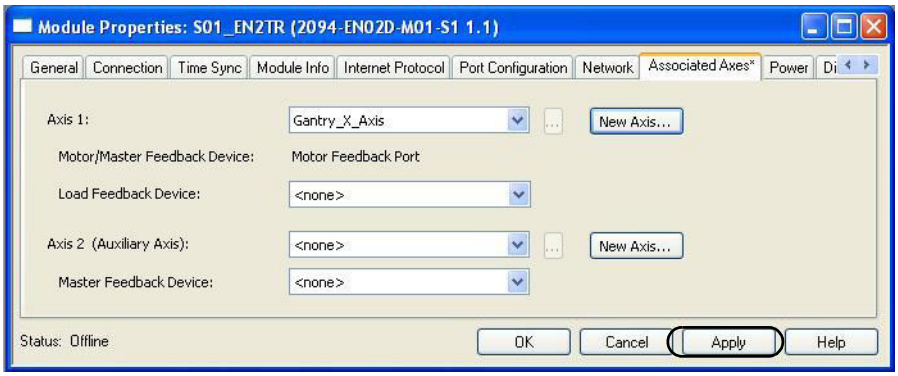
       The New Tag dialog box closes.

       The new axis is assigned as Axis 1.

Widg-O-matic X-Y Gantry Axis Assignments

Axis	Axis Name	Digital Input 1	Digital Input 2
1	Gantry_X_Axis	Enable	Home
2	Gantry_Y_Axis	Enable	Home

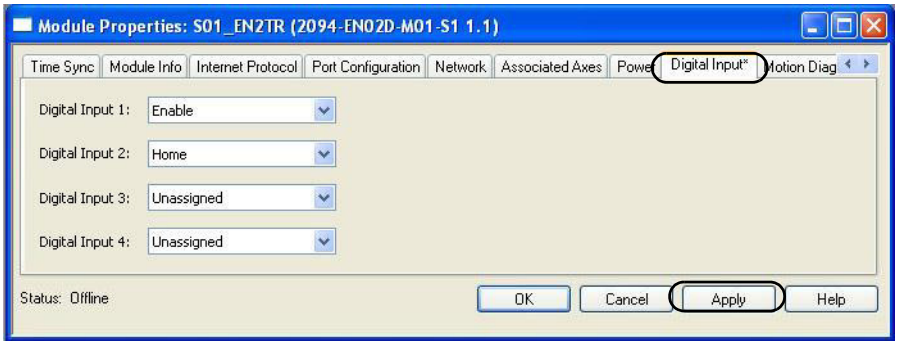
16. Click Apply.



This assigns the associated axes to the control module.

IMPORTANT For PowerFlex 755 CIP Motion drives, you must configure the motor feedback device. Refer to your PowerFlex 755 user manual, publication 750-UM001, for more information.

17. Click the Digital Input tab.



The digital inputs (1...4) are assigned default values.

You can reassign them, using the pull-down menus, according to the needs of your application. You can also unassign digital inputs, if your application does not use them or you want to remove the default assignments.

For the Widg-O-matic machine example, digital inputs 1 and 2 are assigned Enable and Home (respectively) and digital inputs 3 and 4 are unassigned.

Widg-O-matic X-Y Gantry Digital Input Assignments

Axis	Axis Name	Digital Input 1	Digital Input 2
1	Gantry_X_Axis	Enable (1)	Home
2	Gantry_Y_Axis	Enable	Home

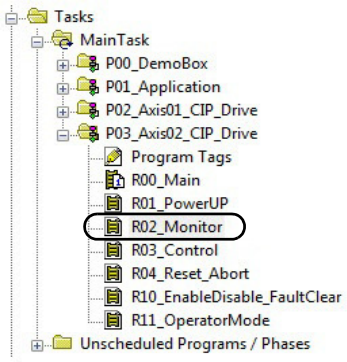
(1) When using the Enable digital input, you can add a check in the device module code to make sure it is on before running your machine. Refer to the steps below to see how.

IMPORTANT PowerFlex 755 CIP Motion drives support only one digital input. Refer to your PowerFlex 755 user manual, publication 750-UM001, for more information.

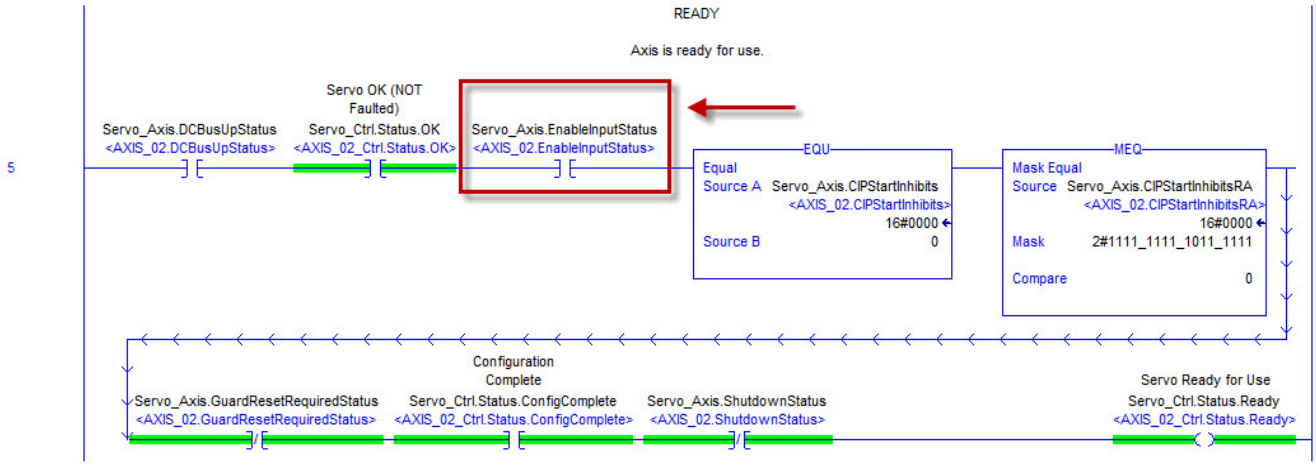
Follow these steps if your CIP Motion drive requires Enable Input Checking.

a. Expand the CIP Motion Drive Module that you added to your project.
   P03_Axis02_CIP_Drive is used in this example.

b. Double-click the R02_Monitor routine.



The R02_Monitor routine opens.

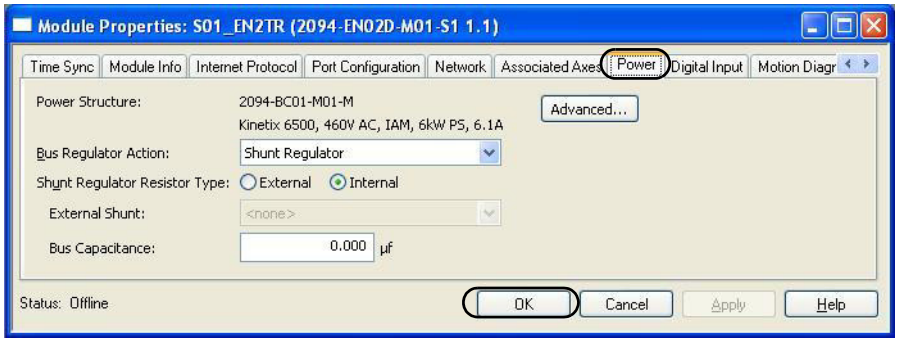


c. Add an XIC (Examine On) instruction to Rung 5 and assign tag Servo_Axis.EnableInputStatus to it.

d. Save and close the R02_Monitor routine.
   The Module Properties dialog box re-appears.

18. Click Apply.

19. Click the Power tab.



The Widg-O-matic machine example uses the default values for the IAM power module as shown. If your application requires additional shunt configuration, refer to step 20. If not, skip to step 22.

20. From the Bus Regulator Action pull-down menu, choose the shunt option appropriate for your actual hardware configuration.

Choose	To
Disable	Disable the shunt resistor internal to the IAM power module.
Shunt Regulator	Choose an internal or external shunt option.
Common Bus Follower (1)	To configure your IAM power module as a common-bus follower IAM module.

(1) Drive will not accept CommonBus Follower selection if three-phase power or DC bus power is applied.

If You Choose	Then
Shunt Regulator	Select Internal to use the shunt resistor internal to the IAM power module.
	Select External to use the External Shunt pull-down menu and choose between the Bulletin 1394 shunt modules and the Bulletin 2094-BSP2 shunt module. (1)

(1) Drive will not accept Internal, 2094-BSP2, or 1394-SR*xxxx* selection if DC bus voltage is present without having three-phase power applied.

21. Calculate additional bus capacitance, if this applies to your application, and enter the value here (version 18.00 or later).

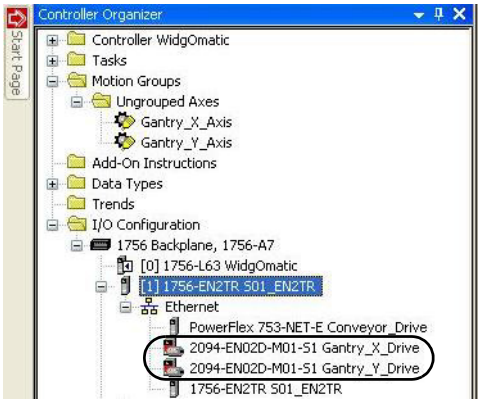
The Additional Bus Capacitance field only applies to the IAM power module.

IMPORTANT DC common-bus applications must calculate Total Bus Capacitance and Additional Bus Capacitance and set the Add Bus Cap parameter in the leader IAM power module.

Refer to the Kinetix 6200 and Kinetix 6500 Modular Multi-axis Servo Drives User Manual, publication 2094-UM002 for more information on making the calculations.

22. Click OK.

23. Repeat step 2 through step 18 and step 22 for the each additional 2094-EN02D-M01-S*x* control module.



When your CIP Motion drive configuration is complete, all of the drive modules should appear in the I/O Configuration folder under your Ethernet module.

For the Widg-O-matic machine example, the X-Y gantry configuration appears as shown.

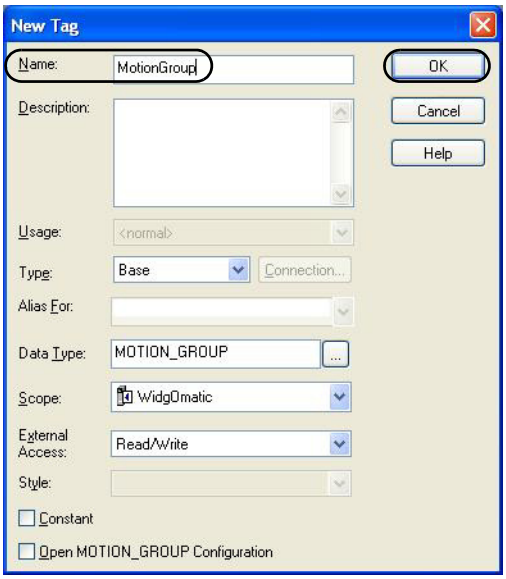
Configure the Motion Group

Follow these steps to configure the motion group.

1. Right-click Motion Groups in the Controller Organizer and choose New Motion Group.

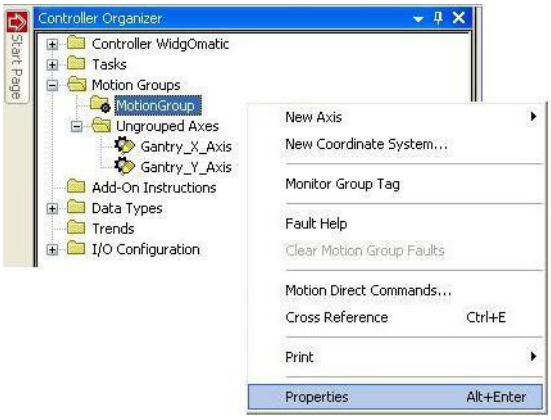
   The New Tag dialog box opens.

2. Type the new motion group Name.
3. Click OK.



   The new motion group appears under the Motion Groups folder.

4. Right-click the new motion group in the Controller Organizer and choose Properties.



   The Motion Group Properties dialog box opens.

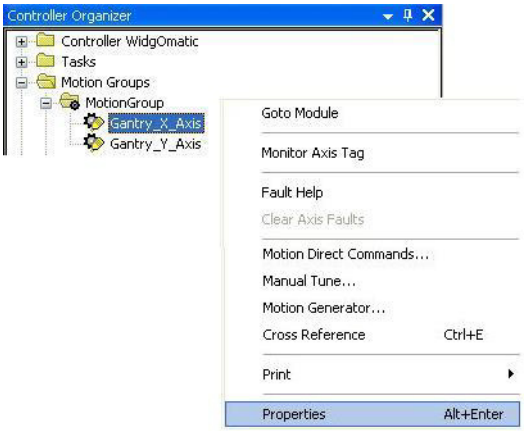
5. Click the Axis Assignment tab and move your axes (created earlier) from Unassigned to Assigned.
6. Click the Attribute tab and edit the default values as appropriate for your application.
7. Click OK.

   The assigned axes appear under the new Motion Group.

Configure Axis Properties

Follow these steps to configure axis properties.

1. Right-click an axis in the Controller Organizer under your configured Motion Group and choose Properties.



   The Axis Properties dialog box opens.

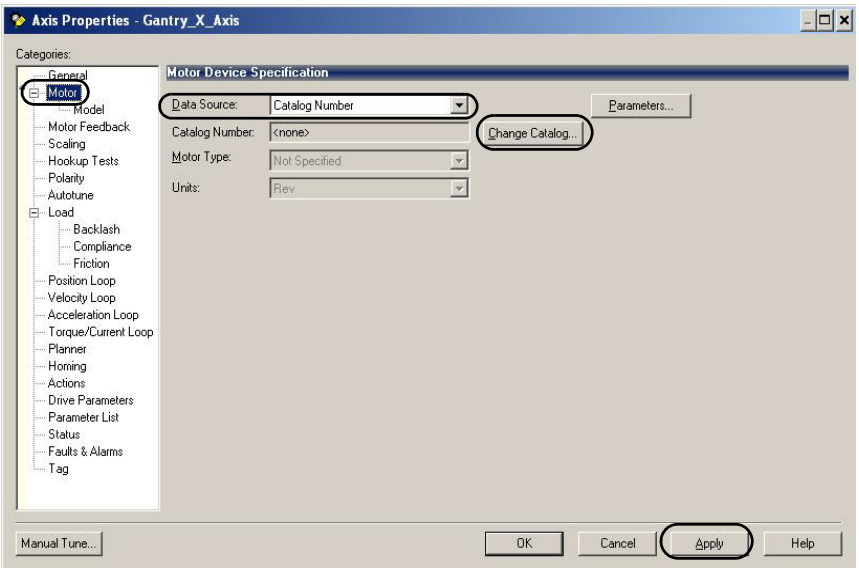
2. Click the Motor category.

   The Motor Device Specification dialog box opens.

3. From the Data Source pull-down menu, choose Catalog Number.

4. Click Change Catalog.

   The Change Catalog Number dialog box opens.



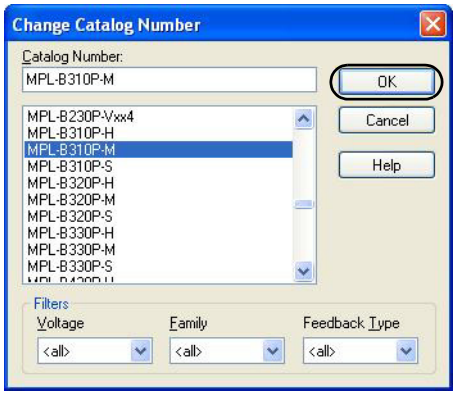
5. Select the motor catalog number appropriate for your application.

   For the Widg-O-matic machine example, the MPL-B310P-M motor is used for both axes.

   To verify the motor catalog number, refer to the motor name plate.

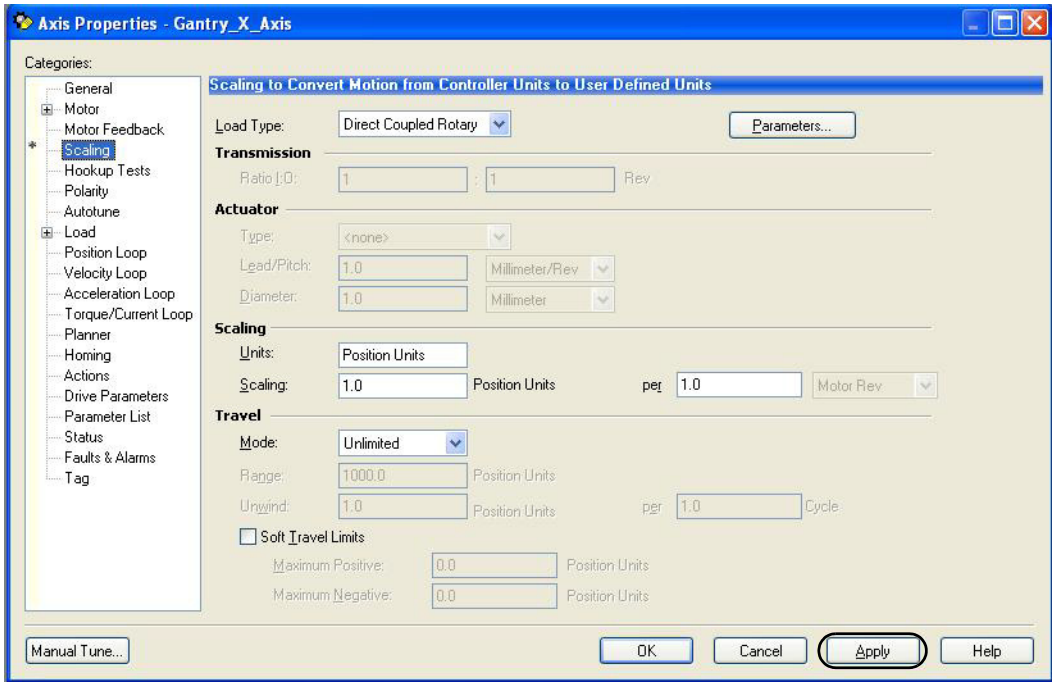
6. Click OK to close the Change Catalog Number dialog box.

7. Click Apply.



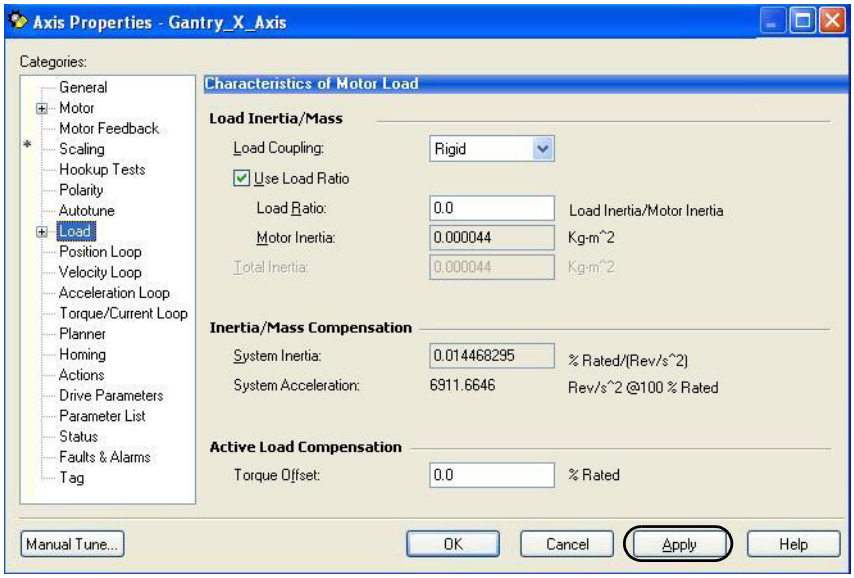
   Motor data specific to your motor appears in the Motor category.

8. Click the Scaling category and edit the parameter default values as appropriate for your application.



9. Click Apply, if you make changes.

10. Click the Load category and edit the parameter default values as appropriate for your application.

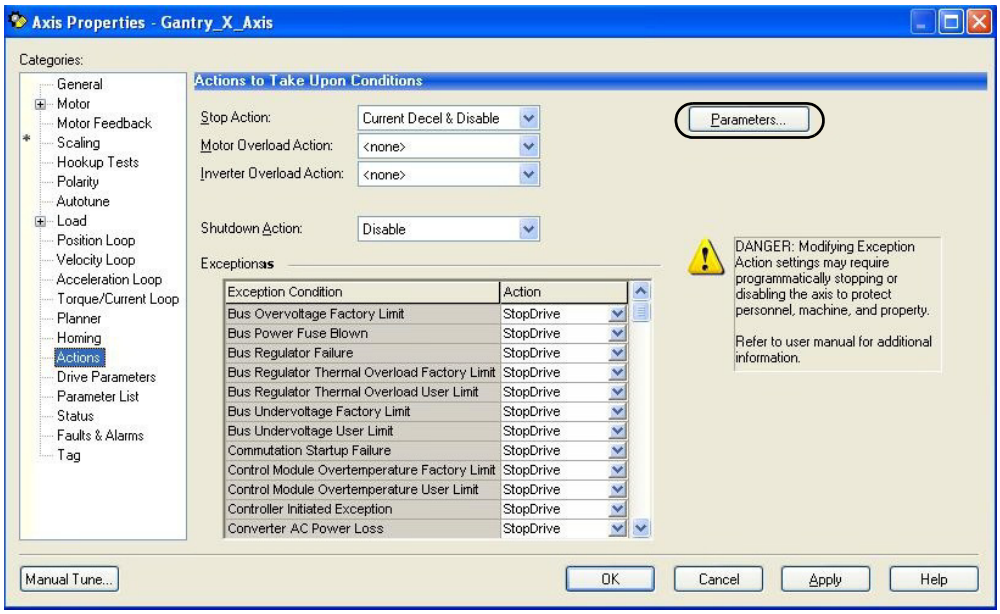


11. Click Apply, if you make changes.

12. Click the Actions category.

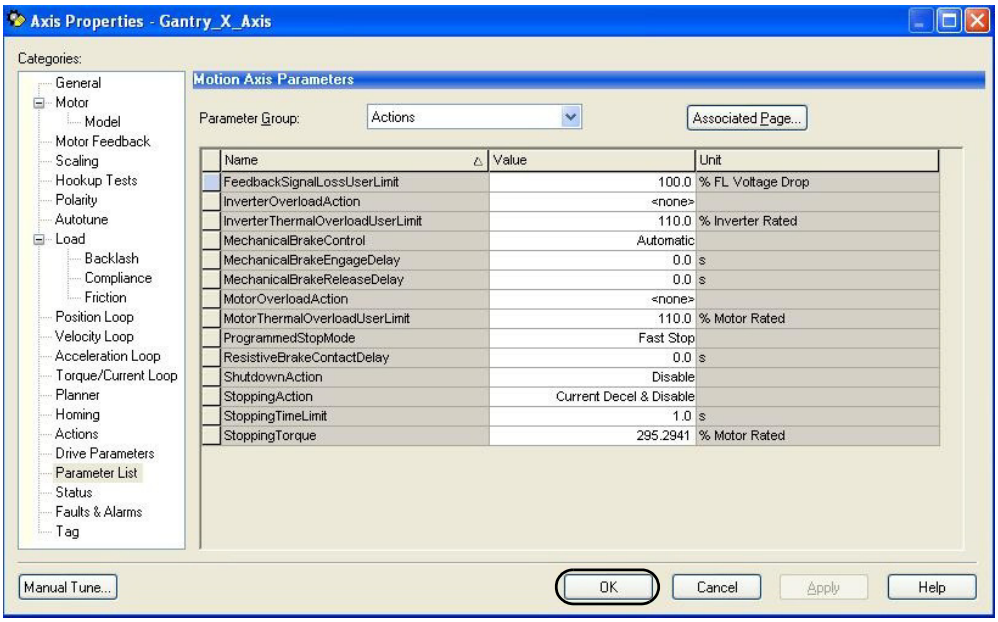
    The Actions to Take Upon Conditions dialog box opens. From this dialog box, you can program actions and change the action for exceptions (faults).

13. Click Parameters.



The Motion Axis Parameters dialog box opens.

From this dialog box you can set delay times for servo motors and RBM modules.



14. Click OK.

15. Repeat step 1 through step 14 for each axis.

16. Verify your device configuration and save the file.

Sercos Motion Drive Configuration

This section applies to all Kinetix 6200, Kinetix 6000, Kinetix 6000M, Kinetix 2000, Kinetix 7000, and Ultra3000 sercos drives and includes these procedures:

- Configure Sercos Drive Modules
- Configure the Motion Group
- Configure Axis Properties

These sercos interface drive configuration steps were written specifically for Kinetix 6200 drives. The Kinetix 6000, Kinetix 2000, Kinetix 7000, and Ultra3000 sercos drive configuration steps are similar. You can also use the Kinetix 6000M integrated drive-motor (IDM) system when the IDM power interface module (IPIM) is added to the Kinetix 6000 power rail. Examples for each drive family are given when significant differences exist.

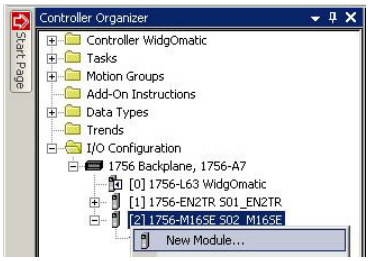
For more information on drive configuration, refer to the appropriate user manual listed in Additional Resources on page 15.

Configure Sercos Drive Modules

Follow these steps to configure the sercos drive modules.

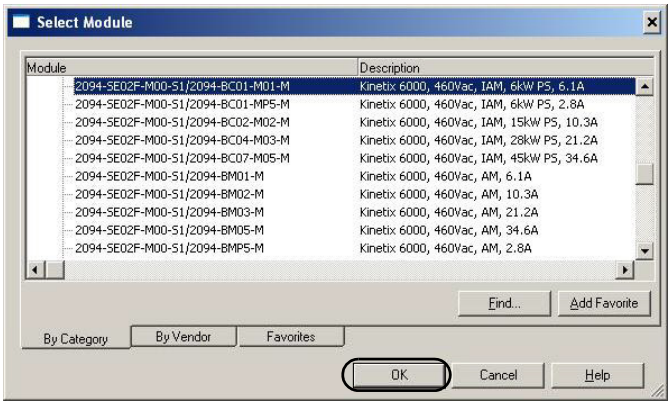
1. Open your Logix Designer project file created in Appendix F.
2. Right-click the sercos module you created and choose New Module.

   The Select Module dialog box opens.



3. Expand the Drives category and select drive components appropriate for your actual hardware configuration.

   In this example, the Kinetix 6200 2094-SE02F-M00-S1 control module and 2094-BC01-M01-M IAM power module are selected.

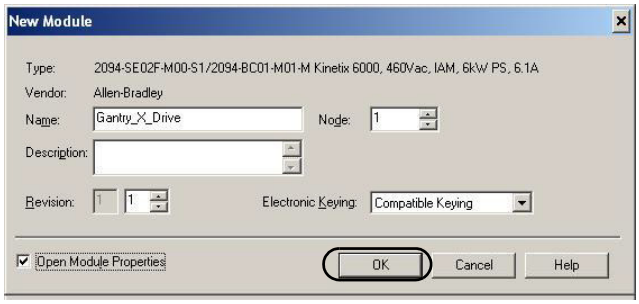


Sercos X-Y Gantry Power Module Configuration Example

Module Name	Power Module Type	Control Module/Power Module Cat. No.
Gantry_X_Drive	IAM	2094-SE02F-M00-S1/2094-BC01-M01-M
Gantry_Y_Drive	AM	2094-SE02F-M00-S1/2094-BMP5-M

IMPORTANT To configure Kinetix 6200 drive modules (catalog numbers 2094-SE02F-M00-S*x*, 2094-BC*xx*-M*xx*-M, and 2094-BM*xx*-M) you must be using RSLogix 5000 software, version 17 or later, or the Logix Designer application, version 21 or later.

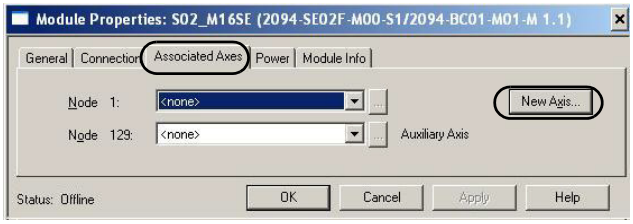
4. Click OK.
5. Configure the new module.
   a. Type the module Name.
   b. Enter the Node address.
      Set the node address in the software to match the node setting on the drive.
   c. Check Open Module Properties.



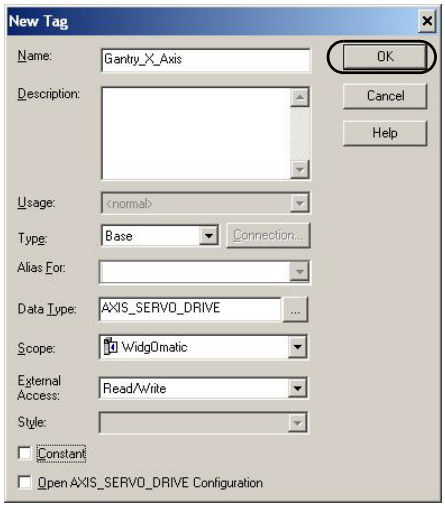
Widg-O-matic X-Y Gantry Ethernet Address Configuration

Module Name	Node Address
Gantry_X_Drive	1
Gantry_Y_Drive	2

6. Click OK.
7. Click the Associated Axes tab.
8. Click New Axis.



The New Tag dialog box opens.

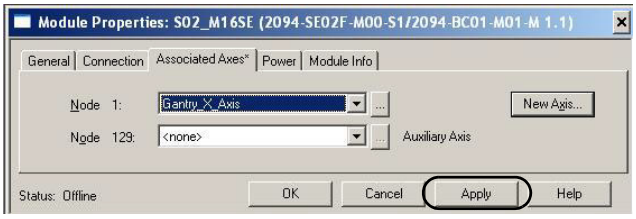


9. Type the axis Name.

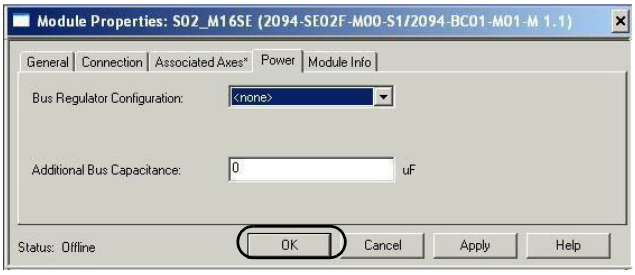
   AXIS_SERVO_DRIVE is the default Data Type.

10. Click OK.

    The axis appears under the Ungrouped Axes folder in the Controller Organizer.



11. Assign your axis to Node 1.
12. Click Apply.



13. Click the Power tab.
14. From the Bus Regulator Configuration pull-down menu, choose the shunt option appropriate for your actual hardware configuration.

If your IAM power module is	And your hardware configuration includes this shunt option	Then choose
Configured as an IAM module or common-bus leader IAM module (1)	Internal shunt resistors only	Internal or <none>
	Bulletin 2094 (rail mounted) shunt module (2)	2094-BSP2
	Bulletin 1394 passive shunt module (connected to the 2094-BSP2 shunt module)	1394-SR*xxxx*
	Bulletin 1336 active shunt module	Internal or <none>
Configured as a common-bus follower IAM module (3)	N/A. Shunts are disabled on follower IAM module	CommonBus Follow

(1) Drive will not accept Internal, <none>, 2094-BSP2, or 1394-SR*xxxx* selection if DC bus voltage is present without having three-phase power applied.
(2) To use the 2094-BSP2 shunt module with 2094-BC*xx*-M*xx*-M power modules, you must be using Motion Database 5.12.1 or later. Contact Rockwell Automation Technical Support for more information.
(3) Drive will not accept CommonBus Follow selection if three-phase power or DC bus power is applied.

15. Calculate additional bus capacitance, if this applies to your application, and enter the value here (version 20.00 or later).

    The Additional Bus Capacitance field only applies to the IAM power module.

IMPORTANT	DC common-bus applications must calculate Total Bus Capacitance and Additional Bus Capacitance and set the Add Bus Cap parameter in the leader IAM power module. Refer to the DC common bus appendix in the appropriate user manual listed in Additional Resources on page 15 for more information on making these calculations.

16. Click OK to save and close the Module Properties dialog box.
17. For multi-axis systems, repeat step 2 through step 11 and step 16 for each additional drive module including Kinetix 6200, Kinetix 6000, Kinetix 6000M, and Kinetix 2000 drives.

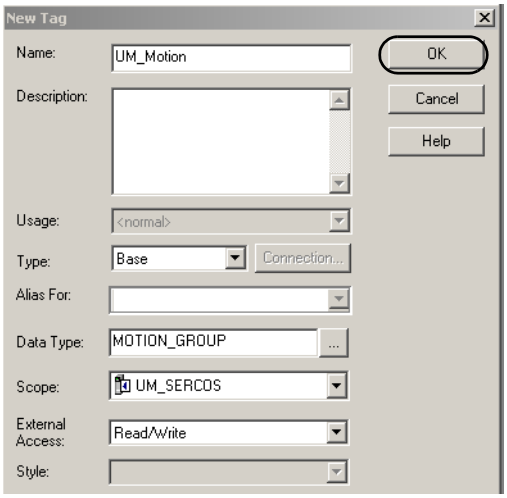
For more information on drive configuration, refer to the appropriate user manual listed in Additional Resources on page 15.

Configure the Motion Group

Follow these steps to configure the motion group.

1. Right-click Motion Groups in the Controller Organizer and choose New Motion Group.

   The New Tag dialog box opens.

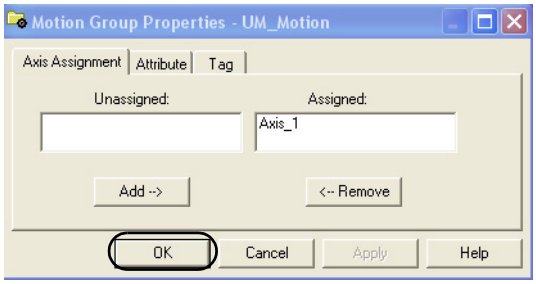


2. Type the new motion group Name.
3. Click OK.

   The new motion group appears under the Motion Groups folder.

4. Right-click the new motion group and choose Properties.

   The Motion Group Properties dialog box opens.



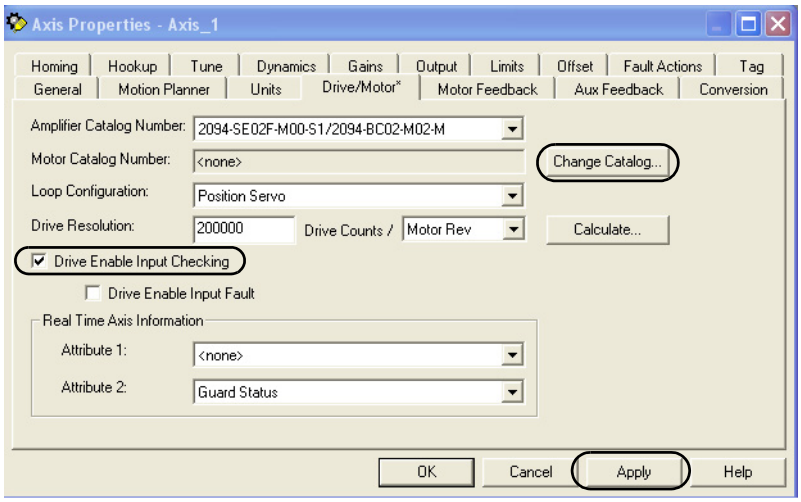
5. Click the Axis Assignment tab and move your axes (created earlier) from Unassigned to Assigned.
6. Click the Attribute tab and edit the default values as appropriate for your application.
7. Click OK.

Configure Axis Properties

Follow these steps to configure the Axis properties.

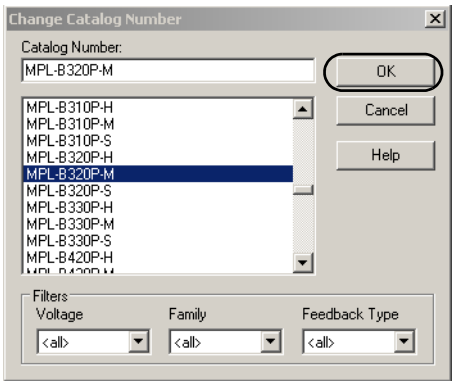
1. Right-click an axis in the Controller Organizer and choose Properties.

   The Axis Properties dialog box opens.



2. Click the Drive/Motor tab.
3. Click Change Catalog.

   The Change Catalog Number dialog box opens.

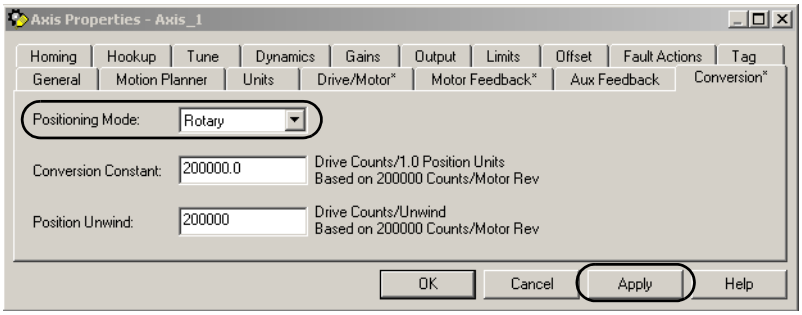


4. Select the motor catalog number appropriate for your application.

   To verify the motor catalog number, refer to the motor name plate.
5. Click OK to close the Change Catalog Number dialog box.
6. On the Drive/Motor tab, check Drive Enable Input Checking.

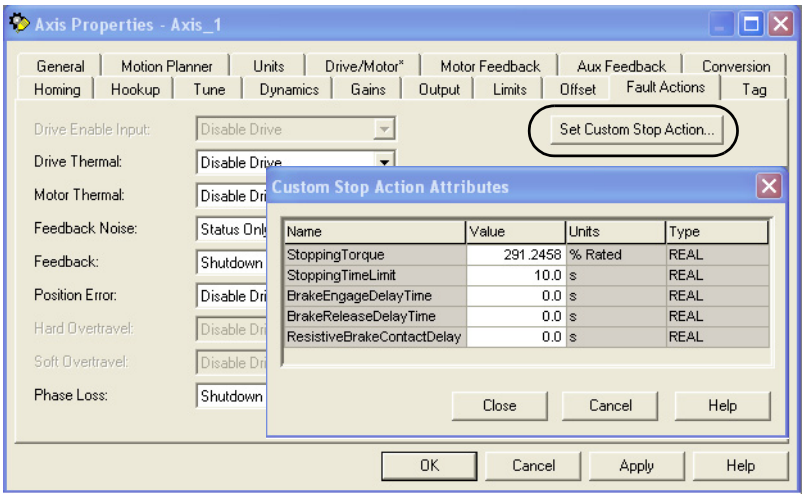
   When checked (default), means a hard drive-enable input signal is required. Uncheck to remove that requirement.
7. Click Apply.
8. Click the Motor Feedback tab and verify the Feedback Type shown is appropriate for your actual hardware configuration.
9. Click the Units tab and edit default values as appropriate for your application.

10. Click the Conversion tab and edit default values as appropriate for your application.



In this example, Rotary is chosen from the Positioning Mode pull-down menu.

11. Click Apply if you made changes.
12. Click the Fault Actions tab.



13. Click Set Custom Stop Action.

    The Custom Stop Action Attributes dialog box opens. From this dialog box you can set delay times for servo motors and RBM modules.

14. Click OK.
15. Repeat step 1 through step 14 for each Bulletin 2094 AM power module and control module combination.
16. Verify your device configuration and save the file.

Kinetix 300 Drive Configuration

Kinetix 300 drive configuration applies to all 2097-3*x*PR*x* drive modules and includes these procedures:

- Update Kinetix 300 Add-On Profiles
- Add Kinetix 300 Drives to Your Logix Designer Project
- Configure Kinetix 300 Drives

Update Kinetix 300 Add-On Profiles

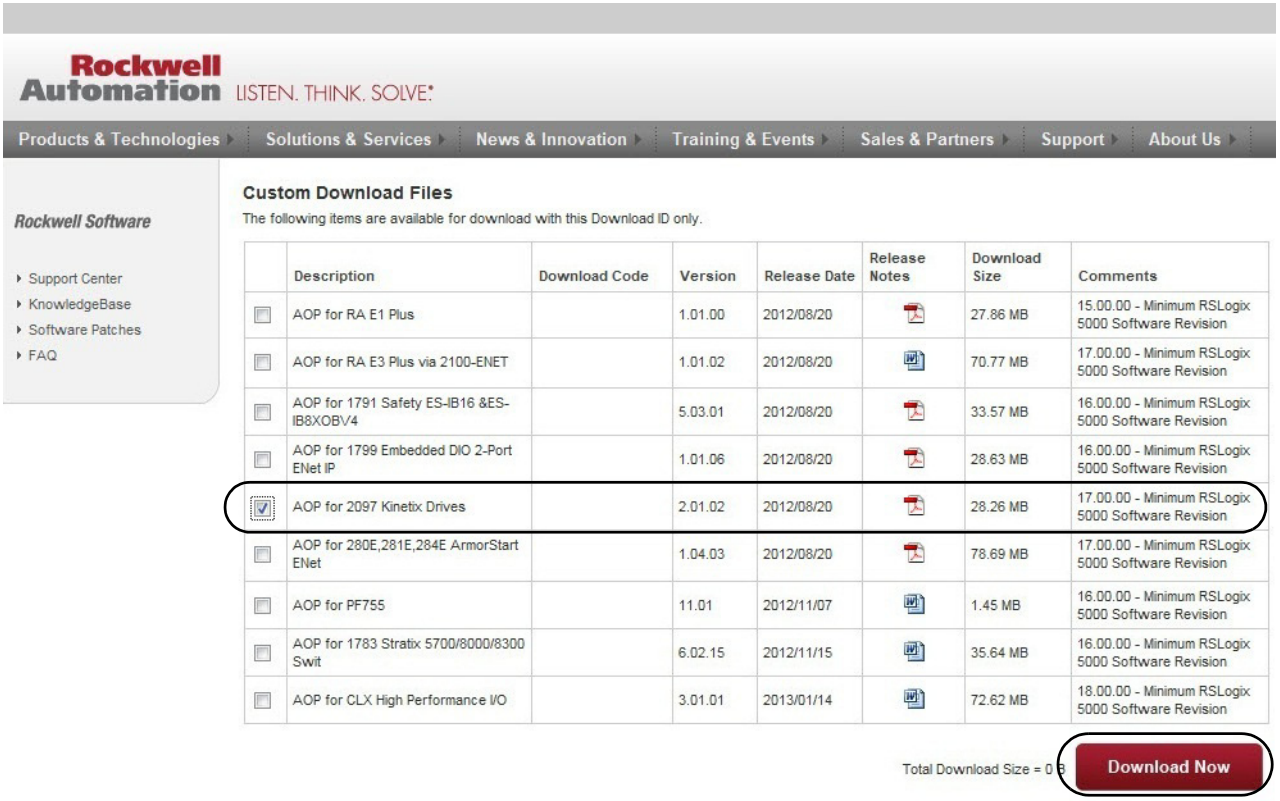
IMPORTANT The Kinetix 300 Add-On Profiles are independent of the RSLogix 5000 software or Logix Designer application releases. Update your Kinetix 300 Add-On Profiles to make sure your application runs correctly.

Add-On profiles (AOP) are available for download at the Custom Downloads Add-On Profiles website: https://download.rockwellautomation.com/esd/download.aspx?downloadid=addonprofiles

Follow these steps to download Kinetix 300 Add-On profiles.

1. Login to the Custom Download Add-On Profiles website.

   The Custom Download Files dialog box opens.



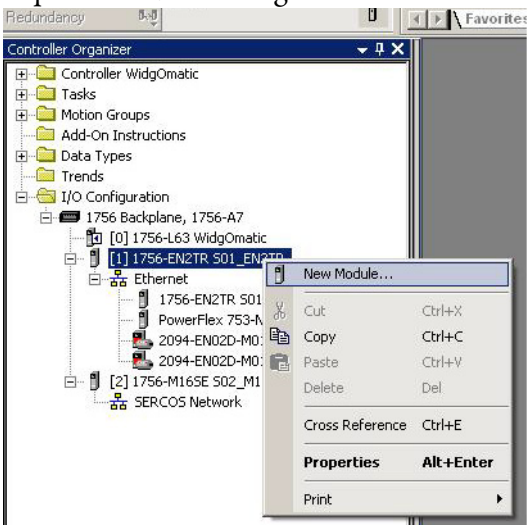
2. Check AOP for 2097 Kinetix Drives.
3. Click Download Now and accept the user license agreement.

   If prompted to install the Download Manager, allow the installation.
4. Click the Add-On Profile icon and follow the download instructions.
5. Extract the AOP zip file and run Setup.

Add Kinetix 300 Drives to Your Logix Designer Project

Follow these steps to add each Kinetix 300 drive in your system to the Logix Designer project file. For the Widg-O-matic machine application example, you add a single drive.

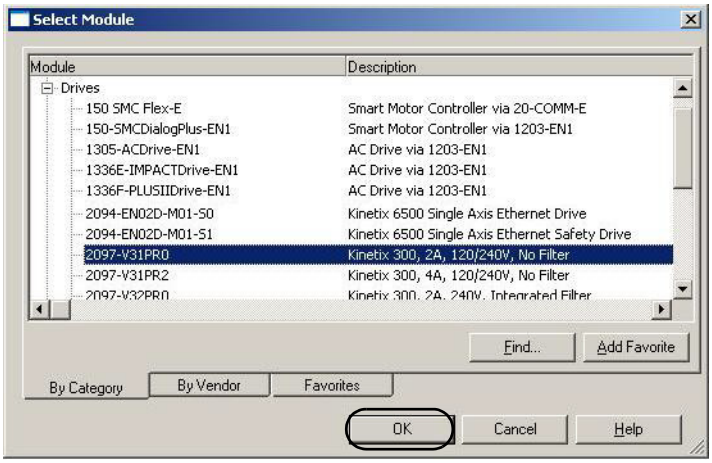
1. Open your Logix Designer project file created in Appendix F.
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.



3. Right-click the network communication module for your Kinetix 300 drive and choose New Module.

   For the Widg-O-matic example, the 1756-EN2TR module is chosen.

   The Select Module dialog box opens.



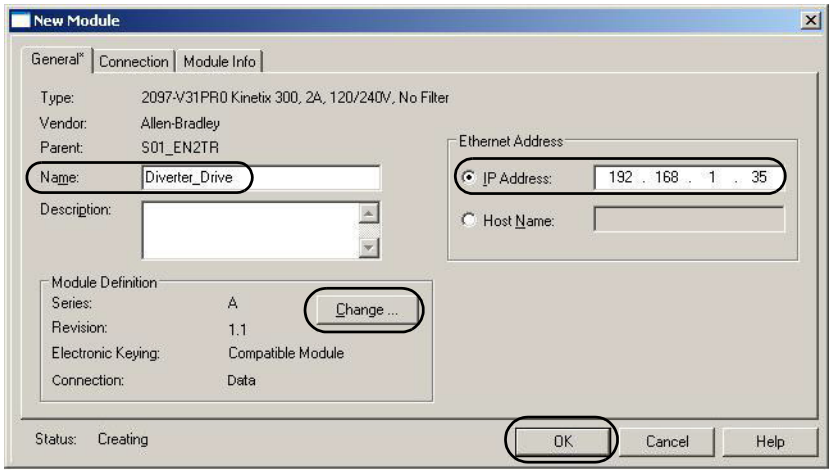
4. Expand the Drives folder and select the appropriate Kinetix 300 drive for your application.

   For the Widg-O-matic example, the 2097-V31PR0 drive is selected as the diverter drive.

5. Click OK.

   The New Module dialog box opens.

6. Name the module.



For the Widg-O-matic application example, the name is Diverter_Drive.

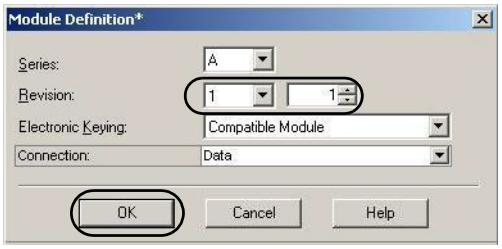
7. Enter the IP Address.

   For the Widg-O-matic application example, the IP address is 192.168.1.35.

8. In the Module Definition field, click Change.

   The Module Definition dialog box opens.

9. Enter major and minor revisions appropriate for your drive hardware.
10. Click OK to save and close the Module Definition dialog box.
11. Click OK to save and close the New Module dialog box.
12. Verify your device configuration and save the file.



Configure Kinetix 300 Drives

In this section you configure each Kinetix 300 drive by using MotionView OnBoard software. Follow these three procedures to configure a single drive.

- Connect to the Kinetix 300 Drive
- Set Kinetix 300 Drive IP Address
- Configure Kinetix 300 Drive Parameters

Connect to the Kinetix 300 Drive

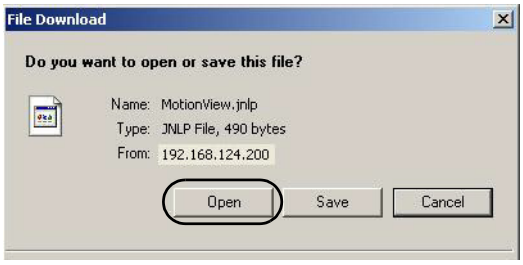
Configuration of the Kinetix 300 drive is performed over the standard 10/100 Mbps Ethernet communication port using MotionView OnBoard software contained within the drive itself. To access the MotionView software, the drive and your personal computer must be configured to operate on the same network.

TIP The Kinetix 300 drive's IP address is scrolling across the keypad display. The default IP address for each Kinetix 300 drive (192.168.124.200) is used in this connection example.

1. Run a Java enabled web browser such as Internet Explorer.
2. Enter the drive's IP address into the browser.

   The File Download dialog box opens.

3. Click Open.

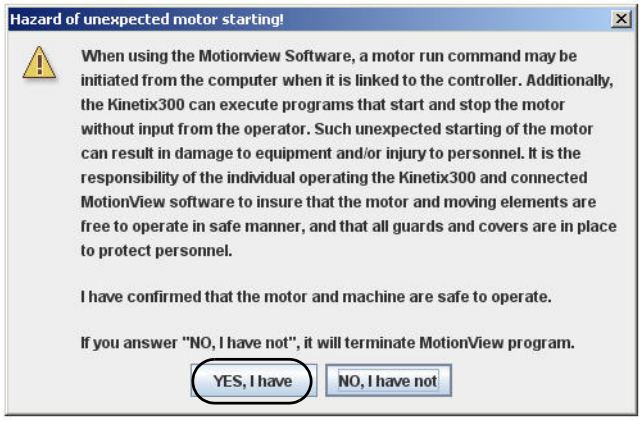


   The Security Warning dialog box may open.

4. If the Security Warning dialog box opens, click Run.

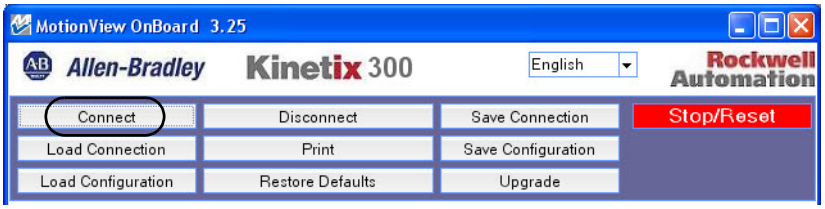
   The Hazard of unexpected motor starting dialog box opens.

5. Read the cautionary text and Click Yes, I have.



   The MotionView software opens.

6. Click Connect.

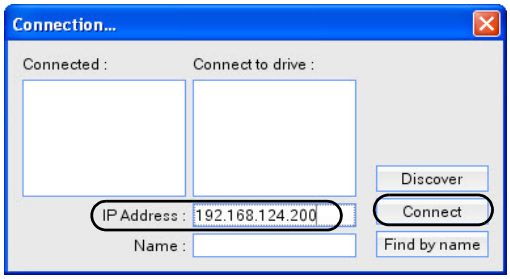


   The Connection dialog box opens.

7. Enter the drive IP Address.

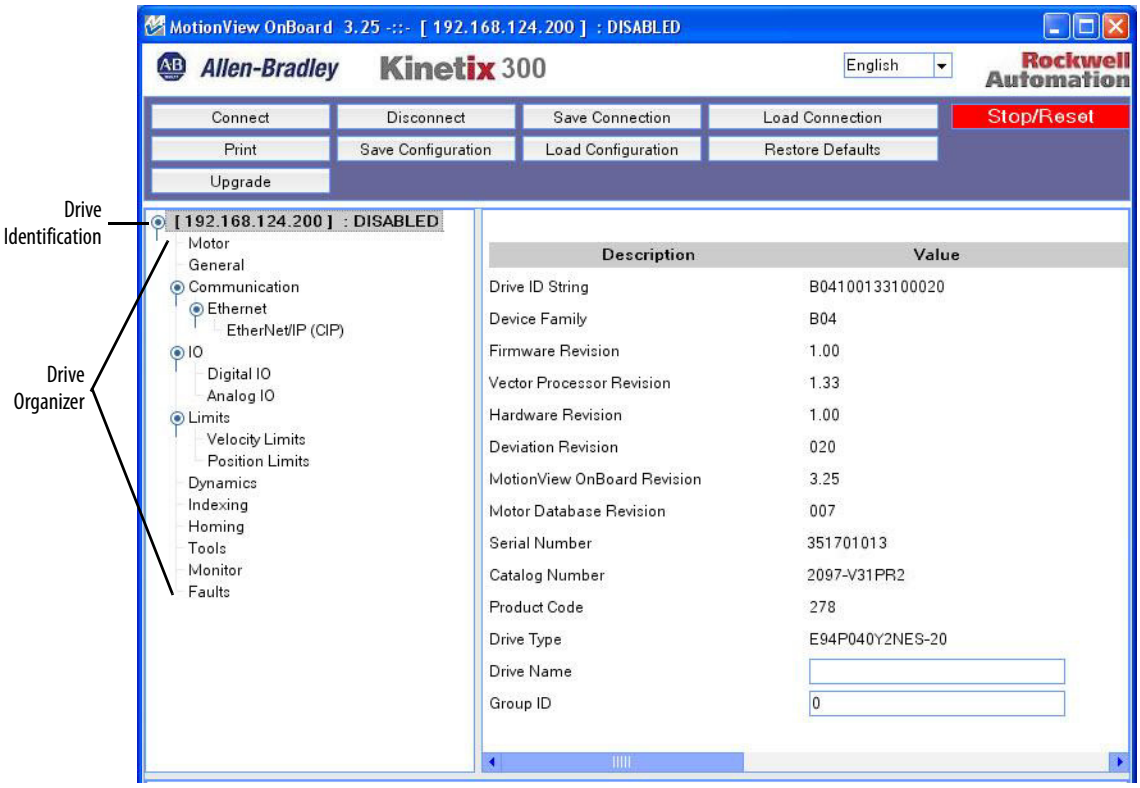
   The drive IP address is scrolling across the keypad display.

8. Click Connect.



   MotionView software connects to the drive. Your drive's IP address and drive organizer appear.

9. Click the drive IP address to display the drive identification data.



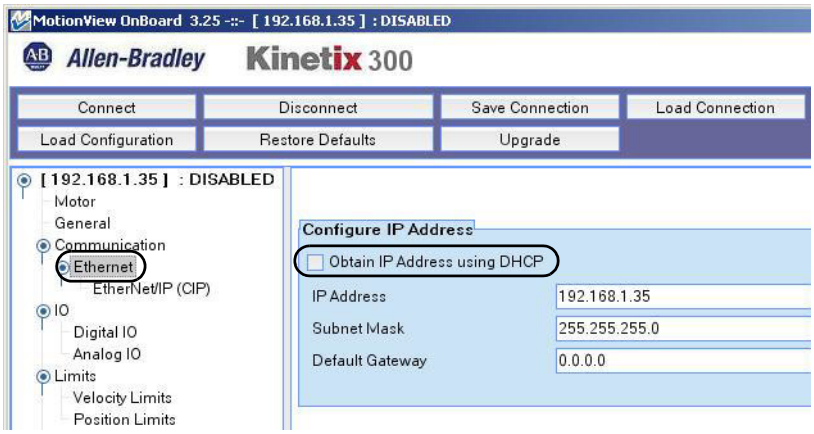
Set Kinetix 300 Drive IP Address

The drive's IP address scrolls across the keypad display. The drive IP address must match the IP address used in your application. Follow this procedure if you need to change the IP address of your Kinetix 300 drive. If the address is correct then skip this section.

1. Open MotionView software and connect to your Kinetix 300 drive.

   Follow the procedure in the previous section or if the MotionView Java application has been downloaded, double-click the MotionView Onboard icon.

2. From the drive organizer, select Communication>Ethernet.

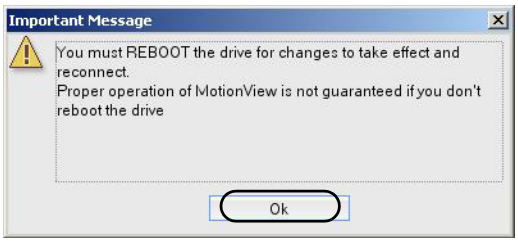


3. Uncheck Obtain IP Address using DHCP.
4. Enter the IP Address.

   For the Widg-O-matic application example, the IP address is 192.168.1.35.

5. Enter Subnet Mask 255.255.255.0

   After changing these parameters a warning message pop-up asks you to cycle power.



6. Click Ok.

Configure Kinetix 300 Drive Parameters

The Kinetix 300 drive parameters are configured using MotionView Onboard software over the EtherNet/IP network. For more information on drive parameters, refer to the Kinetix 300 EtherNet/IP Indexing User Manual, publication 2097-UM001.

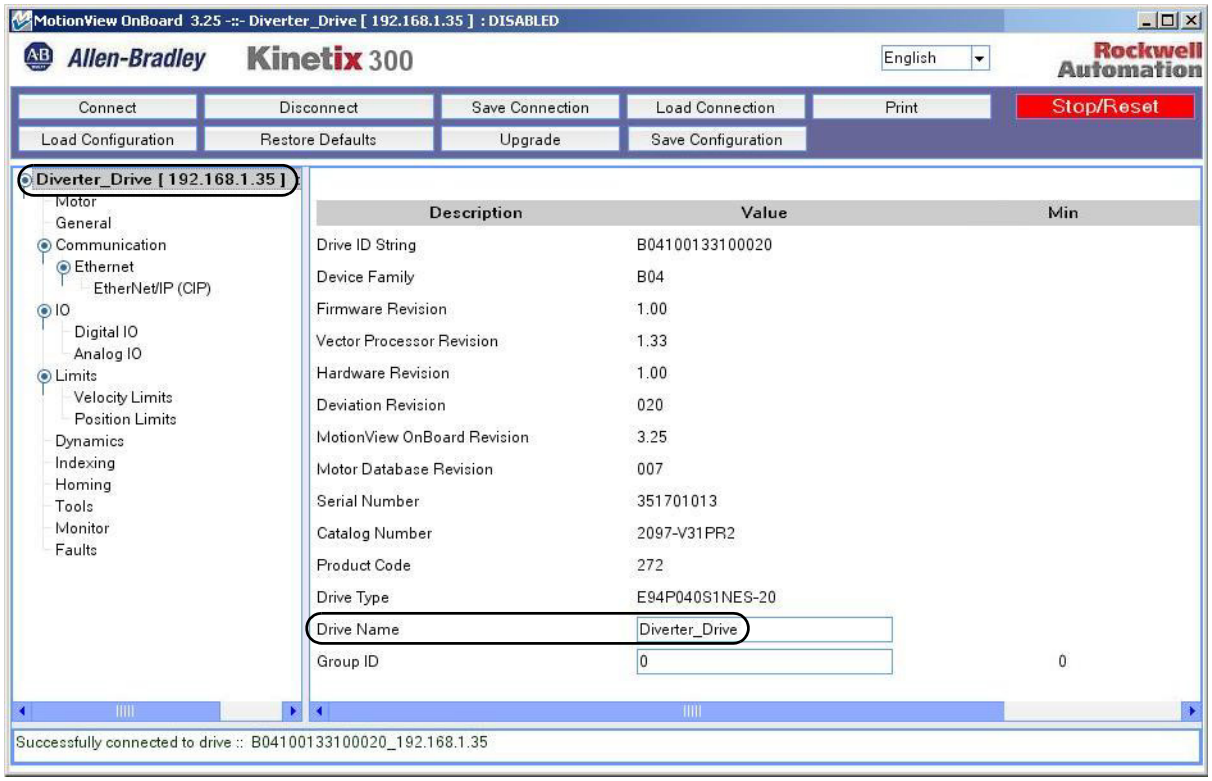
IMPORTANT If your application does not use the Kinetix 300 safety circuit, make sure that the safe torque-off circuit is bypassed. Refer to the Kinetix 300 EtherNet/IP Indexing Servo Drives User Manual, publication 2097-UM001, for more information on wiring the safety circuit.

TIP By default, the Kinetix 300 drive uses a hardware enable signal. Refer to the Kinetix 300 EtherNet/IP Indexing User Manual, publication 2097-UM001, for enable circuit wiring examples.

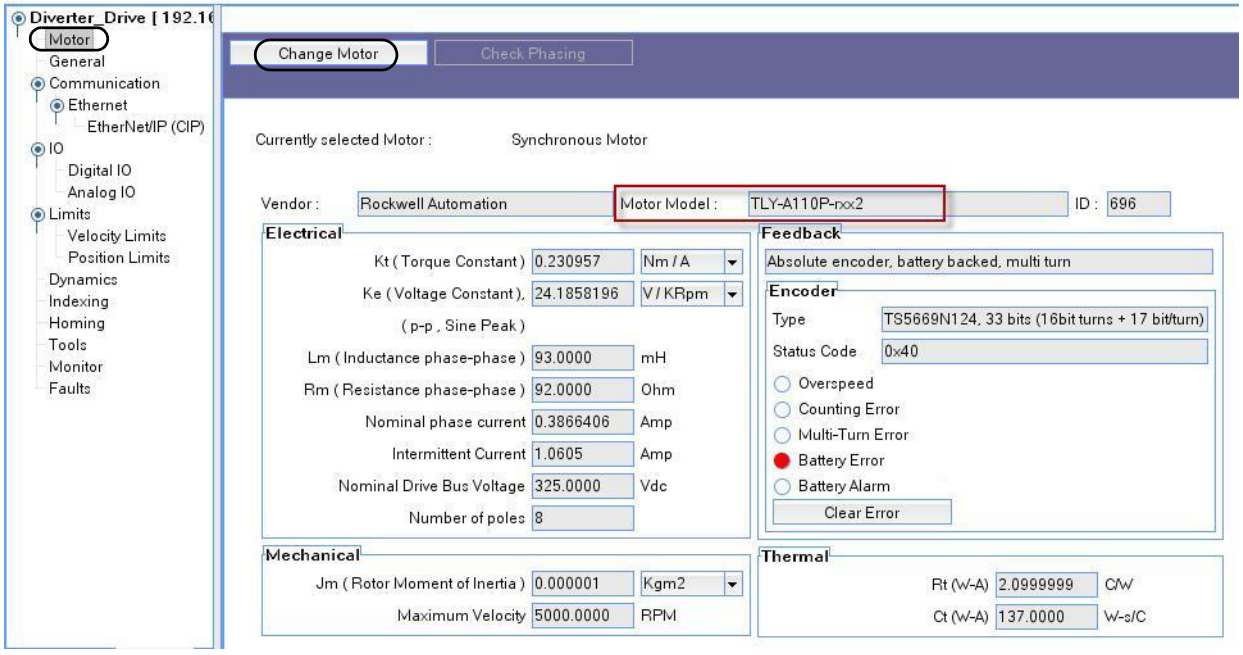
1. Open the MotionView software. If the MotionView Java application has been downloaded, double-click the MotionView Onboard icon.

2. Click the drive identification in the drive organizer and enter your Kinetix 300 drive name in the Drive Name field (optional).

   For the Widg-O-matic application example, Diverter_Drive is the Drive Name.



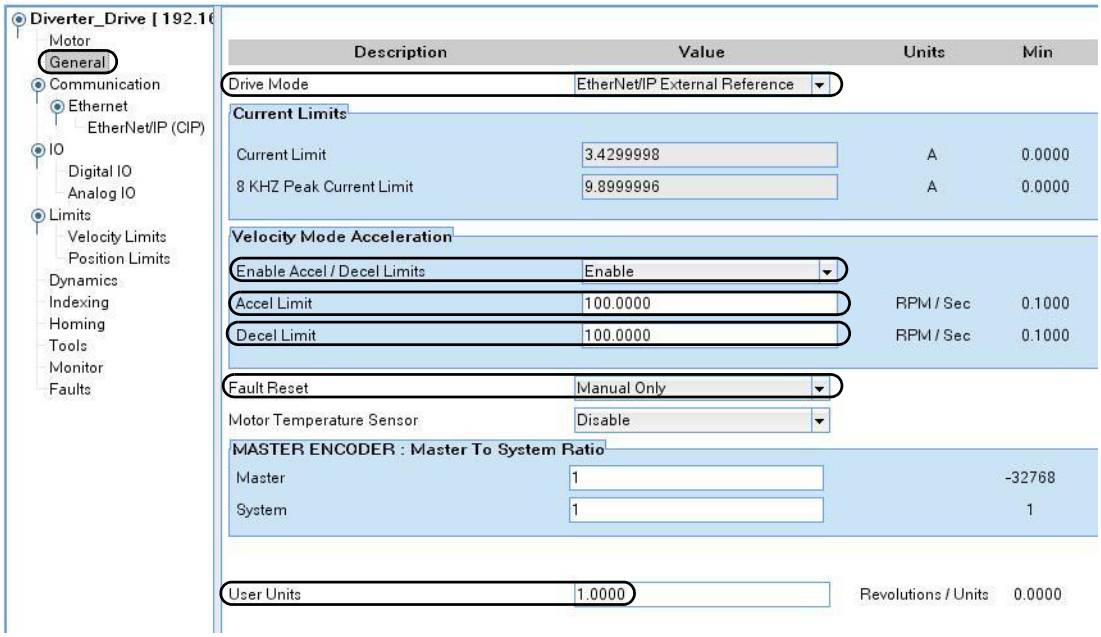
3. Select Motor in the drive organizer.



Allen-Bradley motors and actuators with intelligent feedback devices automatically populate data fields in the motor configuration. For Allen-Bradley motors and actuators with incremental encoders, click Change Motor and choose from the provided list.

For the Widg-O-matic application example, the Kinetix 300 demo box containing a 2097-V31PR0 drive and a TLY-A110P-BJ62AA motor was used.

4. Select General in the drive organizer.



5. From the Drive Mode pull-down menu, choose AutoTune.

   AutoTune is the default setting. Run AutoTune on your motor/drive combination if not already done. For a detailed understanding of the AutoTune parameter, refer to the Kinetix 300 EtherNet/IP Indexing User Manual, publication 2097-UM001.

   If your drive has been tuned with this motor, you can switch the Drive mode to Index or EtherNet/IP External Reference.

   TIP The Kinetix 300 device module includes logic to switch the Drive mode as required by your application.

6. From the Accel/Decel Limits pull-down menu, choose Enable.
7. Type values in the Accel and Decel limit fields appropriate for your application.

   For the Widg-O-matic application example, the Accel and Decel limit values are 200.

   TIP The Kinetix 300 device module includes logic to adjust the Accel/Decel limits as required by the application.

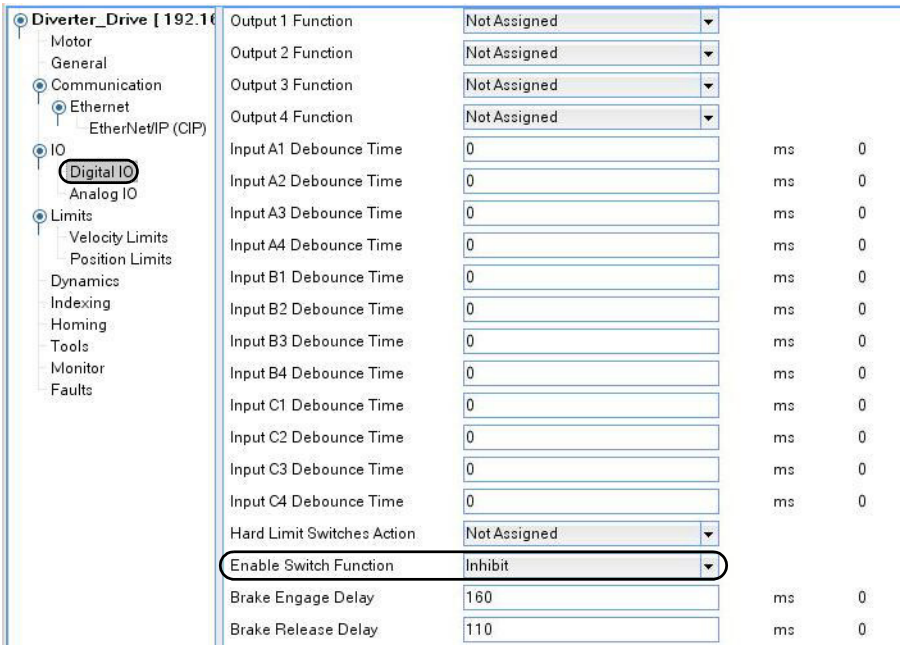
8. From the Fault Reset pull-down menu, choose Manual Only.
9. Type a value in the User Units Value field.

   For the Widg-O-matic application example, the User Units value is 1.0.

10. Select Communication>Ethernet>EtherNet/IP (CIP) in the drive organizer to display the Input and Output Assembly Links (datalinks) to the controller.

    The Widg-O-matic application example and Kinetix 300 drive do not require any additional Assembly Links. Leave the entries at default values.

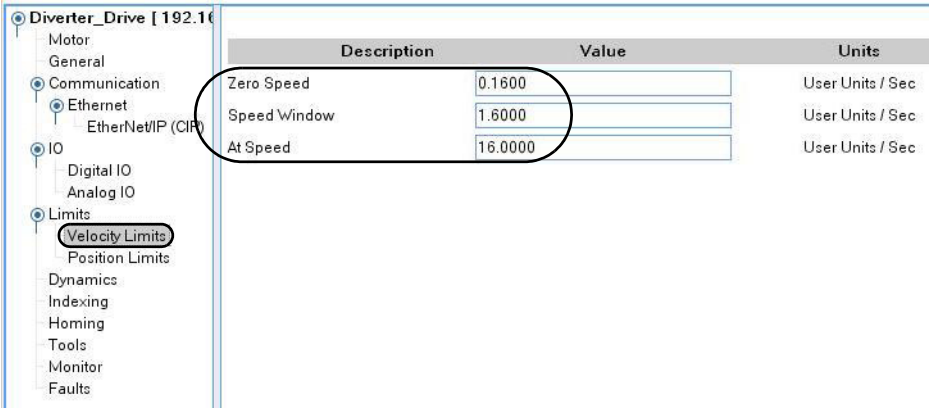
11. Select IO>Digital IO in the drive organizer.



    You can leave the input and output functions at default values.

12. From the Enable Switch Function pull-down menu, choose Inhibit.

13. Select Limits>Velocity Limits in the drive organizer.

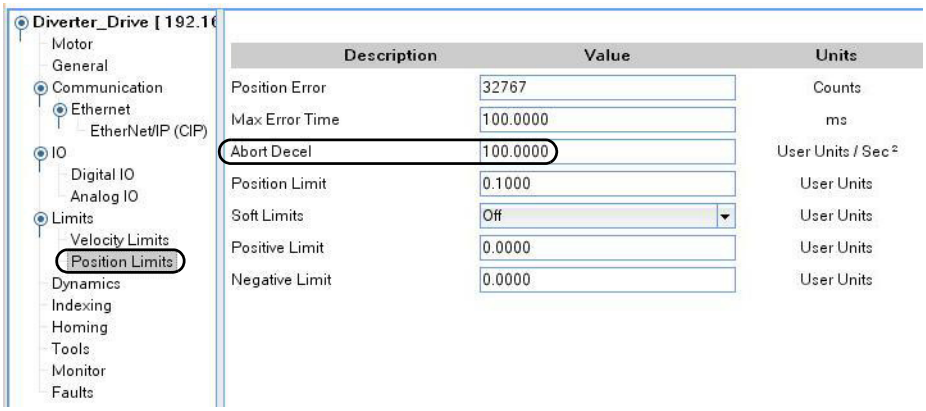


    These values set status bits used in the Kinetix 300 drive.

14. Type values for the Zero Speed, Speed Window, and At Speed parameters.

    The Velocity Limit parameter values are the recommended starting values.

15. Select Position Limits in the drive organizer.



16. Type a value for the Abort Decel field.

The Abort Decel parameter is used when the drive stops for a fault, index abort, or disable function.

For the Widg-O-matic application example, the Abort Decel parameter value is 200. The other values set status bits used in the Kinetix 300 drive.

TIP The Kinetix 300 device module includes logic to adjust the Abort Decel limit required by the application.

17. Type values for the other Position Limit parameters.

The Position Limit parameter values are the recommended starting values.

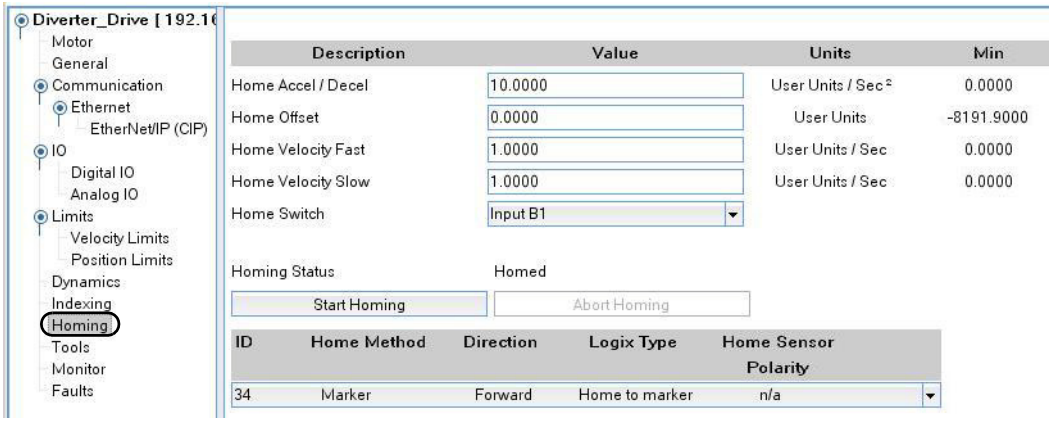
18. Select Indexing in the drive organizer.

19. From the AutoStart Index pull-down menu, choose Disable.

20. Leave all of the other Index configuration values as default.

TIP The Kinetix 300 device module includes logic to configure the Indexing parameters as required by the application.

21. Select Homing in the drive organizer.

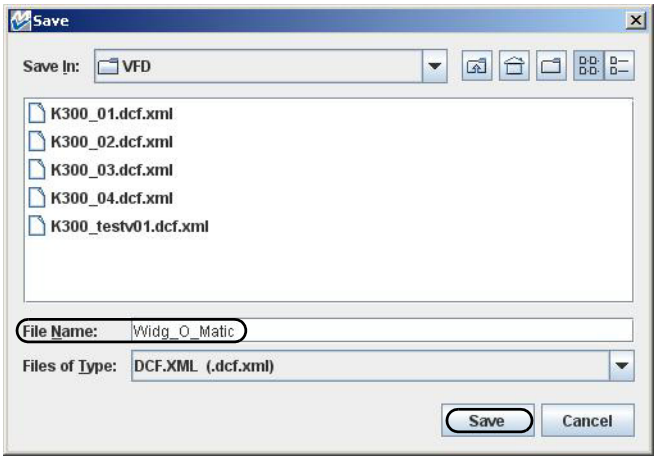


22. Enter values for the Homing parameters according to your application.

The values shown were used to configure the homing parameters for the Kinetix 300 demo box used in the Widg-O-matic application example.

23. From the MotionView menu bar, click Save Configuration.

The Save dialog box opens.



24. Enter a file name.

For the Widg-O-matic application example, the file name is Widg_O_Matic.

25. Click Save.

E3 Plus Overload Relay with Communication Auxiliary Configuration

E3 Plus overload relay configuration applies to E3 Plus overload relays with the 193-DNENCAT communication auxiliary module, and includes these procedures:

- Update E3 Plus Add-On Profiles
- Add E3 Plus Devices to Your Logix Designer Project

Update E3 Plus Add-On Profiles

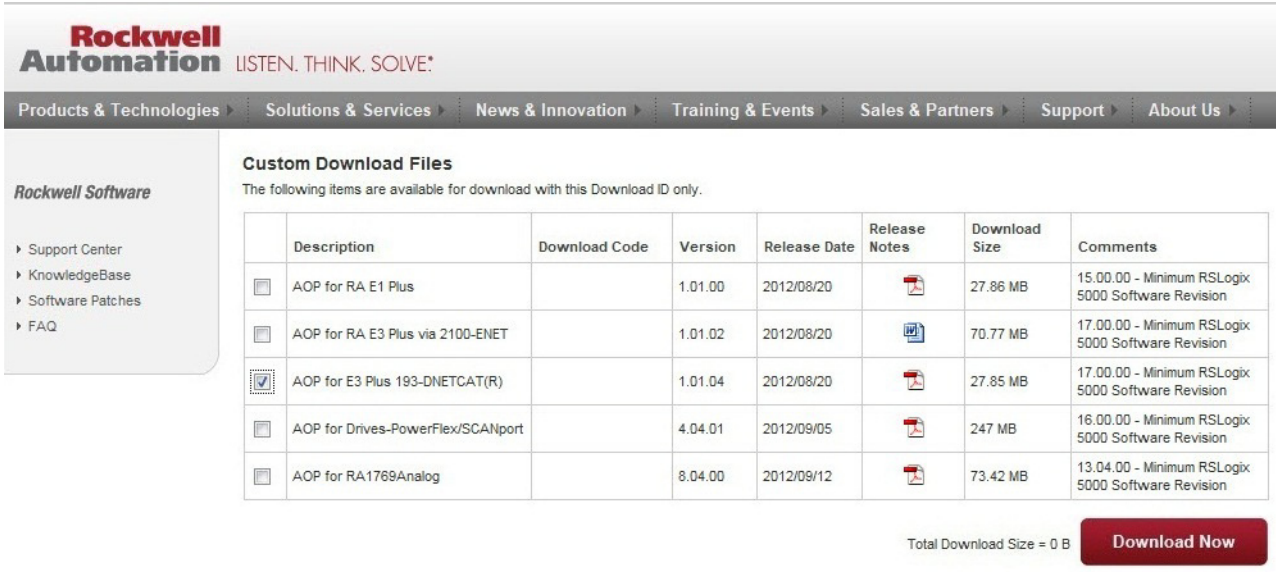
IMPORTANT The E3 Plus Add-On Profiles are independent of RSLogix 5000 software or Logix Designer application releases. Update your E3 Plus Add-On Profiles to make sure your application runs correctly.

Add-On profiles (AOP) are available for download at the Custom Downloads Add-On Profiles website: https://download.rockwellautomation.com/esd/download.aspx?downloadid=addonprofiles

Follow these steps to download E3 Plus Add-On profiles.

1. Login to the Custom Download Add-On Profiles website.

   The Custom Download Files dialog box opens.



2. Check AOP for E3 Plus 193-DNENCAT(R).
3. Click Download Now and accept the user license agreement.

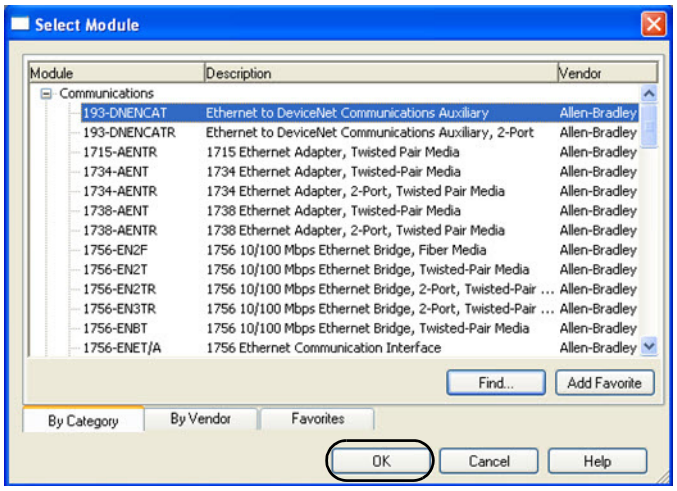
   If prompted to install the Download Manager, allow the installation.
4. Click the Add-On Profile icon and follow the download instructions.
5. Extract the AOP zip file and run MPSetup.

Add E3 Plus Devices to Your Logix Designer Project

Follow these steps to add each 193-DNENCAT device in your system to the Logix Designer project file.

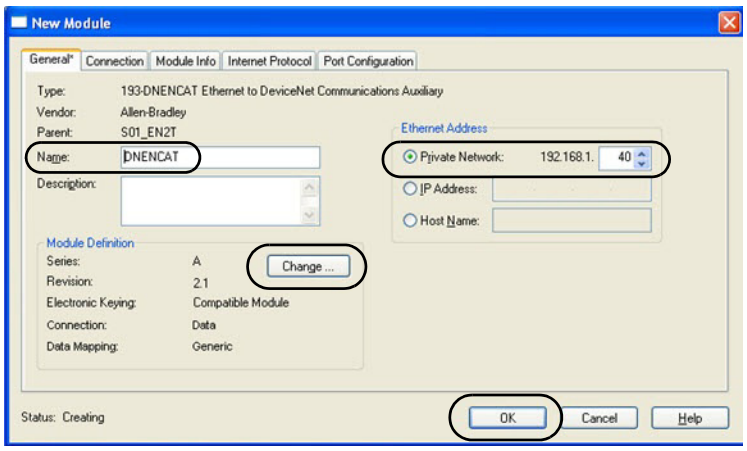
1. Open your Logix Designer project file created in the previous section (for the Widgomatic example the project file was named Widgomatic.acd).
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.
3. Right-click the network communication module for your E3 Plus Device and choose New Module.

   The Select Module dialog box opens.
4. Expand the Communications folder and select the Ethernet to DeviceNet Communications Auxiliary module.

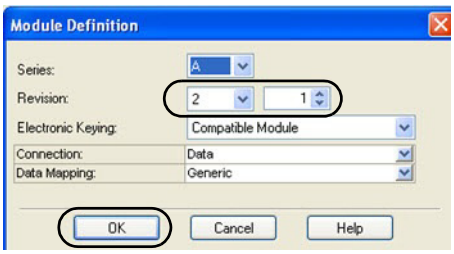


5. Click OK.

   The New Module dialog box opens.
6. Name the module.
7. Enter the IP Address.
8. In the Module Definition field, click Change.



   The Module Definition dialog box opens.
9. Enter the series and revision appropriate for your hardware.
10. Click OK to save and close the Module Definition dialog box.
11. Click OK to save and close the New Module dialog box.



12. Verify your device configuration and save the file.

IMPORTANT You must set the following parameters in the E3 Plus overload relay or the AOI does not function properly in your Logix Designer application:

- Param 59, Output Assembly = 105
- Param 60, Input Assembly = 100
- Param 61, Assy Word 0 Param = 21 (supplies status of Inputs and Outputs)
- Param 62, Assy Word 1 Param = 4 (supplies Avg current)
- Param 63, Assy Word 2 Param = 14 (supplies Trip Status)
- Param 64, Assy Word 3 Param = 15 (supplies Warning Status)

Refer to the Bulletin 193 EtherNet/IP Communications Auxiliary User Manual, 193-UM014, for details on how to configure parameters.

E300 Overload Relay Configuration

E300 overload relay configuration includes these procedures:

- Update E300 Add-On Profiles
- Add E300 devices to your Logix Designer Project

Update E300 Add-On Profiles

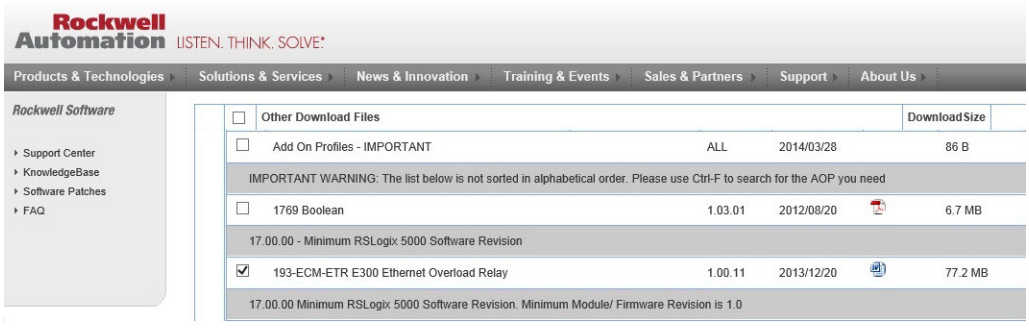
IMPORTANT The E300 Add-On Profiles are independent of RSLogix 5000 software or Logix Designer application releases. Update your E300 Add-On Profiles to make sure your application runs correctly.

Add-On profiles (AOP) are available for download at the Custom Downloads Add-On Profiles website: https://download.rockwellautomation.com/esd/download.aspx?downloadid=addonprofiles

Follow these steps to download E300 Add-On profiles.

1. Login to the Custom Download Add-On Profiles website.

   The Custom Download Files dialog box opens.



2. Check the AOP for 193-ECM-ETR E300 Ethernet Overload Relay.
3. Click Download Now and accept the user license agreement.

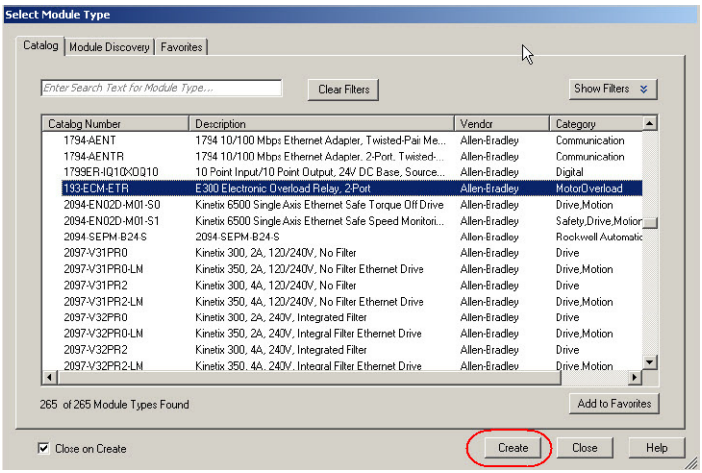
   If prompted to install the Download Manager, allow the installation.
4. Click the Add-On Profile icon and follow the download instructions.
5. Extract the AOP zip file and run MPSetup.

Add E300 Devices to Your Logix Designer Project

Follow these steps to add each E300 device in your system to the Logix Designer project file.

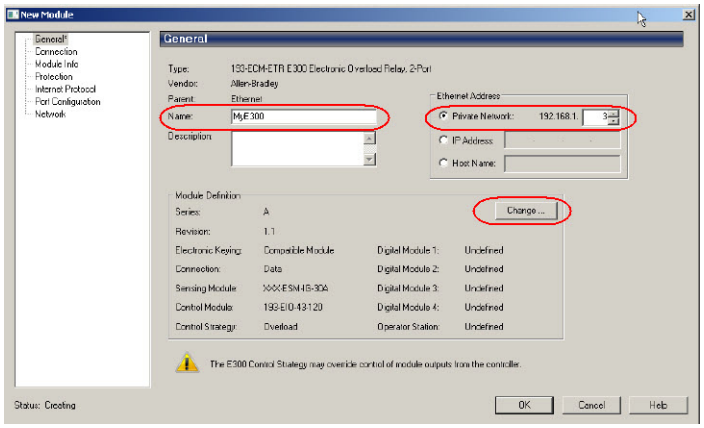
1. Open your Logix Designer project file created in the previous section (for the Widgomatic example the project file was named Widgomatic.acd).
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.
3. Right-click the network communication module for your E300 device and choose New Module.

   The Select Module dialog box opens.
4. Expand the Communications folder and select the E300 relay.



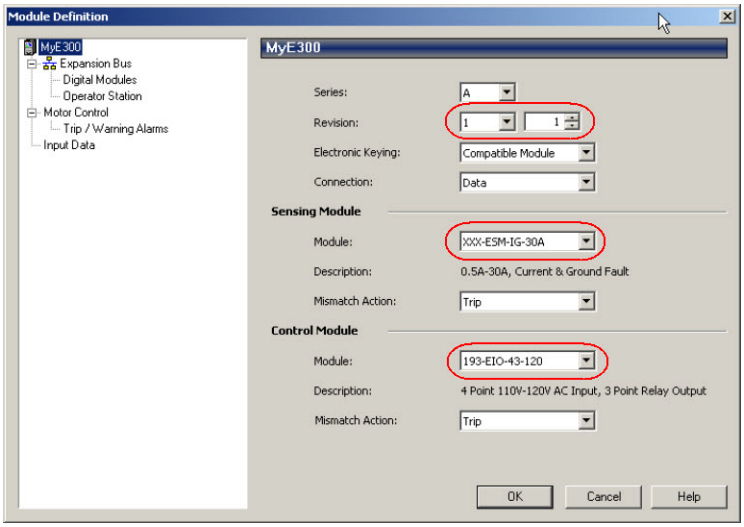
5. Click OK.

   The New Module dialog box opens.
6. Name the module.
7. Enter the IP Address.
8. In the Module Definition field, click Change.



   The Module Definition dialog box opens.

9. Enter the series and revision appropriate for your hardware.
10. Select the appropriate sensing and control modules.
11. Click OK to save and close the Module Definition dialog box.
12. Click OK to save and close the New Module dialog box.
13. Verify your device configuration and save the file.



SMC-50 Soft Starter Configuration

SMC-50 soft starter configuration includes these procedures:

- Update SMC-50 Add-On Profiles
- Add SMC-50 Devices to your Logix Designer Project
- Download Soft Starter Parameters

Update SMC-50 Add-On Profiles

IMPORTANT The SMC-50 Add-On Profiles are independent of RSLogix 5000 software or Logix Designer application releases. Update your SMC-50 Add-On Profiles to make sure your application runs correctly.

Add-On profiles (AOP) are available for download at the Custom Downloads Add-On Profiles website: https://download.rockwellautomation.com/esd/download.aspx?downloadid=addonprofiles

Follow these steps to download SMC-50 Add-On profiles.

1. Login to the Custom Download Add-On Profiles website.

   The Custom Download Files dialog box opens.

☐	AOP for RA E1 Plus		1.01.00	2012/08/20		27.86 MB	15.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for RA E3 Plus via 2100-ENET		1.01.02	2012/08/20		70.77 MB	17.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for E3 Plus 193-DNETCAT(R)		1.01.04	2012/08/20		27.85 MB	17.00.00 - Minimum RSLogix 5000 Software Revision
☑	AOP for Drives-PowerFlex/SCANport		4.04.01	2012/09/05		247 MB	16.00.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for RA1769Analog		8.04.00	2012/09/12		73.42 MB	13.04.00 - Minimum RSLogix 5000 Software Revision
☐	AOP for 1788-CN2FFR		1.01.16	2012/10/25		78.86 MB	15.00.00 - Minimum RSLogix 5000 Software Revision

2. Check the AOP for Drives-PowerFlex/SCANport profile.
3. Click Download Now and accept the user license agreement.

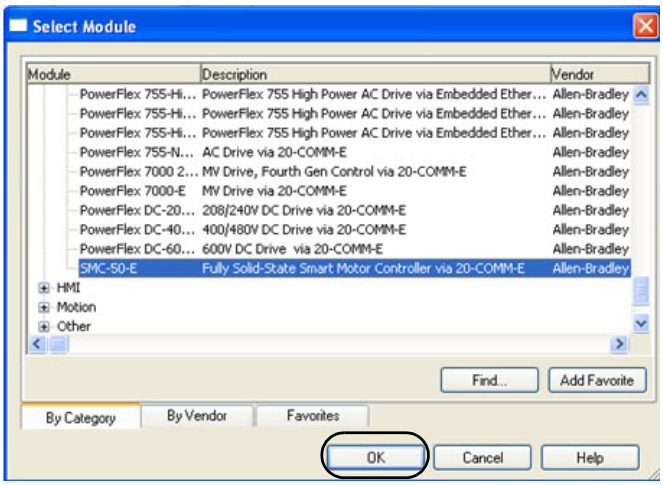
   If prompted to install the Download Manager, allow the installation.
4. Click the Add-On Profile icon and follow the download instructions.
5. Extract the AOP zip file and run MPSetup.

Add SMC-50 Devices to Your Logix Designer Project

Follow these steps to add each SMC-50 device in your system to the Logix Designer project file.

1. Open your Logix Designer project file created in the previous section (for the Widgomatic example the project file was named Widgomatic.acd).
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.
3. Right-click the network communication module for your SMC-50 device and choose New Module.

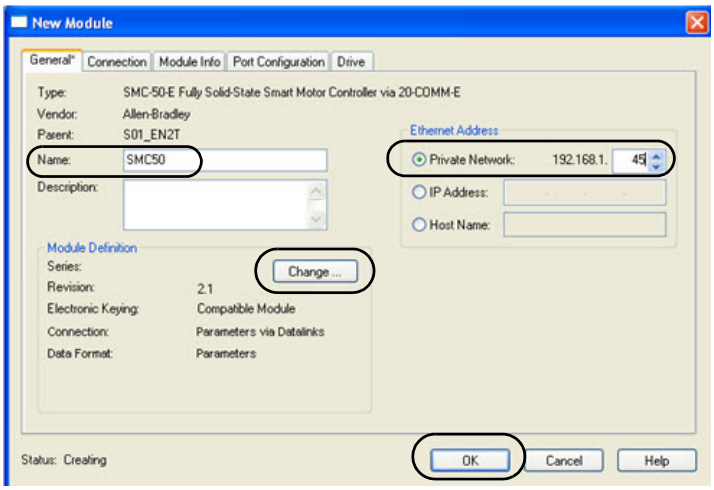
   The Select Module dialog box opens.
4. Expand the Drives folder and select the SMC-50 module.



5. Click OK.

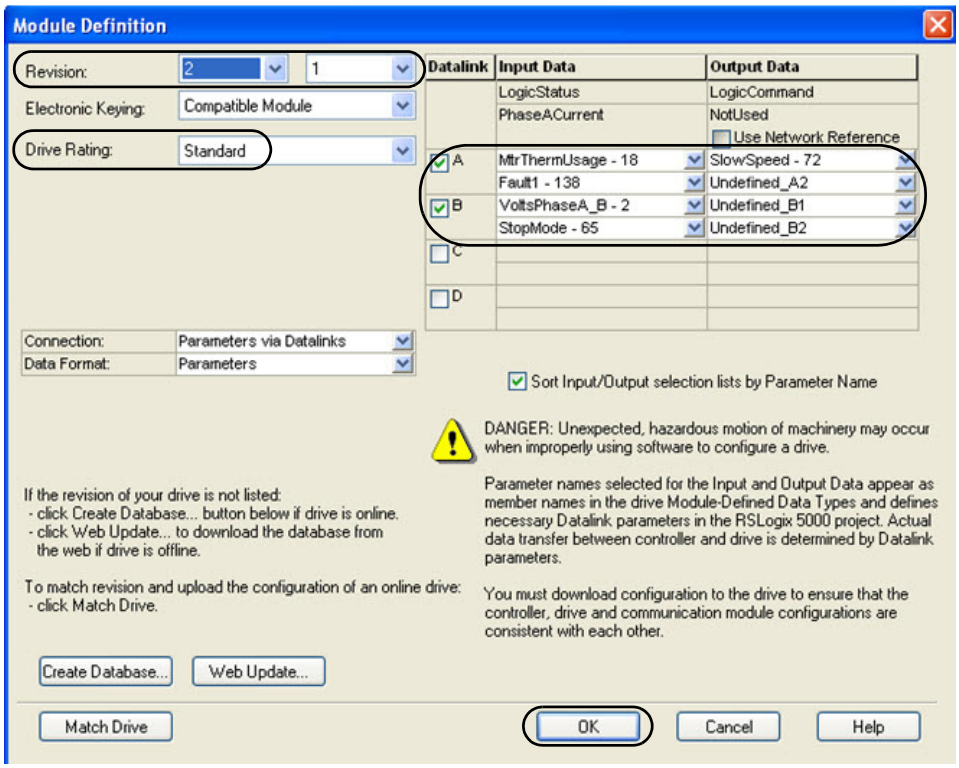
   The New Module dialog box opens.

6. Name the module.
7. Enter the IP Address.
8. In the Module Definition field, click Change.



   The Module Definition dialog box opens.

The Module Definition dialog box lets you configure and access drive data beyond standard I/O.



9. Configure module definitions.

IMPORTANT	The datalinks listed for the SMC-50 soft starter must be configured exactly as shown for successful faceplate AOI import and operation. If additional datalinks are required for your application, modifications to the corresponding AOI can be required.

   a. Enter major and minor revisions appropriate for your drive hardware.

   b. Enter drive rating appropriate for your drive hardware.

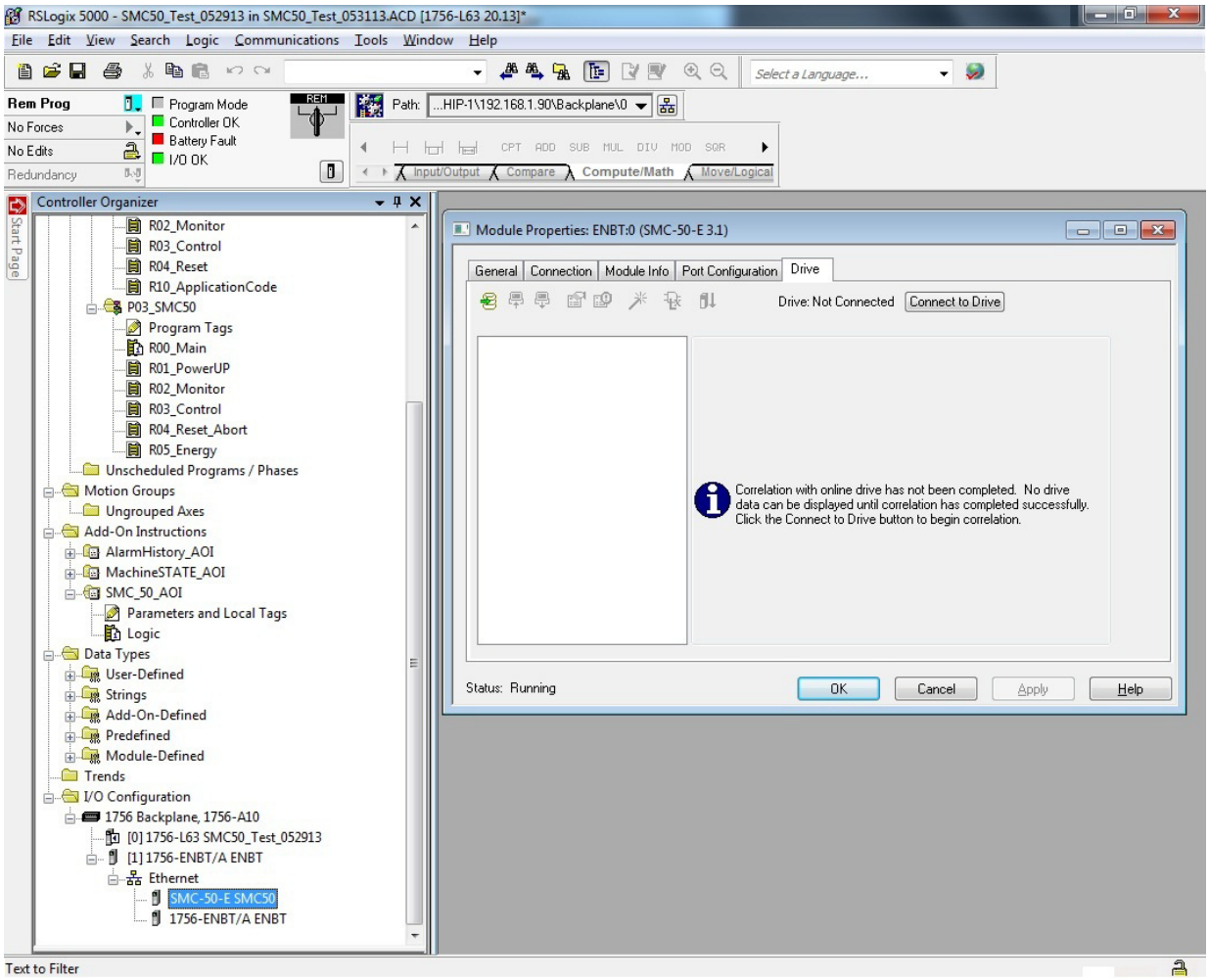
   c. Set datalink definitions.

10. Click OK to save and close the Module Definition dialog box.
11. Click OK to save and close the New Module dialog box.
12. Verify your device configuration and save the file.

Download Soft Starter Parameters

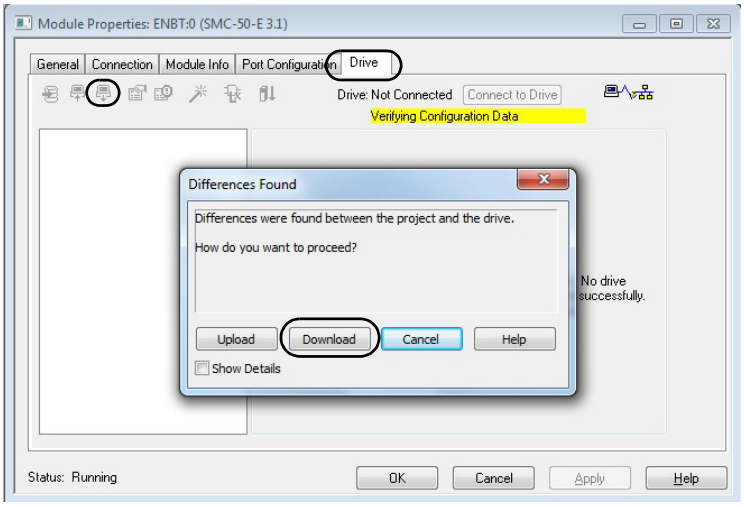
IMPORTANT Before downloading drive parameters, you must configure personal computer communication properties and EtherNet/IP driver. Refer to Appendix D on page 257 for more information.

1. Download application to the Logix5000 controller and go online.
2. Expand the I/O Configuration folder in the Controller Organizer.



3. Double-click your SMC-50 soft starter module.

The Module Properties dialog box opens.



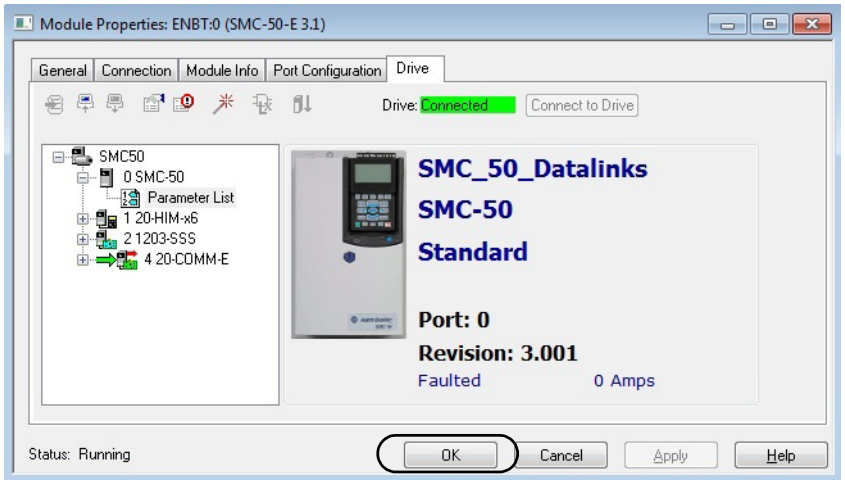
4. On the Drive tab, click the Connect to Drive icon.

   The Differences Found dialog box opens.

5. Click Download.

   Project parameters transfer to the drive.

   Following download, the Module Properties dialog box displays green Drive Connected status indicator and soft starter information is displayed. If not, follow other version compatibility update dialog boxes to connect to soft starter.



6. Click OK.

7. Click  to save your Logix Designer application file.

ArmorStart Distributed Motor Controller Configuration

ArmorStart distributed motor controller configuration includes these procedures:

- Update ArmorStart Add-On Profiles
- Add ArmorStart Devices to Your Logix Designer Project

Update ArmorStart Add-On Profiles

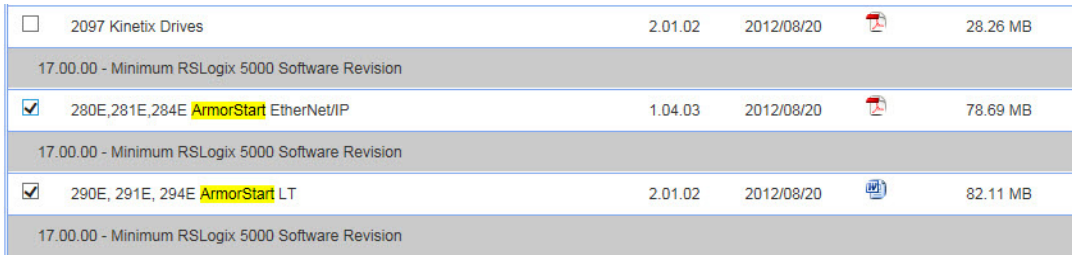
IMPORTANT The ArmorStart Add-On Profiles are independent of RSLogix 5000 software or Logix Designer application releases. Update your ArmorStart Add-On Profiles to make sure your application runs correctly.

Add-On profiles (AOP) are available for download at the Custom Downloads Add-On Profiles website: https://download.rockwellautomation.com/esd/download.aspx?downloadid=addonprofiles

Follow these steps to download ArmorStart Add-On profiles.

1. Login to the Custom Download Add-On Profiles website.

   The Custom Download Files dialog box opens.



2. Check the AOP for ArmorStart Bulletin 280E or 290E profile.
3. Click Download Now and accept the user license agreement.

   If prompted to install the Download Manager, allow the installation.
4. Click the Add-On Profile icon and follow the download instructions.
5. Extract the AOP zip file and run MPSetup.

Add ArmorStart Devices to Your Logix Designer Project

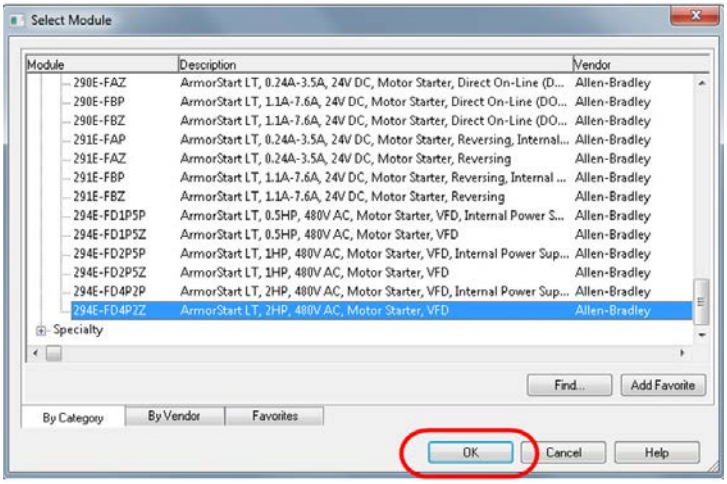
Follow these steps to add each ArmorStart device in your system to the Logix Designer project file.

1. Open your Logix Designer project file created in the previous section (for the Widgomatic example the project file was named Widgomatic.acd).
2. Expand the I/O Configuration folder in the Controller Organizer and browse to the controller backplane.

3. Right-click the network communication module for your ArmorStart device under other and click OK.

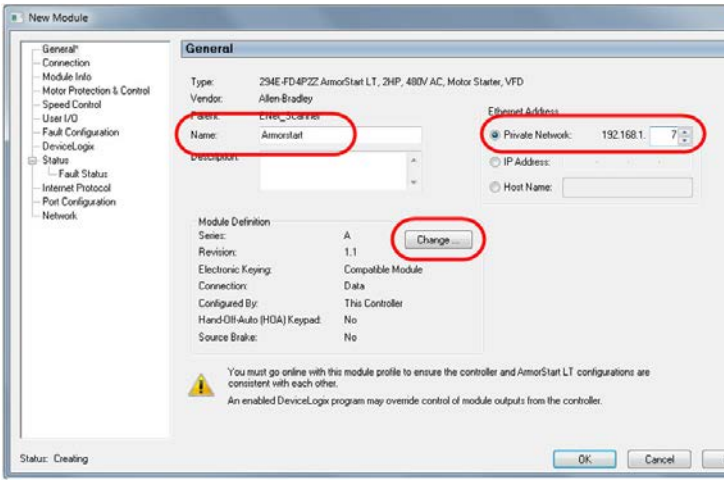
   The Select Module dialog box opens.

4. Expand the Drives folder and select the ArmorStart module.



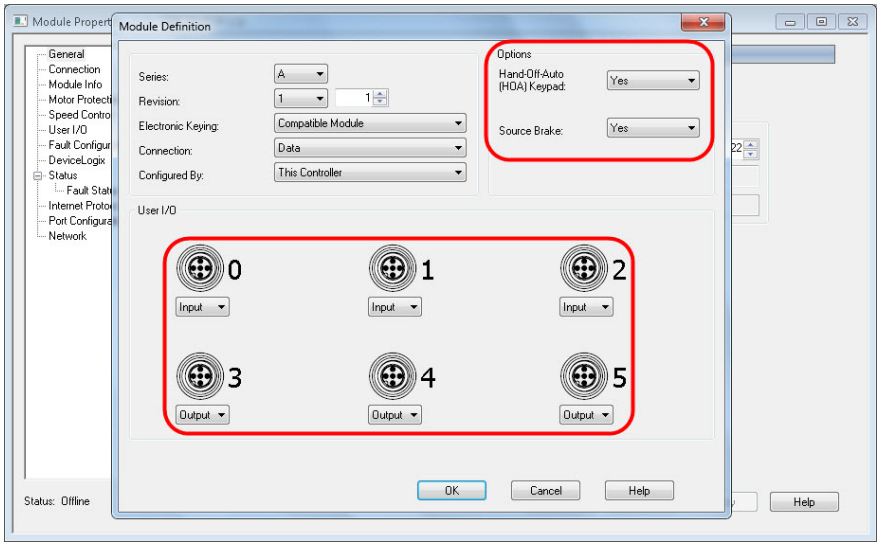
5. Click OK.

   The New Module dialog box opens.



6. Name the module.
7. Enter the IP Address.
8. In the Module Definition field, click Change.

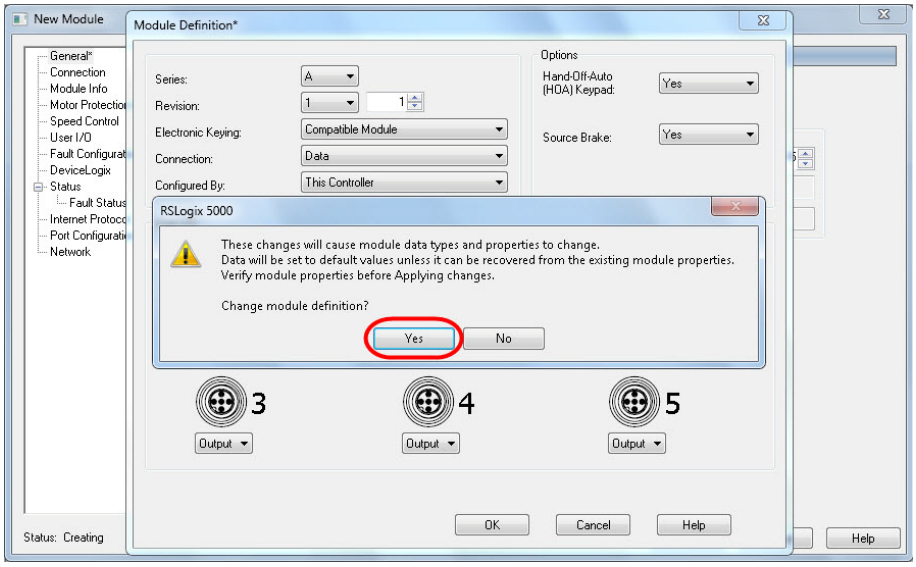
   The Module Definition dialog box opens.



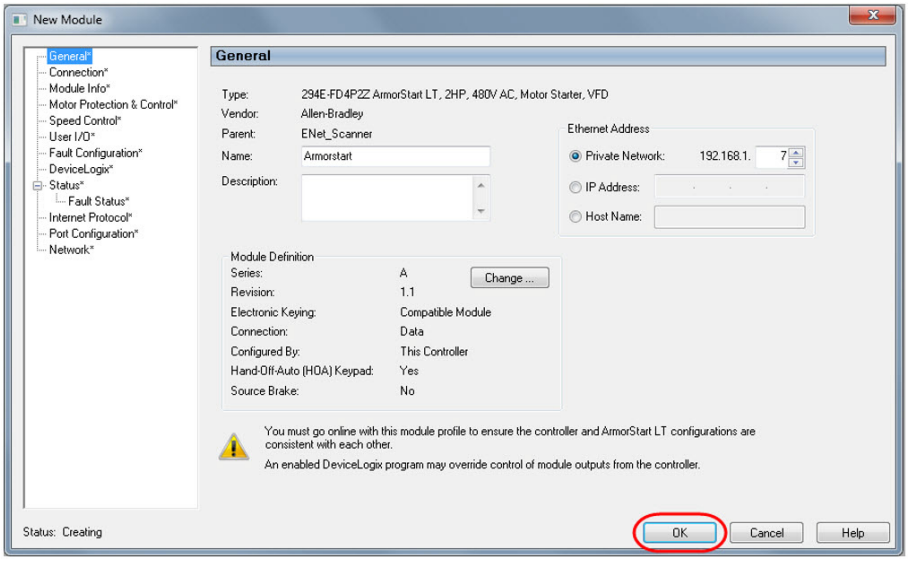
9. Enter the appropriate information for your hardware.
   a. From the Hand-Off-Auto (HOA) Keypad and Source Brake pull-down menus, choose Yes.
      These options are required to be enabled.
   b. From the User I/O pull-down menus, choose Output for I/O 3, 4, 5 and choose Input for I/O 1, 2, 3.
      You can change the User I/O settings based on application requirements. If modified, the module definition changes affecting the AOI input and output data type. Refer to How to Change the AOI Input and Output Data Type on page 390.

IMPORTANT	The User I/O configuration must be defined in the HMI 29xE faceplate parameter file for parameters #10, #11, #12, #13, #14 and #15. HOA Keypad and Source Brake options must be enabled to work with the Logix AOI and HMI faceplate. These settings won't affect hardware performance, even if the hardware doesn't have the options.

10. Click OK to save and close the Module Definition dialog box.
11. Click Yes to acknowledge the Change module definition warning.



12. Click OK to save and close the New Module dialog box.



13. Verify your device configuration and save the file.
14. Refer to the ArmorStart Distributed Motor Controller user manuals, publications 290E-UM001 and 280E-UM001, for more information on how to configure the device.

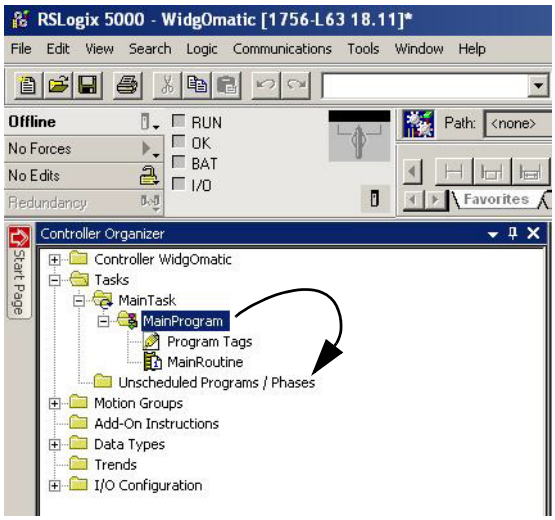
Import and Configure Logic Modules

In this section you import the machine, application, and device modules into your Logix5000 application without using the DMAT Wizard or making edits after initial file is created.

Import and Configure the Machine Logic Module

Follow these steps to add the preconfigured machine logic program file to your Logix Designer project and configure it to your specific application.

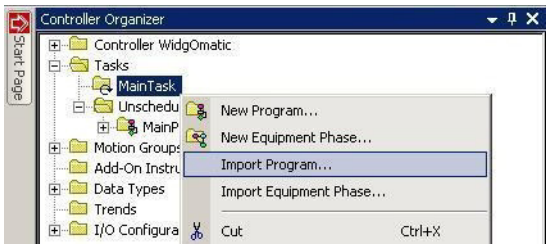
1. Open your Logix Designer project that you added to the Device Configurations in Appendix G.



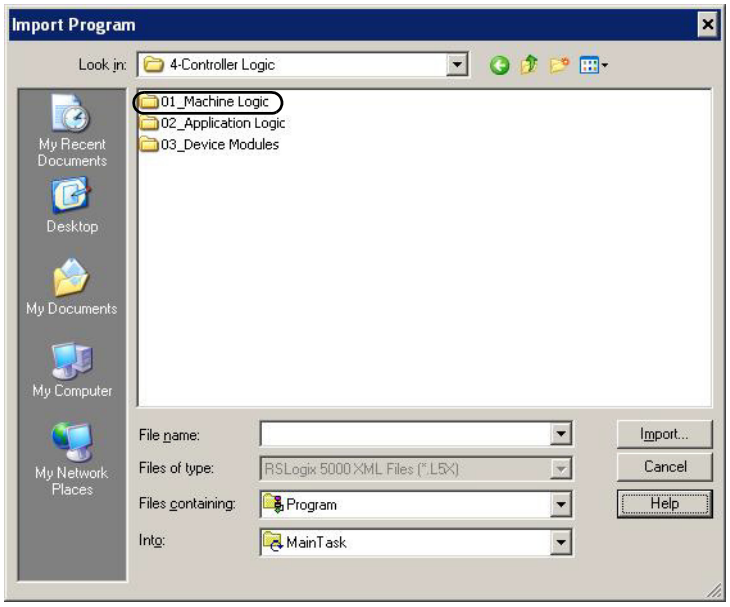
   For the Widg-O-matic machine application example, the WidgOmatic project was opened.

2. Expand the Tasks folder in your Controller Organizer and drag-and-drop the MainProgram folder to the Unscheduled Programs / Phases folder.

3. Right-click the Main Task folder, and choose Import Program.

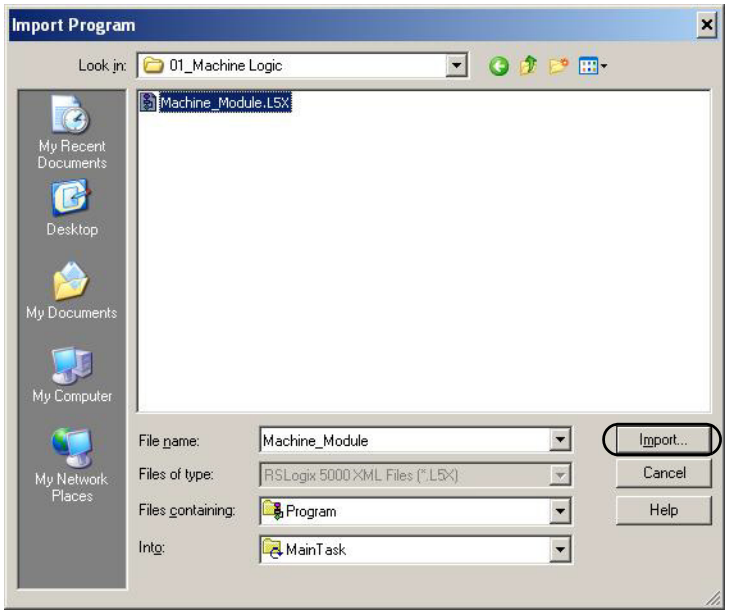


4. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 01_Machine Logic folder.

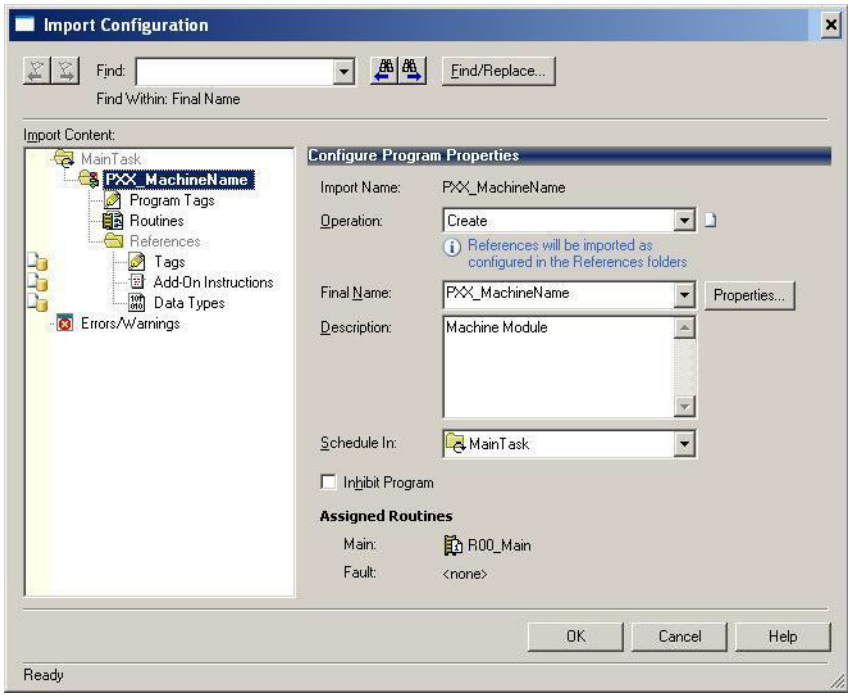


Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

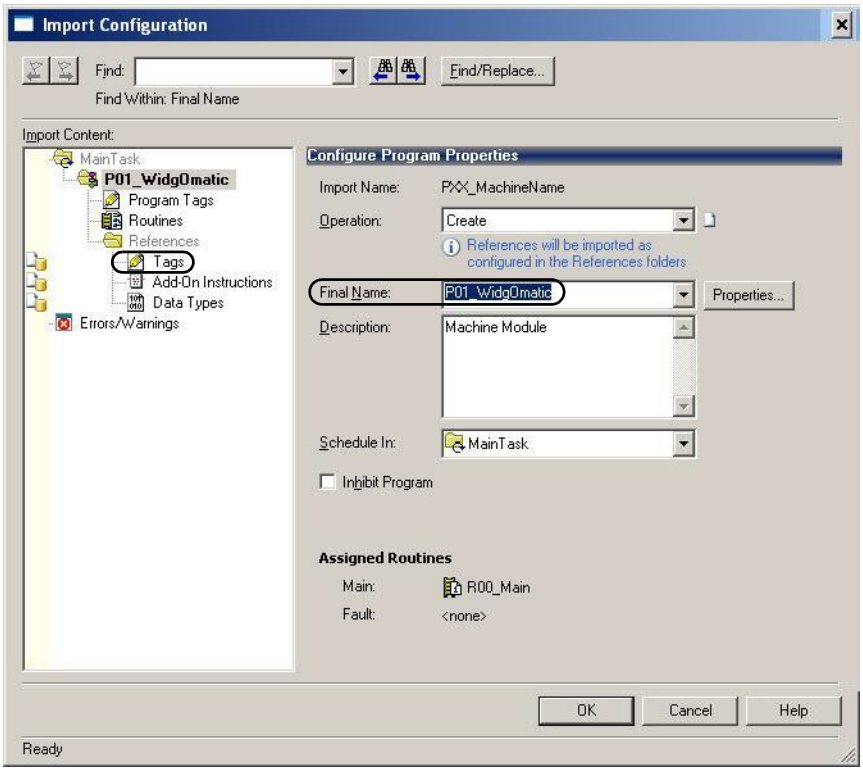
5. Select the Machine_Module.L5*x* file and click Import.



The Import Configuration dialog box opens.



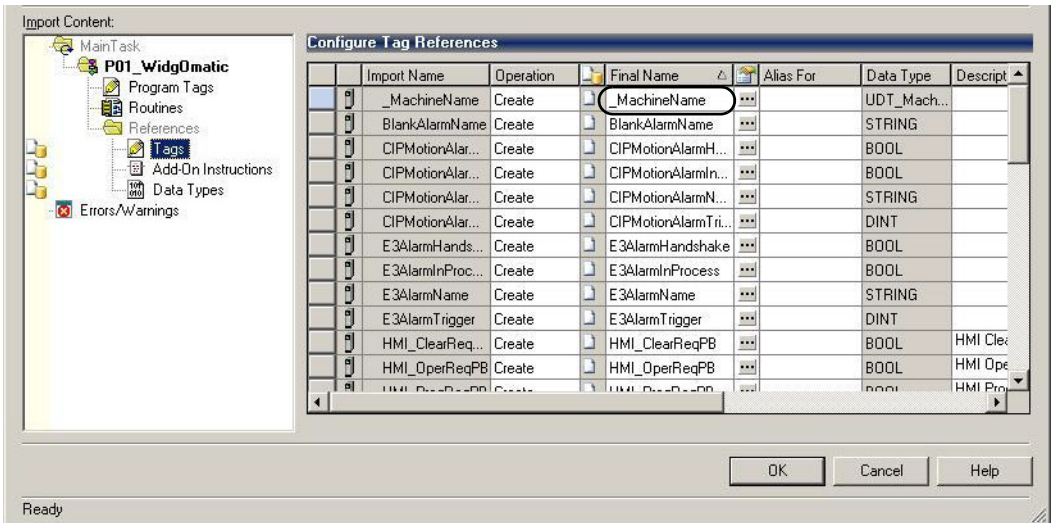
6. Type the desired name for your machine in the Final Name field.



For the Widg-O-matic application example, P01_WidgOmatic is the Final Name.

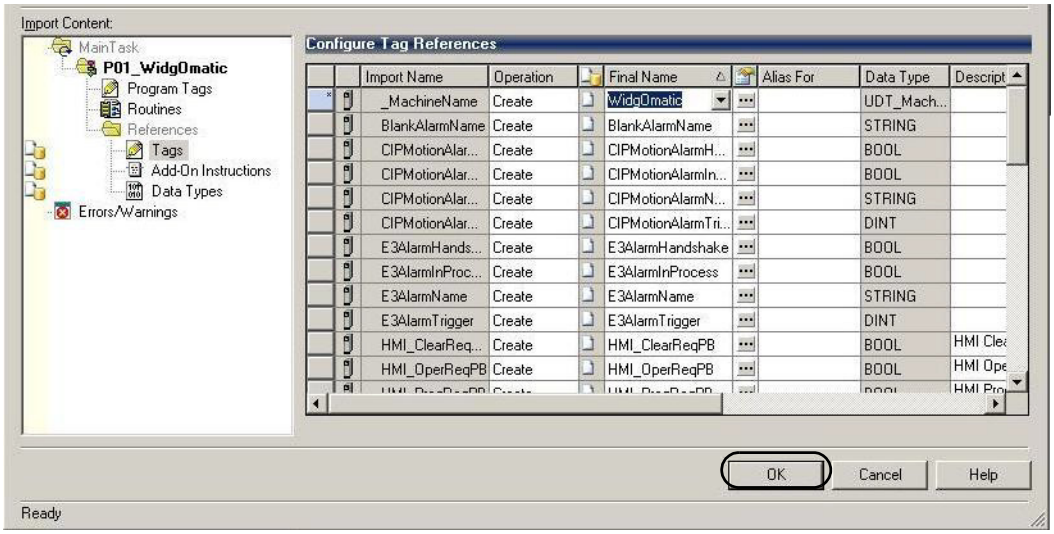
7. Click Tags in the Import Content organizer.

The Configure Tag References dialog box opens.



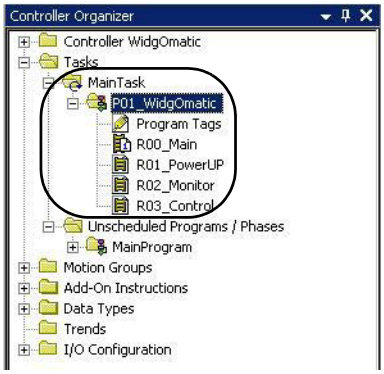
8. Replace _MachineName with the desired tag name of your machine.

   For the Widg-O-matic application example, WidgOmatic is the tag name.



9. Click OK.

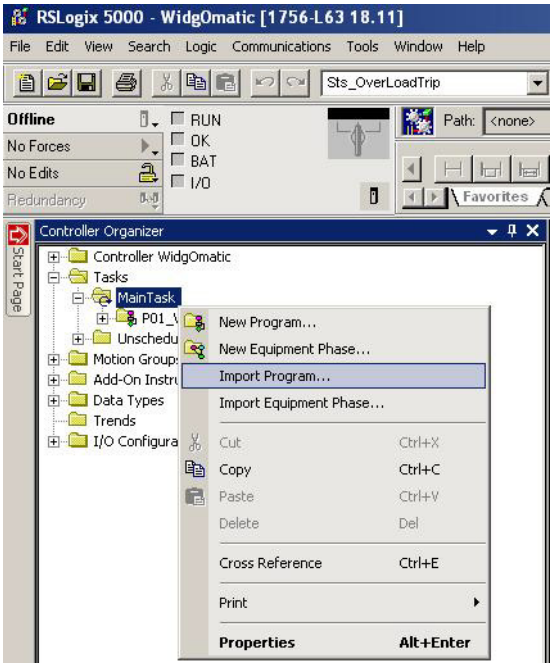
   The new Machine Program appears in the Controller Organizer within the Main Task folder.



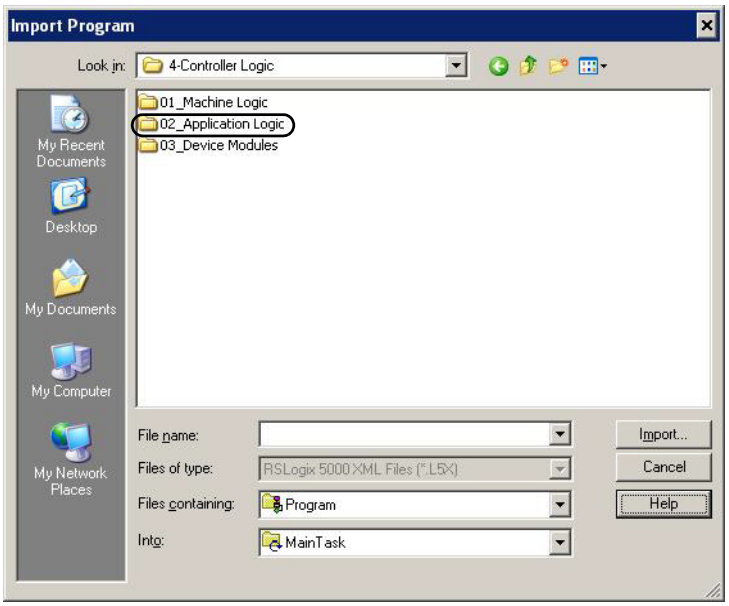
Import and Configure Application Logic Modules

Follow these steps to add preconfigured application logic to your Logix Designer project and configure it for each of your specific applications within your machine.

1. Expand the Tasks folder in your Controller Organizer, and right-click the Main Task folder.

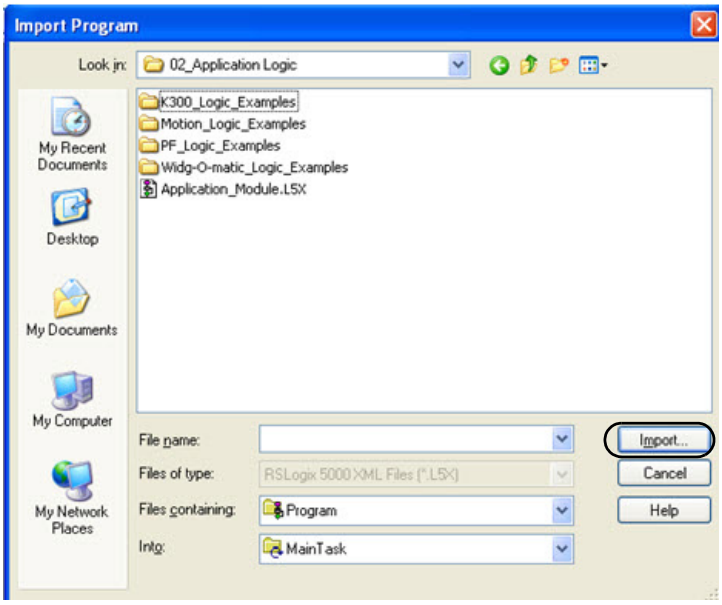


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 02_Application Logic folder.

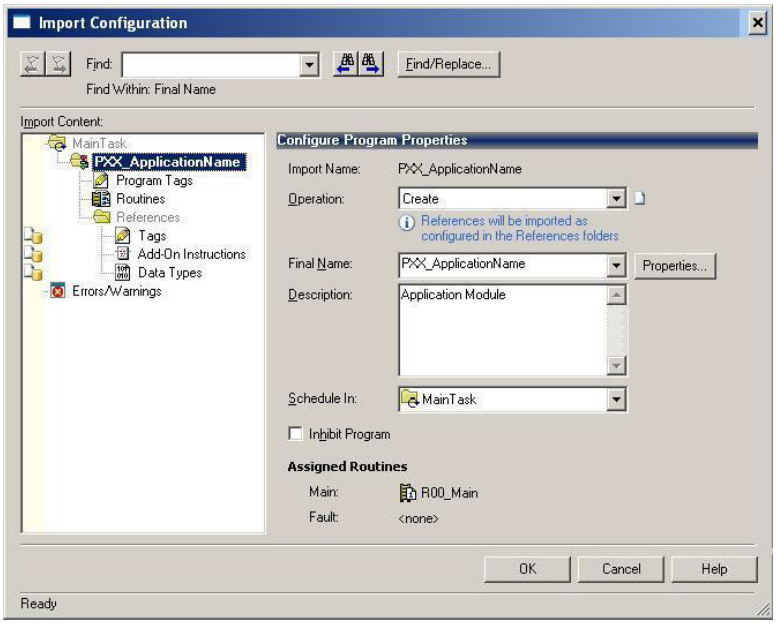


Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

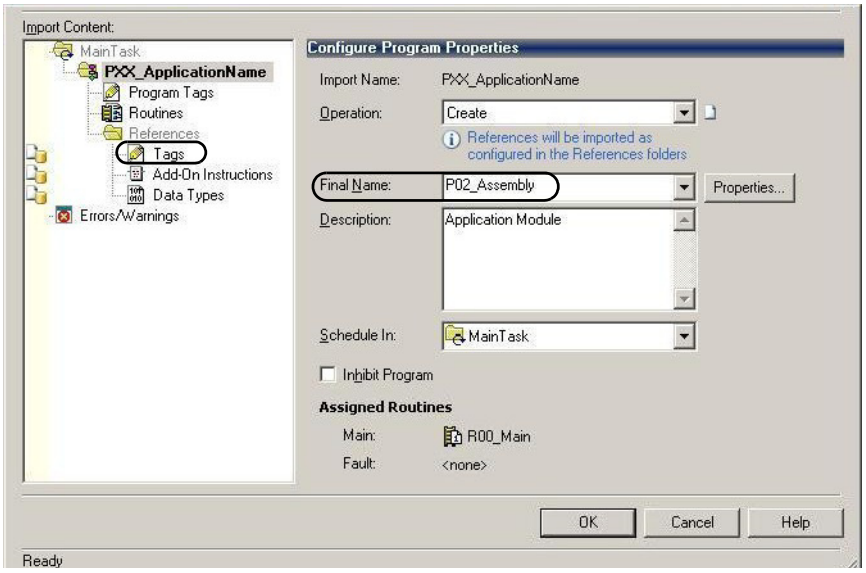
4. Select the Application_Module.L5*x* file and click Import.



The Import Configuration dialog box opens.



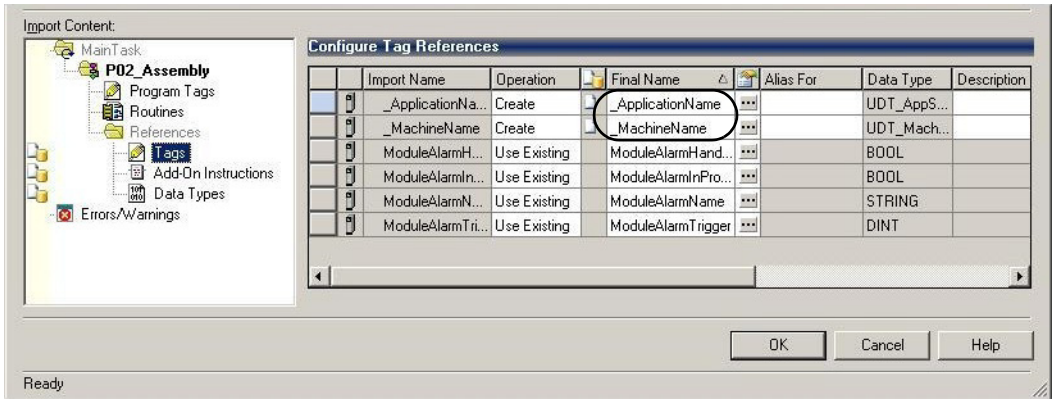
5. Enter the desired name for your initial application in the Final Name field.



For the Widg-O-matic application example, the Final Name is P02_Assembly.

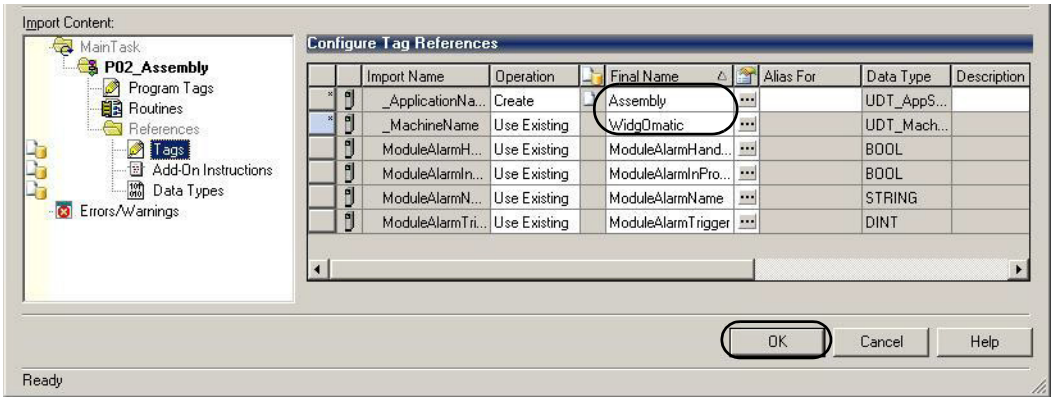
6. Click Tags within the Import Content organizer.

The Configure Tag References dialog box opens.



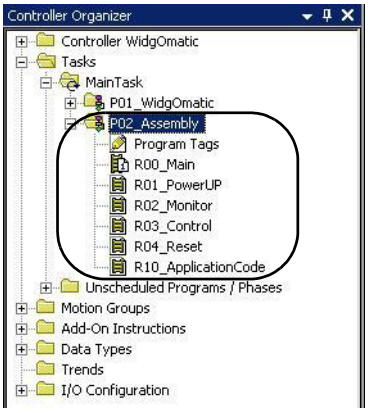
7. Replace the _ApplicationName and _MachineName with the desired tag names of your application and machine.

For the Widg-O-matic application example, Assembly was entered as the ApplicationName and WidgOmatic was entered as the MachineName.



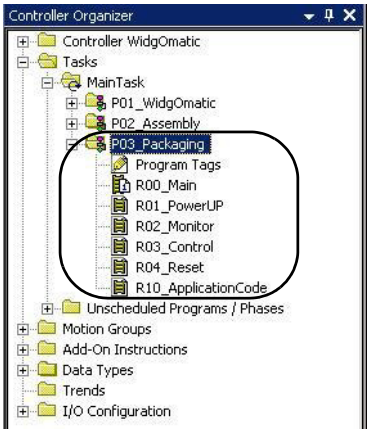
8. Click OK.

   The new application program appears in the Controller Organizer within the Main Task folder.



9. Repeat step 1 through step 8 for each application within your machine.

   For the Widg-O-matic application example, a second application was entered named P03_Packaging.



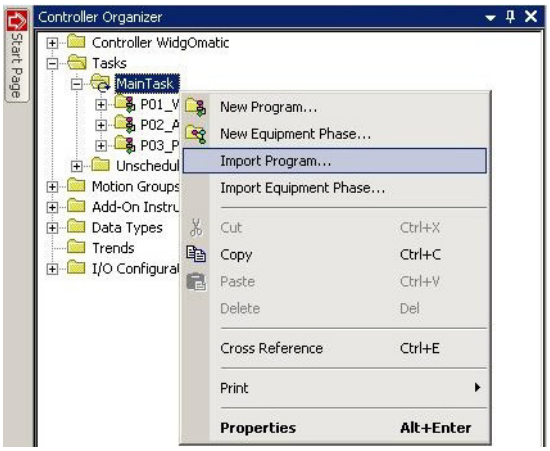
Import and Configure Device Logic Modules

Follow these steps to add preconfigured device logic to your Logix Designer project and configure it for each of your specific devices within your machine.

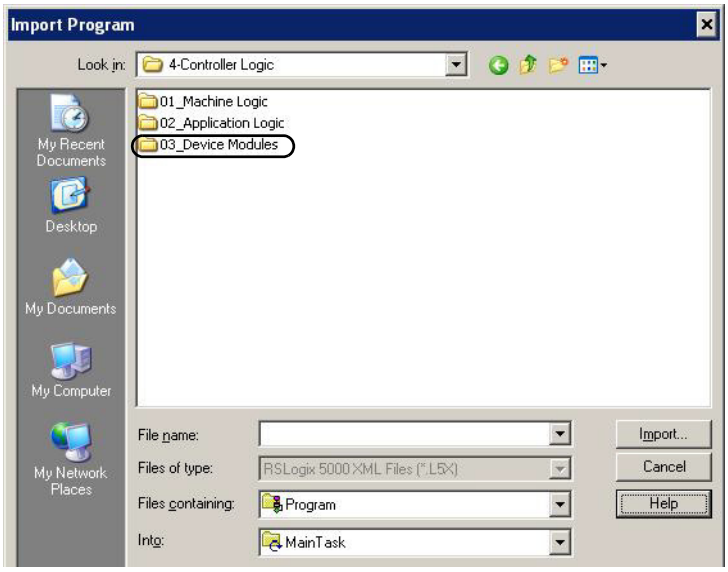
Import and Configure CIP Motion or Sercos Drive Modules

Follow these steps to add preconfigured CIP Motion and sercos interface drive device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.

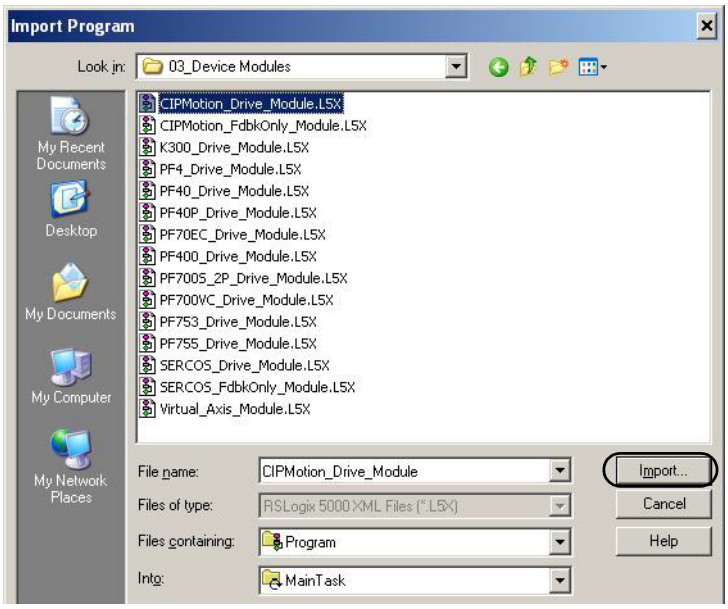


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.



Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

4. Select the Device Module program file that fits your initial CIP Motion or sercos interface drive within your machine based on the Motion Drives Logic Modules table.



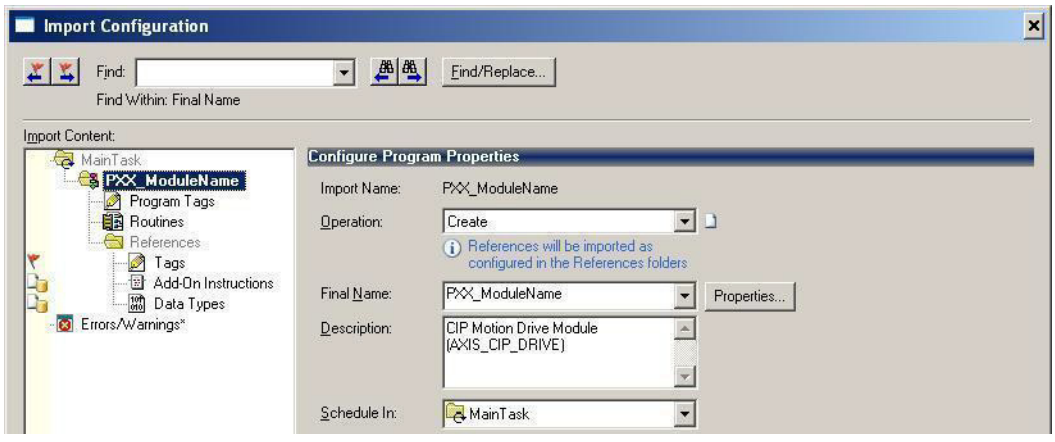
Motion Drives Logic Modules

Device Module Program File	Supported Devices
CIPMotion_Drive_Module.L5X	Kinetix 6500, Kinetix 5500, and PowerFlex 755 configured as a CIP Motion drive.
CIPMotion_FdbkOnly_Module.L5X	Auxiliary feedback-only axis on CIP Motion drives.
SERCOS_Drive_Module.L5X	Kinetix 2000, Kinetix 6000, Kinetix 6200, and Ultra3000 sercos interface drives
SERCOS_FdbkOnly_Module.L5X	Auxiliary feedback-only axis on sercos interface drives.
SERCOS_IDM_ParentIAM_Drive_Module.L5X	Kinetix 6000 and Kinetix 6200 sercos IAM interface drive when used with the Kinetix 6000M system
Virtual_Axis_Module.L5X	Virtual axis for CIP Motion or sercos interface drives configuration

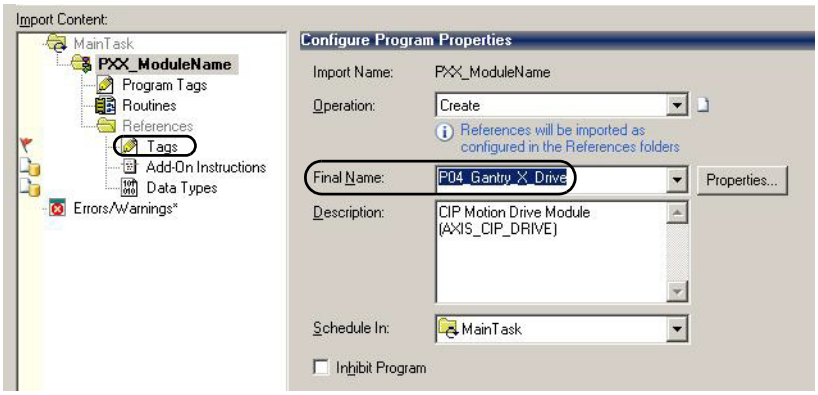
For the Widg-O-matic application example, the CIPMotion_Drive_Module.L5X program file was selected for the first Kinetix 6500 CIP Motion drive.

5. Click Import.

The Import Configuration dialog box opens.



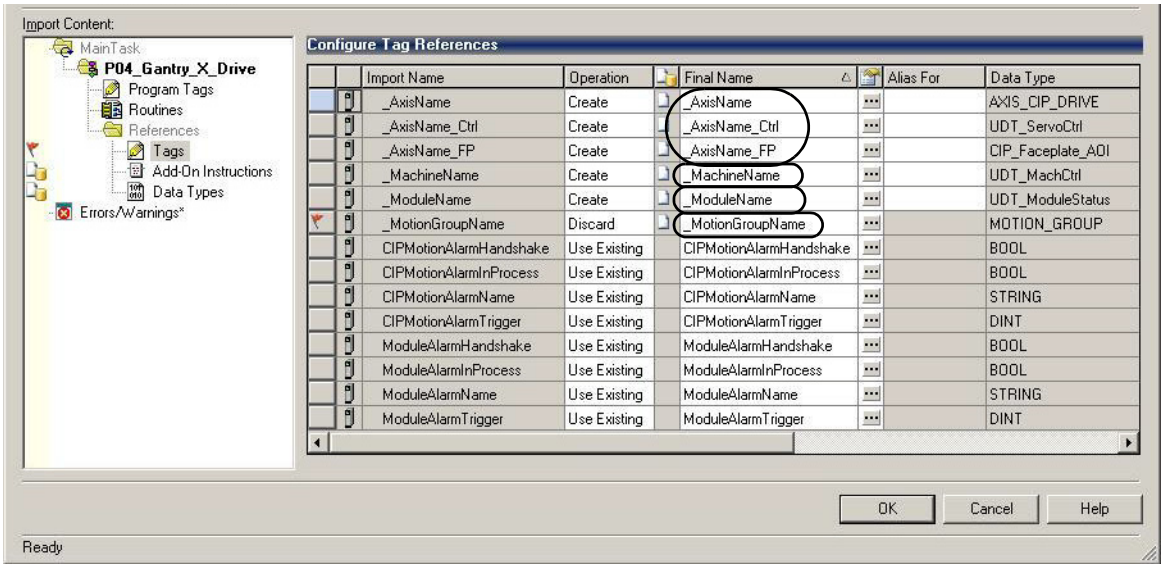
6. Enter the desired name for your initial Device in Final Name field.



For the Widg-O-matic application example, P04_Gantry_X_Drive is the Final Name.

7. Click Tags within the Import Content organizer.

The Configure Tag References dialog box opens.



8. Replace Final Tag Names with associated axis, machine, drive, and motion group names that you have already configured.

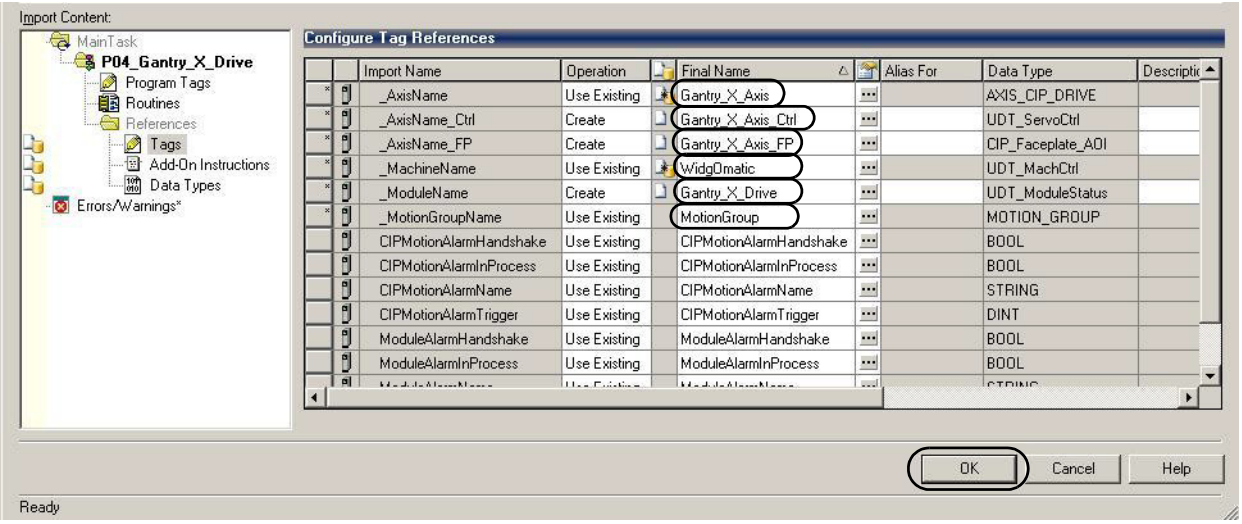
   a. Replace _AxisName of _AxisName, _AxisName_Ctrl, and AxisName_FP tags with the name of the axis for your drive.

   b. Replace _MachineName of _MachineName tag with the machine name of your project.

   c. Replace _ModuleName of _ModuleName tag with the device name of your drive.

   d. Replace _MotionGroupName of _MotionGroupName tag with the motion group name within your project.

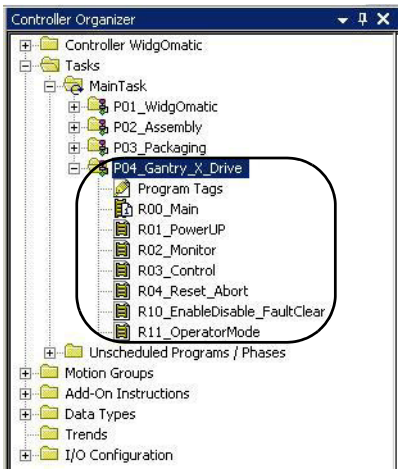
For the Widg-O-matic application example, these are the final tag names.



9. Click OK.

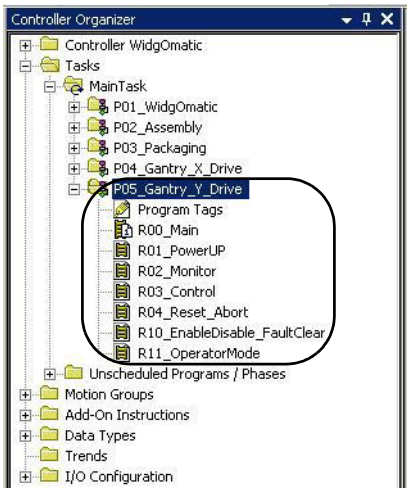
   The new Device Module Program appears in the Controller Organizer within the Main Task folder.

   For the Widg-O-matic application example, the new program named P04_Gantry_X_Drive appears in Controller Organizer.



10. Repeat step 1 through step 9 for each motion drive in your machine.

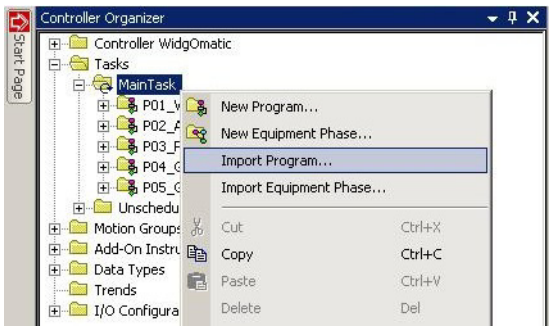
    For the Widg-O-matic application example, a second Kinetix 6500 CIP Motion drive device program named P05_Gantry_Y_Drive was imported and configured.



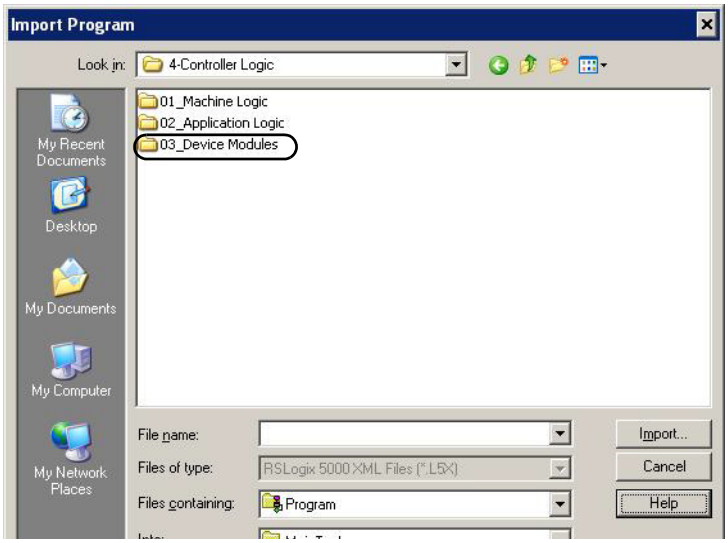
Import and Configure PowerFlex Standard Drive Modules

Follow these steps to add preconfigured PowerFlex standard drive device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.

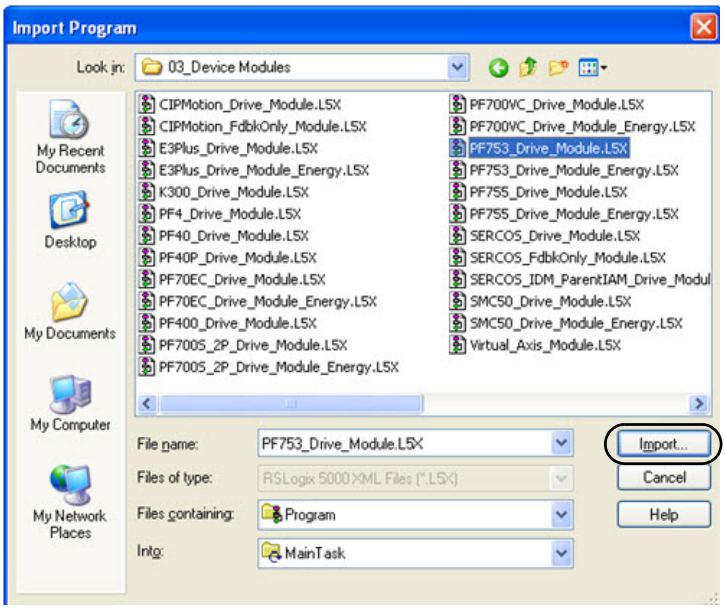


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.



Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

4. Select the Device Module program file that fits your initial PowerFlex standard drive within your machine based on the PowerFlex Drives Logic Modules table.

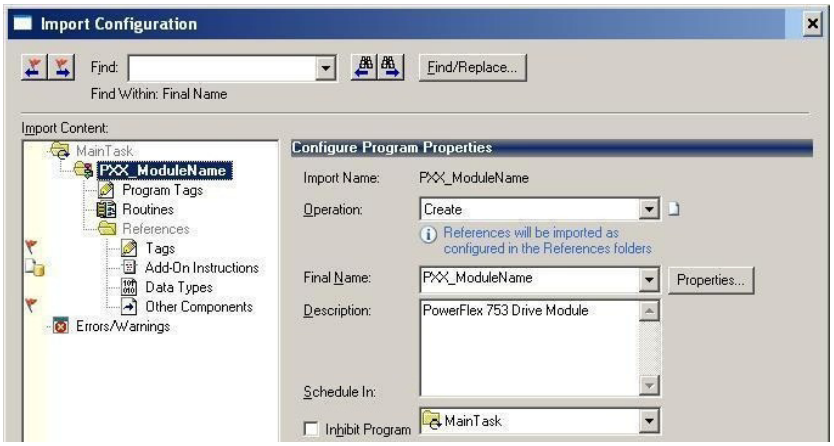


PowerFlex Drives Logic Modules

Device Module Program File	Supported Devices
PF4*xx*_Drive_Module.L5X	PowerFlex 4-class standard drives (for example, PF40P_Drive_Module.L5X supports PowerFlex 40P Drives).
PF7*xxx*_Drive_Module.L5X	PowerFlex 7-class standard drives (for example, PF70EC_Drive_Module.L5X supports PowerFlex 70EC Drives).
PF70EC_Drive_Module_Energy.L5X	PowerFlex 70EC drives with additional logic to support an energy data tab on the HMI faceplate.
PF700S_2P_Drive_Module_Energy.L5X	PowerFlex 700S_2P drives with additional logic to support an energy data tab on the HMI faceplate.
PF700VC_Drive_Module_Energy.L5X	PowerFlex 700VC drives with additional logic to support an energy data tab on the HMI faceplate.
PF753_Drive_Module.L5X	PowerFlex 753 standard drives
PF753_Drive_Module_Energy.L5X	PowerFlex 753 standard drives with additional logic to support an energy data tab on the HMI faceplate.
PF755_Drive_Module.L5X	PowerFlex 755 drive configured as a standard drive.
PF755_Drive_Module_Energy.L5X	PowerFlex 755 standard drives with additional logic to support an energy data tab on the HMI faceplate.
PF525_Drive_Module.L5X	PowerFlex 525 EENET drive.

For the Widg-O-matic application example, PF753_Drive_Module.L5X program file was selected for the only PowerFlex drive in the machine.

5. Click Import.

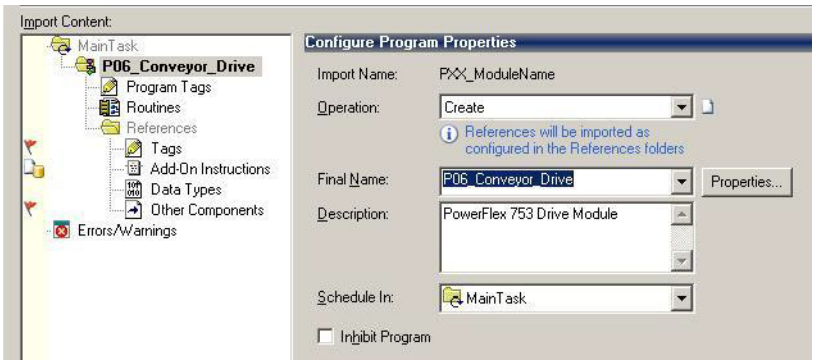


The Import Configuration dialog box opens.

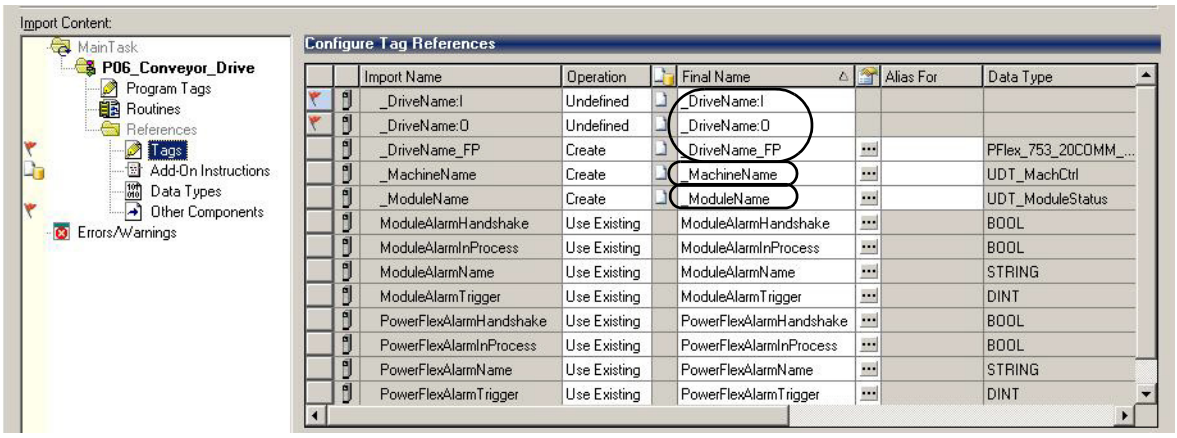
6. Enter the desired name for your initial device in Final Name field.

   For the Widg-O-matic application example, the Final Name is P06_Conveyor_Drive.

7. Click Tags within the Import Content organizer.

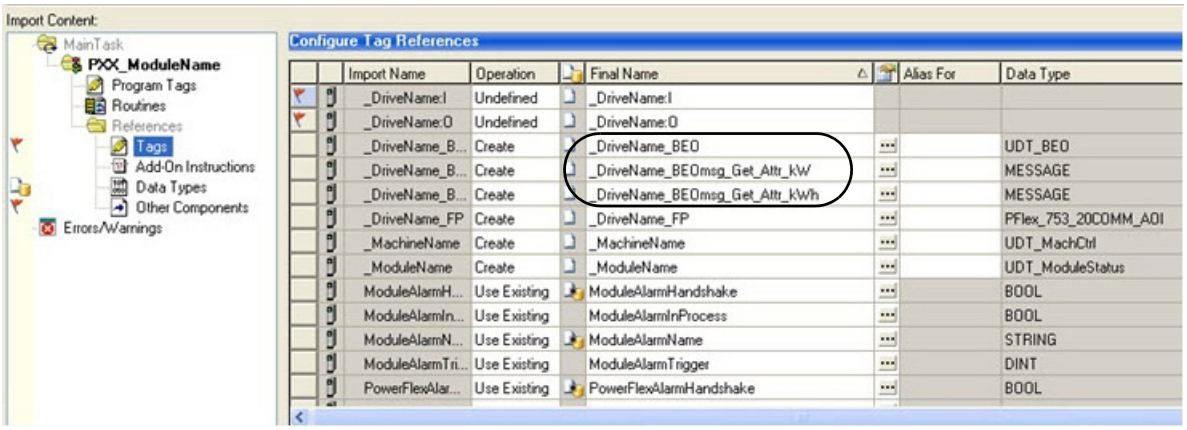


The Configure Tag References dialog box opens.

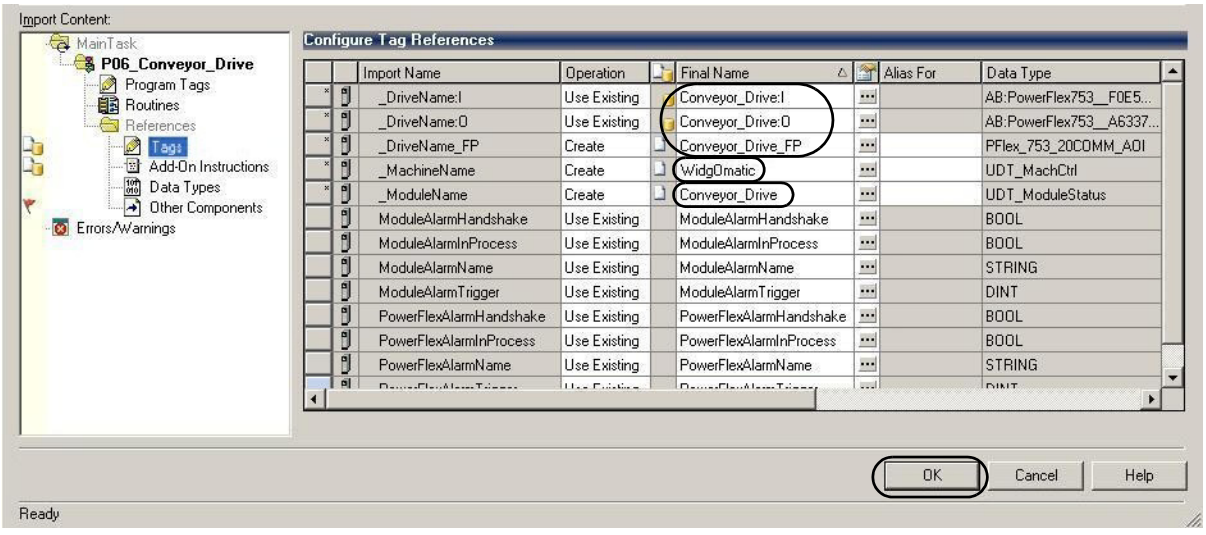


8. Replace Final Tag Names with the associated drive and machine names you have already configured.
   a. Where applicable, replace _DriveName with the name of PowerFlex drive in I/O tree.
   b. Replace _DriveName of _DriveName:I, _DriveName:O, and _DriveName_FP tags with the name your PowerFlex drive.
   c. Replace _MachineName of _MachineName tag with the machine name of your project.
   d. Replace _ModuleName of _ModuleName tag with the device name of your drive.
   e. If a device module with energy support was selected, there will be additional tags named _DriveName_BEO (base energy object). Replace _DriveName in all of these tags with the name of your PowerFlex drive.

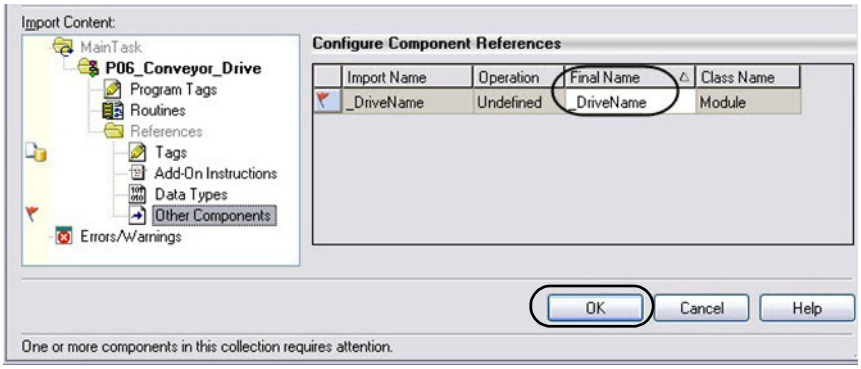
For the Widg-O-matic example, _DriveName_BEO was replaced with ConveyorDrive_BEO.



For the Widg-O-matic application example, the following tag names were entered.

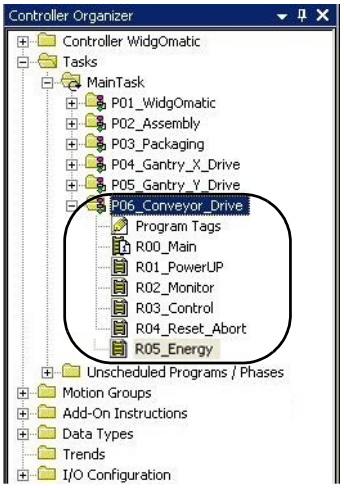


9. Click Other Components under the Import Content organizer.



10. The Configure Components References dialog box opens.
11. Replace _DriveName within the Final Name field with the name of your PowerFlex drive in the I/O tree.
12. Click OK.

    The new Device Module Program appears in the Controller Organizer within the Main Task folder.



    For the Widg-O-matic application example, the new program named P06_ Conveyor_Drive appears in Controller Organizer.

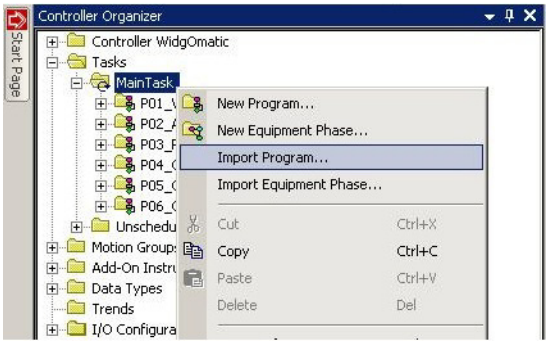
    If a device module with energy support was selected, the program contains an additional routine named R05_Energy. Refer to Set MSG Path in the E3 Plus Energy Monitoring Routine on page 81, for more information.

13. Repeat step 1 through step 12 for each PowerFlex drive in your machine.

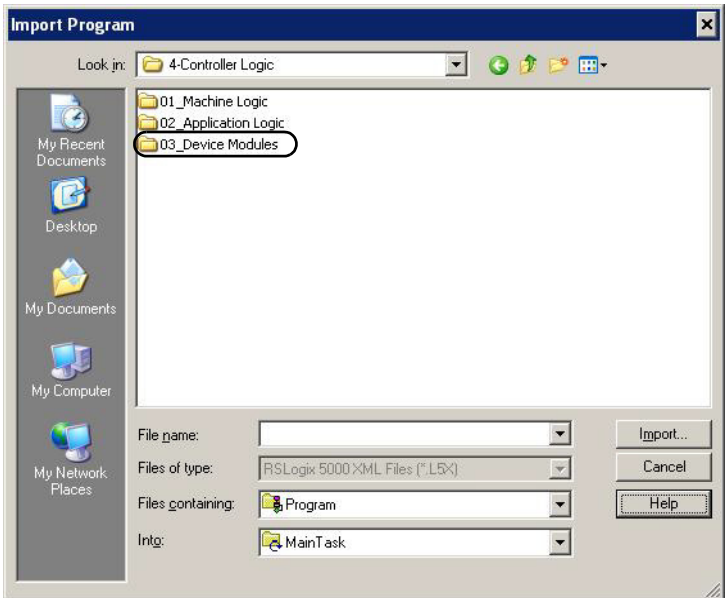
Import and Configure Kinetix 300 EtherNet/IP Motion Drive Modules

Follow these steps to add preconfigured Kinetix 300 EtherNet/IP motion drive device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.

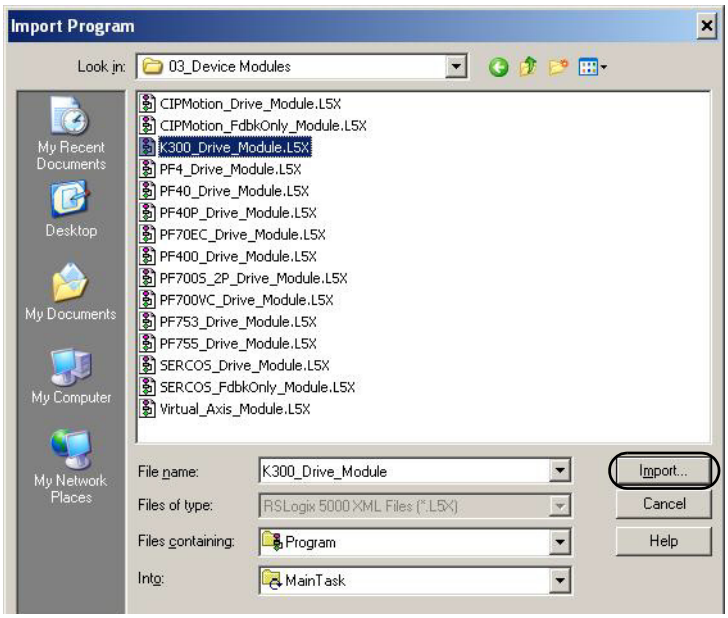


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.



Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

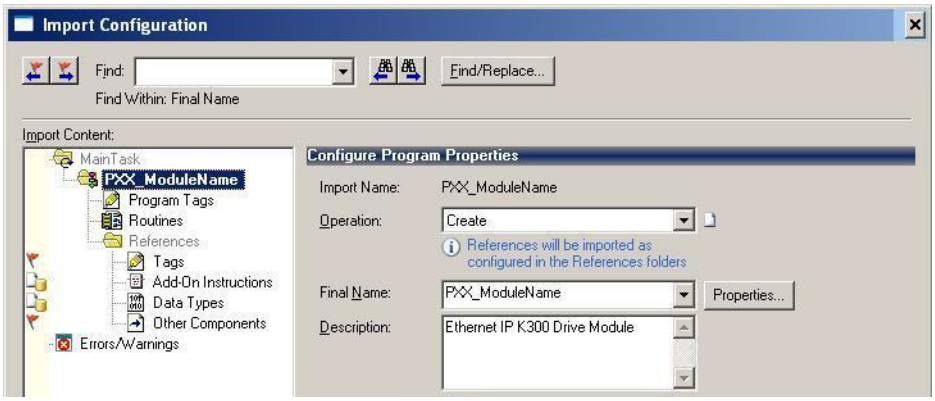
4. Select the K300_Drive_Module.L5X program file for your initial Kinetix 300 Ethernet Motion Drive within your machine.



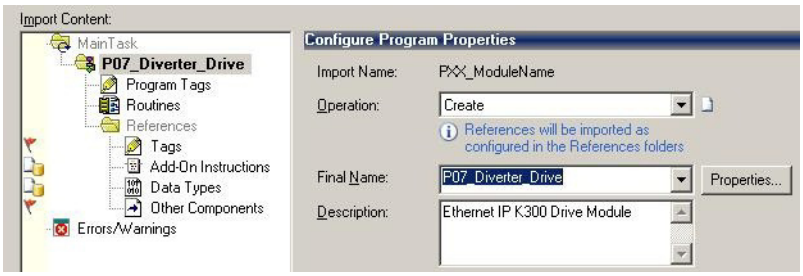
For the Widg-O-matic application example, K300_Drive_Module.L5X program file was selected as the only Kinetix 300 drive in the machine.

5. Click Import.

The Import Configuration dialog box opens.



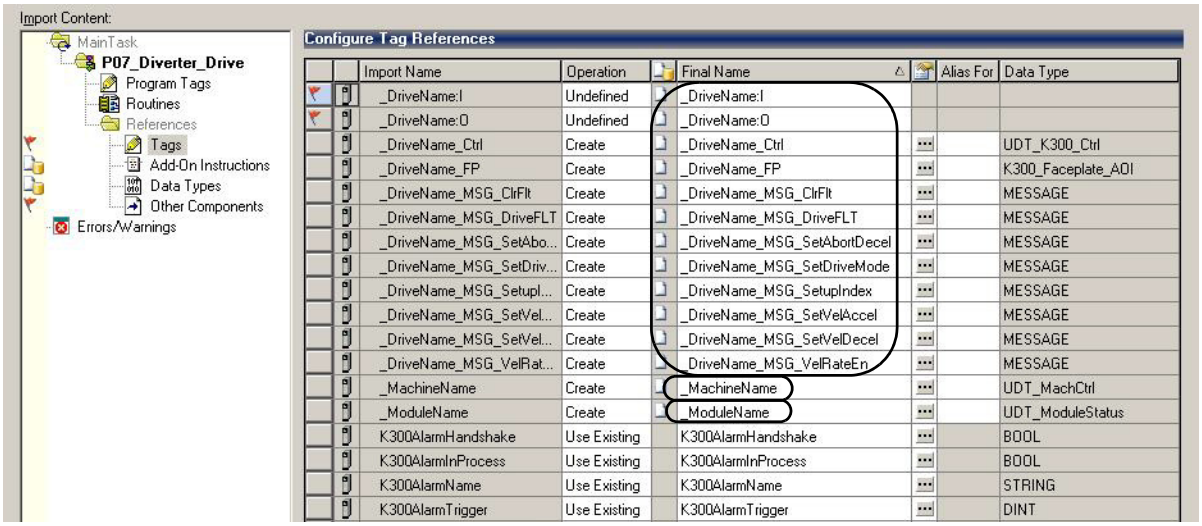
6. Enter the desired name for your initial Device in Final Name field.



For the Widg-O-matic application example, the Final Name is P07_Diverter_Drive.

7. Click Tags within the Import Content organizer.

   The Configure Tag References dialog box opens.



Import Name	Operation	Final Name	Alias For	Data Type
_DriveName:I	Undefined	_DriveName:I		
_DriveName:O	Undefined	_DriveName:O		
_DriveName_Ctrl	Create	_DriveName_Ctrl		UDT_K300_Ctrl
_DriveName_FP	Create	_DriveName_FP		K300_Faceplate_AOI
_DriveName_MSG_ClrFlt	Create	_DriveName_MSG_ClrFlt		MESSAGE
_DriveName_MSG_DriveFLT	Create	_DriveName_MSG_DriveFLT		MESSAGE
_DriveName_MSG_SetAbo...	Create	_DriveName_MSG_SetAbortDecel		MESSAGE
_DriveName_MSG_SetDriv...	Create	_DriveName_MSG_SetDriveMode		MESSAGE
_DriveName_MSG_Setupl...	Create	_DriveName_MSG_SetupIndex		MESSAGE
_DriveName_MSG_SetVel...	Create	_DriveName_MSG_SetVelAccel		MESSAGE
_DriveName_MSG_SetVel...	Create	_DriveName_MSG_SetVelDecel		MESSAGE
_DriveName_MSG_VelRat...	Create	_DriveName_MSG_VelRateEn		MESSAGE
_MachineName	Create	_MachineName		UDT_MachCtrl
_ModuleName	Create	_ModuleName		UDT_ModuleStatus
K300AlarmHandshake	Use Existing	K300AlarmHandshake		BOOL
K300AlarmInProcess	Use Existing	K300AlarmInProcess		BOOL
K300AlarmName	Use Existing	K300AlarmName		STRING
K300AlarmTrigger	Use Existing	K300AlarmTrigger		DINT

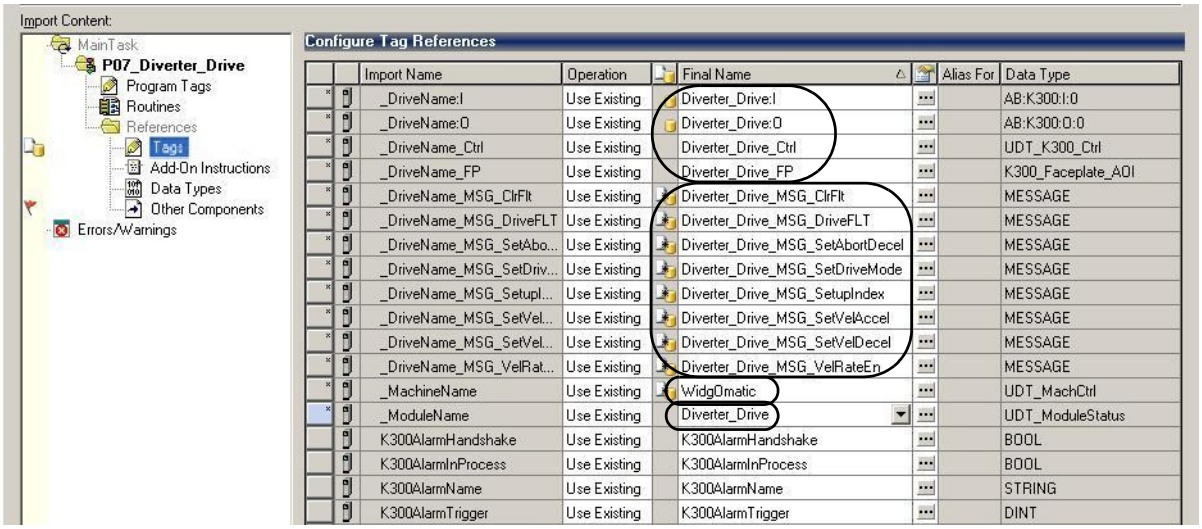
8. Replace the Final Tag Names with the associated drive and machine names you have already configured.

   a. Replace _DriveName of _DriveName:I, _DriveName:O, _DriveName_Ctrl, _DriveName_FP and (8) _DriveName_MSG_*xxxx* tags with the name your Kinetix 300 drive.

   b. Replace _MachineName of _MachineName tag with the machine name of your project.

   c. Replace _ModuleName of _ModuleName tag with the device name of your drive.

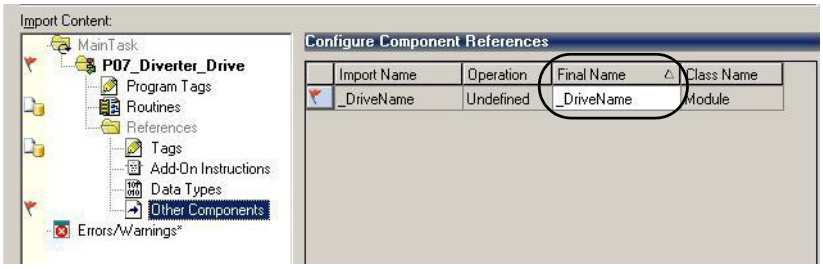
   For the Widg-O-matic application example, the following tag names were entered.



Import Name	Operation	Final Name	Alias For	Data Type
_DriveName:I	Use Existing	Diverter_Drive:I		AB:K300:I:0
_DriveName:O	Use Existing	Diverter_Drive:O		AB:K300:O:0
_DriveName_Ctrl	Use Existing	Diverter_Drive_Ctrl		UDT_K300_Ctrl
_DriveName_FP	Use Existing	Diverter_Drive_FP		K300_Faceplate_AOI
_DriveName_MSG_ClrFlt	Use Existing	Diverter_Drive_MSG_ClrFlt		MESSAGE
_DriveName_MSG_DriveFLT	Use Existing	Diverter_Drive_MSG_DriveFLT		MESSAGE
_DriveName_MSG_SetAbo...	Use Existing	Diverter_Drive_MSG_SetAbortDecel		MESSAGE
_DriveName_MSG_SetDriv...	Use Existing	Diverter_Drive_MSG_SetDriveMode		MESSAGE
_DriveName_MSG_Setupl...	Use Existing	Diverter_Drive_MSG_SetupIndex		MESSAGE
_DriveName_MSG_SetVel...	Use Existing	Diverter_Drive_MSG_SetVelAccel		MESSAGE
_DriveName_MSG_SetVel...	Use Existing	Diverter_Drive_MSG_SetVelDecel		MESSAGE
_DriveName_MSG_VelRat...	Use Existing	Diverter_Drive_MSG_VelRateEn		MESSAGE
_MachineName	Use Existing	WidgOmatic		UDT_MachCtrl
_ModuleName	Use Existing	Diverter_Drive		UDT_ModuleStatus
K300AlarmHandshake	Use Existing	K300AlarmHandshake		BOOL
K300AlarmInProcess	Use Existing	K300AlarmInProcess		BOOL
K300AlarmName	Use Existing	K300AlarmName		STRING
K300AlarmTrigger	Use Existing	K300AlarmTrigger		DINT

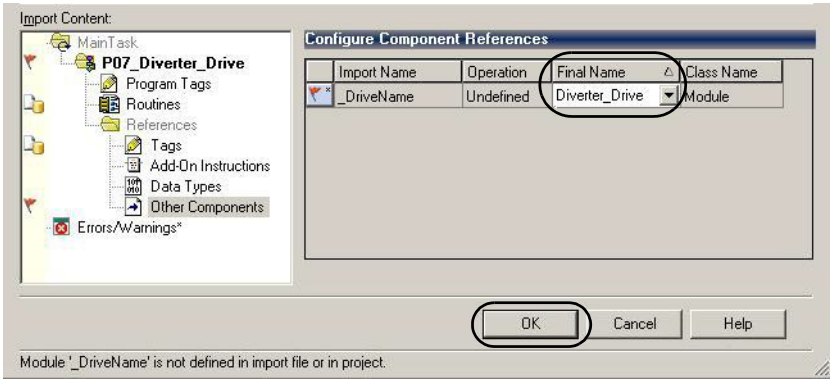
9. Click Other Components within the Import Content organizer.

The Configure Components References dialog box opens.



10. Replace _DriveName in the Final Name field with the name of your Kinetix 300 drive.

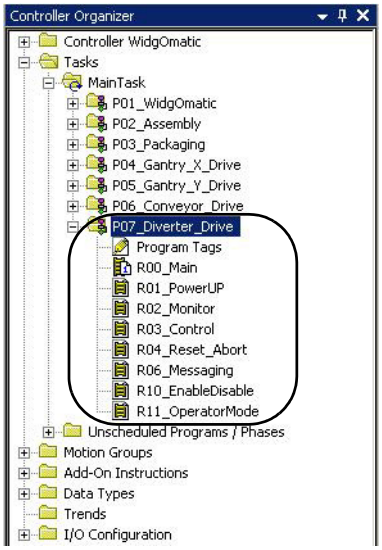
For the Widg-O-matic application example, Diverter_Drive is the Final Name.



11. Click OK.

The new Device Module Program appears in the Controller Organizer within the Main Task folder.

For the Widg-O-matic application example, the new program named P07_Diverter_Drive appears in Controller Organizer.

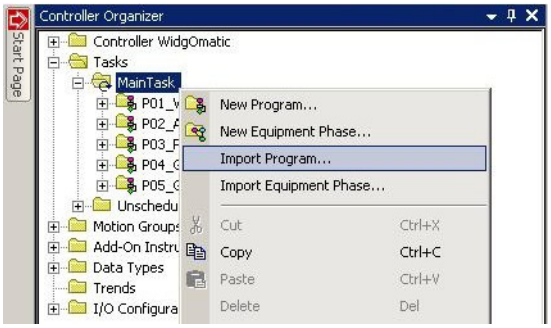


12. Repeat step 1 through step 11 for each Kinetix 300 drive in your machine.

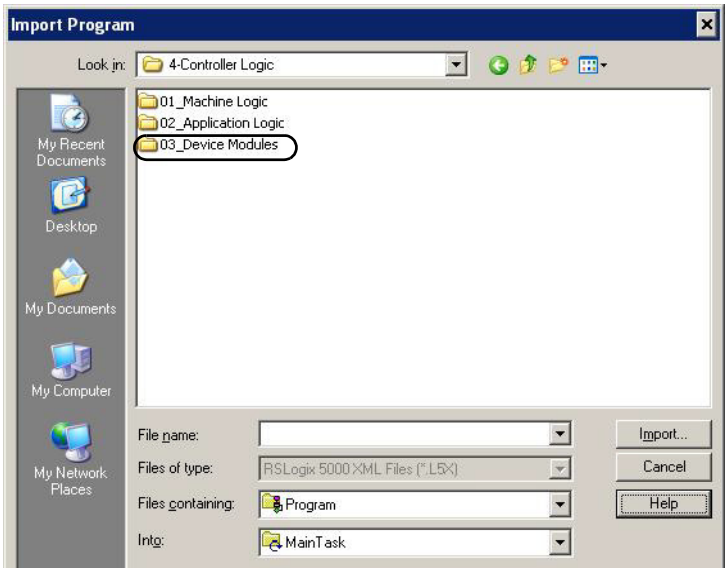
Import and Configure E3 Plus Device Modules

Follow these steps to add preconfigured E3 Plus device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.

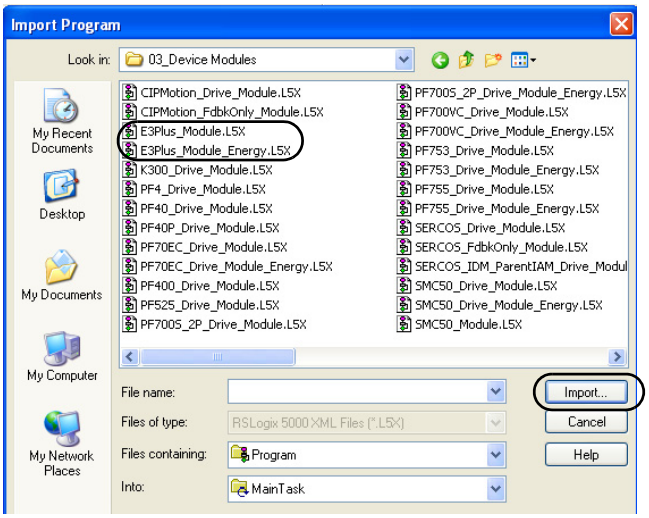


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.



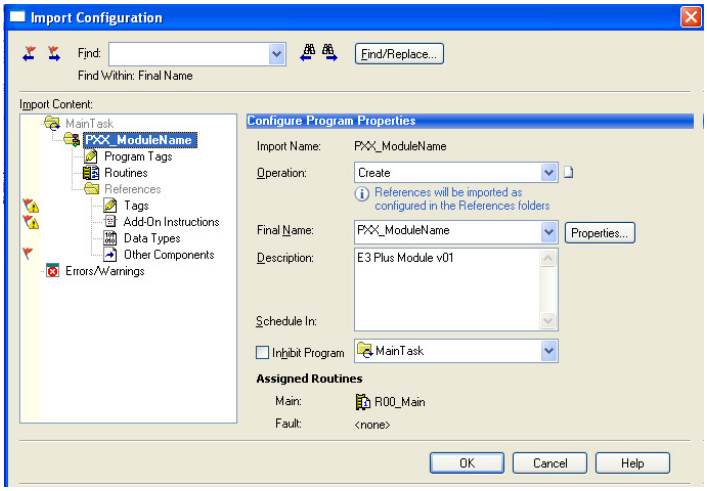
Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

4. Select E3Plus_Module.L5X or E3Plus_Module_Energy.L5X if energy support is required.

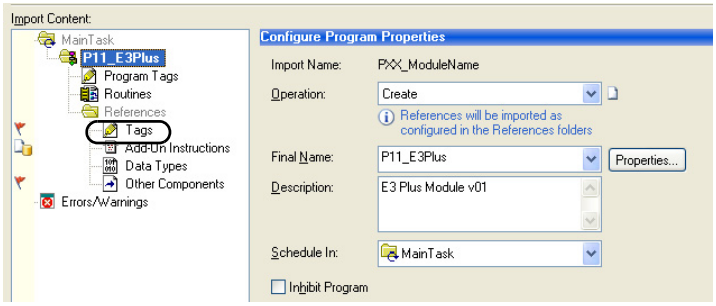


5. Click Import.

   The Import Configuration dialog box opens.



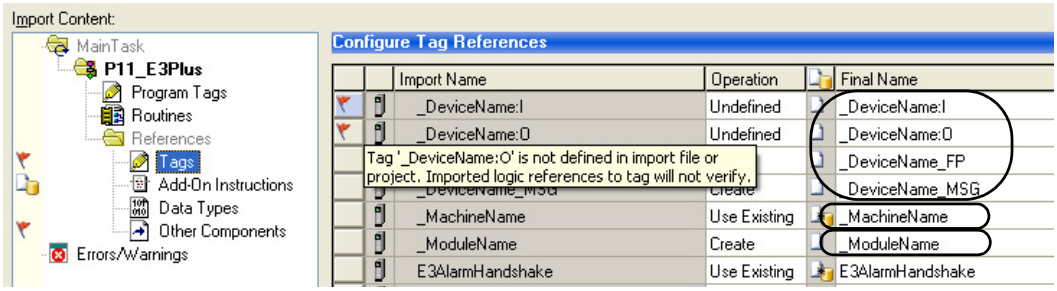
6. Enter the desired name for your initial Device in the Final Name field.



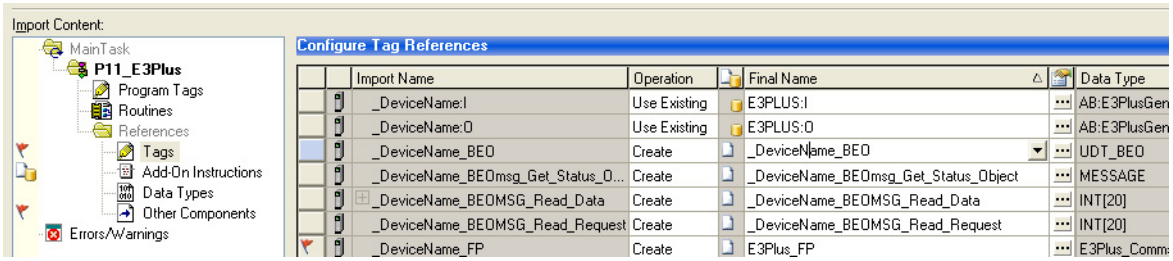
   In this example, the Final Name is P11_E3Plus.

7. Click Tags within the Import Content organizer.

8. The Configure Tag References dialog box opens.

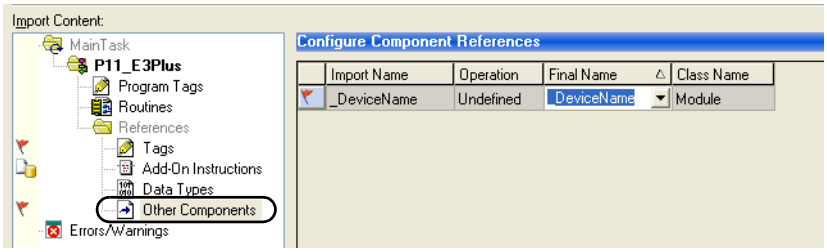


9. Replace Final Tag Names with the associated drive and machine names you have already configured.
   a. Replace _DeviceName of _DeviceName:I, _DeviceName:O, _DeviceName_FP, and _DeviceName_MSG tags with the name of your E3 Plus device.
   b. Replace _MachineName of _MachineName tag with the machine name of your project.
   c. Replace _ModuleName of _ModuleName tag with the device name of your E3 Plus device.
      If a device module with energy support was selected, there will be additional tags named _DeviceName_BEO.
   d. Replace _DeviceName in all of these tags with the name of your E3 Plus device.



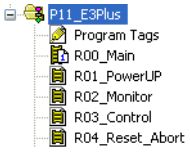
10. Click Other Components within the Import Content organizer.

    The Configure Component References dialog box opens.



11. Replace the Final name (_DeviceName) with the name of your E3 Plus device.
12. Click OK.

    The new Device Module Program appears in the Controller Organizer within the Main Task folder.

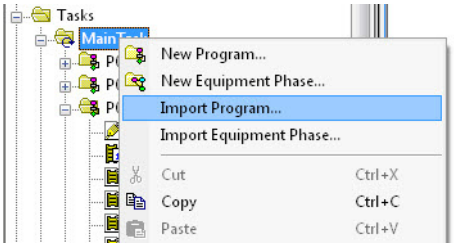


If a device module with energy support was selected, the program will contain an additional routine named R05_Energy. Refer to Set MSG Path in the E3 Plus Energy Monitoring Routine on page 81, for more information.

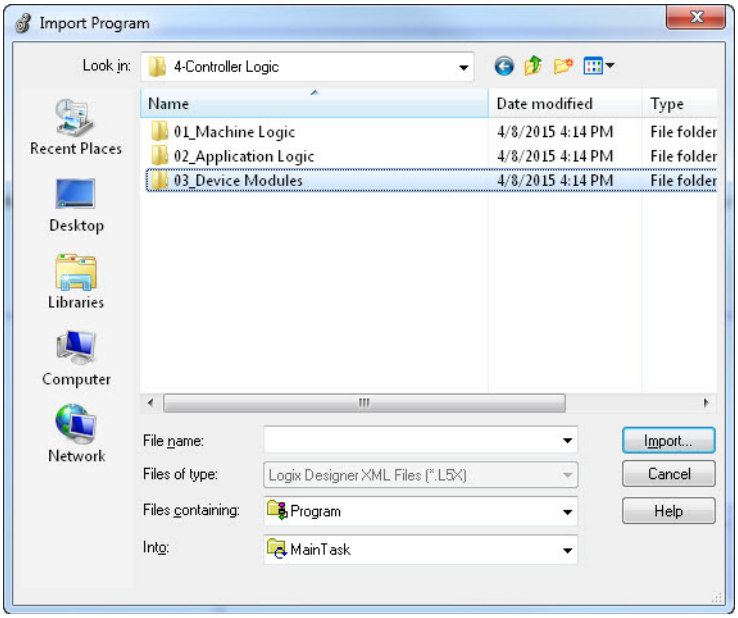
Import and Configure E300 Device Modules

Follow these steps to add preconfigured E300 device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.

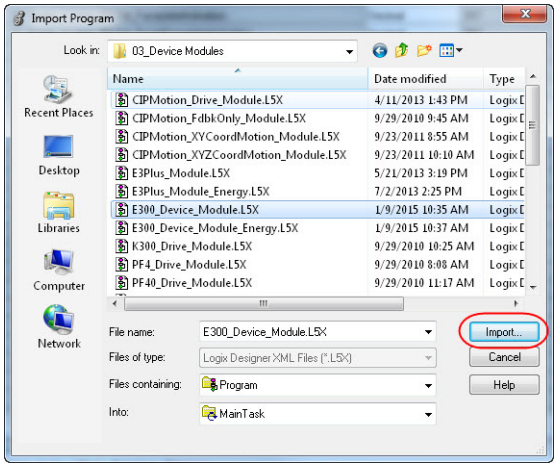


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.



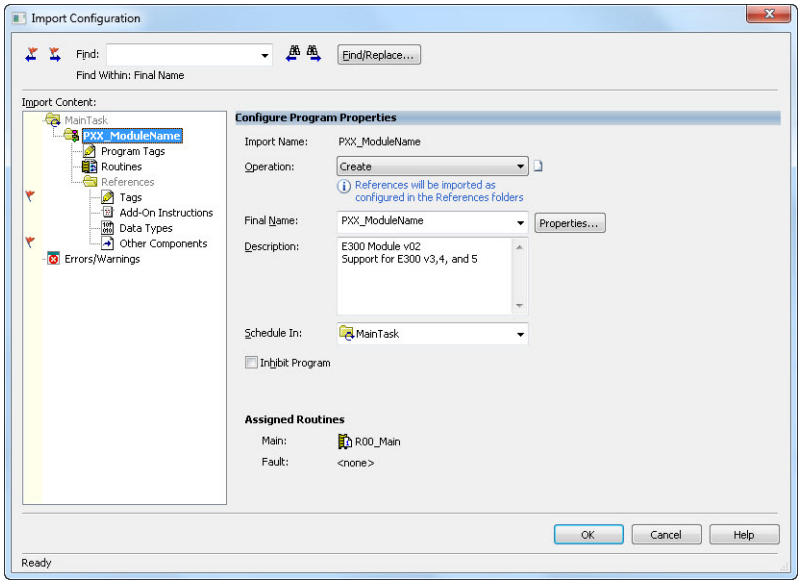
Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

4. Select E300_Module.L5X or E300_Module_Energy.L5X if energy support is required.

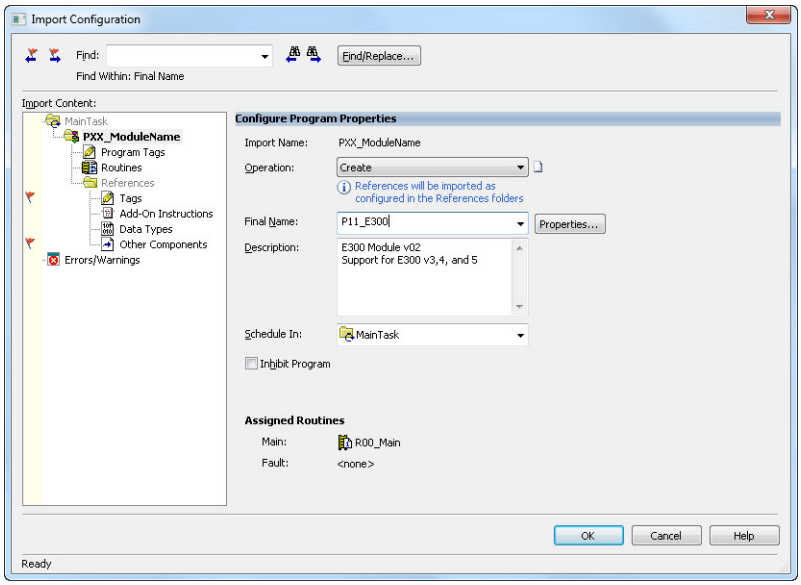


5. Click Import.

   The Import Configuration dialog box opens.

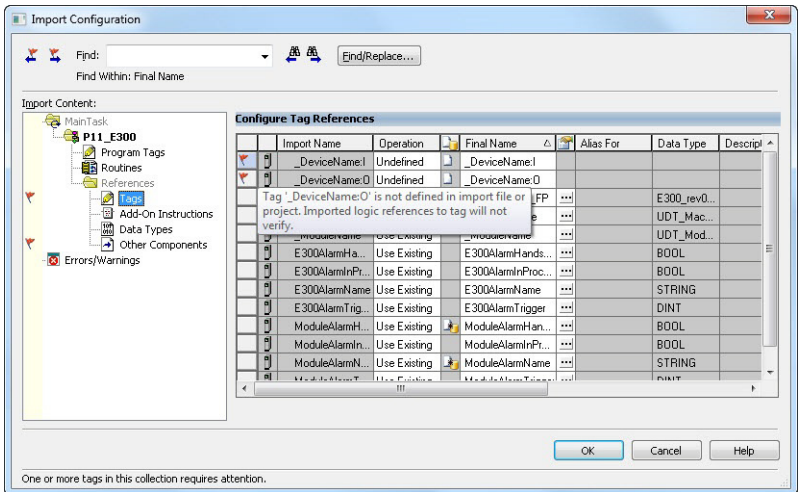


6. Enter the desired name for your initial Device in the Final Name field.



In this example, the Final Name is P11_E300.

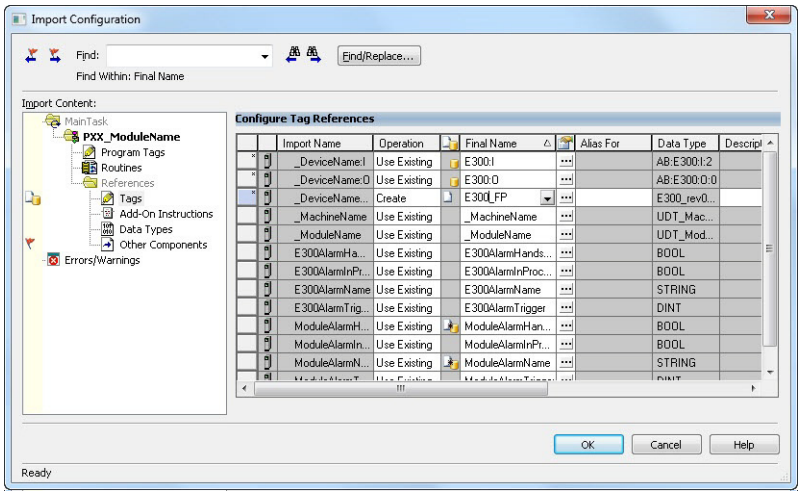
7. Click Tags within the Import Content organizer.
8. The Configure Tag References dialog box opens.



9. Replace Final Tag Names with the associated drive and machine names you have already configured.
   a. Replace _DeviceName of _DeviceName:I, _DeviceName:O, _DeviceName_FP, and _DeviceName_MSG tags with the name of your E300 device.
   b. Replace _MachineName of _MachineName tag with the machine name of your project.
   c. Replace _ModuleName of _ModuleName tag with the device name of your E300 device.

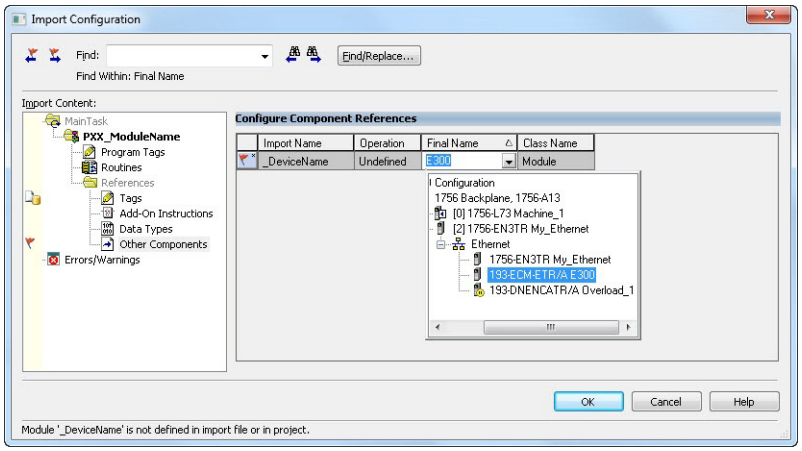
      If a device module with energy support was selected, there will be additional tags named _DeviceName_BEO.

d. Replace _DeviceName in all of these tags with the name of your E300 device.



10. Click Other Components within the Import Content organizer.

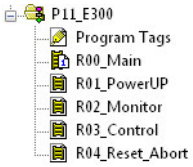
The Configure Component References dialog box opens.



11. Replace the Final name (_DeviceName) with the name of your E300 device.

12. Click OK.

The new Device Module Program appears in the Controller Organizer within the Main Task folder.

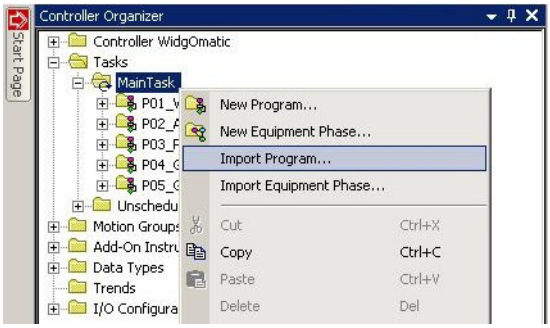


If a device module with energy support was selected, the program will contain an additional routine named R05_Energy. Refer to Set MSG Path in the E3 Plus Energy Monitoring Routine on page 81, for more information.

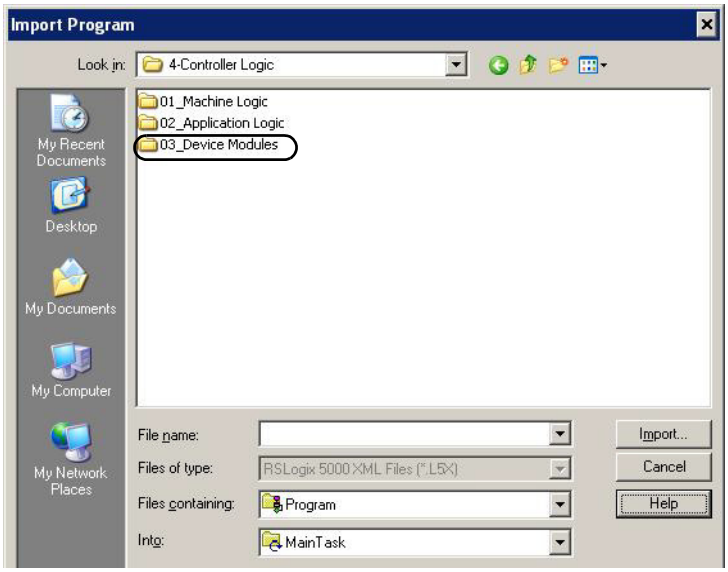
Import and Configure SMC-50 Soft Starter Device Modules

Follow these steps to add preconfigured SMC-50 soft-starter device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.

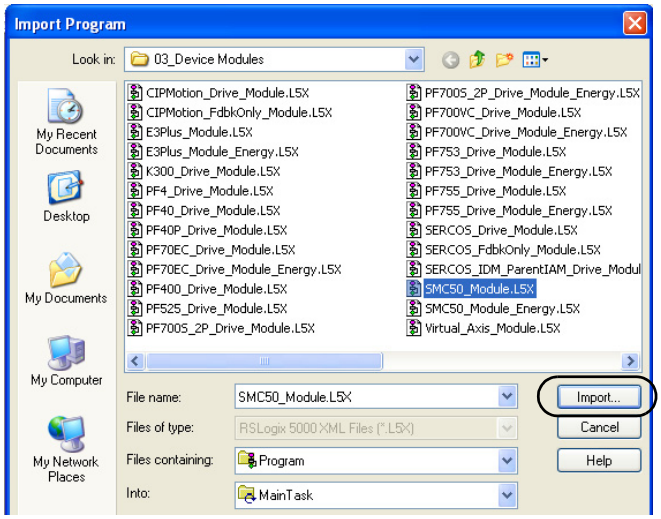


2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.

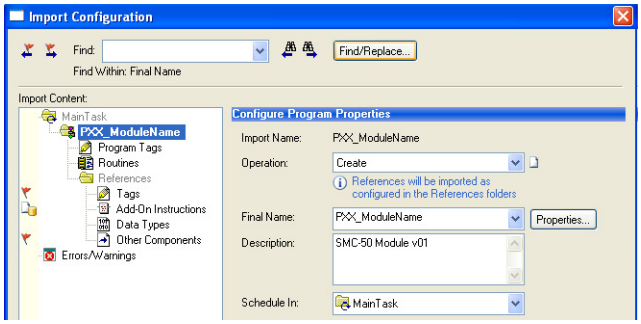


Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

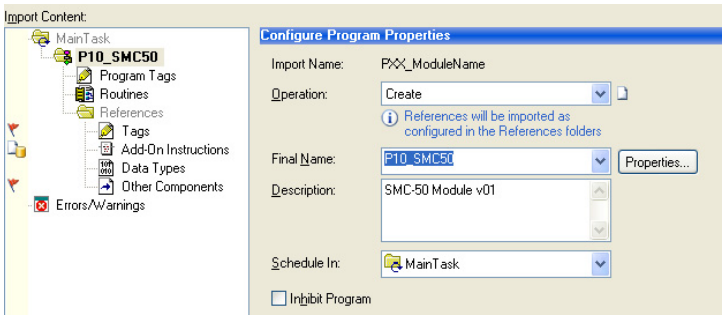
4. Select SMC50_Module.L5X or SMC50_Module_Energy.L5X if energy support is required.



5. Click Import.
6. The Import Configuration dialog box opens.



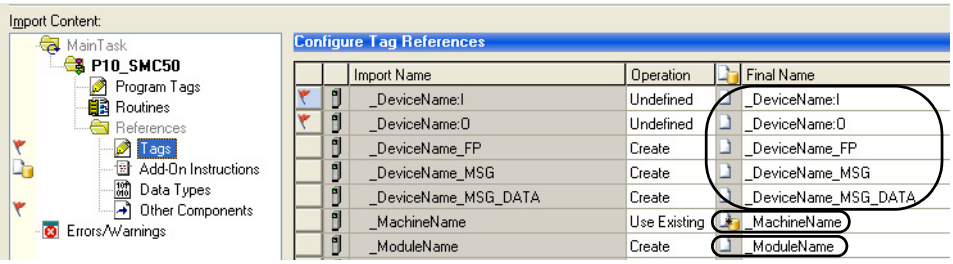
7. Enter the desired name for your initial Device in Final Name field.



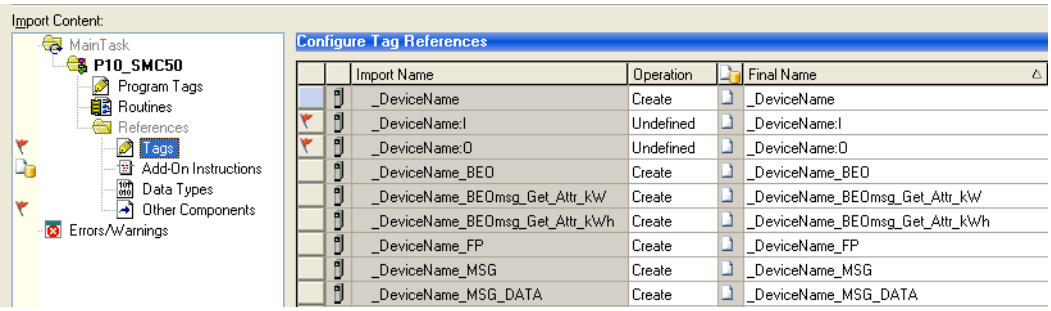
In this example, the Final Name is P10_SMC50.

8. Click Tags within the Import Content organizer.

9. The Configure Tag References dialog box opens.

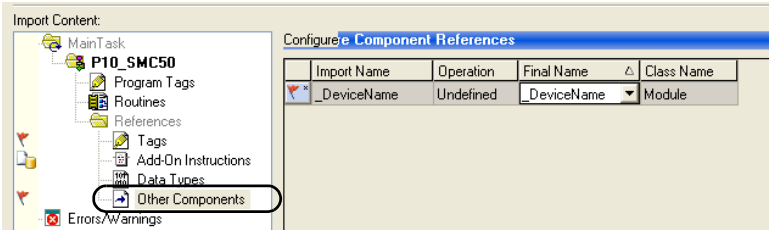


10. Replace Final Tag Names with the associated drive and machine names you have already configured.
    a. Replace _DeviceName of _DeviceName:I, _DeviceName:O, _DeviceName_MSG, _DeviceName_MSG_DATA, and _DeviceName_FP tags with the name of your SMC-50 device.
    b. Replace _MachineName of _MachineName tag with the machine name of your project.
    c. Replace _ModuleName of _ModuleName tag with the device name of your SMC-50 device.
    If a device module with energy support was selected, there will be additional tags named _DeviceName_BEO.
    d. Replace _DeviceName in all of these tags with the name of your SMC-50 device.



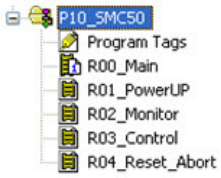
11. Click Other Components within the Import Content organizer.

    The Configure Component References dialog box opens.



12. Replace the Final Name (_DeviceName) with the name of your SMC-50 device.
13. Click OK.

    The new Device Module Program appears in the Controller Organizer within the Main Task folder.

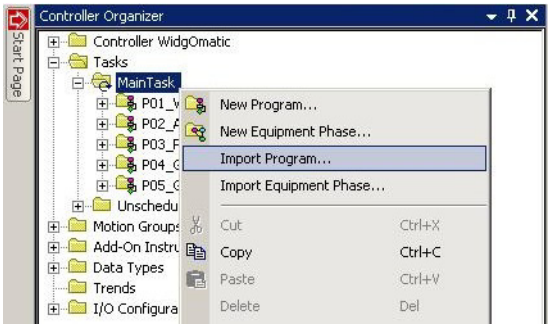


If a device module with energy support was selected, the program will contain an additional routine named R05_Energy. Refer to Set MSG Path in the E3 Plus Energy Monitoring Routine on page 81, for more information.

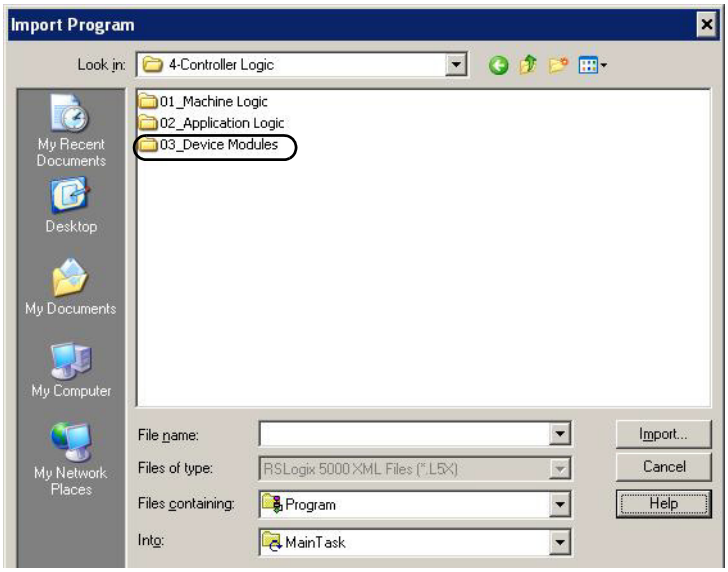
Import and Configure ArmorStart Distributed Motor Controller Device Modules

Follow these steps to add preconfigured ArmorStart distributed motor controller device logic modules to your Logix Designer project.

1. Expand the Tasks folder in your Controller Organizer and right-click the Main Task folder.



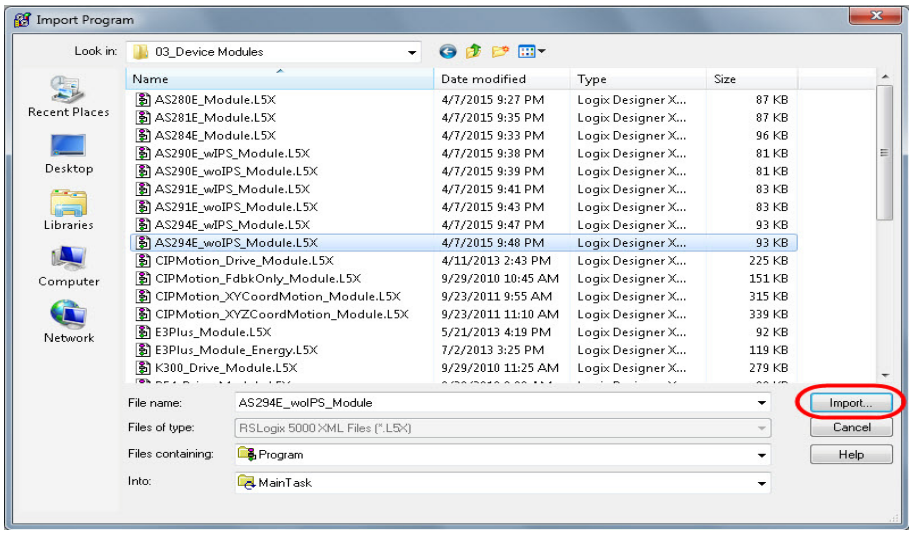
2. Choose Import Program.
3. Navigate to the 4-Controller Logic folder within the toolkit's files folder and open the 03_Device Modules folder.



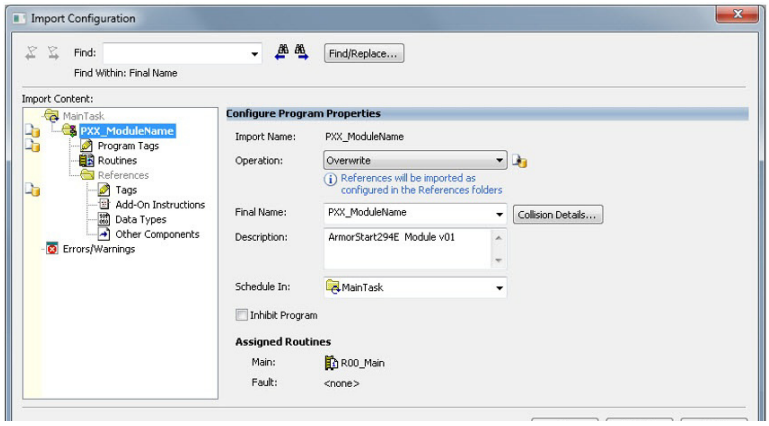
Your personal computer's harddrive path is C:\Program Files\RA_Simplification\DMAT\B-Files\4-Controller Logic.

4. Select AS294E_woIPS_Module.L5X per application requirements.

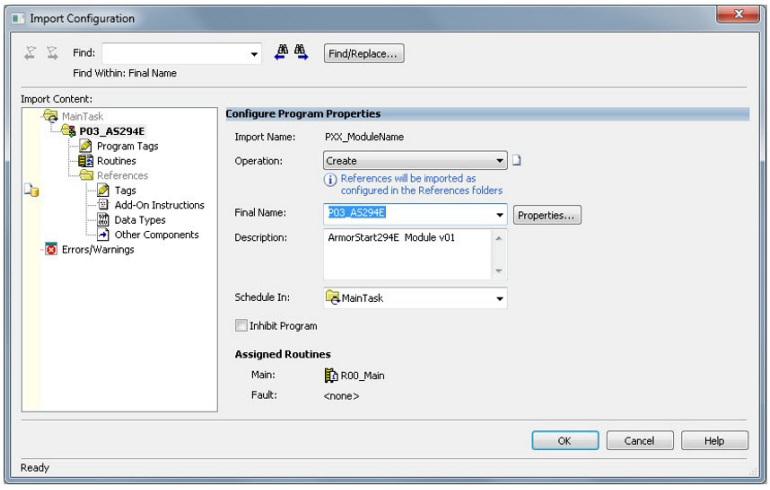
This example uses the ArmorStart LT 294E motor controller (without internal power supply).



5. Click Import.
6. The Import Configuration dialog box opens.

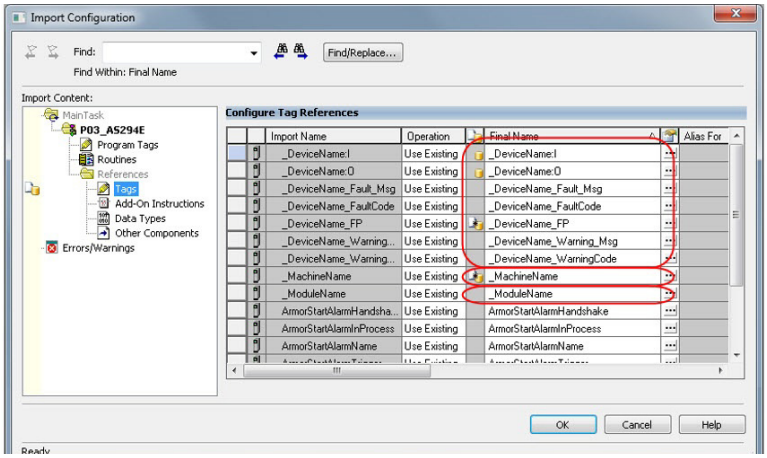


7. Enter the desired name for your initial Device in Final Name field.



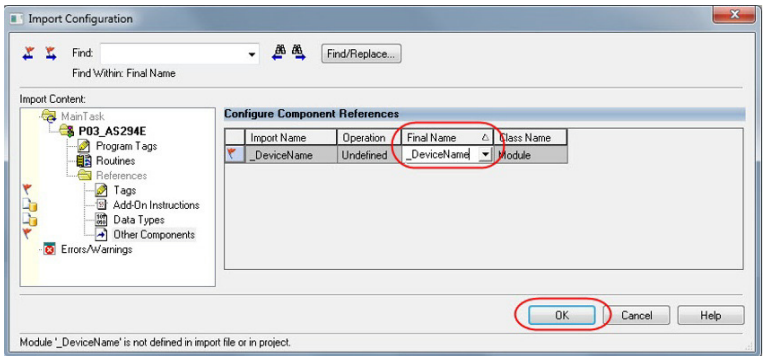
In this example, the Final Name is P03_AS294E.

8. Click Tags within the Import Content organizer.
9. The Configure Tag References dialog box opens.



10. Replace Final Tag Names with the associated drive and machine names you have already configured.
    a. Replace_DeviceName of _DeviceName:I, _DeviceName:O, _DeviceName_Fault_Msg, _DeviceName_FaultCode, _DeviceName_FP, _DeviceName_Warning_Msg and _DeviceName_WarningCode tags with the name of your ArmorStart device.
    b. Replace _MachineName of _MachineName tag with the machine name of your project.
    c. Replace _ModuleName of _ModuleName tag with the device name of your ArmorStart device.
    d. Replace _DeviceName in all of these tags with the name of your ArmorStart device.
11. Click Other Components within the Import Content organizer.

    The Configure Component References dialog box opens.



12. Replace the Final Name (_DeviceName) with the name of your ArmorStart device.
13. Click OK.

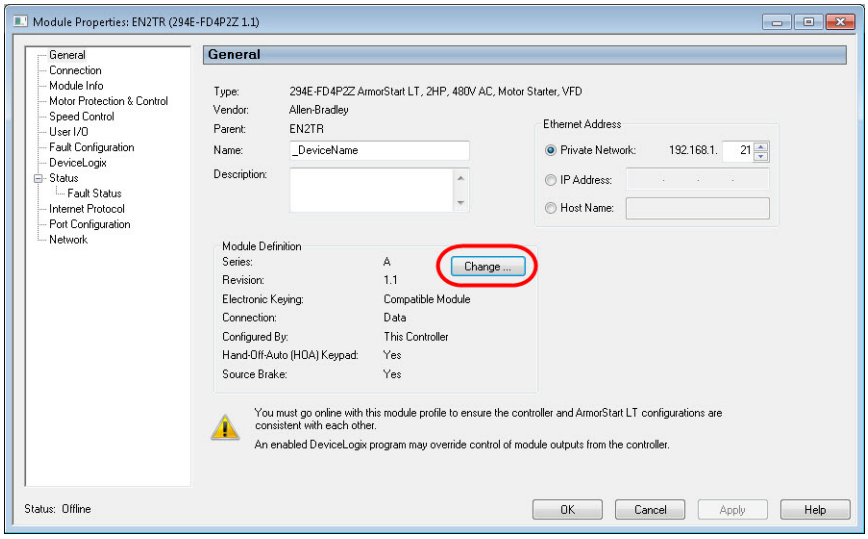
    The new Device Module Program appears in the Controller Organizer within the Main Task folder.

If a device module with energy support was selected, the program will contain an additional routine named R05_Energy. Refer to Set MSG Path in the E3 Plus Energy Monitoring Routine on page 81, for more information.

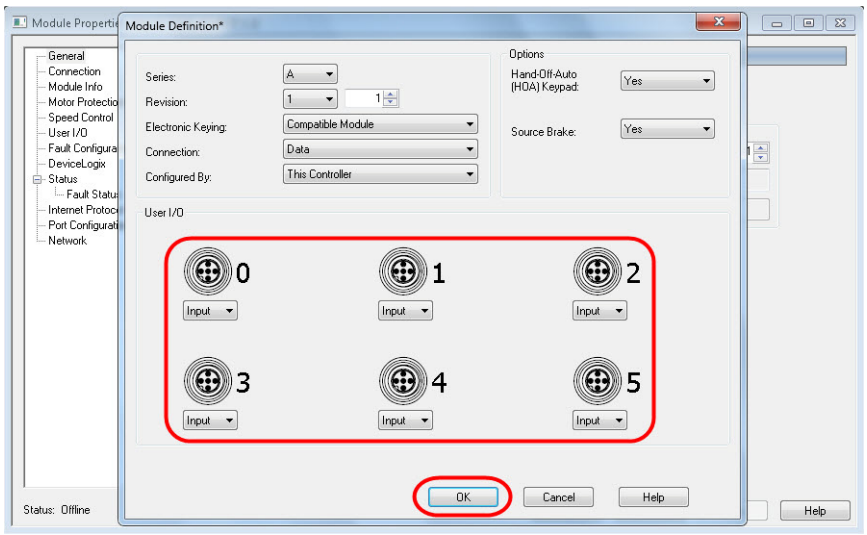
How to Change the AOI Input and Output Data Type

Follow these steps to change the ArmorStart LT AOI input and output data type. This example shows the ArmorStart LT 294E motor controller without IPS (internal power supply).

1. Under I/O Configuration in the Controller Organizer, right-click your ArmorStart motor controller and choose Properties.
2. Click Change in the Module Definition area



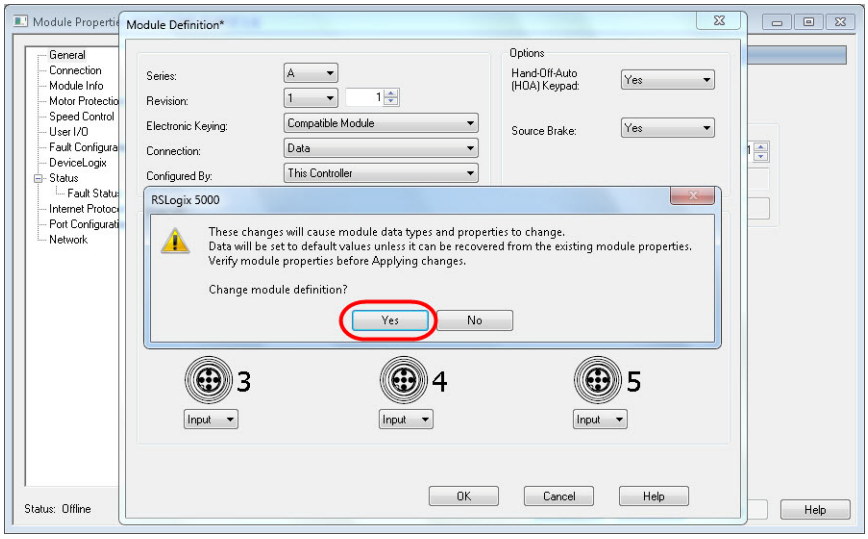
The Module Definition dialog box appears.



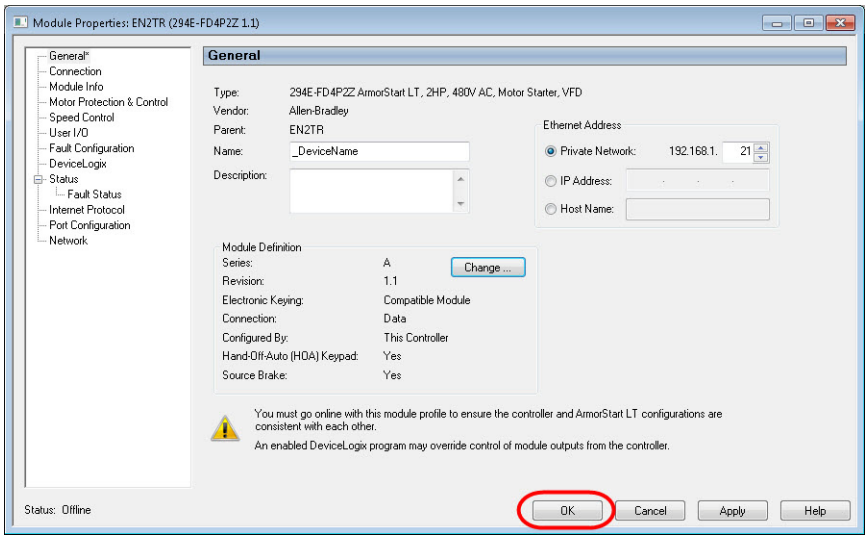
3. Configure the User I/O settings per application requirements.

   In this example, all the User I/O settings are configured as inputs.
4. Click OK to save and close the Module Definition dialog box.

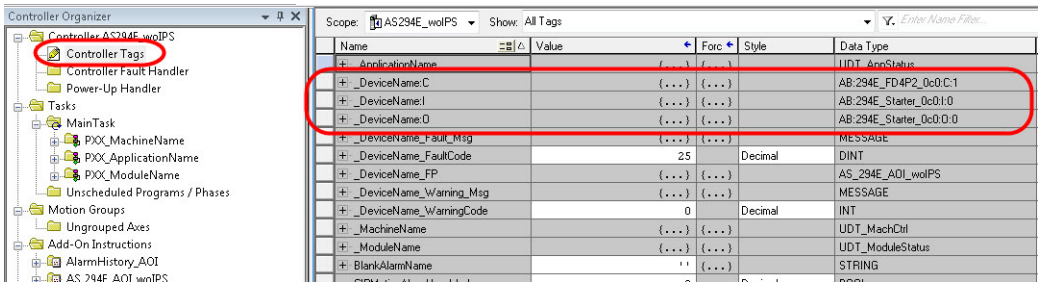
5. Click Yes to acknowledge the Change module definition warning.



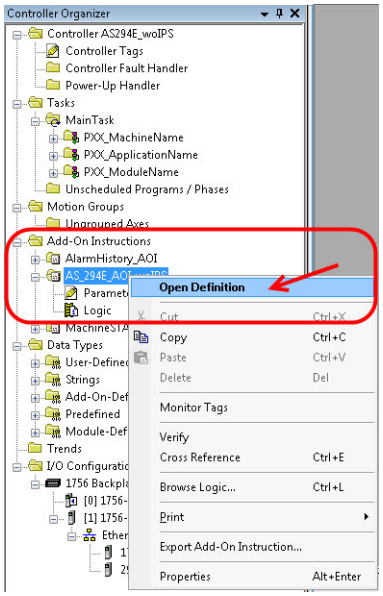
6. Click OK to close the Module Properties dialog box.



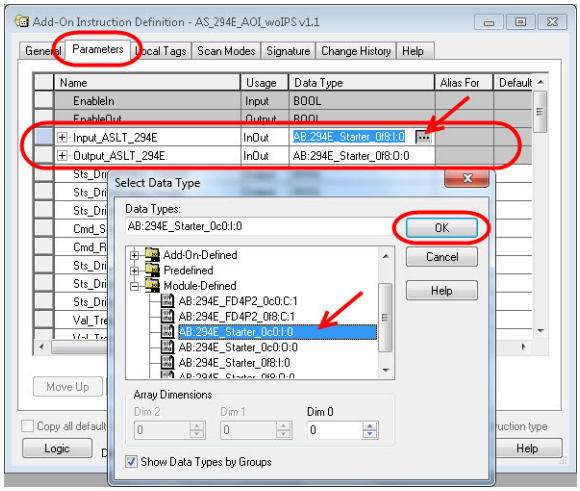
7. Under your ArmorStart controller in the Controller Organizer, double-click your ArmorStart motor controller and observe the new Data Type information.



8. Under the Add-On-Instruction folder in the Controller Organizer, right-click the ArmorStart AOI (AS_2XXE_AOI_...) and choose Open Definition.



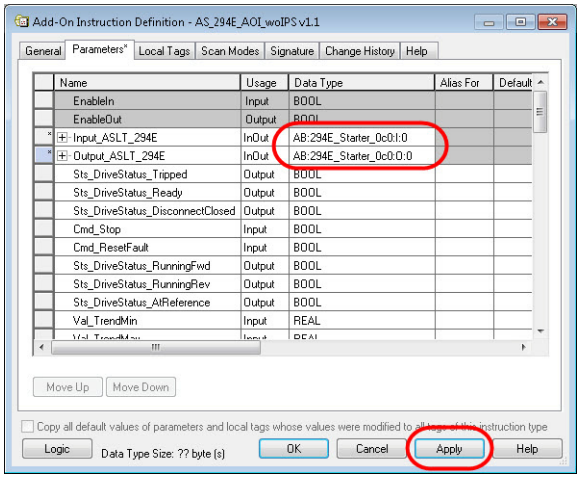
The Add-On Instruction Definition dialog box appears.



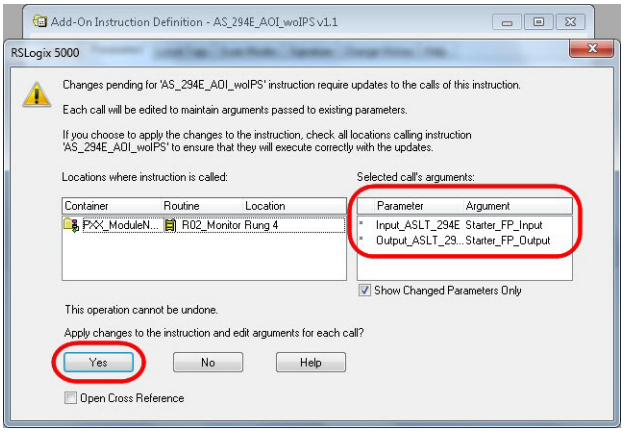
9. Click the Parameters tab.
10. Search for the Input and Output tags and click the ellipses under the Data Type column for the Input tags.

    The Select Data Type dialog box appears.
11. Select the new Data Type previously identified in step 7.
12. Repeat step 10 for the output tags.
13. Click OK to close the Select Data Type dialog box.

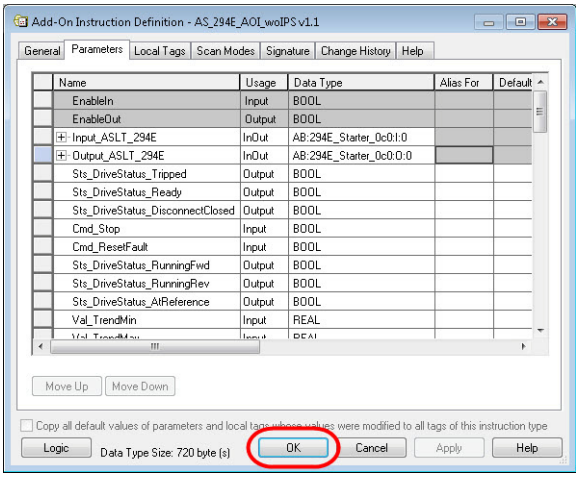
14. Review the new Data Type and click Apply.



15. Review the new parameters and click Yes to apply the edits.



16. Click OK.



The new AOI input and output Data Type changes are complete.

Notes:

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com/ for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/services/online-phone.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Documentation Feedback

Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication RA-DU002, available at http://www.rockwellautomation.com/literature/.

Rockwell Automation maintains current product environmental information on its website at http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page.

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

Publication IASIMP-QS019F-EN-P - September 2015
Supersedes Publication IASIMP-QS019E-EN-P - August 2013