# Cobalt Programming Manual

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**Software Version:** Cobalt - 32.58.00

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# Cobalt by Econolite

## Table of Contents

# Econolite New Controller Setup


## Guided Setup

If you want a step-by-step guide to program basic Cobalt controller parameters, select **Guided Setup**:

- This takes you to the first of a series of basic screens to do essential programming.
- You can navigate to the next or previous screen with the right and left arrows at the top of each screen.
- For help in each screen, select **Options > Help** (**Options** is the icon in the upper right corner with three horizontal bars).

## Manual Setup

If you want to manually program the Cobalt controller, select **Manual Setup**.

- This takes you to the **Home** (Traffic Applications) screen.
- From the **Home** screen, select the related icon for the function you want to program.
- At any time, from the **Home** screen, you can go to the Guided Setup from the **Options** drop-down menu
  (**Options > Guided Setup**) (**Options** is the icon in the upper right corner with three horizontal bars).

## Additional online help scheduled for next release

Updates will be available on a regular basis. Scan the QR Code below to access the latest Cobalt documentation and reference material. **( http://www.econolite.com/QR/controller/cobalt/ )**

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# Home

## Traffic Applications

### Default Home Screen


This is the main Home screen from which you access the screens to program Cobalt for your application.

In future software versions, this screen may have more application programming screens.

Select the applicable icon to program:

- Cabinet Config
- Phase Order
- Overlap
- Ped Overlap (default is hidden)
- Detection
- Flash
- Timing Plans
- Phase Options
- Preemptions
- Transit Signal Priority

- Coordination
- Split Demand
- Event Plans
- Scheduler
- Settings
- Video Viewer (default is hidden)
- Logic Processor

To program whether you want to show (**Yes**) or hide (**No**) these icons, go to:

**Settings > Applications** or select **+/-** in the upper right corner of this screen

When you are in the Applications screen, select an icon to see a description of the purpose of its screen.

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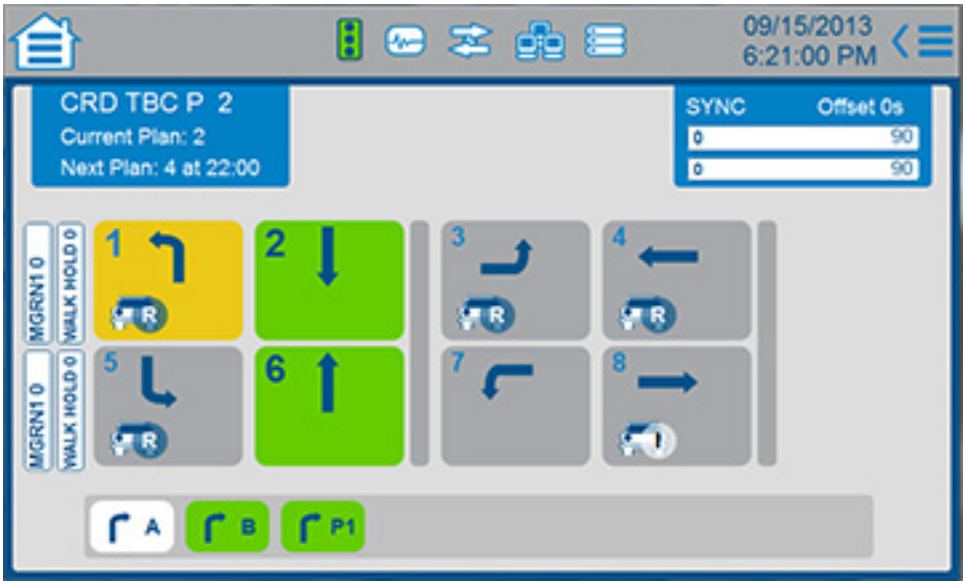
# Home > Signal Status

This Signal Status screen shows the real-time status of the displayed functions.




## Active Phase

The example screen below shows the status for the current Event Plan, a Coordination Pattern that is commanded by Time-Based Control with active Pattern 2 (CRD TBC P 2) as shown in the upper left corner of the screen. The current plan is Plan 2 and the Next Plan is Plan that is scheduled to start at 22:00 hours (10 pm).

## Timing Status

The rectangular fields on the far left of the screen give the active phase timing status.

## Offset Value and Timing

This field is in the upper right corner.

## Overlaps

This field is at the bottom. The example shows vehicle overlaps A and B and pedestrian overlap, P1.

## Activity with Each Phase

You can see the phases that are timing and their colors in real-time. The circles with letters are as follows:

I = Internal application

O = Phase Omitted

R = Recall programmed for that phase

If the circle is red, the phase has passed its coordination permissive period.

## Manual (Internal) Calls

To make a Vehicle or Ped call on a phase:

1. Select the phase
2. Select either [Vehicle Call] or [Ped Call]

To make a Preempt call on a phase:

1. Select the drop-down Options menu.
2. Select [Preemption Call]
3. Select the Preemption Plan number
4. Select [OK]

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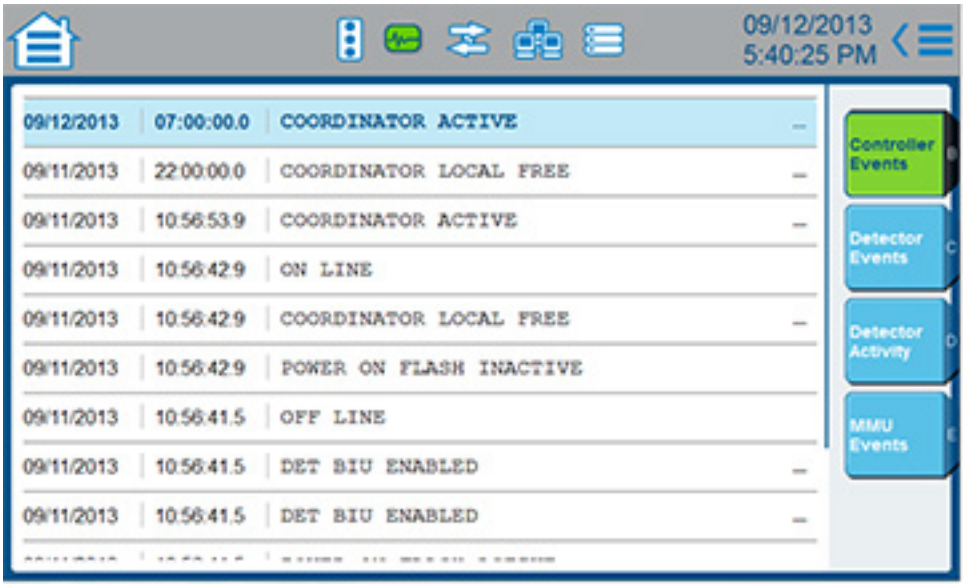
# Event Logs

## What is an Event Log?

Event Logs give historic activity and events of the intersection. There are four logs. Each log records events with a time stamp and has a maximum number of events in its buffer. Below, the maximum number of events for which each event log is capable are shown in parentheses. When the controller reaches the maximum limit, it starts to discard the oldest events.

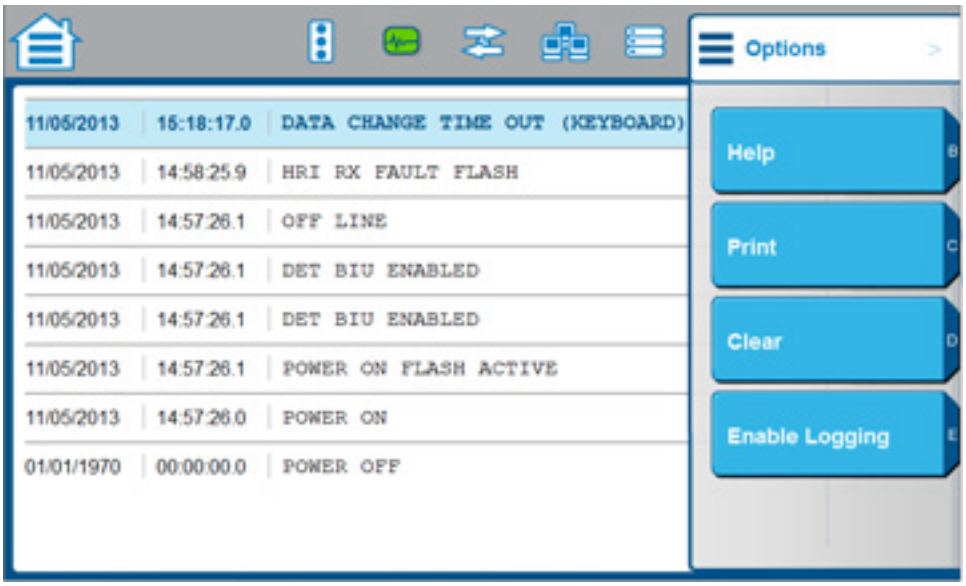
- Controller Events (500)
- Detector Events (300)
- Detector Activity (228)
- MMU Events (50)

To show a display, select the related soft key. The controller events event log is shown below:



## Operations with Event Logs

To Print, Clear and Enable Logging, select the drop-down Options menu, as shown below:

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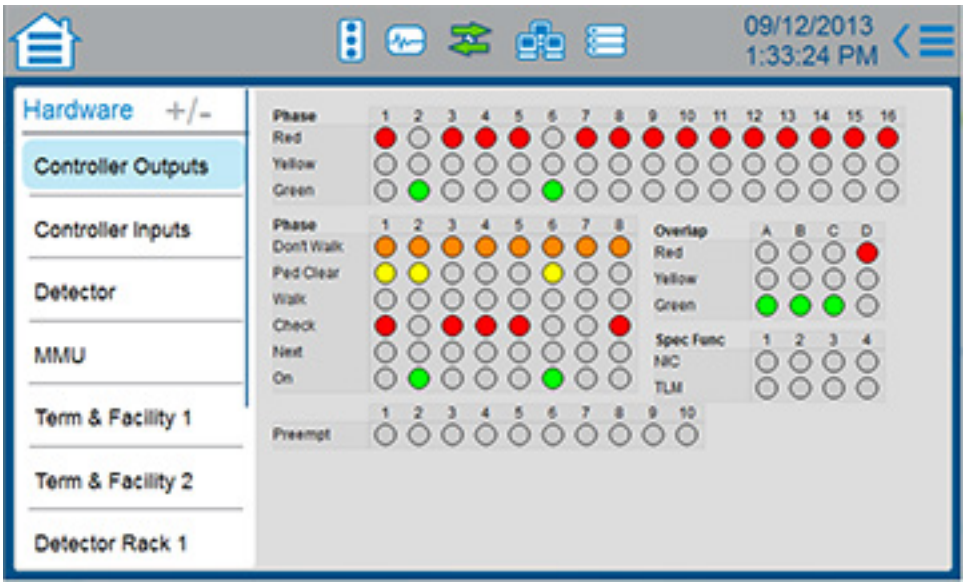
# Cabinet Hardware

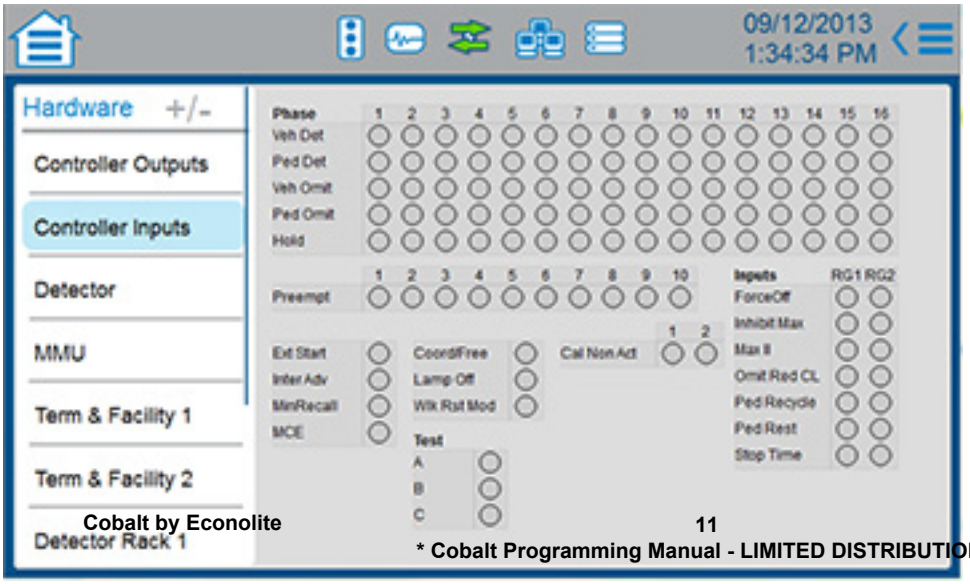
There are six screens for Cabinet Hardware:

- These screens show the real-time status of the displayed functions.
- From the MMU screen, you access screens for MMU Channel Concurrency and MMU Color Check.

## Controller Outputs



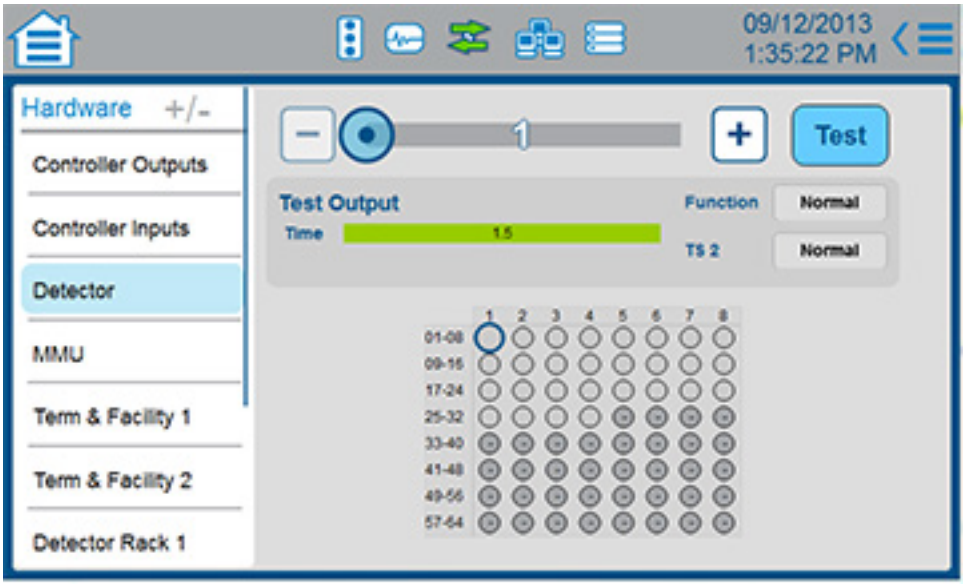

## Controller Inputs



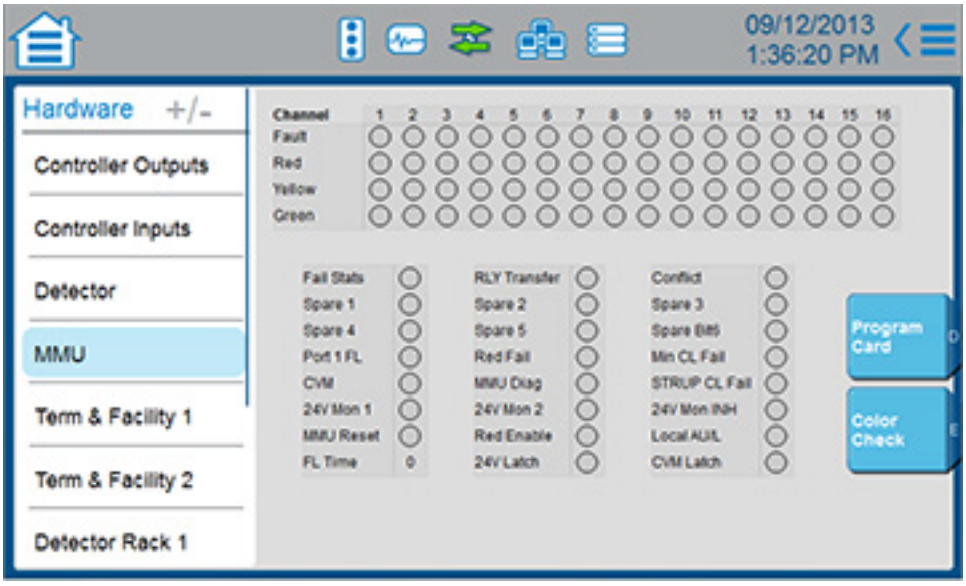
## Detector Inputs

You can place an internal call to test the input of a detector:

1. Select the Detector number (1-64).
2. Select [Test].

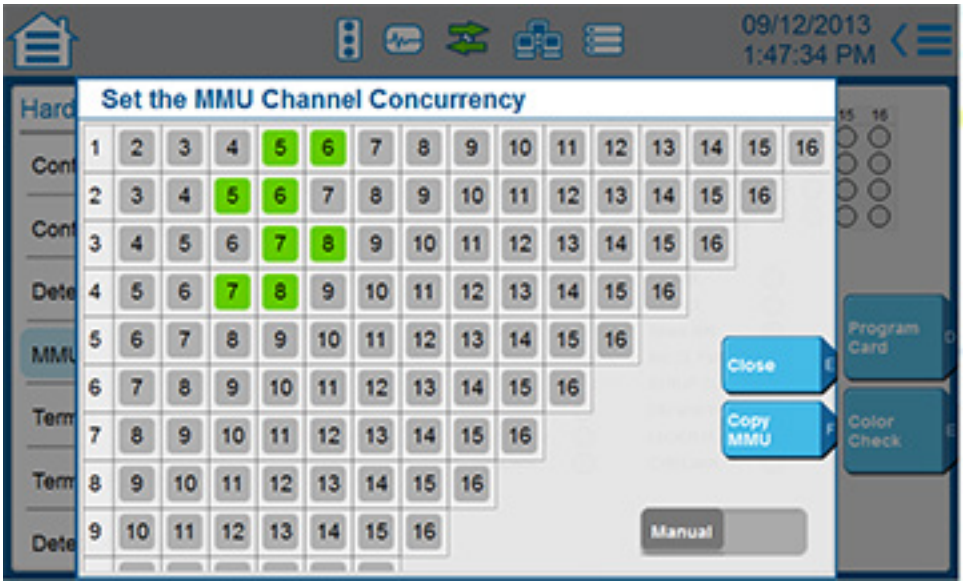



## Maintenance Management Unit (MMU)



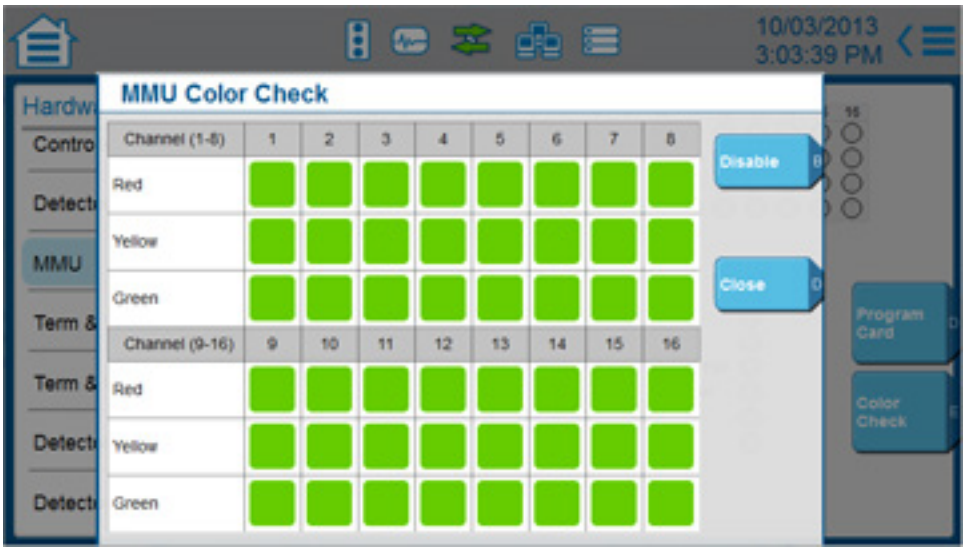
To set the MMU Channel Concurrency:

1. From the MMU screen, select [Program Card].
2. The screen below opens.



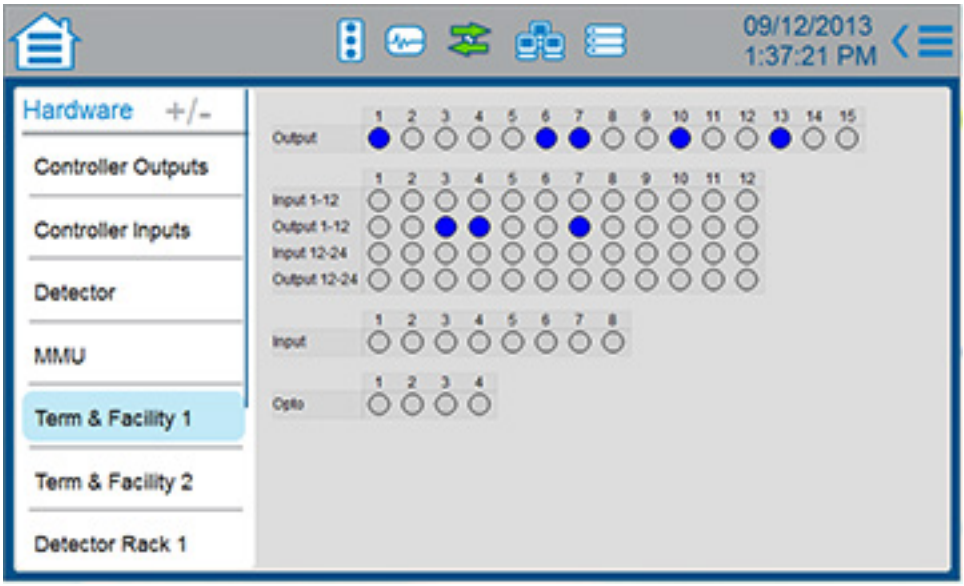

For an MMU Color Check:

1. From the MMU screen, select [Color Check].
2. The screen below opens.



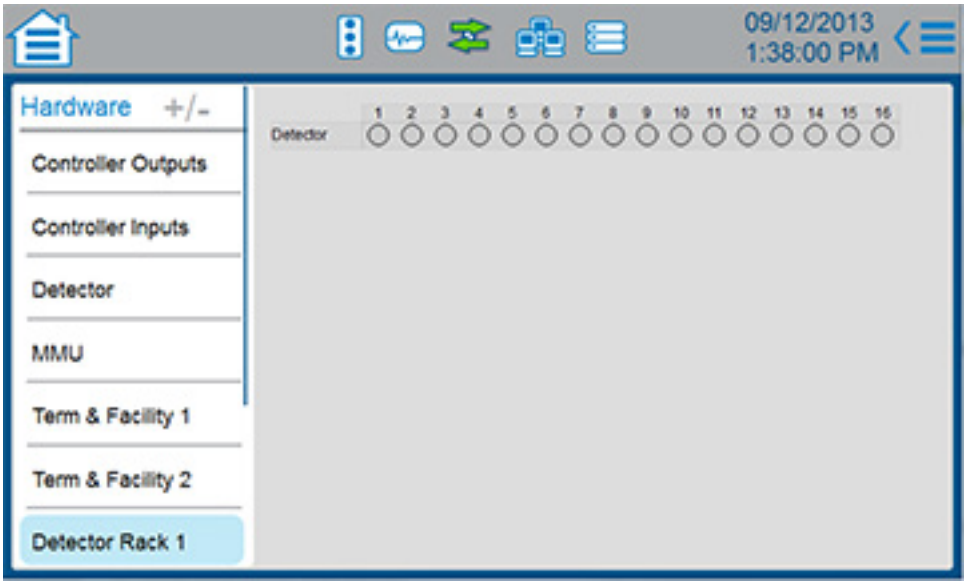
## Terminal and Facility Screens

BIU 1 is shown.




## Detector Racks

BIU 1 is shown.



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# Network

ENET1 NTCIP

Configure and see status for the ENET1 IP address of the unit and adjust protocols and serial in the scrollable list. Contact your Internet Protocol (IP) specialist to determine the correct setting for each of the parameters.

## Example Configuration

ENET1

IP Address: 10.1.15.64

Net Mask: 255.255.248.0

Gateway: 10.1.8.1

FTP Server: 10.1.15.51

NTCIP

Ethernet UDP Port: 55502

## Procedure for Example

Enter the different **ENET1** addresses:

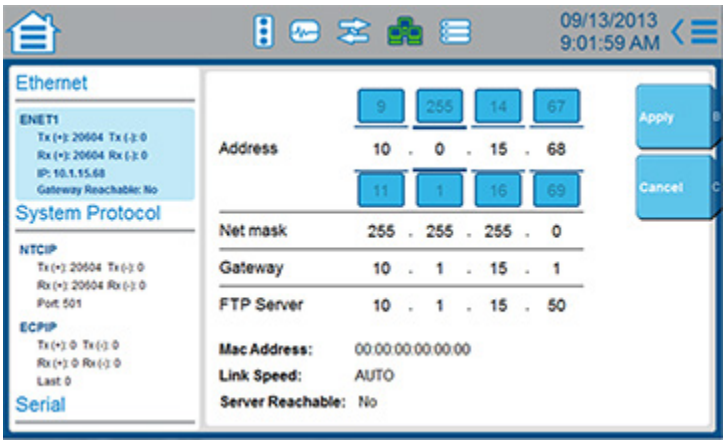
- Select the number you want to change.
- Swipe the number up/down to the correct value.
- Select **Apply** to enter the value, or press **Enter** on the keyboard.

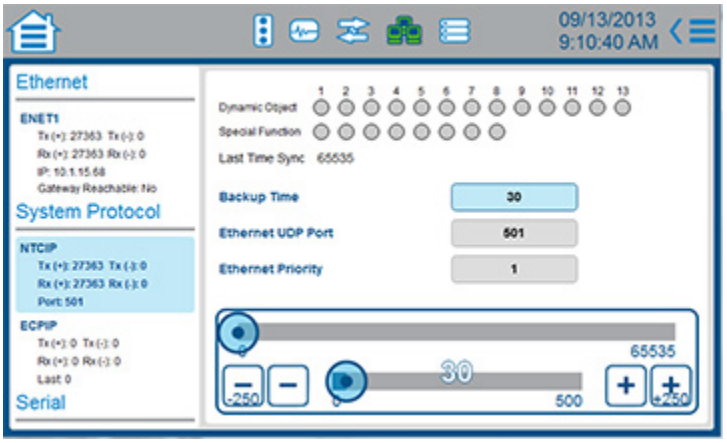
**Note:** You can enter numbers directly with the keyboard. Also, you can navigate to the next address with the keyboard right cursor (works like the Tab on a computer).

Enter the NTCIP **Ethernet UDP Port** value:

- Select **NTCIP** and then the **Ethernet UDP Port** field.
- Slide the scrubber and/or select the +/- buttons, to set the value 55502 (or enter the value with the keyboard).
- Touch an open area of the screen to enter the value (or press **Enter** on the keyboard).

## Completed Screens for Example (Guided Setup screens)




## Ethernet

### ENET1

This Ethernet Port can connect 100 Mbs between the controller and external devices.

Ethernet communication supports NTCIP and ECPIP protocols. Settings for these two protocols are under **System Protocol** in the center of this screen. You configure Ethernet UDP Port for NTCIP in System Protocol, NTCIP. The UDP port for ECPIP is fixed at 2101.

> **Note:** Contact your Internet Protocol (IP) specialist to determine the correct setting for each of the programmable parameters defined below.

| Parameter | Description |
|---|---|
| Address (0-255) | A unique address used by the Ethernet interface. The format follows the Transmission Control Protocol/internet Protocol (TCP/IP) standard dot notation. When used, the address must be assigned from the same subnet as the other network devices with which it may communicate, such as a system controller or File Transfer Protocol (FTP) server. If the controller is connected to an IP router, the address must be valid for that router. |
| Net Mask (0-255) | The Net Mask must be the same as the other devices on the IP subnet to which the controller is attached (when an Ethernet interface is being used).<br>This configures the ethernet port ENET2. |

| Parameter | Description |
|---|---|
| Address (0-255) | A unique address used by the Ethernet interface. The format follows the Transmission Control Protocol/internet Protocol (TCP/IP) standard dot notation. When used, the address must be assigned from the same subnet as the other network devices with which it may communicate, such as a system controller or File Transfer Protocol (FTP) server. If the controller is connected to an IP router, the address must be valid for that router. |
| Gateway (0-255) | The default IP address must be that of the Ethernet interface which is on the same subnet as this controller. This gateway address will be used for transmitting IP messages to end systems, which are not on the same subnet as this controller.<br>This configures the ethernet port ENET2.. |
| FTP Server | This address is optional, and is only required when the IP-based file download options are to be used. The address must be that of the system where the FTP server resides. This field is only used for local downloads from an FTP server host on the local area network. |

The parameters listed below are read-only:

| Parameter | Description |
|---|---|
| Mac Address | The factory-set controller MAC address. |
| Link Speed | This is the selected link speed and duplex setting for your Ethernet LAN. This setting is auto-negotiated or auto-sensed. |
| Server Reachable | Yes = Successful Ping<br>No = Unsuccessful Ping |

## System Protocols

### NTCIP

Port parameters define the NTCIP backup time, UDP Port and priority of the port communications. This programming is only required when the controller is communicating through one of its ports.

From this screen, you specify the NTCIP Backup Time parameters and Ethernet Priority values for Port 2:

| Parameter | Description | Range |
|---|---|---|
| Backup Time | Use the scrubber to enter the appropriate NTCIP Backup Time value in seconds. Value entered (1-65535) establishes the time that the parameters are under control of the SET command and will remain if no SET command is received by the controller.<br>Value 0 disables clearing of the parameters that were set regardless of the time between SET commands. | 0 disables<br>1-65535 sets time |
| Ethernet UDP Port | STMP or IP over PMPP using SNMP or STMP Frame should use this port setting.<br>You can set port 161 to support applications that have a fixed SNMP port setting. | 161,<br>500-65535 |
| Ethernet Priority | Use the scrubber to enter appropriate priority level value (1-9, with 1 highest) for the port. Value selects the priority of commands from that port. While a higher priority port is in control, the lower priority port can continue to retrieve status information. The order of priority when ports have the same priority number is (from highest to lowest) Ethernet, Port 2. | 1-9, with 1 highest |

## Serial Communication Protocols

### TERM (Terminal)

Provides VT100-compatible communication.

### NTCIP

Provides NTCIP-compatible communication.

### ECPIP

Provides ECPIP-compatible communication. This protocol is tailored to function in an Econolite Aries or Zone Master system.

### AB3418

Provides AB3418-compatible communication. This protocol is tailored to comply with the California AB3418 specification.

**Note: Metro Rapid and IEEE 1570 protocols are for future development.**

### GPS NMEA

Provides a connection to process a GPS NMEA message to set the time and date (or longitude/latitude). The controller supports an Eltec GPS unit and all other standard GPS devices that support a GPS NMEA Protocol message $GPRMC on serial **COMM PORT2**. This feature is compatible with *Centracs* Version 1.5.3 or later. Information to order a GPS unit (antenna, antenna cable and serial interface cable) from Econolite is given below:

| Part No. | Connector | Name |
|---|---|---|
| TSD25-GPS | 25 Pins for Serial Port 2 | Eltec GPS DB25 Serial Time Sync Unit |

## COMM PORT 2

1. In the **Protocol** drop-down menu, select the protocol for your application (TERM, NTCIP, ECPIP, AB3418, or GPS NMEA). The screen populates automatically with the applicable fields to set the parameters that are related to the protocol you select.
2. Program the parameters per the table that follows.
3. After you program the parameters, in the **Enabled** field, select **Yes**

| Parameter | Description | Range |
|---|---|---|
| Enabled | After you program the parameters, select **Yes**.<br>**Note:** The port should not be enabled during setup or non-use. | Yes, enables<br>No, disables |
| Protocol | Select from the drop-down menu | TERM, NTCIP, ECPIP, AB3418, GPS NMEA |
| Speed | Select from the drop-down menu | port1200, 4800, 9600, 19200, 38400, 57600, 115200 |
| Data Bits | Select from the drop-down menu.<br>This is of the form D/P/S<br>Where D = Data bits of 7 or 8<br>P = Parity of E (Even), Z (odd), N (None)<br>S = Stop bits of 1 | 7/E/1, 8/N/1, 8/O/1, 8/E/1,;7/N/1, 7/O/1 |
| Duplex | **Important:** Please consult with the factory before changing this setting.<br>As required by modem specifications, the port may be configured as Half or Full Duplex. From the drop-down menu, select HALF or FULL.<br>HALF duplex can receive data only after transmission of a response is complete.<br>FULL duplex can receive and transmit data at the same time. | FULL, HALF |
| Flow Control | Modem control signals sent over serial ports:<br>Carrier Detect (CD)<br>Data Set Ready (DSR)<br>Data Terminal Ready (DTR)<br>Set this to NO when using devices that do not support modem control signals, such as fiber modems. | Yes, enables<br>No, disables |
| Telemetry Address | Select the value with the scrubber to specify a unique address number (1-8191) to which this port will respond. Zero (0) disables responding to any address. | **NTCIP/AB3418** protocol:<br>1-8191: Address to respond to.<br>0: Disables responses<br><br>**ECPIP** protocol:<br>1-24: Address to respond to.<br>0 & 25-8191: Disables responses |

| Parameter | Description | Range |
|---|---|---|
| Group Address | Select the value with the scrubber to specify an address number that allows a master station to access this slave station via group command of NTCIP protocol.<br>1-62 and 64-65535 for AB3418.<br>1-62 for NTCIP.<br>Address 63 is reserved as an all stations group address.<br>Address zero (0) excludes the station from any group. | 0-65535<br>except 63 |
| Drop Out Timer | Select the value with the scrubber to enter the time in seconds (1-65535) from when the last valid command occurs before the controller is returned to local control. Zero (0) disables the dropout feature. | 1-65535 seconds<br>0 disables |
| Single Flag | For AB3418 or NTCIP.<br>Select **YES** (enable) or **NO** (disable).<br>**Yes**: The frame flag is used as both the closing flag for one frame and the opening flag for the next frame.<br>**No**: Each response frame contains an opening and a closing flag. | Yes, No |
| Modem | Toggle to select one of the internal modem setup string options (NONE, 56K, or USER). Use this typically for the optional Intersection Monitor module. | NONE, 56K, USER |
| User | Specifies the unique modem setup string required for the modem being used. This string is only used if the MODEM SETUP STRING is set to USER.<br>The on-screen keyboard is in view when you are in this field. Consult the manual for your modem to determine the setup string required. Use this typically for the optional Intersection Monitor module. | 0-9, A-Z |
| Response Delay | ECPIP Only<br>Telemetry Response Delay (TRD) compensates response timing for overall communication delays. Decrease (start communication earlier) to compensate for longer delays and increase (start communication later) to compensate for shorter delays. | 0.0-30.0 msec |

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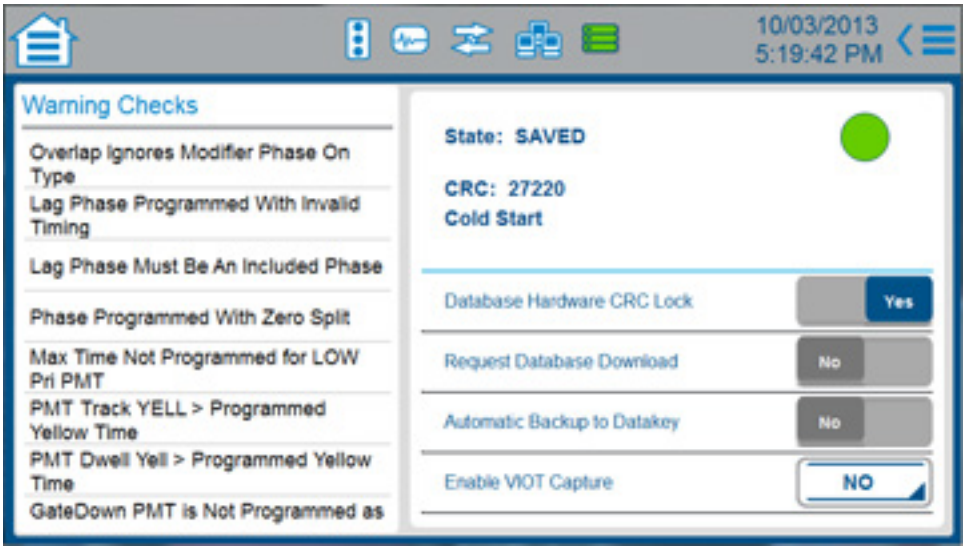
# Database

This screen gives access to Consistency and Warning Checks and has a Database Copy Utility.




## What is a Warning Check?

In the Cobalt controller, following a database download or object data alteration via key board, the controller runs Consistency Checks to look for critical errors. If it detects errors, they must be corrected or all database changes are discarded.

After you program the controller, it may appear that a certain feature does not operate correctly, but it may be because of incorrect programming. To call attention to a possible incorrect programmed entry, the controller generates a Warning. The controller generates a Warning if, in the opinion of Econolite, you override the programmed parameter setting from a database with an unusual selection, or select a combination of programmed values that may not give you the operation you probably expect. Warning Checks are intelligent diagnostics designed to tell you of data entries that, by themselves or in combination with other entries, may result in unexpected operation.

**Important: One thing to keep in mind: a warning is not an error.**

Occasionally, it could be that programming results in incorrect operation, but is acceptable to you because it provides a benefit to you that compensates for an occasional operational anomaly. For example, some users routinely program Walk and Pedestrian Clearance times that exceed phase split times in coordinated operation because there are very few pedestrian calls and the user does not mind the occasional coordinator resynchronization that follows the service of a pedestrian call. Because we cannot possibly anticipate what you have in mind, it is left to you to decide what action, if any, to take to correct the situation that caused a Warning message.

Initially, the software framework and a limited set of diagnostics will be available. Warning Checks are viewed as a long-term **work-in-progress**. These checks will be expanded as users and developers find situations that cause an unexpected controller operation.

Select the condition for your application:

Database Hardware CRC Lock (Yes, No)

Request Database Download (Yes, No)

Automatic Backup to Datakey (Yes, No)

Enable VIOT Capture (Yes, No, Y + C)

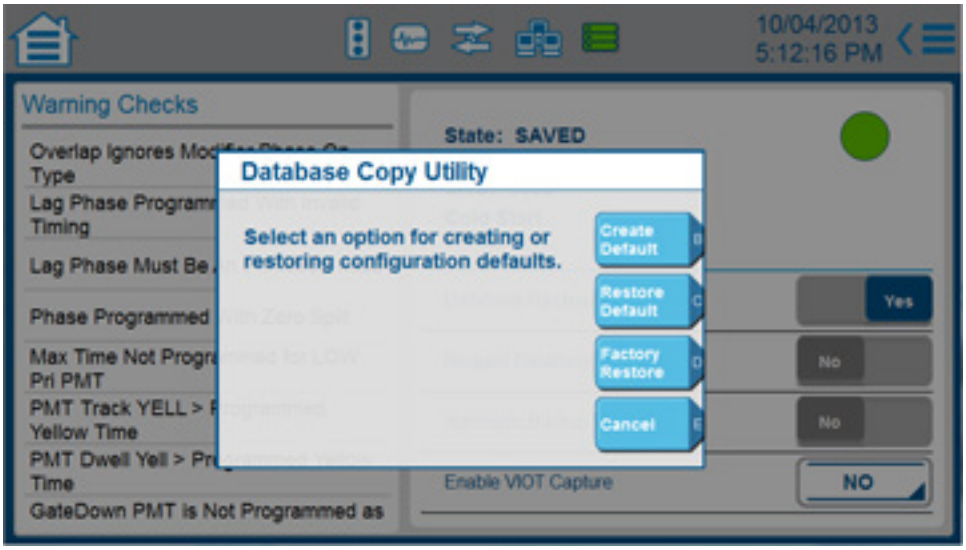
## Database Copy Utility

**Note:** When you program Cobalt, you select Commit as necessary to enable the change to the database. For an explanation of Transaction Mode (that runs when you make a critical change to programming), refer to the Help for Home > Phase Order > Phase Order.

To access the Database Copy Utility, select the Options drop-down menu and then select [Copy Database].

The screen shown below opens. Use this screen to:

- Create a Default Database
- Restore your Default Database
- Restore the Factory Default Database



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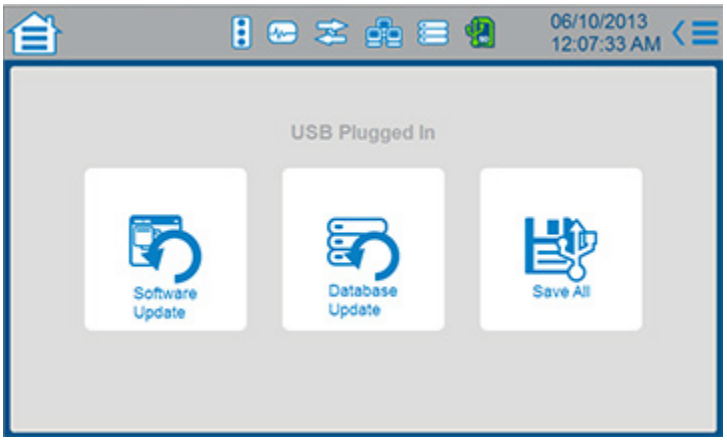
# USB Status

## Using Database Update to Transfer an Application Database

If you have a controller with Econolite *ASC/3* software, you can transfer its application database to a *Cobalt* controller. To transfer your database, use the procedure below that applies to your controller. You will need a USB flash drive (memory stick).

When you insert a USB flash drive into a Cobalt controller, this External Drives icon is added to the Status Bar:

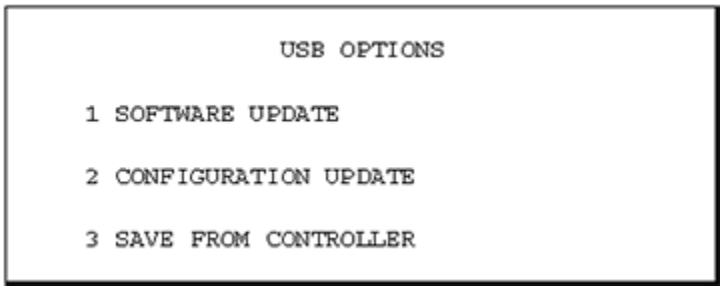

When you select the External Drives icon, this screen opens and the External Drives icon turns green:



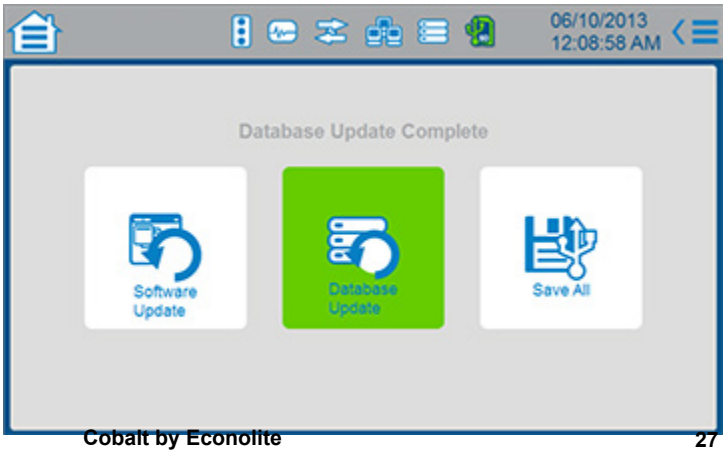

For the screen after a database transfer, refer to the end of this document.

| Current Econolite Database | Procedure to Load Database into a Cobalt |
|---|---|
| *ASC/3 or ASC/3-2070* controller connected to *Centracs* | 1. Upload the database into the *Centracs ASC/3* editor.<br>2. Export the database files.<br>3. Copy the database files to a USB flash drive.<br>4. Insert the USB flash drive into a *Cobalt* controller.<br>5. In the Status Bar at the top of the screen, select the External Drives icon.<br>6. In the center of the screen, select Database Update. |
| *ASC/3* controller *not* connected to *Centracs* | 1. Run the *ASC/3* Utility to upload the database from the *ASC/3*.<br>2. Copy the database files to a USB flash drive.<br>3. Insert the USB flash drive into a *Cobalt* controller.<br>4. In the Status Bar at the top of the screen, select the External Drives icon.<br>5. In the center of the screen, select Database Update. |
| *ASC/3-2070* software on a 2070 controller *not* connected to *Centracs* | 1. Run the *ASC/3-2070* Utility to upload the database from the 2070.<br>2. Copy the database files to a USB flash drive.<br>3. Insert the USB flash drive into a *Cobalt* controller.<br>4. In the Status Bar at the top of the screen, select the External Drives icon.<br>5. In the center of the screen, select Database Update. |
| *ASC/3-LX* software on a 2070E controller with a 2070-1C CPU module | 1. Insert a USB flash drive into the 2070-1C CPU module.<br>2. The screen shown below opens.<br>3. Select 3 SAVE FROM CONTROLLER.<br>4. Select 1 SAVE CURRENT CONFIGURATION.<br>5. After the copy to USB, a SUCCESSFUL COMPLETION" screen opens.<br>6. Insert the USB flash drive into a *Cobalt* controller.<br>7. In the Status Bar at the top of the screen, select the External Drives icon.<br>8. In the center of the screen, select Database Update. |

*Screen that opens when you plug a USB flash drive into a 2070-1C CPU module:




After a successful database transfer, and you see this screen, remove the USB flash drive.



## Additional online help scheduled for next release

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# Home > Cabinet Config

## Load Switch Assignment

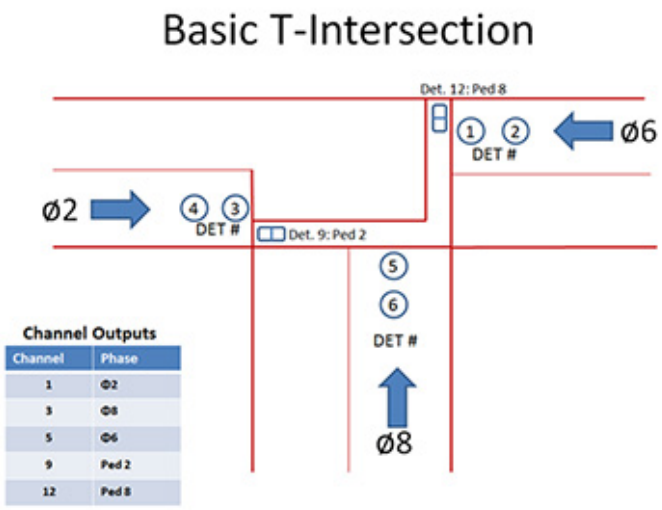
The Load Switch pages configure the channels of the unique geometry of an intersection.

In this Load Switch screen, you configure the 16 Channel Outputs by assigning phase, overlap or pedestrian drivers.

For each Channel Output you program:

- The Channel **Type**: None, Vehicle, Pedestrian or Overlap
- Phase pedestrian or overlap **Assignment**
- **Approach**: the eight directions (for example, North, South, East, West, Northeast, Northwest, Southeast or Southwest)
- **Movement**: select from all possible combinations of straight, left and right arrows
- **Dimming**: Select Red, Yellow, Green and which half cycle to use

### Example Configuration




| Channel | Driver |
|---|---|
| 1 | Phase 2 |
| 3 | Phase 8 |
| 5 | Phase 6 |
| 9 | Ped 2 |
| 12 | Ped 8 |

## Procedure for Example

### Type

Per the table above, select the Vehicle or Pedestrian button at the bottom. To go to the Channel 9 thru 16 screen, select **>** in the top right corner.

**Assignment** (Phase/Overlap)

1. Slide the scrubber and/or select the **+/-** buttons, to set the values per the table.
   For unused phases, enter **0**.
2. For each value, select **Commit** or select **Commit** once done channel programming.

### Approach

Select one of eight directions (for example, North, South, East or West) for each channel per the intersection diagram.

### Movement

Select the straight, right, left, or combination of arrows for each channel that is used.

**Note:** The completed screens for this example configuration are shown below.

## General Notes for the Channel Outputs (Load Switch Assign) screen

**Numbers at the Top** - 1 thru 8 (first screen) and 9 thru 16 (next screen) are the load switch and MMU channel numbers, 1 thru 16.

**Type** - Vehicle, Pedestrian, Overlap or None (“other” not defined)

- Select Vehicle, Pedestrian or Overlap indication (Walk, Pedestrian Clear, and Don’t Walk) as the source of each load switch and MMU channel.
- This selection applies only to TS2 operation with a TS2 MMU. It provides the selection of and correlation between the indication and MMU channel to make sure that the load switch output sensed by the MMU corresponds to the BIU command.
- This selection also allows the controller to redundantly check and verify the load switch outputs indications as sensed by the MMU are as it commanded.

**Assignment** - 0 thru 16 for Vehicle and Pedestrian phases; A thru P for Overlaps (Green/Walk, Yellow/Ped Clear and Red/Don’t Walk)

1. Select a number (with the scrubber) or letter (from the selection boxes) for the assignment
2. Select **Commit** at the top of the screen (or **Rollback** if you want to undo your selection)

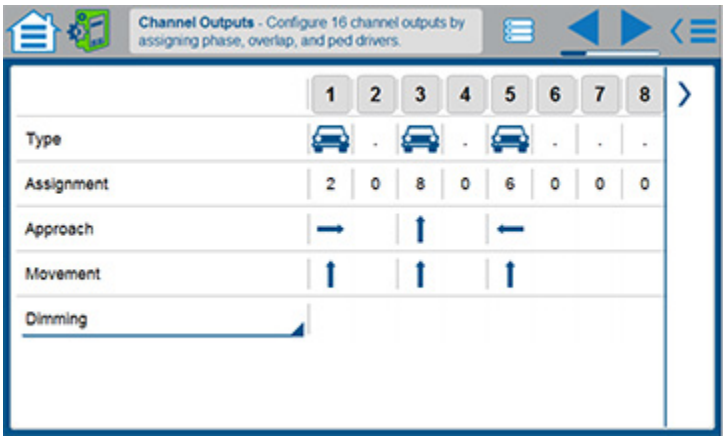
   Assignments are for each load switch and MMU channel.

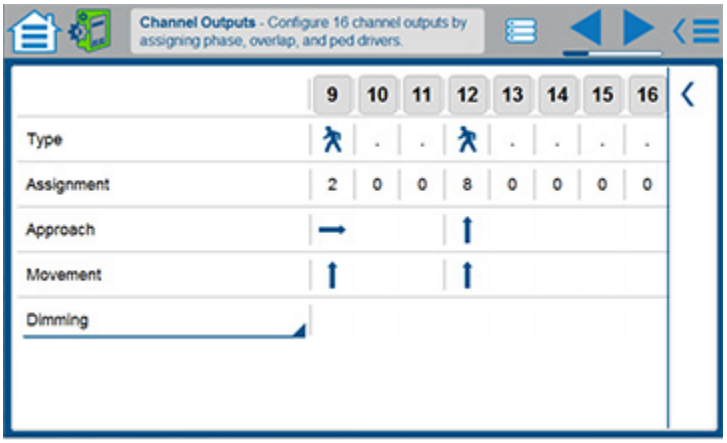
   **0** (zero): deselects any control for that load switch.

   This assignment applies only to TS2 operation with a TS2 MMU. It provides the assignment of and correlation between the indication and MMU channel for verifying that the load switch output sensed by the MMU corresponds to the BIU command.

   **Note:** For TS2 operation, unused load switch/MMU Channels should be cleared of all **Type** and **Assignment** programming.

## Completed Screens for the Example Configuration above (Guided Setup Screens)




## General Notes for the Channel Outputs (Load Switch Assign) screen, continued

**Approach** - select one of eight directions (for example, North, South, East or West) for each channel

**Movement** - select from all possible combinations of straight, left and right for each channel

**Dimming** - select Red, Yellow, Green and which Half Cycle to use for each channel

**Note:** After you select the drop-down menu, you need to scroll down to see the selections.

**For Dim Red, Yellow, Green:**

√ To allow a load switch indication(s) to be dimmed when dimming is enabled

No √ To inhibit a load switch indication(s) to be dimmed when dimming is enabled

**For Half Cycle:**

√ To select the positive (+) half cycle for dimming

No √ To select the negative (-) half cycle for dimming

**Note:** When dimming, the indication load current should be balanced for the positive and negative half cycles of the AC line.

## Additional online help scheduled for next release

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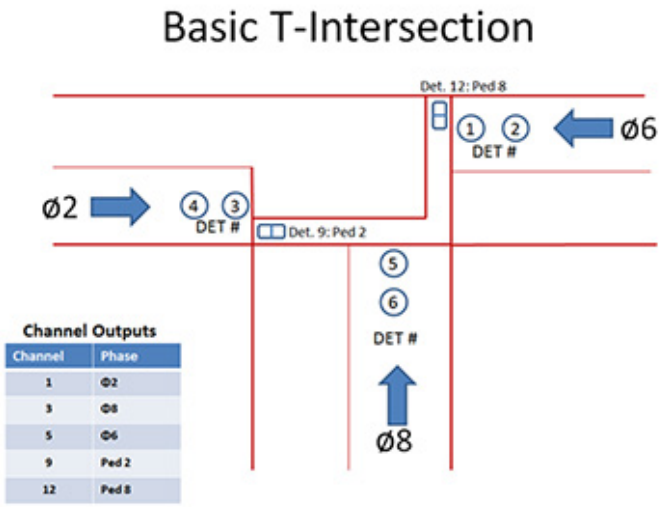
# Home > Phase Order

## Phase Order

The Phase Order pages configure the priority, concurrency, and order in which phases will be serviced.

Program the order and concurrency of phases by selecting the ring barrier phases. Options for adding/removing/swapping are dynamic tabs.

### Example Configuration




| Ring | Barrier 1 Phases | Barrier 2 Phase |
|---|---|---|
| 1 | Phase 2 | Phase 8 |
| 2 | Phase 6 | |

### Procedure for Example

1. As necessary to configure as specified:

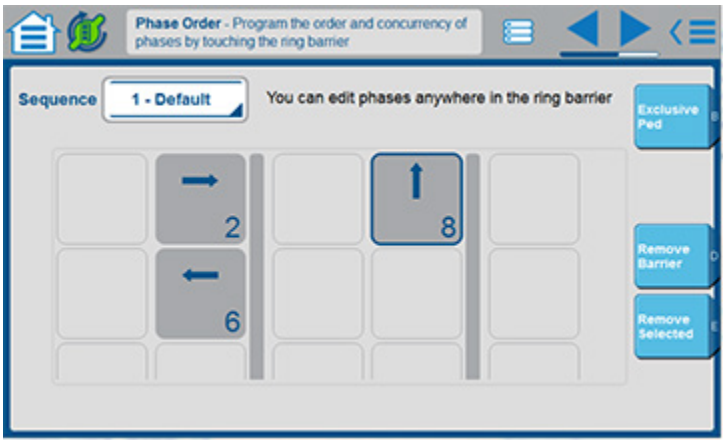
- Select two phases (4 and 8) and then select **Swap Selected**
- Select a single phase and then select **Remove Selected** for phases 1, 3, 4, 5, and 7.

2. After each operation, select **Commit** or select **Commit** after programming is complete.

   **Note:** If you incorrectly delete a phase, select **Rollback** to start over.

3. You may get a Please Wait message after you select **Commit**

## Completed Screen for the Example Configuration (Guided Setup Screen)




## Transaction Mode

**IMPORTANT: To program an ASC/3 or an ATC 2070 Controller with ASC/3-2070 or ASC/3-ATC software, it is necessary for you to understand Transaction Mode. Before you proceed, read and understand this section about Transaction Mode.**

## Introduction

A Cobalt Controller contains a wide variety of Traffic features designed to give you maximum flexibility in configuring an intersection. This broad base of applications requires database functions which, in many cases, depend on other data entries to work properly. To ensure that critical data is entered properly, the controller must run consistency checks on the database. These tests make sure interrelated database functions are compatible with each other.

The consistency checks are done in what is called **Transaction Mode**.

Some data is relatively independent, such as timing entries. Other data, like the selection of controller startup phases, depends on the phases and compatibilities of programmed sequence. These data must be done within the Transaction Mode. Another type of data that triggers Transaction Mode is one that has 2 or more functions — examples include HH:MM or 10.70.10.51.

Controller data may be modified manually via the keypad or remotely using SNMP/STMP messages. In either case, critical data must be protected from incorrect or inconsistent changes.

## Changing Data with the Keypad

If you attempt to modify a critical piece of data with the keypad (for example, controller start-up phases), the controller automatically goes to Transaction Mode. A warning message will appear on the display and the top line of the screen will flash. At this point, all changed data is stored in a temporary buffer until you exit Transaction Mode.

When the Cobalt is in Transaction Mode, the controller gives you audio-visual indications as explained below:

- Over the Database icon in the Status Bar, there is a rotating circular symbol and the selection of Rollback (do not make a database change) or Commit (add the change to the database)
- As a reminder, if there is no key activity for 30 seconds, the controller will produce a continuous beep sound and a pop-up reminder message will be displayed. This reminder is the same as the message seen when you first triggered transaction mode and serves as a reminder to users who

might not remember how to exit transaction mode. Any key activity will stop the buzzer but selecting Rollback clears the transaction mode message.

- The front-panel LED will blink Fast Yellow

### To exit Transaction Mode without saving the data, select Rollback.

### To initiate the VERIFY state, once you have completed all of the changes, select Commit.

During the verify state, the controller runs its consistency checks on the newly entered data. If the data passes, then the changes are copied to the active database and Transaction Mode is terminated. If the Consistency Checks find an error (for example, incompatible Startup Phases), then the controller displays a description of the problem and gives you the option to disregard/throw away all changes or to go back into Transaction Mode to correct the data.

Although the controller's display will show your changes, it is important to note that those changes will NOT take effect in the controller's operation until Transaction Mode has exited. Also, if you cycle power during Transaction Mode, then upon start-up all modified data will be lost. This is because the modified data was only stored in the temporary buffer and never officially copied to the database.

Please note that not all data changes force the controller to Transaction Mode. Timing parameters such as Minimum Green and Yellow Clearance may be modified as soon as you enter the data. These changes take effect immediately.

## Changing Data with SNMP/STMP

You may also change the Cobalt database with an SNMP or STMP SET message from Central. In this case, it is Central's responsibility to force the controller into Transaction Mode if critical data is to be modified. Before SETs will be accepted on any P2 (or critical) objects, Central must send a SET to dbCreateTransaction.0, changing it to a value of 2- transaction. At this point, Central may send any number of SETs to database objects. These values are stored in a temporary buffer, the same as with the manual keypad entry.

Once Central has completed its SNMP/STMP SETS and is ready to commit the new data to the database, Central must send a 3-Verify to dbCreateTransaction.0. Cobalt will run the same Consistency Checks as for the Keypad entry. Once completed, the controller internally sets the transaction state to 6-DONE. If no errors were found, the new data is automatically copied to the active database. Otherwise, the data is held in the temporary buffer until the discrepancies have been corrected. (Central can see the error messages by doing a GET on the object, dbVerifyError.0.)

## Summary

The Cobalt contains many database elements which are dependent on other entries. To ensure proper controller operations, these dependencies must be checked before data is committed to the active database.

Two methods exist to modify the controller's database- keypad and NTCIP communications. Both require Cobalt to enter a Transaction Mode state to allow Consistency Checks to run on the modified data. If you cycle power BEFORE these checks can be run, then the modified data will be lost.

Also note that while the changes may appear on the controller's screens, those values will NOT be implemented in the controller's operation until Transaction Mode is complete. That is, the Consistency Check must be done before the new data is officially copied to the database.

## Additional online help scheduled for next release

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# Home > Phase Order

## Backup Prevent

The Phase Order pages configure the priority, concurrency, and order in which phases are serviced.

### Backup Prevent

A backup condition occurs when a phase is at rest and there is a call on a specified phase in the same ring. This Backup Prevent Phases screen programs the action that is to take place when a backup condition occurs.

### Procedure

The screen prompts you in the selection process:

1. Select Timing Phase.
2. Select Backup Phase.

In the drop-down menu for each Phase Pair, select **Unconditional** or **All Red**.

The phase pairs are listed to the left. The format is Timing Phase number > Backup Phase number.

To delete a phase pair:

1. In the list to the left, select the phase pair.
2. Select [Remove Phase Pair].

## Additional online help scheduled for next release

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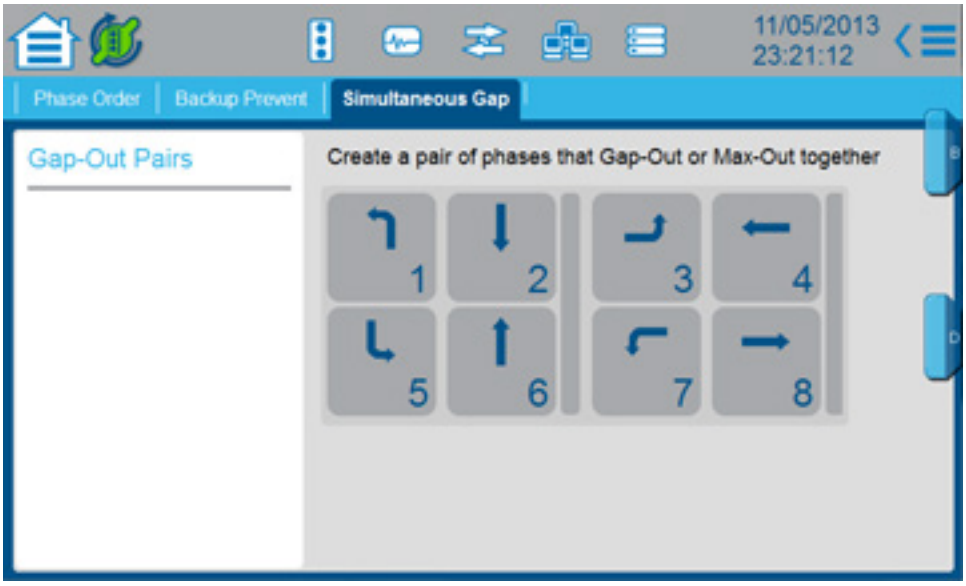
# Home > Phase Order

## Simultaneous Gap

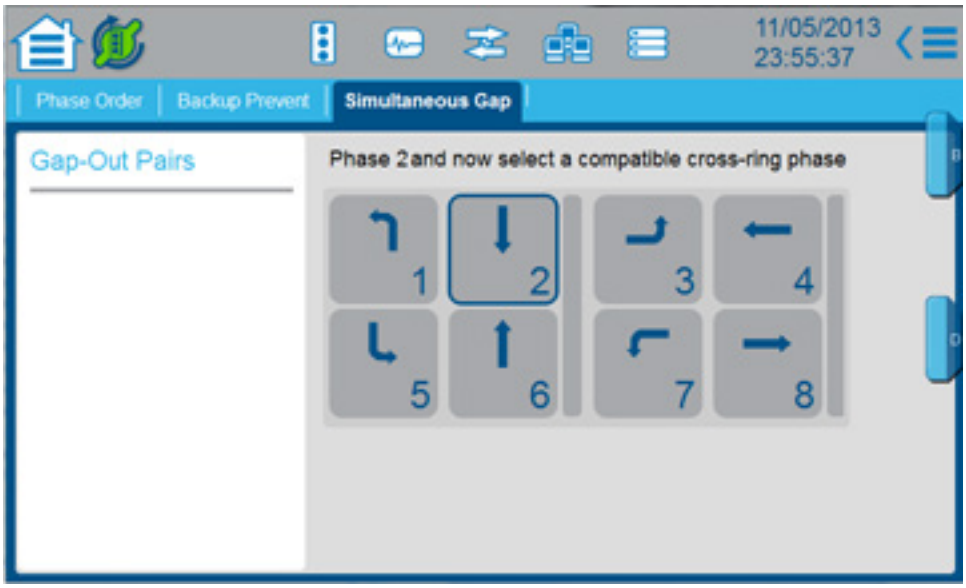
### Example Procedure

To show how to select a pair of phases that will Gap-Out or Max-Out together, we make Phase 2 and Phase 6 into a Gap-Out Pair.

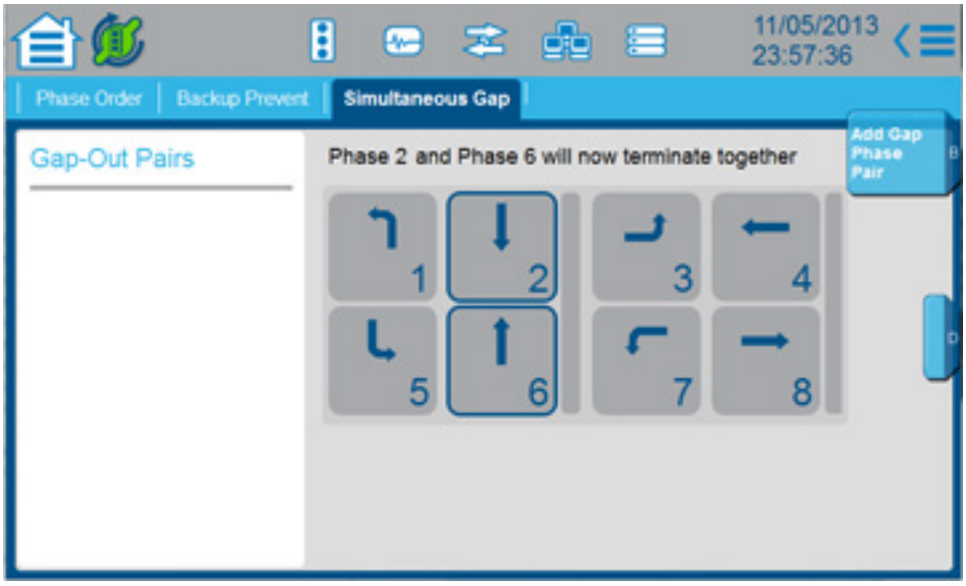
**Note:** This screen prompts you through this process.



1. Select Phase 2:




2. Select the Phase 6:



3. Select [Add Gap Phase Pair].
4. You have now created a Gap-Out Pair that terminate together:


**Notes:**

- Each Gap-Out Pair that you create is listed in the Gap-Out Pairs column on the left.
- To delete a Gap-Out Pair:
    1. Select the Gap-Out Pair in the column on the left.
    2. Select [Remove Phase Pair]

The two phases selected must simultaneously gap when terminating together to service a conflicting demand. If one phase is terminating to service a phase that is permissive with the other phase, then it will not wait to gap simultaneously with the other phase. If a phase is not selected, it is allowed to gap independently with the  phase in the other ring.

## Additional online help scheduled for next release

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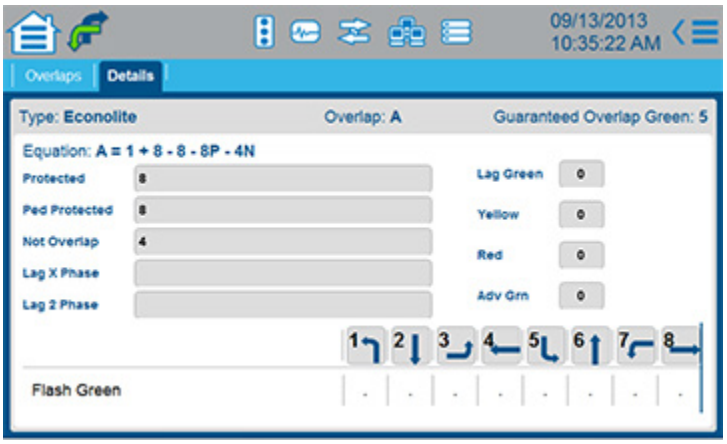
# Home > Overlap

## Overlaps

The Overlaps page configures unique signal drivers outside of common phase control such as right turns or permissive left turns.

### Type: Econolite


After you select Econolite as the type of overlap, select the **Details** tab to program the selected use of these parameters whose functions are described below:

Protected

Ped Protected

Not Overlap

Lag X Phase (Lag, Trailing, Overlap Phases)

Lag 2 Phase (Lead Overlap Phases)

Lag Green (Lag, Trailing, Green)

Yellow

Red

Adv Grn

Flash Green

## Protected

The Protected Overlap is a movement having a protected green arrow (no conflicting phases timing).

> **Note:** When a phase has protected overlap phase assignments, Modifier, Lead, and Trailing assignments are ignored (inhibited).

Select the phases for this type of overlap.

## Ped Protected

The Pedestrian Protect option provides for the specification of phase pedestrian movements that cannot be serviced while the overlap is active. If a pedestrian call is present on a pedestrian protected phase when that phase becomes the phase next selection, the overlap is terminated while the ring transitions from the timing phase to the phase with the protected pedestrian service. If a pedestrian call is not present when the pedestrian protected phase becomes the phase next selection, the overlap remains active if an included phase is timing or a phase next selection. Should a pedestrian call be input while the ring is in yellow change or red clear on the way to the pedestrian protected phase, the overlap is not terminated until the pedestrian protected phase starts and then only if there is enough time to terminate the overlap and time the pedestrian movement before the phase will max out.

Select the phases for this type of overlap.

## Not Overlap

The Not Overlap option is provided to inhibit the activation of an overlap when selected phases are timing. If an overlap is active when a call is placed on a not overlap phase, the phase is not allowed to time until the overlap is terminated. If the order of rotation would normally allow the not overlap phase to time, overlap termination will be initiated even if an overlap included phase is timing or a phase next selection.

Select the phases for this type of overlap.

## Lag X Phase

The Lag (Trailing) Overlap Phases option identifies which phases are to time programmed trailing green, yellow, and red. If Trailing phases are defined, only those phases will time trailing green, yellow, and red when they advance to yellow change and no other included phase is timing or a phase next selection. If no Trailing phases are defined, then trailing green, yellow, and red are disabled.

Select the phases for this type of overlap.

## Lag 2 Phase

For Lead Overlap Phases, when the overlap is active, the last timing overlap included phase is advancing to yellow, no included phase is a phase next selection, and a Lead phase (that is not an included phase) is next, trailing green, yellow, and red will be timed. This operation may be thought of as timing a lagging overlap when proceeding to a particular phase.

When the overlap is not active and a Lead phase that is an included phase is a phase next selection, overlap advance green will be displayed. Overlap advance green output starts, defined by the ADV GRN time, when the phase of the ring that is transitioning to the included Lead phase begins its yellow service.

**Note:** The **Adv Grn** time takes effect only if the lagging **Yellow** time is non-zero.

Select the phases for this type of overlap.

## Lag Green, Yellow, Red

For Lag (Trailing) Green, Yellow and Red times, normally, if an included phase is terminating and no other included phase is timing or a phase next selection, the terminating included phase's yellow and red are also output to the overlap. Trailing Green, Yellow, and Red provide a means of extending the overlap's green and then timing a specified yellow and red. When the last timing overlap included phase begins its yellow change, the overlap's green interval is extended by the specified Trailing Green time. After Trailing Green has timed, Trailing Yellow and Trailing Red times are used to time the overlap's yellow change and red clearance intervals.

**Note:** Lagging times take effect only if the if the Green and Yellow entries are both non-zero.

Range is 0 to 25.5 seconds.

## Adv Grn

Advance Green specifies the minimum amount of overlap advance green to be displayed before a phase next selected included lead phase is started. If the amount of advance green is less than the yellow change time and red clear timed by a ring before its phase next included lead phase can be started, the overlap advance green is extended. If the amount of advance green is greater than the yellow change and red clear timed by the ring before the overlap lead phase next selection would normally start, the terminating ring phase's red clearance is extended until the advance green time is satisfied.

Overlap advance green output starts when the phase of the ring that is transitioning to the included Lead phase begins its yellow service.

Range is 0 to 25.5 seconds.

## Flash Green

Flash Overlap Green is specified for each included phase of an overlap and defines the rate at which the overlap green interval is to flash when the included phase is timing.

For each phase, select a flash rate:

NF = no flash or phase is not an included phase for the overlap

F1 = flash at 1 pps.

F2 = flash at 2.5 pps.

F5 = flash at 5 pps.

The flash is extended across the transition from one included phase to another included phase if their flash rates are the same.

Overlap green will be solid when transitioning between included phases that have different flash rates.

## Additional online help scheduled for next release

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# Home > Overlap

## PPLT/FYA Type Overlaps

The overlaps page configures unique signal drivers outside of common phase control such as right turns or permissive left turns.

### Types of Overlaps

You can program four types of overlaps:

- Normal
- -Green Yellow
- PPLT/FYA
- Econolite

Normal and Minus Green Yellow operate per the requirement specified in NTCIP 1202 paragraph 2.10.2.2. PPLT/FYA uses overlap so you can program Protected Permissive left hand turns. Type Econolite identifies overlaps that supplement the Normal overlap with the Econolite-specific options.

### Overlap Outputs for the PPLT/FYA Type of Overlap

PPLT/FYA = Protected/Permissive Left Turn Flashing Yellow Arrow

This is a special Econolite overlap type for Protected/Permissive Left Turns using the Flashing Yellow Arrow. It changes programmed controller outputs to meet NEMA specification.

To program a PPLT/FYA type of overlap, in the **Type** drop-down menu, select **PPLT/FYA**.

> **Note:** Throughout these procedures, select **Commit** as necessary to enable the change to the database. For an explanation of Transaction Mode (that runs when you make a critical change to programming), refer to the Help for **Home > Phase Order > Phase Order**.


Top of the Screen (for both the Overlaps and Details tab)

The settings listed at the top of the screen show:

- The Type of Overlap you are programming: PPLT/FYA
- The overlap you are programming (A thru P)
- The **Guaranteed Overlap Green** time, in seconds. You set this value in **Home > Timing Plans > Guaranteed**.

## Procedure to program a PPLT/FYA Overlap

1. Select [Create Overlap].
2. A new overlap field (A, B, C, etc.) is shown in the overlap bar at the top. You can create up to 16 overlaps (A thru P).
3. Notice, at the bottom of the screen, there is a prompt, **Select Protected Phase**.
4. Select a Protected Phase (left turn) to Include in the overlap. This phase represents the protected turning movement.
5. Notice, at the bottom of the screen, the Protected Phase you selected in Step 4 is listed and there is a prompt, **Select Permissive Phase**.
6. Select a Permissive Phase to Include in the overlap. This phase is the opposing through movement in which the left turn phase is permitted for PPLT/FYA. When the assigned phase is timing Green or timing with the protected left turn as a next phase decision, then the Flashing Yellow Arrow output is active.
7. Notice:

- At the bottom of the screen, the Protected Phase you selected in Step 4 and the Permissive Phase you selected in Step 6 are listed.
- In the Included list on the left of the screen, each PPLT/FYA overlap is listed with the phases included in that overlap.

  **Note:** To delete an overlap, select the overlap and then select [Remove Selected].

8. Select the Details tab and program the parameters as described in the table below.

| PPLT/FYA Overlap Parameter | Description | Range |
|---|---|---|
| Flashing Arrow Output Channel<br><br>Mode | **Flashing Arrow Output Channel Mode**<br>**Note:** In the example screen above, Channel 13 was selected for Overlap A in **Home > Cabinet Config > Load Switch Assign**<br>In the Mode drop-down menu, select as necessary:<br>**Green Overlap:** Connect the wire of the Flashing Yellow Arrow (FYA) signal to the Green output on the assigned overlap load switch channel (**Home > Cabinet Config > Load Switch Assign**) that is indicated by the (Channel xx) read-only field. Note that the protected and permissive left turn clearance intervals will be the same on the overlap and phase load switch channels.<br>**Ped Yellow:** Connect the wire of the Flashing Yellow Arrow (FYA) signal to the Yellow output on the assigned permissive through load switch channel **(Home > Cabinet Config > Load Switch Assign**) that is indicated by the (Channel xx) read-only field.<br>**Isolate (Isolate Protected Green):** Connect the wire of the Flashing Yellow Arrow (FYA) signal to the Green output on the assigned overlap load switch channel. The protected and permissive left turn clearance outputs will also be located on the overlap load switch channel. Isolate refers to the isolated green indication remaining on the original protected left turn channel. This is based on the EDI Basic FYA Mode." | Green Overlap, Ped Yellow, Isolate |
| Flashing Arrow Output Channel<br><br>Action Plan SF Bit Disable | **Flashing Arrow Output Channel Event Plan Special Function Bit Disable**<br>**1-8:** Assign the bit number that can be used in an Event Plan to disable the permissive left turn by time-of-day. Refer to **Home > Event Plans > Overview > Special Output Flags**.<br>**0 (zero):** PPLT/FYA will not be disabled by a Special Function Bit.<br>**Note:** A disable of PPLT/FYA while the permissive phase is either timing or assigned as a next phase will not take effect until the permissive phase has completed the timing interval. | 0 - 8 |
| Delay Start of: Flashing Yellow Arrow | **Delay Start of Flashing Yellow Arrow**<br>Assign the period of time in tenths of a second to delay flashing the yellow arrow output when the permissive through movement starts timing green. This is a safety feature that will limit the exposure of left turning vehicles because it is assumed that opposing queued vehicles will not provide adequate headway. This delay timer will not apply during preemption. The channel output will be red.<br>**Note:** To make sure that the flashing interval duration is at least two seconds, a phase Hold is applied to make sure the parent opposing through movement does not terminate too soon. If the opposing through phase has reached yellow clearance before the delay start timer expires, then the FYA channel output remains in red. | 0 -25.5 seconds |
| Delay Start of: Clearance | **Delay Start of Clearance**<br>Assign the period of time in tenths of a second to continue flashing the yellow arrow output after the permissive through movement reaches yellow clearance. This is a safety feature that will limit the exposure of providing two conflicting solid yellow clearance arrows in PPLT/FYA operation. | 0-25.5 seconds |

## Additional online help scheduled for next release

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# Home > Overlap

## Normal Type Overlaps

The overlaps page configures unique signal drivers outside of common phase control such as right turns or permissive left turns.

### Types of Overlaps

You can program four types of overlaps:

- Normal
- -Green Yellow
- PPLT/FYA
- Econolite

Normal and Minus Green Yellow operate per the requirement specified in NTCIP 1202 paragraph 2.10.2.2. PPLT/FYA uses overlap so you can program Protected Permissive left hand turns. Type Econolite identifies overlaps that supplement the Normal overlap with the Econolite-specific options.

### Overlap Outputs for the Normal Type of Overlap

The state of the Included Phases of the overlap determines the output, as given below:

| Included Phase | Overlap Output |
|---|---|
| Green | |
| Yellow or Red Clearance<br>-and-<br>one of these phases is Next<br>(For example, Overlap A = 1+2. 1 Terminates and 2 is Next) | Green |
| Yellow and no included phase is Next | Yellow |
| Green and Yellow OFF | Red |

To program a Normal type of overlap, in the Type drop-down menu, select Normal:


## Top of the Screen **(for both the Overlaps and Details tab)**

The settings listed at the top of the screen show:

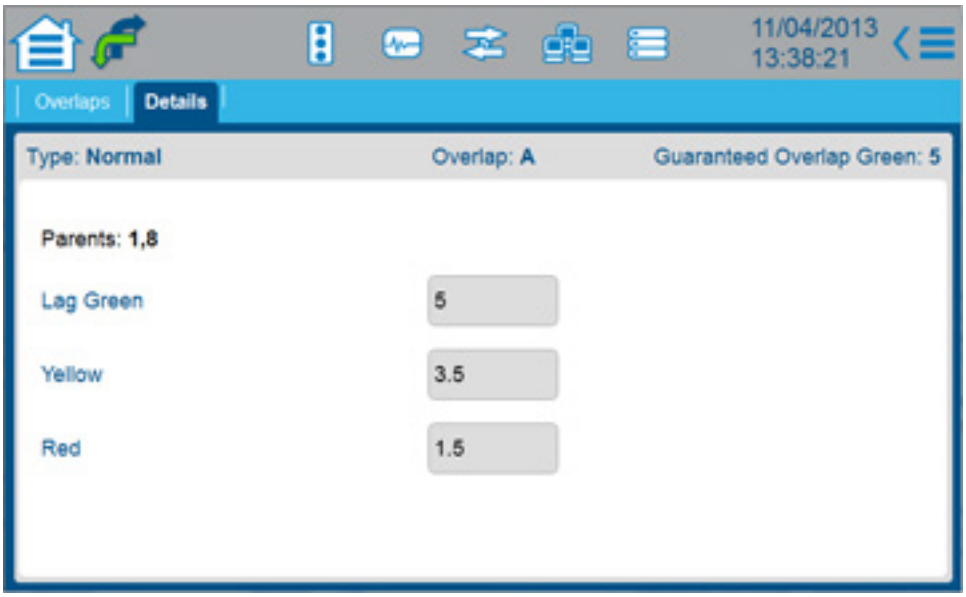
1. The Type of Overlap you are programming: Normal
2. The overlap you are programming (A thru P)
3. The Guaranteed Overlap Green time, in seconds. You set this value in Home > Timing Plans > Guaranteed.

## Procedure to program a Normal Overlap

**Note:** Throughout this procedure, select Commit as necessary to enable the change to the database. For an explanation of Transaction Mode (that runs when you make a critical change to programming), refer to the Help for **Home > Phase Order > Phase Order**.

1. Select [Create Overlap].
2. A new overlap field (A, B, C, etc.) is shown in the overlap bar at the top. You can create up to 16 overlaps (A thru P).
3. Select a phase to Include in the overlap. The Included Phases specify the phases whose timing state is used to derive the state of the overlap. In general terms, when any included phase is timing its green interval or the controller is advancing from one included phase to another included phase, the overlap will be green. If no included phase is green, then the overlap will be yellow when any included phase is yellow. If no included phase is green or yellow, the overlap will be red. The usual derivation of the overlap state can be altered by more programming in the **Details** tab.
4. Repeat Step 3 as necessary.
5. In the **Included** list on the left of the screen, each Normal overlap is listed with the phases included in that overlap.

   **Note:** To delete an overlap, select the overlap and then select [Remove Selected].
6. Select the Details tab and program the parameters as described in the table below.




| Normal Overlap Parameter | Description | Range |
|---|---|---|
| Lag Green<br>Yellow<br>Red | **Lag (Trailing) Green, Yellow and Red times**<br>Normally, if an included phase is terminating and no other included phase is timing or a phase next selection, the terminating included yellow and red of the phase are also output to the overlap. Trailing Green, Yellow, and Red provide a means of extending the green of the overlap and then timing a specified yellow and red. When the last timing overlap included phase begins its yellow change, the green interval of the overlap is extended by the specified Trailing Green time. After Trailing Green has timed, Trailing Yellow and Trailing Red times are used to time the yellow change and red clearance intervals of the overlap.<br>**Note:** Lagging times take effect only if the if the Green and Yellow entries are both non-zero. | 0-25.5 sec. |

## Additional online help scheduled for next release

Updates will be available on a regular basis. Scan the QR Code below to access the latest Cobalt documentation and reference material. **( http://www.econolite.com/QR/controller/cobalt/ )**

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# Home > Overlap

## Minus Green Yellow Type Overlaps

The overlaps page configures unique signal drivers outside of common phase control such as right turns or permissive left turns.

### Types of Overlaps

You can program four types of overlaps:

- Normal
- -Green Yellow
- PPLT/FYA
- Econolite

Normal and Minus Green Yellow operate per the requirement specified in NTCIP 1202 paragraph 2.10.2.2. PPLT/FYA uses overlap so you can program Protected Permissive left hand turns. Type Econolite identifies overlaps that supplement the Normal overlap with the Econolite-specific options.

### Overlap Outputs for the Minus Green Yellow Type of Overlap

The state of the Included Phases and the Modifier Phase Assignments of the overlap determine the output.

This is used to avoid conflicting movements between modifier phase and overlap.
For example, Overlap A=1. Modifier phase is 6. Phase 6 is in conflict with Overlap A. When 6 is ON or Next, Overlap A is NOT ON.

| Included Phase | Modifier Phase | Overlap Output |
|---|---|---|
| Green | NOT Green | Green |
| Yellow or Red Clearance and one is Next | | |
| Yellow and NOT Next | NOT Yellow | Yellow |
| Green and Yellow OFF | ---------- | Red |

To program a Minus Green Yellow type of overlap, in the Type drop-down menu, select –Green/Yellow:


## Top of the Screen **(for both the Overlaps and Details tab)**

The settings listed at the top of the screen show:

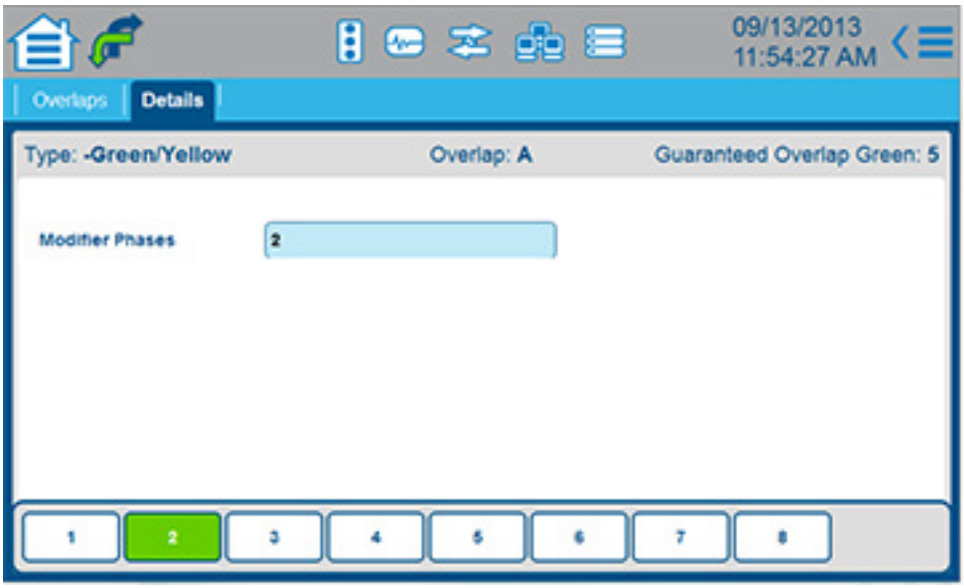
1. The Type of Overlap you are programming: -Green/Yellow
2. The overlap you are programming (A thru P)
3. The **Guaranteed Overlap Green** time, in seconds. You set this value in **Home > Timing Plans > Guaranteed**.

## Procedure to program a Minus Green Yellow Overlap

**Note:** Throughout this procedure, select Commit as necessary to enable the change to the database. For an explanation of Transaction Mode (that runs when you make a critical change to programming), refer to the Help for **Home > Phase Order > Phase Order**.

1. Select [Create Overlap].
2. A new overlap field (A, B, C, etc.) is shown in the overlap bar at the top. You can create up to 16 overlaps (A thru P).
3. Select a phase to Include in the overlap. The Included Phases specify the phases whose timing state is used to derive the state of the overlap. In general terms, when any included phase is timing its green interval or the controller is advancing from one included phase to another included phase, the overlap will be green. If no included phase is green, then the overlap will be yellow when any included phase is yellow. If no included phase is green or yellow, the overlap will be red. The usual derivation of the overlap state can be altered by more programming in the **Details** tab.
4. Repeat Step 3 as necessary.
5. In the **Included** list on the left of the screen, each Minus Yellow Green overlap is listed with the phases included in that overlap.

   **Note:** To delete an overlap, select the overlap and then select [Remove Selected].
6. Select the Details tab and program the parameters as described in the table below.




| Minus Green Yellow Overlap Parameter | Description | Range |
|---|---|---|
| Modifier Phases | **Modifier Phases**<br>Select the Modifier Phase(s).<br>These Modifier Phases are used when the overlap type is Minus Green Yellow to provide an overlap that will terminate to red during a modifier phase green and yellow.<br>**Note:** When Modifier phases are assigned, only it and the Included Phases option are used to decide the state of the overlap. All other overlap programming options are ignored. | Phases 1-16 |

## Additional online help scheduled for next release

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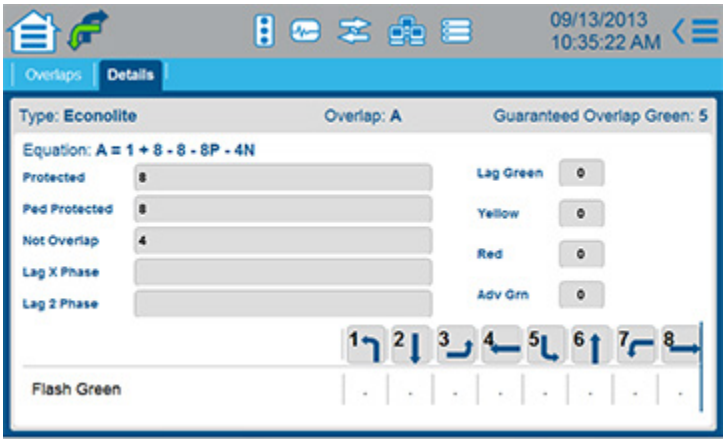
# Home > Overlap

## Econolite Type Overlaps

The Overlaps page configures unique signal drivers outside of common phase control such as right turns or permissive left turns.

### Type: Econolite


After you select Econolite as the type of overlap, select the **Details** tab to program the selected use of these parameters whose functions are described below:

Protected

Ped Protected

Not Overlap

Lag X Phase (Lag, Trailing, Overlap Phases)

Lag 2 Phase (Lead Overlap Phases)

Lag Green (Lag, Trailing, Green)

Yellow

Red

Adv Grn

Flash Green

## Protected

The Protected Overlap is a movement having a protected green arrow (no conflicting phases timing).

> **Note:** When a phase has protected overlap phase assignments, Modifier, Lead, and Trailing assignments are ignored (inhibited).

Select the phases for this type of overlap.

## Ped Protected

The Pedestrian Protect option provides for the specification of phase pedestrian movements that cannot be serviced while the overlap is active. If a pedestrian call is present on a pedestrian protected phase when that phase becomes the phase next selection, the overlap is terminated while the ring transitions from the timing phase to the phase with the protected pedestrian service. If a pedestrian call is not present when the pedestrian protected phase becomes the phase next selection, the overlap remains active if an included phase is timing or a phase next selection. Should a pedestrian call be input while the ring is in yellow change or red clear on the way to the pedestrian protected phase, the overlap is not terminated until the pedestrian protected phase starts and then only if there is enough time to terminate the overlap and time the pedestrian movement before the phase will max out.

Select the phases for this type of overlap.

## Not Overlap

The Not Overlap option is provided to inhibit the activation of an overlap when selected phases are timing. If an overlap is active when a call is placed on a not overlap phase, the phase is not allowed to time until the overlap is terminated. If the order of rotation would normally allow the not overlap phase to time, overlap termination will be initiated even if an overlap included phase is timing or a phase next selection.

Select the phases for this type of overlap.

## Lag X Phase

The Lag (Trailing) Overlap Phases option identifies which phases are to time programmed trailing green, yellow, and red. If Trailing phases are defined, only those phases will time trailing green, yellow, and red when they advance to yellow change and no other included phase is timing or a phase next selection. If no Trailing phases are defined, then trailing green, yellow, and red are disabled.

Select the phases for this type of overlap.

## Lag 2 Phase

For Lead Overlap Phases, when the overlap is active, the last timing overlap included phase is advancing to yellow, no included phase is a phase next selection, and a Lead phase (that is not an included phase) is next, trailing green, yellow, and red will be timed. This operation may be thought of as timing a lagging overlap when proceeding to a particular phase.

When the overlap is not active and a Lead phase that is an included phase is a phase next selection, overlap advance green will be displayed. Overlap advance green output starts, defined by the ADV GRN time, when the phase of the ring that is transitioning to the included Lead phase begins its yellow service.

**Note:** The **Adv Grn** time takes effect only if the lagging **Yellow** time is non-zero.

Select the phases for this type of overlap.

## Lag Green, Yellow, Red

For Lag (Trailing) Green, Yellow and Red times, normally, if an included phase is terminating and no other included phase is timing or a phase next selection, the terminating included phase's yellow and red are also output to the overlap. Trailing Green, Yellow, and Red provide a means of extending the overlap's green and then timing a specified yellow and red. When the last timing overlap included phase begins its yellow change, the overlap's green interval is extended by the specified Trailing Green time. After Trailing Green has timed, Trailing Yellow and Trailing Red times are used to time the overlap's yellow change and red clearance intervals.

**Note:** Lagging times take effect only if the if the Green and Yellow entries are both non-zero.

Range is 0 to 25.5 seconds.

## Adv Grn

Advance Green specifies the minimum amount of overlap advance green to be displayed before a phase next selected included lead phase is started. If the amount of advance green is less than the yellow change time and red clear timed by a ring before its phase next included lead phase can be started, the overlap advance green is extended. If the amount of advance green is greater than the yellow change and red clear timed by the ring before the overlap lead phase next selection would normally start, the terminating ring phase's red clearance is extended until the advance green time is satisfied.

Overlap advance green output starts when the phase of the ring that is transitioning to the included Lead phase begins its yellow service.

Range is 0 to 25.5 seconds.

## Flash Green

Flash Overlap Green is specified for each included phase of an overlap and defines the rate at which the overlap green interval is to flash when the included phase is timing.

For each phase, select a flash rate:

NF = no flash or phase is not an included phase for the overlap

F1 = flash at 1 pps.

F2 = flash at 2.5 pps.

F5 = flash at 5 pps.

The flash is extended across the transition from one included phase to another included phase if their flash rates are the same.

Overlap green will be solid when transitioning between included phases that have different flash rates.

## Additional online help scheduled for next release

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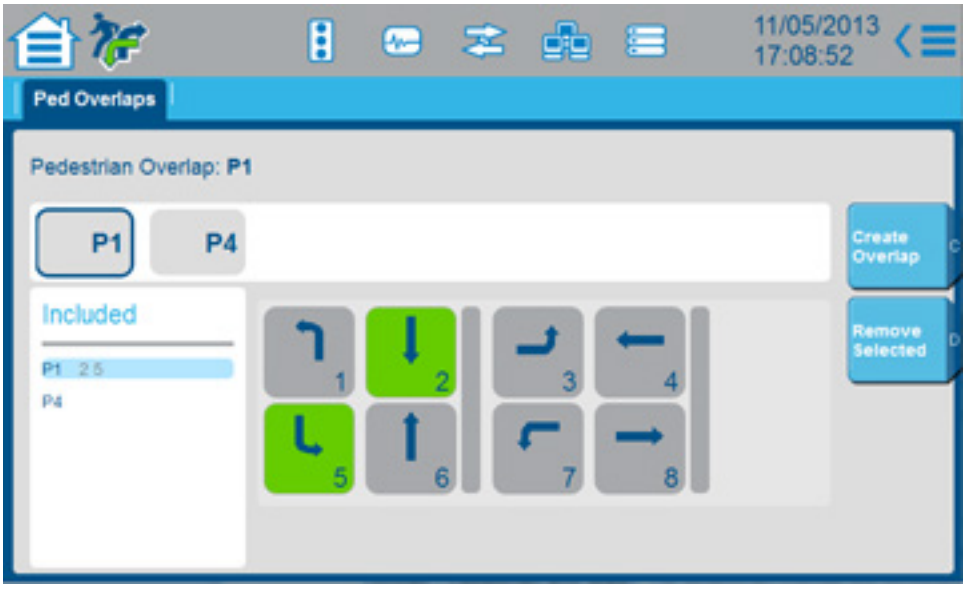
# Home > Ped Overlap

Ped Overlaps

## Pedestrian Overlaps




**Note:** For the default Home (Traffic Applications) screen, the **Ped Overlap** icon is not shown. To show this icon:

1. Select +/- in the upper right of the screen or select **Settings > Application**.
2. Set the **Ped Overlap** icon to Yes.

Use this screen to program Pedestrian Overlaps:

1. Select [Create Overlap]. You can program up to 16 Pedestrian Overlaps, P1 thru P16.

   **Note:** In the example screen above, to program the non-consecutive Pedestrian Overlaps, P1 and P4:

   Select [Create Overlap] four times until Pedestrian Overlaps P1, P2, P3 and P4 are shown.

   Delete the unnecessary overlaps (P2 and P3):

   Select each unnecessary overlap.

   Select [Remove Selected].

2. Select the phases to include in the overlap.

- The included phases are highlighted in green and listed under Included on the left
- In the example above, Phase 2 and Phase 5 are highlighted and their Pedestrian Overlap is

shown to the left as P1  2 5

## Information about Pedestrian Overlaps

Each pedestrian overlap output replaces the selected phase pedestrian output. This gives a total of 16 possible pedestrian overlaps. When a pedestrian overlap programming consists of two or more phases, the overlap operates as follows:

Phase next decision is made at the end of walk. If other rings have pedestrian overlaps, with different walk times and a barrier is being crossed, the phase next decision is made at the end of the longest walk with the other rings being held at the end of walk.

At the end of walk, if the phase next has a pedestrian movement with a demand, which is part of the pedestrian overlap, the pedestrian clearance will not start or time. The phase terminates normally with walk displayed. In a pedestrian overlap, the walk will time in the first phase and every additional phase until a non-included phase next terminates the walk and initiates pedestrian clearance.

Whenever a pedestrian overlap included phase is timing a walk or the controller is transitioning from a walk end condition on a timing phase to a walk service on another overlap included phase, the overlap will display walk. When no ped included phase is timing a walk and is not a phase next selection with a ped call, the overlap will display pedestrian clearance as long as any included ped phase is timing a ped clearance. When all included ped phases are in don’t walk, the ped overlap will show don’t walk.

## Preemption

A preemptor can terminate a pedestrian overlap at any time. The preemption can override a preempted phase ped walk and clearance time and those override times will be used to terminate the overlap. The walk and Pedestrian Clearance times are those programmed for the preemptor (**Home > Preemption > Entry > Minimum Phase Service Timings > Pedestrian and Walk**). The pedestrian overlap will terminate even if the phase is halted in red transfer.

## Coordination

If a coordinated phase is part of a ped overlap, the phase must be non-actuated and Walk Rest Modifier must be applied.

## Additional online help scheduled for next release

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# Home > Detection

## Vehicle Detection

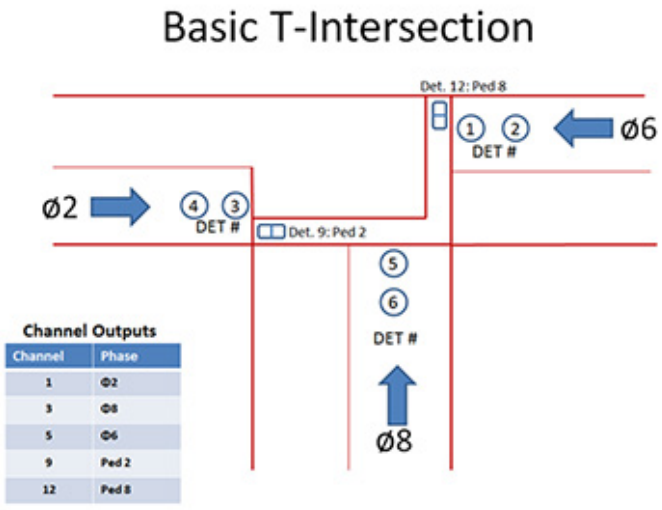
For Vehicle Detection, select the type of detector and program up to 64 vehicle detectors and 4 plans.

There are 8 Types of Vehicle Detection:

- Standard Delay
- NTCIP
- Green Extension/Delay
- Passage Queue/Stopbar
- Red Extension
- Disconnect Queue/Stopbar
- Calling
- Bike

  **Note:** The Vehicle Detection screens are dynamic such that the only parameters shown are those that apply to the Type of vehicle detection you select. Set the parameters per your application.

### Example Configuration

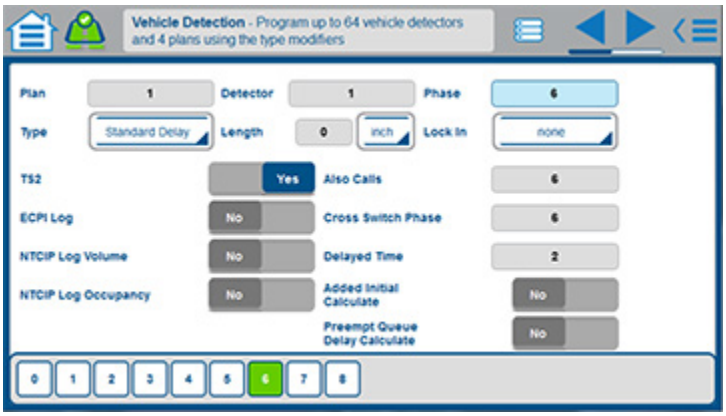


| Parameter | Value |
|---|---|
| Detector Type | Standard Delay |
| Detector #1 and Detector #2 | Phase 6 |
| Detector #3 and Detector #4 | Phase 2 |
| Detector #5 and Detector #6 | Phase 8 |

## Procedure for Example

1. Select the Type drop-down box.
2. Select Standard Delay.
3. Per the specified configuration, select the **Detector** and **Phase** fields and program them accordingly.
4. Check your entries: step through the Detectors and make sure that the phases are correct.

## Completed Screen for the Example Configuration (Guided Setup Screen)




## Additional online help scheduled for next release

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# Home > Detection

## Ped Detection

The Detection pages configure the detection of the unique geometry of an intersection.

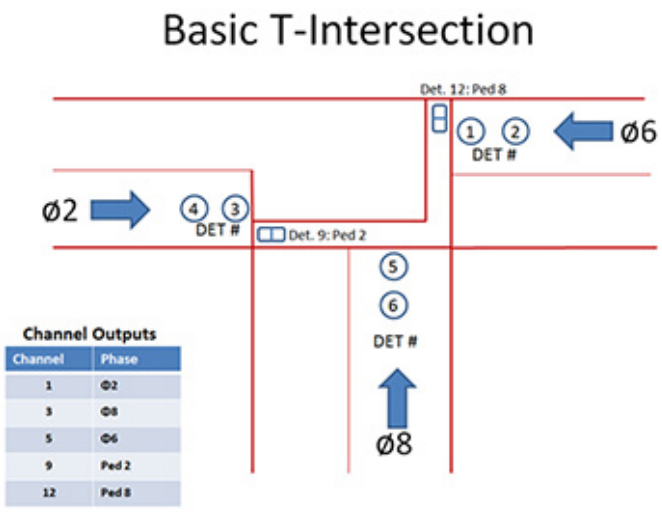
In this screen, you configure the pedestrian detection operation.

There are two Pedestrian Detector Phase Assignment Modes, **Basic** and **Advanced**.

In the **Advanced** Mode, for each phase you select from four possible types of pedestrian call types:

- No detector
- Pedestrian Push Button (PPB), the default
- Walk 2
- Bike (B)

### Example Configuration

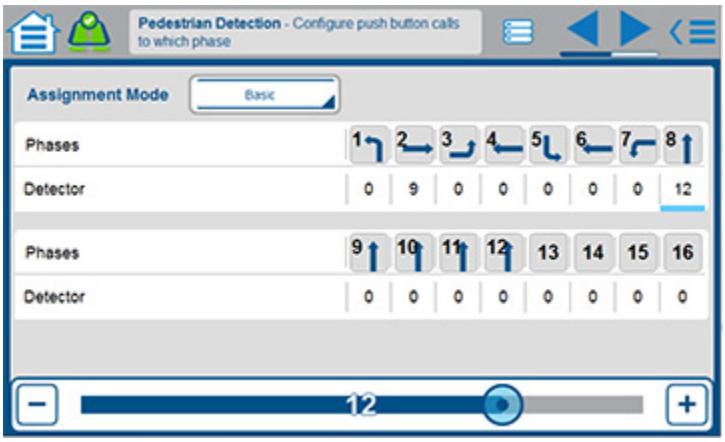



| Phase | Detector |
|---|---|
| Pedestrian 2 | Detector #9 |
| Pedestrian 8 | Detector #12 |

## Procedure for Example

1. Per the specified configuration, select the respective **Detector** fields and program them accordingly.
2. There is no need to set the other Detector fields because they are not used.

## Completed Basic Mode Screen for the Example Configuration (Guided Setup Screen)

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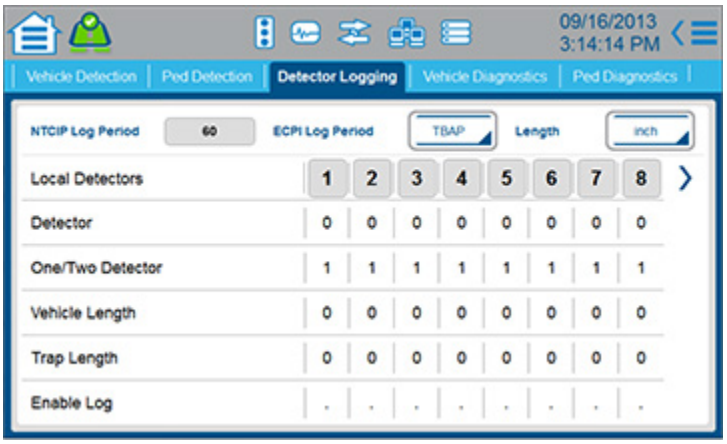
# Home > Detection

## Detector Logging




Use this display to view or edit the NTCIP and ECPI Log Period settings and, with horizontal scrolling, view or edit the settings for five different parameters on 16 Speed Detectors.

| Parameter | Description | Range |
|---|---|---|
| **NTCIP Log Period** | **Period for Logging of NTCIP Detectors**<br>Use the scrubber to select the number of seconds in each period of volume and occupancy data collection.<br>**Note: Observe the programming notes below:**<br>• Changing this entry resets the data collection period and deletes any accumulated data.<br>• Only NTCIP Volume or Occupancy enabled detectors will be logged (NTCIP Log Volume and/or NTCIP Log Occupancy set to Yes in Home > Detection > Vehicle Detection.<br>• Only the last complete sample is maintained in memory. | 0-255 seconds |
| **ECPI Log Period** | **Period for Logging of ECPI Log Detectors**<br>In the drop-down menu, select the number of minutes (5, 15, 30, or 60) for local logging of detector data or select TBAP to allow the Time Base Action Plan (TBAP) to select the log interval.<br>**Note: Observe the programming notes below:**<br>• Changing of this entry will take place when the present log interval is complete.<br>• Only ECPI Log enabled detectors will have volume and occupancy logged.<br>• Only enabled speed detectors will have their speed logged (ECPI Log set to Yes in **Home > Detection > Vehicle Detection**).<br>• The logs are maintained until the log buffer is full. When full, the log buffer deletes the oldest entry to make space for the newest. | TBAP=Time Base Action Plan or 5, 15, 30, 60 minutes |

| | | |
|---|---|---|
| **Length** | Selects units of inches or centimeters for all parameters related to distance. This affects the calculations display and logging of speed.<br>Toggle to select inch or cm (centimeter), as appropriate.<br>**Note: Inches calculates speed in miles per hour. Centimeters, calculates speed in kilometers per hour.** | inch, cm |
| **Detector** | **Speed Detector Local Detector Number**<br>Position the cursor beneath the number (0-16) of the Local Detectors to be edited, then use the scrubber to enter the number (1-64) of the Vehicle Detector to be assigned or enter 0 to disable that Speed Detector.<br>**Note: Observe the programming notes listed below:**<br>• Detectors assigned to a phase may be used as a speed detector.<br>• One-detector speed calculation can use even or odd-numbered detectors.<br>• Two-detector speed calculation requires an odd-numbered detector to be assigned. The next even-numbered detector is the second detector for the speed calculations. | 1-64<br>0 = not active |
| **One/Two Detector** | Select 1 or 2 speed calculations for Local Detectors 1-16.<br>1. *One-detector Speed.* The detector encountering a passing vehicle starts a counter by an actuation and stops the counter when it is deactivated. Speed is calculated using the vehicle travel time over the detection zone and the vehicle length.<br>2. *Two-detector speed calculation.* The first detector encountered by a passing vehicle is the Start Detector and the second is the End Detector. A travel time counter is started by an actuation of the Start Detector and stopped by an actuation of the End Detector. Speed is calculated using the vehicle travel time and distance between detectors.<br>**Note: Observe the programming notes below:**<br>• The Length entry inch calculates speed in miles per hour. cm (centimeters) calculates speed in kilometers per hour.<br>• Speed that reads back to the arterial master is used to generate a log of speed readings in low, nominal, and high speed bands. | 1 or 2 |
| **Vehicle Length** | **Average Vehicle Length**<br>**0-999:** Use the scrubber to enter the average vehicle length in centimeters or inches encountered in the traffic lane for one-detector speed calculations.<br>**Note: This length is used in conjunction with the effective length of the detection zone (Trap Length) and the time that the detector is occupied to determine the one-detector speed.** | 0-999 inches<br>0-999 cm. |
| **Trap Length** | **0-999:** The effective Trap Length distance.<br>For one-detector speed trap calculation, it is the effective detection distance from start edge to stop edge of detection.<br>For two-detector speed trap calculation it is the effective detection distance between two detectors from start edge to start edge of detection.<br>**Note: The effective detection zone will differ from physical length due to a variety of electrical and magnetic factors. Enter the length that produces the most representative speeds.** | 0-999 inches<br>0-999 cm. |
| **Enable Log** | **Enable Speed Trap Log**<br>**X:** Enables local logging of speed data (select On).<br>**. :** Disables logging (select Off). | X enables<br>. disables |

## Additional online help scheduled for next release

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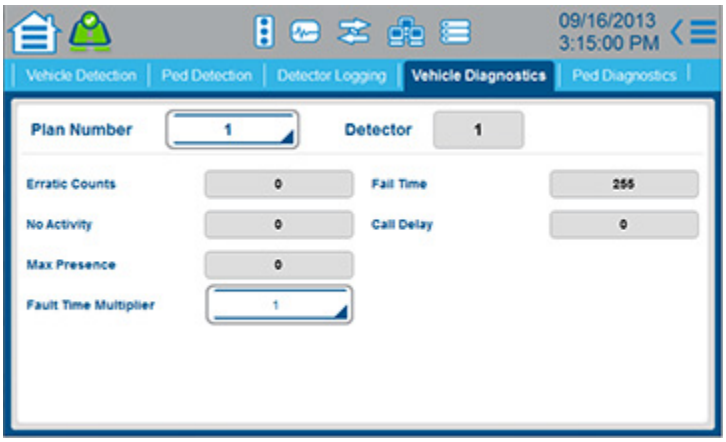
# Home > Detection

## Vehicle Diagnostics




Screen above is repeated for Plan Numbers 2 thru 4.

### For this screen:

1. Enter vehicle diagnostic Plan Number to be viewed or edited.
2. As explained in the descriptions in the table below, for each of 64 detectors (Detector field), enter desired diagnostic parameters in the Erratic Counts, No Activity, Max Presence, Fault Time Multiplier, Fail Time, and Call Delay fields.

   **Note: The Detector Diagnostic Plans are enabled by the Time Base Event Plan.**

| Parameter | Description | Range |
|---|---|---|
| **Plan Number** | In the drop-down menu, select the number (1-4) of the Vehicle Diagnostics Plan that you wish to view or edit. | 1-4 |
| **Detector** | **Vehicle Detector Number**<br>Use the scrubber to select the desired detector number (1-64). | 1-64 |
| **Erratic Counts** | **Vehicle Erratic Counts**<br>**1-255:** Specifies the vehicle detector Counts Per Minute (CPM) that, when exceeded, logs a failed vehicle detector if logging is enabled.<br>**0 (zero):** Disables this diagnostic calculation for that vehicle detector. | 1-255 CPM<br>0 disables |
| **No Activity** | **Vehicle No-Activity**<br>**1-255 minutes:** Time interval between vehicle detections that, when exceeded, logs a failed vehicle detector if logging is enabled.<br>**0 (zero):** Disables the No Activity diagnostic. | 1-255 min. |

| | | |
|---|---|---|
| **Max Presence** | **Vehicle Maximum Presence**<br>**1-255 minutes:** Time for continuous vehicle detection that when exceeded, logs a failed vehicle detector if logging is enabled.<br>**0 (zero):** Disables Maximum Presence diagnostic. | 0-255 min. |
| **Fault Time Multiplier** | **Multiplier (Scaling Factor)**<br>Determines length of the No-Activity and Maximum Presence periods.<br>**1, 2, 15, 60:** No-Activity and Maximum Presence periods that have values between 1 and 255 minutes will be multiplied by these values resulting in desired period length.<br>**Examples**:<br>No Activity period = 60 min, Multiplier = 2. Result: No Activity is reported if detector is inactive for (60 x 2) or 120 minutes.<br>Maximum Presence period = 50 sec, Multiplier = 15. Result: Max presence failure is reported if detector is active for (50 x 15) or 750 minutes. | 1, 2, 10, 15, 60 |
| **Fail Time** | **Failed Detector Extend Time**<br>Use the scrubber to specify the time (0-255 seconds) the failed detector can extend the assigned phase.<br>**1-254:** Allows the failed detector to call and extend the assigned phase for the programmed time.<br>**255:** Places a max recall on the phase.<br>**0 (zero):** Disables the failed detector from calling or extending the assigned phase.<br>**Note:** NTCIP 1202 2.3.2.12 Bits 0-3 defines an NTCIP failed detector. Bit 7 defines a detector that failed the internal detector diagnostics (MM-6-6). | 0-255 seconds |
| **Call Delay** | **Failed Detector Delay Time**<br>Use the scrubber to specify the time (0-255 seconds) that a failed detector will be delayed.<br>**1-255:** Defines the time that a failed detector will not put a call on the assigned phase after it terminated green.<br>**0 (zero):** Disables the delay. | 0-255 seconds |

## Additional online help scheduled for next release

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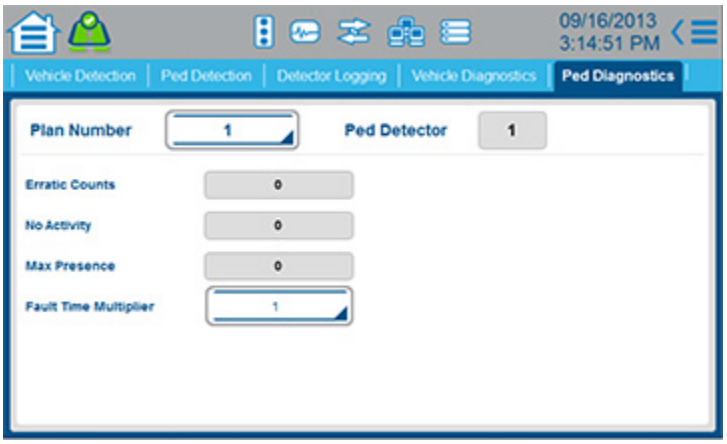
# Home > Detection

## Ped Diagnostics




Screen above is repeated for plan numbers 2 thru 4.

### For this screen:

1. Enter the pedestrian diagnostic Plan Number (1-4) to view or edit.
2. As explained in the descriptions in the table below, for each of 16 detectors (Ped Detector Field), enter the desired diagnostic parameters in the Erratic Counts, No Activity, Max Presence, and Fault Time Multiplier fields.

   **Note: The Detector Diagnostic Plans are enabled by the Time Base Event Plan.**

| Parameter | Description | Range |
|---|---|---|
| **Plan Number** | In the drop-down menu, select the number (1-4) of the Pedestrian Diagnostic Plan that you wish to view or edit. | 1-4 |
| **Ped Detector** | **Pedestrian Detector Number**<br>Use the scrubber to select the desired detector number 91-16). | 1-16 |
| **Erratic Counts** | **Pedestrian Erratic Counts**<br>**1-255:** Specifies the pedestrian detector Counts Per Minute (CPM) that, when exceeded, logs a failed pedestrian detector if log is enabled.<br>**0 (zero):** Disables this diagnostic calculation for the pedestrian detector. | 0-255 CPM |
| **No Activity** | **Pedestrian No-Activity**<br>**1-255 minutes:** Time interval between pedestrian detections that, when exceeded, logs a failed pedestrian detector if logging is enabled.<br>**0 (zero):** Disables the No Activity diagnostic. | 0-255 min. |

| | | |
|---|---|---|
| **Max Presence** | Pedestrian Maximum Presence<br>1-255 minutes: Time for continuous pedestrian detection, that when exceeded, logs a failed pedestrian detector if logging is enabled.<br>0 (zero): Disables Maximum Presence diagnostic. | 0-255 min. |
| **Fault Time Multiplier** | **Multiplier (Scaling Factor)**<br>Determines the length of the No-Activity and Maximum Presence periods.<br>**1, 2, 10, 15, 60:** No-Activity and Maximum Presence periods that have values between 1 and 255 minutes are multiplied by these values resulting in period length.<br>**Examples:**<br>• No Activity period = 60 min, Multiplier = 2. Result: No Activity is reported if detector is inactive for (60 x 2) or 120 minutes.<br>• Maximum Presence period = 50 min, Multiplier = 15. Result: Max presence failure is reported if detector is active for (50 x 15) or 750 minutes. | 1, 2, 10, 15, and 60 |

## Additional online help scheduled for next release

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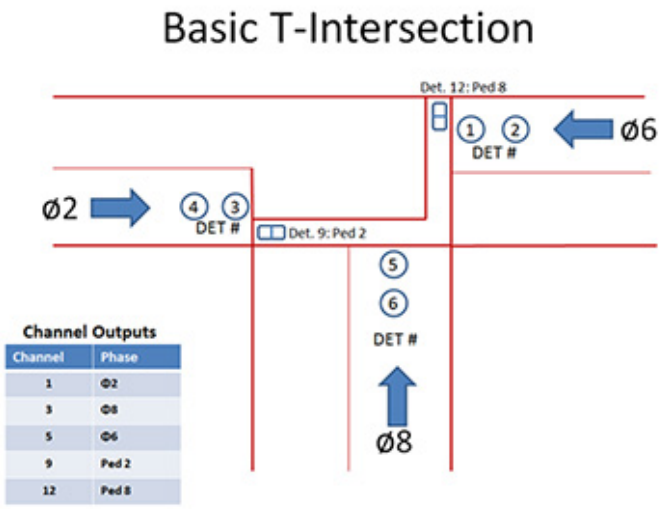
# Home > Flash

## Startup Flash

The Startup Flash pages describe how to exit flashing signal operations, how they flash, and the startup phase(s) and color.

Configure the Startup Flash and External Start behavior.

### Example Configuration




| Parameter | Value |
|---|---|
| Start Sequence | 1 |
| Flash Time | 6 Seconds |
| All Red Time | 6 Seconds |
| Flash Relay | No |
| Startup Phase | 8 Green |
| Flash Color | Channels 1, 5 Yellow (Phases 2 and 6) |

## Procedure for Example

### Start Sequence

1 is the default

### Flash Time

Enter **6**

### All Red Time

**6** is the default

### Flash Relay

**No** is the default (**No** = flash through the Load Switches—a Soft Flash; **Yes** = flash through the CVM).

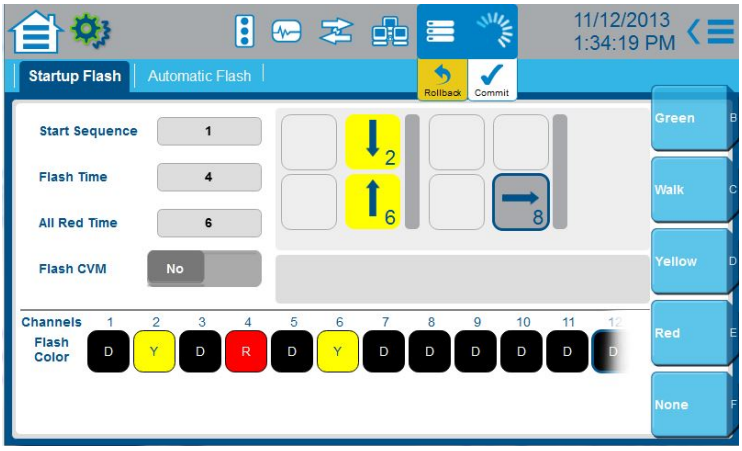
### Startup Phases

1. For default Yellow Phases **2** and **6**, select them in turn and select **None**
2. For each phase you set, select **Commit** or select **Commit** once done programming.
3. Select Phase **8**
4. Select None

### Flash Color

1. In turn, select Channel **1** then **5** and select **Yellow** soft key tab for each
2. For each channel you set, select **Commit**
3. Except for Channel 9 thru **12** (**Dark**) set the other channels to **Red**. To access channels **13** thru **16,** swipe the screen to the left.

## Completed Screen for the Example Configuration (Guided Setup screen)



## Notes for Startup Flash Programming

| Parameter | Description | Range |
|---|---|---|
| Start Sequence | | 1 - 16 or 17 - 20 |
| Flash Time | | 0 - 255 seconds |
| All Red Time | | 0 - 255 seconds |
| Flash Relay | | No =<br>Yes = |
| Power Start Phase Interval | | Green, Walk, Yellow, Red, None |
| Start Up Overlap | | 0 - 255 actuations |

## General Notes for the Startup Flash and Automatic Flash Screens

The layout of the phases in the screen:

- They are in barrier groups, separated by a vertical bar.
- The top row is Ring 1 and the bottom row is Ring 2

When programming the phases, remember:

- You can have one phase per ring.
- For two phases:

  One must be in Ring 1 and the other in Ring 2

  They must be in the same barrier group

You cannot put two phases in different barrier groups.

**Flash Color (for load switch power up only)** -The flash color buttons represent Channels 1 thru 16.

Since channels 9 thru 12 are pedestrians and overlaps so they are programmed as **Dark**.

**Red**: Indicates that the channel will flash red. These load switches must represent compatible MMU channels.

**Dark**: Indicates that the channel will be dark.

**Yellow**: Indicates that the channel will flash yellow. These load switches must represent compatible MMU channels.

**Automatic**: Indicates that the channel color will follow Automatic Flash. If any PWR is programmed R or Y, then the controller cannot have A programmed for any other PWR channels.

**Important**: It is your responsibility to match this Flash Color load switch setting with the actual cabinet flash output.

## Additional online help scheduled for next release

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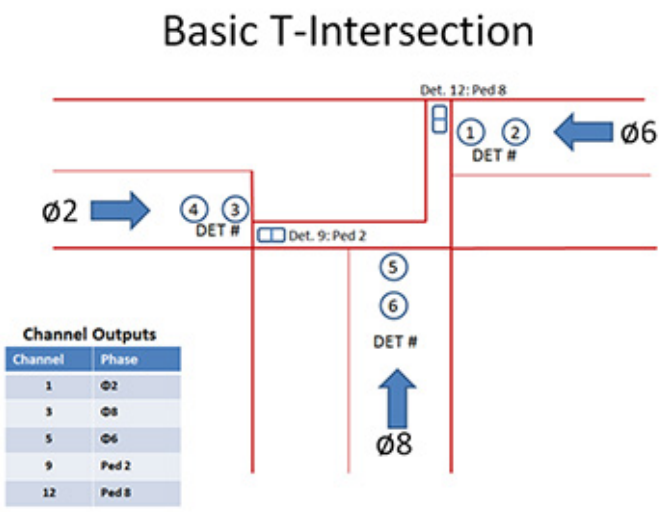
# Home > Flash

## Automatic Flash

The Flash pages describe how to exit and enter automatic flashing signal operations along with how they flash.

In this screen, you configure the Automatic Flash entrance and exit behavior.

### Example Configuration

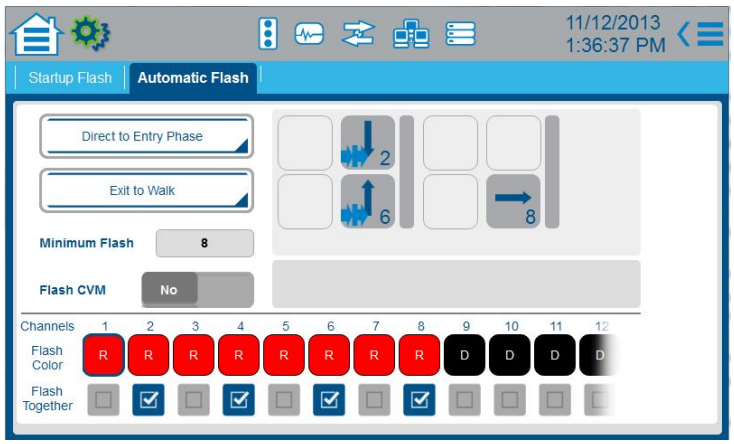



| Parameter | Value |
|---|---|
| Direct to Entry Phase flash | Phase 8 |
| Exit to Walk | Phase 8 |
| Flash Color | Channel 1 and Channel 5 both Yellow |
| Flash Together | Channel 1 and Channel 5 |

## Procedure for Example

1. In the drop-down menus, select **Direct to Entry Phase** and **Exit to Walk**
2. For default Entry and Exit Phases **2** and **6**, select them in turn and select **None**
3. For each phase you set, select **Commit**
4. Select Phase **8**
5. Select **Both** (Entry and Exit). Notice the blue arrows show entry and exit directions.
6. Select **Commit**
7. In turn, select Channel 1 and 5 and select **Yellow** soft key tab
8. For each channel you set, select **Commit** or select **Commit** when done programming.

## Completed Screen for the Example Configuration (Guided Setup Screen)




## For the Automatic Flash Screen

### Entry Behavior Selection drop-down list:

Direct to Entry Phase (default)

Active Calls to Entry

Recalls Until Entry

All Phases Once Entry

### Exit Behavior Selection drop-down list:

Ignore Exit Phases

Exit to Walk (default)

Exit to Green

Exit to Yellow

Exit to Red

## Notes for Automatic Flash Programming

| Automatic Flash Parameter | | Description | Range |
|---|---|---|---|
| Entry Behavior (drop-down menu) | Direct to Entry Phase (default) | | |
| | Active Calls to Entry | | |
| | Recalls Until Entry | | |
| | All Phases Once Entry | | |
| Exit Behavior (drop-down menu) | Exit to Walk (default) | | |
| | Exit to Green | | |
| | Exit to Yellow | | |
| | Exit to Red | | |
| | Minimum Flash | | |
| | Flash Relay | Select the path of the Power Start Flash | No = Through Load Switches<br>Yes = Through Controller Voltage Monitor (CVM) |
| In the phase diagram | Entry/Exit phase assignment | Select for each phase if it is an Entry and/or Exit phase | None, Entry, Exit, Both |
| | | | |
| | Flash Color | | |
| | Flash Together | | |

## General Notes for the Startup Flash and Automatic Flash Screens

The layout of the phases in the screen:

- They are in barrier groups, separated by a vertical bar.
- The top row is Ring 1 and the bottom row is Ring 2

When programming the phases, remember:

- You can have one per ring phase.
- For two phases:

  One must be in Ring 1 and the other in Ring 2

  They must be in the same barrier group

You cannot put two phases in different barrier groups.

**Flash Color (for load switch power up only)** -The flash color buttons represent Channels 1 thru 16.

Channels 9 thru 12 are pedestrians and overlaps so they are programmed as **Dark**.

**Red**: Indicates that the channel will flash red. These load switches must represent compatible MMU channels.

**Dark**: Indicates that the channel will be dark.

**Yellow**: Indicates that the channel will flash yellow. These load switches must represent compatible MMU channels.

**Automatic**: Indicates that the channel color will follow Automatic Flash. If any PWR is programmed R or Y, then the controller cannot have A programmed for any other PWR channels.

**Important**: It is your responsibility to match this Flash Color load switch setting with the actual cabinet flash output.

## Additional online help scheduled for next release

Updates will be available on a regular basis. Scan the QR Code below to access the latest Cobalt documentation and reference material. **( http://www.econolite.com/QR/controller/cobalt/ )**

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# Home > Timing Plans

## Min Green

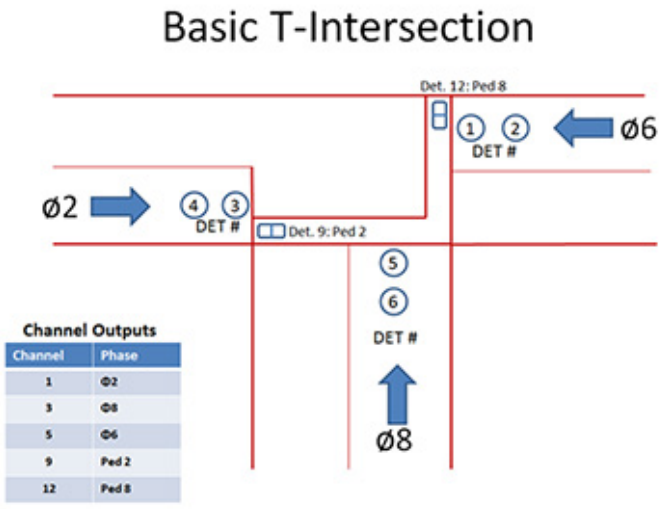
The Phase interval timers are programmed in this page.

The parameters in this screen:

- Timing Plan (1 - 4)
- Minimum Green (0 - 255 seconds)
- Bike Minimum Green (0 - 255 seconds)
- Conditional Service Minimum Green (0 - 255 seconds)
- Delayed Green (0 - 255 seconds)
- Variable Initial Phase:
  - Actuations before incrementing actu... (0 - 255 actuations)
  - Seconds per Actuation (0 - 25.5 seconds)
  - Maximum Added Initial (0 - 255 seconds)

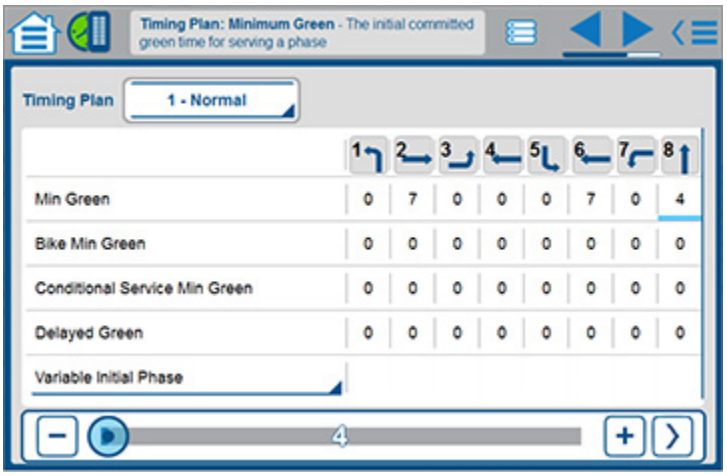
Define initial phase timing (green or delayed) intervals in the rows below.

### Example Configuration




| Parameter | Phase 2 | Phase 6 | Phase 8 |
|---|---|---|---|
| Min Green | 7 seconds | 7 seconds | 4 seconds |

## Completed Screen for the Example Configuration (Guided Setup Screen)




## Notes for Minimum Green (initial green) Timing Plans

| Min Green Parameter | Description | Range |
|---|---|---|
| Timing Plan | Use the drop-down menu to select a timing plan. To name the timing plan, go to **Options > Rename Plan**. | 1 - 4 |
| Minimum Green | The shortest possible vehicle green time, before any added initial or vehicle extensions.<br>**Note:** Actual minimum green indication is the longest of the minimum green plus any added initial, vehicle extension, bike minimum green, ped walk plus ped clearance, or guaranteed minimum green*. | 0 - 255 seconds |
| Bike Minimum Green | The minimum green due to a bike detector call. Bike minimum green has no effect if the phase has no bike detector input. | 0 - 255 seconds |
| Conditional Service Minimum Green | The minimum green time for a phase being conditionally serviced. | 0 - 255 seconds |
| Delayed Green | The time that the vehicle green indication is delayed from the start of the walk interval. The delay is ignored if there is no pedestrian service call when the phase is started. If the delay time is greater than the Walk time, the walk is extended to the end of delay green. | 0 - 255 seconds |
| Variable Initial Phase> Actuations before incrementing actu... | Number of actuations that must be received during the phase yellow and red intervals before seconds per actuation time is added to initial green. | 0 - 255 actuations |
| Variable Initial Phase > Seconds per Actuation | Time by which the phase added initial time period is increased from zero for each vehicle actuation received during the phase yellow and red intervals that exceed the Actuations Before limit. | 0 - 25.5 seconds |
| Variable Initial Phase > Maximum Added Initial | Maximum time that added initial green can attain. The number of vehicle actuations received during a phase yellow and red intervals multiplied by the seconds per actuation time cannot exceed this time. | 0 - 255 seconds |

* Guaranteed minimum values are programmed in **Home > Timing Plans > Guaranteed**

## Additional online help scheduled for next release

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# Home > Timing Plans

## Passage

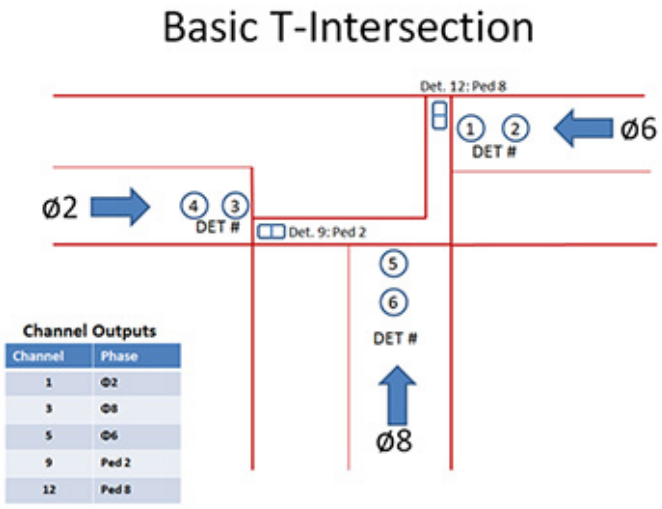
The Phase interval timers are programmed in this page.

Define the time it takes a vehicle to pass over the detector and through the intersection.

The parameters in this screen:

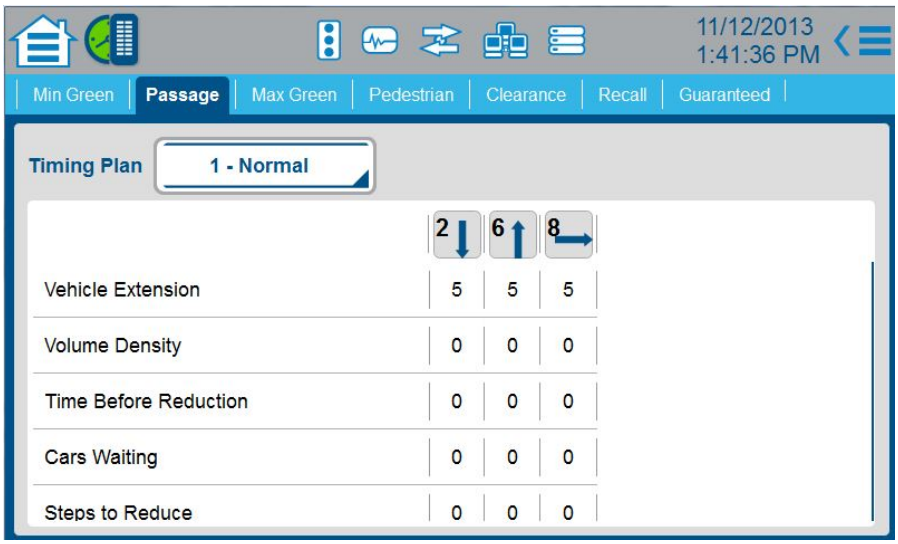
- Timing Plan (1 - 4)
- Vehicle Extension (0.0 - 25.5 seconds)
- Volume Density
  - Time Before Reduction (1 - 255 seconds, 0 disables)
  - Cars Waiting (1 - 255 seconds, 0 disables)
  - Steps to Reduce (0.1 - 25.5 seconds/step, 0 = linear)
  - Time to Reduce (1 - 255 seconds, 0 disables)
  - Minimum Gap Time (0.0 - 25.5 seconds)

### Example Configuration




| Parameter | Phase 2 | Phase 6 | Phase 8 |
|---|---|---|---|
| Vehicle Extension | 3 seconds | 3 seconds | 4 seconds |

## Completed Screen for the Example Configuration (Guided Setup Screen)




## Notes for Passage Timing Plans

| Passage Parameter | Description | Range |
|---|---|---|
| Timing Plan | Use the drop-down menu to select a timing plan. To name the timing plan, go to **Options > Rename Plan**. | 1 - 4 |
| Vehicle Extension | **Phase Vehicle Extension (Preset Gap, Passage Time).** When minimum green finishes timing, the green interval is allowed to extend for a length of time equal to maximum time in effect. Actual length of extension period depends on this phase vehicle extension time, frequency of vehicle actuations and minimum gap setting.<br>Detector-by-Detector extension time can be set in the vehicle detector setup screen (**Home > Detection > Vehicle Detection**).. | 0.0 - 25.5 seconds |
| Volume Density | | |
| Time Before Reduction | Length of time before start of gap reduction. Begins timing when phase is green and there is a conflicting serviceable call.<br>**Note:** Start of gap reduction (time to reduce or step to reduce) is initiated by **Time Before Reduction** or **Cars Waiting**, whichever reaches its programmed value first. | 1 - 255 seconds,<br>0 disables |
| Cars Waiting | **Cars Waiting Before Reduction.** Number of vehicle detections that have been recorded on all conflicting phases during their yellow and red intervals.<br>**Note:** Start of gap reduction (time to reduce or step to reduce) is initiated by **Time Before Reduction** or **Cars Waiting**, whichever reaches its programmed value first. | 1 - 255 seconds<br>0 disables |

| | | |
|---|---|---|
| Steps to Reduce | Step reduction: When gap reduction starts and **Steps to Reduce** is not zero, **Time to Reduce** multiplied by 10 is divided by **Steps to Reduce** to calculate the number of 1/10 second cycles timed between each reduction step. By the time the **Time to Reduce** interval has completed its timing, vehicle extension in effect will have been reduced the **Minimum Gap Time**.<br>Linear reduction: When gap reduction starts and **Steps to Reduce** is zero, **Minimum Gap Time** is subtracted from the vehicle extension in effect and that value is divided by the product of **Time to Reduce** multiplied by 10. The result is subtracted from vehicle extension in effect every 1/10 second until vehicle extension in effect is reduced to the **Minimum Gap Time**. | 0.1 - 25.5 seconds/step<br>0 = linear |
| Time to Reduce | Length of time between the start and end of gap reduction. During the Time to Reduce interval, the vehicle extension in effect is reduced from its initial time down to the specified **Minimum Gap Time**. | 1 - 255 seconds<br>0 disables |
| Minumum Gap Time | Minimum vehicle extension to be timed for each vehicle actuation. If the minimum vehicle extension times out before a vehicle actuation is received and the timer is restarted, gap out occurs. | 0.0 - 25.5 seconds |

## Additional online help scheduled for next release

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# Home > Timing Plans

## Max Green

The Phase interval timers are programmed in this page.

Define the maximum green times that can be timed when selected:

Event Plans (Max 2,3) or

Consecutive Max-Outs (Dynamic).

The parameters in this screen:

Timing Plan (1 - 4)

Maximum Green 1 (0 - 255 seconds)

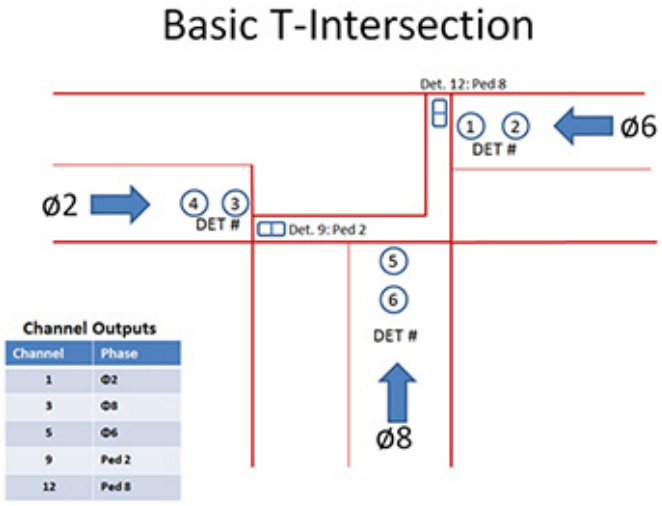
Maximum Green 2 (0 - 255 seconds)

Maximum Green 3 (0 - 255 seconds)

Dynamic Maximum (0 - 255 seconds, 0 disables)

Dynamic Step (0.0 - 25.5 seconds)

### Example Configuration




| Parameter | Phase 2 | Phase 6 | Phase 8 |
|---|---|---|---|
| Max Green 1 | 40 seconds | 40 seconds | 25 seconds |

## Completed Screen for the Example Configuration (Guided Setup Screen)


## Notes for Max Green Timing Plans

| Max Green Parameter | Description | Range |
|---|---|---|
| Timing Plan | Use the drop-down menu to select a timing plan. To name the timing plan, go to **Options > Rename Plan**. | 1 - 4 |
| Maximum Green 1 | Maximum green time allowed in the presence of an opposing call.<br>**Note:** The higher numbered maximum green selected is in effect. | 0 - 255 seconds |
| Maximum Green 2 | Maximum green time allowed in the presence of an opposing call.<br>**Note:** The higher numbered maximum green selected is in effect. | 0 - 255 seconds |
| Maximum Green 3 | Maximum green time allowed in the presence of an opposing call.<br>**Note:** The higher numbered maximum green selected is in effect. | 0 - 255 seconds |
| Dynamic Maximum | Determines the upper limit of the running max time. The max in effect (Maximum 1, 2, or 3) determines the other limit.<br>When a phase maxes out twice in a row, and on each successive max out thereafter, the running max is incremented one dynamic max step until it reaches the dynamic maximum upper limit.<br>When a phase gaps out twice in a row, and on each successive gap out thereafter, the running max is decremented one dynamic max step until it reaches the dynamic maximum lower limit.<br>If a phase gaps out in one cycle and maxes out in the next cycle, or vice versa, the running max is not changed.<br>Refer to Phase Dynamic Max Limit described in NTCIP 1202 paragraph 2.2.2.17 for a more complete explanation.<br>**Note:** When Dynamic Maximum is not used (Dynamic Maximum = 0), the maximum green time is equal to the selected max timer (Maximum 1, 2 or 3). | 0 - 255 seconds<br>0 disables |
| Dynamic Step | The amount of time that the running max time is increased or decreased by max or gap out.<br>Refer to Phase Dynamic Max Step described in NTCIP 1202 paragraph 2.2.2.18 for a more complete explanation. | 0.0 - 25.5 seconds |

## Additional online help scheduled for next release

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# Home > Timing Plans

## Pedestrian

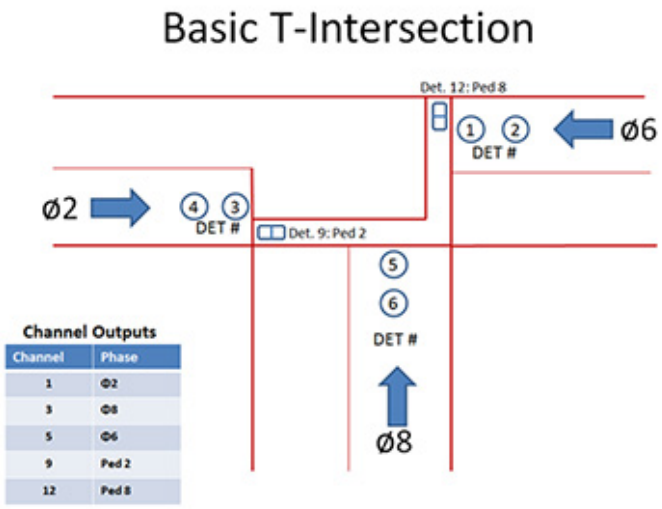
The Phase interval timers are programmed in this page.

Define the Pedestrian times and use Walk 2 for special Event Plan or Detector actuation. Extension times are for Ped Extend input limits.

The parameters in this screen:

- Timing Plan (1 - 4)
- Walk (0 - 255 seconds, 0 disables)
- Ped Clearance Time (0 - 255 seconds)
- Walk 2 (0 - 255 seconds)
- Ped Clearance 2 (0 - 255 seconds)
- Ped Clearance Extension Max (0 - 255 seconds)
- Walk Extension Max (0 - 255 seconds)
- Carry Over to Phase Number (0 - 16)

### Example Configuration



| Parameter | Phase 2 | Phase 6 | Phase 8 |
|---|---|---|---|
| Walk | 7 seconds | 0 | 5 seconds |
| Clearance Time | 10 seconds | 0 | 9 seconds |

## Completed Screen for the Example Configuration (Guided Setup Screen)


## Notes for Pedestrian Timing Plans

| Pedestrian Parameter | Description | Range |
|---|---|---|
| Timing Plan | Use the drop-down menu to select a timing plan. To name the timing plan, go to **Options > Rename Plan**. | 1 - 4 |
| Walk | Time during which WALK or walking person symbol is displayed when servicing a ped call.<br>Walk or Clearance Time timing cannot be programmed to zero if the phase is the ped carryover start phase or part of a ped overlap.<br>**Note:** Actual walk time is the longer of the walk time in effect or guaranteed* walk. | 0 - 255 seconds<br>0 disables |
| Ped Clearance Time | Time during which DONT WALK or hand symbol is flashing following pedestrian WALK time.<br>Walk or Clearance Time timing cannot be programmed to zero if the phase is the ped carryover start phase or part of a ped carryover.<br>**Note:** Actual pedestrian clearance time is the longer of the pedestrian clearance in effect or guaranteed* pedestrian clearance | 0 - 255 seconds |
| Walk 2 | Walk 2 defines the duration of the interval in which WALK or the walking person symbol is displayed following a ped call from the Walk 2 input. If it is not a larger value, it is replaced by guaranteed WALK Time (**Home > Timing Plans > Guaranteed**). If WALK 2 is zero and enabled, the Walk time is substituted.<br>**Note:** Actual walk time is the longer of the walk time in effect or guaranteed* walk. | 0 - 255 seconds |

| | | |
|---|---|---|
| Ped Clearance 2 | Pedestrian clearance time that is to be in effect when WALK 2 is enabled by a time base Action Plan (**Home > Scheduler > Calendar Events**). This is the time during which DONT WALK or the hand symbol is flashing following ped WALK time.<br>**Note:** Actual pedestrian clearance time is the longer of the pedestrian clearance in effect or guaranteed* pedestrian clearance. | 0 - 255 seconds |
| Ped Clearance Extension Max | This is an ECPI feature.<br>(Applies to TS1 and TS2 operation)<br>The Pedestrian Clearance indication can be extended to the smaller of the two values by the phase ped extend input.<br>• Clearance Extension Max time<br>• Phase Max time remaining | 0 - 255 seconds |
| Walk Extension Max | When the walk in effect has been timed: if the phase Ped Extend Detector is TRUE, the walk is extended until 1) its total length reaches Walk Maximum, or 2) the elapsed length of the walk extension plus the ped clear equals the max in effect, or 3) the Ped Extend Detector input goes false. Walk maximum time has no effect when there is not a pedestrian extend detector for the phase. | 0 - 255 seconds |
| Carry Over to Phase Number | If phase pedestrian service can be carried over into another phase in the same ring when that phase times next, enter the phase that is allowed to time next while the pedestrian service (pedestrian carryover) is completed. If the phase identified as the pedestrian carryover phase does not have a vehicle call or will not be serviced next, the pedestrian service will be completed before the initiating phase is allowed to terminate. This option allows two vehicle movements while pedestrians are crossing wide streets.<br>**Note:** A pedestrian carryover service is not permitted to be part of a Pedestrian Overlap. | 0 - 16 |

* Guaranteed minimum values are programmed in **Home > Timing Plans > Guaranteed**

## Additional online help scheduled for next release

Updates will be available on a regular basis. Scan the QR Code below to access the latest Cobalt documentation and reference material. **( http://www.econolite.com/QR/controller/cobalt/ )**

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# Home > Timing Plans

## Clearance

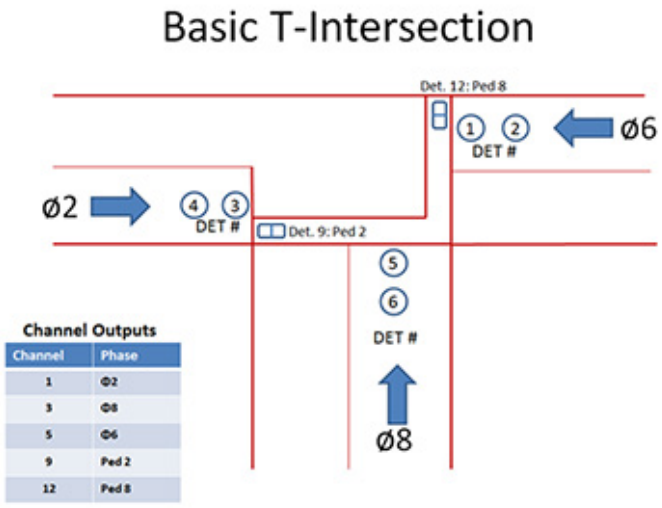
The Phase interval timers are programmed in this page.

Define the Yellow and Red Clearance intervals. Revert time applies to timing phase going red back to green.

The parameters in this screen:

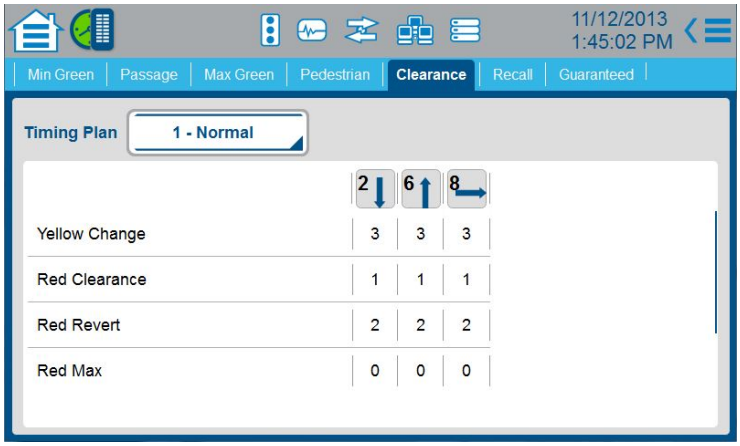
- Timing Plan (1 - 4)
- Yellow Change (0.0 - 25.5 seconds)
- Red Clearance (0.0 - 25.5 seconds)
- Red Revert (0.0 - 25.5 seconds)
- Red Max (0.0 - 25.5 seconds)

### Example Configuration




| Parameter | Phase 2 | Phase 6 | Phase 8 |
|---|---|---|---|
| Yellow Change | 3.5 seconds | 3.5 seconds | 3.3 seconds |
| Red Clearance | 1.2 seconds | 1.2 seconds | 1.1 seconds |

## Completed Screen for the Example Configuration (Guided Setup Screen)




## Notes for Clearance Timing Plans

| Clearance Parameter | Description | Range |
|---|---|---|
| Timing Plan | Use the drop-down menu to select a timing plan. To name the timing plan, go to **Options > Rename Plan**. | 1 - 4 |
| Yellow Change | The time that the phase yellow indication is displayed following a green interval.<br>**Note:** Actual yellow change in effect is the longest of yellow change or guaranteed* yellow. | 0.0 - 25.5 seconds |
| Red Clearance | The time that the phase red indication is displayed following a yellow change interval when terminating the phase.<br>**Note:** Actual red clearance time in effect is the longest of the red clearance or guaranteed* red clearance. | 0.0 - 25.5 seconds |
| Red Revert | Minimum red time before a phase can be re-serviced. Red revert begins timing at the start of red clearance. The actual red revert time for any phase is the larger of this and the Unit Red Revert time.<br>**Important:** NEMA mandates minimum limit time setting at 2 seconds. NTCIP allows for this value to be set lower. | 0.0 - 25.5 seconds |
| Red Max | When the red clearance in effect has been timed, if the phase Red Extend Detector is TRUE, red clearance is extended until its total length reaches Red Maximum or the Red Extend Detector input goes FALSE. Red Maximum has no effect when there is not a red extend detector for the phase. | 0.0 - 25.5 seconds |

* Guaranteed minimum values are programmed in **Home > Timing Plans > Guaranteed**

## Additional online help scheduled for next release

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# Home > Timing Plans

## Recall

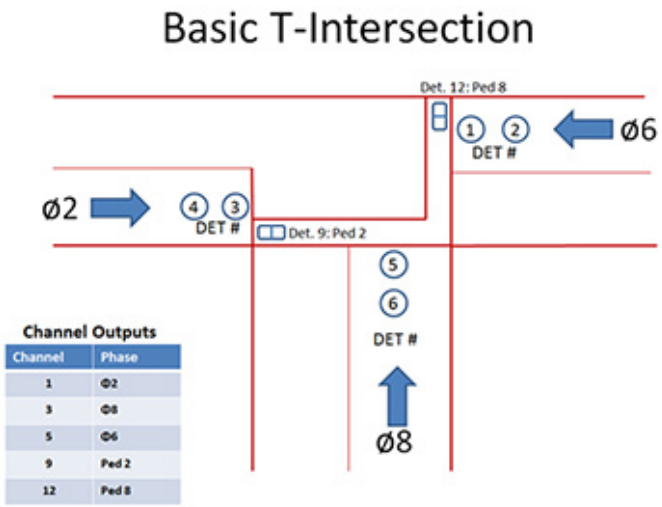
The Phase interval timers are programmed in this page.

Define the phase demand through recalls and latched detector calls. Soft Recall and No Rest apply when no opposing demand is present.

The parameters in this screen:

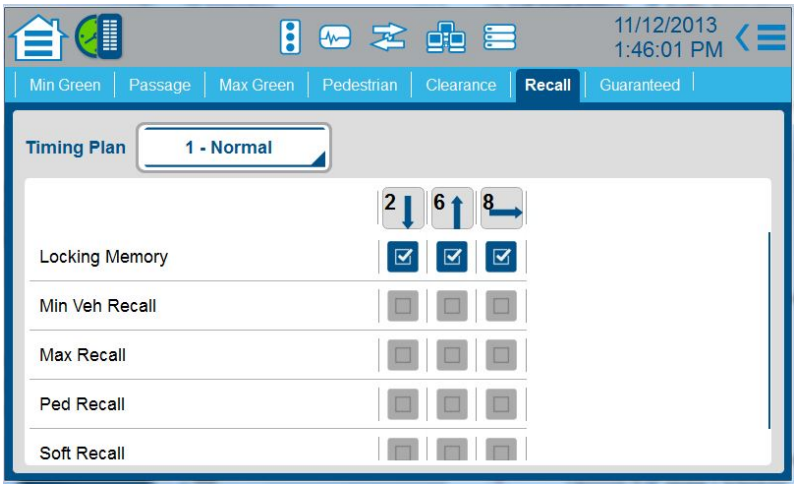
- Timing Plan (1 - 4)
- Locking Memory (Enable/Disable)
- Min Veh Recall (Enable/Disable)
- Max Recall (Enable/Disable)
- Ped Recall (Enable/Disable)
- Soft Recall (Enable/Disable)
- No Rest (Enable/Disable)

### Example Configuration




| Parameter | Phase 2 | Phase 6 | Phase 8 |
|---|---|---|---|
| Min Veh Recall | √ (Enable) | √ (Enable) | No check (Disable) |

## Completed Screen for the Example Configuration (Guided Setup Screen)




## Notes for Recall Timing Plans

| Recall Parameter | Description | Range |
|---|---|---|
| Timing Plan | Use the drop-down menu to select a timing plan. To name the timing plan, go to **Options > Rename Plan**. | 1 - 4 |
| Locking Memory | This locks the detector inputs. When locking memory is enabled, an actuation on any detector input assigned to the associated phase during yellow or red is remembered as a vehicle call and is not reset when the vehicle call is no longer present. Reset occurs during green.<br>**Note:** Locking memory function can be assigned per detector for each detector associated with a phase. To do this, go to **Home > Detection > Vehicle Detection > Lock In** | Check (Enable)<br>No check (Disable) |
| Min Veh Recall | Vehicle recall places a demand for vehicle service on a phase by registering a call while the phase is not in the green interval. | Check (Enable)<br>No check (Disable) |
| Max Recall | Places a continuous vehicle call on the phase.<br>The phase times to the maximum green time.<br>Maximum green timer begins timing as though an opposing call was present, but the phase does not terminate unless there is an actual opposing call. | Check (Enable)<br>No check (Disable) |
| Ped Recall | Pedestrian recall places a demand for pedestrian service on a phase by registering a call while the phase is not in the walk interval. | Check (Enable)<br>No check (Disable) |
| Soft Recall | Soft recall places a call on these enabled phase(s) when the controller goes to rest in other phases.<br>**Note:** Typical Soft Recall phases are through-phases such as 2 and 6. | Check (Enable)<br>No check (Disable) |
| No Rest | Absence of detector calls, the controller automatically goes to the next phase that is allowed to rest.<br>**Note:** Soft Recall overrides the No Rest entry. | Check (Enable)<br>No check (Disable) |

## Additional online help scheduled for next release

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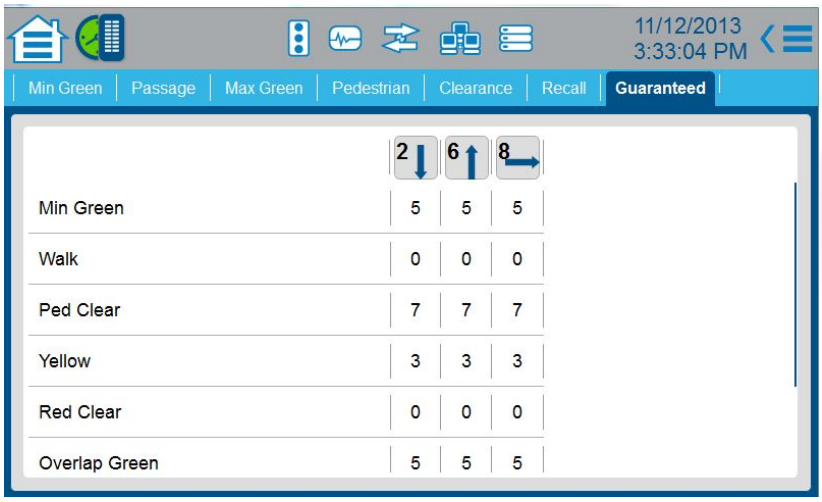
# Home > Timing Plans

## Guaranteed




Guaranteed minimum time for phase or overlap intervals. These entries establish the lower limit that the phase or overlap intervals must time.

**Note: The circumstances that can cause guaranteed minimum times to be ignored include: Manual advance input, Preemptor timing, and External Start input.**

| Guaranteed Parameter | Description | Range |
|---|---|---|
| Min Green | **Guaranteed Minimum Green:** The shortest possible vehicle green time, before any added initial or vehicle extensions.<br>**Note: Actual minimum green time will be the longest of the following: minimum green plus any added initial, vehicle extension, bike minimum green, ped walk plus ped clearance and guaranteed minimum green.** | 0-255 sec. |
| Walk | **Guaranteed Pedestrian Walk:** The shortest possible pedestrian walk time.<br>**Note: Actual minimum walk time will be the longer of the Walk time in effect or guaranteed* walk.** | 0-255 sec. |
| Ped Clear | **Guaranteed Pedestrian Clearance:** The shortest possible pedestrian clearance time.<br>**Note: Actual minimum pedestrian clearance time will be the longer of the Pedestrian Clearance in effect or guaranteed* pedestrian clearance.** | 0-255 sec. |
| Yellow | **Guaranteed Yellow Change:** The shortest possible phase yellow indication following a green interval.<br>**Note: Actual minimum yellow change time will be the longer of the Yellow time or guaranteed* yellow.** | 0-25.5 sec. |

| | | |
|---|---|---|
| Red Clear | **Guaranteed Red Clearance:** The shortest possible red indication following a yellow change interval when terminating the phase.<br>**Note: Actual minimum red clearance time will be the longer of the Red Clearance time in effect or guaranteed* red clearance.** | 0-25.5 sec. |
| Overlap Green | **Guaranteed Overlap Green:** Minimum overlap green that must be timed before the overlap is allowed to terminate.<br>**Note: If an overlap guaranteed green has not been satisfied by the time the overlap initiating included phase is ready to terminate its green interval, the phase green interval is extended until the overlap guaranteed green has been timed.** | 0-255 sec. |

* Circumstances that can alter this minimum time include: Manual Advance input, Preemptor timing, and External Start input.

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# Home > Phase Options

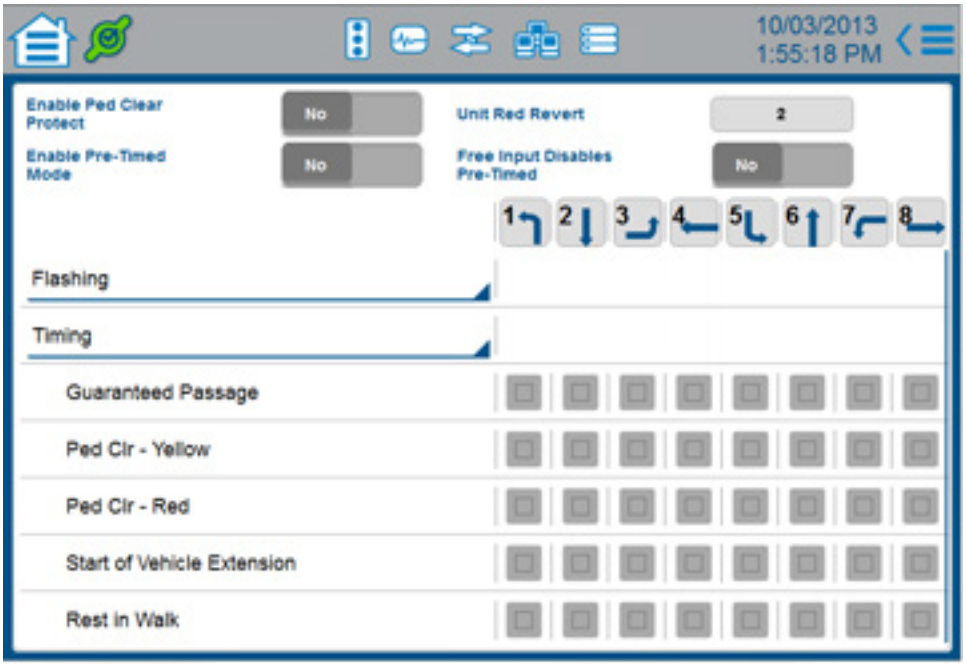
The Phase Options screen gives options for flashing and special service; for example, pre-timed phases.


Program the parameters for your application:

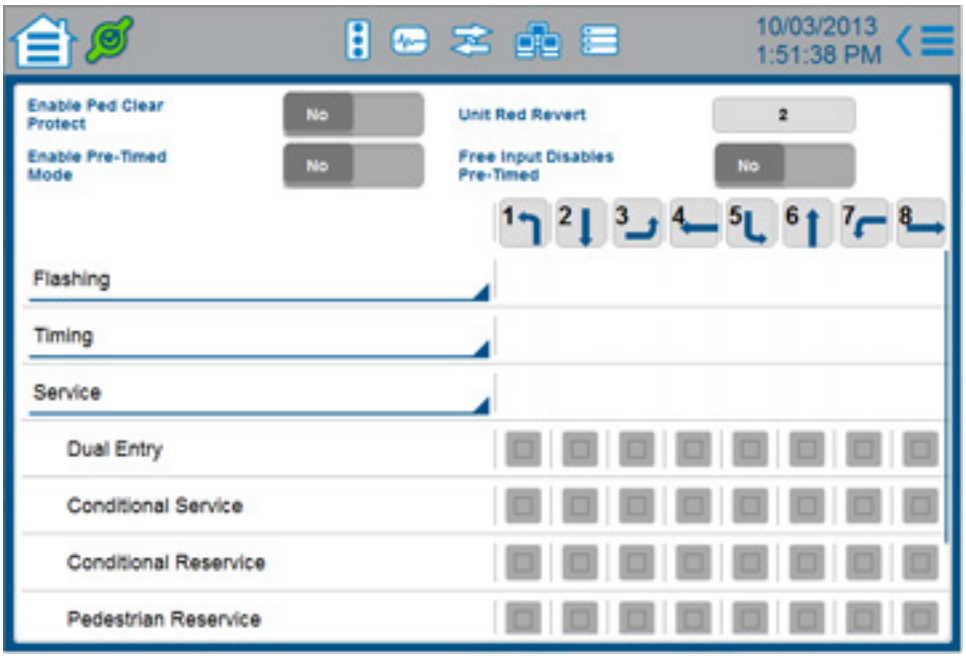
- Flashing
- Timing
- Service
- Non-actuated Phases
- Pre-timed Phases

## Flashing

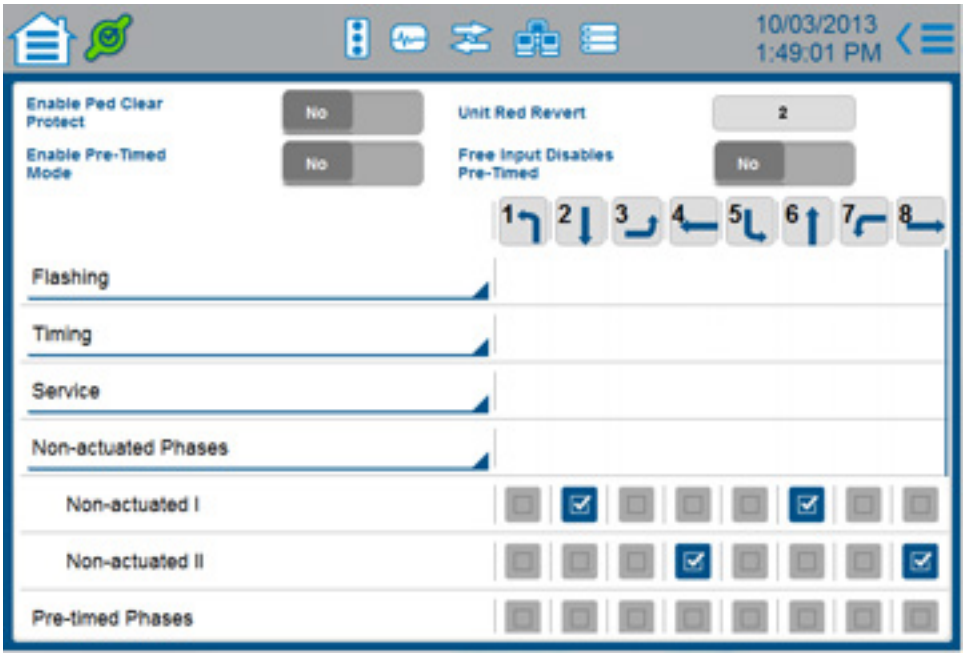

## Timing



## Service




## Non-actuated Phases



## Additional online help scheduled for next release

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# Home > Preemption

## Overview

You can program up to 10 Preemption Plans. A programmed Preemption Plan is used when it is enabled (its icon is highlighted in blue) and not used when it is disabled (its icon has a gray background). Service is prioritized so that the lowest number preemptor with Priority Override set to Yes (in the Entry screen) has the highest priority or service can be programmed as first come, first served.

### Initial Overview Screen


In the screen above, notice:

- Preemption Plan 1 is a **Rail** type and Preemption Plans 3, 4 and 7 are **Emergency** type.
- If a Preemption Plan is enabled, it is highlighted in blue. Preemption Plans 3 and 4 are enabled and Preemption Plans 1 and 7 are disabled (gray background).

To start to program preemptions in this screen, select a Preemption Plan (1 thru 10) in the Preemption Plan fields.

- For a **Rail** preemption, this is the first of six screens (Overview, Entry, Track Clear, Dwell, Cycle and Exit).
- For an **Emergency** preemption, this is the first of five screens (Overview, Entry, Dwell, Cycle and Exit).

## Example Overview Screen for a Rail Preemption Plan


For the screen above:

- **Preemption Plan:** Preemption Plan 1 is selected.
- **Feature Type Filter:** Rail preemption is selected.
- There is a Track Clear tab after the Entry tab (because it is a Rail preemption).

  **Note:** For a Rail preemption, make sure you program the parameters in the Track Clear tab. If you do not program the Track Clear screen, the type changes to Emergency (as written in red in this screen).
- The preempt input is not filtered (filtering is bypassed):
  - No **Call Method** is selected.

    **Note:** If you want to bypass the filter of the input and Solid or Pulsing is selected, tap the selected field to de-select it. But, if you want to filter the input, select a **Call Method**, **Solid** or **Pulsing**.
  - The hard-wired preempt Input 1 routes directly to Preemptor 1 (when the input is bypassed, the number of the hard-wired input and the number of the preemptor is the same).
  - The **Filtered Input** is automatically set to 0 because the filtering for this Preemption Plan is bypassed.
- **Active Status** (the output during a preemption) is **F1 pps** (a 1-pulse-per-second signal).
- **Min Duration** (the required minimum time that the preempt run must be active) is 10 seconds.
- **Only During Dwell** is **No** (a restriction of the Output Status to only during the Dwell/Cycle interval is disabled).
- There are no **Special Functions** enabled.
- This Preemption Plan disabled (gray background); to enable this plan, select [Enable Plan], then **Commit**.

### Example Overview Screen for an Emergency Preemption Plan


For the screen above:

- **Preemption Plan:** Preemption Plan 3 is selected.
- **Feature Type Filter: Emergency** preemption is selected.
- There is not a Track Clear tab after the Entry tab.
- The preempt input is filtered:
  - The **Call Method** is **Pulsing** for the controller to filter the input for a pulsing preempt signal from an emergency vehicle.
  - For this example, the Filtered Input is set to 3 (with the preemptor number the same as the number of the hard-wired input). But it is possible to select another number (1 thru 10) to connect this preemptor to a hard-wired input with a different number.
- **Active Status** (the output during a preemption) is **Solid** (a solid signal).
- **Min Duration** (the required minimum time that the preempt run must be active) is **10** seconds.
- **Only During Dwell** is **No** (a restriction of the Output Status to only during the Dwell/Cycle interval is disabled).
- There are no **Special Functions** enabled.
- This Preemption Plan is enabled (highlighted in blue); to disable this plan, select [Disable Plan].

# Programming for the Preemption Overview Screen

| Overview Parameter | Description | Range |
|---|---|---|
| Preemption Plan | In the Preemption Plan fields, 1 thru 10, select a Preemption Plan to edit or view. | 1 thru 10 |
| [Enable Plan] or [Disable Plan] | **[Disable Plan]:** When this soft key is shown, the selected Preemption Plan is highlighted in blue that shows it is enabled. To disable the Preemption Plan selected:<br>1. Select [Disable Plan].<br>2. Select Commit.<br><br>**[Enable Plan]:** When this soft key is shown, the selected Preemption Plan has a gray background that shows it is disabled. To enable the Preemption Plan selected:<br>1. Select [Enable Plan].<br>2. Select Commit. | [Enable Plan], [Disable Plan] |
| Feature Type Filter | **Type of Preemption**<br>**Rail:** Select this for a Preemption Plan for a train.<br>**Emergency:** Select this for a Preemption Plan for an emergency vehicle. | Rail, Emergency |
| Call Method | **Solid:** Select this if you want to filter the call for this preemptor for a solid signal.<br>**Pulsing:** Select this if you want to filter the call for this preemptor for a pulsing signal.<br>**Note:** Filtering is typically used for a low priority preemption such as an emergency vehicle.<br>**No selection:** The call for this preemptor is not filtered (filtering bypassed). If you want this condition and Solid or Pulsing is selected, tap the selected field to de-select it. When you do this, the Filtered Input field automatically sets to 0.<br>**Note:** When no call method is selected, filtering is bypassed and the input connects directly to the preemptor of the same number—usually for highest priority preempts such as a train. | Solid, Pulsing, No selection |
| Filtered Input | **1 thru 10:** Select (1 thru 10) for the number of the hard-wired input to connect to this preemptor.<br>**0:** This is set automatically when Solid and Pulsing are both not selected for the Call Method. This indicates that the input filtering is bypassed and the hard-wired input connects to the preempt with the same number. | 1 thru 10, 0 |
| Active Status | **Preemption Active Output**<br>From the drop-down menu, select the status output for an active preemption:<br>**Off:** Disable<br>**Solid:** Enable solid<br>**F1 pps:** Enable flash at 1pps<br>**F2 pps:** Enable flash at 2.5pps<br>**F5 pps:** Enable flash at 5pps<br>The setting in Only During Dwell in this screen determines if this is active only during the **Dwell/Cycle** interval. | Off, Solid, F1 pps, F2 pps, F5 pps |

| | | |
|---|---|---|
| Min Duration | **Minimum Duration Time**<br>This is the required minimum time that the preempt run must be active. It starts timing at the end of the Delay Interval. A preempt run May Not Exit until this timer has expired.<br>With no Dwell phases programmed, a Zero entry allows preempt to exit immediately after the Track Clearance interval if the preempt input is no longer present. But, if Dwell phases are programmed, then the Dwell phases will be serviced for their **Minimum Dwell** time before the preemptor exits. Select the **Dwell** tab to see the programming for the Minimum Dwell time. | 0-65535 sec. |
| Only During Dwell | Preemption Active Output Only In Dwell.<br>Select **Yes** (enable) or **No** (disable) for the Preemptor Status to give an output only during the Dwell/Cycle interval.<br>**Note:** When this is enabled, it is only enabled during the green dwell interval; it is not enabled during the dwell clearance interval.<br>When this is set to No (disabled), the Preemptor Status is output continuously when the preemptor is active. | Yes, enable<br>No, disable |
| Special Functions | **Preemptor Special Function Outputs**<br>Select up to eight Special Function outputs when this Preemption Plan is in effect.<br>These outputs are typically mapped to a controller output, input, or used by a Logic Processor Statement (refer to **Home > Logic Processor**). | 1 thru 8 |

## Additional online help scheduled for next release

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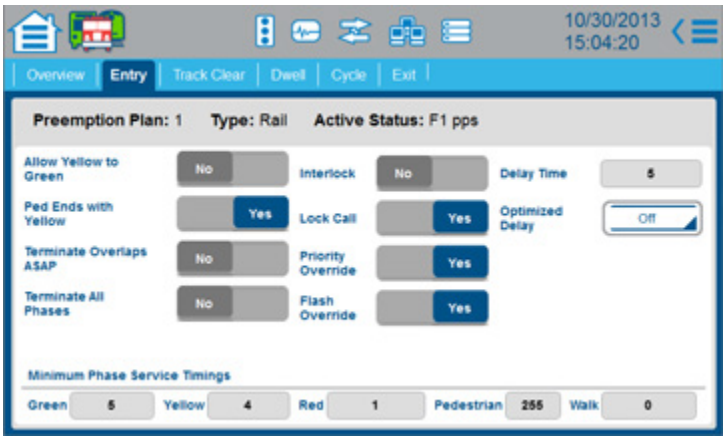
# Home > Preemption

## Entry




Use this screen to program how to make the transition from the Day Plan in effect to a Preemption Plan after the Entry of a preempt signal.

### Top of the Screen

The settings at the top of this screen are read-only; you set these parameters in the **Overview** screen: **Preemption Plan** (1 thru 10), **Feature Type Filter** (Rail, Emergency) and **Active Status** (Off, Solid, F1 pps, F2 pps, F5 pps).

### Programming for the Preemption Entry Screen

| Entry Parameter | Description | Range |
|---|---|---|
| Allow Yellow to Green | **Yellow Clearance Reverts to Green**<br>**Yes:** Lets a phase go immediately to green if it has been timing a Yellow Clearance interval when the preemption call is received and the interval to time next during preemption is that same phase green.<br>**No:** Forces the phase and will proceed through red revert in the normal sequence.<br>**Note:** In this screen, you cannot set this parameter to **Yes** (enable) and also set **Terminate All Phases** to **Yes** (enable) because they would be in direct conflict with one another. This feature is automatically disabled if a Lagging Ovlp Green starts timing on the way to Preempt. | Yes,<br>No |

| | | |
|---|---|---|
| Interlock | **Preemptor Interlock Enable**<br>**Yes:** Enables Preemptor Interlock. The Preemptor Interlock input must remain at logic ground or TRUE state until that preemptor has an active input and at logic high or FALSE state when that preemptor input is active. If this condition is not met for at least 1 second and the preemptor is programmed, the controller reverts to flash.<br>**Note:** Each of the 10 preempt inputs have a corresponding Interlock Input EXCEPT for Preempts 1 & 2 which SHARE Interlock Input #1. As a result, Interlock Input #2 is NEVER used.<br>**No:** Disables Preemptor Interlock. The preemptor interlock input has no effect on controller operation.<br><br>**Preemptor Interlock Enable**<br>**Example:** Preemptor 1-2 Interlock enabled.<br>Preemptor 1 or 2 are not active or timing Initial/Track Clearance:<br>1. Activate preemptors 1 and 2.<br>2. Clear to all red after Track Clearance.<br>3. Go to a latched flash condition by forcing Voltage Monitor/ Fault Monitor FALSE.<br><br>Preemptor 1 is active after termination of Track Clearance:<br>1. Clear to all red.<br>2. Go to a latched flash condition by forcing Voltage Monitor/ Fault Monitor FALSE.<br><br>Preemptor 2 is active and after termination of Track Clearance and Preemptor 1 is not programmed:<br>1. Clear to all red.<br>2. To go to a latched flash condition, force Voltage/Fault Monitor false.<br><br>Preemptor 2 is active and after termination of Track Clearance and Preemptor 1 is programmed:<br>1. Activate preemptor 1 and 2 inputs.<br>2. Clear to all red after Track Clearance.<br>3. Go to a latched flash condition by forcing Voltage Monitor/ Fault Monitor FALSE.<br><br>Any preemptor is terminating (going to Exit phase(s) or exiting Preemptor Flash):<br>1. Restart the Preemptor 1 or 2 if either is timing<br>2. Activate preemptor 1 and 2 inputs<br>3. Clear to all red after Track Clearance.<br>4. Go to a latched flash condition by forcing Voltage Monitor/ Fault Monitor FALSE.<br><br>**Note:** The preempt logic gives the preempt and interlock inputs 3 seconds to stabilize before it checks if they are logically opposite. | Yes,<br>No |
| Delay Time | **Delay Time**<br>This is the time between receipt of a preemptor call and the start of preemption movements. If preemption is not active when the call is not locked, then preemption is removed before the delay timing period expires. Zero entry causes no delay before the preempt input is acknowledged and the **Optimized Delay** parameter in this screen is grayed out. | 0-65535 sec. |

| | | |
|---|---|---|
| Ped Ends with Yellow | **Pedestrian Clearance Through Yellow**<br>**Yes:** Allows the Yellow Change indication to time with the completion of Pedestrian Clearance interval when entering preemption.<br>**No:** Provides normal pedestrian termination when entering preemption. The Yellow Change interval is after the completion of Pedestrian Clearance. | Yes,<br>No |
| Lock Call | **Locked Preemptor Call During Delay**<br>A preemptor may have either Locked (Yes) or non-locked (No) detector inputs. The non-locked parameter is in effect only during delay time.<br>**No** (Detector not Locked): If a preemptor call is dropped during delay time, the preemptor is not serviced.<br>**Yes** (Detector is Locked): If a preemptor call is dropped during delay time, the preemptor is serviced. The call is Locked until the preemptor is serviced. | Yes,<br>No |
| Optimized Delay | **Optimized Delay Entrance Option**<br>**Note:** To enable this function, you must enter a non-zero value for the Delay Time in this screen. If the Delay Time is set to 0, this parameter is grayed out.<br>Select from the drop-down menu to enable/disable the optimized delay to decide whether or not to apply omits to movements, as explained below:<br>**Off:** Disabled<br>**On:** Always Enabled<br>**Time of Day:** Enabled only by Time of Day. This function is then controlled by **Home > Event Plans > Advanced > Allow Optimized Delay** (set to Yes or No).<br>When this is enabled, and a preempt is activated, the preemptor compares its delay time to the minimum time required to service phase and pedestrian movements. If the amount of time left in the delay timer is less than the amount required to service a phase or ped, then the preemptor applies omits to those movements.<br>When all phases have been omitted because of lack of time, the preemptor will direct the controller to the preempt Entry Phases so it can start the preempt as soon as the Delay Timer reaches 0 (zero). | Off,<br>On,<br>Time of Day |
| Terminate Overlaps ASAP | **Terminate Overlaps As Soon As Possible.**<br>**Yes:** Forces overlaps to terminate immediately with their included phase and ignore any Lagging Overlap programming.<br>**No:** Allows overlaps to terminate nominally when the last overlap included phase reaches the preemptor minimum yellow interval. | Yes,<br>No |

| | | |
|---|---|---|
| Priority Override | **Preemptor Overrides Higher Numbered Preemptor Disable**<br>**Note:** A Higher Priority preempt cannot interrupt a preempt currently entering or timing Track Clear. The interrupted preempt will complete timing its Track Clear and only then will it terminate so that the Higher Level Preempt can run.<br>**Yes:** Allows this preemptor to override all higher numbered preemptors. (Example: 2 = Yes overrides 3 through 10)<br>**No:** Disables this preemptor from overriding the next active higher-numbered preemptor.<br>**Example:**<br>• Preemptor 1 is the highest priority preemptor.<br>• Preemptor 2 has priority over all other active preemptions except Preemptor 1.<br>• Preemptors 3-6 are equal and are serviced on a first-come, first-served basis. They all override Preemptors 7-10.<br>• Preemptors 7- 10 are equal and are serviced on a first-come, first-served basis.<br>To program the above example, set Priority Override in the preemption plans as shown:<br>1 = No<br>2 = Yes<br>3 = No<br>4 = No<br>5 = No<br>6 = Yes<br>7 = No<br>8 = No<br>9 = No<br>10 = Yes or No (this has no effect) | Yes,<br>No |
| Max Call Inhibit Time | **Maximum Call Inhibit Time**<br>**Note:** This parameter is only shown for an Emergency vehicle type of preemption. For a Rail type of preemption, this parameter is not shown.<br>This is the last part of delay time, during which phases that are not scheduled for service at the start of the preemption sequence, and all pedestrian movements are inhibited. This inhibit time must be less than or equal to Delay Time. Zero entry causes no inhibit time at the start of the preemption sequence. | 0-255 sec. |
| Terminate All Phases | **Preemptor Terminate All Phases**<br>Select **Yes** or **No** for the controller to always terminate all timing phases before it enters a preempt run. This forces an All Red condition before the preempt starts.<br>Yes: Terminate all timing phases and force an All Red condition before the start of the activated preempt. Phases will not be terminated if the current Green phases exactly match the entry phase(s) of the Preempt and the entry phase(s) will not cause a Yellow Trap for settings that conflict with this as programmed in **Home > Overlap > Details** for a PPLT/FYA type overlap.<br>**No:** Controller only terminates phases not required by the activated Preempt run.<br>**Note:** In this screen, you cannot enter **Yes** in **Terminate All Phases** and **Yes** in **Allow Yellow to Green** at the same time because they would be in direct conflict with one another.<br>To make a PPLT compatible during preemption, program the designated phase/ overlap type that is associated with the PPLT to **F1 pps** (1 pps flash). | Yes,<br>No |

| | | |
|---|---|---|
| Flash Override | **Preemption Has Priority Over Automatic Flash**<br>**No:** Lets automatic flash continue. Automatic flash terminates after the preemption input is removed.<br>**Yes:** Lets the preemptor override automatic flash and time the preemptor sequence. The preemptor forces the exit from automatic flash, times the complete preemption sequence and then lets the controller return to automatic flash.<br>This complies with the NEMA TS2 3.4.6 priority list. | Yes,<br>No |
| Minimum Phase Service Timings<br><br>Green<br><br>Yellow<br><br>Red<br><br>Pedestrian<br><br>Walk | **Preemption Entrance Minimum Phase Service Times**<br>Enter the minimum times to serve the phases that are active when the preemptor becomes active.<br>**Green:** 0-255 sec.<br>**Yellow** (yellow change): 0.0-25.5 sec.<br>**Red** (red clearance): 0.0-25.5 sec.<br>**Pedestrian** (pedestrian clearance): 0-255 sec.<br>**Walk**: 0-255 sec.<br>**Note:** Programming these values to 255 and 25.5 respectively, lets the phase minimum times be used. There is no way for the phase indication times to be larger than their programming when the phases enter preemption.<br>I**mportant:** If these values are set to zero and the Guaranteed Minimum Times (**Home > Timing Plans > Guaranteed**) are also zero, the indication will terminate immediately when it enters preemption, regardless of the time on the phase. This can result in a clearance indication being omitted or shorter than the MMU minimum clearance time resulting in a Latched MMU Minimum Clearance failure. | 0-25.5 sec.<br>or<br>0-255 sec |

## Additional online help scheduled for next release

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# Home > Preemption

## Track Clear

### Top of the Screen

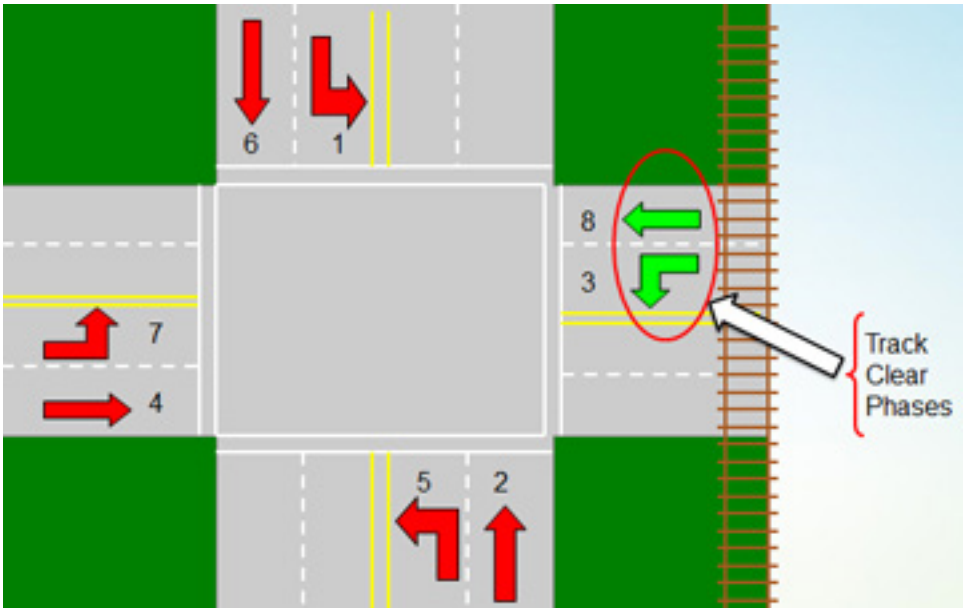
The settings at the top of this screen are read-only; you set these parameters in the **Overview** screen: **Preemption Plan** (1 thru 10), **Feature Type Filter** (Rail, Emergency) and **Active Status** (Off, Solid, F1 pps, F2 pps, F5 pps).

> **Note:** This Track Clear tab and screen is only shown for **Type: Rail**. It is hidden for **Type: Emergency**.

Use this screen to program Track Clear Phases.

### Example

In the example shown below, the path of a train blocks Phase 3 and Phase 8; these are the Track Clear Phases. When you program Phase 3 and Phase 8 as Track Clear Phases, the controller first clears the traffic on these phases after it receives a preemption input for the approach of a train.



For this example, program as follows:

1. Select Phase 3.
2. Select the [Vehicle] soft key.


3. From the **Flash** drop-down menu, select the phase output (Solid, F1 pps, F2 pps, F3 pps). In this example, **Solid** is selected (also shown by the S in the top corner of the field for Phase 3).
4. Select **Commit**.


5. Repeat Step 1 thru Step 4 for Phase 8.
6. This is the final screen:


To program the other parameters in this screen, refer to the table that follows.

**Notes:**

- Track Clear phases are highlighted in green.
- To remove a Track Clear phase, select the phase and then select [None].
- The row below the phases shows overlaps A and B. You can also program overlaps as Track Clear phases. To program overlaps in Track Clearance, refer to the last row in the table that follows.

# Programming for the Preemption Track Clear Screen

| Track Clear Parameter | Description | Range |
|---|---|---|
| Reservice | **Track Clearance Reservice**<br>**Yes:** Allows the preemptor to re-service the track clearance phases when the preemption call goes away and returns before the preemption sequences terminate. With this option enabled, the **Post Call Extended** option is disabled (programmed in the **Cycle** screen).<br>**No:** Disables re-servicing the preemption track clearance phases while in the preemption sequence. | Yes,<br>No |
| | **Minimum Service Times** | |
| Green Time | **Track Clearance Time, Minimum Green**<br>**0-255 sec:** For Track Clear Green, the preemptor times this setting regardless of the phase timing. The indications at least time the Guaranteed Minimum Times (**Home > Timing Plans > Guaranteed**).<br>**Notes**:<br>**0 (zero):** Track clearance green time omits the track clearance interval regardless of programming.<br>Programming this value to 255 allows the phase minimum times to be used.<br>**Important:** If the setting of these clearance values is zero and the Guaranteed Minimum Times are also zero, the indication will terminate immediately when exiting track clearance regardless of the time on the phase. This can result in a clearance indication being omitted or shorter than the MMU minimum clearance time resulting in a Latched MMU Minimum Clearance failure. | 0-255 sec. |
| Yellow Time<br><br>Red Time | **Track Clearance Time, Yellow or Red**<br>**0.0 - 25.5 sec:** Track Clear Yellow or Red also times the programmed value unless a value of 25.5 is set. With a value of 25.5, the controller uses the phase programmed time (**Home > Timing Plans**). Regardless, the indications at least time the Guaranteed Minimum Times (**Home > Timing Plans > Guaranteed**).<br>**Note:** Programming these values to 25.5 allows the phase minimum times to be used.<br>**Important:** If the setting of these clearance values is zero and the Guaranteed Minimum Times are also zero, the indication will terminate immediately when exiting track clearance regardless of the time on the phase. This can result in a clearance indication being omitted or shorter than the MMU minimum clearance time resulting in a Latched MMU Minimum Clearance failure. | 0.0 - 25.5 sec. |
| | **Gate Down** | |
| Extended Green | **Preemptor Gate Down Extended Green**<br>**Note:** For this feature to operate, you must set a non-zero value for both **Gate Down Extended Green** and **Gate Down Max Green**.<br>**0.0** (zero) disables the Gate Down option.<br>**0.1 to 25.5 sec.:** This timing will extend the Track Clear green time after the Gate Down input is received.<br>This enables any cars that have just crossed the tracks to get through the intersection on a Green light.<br>**Important:** If the gate down maximum green timer times out, the preemptor will force the intersection into flash!<br>**Note:** This timing only takes effect after the Track Clear Minimum Green time is complete and the Gate Down input has been received. If the Gate Down signal never happens, then the Extend Green Time will never time and eventually the controller will go into Gate Down Fault Flash. | 0 – 25.5 sec. |

| | | |
|---|---|---|
| Max Green | **Track Clearance Time, Maximum Track Clear Green**<br>**Note:** For this feature to operate, you must set a non-zero value for both **Gate Down Extended Green** and **Gate Down Max Green**.<br>**0** (zero) disables the Gate Down option.<br>**1 - 255 sec.:** The maximum time that Track Clear Green may be serviced when being extended by the Gate Down feature.<br>**Important:** If the gate down maximum green timer times out, the preemptor will force the intersection into flash! | 0 - 255 sec. |
| (Phase Diagram)<br><br>[Vehicle]<br><br>Flash | **Track Clearance Phase(s)**<br>To program phases for Track Clearance, refer to the example before this table.<br>These are the phases serviced first following Initial Clearance. Each ring will time according to the Track Clearance Green, Yellow Change and Red Clearance intervals. Each ring then holds in Red transfer until all have finished their Track Clearance timing. All rings then advance to the preemptor Dwell interval together. The Yellow and Red indication will be solid but the green will be as follows:<br>• **Solid:** Solid Green when the phase is green.<br>• **F1 pps:** Flashing Green at 1 pps when the phase is green<br>• **F2 pps:** Flashing Green at 2.5 pps when the phase is green.<br>• **F5 pps:** Flashing Green at 5 pps when the phase is green.<br>**Note:** Changes in flashing rate will take place when the phase green starts to time. All Track Clearance vehicle movements must be permissive and compatible with each other. Track Clearance vehicle movements cannot be Dwell or Cycle vehicle movements. | Solid,<br>F1 pps,<br>F2 pps,<br>F5 pps<br>[None] disables |
| (Overlap Diagram)<br><br>Flash | **Track Clearance Overlap(s)**<br>Refer to the illustrations before this table.<br>To enable an overlap during Track Clearance:<br>1. Select the overlap phase (A, B, C, etc.).<br>2. In the Flash drop-down menu, select **Solid, F1 pps, F2 pps,** or **F5 pps** (described below).<br>The Yellow and Red indication are solid, but the Green is as follows:<br>• **Solid:** Solid Green when the overlap is green or timing between two included phases.<br>• **F1 pps:** Flashing Green at 1 pps when the phase is green or timing between two included phases<br>• **F2 pps:** Flashing Green at 2.5 pps when the phase is green or timing between two included phases<br>• **F5 pps:** Flashing Green at 5 pps when the phase is green or timing between two included phases<br><br>To disable an overlap during Track Clearance:<br>1. Select the overlap phase (A, B, C, etc.).<br>2. In the Flash drop-down menu, select Off.<br><br>Observe the information below:<br>• Changes in flashing rate will take place when the phase green starts to time.<br>• All Track Clearance vehicle movements must be permissive and compatible with each other.<br>• Track Clearance vehicle movements cannot be dwell or cycling movements.<br>• Track Clearance overlap indications will only be active if they have an Included phase programmed (in **Home > Overlap > Overlaps**) as a Track Clearance vehicle movement.<br>All overlap operations (including lead/lag timing, protect, modified and not-overlap) will be active coming to, during, and exiting Track Clearance. | Solid,<br>F1 pps,<br>F2 pps,<br>F5 pps<br>Off disables |

## Additional online help scheduled for next release

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# Home > Preemption

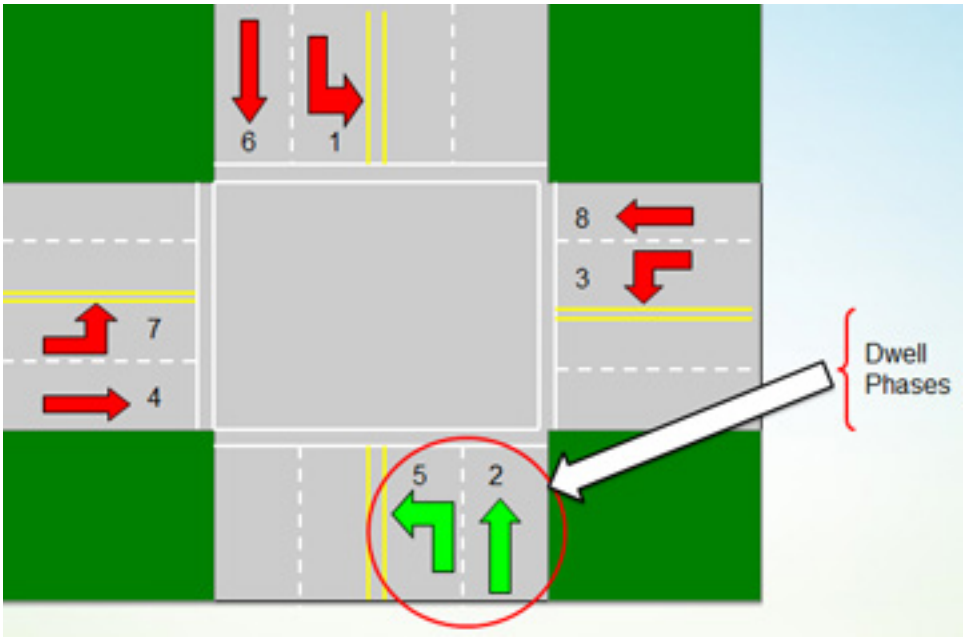
## Dwell

### Top of the Screen

The settings at the top of this screen are read-only; you set these parameters in the Overview screen: Preemption Plan (1 thru 10), Feature Type Filter (Rail, Emergency) and Active Status (Off, Solid, F1 pps, F2 pps, F5 pps).

### Example of Dwell Phases

In the example shown below, there is an ambulance whose path is on Phase 2. The ambulance sends a preemption signal after which the controller times Phase 2 and Phase 5 in Dwell Green and the other phases in Dwell Red. The ambulance can then proceed safely through the intersection.




### Procedure

**Note:** Throughout this procedure, select **Commit** as necessary to enable a change to the database. For an explanation of Transaction Mode (that runs when you make a critical change to programming), refer to the Help for **Home > Phase Order > Phase Order**.

For the above example, you could program as follows, as shown in the screen below:

1. Select Phase 2.
2. Select the [Vehicle] soft key.
3. In the Flash drop-down menu, select Solid.
4. Repeat Step 1 thru Step 3 for Phase 5.


To program the other parameters in this screen, refer to the table that follows.

**Notes:**

- Dwell phases are highlighted in green.
- To remove a Dwell phase, select the phase and then select [None].
- The row below the phases shows overlaps A and B. You can also program overlaps as Dwell phases. To program overlaps as Dwell, refer to second to the last row in the table that follows.

## Programming for the Dwell Screen

| Dwell Parameter | Description | Range |
|---|---|---|
| Minimum Dwell | **Preemptor Minimum Dwell Time**<br>**0 – 255:** The minimum time (in seconds) for the Dwell Phases. After this time, the preemptor waits for the duration time to be complete and the preemption input to go FALSE before it exits. | 0 - 255 sec |

| | | |
|---|---|---|
| Flashing | **Dwell Phases Flash During the Dwell Interval**<br>When the preemptor advances to the dwell interval (dwell phases may or may not be programmed), the load switch outputs behave as follows:<br>**Off:** Load switch outputs do not flash.<br>**LDSW** (Load Switch): Causes the preemption Dwell phases to flash Yellow while all other phases flash Red. Dwell Flash operation is limited to one phase per ring that is also a permissive phase.<br>**Note:** This Flash exits to either the Exit Phases or (if no exit phases) to the Dwell Phases.<br>**Monitor:** On NEMA cabinet, controller forces the controller to drop CVM and puts the intersection into Cabinet Flash. On 300 Series cabinet, for this to work, Conflict Monitor needs to have watchdog latching disabled. In this mode, Watchdog can be stopped to produce cabinet flash.<br>Upon exiting Preemption, the controller will time the Power-Up Red before going to the Start-up phases as programmed in **Home > Flash > Startup Flash.** | Off,<br>LDSW,<br>Monitor |
| Exit Color | **Dwell Flash Exit Color**<br>In the Exit Color drop-down menu, select Red, Yellow or Green. The controller will exit from Dwell phase flash to the selected color indication.<br>**Note:** For this option to operate, you must also select either Dwell Phases and/or Exit Phases. Track Clearance vehicle movements cannot be an Exclusive Ped Phase. | Red,<br>Green,<br>Yellow |
| Ped Dark | **Pedestrian Indications Dark**<br>**Yes:** Turns OFF all pedestrian output indications while the preemptor is Active.<br>**No:** Lets pedestrian indications follow other preemptor programming. | Yes,<br>No |
| Phase Diagram | **Dwell Phase(s)**<br>These are the phases that will be first served following the Track Clearance interval. The Yellow and Red indication will be solid but the Green indication will be as described below.<br>For each Dwell Phase:<br>1. In the phase diagram, select the phase (highlighted in green).<br>2. In the **Flash** drop-down menu select the Green indication as described below:<br>**Solid:** Solid Green when the phase is green.<br>**F1 pps:** Flashing Green at 1 PPS when the phase is Green<br>**F2 pps:** Flashing Green at 2.5 PPS when the phase is Green.<br>**F5 pps:** Flashing Green at 5 PPS when the phase is Green.<br>**Observe the notes below:**<br>• Changes in flashing rate will take place when the phase green starts to time.<br>• All Dwell vehicle movements must be permissive.<br>• Dwell vehicle movements cannot be Track Clearance vehicle movements.<br>• Dwell phases may not be Identical to the Cycle phases. For example, Dwell 2/5, Cycle 2/5 is not permitted.<br>• An Exclusive Ped phase may be used as a Dwell phase but its corresponding Dwell Ped phase must also be selected. | Solid,<br>F1 pps,<br>F2 pps,<br>F5 pps |

| | | |
|---|---|---|
| Overlap Field (bottom of screen) | **Dwell Overlap(s)**<br>These are the Overlaps to be first served following Track Clearance. Dwell overlap Yellow and Red indication will be solid, but the green will be as described below.<br>For each Overlap:<br>1. In the Overlap field, select the overlap (highlighted in green).<br>2. In the Flash drop-down menu select the Green indication as described below:<br>**Solid:** Solid Green when the Overlap phase is green.<br>**F1 pps:** Flashing Green at 1 PPS when the phase is green.<br>**F2 pps:** Flashing Green at 2.5 PPS when the phase is green.<br>**F5 pps:** Flashing Green at 5 PPS when the phase is green.<br>**Observe the notes below:**<br>• All Dwell vehicle movements must be permissive.<br>• Dwell vehicle movements cannot be Track Clearance vehicle movements.<br>• Dwell overlap indications will only be active if they have an included phase (**Home > Overlap > Overlaps**) programmed as a Dwell vehicle movement.<br>• All overlap operations (including lead/lag timing, protect, modified, and not-overlap) will be active coming to, during, and exiting Dwell interval. | Solid,<br>F1 pps,<br>F2 pps,<br>F5 pps |
| [Ped and Vehicle] | **Dwell Pedestrian(s)**<br>After you select a phase, if you want to serve Dwell phase Pedestrian movements as well as Vehicle movements, select [Ped and Vehicle].<br>**Note:** If Dwell Flash option is enabled, no pedestrian indications can be serviced. | |

## Additional online help scheduled for next release

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# Home > Preemption

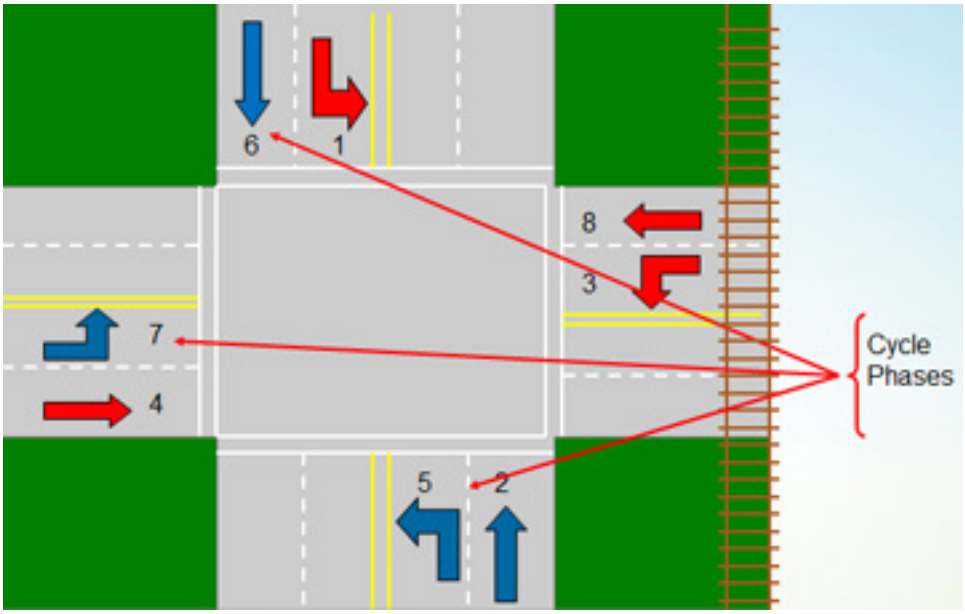
Cycle

## Top of the Screen

The settings at the top of this screen are read-only; you set these parameters in the **Overview** screen: **Preemption Plan** (1 thru 10), **Feature Type Filter** (Rail, Emergency) and **Active Status** (Off, Solid, F1 pps, F2 pps, F5 pps).

## Example of Cycle Phases

In the example shown below, there is a Rail preemption timing. It is safe for Phases 2, 5, 6 and 7 to continue timing their normal cycle while Phases 1, 4, 8 and 3 are Red.  Phases 2, 5, 6 and 7 are the Cycle Phases.




## Procedure

**Note:** Throughout this procedure, select Commit as necessary to enable a change to the database. For an explanation of Transaction Mode (that runs when you make a critical change to programming), refer to the Help for Home > Phase Order > Phase Order.

For the above example, you could program as follows, as shown in the screen below:

1. Select Phase 2.
2. Select the [Vehicle] soft key.
3. In the Flash drop-down menu, select Solid.
4. Repeat Step 1 thru Step 3 for Phases 5, 6 and 7.


To program the other parameters in this screen, refer to the table that follows.

**Notes:**

- Cycle phases are highlighted in green.
- To remove a Cycle phase, select the phase and then select [None].
- The row below the phases shows overlaps A and B. You can also program overlaps as Cycle phases. To program overlaps as Cycle, refer to second to the last row in the table that follows.

## Programming for the Cycle Screen

| Cycle Parameter | Description | Range |
|---|---|---|
| Minimum Cycle | **Preemptor Minimum Cycle Time**<br>**0 – 255:** The minimum time (in seconds) for the Dwell Phases. After this time, the preemptor waits for the duration time to be complete and the preemption input to go FALSE before it exits. | 0 - 255 sec |
| Post Call Extended | **Preemption Input Extension Time**<br>Preemptor remains in Dwell interval for Extend Input time when preempt call is removed. If preempt call is reapplied during this time, the preemptor reverts to start of dwell interval. Zero entry causes no input extension time and Dwell interval ends when the preempt call is removed. | 0.0 - 25.5 seconds |
| Phase Diagram | **Cycle Phase(s)**<br>These are the phases that will be served after the Dwell Phases. The Yellow and Red indication will be solid but the Green indication will be as described below.<br>For each Cycle Phase:<br>1. In the phase diagram, select the phase (highlighted in green).<br>2. In the Flash drop-down menu select the Green indication as described below:<br>**Solid:** Solid Green when the phase is green.<br>**F1 pps:** Flashing Green at 1 PPS when the phase is Green<br>**F2 pps:** Flashing Green at 2.5 PPS when the phase is Green.<br>**F5 pps:** Flashing Green at 5 PPS when the phase is Green.<br>**Observe the notes below:**<br>• Changes in flashing rate will take place when the phase green starts to time.<br>• Cycle vehicle movements cannot be Track Clearance vehicle movements.<br>• It is not **valid** to use **exactly** the same phase for both a Cycle movement and Dwell movement, for example Dwell 2,5 and Cycle 2,5. However, for example, Dwell 2,5 and Cycle 2,6,7,8 would be acceptable; in this example, the Dwell programming tells the preemptor to service 2, 5 first and then continue to the cycle phases as they have demand.<br>• If no calls exist on any of the Cycle phases, then the preemptor will automatically apply Vehicle calls to all Cycle phases so the Cycle Phases will be serviced at least once.<br>• An Exclusive Ped phase may be used as a Cycle phase but its corresponding Cycle Ped phase must also be selected. | Solid,<br>F1 pps,<br>F2 pps,<br>F5 pps |

| | | |
|---|---|---|
| Overlap Field (bottom of screen) | **Cycle Overlap(s)**<br>These are the Overlaps to be first served after Dwell vehicle movements. Dwell overlap Yellow and Red indication will be solid, but the green will be as described below.<br>**For each Overlap:**<br>1. In the Overlap field, select the overlap (highlighted in green).<br>2. In the Flash drop-down menu select the Green indication as described below:<br>**Solid:** Solid Green when the Overlap phase is green.<br>**F1 pps:** Flashing Green at 1 PPS when the phase is green.<br>**F2 pps:** Flashing Green at 2.5 PPS when the phase is green.<br>**F5 pps:** Flashing Green at 5 PPS when the phase is green.<br>**Observe the notes below:**<br>• Cycle vehicle movements cannot be Track Clearance vehicle movements.<br>• Cycle overlap indications will only be active if they have an included phase (Home > Overlap > Overlaps) programmed as a Cycle vehicle movement.<br>• All overlap operations (including lead/lag timing, protect, modified, and not-overlap) will be active coming to, during, and exiting Dwell and Cycling phases. | Solid,<br>F1 pps,<br>F2 pps,<br>F5 pps |
| [Ped and Vehicle] | **Cycle Pedestrian(s)**<br>After you select a phase, if you want to serve Cycle phase Pedestrian movements as well as Vehicle movements, select [Ped and Vehicle].<br>**Note:** If Dwell Flash option is enabled, no pedestrian indications can be serviced.<br>These pedestrian movements time during the Cycle interval following the Dwell movements.<br>**Note:** Although the preemptor applies Cycle Vehicle calls for Cycle phases, it does not apply Cycle Ped calls. | |

## Additional online help scheduled for next release

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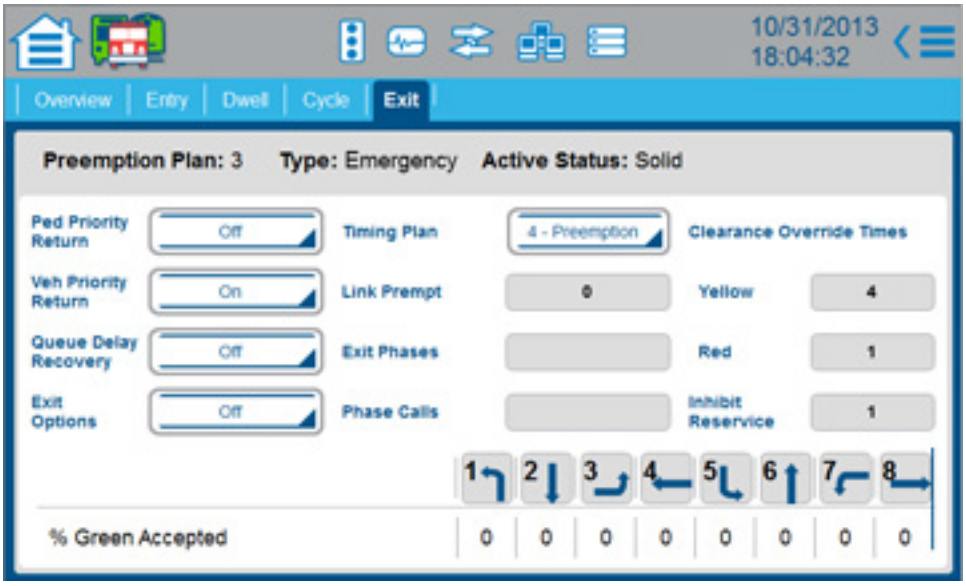
# Home > Preemption

## Exit




Use this screen to program how to make the transition from a Preemption Plan to the programmed Day Plan when the controller Exits preemption.

### Top and Bottom of the Screen

**Top:** The settings at the top of the screen are read-only; you set these parameters in the **Overview** screen: **Preemption Plan** (1 thru 10), **Feature Type Filter** (Rail, Emergency) and **Active Status** (Off, Solid, F1 pps, F2 pps, F5 pps)

**Bottom:** The % Green Accepted parameter is shown if Veh Priority Return is set to On or Time of Day. If Veh Priority Return is set to Off, the % Green Accepted parameter is hidden.

**Note:** Whether the Inhibit Reservice parameter (last parameter in the far-right column of this screen) is hidden or shown in this screen depends on the setting of the Feature Type Filter parameter in the **Overview** screen (to go there, select the Overview tab):

- If **Rail** is selected, the **Inhibit Reservice** parameter is hidden in this **Exit** screen.
- If **Emergency** is selected, the **Inhibit Reservice** parameter is shown in this **Exit** screen.

## Exit Strategy Priorities

With respect to the preemptor Exit phase parameters that follow, if you enable multiple exit strategies, they are processed in the order listed below. If a higher priority strategy is not satisfied, then the next highest will be evaluated.

For example, if both **Ped Priority Return** (3rd in the list) and **Veh Priority Return** (4th in the list) are enabled but no Ped Priority Exit Phase is found (Preempt did not interrupt a ped movement), then the preempt exit logic will check if any phases met the criteria for a Veh Priority Return Exit Phase.

1. Exit from CVM preempt flash state (preempt exits to programmed start-up phases)
2. Exit to pending preempt
3. **Ped Priority Return**
4. **Veh Priority Return**
5. **Queue Delay Recovery**
6. The selection for **Exit Options** in this **Preempt Plan: Exit to Coord, Exit** to **Phase Once** or **Exit** to **One Cycle** (exit to one free cycle)
7. Programmed exit phases
8. Currently Green phases
9. The next phase in the sequence rotation with a demand

## Programming for the Preemption Exit Screen

| Exit Parameter | Description | Range |
|---|---|---|
| Ped Priority Return | **Pedestrian Priority Return Exit Option**<br>Select from the drop-down menu to enable/disable the preemptor to check if the Walk or Ped Clear timing has been interrupted by a preempt:<br>**Off:** Disabled<br>**On:** Always Enabled<br>**Time of Day:** Enabled only by Time of Day. This function is then controlled by **Home > Event Plans > Advanced > Allow Ped Priority Return** (set to Yes or No).<br>When this is enabled, the preempter will determine if Walk or Ped Clear timing has been shortened by the preempter as it attempts to start. If so, then those interrupted Peds will be selected as Ped Priority Return Exit phases. | Off,<br>On,<br>Time of Day |
| Timing Plan | **Preemption Exit Timing Plan**<br>In the drop-down menu, select the controller timing plan (you can program up to four timing plans in **Home > Timing Plans**) that will be in effect when preemption exits.<br>**If you select a timing plan (of 4 possible timing plans):** Forces the controller to use the selected timing plan for the first controller cycle after preemption. That controller cycle will be complete when all phases have been served that had demand at preemption exit.<br>**0 – None (Auto):** Lets you select the timing plan by normal controller operation.<br>**Note:** If the preemptor exits directly to coordination (Preemption to Coordination), the timing plan selected by the preemptor will be in effect as coordination is running until all phases with demand at preempt exit have been serviced. | 0<br>4 different possible timing plans |

| | | |
|---|---|---|
| Veh Priority Return | **Vehicle Priority Return Exit Option**<br>**Note:** The % Green Accepted parameter (at the bottom of this screen) is shown if this Veh Priority Return parameter is set to On or Time of Day. If Veh Priority Return is set to Off, the % Green Accepted parameter is hidden.<br>**Note:** Interrupted Phases = phases timing when the preemptor tries to start.<br>Select from the drop-down menu to enable/disable the preemptor to decide if an Interrupted Phase will be selected as an exit phase:<br>**Off:** Disabled<br>**On:** Always Enabled<br>**Time of Day:** Enabled only by Time of Day. This function is then controlled by **Home > Event Plans > Advanced > Allow Vehicle Priority Return** (set to Yes or No).<br>When this is enabled, the preemptor:<br>1. Calculates the % Green timed of the Interrupted Phases<br>2. Compares the % Green timed with the % value you entered in % **Green Accepted** (bottom of this screen) for the Interrupted Phases<br>3. If the % Green is less than the % value you entered in % **Green Accepted** for a phase, then the preemptor selects that Interrupted Phase as a Veh Priority Return Exit phase.<br>For details about the % Green Accepted parameter, refer to the last row of this table. | Off,<br>On,<br>Time of Day |
| Link Preempt | **Preemptor to be Linked to this Preemptor**<br>Select a higher priority (lower numbered) preemptor to link to this preemptor. The linked preemptor will be called when this preemptor completes the programmed minimum dwell time. The call to the linked preemptor will be maintained as long as demand for this preemptor is present. Calls to any lower priority or not valid preemption sequence will be ignored.<br>The linking preemptor feature allows multiple track clearances or complex preemption sequences with one preemptor calling another.<br>**Example:** Preemptor 3 is linked to 2, it will go through its Track Clearance interval and start the Dwell interval.<br>When the Minimum Dwell/Cycle Green time is elapsed, a call is then placed on Preemptor 2. This transfers control to Preemptor 2. Preemptor 2, in turn, can then be linked to Preemptor 1.<br>This example creates a possibility of five phase clearance prior to getting to the Preemptor 1 Dwell interval and timing its phases.<br>**Important:** The Max Presence time for each preemptor must be taken into account when this feature is used to make sure the correct operation occurs. | 0-9 |
| Filtered Input | 1 thru 10: Select (1 thru 10) for the number of the hard-wired input to connect to this preemptor.<br>0: This is set automatically when Solid and Pulsing are both not selected for the Call Method. This indicates that the input filtering is bypassed and the hard-wired input connects to the preempt with the same number. | 1 thru 10,<br>0 |
| Clearance Override Times<br>Yellow<br>Red | **Exit Yellow Change and Red Clearance times when Preemption Exits**<br>This parameter depends on exit phase and automatic flash priority programming.<br>**0.0 – 25.5:** The preemptor times (in seconds) the smaller of these settings or the phase programmed times (**Home > Timing Plans**). Regardless, the indications will not time less than the Guaranteed Minimum Times (**Home > Timing Plans > Guaranteed**).<br>**Important:** If these values are set to zero and the Guaranteed Minimum Times (**Home > Timing Plans > Guaranteed**) are also zero, the indication will terminate immediately when it enters preemption, regardless of the time on the phase. This can result in a clearance indication being omitted or shorter than the MMU minimum clearance time resulting in a Latched MMU Minimum Clearance failure. | 0.0 - 25.5 seconds |

| | | |
|---|---|---|
| Queue Delay Recovery | **Queue Delay Recovery Option**<br>Select from the drop-down menu to enable/disable as described below:<br>**Off:** Disabled<br>**On:** Always Enabled<br>**Time of Day:** Enabled only by Time of Day<br>When this is enabled, the preemptor:<br>1. Checks phase wait time (WT) since last demand.<br>2. Checks the number of cars waiting for service (CW).<br>3. Selects the phases with the greatest WT x CW values as possible Exit Phases, one phase per ring. If the weighted delays for two phases are equal, the next in the sequence is served first.<br>**Example:** Phase A wait = 50 secs with 10 cars in line; phase B wait = 80 secs with 7 cars in line. 80 x 7 (560) > 50 x 10 (500) so Phase B is selected.<br>One phase per ring and concurrent group are selected as exit phases.<br>**Note:** Also, to include a phase in the selection process, you must set **Preempt Queue Delay Calculate** to Yes in **Home > Detection > Vehicle Detection**. | Off,<br>On,<br>Time of Day |
| Exit Phases | **Preemption Exit Phase(s)**<br>Select exit phases (1 thru 16) to enable the operation described below.<br>For the phases you select as exit phases, the preemption sequence terminates when all exit phases are timing.<br>If you do not select an exit phase, there are two possibilities:<br>• If the Preemption-to-Coordination option is not active, the preemptor terminates immediately and exits from the Cycling interval directly to normal controller operation.<br>• If the Preemption-to-Coordination option is active, the preemptor will terminate and exit from the Cycling interval directly to the lowest priority phase(s) that have an open coordination permissive window. This allows the preemptor to exit directly into coordination without requiring a pickup cycle or transition.<br>**Note:** Exit phases must be permissive and compatible with each other. | 1-16 |
| Exit Options | **Preemption Exit Options for Timing Plan**<br>**Note:** In the descriptions below, Timing Plan refers to the timing plan set in the Timing Plan parameter in this screen. For **Exit to Phase Once** and **Exit to One Cycle** to operate, you must set a Timing Plan. **Exit to Coord,** however, operates with or without a Timing Plan.<br>From the drop-down menu, select the next phase after exit from a preemption:<br>**Off:** Disable<br>**Exit to Coord:** The preemptor exits directly into the coordination sequence and does not require a pickup cycle when the coordinator is active.<br>Exit to Phase Once: The preemptor exits directly to the exit phase with a Timing Plan. This preempt exit Timing Plan is used only for the timing of the exit phases.<br>**Exit to One Cycle:** The preemptor exits to Free for one cycle by a Timing Plan. Then the controller returns to Coordination mode. One cycle = all phases that had external calls when the preemption exited; recalls or internal calls are not included. | Off,<br>Exit to Coord,<br>Exit to Phase Once,<br>Exit to One Cycle |
| Phase Calls | **Preemption Exit Phase Vehicle Calls**<br>The phase(s) for which the preemptor enters a vehicle call when it exits preemption. | 1-16 |

| | | |
|---|---|---|
| Inhibit Reservice | **Low Priority Preemption Re-service Time**<br>Selects the time duration that a low priority preemptor is inhibited after preemption.<br>**Note:** Whether this parameter (last parameter in the far-right column of this screen) is hidden or shown in this screen depends on the setting of the **Feature Type Filter** parameter in the **Overview** screen (to go there, select the Overview tab):<br>If **Rail** is selected, this **Inhibit Reservice** parameter is hidden in this **Exit** screen.<br>If **Emergency** is selected, this **Inhibit Reservice** parameter is shown in this **Exit** screen.<br>**0:** Disables re-service Operation<br>**1 - 254:** Specifies the minimum time allowed between low-priority preempt calls.<br>**255:** Requires all active phases with calls, when the preemptor exits, to be serviced before preemption can be serviced. | 0-255 sec. |
| % Green Accepted | **Vehicle Priority Return Green Percent Values**<br>**Note:** This % **Green Accepted** parameter (at the bottom of the screen) is shown if **Veh Priority Return** in this screen is set to **On** or **Time of Day**. If **Veh Priority Return** is set to **Off**, this % **Green Accepted** parameter is hidden.<br>**Note:** Interrupted Phases = phases timing when the preemptor tries to start.<br>Enter the minimum percent of green that is necessary to time in an Interrupted **Phase:**<br>**0:** Disables<br>**1 - 100:** For an Interrupted Phase, minimum % of green to time<br>When you enter a % value (1-100), the preemptor:<br>1. Calculates the % Green timed of the Interrupted Phase.<br>2. Compares the % Green timed with the % value you entered for this parameter for that phase.<br>3. If the % Green is less than the % value you entered for this phase, then the preemptor selects that Interrupted Phase as a Veh Priority Return Exit phase. | 0 - 100 |

## Additional online help scheduled for next release

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# Home > Transit Signal Priority

## Plans

Use this screen to program Transit Signal Priority configuration events for mass transit vehicles.


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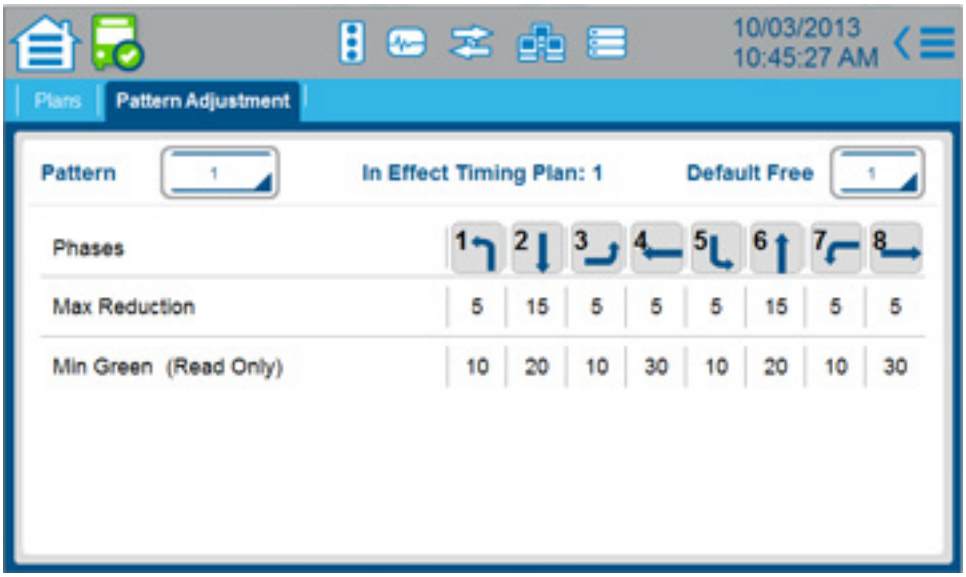
# Home > Transit Signal Priority

## Pattern Adjustment

Use this screen to program Transit Signal Priority configuration events for mass transit vehicles.




- **Max Reduction** - This is a per-phase and per-split pattern parameter that specifies the maximum number of seconds that the split of a phase can be reduced during TSP. This effective value may be reduced based on the operating phase minimum service requirements.
- **Minimum Green** (Read only) - This is a per-phase and per-split pattern parameter. This entry is for display only. The calculation is the coord split minus the Max Reduction = TSP Min. Green + clearance time.

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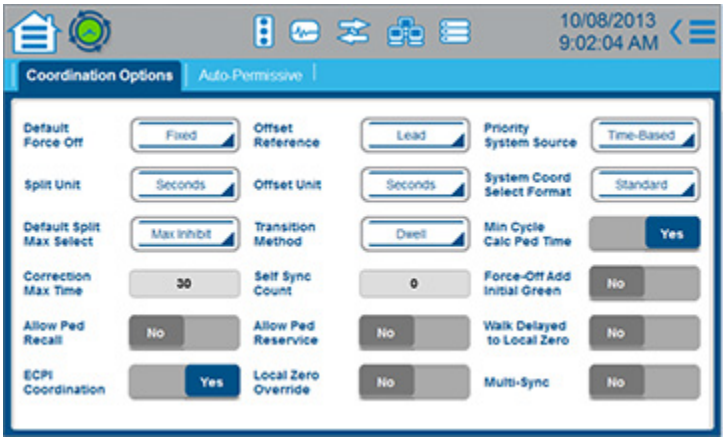
# Home > Coordination

## Coordination Options




## Programming Summary

Use this screen to specify 18 different coordinator option values as follows:

| Coordination Parameter | Programming Summary |
|---|---|
| Default Force Off | Selects the method of determining the position of the phase force off |
| Offset Reference | Selects the local zero reference point for the programmed offset |
| Priority System Source | Move the indicated source option to the highest priority source for selection of the coordination pattern. |
| Split Unit | Selects the split units as seconds or percent |
| Offset Unit | Selects the offset units as seconds or percent |
| System Coord Select Format | Determines the format in which the source is presenting the coordination pattern selection |
| Default Split Max Select | Allow the maximum split time in coordination to be either the phase split (inhibit maximum) or selected Max 1, 2, or 3. |
| Transition Method | Selects the method that the coordinator uses to get into coordination synchronization |

| | |
|---|---|
| Min Cycle Calc Ped Time | Allows the smooth transition algorithm to use or not to use the pedestrian times in determining the smooth transition direction |
| Correction Max Time | Enters the maximum time that the coordinator can dwell or add when transitioning. |
| Self Sync Count | Selects the number of missed syncs allowed from an external source before reverting to time-base. |
| Force-Off Add Initial Green | Allows the coordinator to terminate the phase green when added initial is timing. This only has an effect when added initial is programmed during volume-density operation (Home > Timing Plans > Passage > Volume Density). |
| Allow Ped Recall | Allows the programmed pedestrian recall (Home > Detection > Ped Detection) to recycle the pedestrian movement when the Coordinator Pattern has Actuated Walk programmed |
| Allow Ped Reservice | Allows pedestrian movement when walk plus ped clearance can time before force-off point |
| Walk Delayed to Local Zero | Enable the coordinated phase walk to be prevented from starting until the local zero. Normally, the coordinated phase walk starts as soon as it is able to after the last permissive is closed. |
| ECPI Coordination | Allows ECPI coordination operation and parameters |
| Local Zero Override | Allows the non-coordinated phase/s to use a portion of the coordinated phase split before the coordinated phase becomes green. The movement continues to run and remain in sync with the Local Master Dial until the coordinated phase would violate the Yield point. At that time, the Local Dial stops until the coordinated phase is green and reports a local zero error.<br>Note: Typically used on short cycles that have seldom used non-coordinated movements. |
| Multi-Sync | Allows the coordinator to receive multiple sync pulses. The coordinator will synchronize to the pulse that represents cycle in effect. |

## Programming Details

| Coordination Parameter | Description | Range |
|---|---|---|
| **Default Force Off** | **Determines position of the phase force off**<br>**Fixed:** The phase will force off at the fixed position in the cycle regardless of when it started.<br>**Floating:** The phase will force off after it has serviced its split regardless of when it started. | Fixed<br>Floating |
| **Offset Reference** | **Offset Reference**<br>In the drop-down box, select Lead, Lag, Yield, Yellow or Ring 1 as the offset reference.<br>**Lead:** References the start of the Local Dial to the start of the first coordinated phase green.<br>**Lag:** References the start of the Local Dial to the start of the last coordinated phase green.<br>**Yield:** References the start of the Local Dial to the start of the yield of the first coordinated phase.<br>**Yellow:** References the start of the Local Dial to the start of the first coordinated phase yellow.<br>**Ring 1:** References the start of Ring 1 coordinated phase.<br>**Note: Criteria for Ring 1 are listed below.**<br>If there is no coordinated phase on Ring 1 or the coordinated phase is in a ring that runs independently of Ring 1 (not in the same concurrent group with Ring 1 coordinated phase), the offset reference is the start of the first coordinated phase (same as Lead).<br>In 3 or 4-ring configurations, TSP is not supported if the coordinated phase of Ring 1 is not the first or last coordinated phase. | Lead<br>Lag<br>Yield<br>Yellow<br>Ring 1 |
| **Priority System Source** | **System (Coordination) Source**<br>In the drop-down box, select Hardware, Time-Based or System as the source of coordination commands.<br>Default source priority (Manual-Highest): Manual, Remote Command, Time-Based, Hardwire. Selecting the below option to place it at the top priority source of coordination. All other sources will stay with default priority order.<br>**Hardware:** The source of coordination data is the NEMA TS2 inputs.<br>**Time-Based:** The source of coordination data is Time Base.<br>**System:** The source of coordination data is Port 2 or Ethernet per the settings in the Network screen in the Status Bar. | Hardware<br>Time-Based<br>System |
| **Split Unit** | **Split Units**<br>Seconds NTCIP 1202 2.5.9.3<br>Percent (ECPI feature)<br>In the drop-down box, select Seconds or Percent.<br>**Seconds:** Defines the units programmed in the Split Pattern (**Home > Event Plans > Splits and Home > Spit Demand > Special Split**) as seconds.<br>Percent: Defines the units programmed in the Split Pattern (**Home > Event Plans > Splits and Home > Spit Demand > Special Split**) as percentage of the cycle time.<br>**Note: When this parameter is changed between Seconds and Percent on any coordination pattern, every pattern is changed.** | Seconds<br>Percent |

| | | |
|---|---|---|
| **Offset Unit** | **Offset Units**<br>Seconds NTCIP 1202 2.5.7.3<br>Percent (ECPI feature)<br>In the drop-down box, select Seconds or Percent.<br>**Seconds:** Defines the units programmed in the Offset Value (**Home > Event Plans > Pattern**) as seconds.<br>**Percent:** Defines the units programmed in the Offset Value (**Home > Event Plans > Pattern**) as percentage of the cycle time.<br>**Note: When this parameter is changed between Seconds and Percent on any coordination pattern, every pattern is changed.** | Seconds<br>Percent |
| **System Coord Select Format** | **System (Coordination) Format**<br>In the drop-down box, select Standard, TS2 or Pattern interconnect format.<br>**Standard:** The coordination patterns are selected by Econolite-Standard cycle/ offset/split commands. The pattern with the matched Cycle Offset Split (COS) value is selected.<br>The coordinator is free if the cycle or split is zero.<br>**TS2:** The coordination patterns are selected by TS2 timing plans and offset. The pattern selected is determined by the following:<br>(((Timing plan) * 3) + offset) = pattern number. (Reference NEMA TS2 Table 3-14 TIMING PLAN).<br>The coordinator is free if the offset is zero. Flash is by a separate command.<br>**Pattern:** The coordination pattern (coordination, free or automatic flash mode) is selected directly by the Event Plan (**Home > Event Plans > Overview with the [Add New Plan] soft key**). | Standard<br>TS2<br>Pattern |
| **Default Split Max Select** | In the drop-down box, select Max Inhibit, Max 1, Max 2 orMax 3.<br>**Max Inhibit:** Allows the coordinator phase split to control the time a phase is allowed to be green in any Coordination Pattern.<br>Max 1, Max 2 or Max 3: Allows the shorter of the Max Green timing (**Home > Timing Plans > Max Green**) or the coordinator phase split to control the time a phase is allowed to be green in any Coordination Pattern. | Max Inhibit<br>Max 1<br>Max 2<br>Max 3 |
| **Transition Method** | In the drop-down box, select Dwell, Smooth or Add Only to select the method of offset change.<br>**Dwell:** Change is by holding in the coordinated phases for a specified dwell period (refer to NTCIP 1202 2.5.2 Integer 1).<br>Snap offset correction is active at all times. The general operation performs as follows: If a local cycle can be in sync, make it in sync.<br>**Smooth:** Is accomplished by adding or subtracting a maximum of 17% of cycle length per cycle (Ref NTCIP 1202 2.5.2 Integer 3). Econolite lets you change this factor by changing the Dwell / Add Time when it is non-zero.<br>**Add Only:** Is accomplished by adding a maximum of 17% of cycle length per cycle (ref NTCIP 1202 2.5.2 Integer 4). Econolite lets you change this factor by changing the Dwell / Add Time when it is non-zero. | Dwell<br>Smooth<br>Add Only |
| **Min Cycle Calc Ped Time** | For Offset Correction, Use Pedestrian Times When Calculating Minimum Cycle<br>Select Yes (to enable) or No (to disable) using pedestrian times for minimum cycle calculations.<br>**Note: The minimum cycle value has effect only on subtraction during Smooth Transition.**<br>**Yes:** Includes pedestrian times in minimum cycle calculation for offset correction.<br>**No:** Omits pedestrian times from the minimum cycle calculation for offset correction.<br>**Note: No is typically used at intersections that have little or no pedestrian movements.** | Yes<br>No |

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|---|---|---|
| **Correction Max Time** | Use the scrubber to enter the maximum time that Dwell or Add/Subtract time during transition.<br>When the Offset Correction is Dwell:<br>**0 (zero):** NTCIP maximum dwell period (ref NTCIP 1202 2.5.2 Integer 2) is 20% of the cycle (if the offset is in percent) or 20 seconds (if the offset is in seconds).<br>**1-99:** Percentage if the offset is in percent<br>**100-255:** Seconds if the offset is in seconds<br>When the Offset Correction is Add Only or Smooth Transition:<br>**0 (zero):** During add only or Smooth Transition, maximum 17% of the cycle to be adjusted (ref NTCIP 1202 2.5.2 Integers 3 and 4)<br>**1-99:** Maximum percentage of the cycle to be adjusted during Add Only or Smooth Transition<br>**Note: During Smooth Transition, the coordinator subtracts a maximum of 17% of the cycle.** | 0-255 seconds<br>1-99 percent |
| **Self Sync Count** | Allows the coordinator to self sync when a sync pulse does not occur at Local Master Zero.<br>0: Defaults to 1” self-sync cycle.<br>**1-254:** Self-sync cycles that will be completed if a sync pulse does not occur; after which, Coordination reverts to Time Base operation.<br>**255:** Allows the coordinator to continue to re-sync until a sync pulse is detected.<br>**Note: This option is used when the interconnect sync pulses are an even multiple of the local cycle.**<br>**Example:** Set the re-sync count to 3 when:<br>• The interconnect sync pulse every 180 seconds.<br>• The local cycle is 60 seconds. | 0-255 |
| **Force-Off Add Initial Green** | **Force Off Added Initial Green**<br>Select Yes (to enable) or No (to disable) the Force Off of Added Initial Green by the Coordinator.<br>**Note: This option allows the use of the Added Initial calculations while maintaining coordination.**<br>**Yes:** Allows the coordinator to force off the Added portion of Initial Green that was generated by volume density.<br>**No:** Prevents the coordinator from Forcing off the Added portion of Initial Green that was generated by volume density. | Yes<br>No |
| **Allow Ped Recall** | **Coordinated Phase Pedestrian Re-service**<br>Select Yes (to enable) or No (to disable) pedestrian recall (Home > Timing Plans > Recall and Home > Event Plans > Recall) during coordination.<br>**Yes:** Allows the programmed pedestrian recall to recycle the pedestrian movement when the Coordinator Pattern has Actuated Walk programmed. The pedestrian actuations will have no effect.<br>**No:** Allows only pedestrian actuations to recycle the pedestrian movement during coordination. The programmed pedestrian recall will not recycle the pedestrian movement when the Coordinator Pattern has actuated Walk programmed. | Yes<br>No |

| | | |
|---|---|---|
| **Allow Ped Re-service** | **Pedestrian Re-service**<br>Select Yes (to enable) or No (to disable) to re-service the Walk during coordination.<br>**Yes:** Allows the pedestrian movements to be re-serviced during coordination.<br>**No:** Prevents the pedestrian movements from being re-serviced during coordination.<br>**Note: When pedestrian phases are re-serviced, they will return to the start of the Walk interval. Any pedestrian phase can be re-serviced when there is a pedestrian call and Walk plus Pedestrian Clear can be timed in full before the force-off point (Split Time).** | Yes<br>No |
| **Walk Delayed to Local Zero** | **Delay the Coordinated Walk to Local Zero**<br>Select Yes (to enable) or No (to disable) delaying the start of the coordinated phase walks.<br>**Yes:** Delays the start of walk of the coordinated phases until the start of local zero.<br>**No:** Allows the coordinated phase walk to start after the end of the last permissive period is closed. | Yes<br>No |
| **ECPI Coordination** | Select Yes (to enable) or No (to disable).<br>**Yes:** The coordinator will:<br>Not be set free if the critical phase (Minimum time to service the phase) time is greater than the split.<br>• Not be set free if the critical path (Minimum time to service all phases with minimum recall applied) through the phase diagram is greater than the cycle length.<br>• Will time 20 seconds of dwell with zero entered in **Correction Max Time** in this screen.<br>• Will time the Smooth transitions add time if the **Correction Max Time** entry in this screen is greater than zero. If equal to zero, it will time 17%.<br>**No (default):** The coordinator will:<br>• Be set free if the critical phase (Minimum time to service the phase) time is greater than the split (Reference NTCIP 1202-2.5.9.3).<br>• Be set free if the critical path (Minimum time to service all phases with minimum recall applied) through the phase diagram is greater than the cycle length (Reference NTCIP 1202-2.5.9.3).<br>• Will time max dwell regardless of what is programmed in the **Correction Max Time** parameter in this screen (Reference NTCIP 1202-2.5.2).<br>• Will time the Smooth transitions add time if the **Correction Max Time** parameter in this screen is greater than zero. If equal to zero, it will time 17% (Reference NTCIP 1202-2.5.2).<br>• Force the coordinator to Max Inhibit when **Default Split Max Select** in this screen is set to Max 3.<br>• Force the coordinator free when the Cycle is greater than 255. | Yes<br>No |

| | | |
|---|---|---|
| **Local Zero Override** | **Local Zero Override**<br>**Yes:** Allows the coordinator local dial to continue running and remain in synchronization with the Local Master Dial until the coordinated phase would violate the Yield point. At that time, the Local Dial stops until the coordinated phase is green and reports a local zero error.<br>**No:** Normal coordinator operation. The Local Dial stops at Local Zero until the coordinated phase is green and reports a local zero error.<br>**Note: Typically used on short cycles that have seldom used non-coordinated movements. Allows the non-coordinated phase(s) to use a portion of the coordinated phase split before the coordinated phase becomes green. The seldom used movement has a phase split that violated the coordinated cycle or phase split because of a pedestrian movement, density, full phase demand, or guaranteed minimum times. There will be not reported or logged error" if the coordinated phase is can yield by the yield point.** | Yes<br>No |
| **Multi-Sync** | Select Yes (to enable) or No (to disable) the Multi-Sync Operation.<br>**Yes:** Allows the coordinator to receive sync pulses that represent multiple cycle lengths and synchronize to the sync pulse that represents cycle in effect.<br>**No:** Resets the local master dial on every sync pulse. | Yes<br>No |

## Additional online help scheduled for next release

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# Home > Coordination

## Auto-Permissive

### Use this display to specify all Auto-Permissive Minimum Green periods:

- Enter desired automatic permissive minimum green times for each phase 1-8. This time is only used in the auto-permissive calculations and has no effect on the actual phase minimum green.
- Zero entry disables the function for that phase.

### To enable automatic permissive operation:

Go to **Home > Event Plans > Patterns > Manual Vehicle Permissive Period** and set all three vehicle permissive periods to zero.

| Parameter | Description | Range |
|---|---|---|
| **Min Green** | Select the phase minimum green time (in seconds) to be used by the coordinator. This Min Green or the phase Min Green time (Home > Timing Plans > Min Green > Min Green), whichever is larger, is used by the auto permissive algorithm to determine the permissive for each phase.<br>**Note: This entry is only in effect when all three vehicle Permissive fields are set to zero in Home > Event Plans > Patterns > Manual Vehicle Permissive Period.** | 0-255 seconds |

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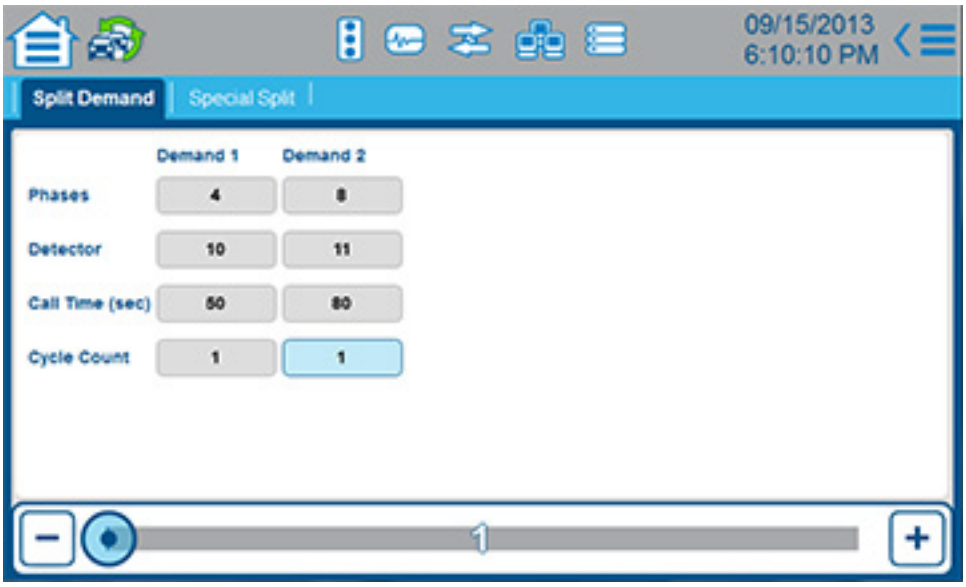
# Home > Split Demand

## Split Demand




You use the **Split Demand** screens to program split patterns to use in special situations. For example, if there were a long line of cars waiting at a red light as part of the traffic after an event in a stadium, you could enable a split pattern with an extra-long green on that phase to clear the traffic. Use this screen to specify all Split Demand data values.

Enter desired phase(s) timing, detectors and continuous detector activity to enable split Demand 1 or Demand 2.  Select the number of coordinator cycles that split demand will be in operation.

| Split Demand Parameter | Description | Range |
|---|---|---|
| Phases | **Split Demand 1 & Split Demand 2 Phase(s)**<br>For each Split Demand, select the phases for Split Demand operation.<br>The coordinator uses the split values in **Split Demand Pat 1** or **Split Demand Pat 2**, as specified in the Coordinator Pattern (**Home > Event Plans > Pattern**) when the:<br>• Demand phase(s) are timing and<br>• Demand Detector is continuously actuated and<br>• Demand Call Time has been exceeded.<br>• When Split Demand Pattern has been selected, it remains in effect for the number of cycles set in Cycle Count after the above conditions are no longer met.<br>**Note:** Split demand operation allows the intersection to call a different Split Pattern (Home > Event Plans > Splits) to service local traffic demand. | 1-16 |
| Detector | **Split Demand Detector Assignment**<br>Use the scrubber to select the detector to enable the coordinator Split Demand 1 or 2.<br>**1-64:** Selects the Raw detector input to be used. This detector need not be assigned or programmed (**Home > Detection > Vehicle Detection**).<br>**0** (zero): Disables Split Demand operation.<br>**Note:** If a detector fails, it disables the Split Demand 1 or 2 selections. | 0-64 |
| Call Time (sec) | **Split Demand Call Time**<br>Use the scrubber to enter a number (1-255) to specify a call time or enter 0 (zero) to disable the split demand operation.<br>**1-255:** Specifies the number of seconds of continuous detector activity while the demand phase(s) are timing. Enables Split Demand operation.<br>**0 (zero)** disables the split demand operation. | 0 disables<br>1-255 selects time |
| Cycle Count | **Split Demand Cycle Count**<br>Use the scrubber to specify 1-255 cycles that Split Demand operation remains in effect after Demand Call Time conditions are no longer met.<br>The coordinator uses the split values in Split Demand Pattern 1 or 2, as specified in Coordinator Pattern (**Home > Event Plans > Pattern**) when the:<br>• Demand phase/s are timing and<br>• Demand Detector is continuously actuated and<br>• Demand Call Time has been exceeded. | 1-255 |

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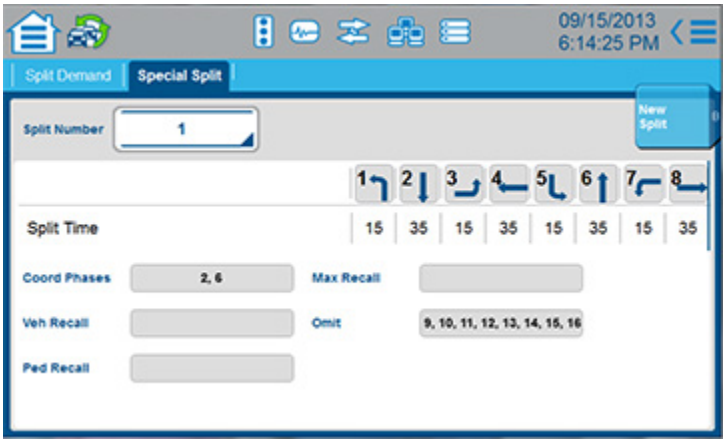
# Home > Split Demand

## Special Split




You use the **Split Demand** screens to program split patterns to use in special situations. For example, if there were a long line of cars waiting at a red light as part of the traffic after an event in a stadium, you could enable a split pattern with an extra-long green on that phase to clear the traffic.

Below is a summary of the programming for this Special Split screen, followed by detailed descriptions to program this screen.

### Programming Summary for Special Splits

| Special Split Parameter | Programming Summary |
|---|---|
| Split Number | In the drop-down menu, select a Split Number to edit or view or select [New Split] and create a new Split Number.<br>If you have the Transit Signal Priority (TSP) option, refer to **Home > Transit Signal Priority > Pattern Adjustment > Pattern**. |
| Split Time | Enter the split value for each active phase. |
| Coord Phases | Select the phase(s) that will be coordinated when the Split Pattern is operational. |
| Max Recall | Select the phase(s) where max recalls are placed when the split pattern is operational. |

| | |
|---|---|
| Veh Recall | Select the phase(s) where vehicle recalls are placed when the split pattern is operational. |
| Omit | Select the phase(s) that is omitted when the split pattern is operational. |
| Ped Recall | Select the phase(s) where ped recalls are placed when the split pattern is operational. |

## Programming Details for Special Splits

| Special Split Parameter | Description | Range |
|---|---|---|
| Split Number | In the drop-down menu, select a Split Number to edit or view or select [New Split] and create a new Split Number. | 1-120 |
| Split Time | **Split Intervals of the Cycle Time**<br>Here you divide the cycle time into sections (split intervals) to assign the maximum amount of time to each timing phase during coordination.<br>**Important:** Observe the Cautions listed below.<br>If ECPI Coordination is set to No (in **Home > Coordination > Coordination Options**), the coordinator will go free when:<br>• Entering zero for any active phase-split.<br>• Entering phase-splits that are smaller than the minimum phase time<br>• Entering splits that exceed the cycle length.<br>If ECPI Coordination is set to Yes (in **Home > Coordination > Coordination Options**), then:<br>• Entering zero for any active phase-split will omit that phase.<br>• Entering phase-split(s) that are smaller than the minimum phase time(s) or that exceed the cycle length may cause loss of coordination.<br>**Note:** A Phase Split is the maximum amount of time available to a phase during coordination if **Floating Force-Offs** is in effect. If using **Fixed Force Offs** are in effect and the split timer starts early due to time left over from preceding phases, the phase can be extended by demand up to the force-off point. The maximum time available can only be lowered if you have a Max Select (Max 1, 2 or 3) (set in **Home > Coordination > Coordination Options > Default Split Max Select** or in **Home > Event Plans > Pattern > Max Select**) and if the max time in effect is shorter than the split. | 0-255 sec. or 0-99% |
| Coord Phases | **Coordinated Phases**<br>Select the phases for Coordination.<br>**Note:** Observe the notes below.<br>• All coordinated phases must be compatible (in the same concurrent group).<br>• There must be a Coordinated phase entered for each ring in that concurrent group.<br>• It is permissible to have only one ring in the concurrent group. | 1-16 |
| Max Recall | **Maximum Recalls**<br>Select the phases where max recall is placed in coordination. | 1-16 |

| | | |
|---|---|---|
| Veh Recall | **Vehicle Recalls**<br>Select the phases where vehicle recall is placed in coordination. | 1-16 |
| Omit | **Phase Omits**<br>Select the phases that are omitted in coordination. | 1-16 |
| Ped Recall | **Pedestrian Recalls**<br>Select the phases where ped recall is placed in coordination. | |

## Additional online help scheduled for next release

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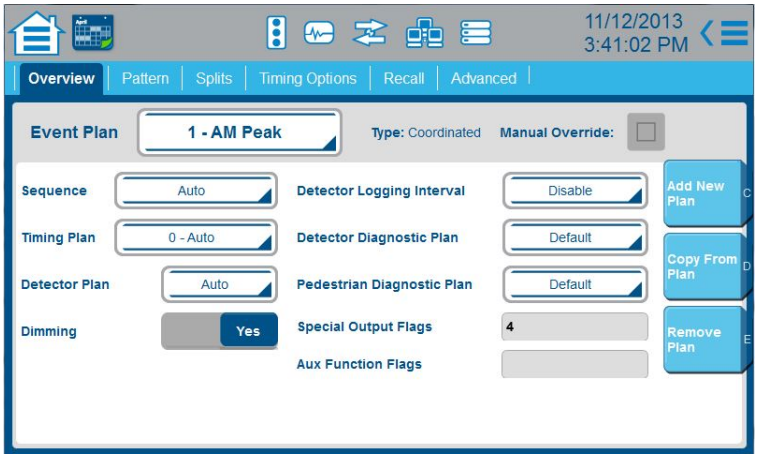
# Home > Event Plans

## Overview




This is the first of several screens to create, view or edit an Event plan.

### In this Overview screen:

- You create Event Plans for which you select the type of pattern (flash, free, coordinated, auto) and assign and enable/disable various functions by time-of-day.
- You can program up to 100 Event Plans. Use these Event Plans to program up to 16 Day Plans, each of which can have up to 50 Event Plan time periods (to program Day Plans, go to **Home > Scheduler > Day Plan**).

### Top Bar

- At the top of all six Event Plan screens (Overview, Pattern*, Splits*, Timing Options, Recall, Advanced) are listed the **Event Plan** and the **Type** of Event Plan (Flash, Free, Coordinated or Auto). You select the Event Plan and its Type in this Overview screen and these parameters are read-only in the other Event Plan screens.
- **Manual Override checkbox:**
  **Checked:** You manually enable the Event Plan selected in this screen. The Event Plan remains in effect until you select another Event Plan or until you uncheck this checkbox. This manual selection overrides any other source.
  **Unchecked:** Cobalt automatically selects Time Base Event Plans by time-of-day.

  *** The Patterns and Split tabs are only shown if you select a Coordinated pattern for the Event Plan.**

# Details for Splits Screen Programming

| Overview Parameter | Description | Range |
|---|---|---|
| **Event Plan** | **Event Plan with Number and Name**<br>In the drop-down menu, select the Event Plan to view or edit.<br>With the [Add New Plan] soft key (described below), you can create up to 100 Event Plans. | **Up to 100 different plans** |
| **[Add New Plan]** | **Create a New Event Plan**<br>1. Select [Add New Plan].<br>2. In this sub-menu, scroll to assign a Plan Number for this Event Plan.<br>3. Select the Plan Name field and use the keyboard to enter a name for the plan (for example: AM Peak, Off Peak, PM Peak, etc.).<br>4. Select the Type of pattern: Flash, Free, Coordinated, Auto<br>5. Select [OK].<br>**Flash:** Selects Automatic Flash operation. Automatic Flash pattern is treated in the same priority as any other pattern.<br>**Free:** Selects free operation. Sequence defaults to 1 if not specified.<br>**Coordinated:** Selects a coordination pattern for this Event Plan.<br>**Auto:** Indicates that no pattern is selected. The Time Base releases control and allows lower priority control (i.e., hardware interconnect if available).<br>**Note:** If you select a pattern that does not exist or does not meet the timing parameters, the controller sets to Free. | **1-100 plans**<br>**Flash,**<br>**Free,**<br>**Coordinated,**<br>**Auto** |
| **[Copy From Plan]** | Use this soft key to copy another existing Event Plan to the Event Plan selected in this screen.<br>1. Select [Copy From Plan].<br>2. Scroll to the Event Plan you want to copy.<br>3. Select OK. | **All existing Event Plans** |
| **[Remove Plan]** | Select this soft key to remove the existing plan that you selected in the Event Plan field. | **All existing Event Plans** |
| **Sequence** | **Controller Sequence**<br>Selects the controller sequence to operate.<br>Selects the controller sequence, for this Event Plan, when a higher priority routine has not made a selection. Selection priorities from highest to lowest are:<br>1. Manual<br>2. System<br>3. Coordinator<br>4. Hardware<br>5. Time Base<br>**Auto:** Sequence selection is by other means (hardware inputs or Time Base). Defaults to 1 if no sequence number is specified anywhere else.<br>**1-16:** Selects one of 16 possible configurations of sequence data (refer to NTCIP 1202, 2.8.3.3). To program these phase sequences, go to **Home > Phase Order > Phase Order**. | **Auto**<br>**1-16** |

| | | |
|---|---|---|
| **Detector Logging Interval** | **Internal Detector Log Enable**<br>In the drop-down menu, select Disable, 5, 15, 30, or 60 minutes for detector logging. To view Detector Events and Detector Activity, select **Event Logs** in the Status Bar (second icon from the left in the Status Bar).<br>**Note:** This selection is only in effect when the ECPI Log Period in **Home > Detector > Detector Logging** is set to TBAP (Time Base Event Plan*).<br>***In Cobalt Classic View, an Event Plan" is called an Action Plan."** | **Disable, 5, 15, 30, 60 minutes** |
| **Detector Diagnostic Plan** | **Timing Plan**<br>In the drop-down menu, select the Timing Plan (1-4) when a higher priority routine has not selected one.<br>**Auto:** Uses the Timing Plan in effect<br>**1-4** (with the name you entered)**:** Selects the Timing Plan*<br>The priorities (from highest to lowest) are:<br>1. Manual<br>2. Preemptor<br>3. System<br>4. Coordinator<br>5. Hardware<br>6. Time Base<br>***Timing Plans are programmed in Home > Timing Plans.** | **Default**<br>**1-4 selects by priority** |
| **Detector Plan** | **Vehicle Detector Recall Plan**<br>In the drop-down menu, select the Vehicle Detector Recall Plan for this Event Plan.<br>**Auto:** The Day Plan Event uses the Vehicle Detector Plan already in effect.<br>**1-4:** Selects the Vehicle Detector Plan when a higher priority routine has not selected one.<br>The priorities (from highest to lowest) are:<br>1. Manual<br>2. Preemptor<br>3. System<br>4. Coordinator<br>5. Hardware<br>6. Time Base | **Auto**<br>**1-4 selects by priority** |
| **Pedestrian Diagnostic Plan** | **Pedestrian Detector Diagnostic Plan**<br>In the drop-down menu, select the Pedestrian Detector Diagnostic Plan if one has not been selected.<br>**Default:** No pedestrian detector diagnostic is selected.<br>**1-4:** Selects the pedestrian detector diagnostic plan when a higher priority routine has not been selected.<br>The priorities (from highest to lowest) are:<br>1. Manual<br>2. Hardware<br>3. Time Base | **Default, 1-4** |
| **Dimming** | **Dimming Enable**<br>Select enable (Yes) or disable (No) dimming by this Event Plan.<br>Dimming of the signals also requires:<br>• Dimming input is TRUE.<br>• Dimming polarity is programmed in **Home > Cabinet Config > Load Switch Assign > Dimming**. | **Yes/No** |

| | | |
|---|---|---|
| **Special Output Flags** | **Special Function Output Flags**<br>Select any Time Base Special Function outputs (1-8) by this Event Plan. | **1-8** |
| **Aux Function Flags** | **Auxiliary Function Flags**<br>Select any Time Base Auxiliary Function outputs (1-3) by this Event Plan. | **1-3** |

## Additional online help scheduled for next release

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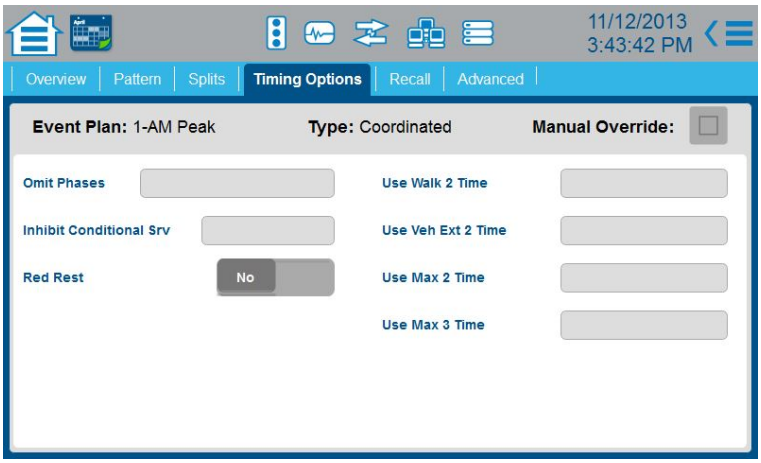
# Home > Event Plans

## Timing Options




This is one of several screens to create, view or edit Event Plans that are used for time-based plans for Flash, Free and Coordination.

In this Timing Options screen, you select the phases for Inhibit Conditional Service, Walk 2 Time, Vehicle Extension 2 Time, Maximum 2, and Maximum 3 Time. You also select phases to Omit and enable or disable Red Rest.

## Top Bar

- At the top of this screen are listed the **Event Plan** and the **Type** of **Event Plan** (Flash, Free, Coordinated or Auto). To program the **Event Plan** and its Type, select the **Overview** tab; these parameters are read-only in this screen.
- **Manual Override checkbox:**
  **Checked:** You manually enable the Event Plan listed at the top of this screen. The Event Plan remains in effect until you select another Event Plan or until you uncheck this checkbox. This manual selection overrides any other source.
  **Unchecked:** Cobalt automatically selects Time Base Event Plans by time-of-day.

| Timing Options Parameter | Description | Range |
|---|---|---|
| **Omit Phases** | **Omit Phases**<br>Select the phases to apply Phase Omit in this Event Plan. The selected phases are OR functions with other Phase Omit selections and inputs.<br>Phases you do not select are disabled for Phase Omit by this Event Plan. | 1-16 phases |
| **Use Walk 2 Time** | **Use Walk 2 Time**<br>Select the phases to apply Walk 2 time in this Event Plan. The selected phases are OR functions with other Walk 2 selections and inputs.<br>Phases you do not select are disabled for Walk 2 time by this Event Plan. | 1-16 phases |
| **Inhibit Conditional Srv** | **Inhibit Conditional Service**<br>Select the phases to apply Conditional Service Inhibit in this Event Plan. The selected phases are OR functions with other Conditional Service Inhibit selections and inputs.<br>Phases you do not select are disabled for Conditional Service Inhibit by this Event Plan. | 1-16 phases |
| **Use Veh Ext 2 Time** | **Use Vehicle Extension 2 Time**<br>Select the phases to apply Vehicle Extension 2 time in this Event Plan. The selected phases are OR functions with other Vehicle Extension 2 selections and inputs.<br>Phases you do not select are disabled for Vehicle Extension 2 by this Event Plan. | 1-16 phases |
| **Red Rest** | **Red Rest (Call Away)**<br>Select **Yes** (to enable) or **No** (to disable) the request for Red Rest (Call Away) operation by this Event Plan.<br>This request is an OR function with all other requests for Red Rest. | Yes, enable<br>No, disable |
| **Use Max 2 Time** | **Use Maximum 2 Time**<br>Select the phases to apply Max 2 time in this Event Plan. The selected phases are OR functions with other Max selections and inputs.<br>Phases you do not select are disabled for Max 2 by this Event Plan.<br>Overrides are as listed below:<br>Max 2 selection overrides Max 1.<br>Max 3 selection overrides Max 1 & 2. | 1-16 phases |
| **Use Max 3 Time** | **Use Maximum 3 Time**<br>Select the phases to apply Max 3 time in this Event Plan. The selected phases are OR functions with other Max selections and inputs.<br>Phases you do not select are disabled for Max 3 by this Event Plan.<br>Max 3 selection overrides Max 1 or Max 2. | 1-16 phases |

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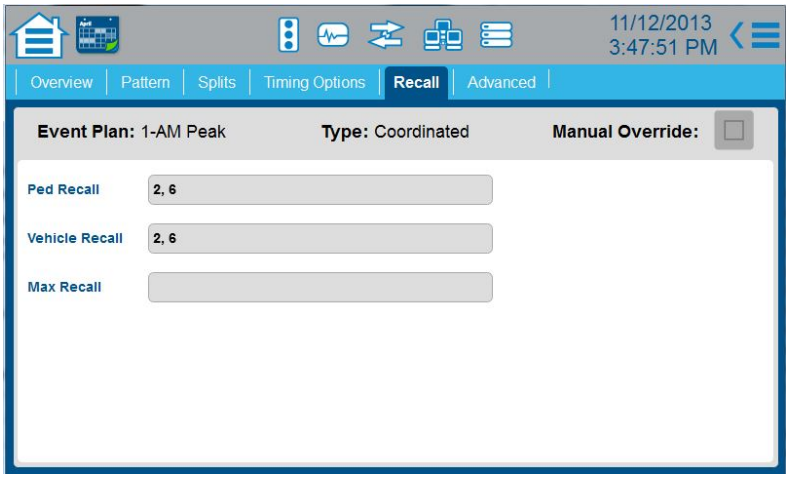
# Home > Event Plans

## Recall




This is one of several screens to create, view or edit Event Plans that are used for time-based plans for Flash, Free and Coordination.

In this **Recall** screen, you select the phases where you want to program a Recall to continue the phase timing for pedestrian, vehicle and/or maximum recalls.

> **Note:** In **Home > Split Demand > Special Split**, you also program Ped Recall, Veh Recall and Max Recall, but they are used in special coordination split patterns. For details, refer to the Help in **Home > Event Plans > Patterns** for **Split Demand Pat 1** and **Split Demand Pat 2**.

### Top Bar

- At the top of this screen are listed the **Event Plan** and the **Type** of **Event Plan** (Flash, Free, Coordinated or Auto). To program the **Event Plan** and its Type, select the **Overview** tab; these parameters are read-only in this screen.
- **Manual Override checkbox:**
  **Checked:** You manually enable the Event Plan listed at the top of this screen. The Event Plan remains in effect until you select another Event Plan or until you uncheck this checkbox. This manual selection overrides any other source.
  **Unchecked:** Cobalt automatically selects Time Base Event Plans by time-of-day.

| Recall Parameter | Description | Range |
|---|---|---|
| **Ped Recall** | **Pedestrian Recall**<br>Select this field and use the scrubber to select phases to which this Event Plan applies Pedestrian Recall. This is an OR function with other Pedestrian Recall programming and inputs.<br>Phases you do not select are disabled for Pedestrian Recall by this Event Plan. | 1-16 phases |
| **Vehicle Recall** | **Vehicle Recall**<br>Select this field and use the scrubber to select phases to which this Event Plan applies Vehicle Recall. This is an OR function with other Vehicle Recall programming and inputs.<br>Phases you do not select are disabled for Vehicle Recall by this Event Plan. | 1-16 phases |
| **Max Recall** | **Maximum Recall**<br>Select this field and use the scrubber to select phases to which this Event Plan applies Maximum Recall. This is an OR function with other Maximum Recall programming and inputs.<br>Phases you do not select are disabled for Maximum Recall by this Event Plan. | 1-16 phases |

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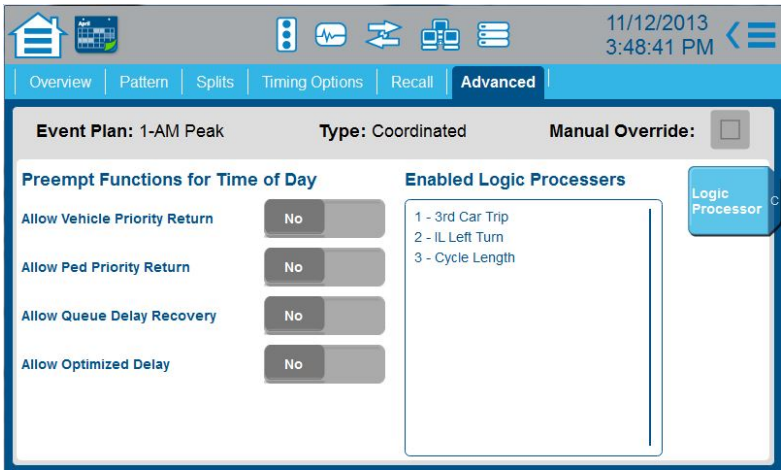
# Home > Event Plans

## Advanced




### Top Bar

- At the top of this screen are listed the **Event Plan** and the **Type** of **Event Plan** (Flash, Free, Coordinated or Auto). To program the **Event Plan** and its Type, select the **Overview** tab; these parameters are read-only in this screen.
- **Manual Override checkbox:**
  **Checked:** You manually enable the Event Plan listed at the top of this screen. The Event Plan remains in effect until you select another Event Plan or until you uncheck this checkbox. This manual selection overrides any other source.
  **Unchecked:** Cobalt automatically selects Time Base Event Plans by time-of-day.

This **Advanced** screen is one of several screens to create, view or edit Event Plans that are used for time-based plans for Coordination. Here, you program:

- Exit and Entry functions for Preempts and
- Enable Logic Processor statements

### Notes:

- For this screen to control a Preempt function by time-of-day, its related function must be programmed for Time of Day in its Preemption screen: for Exit functions, in **Home > Preemptions > Exit** and for the Entry function (Optimized Delay), in **Home > Preemptions > Exit**.
- You program Logic Processor statements in **Home > Logic Processor.**

# Advanced Screen Programming

| Advanced Parameter | Description | Range |
|---|---|---|
| | **Preempt Exit Functions for Time-of-Day** | |
| **Allow Vehicle Priority Return** | **Preempt Vehicle Priority Return Time-of-Day Select**<br>This is an Econolite feature<br>Select **Yes** (enable) or **No** (disable) for Preempt Vehicle Priority Return exit operation by this Event Plan. This allows vehicle phases which have been **interrupted by a preempt call** to be dynamically selected as the exit phases for that Preemptor.<br>**Note:** Veh Priority Return in **Home > Preemptions > Exit** must be set to Time of Day for this setting to take effect. | Yes, to enable<br>No, to disable |
| **Allow Ped Priority Return** | **Preempt Pedestrian Priority Return Time-of-Day Select**<br>This is an Econolite feature<br>Select **Yes** (enable) or **No** (disable) for Preempt Pedestrian Priority Return exit operation by this Event Plan. This allows pedestrian movements which have been **interrupted by a preempt call** to be dynamically selected as the exit phases for that Preemptor.<br>**Note:** Ped Priority Return in **Home > Preemptions > Exit** must be set to Time of Day for this setting to take effect. | Yes, to enable<br>No, to disable |
| **Allow Queue Delay Recovery** | **Preempt Queue Delay Recovery Time-of-Day Select**<br>This is an Econolite feature<br>Select **Yes** (enable) or **No** (disable) for Preempt Queue Delay Recovery exit operation by this Event Plan. Allow phases, which have been waiting the longest to be serviced or which have the most cars waiting to be dynamically selected as the exit phases for that Preemptor.<br>**Note:** Queue Delay Recovery in **Home > Preemptions > Exit** must be set to Time of Day for this setting to take effect. | Yes, to enable<br>No, to disable |
| | **Preempt Entry Functions for Time-of-Day** | |
| **Allow Optimized Delay** | **Preempt Queue Delay Recovery Time-of-Day Select**<br>This is an Econolite feature<br>Select **Yes** (enable) or **No** (disable) for Preempt Optimized Delay operation by this Event Plan. This gives the ability to delay the preempt input based on vehicle and pedestrian service request in relation to the coordinated cycle (Is there enough time to service the phase before going to the dwell phase?).<br>**Note:** Optimized Delay in **Home > Preemptions > Entry** must be set to Time of Day for this setting to take effect. Delay Time must have a non-zero entry to activate the Optimized Delay field. | Yes, to enable<br>No, to disable |
| | **Logic Processor Statement Control** | |
| **Enabled Logic Processors** | This field lists the Logic Processor statements that have been enabled for this Event Plan. To enable Logic Processor statements for this Event Plan:<br>1. Select the [Logic Processor] soft key.<br>2. A window opens with a list of the Logic Processor statements that have been programmed in the **Home > Logic Processor** screen.<br>3. To enable a Logic Processor statement, select (highlight) the circular button to the right of the name of the statement.<br>4. To also enable other Logic Processor statements listed, repeat Step 3.<br>5. Select [OK]. | |

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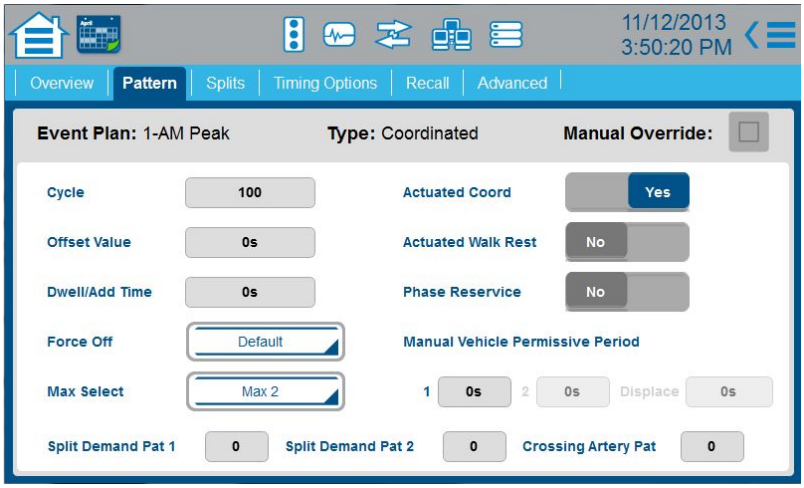
# Home > Event Plans

## Pattern




### Top Bar

- At the top of this screen are listed the **Event Plan** and the **Type** of **Event Plan** (Flash, Free, Coordinated or Auto). To program the **Event Plan** and its Type, select the **Overview** tab; these parameters are read-only in this screen.
- **Manual Override checkbox:**
  **Checked:** You manually enable the Event Plan listed at the top of this screen. The Event Plan remains in effect until you select another Event Plan or until you uncheck this checkbox. This manual selection overrides any other source.
  **Unchecked:** Cobalt automatically selects Time Base Event Plans by time-of-day.

For a brief description of the parameters you program in this Pattern screen, refer to the **Summary for Pattern Screen Programming** section. For detailed information about the programming, refer to the **Details for Pattern Screen Programming** section.

This **Pattern** screen is one of several screens to create, view or edit Event Plans that are used for time-based plans for Coordination.

> **Note:** The Pattern screen and the Splits screen tabs are only necessary for Event Plans with Coordination patterns; Pattern and Splits tabs are not shown for Event Plans with Flash or Free patterns.

## Coordination Patterns

Event Plans with Coordination are controlled with patterns. Each pattern is defined by the associated coordination parameters programmed by the user. To program parameters specific to Coordination, select the Pattern and Splits tabs.

## Summary for Pattern Screen Programming

| Pattern Parameter | Programming Summary |
|---|---|
| Cycle<br>(the coordination cycle length) | Enters the cycle length in seconds that the coordinator will use when this pattern is active. To coordinate, the cycle length must be greater than 30 seconds. |
| Actuated Coordinated Phase | Makes the coordinated phases non-actuated until the Yield Point, then actuated after the Yield Point. Required when ring split extensions, actuated walk rest or phase re-service is programmed. |
| Offset Value | Enters the value in seconds or percent that the local cycle zero will lag the system sync. This value must be consistent with the offset in selection. |
| Actuated Walk Rest | Makes the coordinated phase(s) rest in walk when actuated coordination is programmed. |
| Dwell/Add Time | A non-zero value will override the Correction Max Time setting in **Home > Coordination > Coordination Options** when this pattern is in effect. |
| Phase Reservice | Allows the coordinator to respond to demands on any phase that has an open permissive. For phase Reservice to function, the controller must be fully actuated, including coordinated phases, actuated coordination programmed and automatic permissives enabled. |
| Force Off | When this pattern is in effect, it overrides the Default Force Off setting in **Home > Coordination > Coordination Options.** |
| Max Select | Use this field to override the Default Split Max Select setting in **Home > Coordination > Coordination Options** when this pattern is in effect. |
| Manual Vehicle Permissive Periods:<br>1<br>2<br>Displacement | **Automatic:** Enter 0 (zero) for Manual Vehicle Permissive Period 1 (VPP1), Manual Vehicle Permissive Period 2 (VPP2) and Vehicle Permissive Period 2 Displacement (VPP2D).<br>**Single:** Enter desired single permissive period for VPP1 and zero for VPP2 and VPP2D.<br>**Dual:** Enter desired values for VPP1, VPP2 and VPP2D. |
| Split Demand Patterns 1 and 2 | Enter the pattern to be in effect that is used in the split demand screen. You program Split Demand 1 and Split Demand 2 in **Home > Split Demand > Split Demand.** |
| Crossing Artery Pattern | Select the coordination pattern to use when you select dual coordination. |

# Details for Pattern Screen Programming

| Patterns Parameter | Description | Range |
|---|---|---|
| Cycle | **Coordination Cycle Length (time)**<br>Use the scrubber to enter the length of the coordination cycle in seconds.<br>**0 (zero):** Forces Free and replaces the phase Max in effect with the split time as the Max for the phase.<br>**1-29:** Forces Free. This is because the coordinator cannot operate with a cycle length less than 30 seconds.<br>**30-255:** Programs the cycle length.<br>**Note:** If the cycle length is between 30 and 255 seconds, you can program Offset Unit and Split Unit values (**Home > Coordination > Coordination Options**) in seconds or percent.<br>**256-999:** Programs the cycle length.<br>**Note:** If the cycle length is between 256 and 999 seconds, the Split and Offset values will be in percent, regardless of what you select for Split Unit and Offset Unit in **Home > Coordination > Coordination Options**. | 0-999 seconds |
| Actuated Coord | **Actuated Coordinated Phase**<br>Enables the coordinated phase(s) to respond to vehicle demand(s) and extend the coordinated phase between the ring split extension time before the Yield Point. When enabled, allows actuated walk rest to be enabled.<br>**Yes:** Enables the coordinated phases to respond to vehicle detector inputs and to extend the coordinated phase split after the Yield Point to a maximum of the Split Extension entry in **Home > Event Plans > Splits**.<br>**Note:** When Actuated Coordinated phase is enabled, Actuated Walk Rest and Phase Reservice are permitted, if enabled.<br>**No:** Disables the coordinated phase from responding to any vehicle or pedestrian detector inputs and forces Vehicle and Pedestrian Recall. It also disables the Phase Reservice. | Yes enables<br>No disables |
| Offset Value | **Offset from the System Sync**<br>Use the scrubber to enter the Offset Value in seconds or percent (the units are set in Offset Unit in Home > Coordination > Coordination Options).<br>**0 to (Cycle time minus 1):** Time or percent that the Local Dial lags the Local Master Dial (synchronization pulse).<br>**Cycle time to 255:** The coordinator goes to Free mode.<br>**Note:** When the cycle length is greater than 255, the acceptable offset value is 0-255 seconds or 0-99%.<br>The setting of Offset Reference (**Home > Coordination > Coordination Options**) determines if this offset is referenced to the start of the first coordinated phase green, the start of the last coordinated phase green, start of the first coordinated phase yield, or the start of the first coordinated phase yellow. | 0-255 |
| Actuated Walk Rest | **Actuated Rest in Walk**<br>**Yes:** Lets actuated coordinated phase walk rest in Walk and begin pedestrian clearance at the Yield Point.<br>**No:** Lets the actuated coordinated phase time Walk and Pedestrian Clearance in response to a demand. | Yes enables<br>No disables |

| | | |
|---|---|---|
| Dwell/Add Time | A non-zero value will override the Correction Max Time setting in **Home > Coordination > Coordination Options** when this pattern is in effect.<br>When the Offset Correction is Dwell:<br>• **0 (zero):** There is no override and the maximum dwell period in the Correction Max Time setting in Home > Coordination > Coordination Options is in effect.<br>• **1-99:** If the offset is in percent, this is the Dwell/Add Percentage that is used in place of the Correction Max Time setting in **Home > Coordination > Coordination Options**.<br>• **1-255:** If the offset is in seconds, this is the Dwell/Add Time in Seconds that is used in place of the Correction Max Time setting in Home > Coordination > Coordination Options.<br>When the Transition Method (**Home > Coordination > Coordination Options**) is set to Add Only or Smooth:<br>• **0 (zero):** Maximum percentage of the cycle to be adjusted is determined by the Correction Max Time setting in **Home > Coordination > Coordination Options**.<br>• **1-99:** Maximum percentage of the cycle to be adjusted during Add Only or Smooth transition.<br>**Note:** During Smooth transition, the coordinator subtracts a maximum of 17% of the cycle. | 0-255 |
| Phase Reservice | Lets all phases (including the coordinated phases) cycle between those that have open permissives and to rest in any phase. Automatic calls are only placed on the coordinated phases when it is time to return.<br>Select Yes or No to enable/disable the re-servicing of phases during a single coordination cycle.<br>**Yes:** Enables the coordinator to allow the controller to respond to demands on any phase that has an open.<br>**No:** Disallows re-servicing of phases during a single coordination cycle. After the controller has exited and returned to the coordinated phases, it will not service any demand until the next cycle.<br>**Note:** For phase re-service to function, the controller must be fully-actuated, including coordinated phases, actuated coordination programmed and automatic permissive enabled. | Yes enables<br>No disables |
| Force Off | **Determines position of the phase force off**<br>When this pattern is in effect, it overrides the FORCE OFF setting in MM-3-1.<br>Select from the drop-down menu:<br>**Default:** The Force Off mode is determined by the Default Force Off setting in **Home > Coordination > Coordination Options**.<br>**Fixed:** When this pattern is in effect, it overrides the Default Force Off setting in **Home > Coordination > Coordination Options**. This option will force off the phase at the fixed position in the cycle regardless of when it started.<br>**Float:** When this pattern is in effect, it overrides the Default Force Off setting in **Home > Coordination > Coordination Options**. This option will force off after it has serviced its split regardless of when it started. | Default,<br>Fixed,<br>Float |

| | | |
|---|---|---|
| Max Select | When this pattern is in effect, use this field to override the Default Split Max Select setting in **Home > Coordination > Coordination Options**.<br>Select from the drop-down menu:<br>**Default:** Max Select is the setting in Default Split Max Select in **Home > Coordination > Coordination Options**.<br>**Max Inhibit:** When this pattern is in effect, it overrides the Default Split Max Select setting in Home > Coordination > Coordination Options. This option allows the coordinator phase split to control the time a phase is allowed to be green in the selected coordination pattern only.<br>**Max 1, Max 2 or Max 3:** When this pattern is in effect, it overrides the Default Split Max Select setting in **Home > Coordination > Coordination Options**. This option allows the shorter of the MAX timing (**Home > Timing Plans > Max Green**) or the coordinator phase split to control the time a phase is allowed to be green in the selected coordination pattern only. | Default,<br>Max Inhibit,<br>Max 1,<br>Max 2,<br>Max 3 |
| Manual Vehicle Permissive Period 1 | **Manual Vehicle Permissive Period 1 (VPP1)**<br>This is the portion of the cycle length during which phases other than the coordinated phases may be serviced. This period begins timing at the coordinated phase Yield Point. If Vehicle Permissive Period 2 (VPP2) or Vehicle Permissive Period 2 Displacement (VPP2D) is equal to zero, all non-coordinated phases may be serviced during this period. If VPP2 or VPP2D are not equal to zero (dual permissive operation), then only the first phase(s) that follows the coordinated phase(s) (first permissive phases) is serviced during this period.<br>Use the scrubber to enter **0** to **(Cycle time minus 1)**. The units of measure are the same as set in Split Unit (seconds or percentage) in **Home > Coordination > Coordination Options**.<br>**1 to (Cycle time minus 1)** enables the Vehicle Permissive Period 1 (VPP1) that is the portion of the cycle following Yield in which phase(s) following a coordinated phase may be serviced.<br>**Note:** If VPP2 or VPP2D is zero, all phases will be serviced during VPP1.<br>**0 (zero)** enables the coordinator to calculate an Auto Permissive for each phase when VPP2 is also zero.<br>For more details, refer to the Added Parameters section after this table. | 0-99%<br>0-255 sec. |

| | | |
|---|---|---|
| Manual Vehicle Permissive Period 2 | **Manual Vehicle Permissive Period 2 (VPP2)**<br>This is the portion of the cycle length during which phases other than the coordinated phases and those directly following may be serviced. This period begins timing immediately after the Vehicle Permissive 2 displacement period. Only phases other than those serviced during the first permissive period can be serviced because phase omits are applied to the first permissive phase(s).<br>Use the scrubber to enter **0** to **(Cycle time minus 1)**. The units of measure are the same as set in Split Unit (seconds or percentage) in **Home > Coordination > Coordination Options**.<br>**1 to (Cycle time minus 1)** enables VPP2 that starts after VPP2D has timed out after the Coordinator Yield. It is the portion of the subsequent cycle that phase(s) other than those that directly follow coordinated phase(s) may be serviced.<br>**Note:** If VPP2 or VPP2D is zero, all phases will be serviced during VPP1.<br>**0 (zero)** enables the coordinator to calculate an Auto Permissive for each phase when VPP1 is also zero.<br>For more details, refer to the Added Parameters section after this table. | 0-99%<br>0-255 sec. |
| Manual Vehicle Permissive Period Displace | **Manual Vehicle Permissive Period 2 Displacement (VPP2D)**<br>This starts timing at the coordinated phase Yield Point. At the end of this displacement period, the second permissive period starts timing.<br>Use the scrubber to enter **0** to **(Cycle time minus 1)**. The units of measure are the same as set in Split Unit (seconds or percentage) in **Home > Coordination > Coordination Options**.<br>**1 to (Cycle time minus 1)** is the portion of cycle between the Yield Point and the beginning of VPP2.<br>**0 (zero)** enables all phases to be serviced during the first permissive period when VPP 1 is non-zero.<br>For more details, refer to the Added Parameters section after this table. | 0-99%<br>0-255 sec. |
| Split Demand Pat 1<br><br>Split Demand Pat 2 | **Split Demand Patterns 1 and 2**<br>In this screen, you select a special Split Demand Pattern to be in effect. You program these split patterns in **Home > Split Demand > Special Split**.<br>The coordinator uses these phase splits in place of those in the Split Pattern when the Split Demand Pattern is in effect. But the coordinated phase(s) and modes are still taken from the Split Pattern.<br>Use the scrubber to enter the Split Number.<br>**1-120** selects the Split Number of the Split Pattern that will be in effect when Split Demand 1 or Split Demand 2 is in effect. If both are in effect, Split Demand Pattern 2 is selected. You program Split Demand 1 and Split Demand 2 in **Home > Split Demand > Split Demand**.<br>**0 (zero)** disables the split demand operation.<br>**Note:** Crossing artery coordination has priority over Split demand. | 0 disables<br>1-120 selects |

| | | |
|---|---|---|
| Crossing Artery Pat | **Crossing Artery Pattern**<br>Use the scrubber to select and enable the crossing artery operation when the Dual Coordination input is TRUE.<br>**0 (zero):** Disables the crossing artery coordination.<br>**1-120:** Selects the Split Pattern to use when you request crossing artery operation.<br>**Note:** Crossing artery coordination has priority over Split demand. The crossing artery coordinated phases are programmed as CNA2 phases. | 0-120 |

## Added Parameters

The parameters that follow are not shown on any of the data entry screens. They are included here because they are necessary to understand the data entry parameters for this section.

| Parameter | Description |
|---|---|
| Permissive Operation | The coordinator is programmed to calculate permissive periods by one of three operations: Automatic, Dual and Single; these are described below. |
| Auto Permissive | Automatically computed permissive period. Each sequential phase is automatically assigned a vehicle and pedestrian permissive period. The length of the vehicle permissive period is determined by the phase split interval and phase minimum time. Phase minimum time is equal to auto permissive minimum green, bike minimum green, or phase minimum green, whichever is larger, plus the yellow and red clearance time. Auto permissive green time allows you to set the phase minimum green to a low value, yet still ensures that the auto permissive period provides sufficient green time if the controller yields to the phase at the end of the permissive. |
| Dual Permissive | A permissive operation that requires operator data entry of three parameter values: Manual Vehicle Permissive Period 1, Manual Vehicle Permissive Period 2 and Manual Vehicle Permissive Period Displace. During this permissive operation, the Vehicle Permissive Period 1 times first. This period begins at the yield point. Vehicle Permissive Period 2 begins timing immediately after an adjustable time period (Vehicle Permissive Period 2 Displacement). During the Vehicle Permissive Period 1, only those phases immediately following the coordinated phases are serviced. If the controller yields during the first permissive, all remaining calls are serviced in normal sequence and the second permissive period is not used. |
| Single Permissive | Single permissive operation is selected by setting the Vehicle Permissive 2 displacement to zero. Only the Vehicle Permissive Period 1 and its associated pedestrian permissive period are timed and begin timing at the yield point. During the Single Permissive period, the controller yields to any phase. |
| Permissive Period End Point | End Point = (Split Sum) - (K Phase Clear) - (Perm Phase Min Green and Clear)<br>Where:<br>• Split Sum = Sum of splits from coordinated through permissive phases, inclusive.<br>• K Phase Clear = Coordinated phase Yellow + All Red (If Walk Rest Modifier input = TRUE).<br>• K Phase Clear = Coordinated phase Ped Clear + Yellow + All Red (If Walk Rest Modifier input = FALSE).<br>• Perm Phase Min Green and Clear = Permissive phases minimum green + Yellow + All Red.<br>• Perm Phase Min Green = Permissive Phase minimum green or (Walk + Ped Clear), whichever is greater. |

| | |
|---|---|
| Yield Point | Yield Point = Coordinated phase split interval - Coordinated phase clearance time (Pedestrian and vehicle clearance times). |
| Actuated Yield Point | Actuated Yield Point = Coordinated phase split interval - Coordinated phase clearance time(s) – Ring split extension time. |
| Offset Point | The offset entry establishes the offset point to the:<br>• **Lead:** Referenced the start of the Local Dial to the start of the first coordinated phase green.<br>• **Lag:** Referenced the start of the Local Dial to the start of the last coordinated phase green.<br>• **Yield:** Referenced the start of the Local Dial to the start of the first coordinated phase yield.<br>• **Yellow:** Referenced the start of the Local Dial to the start of the first coordinated phase yellow. |
| Yield Points | The coordinator uses multiple yield points; one yield point is computed per ring. There may be four distinct yield points. Hold and Yield are independent calculations based on offset, coordinated phase splits and coordinated phase timing. |
| Minimum Controller Cycle Time | The shortest possible cycle length allowing all phases to time their minimum vehicle and pedestrian interval times. |
| Dual Coordination | Dual coordination is established when the dual coordination input is TRUE. This forces the crossing artery (Crossing Artery Pat) phase splits to be used and places a continuous vehicle demand on the call-to-non-actuated 2 (CNA II) phases. |

## Additional online help scheduled for next release

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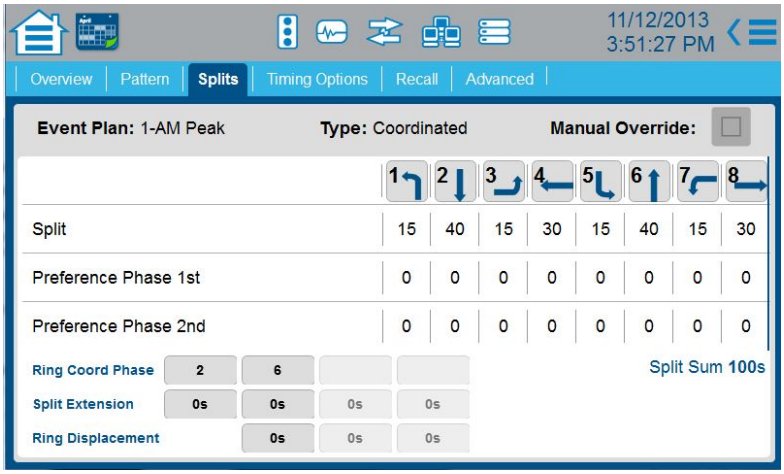
# Home > Event Plans

## Splits




### Top Bar

- At the top of this screen are listed the **Event Plan** and the **Type** of Event Plan (Flash, Free, Coordinated or Auto). To program the Event Plan and its Type, select the **Overview** tab; these parameters are read-only in this screen.
- **Manual Override checkbox:**
  **Checked:** You manually enable the Event Plan listed at the top of this screen. The Event Plan remains in effect until you select another Event Plan or until you uncheck this checkbox. This manual selection overrides any other source.
  **Unchecked:** Cobalt automatically selects Time Base Event Plans by time-of-day.

  For a brief description of the parameters you program in this **Splits** screen, refer to the **Summary for Splits Screen Programming** section. For detailed information about the programming, refer to the **Details for Splits Screen Programming** section.

This **Splits** screen is one of several screens to create, view or edit Event Plans that are used for time-based plans for Coordination.

> **Note:** The Pattern screen and the Splits screen tabs are only necessary for Event Plans with Coordination patterns; Pattern and Splits tabs are not shown for Event Plans with Flash or Free patterns.

## Coordination Patterns

Event Plans with Coordination are controlled with patterns. Each pattern is defined by the associated coordination parameters programmed by the user. To program parameters specific to Coordination, select the Pattern and Splits tabs.

## Summary for Splits Screen Programming

| Splits Parameter | Programming Summary |
|---|---|
| Split | Enter the split value for each active phase. |
| Split Sum | Because this is an automatic calculation of the split sum based on data entry, this is read only. |
| Preference Phase 1st<br>Preference Phase 2nd | Select the phases to receive any non-coordinated phase unused split time. Preference 1 phases have precedence over Preference 2 phases when unused split time is being allocated. |
| Ring Coordinated Phase(s) | Select the phase(s) that will be coordinated when the Split Pattern operates. |
| Split Extension | Allows the coordinated phase in each ring to extend by actuations from the split extension time before coordinated phase split termination. After it has gapped, the ring can service any open permissive phase. |
| Ring Displacement | Select the displacement or offset from ring one that an independent ring coordinated phase will start. When two or more rings have a barrier in common, the higher numbered ring is forced to use the value of the lower numbered ring. |

# Details for Splits Screen Programming

| Splits Parameter | Description | Range |
|---|---|---|
| **Split** | **Split Intervals of the Cycle Time**<br>Here you divide the cycle time into sections (split intervals) to assign the maximum amount of time to each timing phase during coordination.<br>**Important:** Observe the Cautions listed below.<br>If ECPI Coordination is set to No (in **Home > Coordination > Coordination Options**), the coordinator will go free when:<br>• Entering zero for any active phase-split.<br>• Entering phase-splits that are smaller than the minimum phase time<br>• Entering splits that exceed the cycle length.<br>If ECPI Coordination is set to Yes (in **Home > Coordination > Coordination Options**), then:<br>• Entering zero for any active phase-split will omit that phase.<br>• Entering phase-split(s) that are smaller than the minimum phase time(s) or that exceed the cycle length may cause loss of coordination.<br>**Note:** A Phase Split is the maximum amount of time available to a phase during coordination if **Floating Force-Offs** is in effect. If using **Fixed Force Offs** are in effect and the split timer starts early due to time left over from preceding phases, the phase can be extended by demand up to the force-off point. The maximum time available can only be lowered if you have a Max Select (Max 1, 2 or 3) (set in **Home > Coordination > Coordination Options > Default Split Max Select** or in **Home > Event Plans > Pattern > Max Select**) and if the max time in effect is shorter than the split. | **0-255 sec. or 0-99%** |
| **Split Sum** | This is an automatic calculation of the split sum based on data entry.<br>**Note:** The split sum in Free mode is composed of Minimum Green, Yellow, and Red clearance. | **This is read only** |

## Details for Splits Screen Programming

| Splits Parameter | Description | Range |
|---|---|---|
| **Preference Phase 1st (Initial Phase)**<br><br>**Preference Phase 2nd (Subsequent Phase)** | **Preference 1 and 2 Phase Unused Split Allocation**<br>**0:** Deselect or<br>**1-16:** Select a phase to allocate unused split time.<br>**Important:** For this feature to operate, make sure that the Force Off parameter is set to Float (in **Home > Coordination > Coordination Options > Default Force Off** or in **Home > Event Plans > Pattern > Force Off)**. If Force Off is set to Fixed, these Preference Phase 1st and Preference Phase 2nd parameters are not shown in this screen.<br>You can program any unused split time from an Initial phase to time in a Subsequent/Preference phase, as needed. The Subsequent/Preference phase must be in the same ring as the Initial phase.<br>**Procedure:**<br>1. In Preference Phase 1st, select the field under the number of the phase you want for the Initial Phase (1-16).<br>2. Use the scrubber to select the number of the Subsequent/Preference Phase (1-16) to time any unused split time from the Initial Phase.<br>3. To program another Subsequent/Preference phase, repeat Steps 1 and 2 with Preference Phase 2nd.<br>**Note:** A value of 0 in Preference Phase 1st / Preference Phase 2nd means that the related phase is not programmed to use its unused split time.<br>If you program Preference Phase 1st (Pref 1) and Preference Phase 2nd (Pref 2), the unused split time will first be available to the Pref 1 subsequent phase to use if it maxed out in the last cycle. If Pref 1 Subsequent phase does not qualify, the unused split time will be available to the Pref 2 subsequence phase. If Pref 1/ Pref 2 subsequent phases do not need the Initial unused split time, the unused split time is added to the coordinated phase. The allocation of the unused split time does not affect the sum of the split time used for each ring.<br>**Example:** Phase sequence is<br>2 1 \| 3 4<br>6 5 \| 7 8<br>Phase 2, 6 are coordinated phases. Initial Phase 1 has Preference Phase 1st as Phase 4. If there is any unused split time from Initial Phase 1, and Subsequent Phase 4 is available and maxed out during last cycle, then the unused time could be used by Subsequent Phase 4 if it has the demand. | **0 deselects**<br>**1-16 selects** |
| **Ring Coord Phase** | **Coordinated Phases**<br>Select the phases for coordination.<br>**Note:** Observe the information below:<br>• All coordinated phases must be compatible (in the same concurrent group).<br>• There must be a coordinated phase entered for each ring in that concurrent group.<br>• It is permissible to have only one ring in the concurrent group. | 1-16 phases |
| **Split Extension** | **Coordinated Phase Split Extension**<br>This is the vehicle extension time for an actuated coordinated phase.<br>**0 to (Cycle time minus 1)** seconds or 0-99% allows the coordinated phase in each ring to extend by actuations from the Split Extension time before coordinated phase split termination. After it has gapped, the ring can service any open permissive phase.<br>**Note:** Actuated Coord in **Home > Event Plans > Pattern** must be set to Yes. Units of measure are the same as the Split option. | 0-99%<br>0-255 sec. |

| | | |
|---|---|---|
| **Ring Displacement** | **Ring Displacement From Ring 1**<br>Use the scrubber to select the displacement (Offset) from Ring Offset One that independent ring coordinated phase(s) will start.<br>**0 to (Cycle time minus 1)** seconds or **0-99%** is the displacement Ring 1 for Rings 2, 3 and 4.<br>Cycle time of 255 seconds or 100-255% results in no displacement.<br>The Offset for the rings are as follows:<br>• **Ring 1 offset** is the programmed offset.<br>• **Ring 2 offset** is the programmed offset plus the Ring 1-2 Offset.<br>• **Ring 3 offset** is the programmed offset plus the Ring 1-3 Offset.<br>• **Ring 4 offset** is the programmed offset plus the Ring 1-4 Offset.<br>**Note:** When two or more rings (1-4) have a barrier in common, the higher numbered ring is forced to use the value of the lower numbered ring.<br>**Example:** Rings 1 and 3 have a barrier in common. The Ring Displacement 1-3 will be ignored and Ring 3 will use the offset of Ring 1. | 0-255 seconds<br>(0 to Cycle time minus 1)<br>or<br>(0-99%) |

## Additional online help scheduled for next release

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# Home > Scheduler

## Day Plan

This **Day Plan** screen is one of three screens that you use to schedule the times during a day to enable Event Plans. Use this screen to:

Create names for up to 16 different Day Plans

Select an Event Plan to use for each time period in a Day Plan

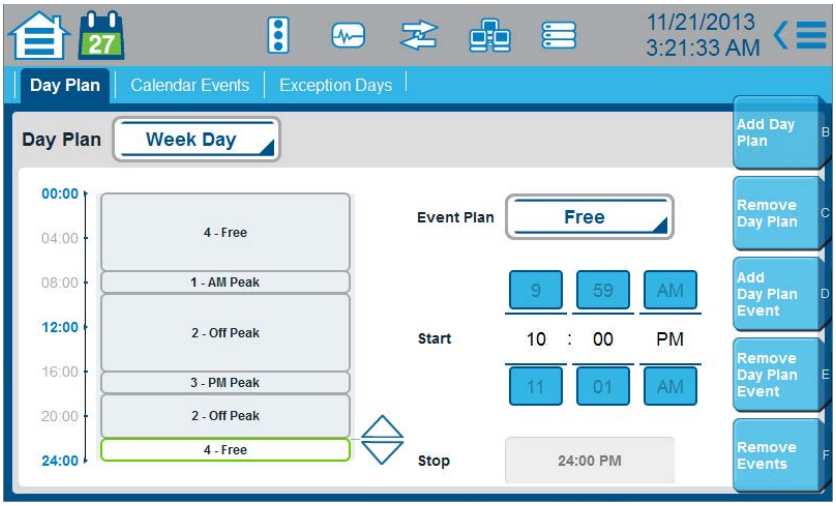
Enter start times for each Event Plan in the Day Plan

Add/remove Day Plans and Day Plan Events as necessary

> **Caution:** Before you select [Remove Day Plan], make sure you want to delete the Day Plan in view. When you select [Remove Day Plan], you immediately delete the Day Plan in view. But, if you incorrectly delete a Day Plan and want to recover it, select [Add Day Plan] and enter the same name as the Day Plan you deleted.

### Example Day Plan

This is to program a Day Plan named Week Day. Below is the completed screen for this example (the time format is for a 24-hour clock).



In this example, you have programmed the Event Plans listed below (you can program up to 100 Event Plans in Home > Event Plans).

1-AM Peak

2-Off Peak

3-PM Peak

4-Free

And you want to program these Event Plans as follows:

| Time to Start | Time to Stop | Event Plan |
|---|---|---|
| Midnight (00:00) | 7 AM (07:00) | 4-Free |
| 7 AM (07:00) | 9 AM (09:00) | 1-AM Peak |
| 9 AM (09:00) | 4 PM (16:00) | 2-Off Peak |
| 4 PM (16:00) | 6 PM (18:00) | 3-PM Peak |
| 6 PM (18:00) | 10 PM (22:00) | 2-Off Peak |
| 10 PM (22:00) | Midnight (24:00) | 4-Free |

This Day Plan has 6 time periods. You can program up to 50 time periods in a Day Plan.

## Procedure to Program the Example Day Plan

**Note:** The vertical time scale on the left side of the screen is a 24-hour clock, from 00:00 to 24:00 hours. But you can select the time format for the Start and Stop times shown in this screen. To select the time format, go to **Home > Settings > Date & Time > 24 Hour Time**; if you select **Yes**, the Start and Stop times in this screen are shown as 24-hour clock times or, if you select **No**, the times are shown as AM/PM times.

1. Select [Add Day Plan].
2. In the **New Day Plan** screen, select the **Plan Name** field and use the keyboard to enter the name, Week Day (you can enter a maximum of 12 characters for a name).
3. Select [OK].
4. Select [Add Day Plan Event].
5. In the **New Event Plan** screen, in the drop-down box, select the first Event Plan for the day, 4-Free.
6. Scroll and/or increment the time fields to enter the time to start this Event Plan, 00:00.
7. Select [OK].
8. The screen now shows the information you programmed. Notice:
   - The 4-Free Event Plan and its number/name is shown in a green rectangle that shows as block of time from 00:00 to 24:00 hours.
   - The name of the Event Plan is also shown in a drop-down box. Select this drop-box to see a list of all the available Event Plans.
   - The Start and Stop times are shown for the Event Plan in view.
   - To change the Start time, select and move the up/down arrows and/or scroll/increment the

Start field. After you set the new time, select Commit at the top of the screen. To return to the previous start setting, select Rollback.

– There are now more soft keys: [Add Day Plan Event], [Remove Day Plan Event] and [Remove Events]. Refer to the table below for details on the use of these soft keys.

9. To program the subsequent Event Plan for this Day Plan (Week Day), select [Add Day Plan Event].
10. In the **New Event Plan** screen, in the drop-down box, select the subsequent Event Plan for the day, 1-AM Peak.
11. Scroll and/or increment the time fields to enter the time to start this Event Plan, 07:00 (07:00 AM).
12. Select [OK].
13. At the top of the screen, select Commit.
14. The screen now shows this Event Plan with its Start time.
15. Again select [Add Day Plan Event] and repeat Step 9 thru Step 13 for the other Event Plans for this Day Plan.

## Day Plan Functions

| Day Plan Functions | Description |
|---|---|
| **Day Plan** | Use this drop-down box to select a Day Plan to create or edit.<br>When you select this, you see a list of all the Day Plans.<br>You can program up to 16 day plans (to create a Day Plan, refer to the example above). |
| **Event Plan** | This drop-down box shows the name of the Event Plan selected for the time period selected.<br>Select this box to:<br>• Show a list of all the Event Plans available.<br>• Select an Event Plan for the time period in the block of time selected (in the green rectangle) in the time line on the left. |
| **Start** | Scroll and/or increment the time fields to enter the time to start the Event Plan selected.<br>If you *briefly* select a blue block, the number will increment one number.<br>If you *continuously* select one of the blue blocks, the numbers will scroll quickly.<br>You can program up to 50 time periods in a Day Plan, each with an Event Plan. |
| **Stop** | This is the stop time for the Event Plan selected. This field is read-only. |
| **[Add Day Plan]** | **Name a New Day Plan**<br>Select this to open the **New Day Plan** screen where you enter the name (up to 12 characters) for a new Day Plan. You can create up to 16 Day Plans. |
| **[Remove Day Plan]** | **Delete the Day Plan in View**<br>Select this to immediately delete the Day Plan in view.<br>If you incorrectly delete a Day Plan and want to recover it, select [Add Day Plan] and enter the same name as the Day Plan you deleted. |

| | |
|---|---|
| **[Add Day Plan Event]** | **Add an Event Plan to this Day Plan**<br>Select this to open the **New Event Plan** screen, then:<br>1. In the drop-down box, select an Event Plan.<br>2. Scroll and/or increment the time fields to enter the time to start this Event Plan.<br>3. Select [OK]. |
| **[Remove Day Plan Event]** | Select this to remove the selected Event Plan during this time period for this Day Plan. Select Commit to implement this.<br>After you remove an Event Plan from the Day Plan, the previous Event Plan (above in the diagram) adds this time block to its time period. |
| **[Remove Events]** | Select this to remove all the events from the Day Plan in view.<br>Use this to give you a blank screen so you can start over again to program this Day Plan. |
| **Up/Down Arrows** | **Change the Start Time of an Event Plan**<br>Use these arrows to change the Start time for an Event Plan. If the Event Plan before it stops at this same time, this also changes the Stop time for the previous Event Plan to this same time.<br>1. On the left side, select the time block for the Event Plan.<br>2. Select these arrows and move them up/down to change the Start time for the Event Plan.<br>3. To increment the Start time more precisely, scroll/increment the Start field on the right of the screen.<br>4. After you set the new time, select Commit at the top of the screen or, to return to the previous start setting, select Rollback. |

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# Home > Scheduler

## Calendar Events

This **Calendar Events** screen is one of three screens that you use to schedule the times during a day to enable Event Plans.

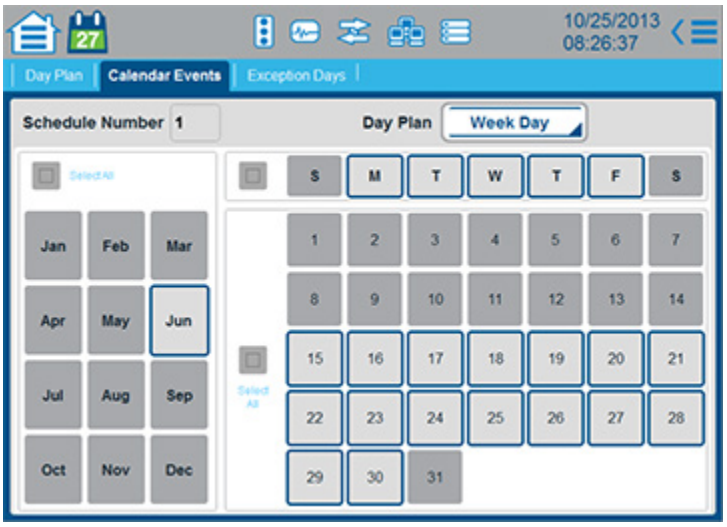
Use this **Calendar Events** screen to create up to 200 Schedules (200 **Schedule Numbers**, each with a **Day Plan**) that assign the days and months that a specified Day Plan can be in effect. Use this screen to:

- Create Day Plan schedule entries
- Enable a Day Plan (you can program up to 16 Day Plans with the Day Plan tab of this screen)
- Enter the month(s) of the year for the Day Plan to be in effect
- Enter the day(s) of the week for the Day Plan to be in effect
- Enter the day(s) of the month for the Day Plan to be in effect

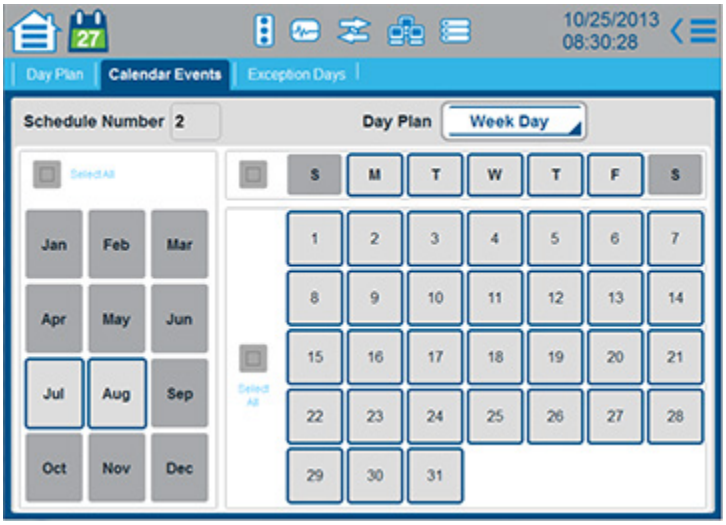
  **Note:** A Day Plan is only in effect for the days in a month that the day(s) of the week agrees with the day of the month. But, programming in Exception Days (in the **Exception Days** tab of this screen) overrides this selection.

**Example:** The Day Plan named Week Day is to be in effect during the summer break from June 15 to September 3 on Monday through Friday. Program as follows:

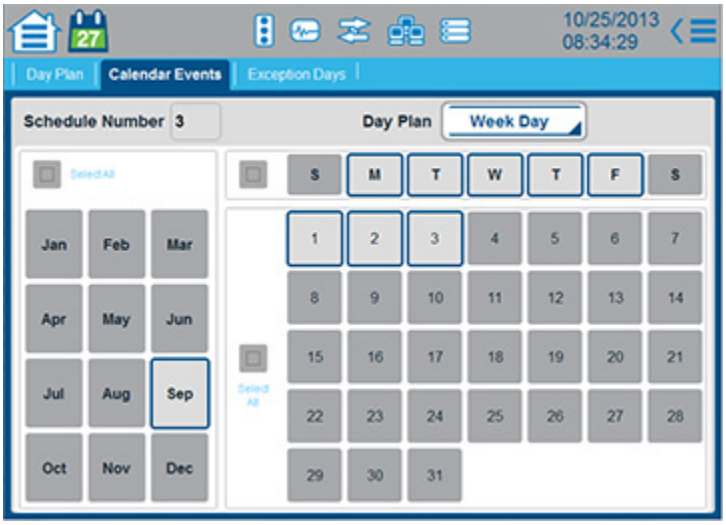
**Schedule Number 1: Day Plan** is **Week Day** with the month of June (**Jun**), days of the week Monday thru Friday (**M** thru **F**) and days of the month **15** thru **30** selected:



**Schedule Number 2: Day Plan** is **Week Day** with the months of July and August (**Jul** and **Aug**), days of the week Monday thru Friday (**M** thru **F**) and days of the month **1** thru **31** enabled:




**Schedule Number 3: Day Plan** is **Week Day** with the month of September (**Sep**), days of the week Monday thru Friday (**M** thru **F**) and days of the month **1** thru **3** enabled:



## Advanced Screen Programming

| Calendar Event Parameter | Description | Range |
|---|---|---|
| **Schedule Number** | **Time-Based Schedule Program Number**<br>Select this field and use the scrubber to enter the number of the Schedule of a Day Plan to program and/or view.<br>**1-200:** Specifies the Schedule of a Day Plan to program and/or view | 1-200 |
| **Day Plan** | Use the drop-down menu to select the Day Plan (to program a Day Plan, select the Day Plan tab in this screen).<br>**None:** Disables all programming of this Schedule Number | None<br>Up to<br>16 Day Plans |
| **Select All (check boxes)** | **Select/Clear All Fields**<br>Select the related check box to select/clear all the fields in its section (all the months, all the days of the week, or all the days of the month). | All selected<br>All cleared |
| **Months section** | **Select the month(s) to be in effect for this Schedule Number**<br>**Note:** A Schedule program will be in effect when it is permitted in the programming of the Month, Day-of-the-Week and Day-of-the-Month. But, programming in Exception Days (in the **Exception Days** tab of this screen) overrides this selection. | Jan thru Dec |
| **Days-of-the-Week section** | Select the day(s) of the week to be in effect for this Schedule Number | S thru S |
| **Days-of-the-Month section** | Select the day(s) of the month to be in effect for this Schedule Number | 1 thru 31 |

## Additional online help scheduled for next release

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# Home > Scheduler

## Exception Days

This **Exception Days** screen is one of three screens that you use to schedule the times during a day to enable Event Plans.

Use this screen to view or edit the control parameters for up to 36 Exception Days—that is, any day that has special traffic demands.

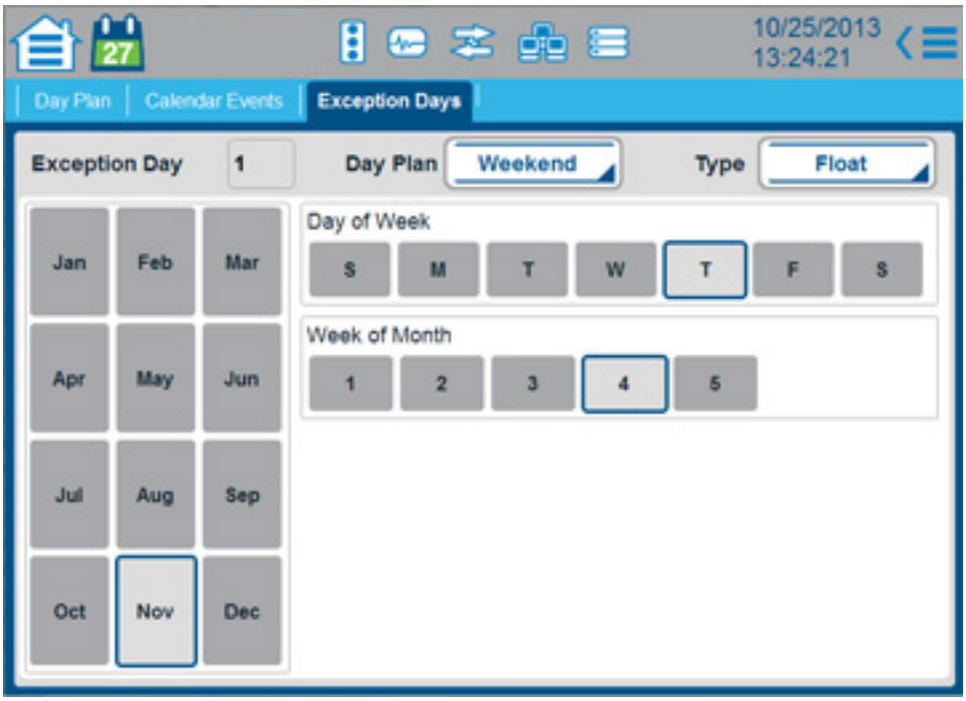
**Note:**

- This screen has two different formats, one for a **Floating** type of Exception Day and another for a **Fixed** type of Exception Day.
- If a day is programmed in as both a Calendar Event and an Exception Day, the Exception Day programming overrides the Calendar Event programming.
- The Exception Day program is effective only if time base (Time of Day)is the command source.

### Example for a Floating Exception Day

In the USA, **Thanksgiving** is a floating Exception Day. It always occurs on the 4th Thursday in November.

To program Thanksgiving as an Exception Day, select the fields as shown:



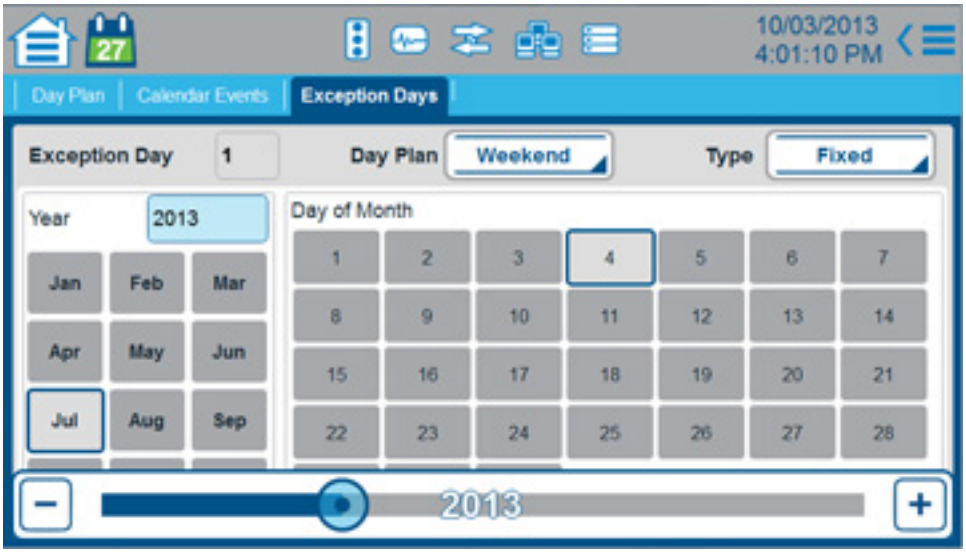
## Detailed Procedure to Program Thanksgiving as an Exception Day

1. **Exception Day:** Use the scrubber to select **1**. In general, select a number (1 thru 36) that has not been used.
2. **Day Plan:** In the drop-down menu, select **Weekend** (to name and program up to 16 Day Plans, select the Day Plan tab at the top of this screen).
3. **Type:** In the drop-down menu, select **Float**.
4. On the left side of the screen, select **Nov** (November).
5. **Day of Week:** Select the second **T** (Thursday).
6. **Week of Month:** Select **4** (4th week).

## Example for a Fixed Exception Day

In the USA, **Independence Day** is a fixed Exception Day. It always occurs on July 4th regardless of the day of the week.

To program July 4th as an Exception Day, select the fields as shown:




## Detailed Procedure to Program Independence Day as an Exception Day

1. **Exception Day:** Use the scrubber to select **1**. In general, select a number (1 thru 36) that has not been used.
2. **Day Plan:** In the drop-down menu, select **Weekend** (to name and program up to 16 Day Plans, select the Day Plan tab at the top of this screen).
3. **Type:** In the drop-down menu, select **Fixed**.
4. On the left side of the screen, select **Jul** (July).
5. **Day of Month:** Select **4**.
6. **Year:** Use the scrubber to select **2013**.

| Exception Days Parameter | Description | Range |
|---|---|---|
| Exception Day | Use the scrubber to select the number of an Exception Day (1-36) to view or edit.<br>**Note:**<br>• You can create up to 36 different Exception Day programs as Floating exception days and up to 36 different Exception Day programs as Fixed exception days.<br>• The Exception Day program is in effect only if the command source is time-based (Time of Day).<br>• An Exception Day program overrides the Day Plan program normally used on that specific day. | 1-36 |
| Day Plan | **Exception Day Plan**<br>In the drop-down menu, select a Day Plan (to name and program up to 16 Day Plans, select the Day Plan tab at the top of this screen).<br>**None:** Disables the Exception Day. | None<br>Up to<br>16 Day Plans |
| Type | **Floating or Fixed Exception Day**<br>In the drop-down menu, select Float or Fixed.<br>**Float:** Occurs on an ordinal numbered (1st, 2nd, etc.) Day-of-the-Week of a month.<br>**Note:** The Week of the Month is counted from the first week of the month that contains the Day of the Month. For example, in the USA, Labor Day for 2006 was September 4. For 2006, September 4 (1st Monday in September) is considered in the 1st Week of the Month (even though there were 2 days of September in the previous week).<br>**Fixed:** Occurs on a specific date of the year.<br>For procedures to program Floating and Fixed Exception Days, refer to the examples before this table.<br>**Note:** When the current date matches the Floating holiday (Month, Day of the Week and Week of the Month) or Fixed holiday (Month, Day of the Month and Year), the Day Plan assigned to the Exception Day plan replaces the Day Plan selected by the time base schedule (Time of Day). | Float,<br>Fixed |
| | **Floating Exception Day Parameters** | |
| Month section | **Month in which the Exception Day occurs**<br>Select the month for this Exception Day to be in effect. | Jan thru Dec |
| Day of Week | **Day of the Week in which the Exception Day occurs**<br>Select the day of the week for this Exception Day to be in effect. | S thru S |
| Week of Month | **Week of the Month in which the Exception Day occurs**<br>Select the week of the month for this Exception Day to be in effect. | 1 thru 5 |
| | **Fixed Exception Day Parameters** | |
| Month section | **Month in which the Exception Day occurs**<br>Select the month for this Exception Day to be in effect. | Jan thru Dec |
| Day of Month | **Day of the Month in which the Exception Day occurs**<br>Select the day of the month for this Exception Day to be in effect. | 1 thru 31 |
| Year | **The Year in which the Exception Day occurs**<br>Use the scrubber to select the year for this Exception Day to be in effect. | 1970 thru 2106 |

## Additional online help scheduled for next release

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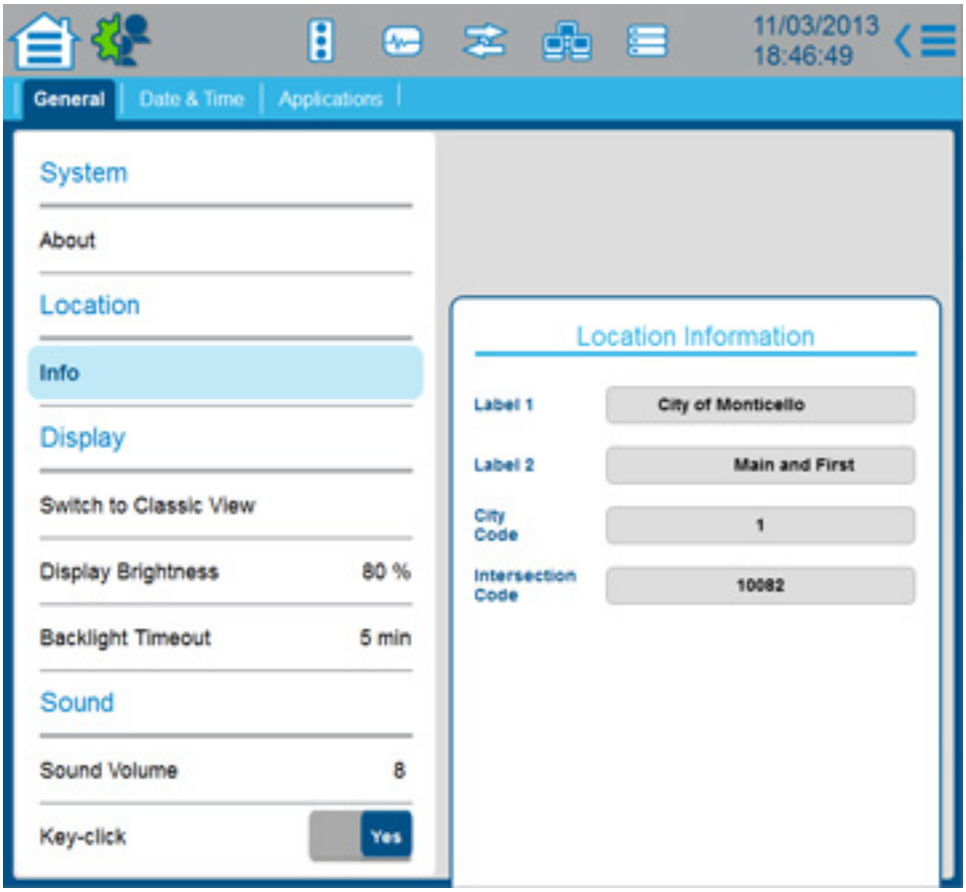
# Home > Settings

## General

**Note:** The screen shot below is expanded to show all the parameters. On your Cobalt, scroll down to view all the parameters.




## System

Select About to see the name, version and part number for all the software modules actually installed in your system:

Traffic Application

Engine Board

Front Panel

Subsystems

Graphics Card

Special Features

## Location

**Info** (Location Information): A typical screen for this is shown above.

- Select Label 1 and Label 2 and enter your information with the keyboard.
- Use the scrubber to set values for the City Code (0-255) and the Intersection Code (0- 65535).

## Display

**Switch to Classic View:** To go to character-based screens (without graphics):

1. Select **Switch to Classic View**.
2. Select [OK].

Use the Cobalt keyboard (refer to the white labels of the keys) to navigate and make entries in the classic view. Press the [Main] key (Home) in the upper right to start at the Main Menu. There are context-sensitive soft keys, [A] thru [F], for which you can press the letter key or tap the touch screen to navigate; for example [Next Data], [Next Screen] and [Next Page].

> **Note:** For early versions of Cobalt, there are some features for which it is necessary to use the Classic View. As necessary, instructions are given in the Cobalt Help.

When you are in the Classic View, to return to the touch-screen graphics mode:

1. Go to Main Menu-1-7-2, **Display Options** (press [Main], then [1], [7], and [2]).
2. Cursor to SWITCH TO GRAPHICS MODE.
3. Toggle to YES.
4. Press [Enter].

**Display Brightness** and **Backlight Timeout**. Use the scrubber to enter values:

**Brightness:** 0 – 100%

**Backlight Timeout:** 0 – 30 minutes of inactivity with Cobalt for the backlight to go OFF.

## Sound

**Sound Volume** and **Key-click**. Select values:

**Sound Volume:** 0 – 10 (minimum to maximum)

**Key-click** (this is a sound made when you press a key on the keyboard): Yes or No

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# Home > Settings

## Date and Time

### Example Configuration

- The date and time now
- Pacific Time Zone
- Daylight Savings Time

### Procedure for Example

To set the date: Scroll to the correct date. You can also enter the date with the Cobalt keyboard.

To set the time:

1. At the bottom of this screen, select **Yes** or **No** for the 24 Hour Time format.
2. Scroll to enter the current Time-Of-Day (TOD).

This time is used for all time-based functions and logging.

To set the Time Zone:

Standard Local Time from Greenwich Mean Time (GMT)

1. Slide the scrubber to specify the number of hours (–12 to +12) that the local standard (non-day-light-
   savings-time) is ahead (+) or behind (-) Greenwich Mean Time (GMT). For USA Pacific Time Zone, set to -8 as given below.
2. Select **OK**.

In general, the Eastern hemisphere is ahead (+) and the Western hemisphere is behind (-).

For Non-Day-Time-Saving, observe the differences in time zones listed below:

USA Eastern Time Zone is GMT -5 hours.

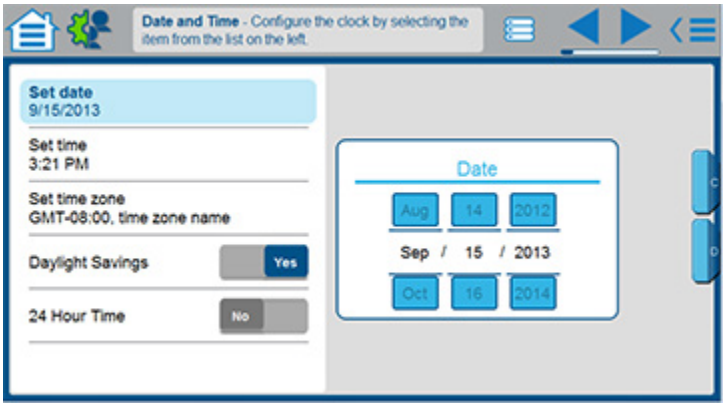
USA Central Time Zone is GMT -6 hours.

USA Mountain Time Zone is GMT -7 hours.

USA Pacific Time Zone is GMT -8 hours.

To set for Daylight Savings, select **Yes**.

## Completed Screen for Example (Guided Setup screen)

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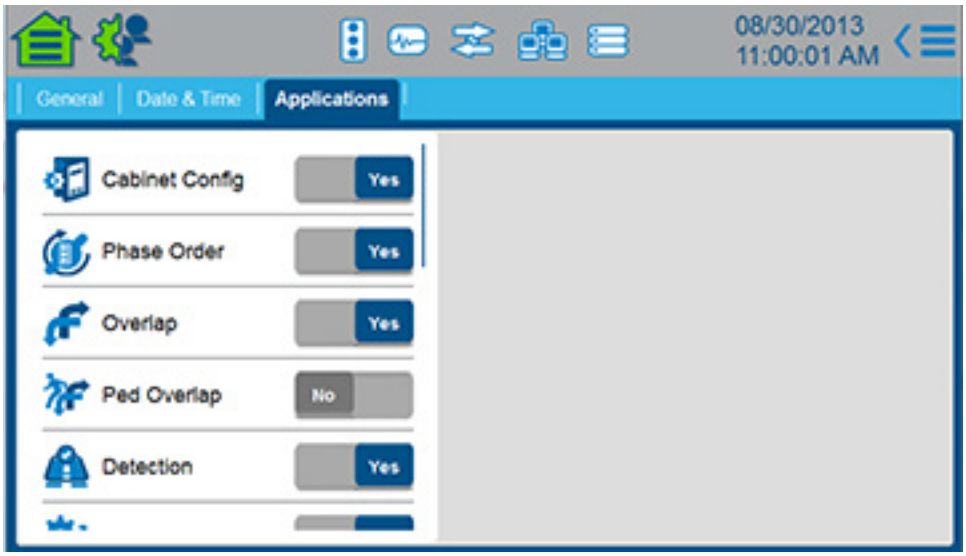
# Home > Settings

## Applications




Select the icons you want to show in the Home (Traffic Applications) screen.

The default is all icons selected (**Yes**) except for Ped Overlap (**No**) and Video Viewer (**No**).

Select **Yes** for each icon you want to show in the Home screen and **No** for each icon you want to hide in the Home screen.

> **Note:** If you select **No** for an icon, and you no longer see it on the Home screen, you may need it in the future and forget that it is available (out of sight, out of mind).

To see (in the field to the right) a brief description of the purpose of the screen(s) for an icon, select the applicable icon.

## Additional online help scheduled for next release

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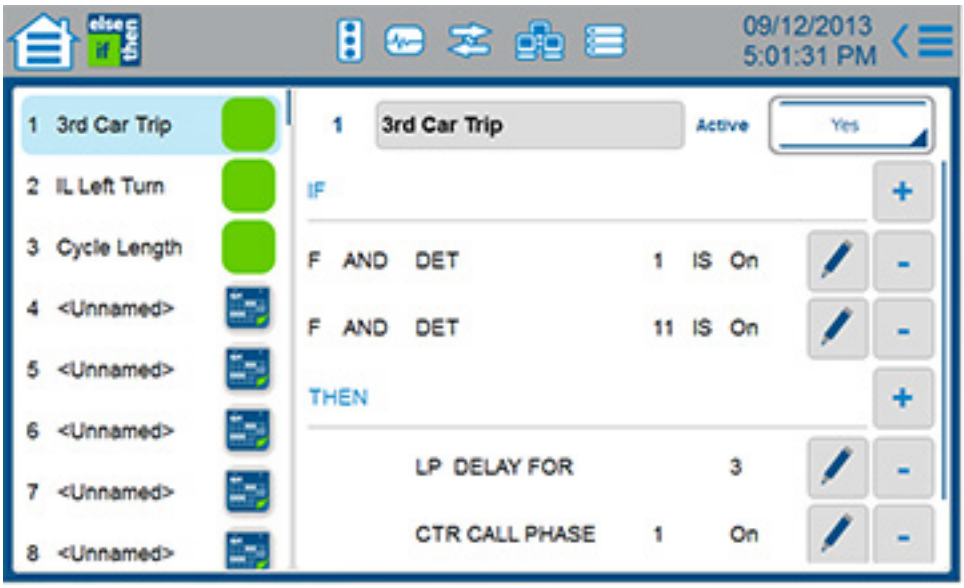
# Home > Logic Processor

The Logic Processor can hold up to 100 logic gates.

The Logic Processor Statements screen allows the inputs and outputs to be under logical control of conditions developed by the user.

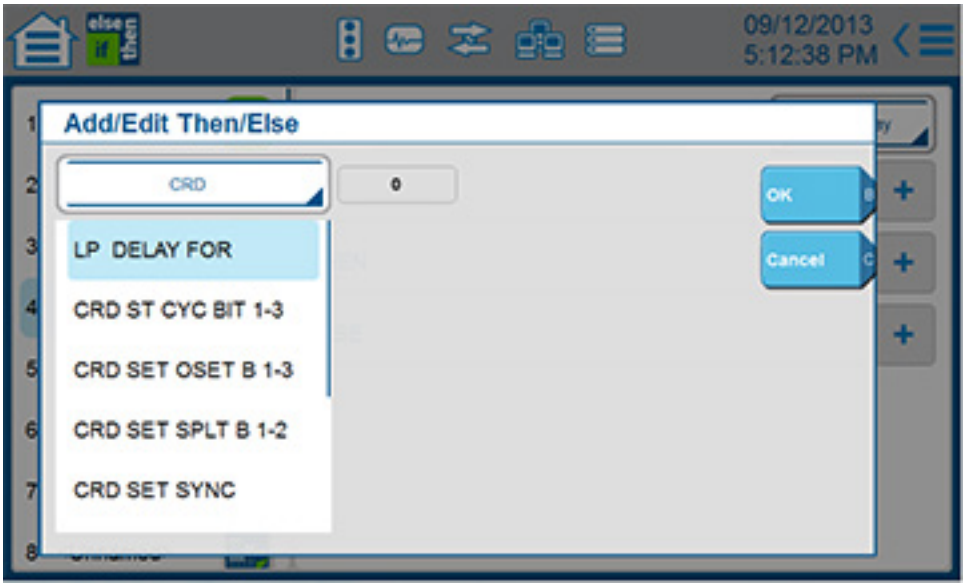
| Name | Description |
|---|---|
| Logic Processor # 1 - 100 | Logic Processor Statement Name |
| IF **(testable element)**<br>(Logical Operator)<br>**(testable element)** | This group is called an IF Condition. Up to 10 elements can be programmed.<br>Logical Operator lines are optional. After the first Testable element, additional Testable elements must have a Logical Operator (e.g. AND, OR, NAND, NOR XOR) |
| THEN **(executable element)** | This group is called **THEN elements**. Up to 5 elements can be programmed. |
| ELSE **(executable element)** | This group is called **ELSE elements**. Up to 5 elements can be programmed. |
| Several LP statements can be linked together to perform a unique function. | This should be referred to as **Linked Logic Processor Statements**. |

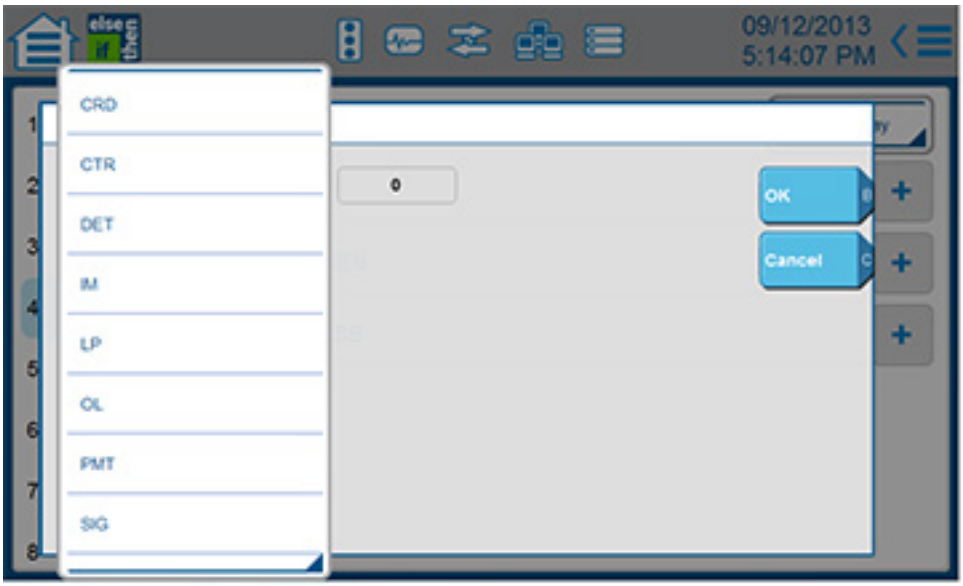
- The first Logic Processor change triggers Transaction mode, for safety reasons. Please use Logic Processor Logic Statement with absolute care.
- The order of the testable elements is important
  - Testable elements are evaluated from top to bottom
- Delay timers can be set as an executable element to temporarily suspend execution of elements that follow.
- There are 64 user settable logic flags
  - Usually set or cleared in an executable element and then tested in another LP element

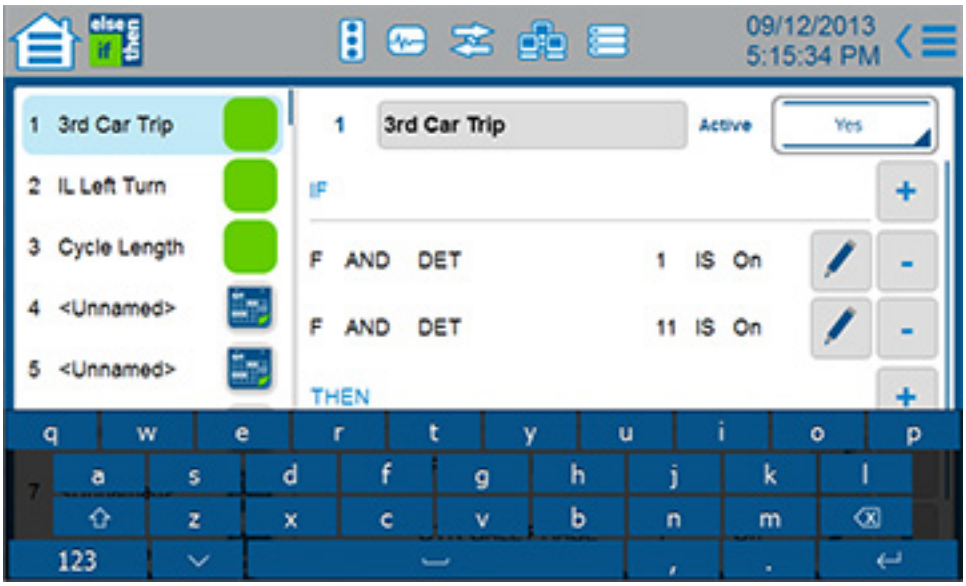

09/12/2013
5:01:31 PM
1 3rd Car Trip
2 IL Left Turn
3 Cycle Length
4 <Unnamed>
5 <Unnamed>
6 <Unnamed>
7 <Unnamed>
8 <Unnamed>
1 3rd Car Trip
Active
Yes
IF
F AND DET 1 IS On
F AND DET 11 IS On
THEN
LP DELAY FOR 3
CTR CALL PHASE 1 On


09/12/2013
5:08:43 PM
Add/Edit IF
AND
OR
NAND
NOR
XOR
COORD
0
IS
Off
OK
Cancel
VEH GREEN ON PH
COORD PATT FLASH
COORD PATT FREE
COORD IN STEP
COORD PLAN


09/12/2013
5:10:29 PM
Add/E
COORD
CTR
DET
LP
PED
PMT
TOD
VEH
AND
OR
NAND
NOR
XOR
0
IS
Off
OK
Cancel


09/12/2013
5:12:38 PM
Add/Edit Then/Else
CRD
0
LP DELAY FOR
CRD ST CYC BIT 1-3
CRD SET OSET B 1-3
CRD SET SPLT B 1-2
CRD SET SYNC
OK
Cancel

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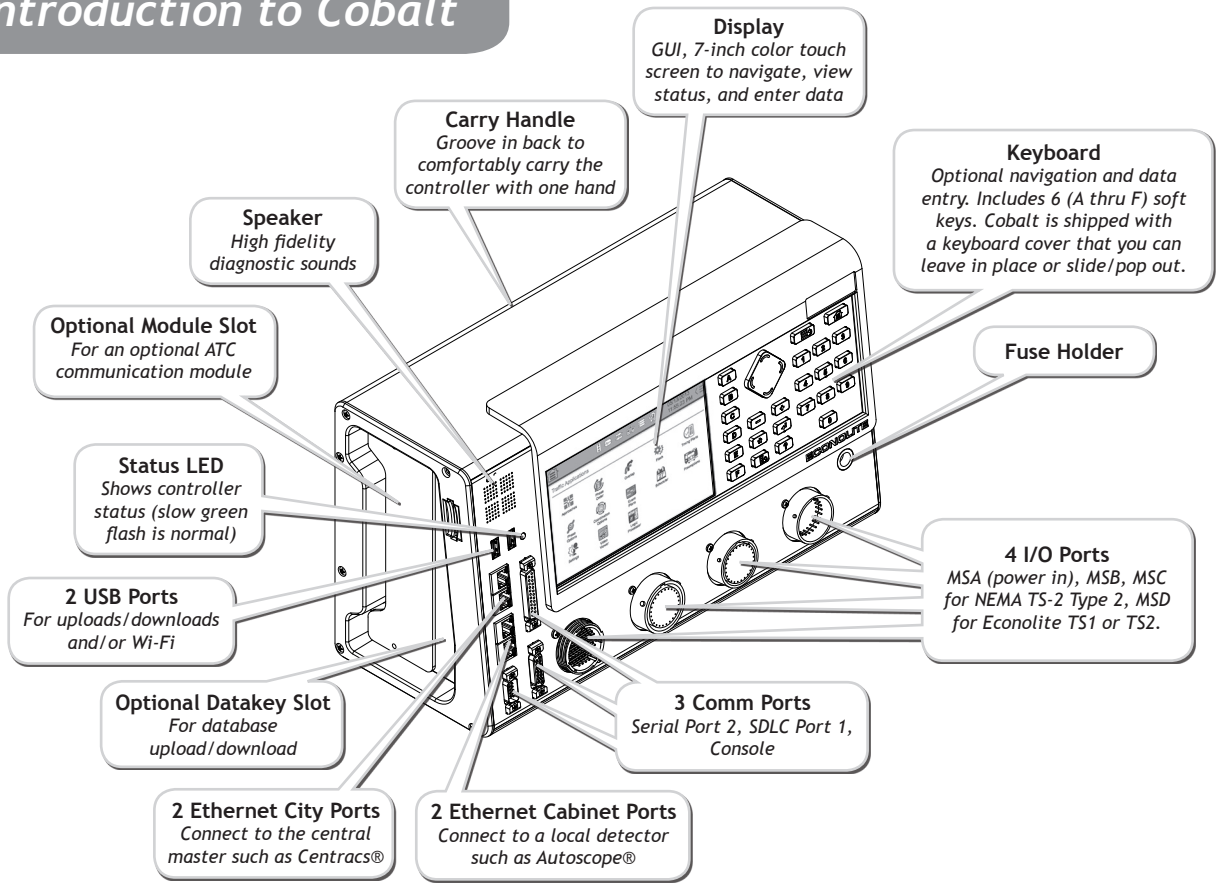
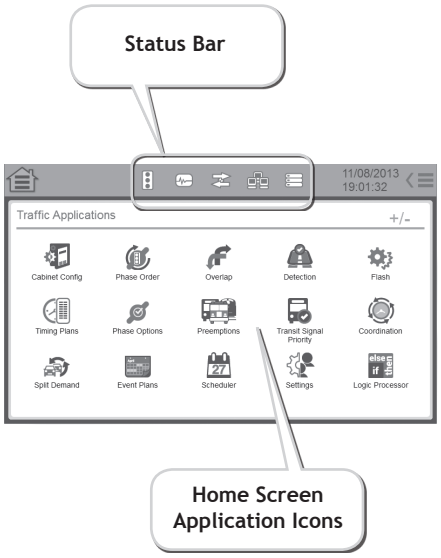
# Introduction to Cobalt




| Status Bar Icons and Options Icon | | |
|---|---|---|
| | **Signal Status** | Ring Diagram that shows the intersection status in real time |
| | **Event Logs** | Historic activity and events of the intersection |
| | **Cabinet Hardware** | Status of all the components connected to Cobalt. The arrows signify the I/O connections between *Cobalt* and other cabinet hardware. |
| | **Network** | *Cobalt* communications connection information, including Ethernet and serial. |
| | **Database** | Gives database information and access to Consistency and Warning Check messages. Operations with the database, e.g. create/restore configuration defaults. |
| | **USB Device plugged in** | Status of the USB Port—and access to USB device *(icon only shown if USB Port is in use)* |
| | **Options** | Additional application functions for the active screen and context-sensitive Help |




# Using the Home Screen

To program Traffic Applications, press the Home icon at any time to access the Application Icons, described below. You always know what screen is open because its icon is next to the Home icon in the upper left corner of the screen.

| | | |
|---|---|---|
| | **Cabinet Config** | Load switch assign for channel mapping, SDLC device cabinet interfaces |
| | **Phase Order** | Set up the phase sequence |
| | **Overlap** | Set vehicle overlaps |
| | **Ped Overlap** | Configure unique signal drivers to replace the selected phase pedestrian outputs |
| | **Detection** | Vehicle and pedestrian detector assignments, logging and diagnostics |
| | **Flash** | Start up flash and automatic flash |
| | **Timing Plans** | Phase timing |
| | **Phase Options** | Phase functions |
| | **Preemptions** | 10 preemption sequences |
| | **Transit Signal Priority** | Optional feature—decreases bus delays and maintains normal coordination |
| | **Coordination** | Coordination patterns |
| | **Split Demand** | Detector occupancy events to trigger special coordination split times |
| | **Event Plans** | Set time-of-day events |
| | **Scheduler** | Define Event Plans that occur in Day Plans, Calendar Plans and Exception Days. |
| | **Settings** | General system information, date & time, user accounts, and applications |
| | **Video Viewer** | View digital video streams, such as those viewable from *Autoscope*® sensors |
| | **Logic Processor** | Program up to 100 logic gates with conditions to control the inputs and outputs |

# Welcome


Thank you for purchasing the Econolite *Cobalt*™ ATC controller. With *Cobalt's* intuitive touch screen and easy-to-use operating system, you will quickly be able to find and start using its many features. This QuickStart Guide is designed to help you become familiar with the basic operation of the *Cobalt* controller.

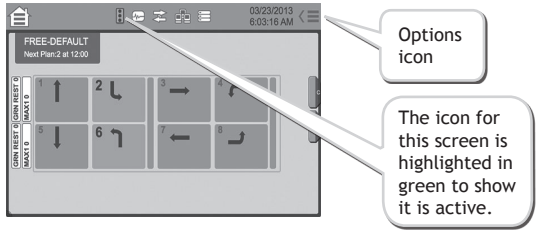
### More Information

For further assistance, please contact your *Cobalt* Representative or Econolite Technical Support at +1.800.225.6480 x8982, +1.714.630.3700 x8982, or support@Econolite.com.

# Initial Start-up

### Signal Status Screen

After connecting power to *Cobalt*, you see the Signal Status screen (below), a Ring Diagram that shows the intersection status in real time. See reverse page for other Status Bar icons.




### Changing Basic Settings

Press the Home icon, then +/- (top right corner) to show or hide the Application icons (*Using the Home Screen* on reverse page). Press the Settings icon to set the Backlight Timeout duration and unit Date & Time, to check the system information, and more.

### Options Icon

Press the Options icon (shown above) to select Guided Setup or Quick Start Help from the Home screen or, from any screen, to go to context-sensitive Help and options.

# Navigation Tips

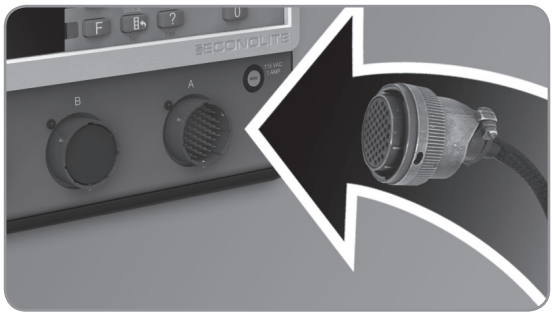
- Navigate the menus using either the touch screen or keyboard to view status and enter configuration data.

Note: The Cobalt touch screen requires actual tactile pressure to operate. As a result, users can navigate the system even while wearing gloves.

- The *Cobalt* Graphical User Interface (GUI) is designed to allow you to navigate as you would with a smartphone or a tablet. For example, you can enter numerical values with a scrubber instead of keying the number manually, or swipe right/left to go from one screen to another.
- The *Cobalt* screen is easy to read, even in bright sunlight. To reactivate the screen, press the screen itself or any key.

Note: To search inside a help screen: select Options > Search, enter the topic, then select the down arrow.

# Power Connection



*Power Connection on Cobalt*

1. For basic operation, first connect power to the circular male 55-pin "A" plug (MSA) on the *Cobalt* front panel (see above). If the power connector in your cabinet is a circular 10-pin MSA female plug, use a 33274G4 MSA adaptor cable to connect to the circular 55-pin MSA plug on *Cobalt*.
2. Connect the other I/O connectors per your application.
3. Apply power.

ECONOLITE
Solutions that Move the World®

Anaheim, CA 92806 USA

**www.econolite.com**

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Printed in the U.S.A.

cobalt
by Econolite

# ATC Controller


## QuickStart