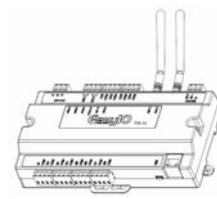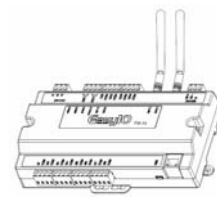# EasyIO FW-14User Reference

Document Change Log

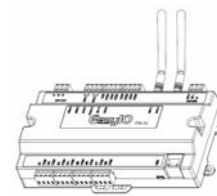**26th Dec 2016**
Document created.

Disclaimer

EasyIO FW-14 is a product by EasyIO Holdings Pte Ltd

The EasyIO FW-14 was built on the Sedona Framework ®.

Sedona Framework is a trademark of Tridium, Inc.

CPT Tool is by Online Tools Inc.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Caution:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

RF Exposure: A distance of 20 cm shall be maintained between the antenna and users, and the transmitter module may not be co-located with any other transmitter or antenna.
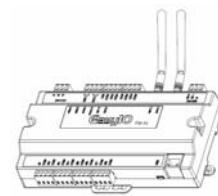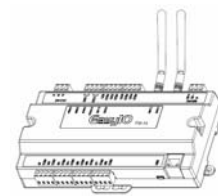
Table of Contents

Introduction

EasyIO FW Series is the most powerful wireless Sedona controller in the market. It is equipped with two 32-bit Processors, the first in the Automation industry, with a580MHz MTK processor and an ARM M0 Cortex for the I/O management and A-D processing, and also with a Linux 3.18 OS for premium performance. Supports BACnet as server and TCom or premium performance with Niagara AX and N4.

- The Build inboot loader can be carried out remotely. No more manual service button needed is used.

- Firmware upgrading can be done remotely and without any assistant.

- Firmware upgrading is via ftp client.

This document describe about basic connection and technical specifications.

It applies forEasyIO FW-14.

Item	FG-32
Digital Output	2 Channels
Universal Output	4 Channels
Universal Input	8 Channels

*Table shown above show the IO configuration*
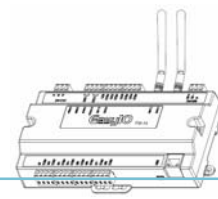
Hardware Configurations

Power supply Connection

Both AC and DC can be used for EasyIO FW-14 Series controller. Refer to electrical specification for the working range. In order to avoid damage on the controller input/output devices and RS485 connection, use individual power supply for each controller. If a single power supply is used to power up multiple EasyIO FW-14, make sure controller power supplies are connected with the same polarity.
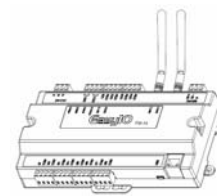
Electrical	
Power Supply	24V AC +/- 5% or 24V DC +20%/-15%
Consumption	500 mA
Operating Temperature	32 to 150 Deg-F (0 to 65 Deg-C)
Storage Temperature	-4 to 150 Deg-F (-20 to 65 Deg-C)
Operating Humidity	10% to 70% relative humidity non-condensing
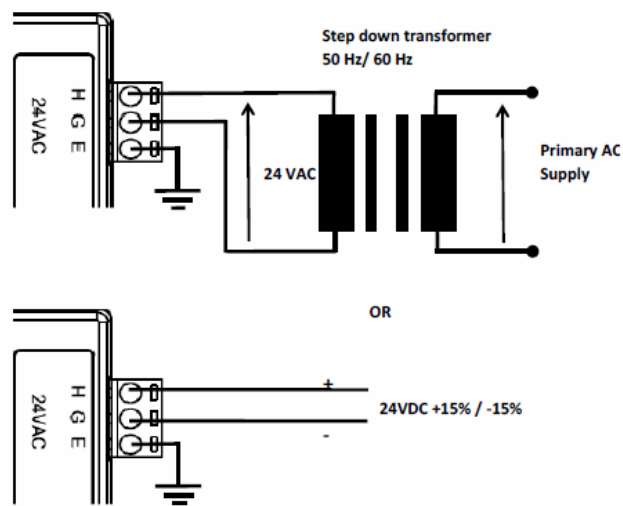
Power Supply Connection
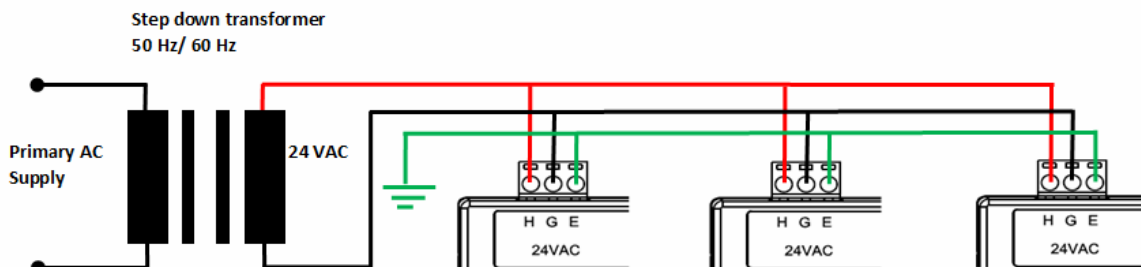
*Multiple controllers share single transformer connection*

RS485 Connection

RS485 connection must be terminated at both ends with termination resistor, typically 120Ohms. It is recommended to use shielded twisted pair wire (STP) for the wiring.

Lightning protection circuit is highly recommended to be installed at one end of the wiring. The controller should be wired in daisy chain network topology as shown as image below. If wire branch can be avoided, keep it as short as possible, and never connect more than one device to the wire branch (it is not recommended).

Be careful if single power supply is used for all connected RS485 device, make sure all devices are having the same ground connection. Make sure you are connecting the same wire for the same terminal position, all "H" terminals connected to the same wire.
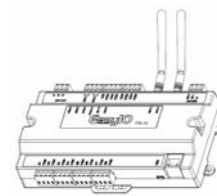
| Physical Interface	Remark
EIA-485	BUS A,B Two Wire, Half Duplex Speed:(9.6K, 19.2k, 38.4K), Data Bit:(8 bits), Parity:(None)
Ethernet 10/100 Mbps	IP, TCP, UDP, ICMP, HTTP,FTP
Application Support	Sedona, BACnet MSTP Server and Tcom
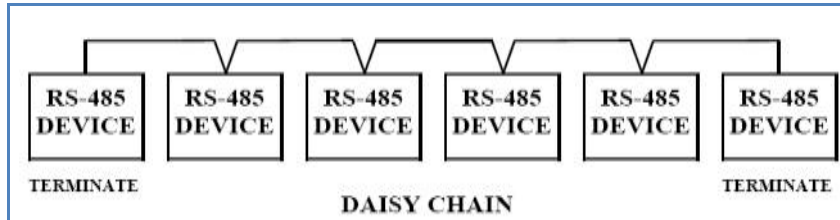
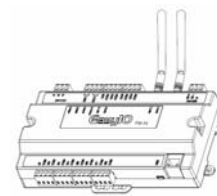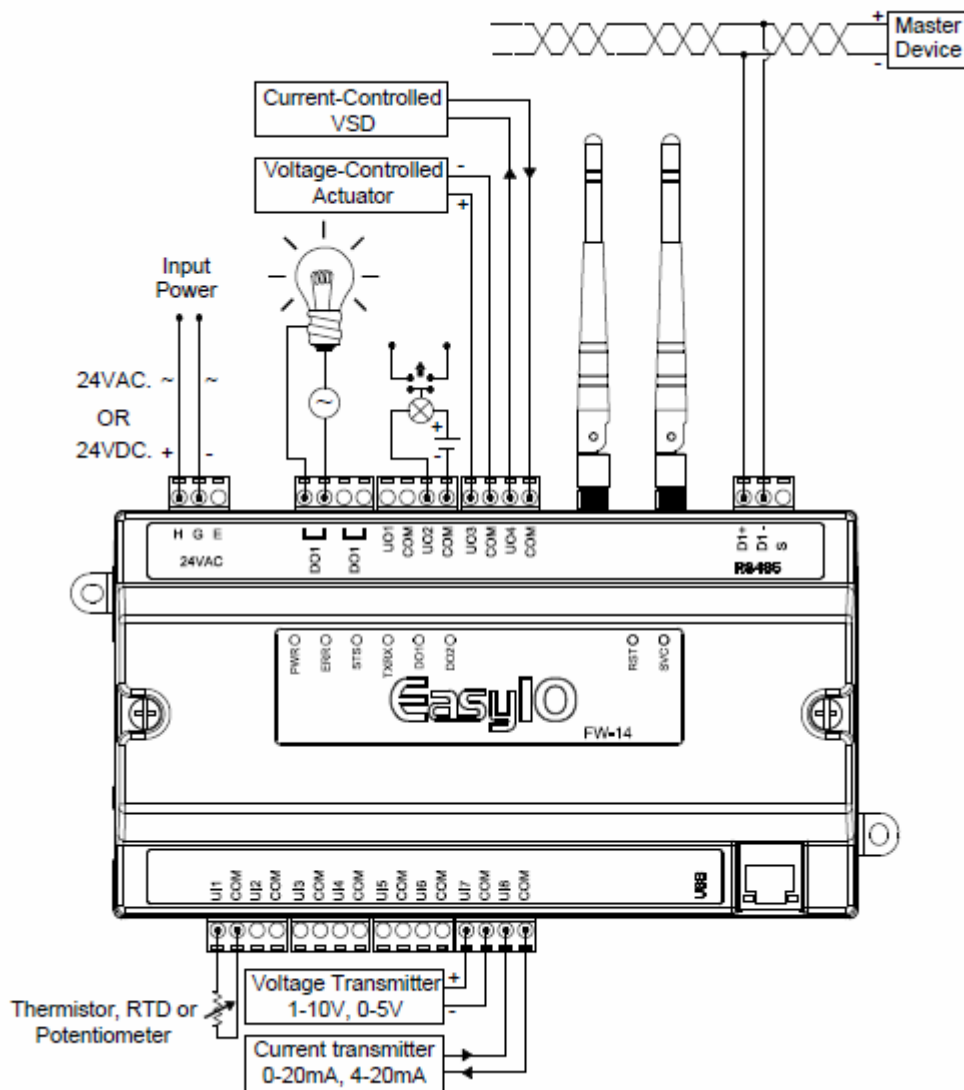*Daisy Chain Network Topology*
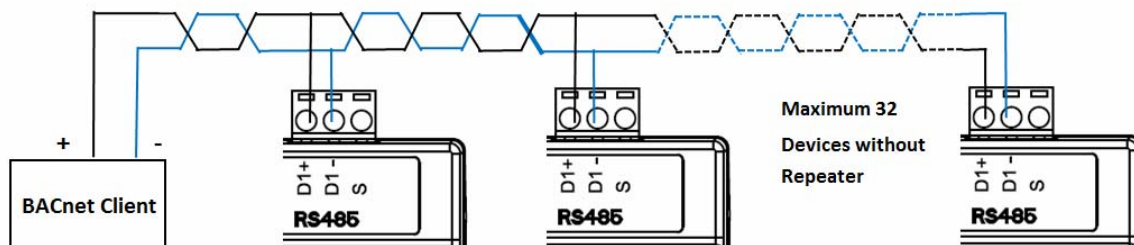
RS485 Connection Diagram
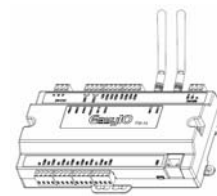
JumpersConfigurations

Below image shows the jumper setting for Universal Input, Universal Output, Watchdog and also EIA 485 120 Ohm terminations.
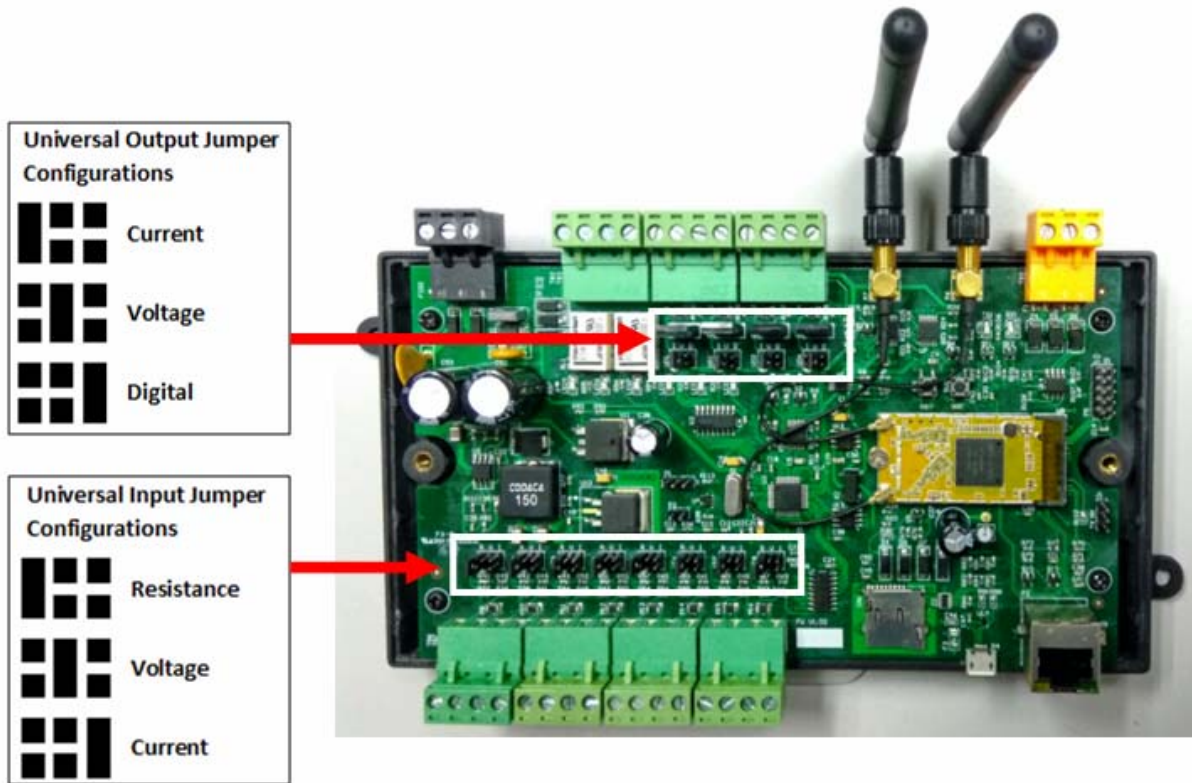
Wiring diagram

Digital Output Wiring Connection

EasyIO FW-14 Series digital output is for general purpose isolated digital output connections (relay output).
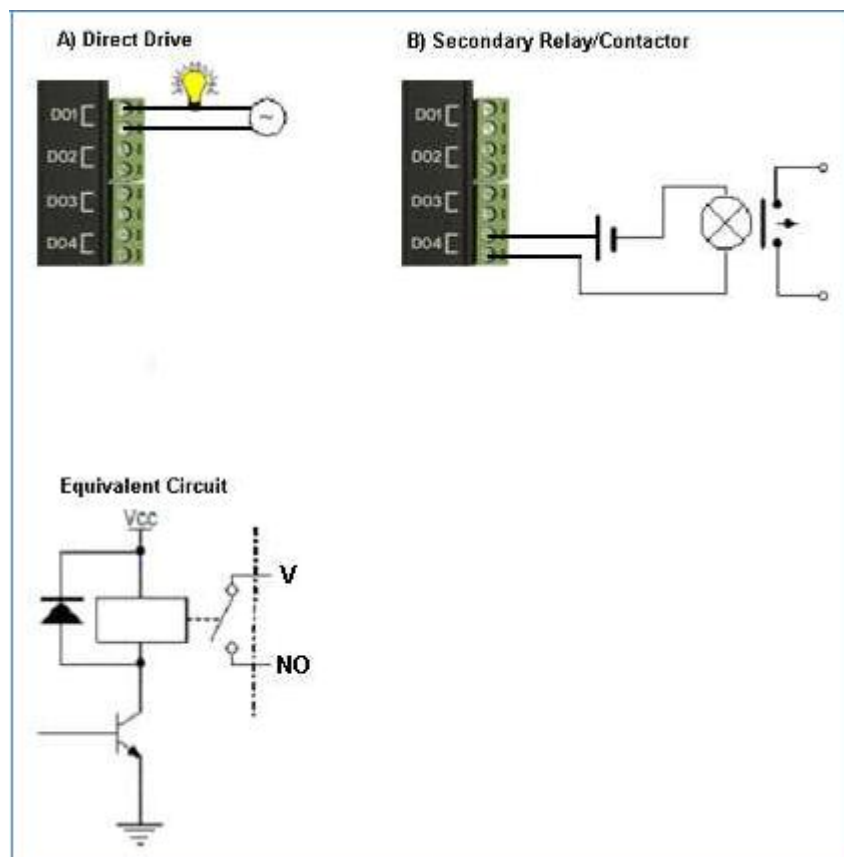
General rating is as below (Direct Drive);
- 100 VAC , 0.5A
- 24 VDC , 2A

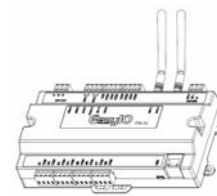Pilot Duty rating is as below (Pilot Duty);
- 24 VAC , 0.5A
- 24 VDC , 0.5A

Digital Output	2 Channels
Type	Relay Contacts, SPST NO, 48VA at 24VAC, Pilot Duty at 500mA max load.

It does not output voltage or current. It is a dry relay contact.
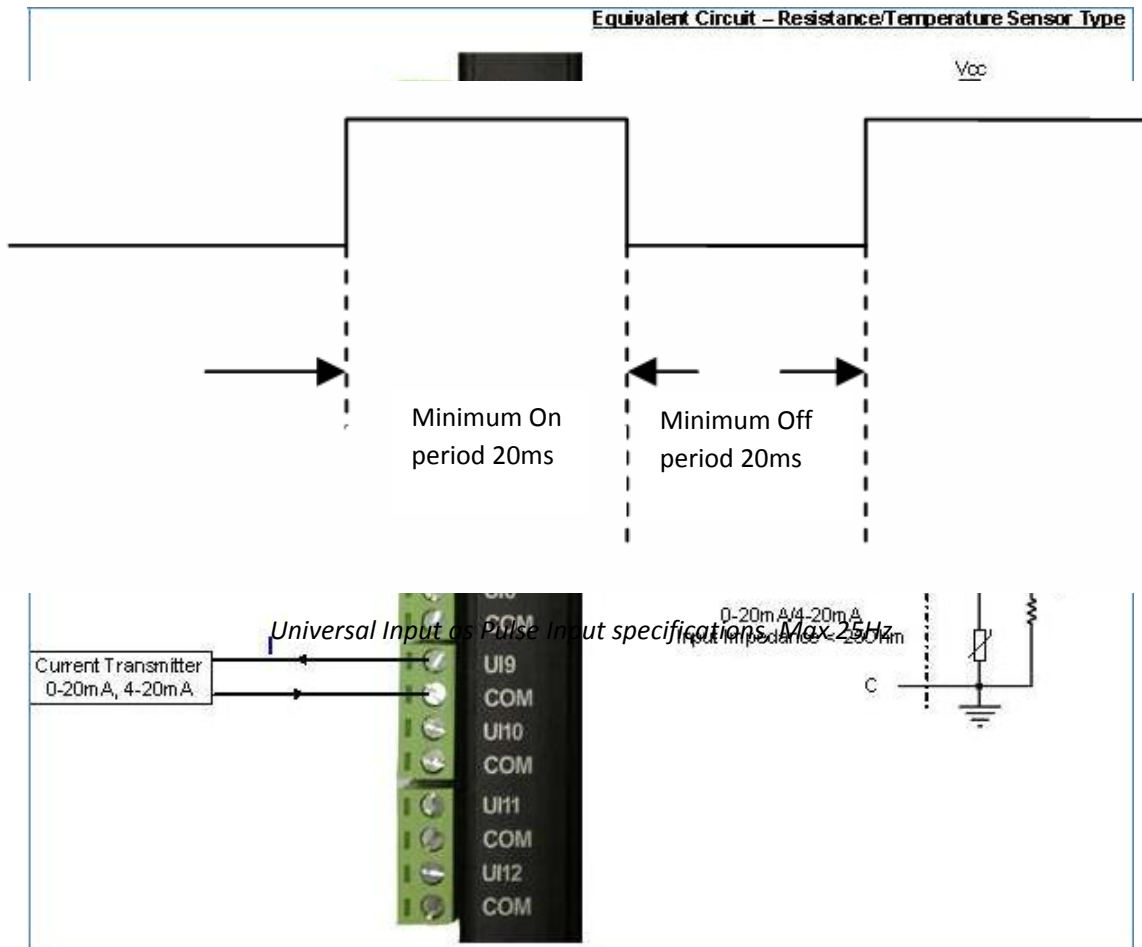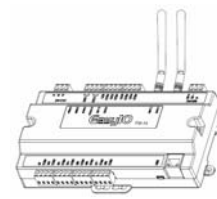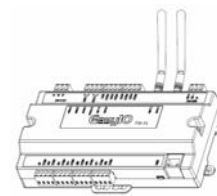

Digital Output Connection

Analogue Input Connection

EasyIO FW-14 series has non-isolated universal inputs. The universal input supports three type of analog signal i.e. resistance, voltage and current transmitter via hardware jumper and internal register settings:

Universal Input	8 Channels
Voltage	0 - 10V DC (+/-0.005V)
Resistance	500 - 500K (+/-10 Ohm)
Thermistor	10K, 10K Shunt, 1K Balco, 1K Platinum : All (+/-0.01 Deg-C)
UI as Digital Input	Voltage Free Contact

a) Resistance – The working range of resistance is 500Ohm – 500KOhms. If the input is configured as Thermistor type. The commonly used Thermistor like 10K, 10K with Shunt, 1K Balco and 1K Platinum are all supported

b) Voltage – Supports 0 – 10V and 0 – 5V (scaling required).
The minimum input impedance of voltage mode input is **1 Mega Ohm.**

c) Pulse Input – All Universal Inputs are capable of receiving high speed pulse. Minimum on time pulse is 20ms and minimum off time is 20ms.
Approximately 25 Hz. Refer to image below.

Equivalent Circuit – Resistance/Temperature Sensor Type

Vcc

Minimum On period 20ms

Minimum Off period 20ms

Universal Input as Pulse Input specifications. Max 25Hz

Current Transmitter
0-20mA, 4-20mA

UI9
COM
UI10
COM
UI11
COM
UI12
COM

0-20mA/4-20mA
Input Impedance < 250 ohm

C

## Analogue Output Connection

EasyIO FW-14 series has Universal Output connections. Each Universal Output can be configured to drive voltage or current output or digital output via hardware jumper and internal register settings.

The working range for voltage is 0 – 10V.

Universal Output	4 Channels
Type	Voltage: 0 – 10VDC , **Min Impedance 1000 Ohm.**
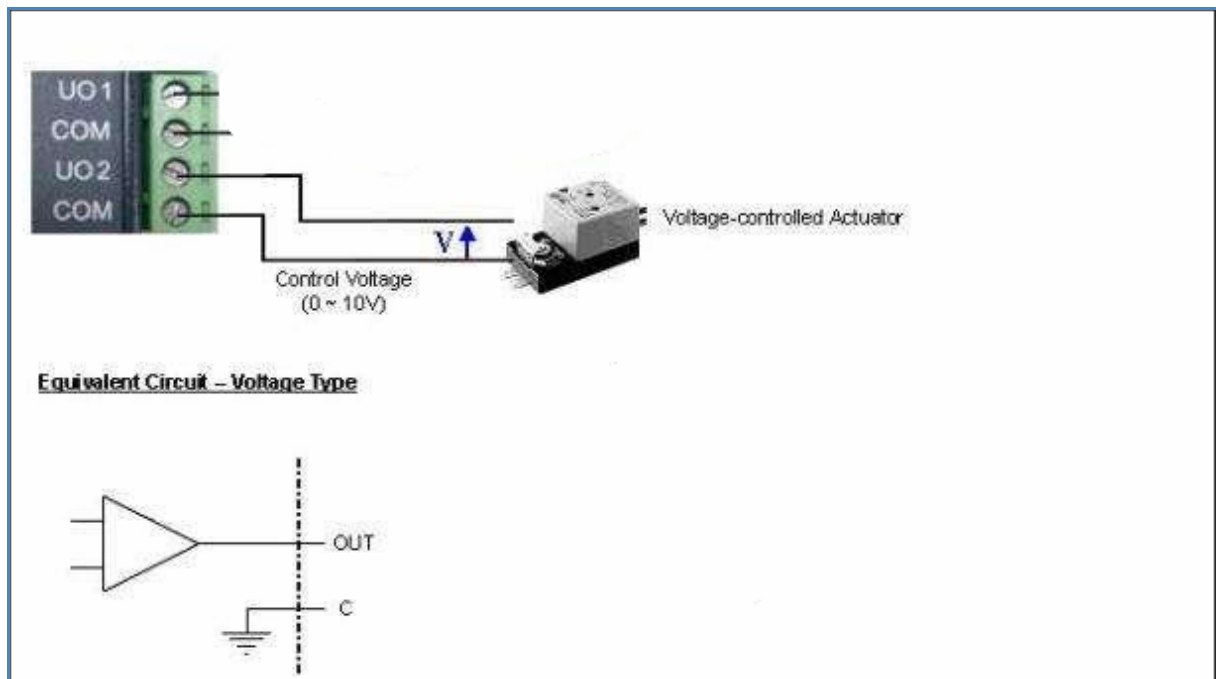
Universal Output Connection for Voltage and Current
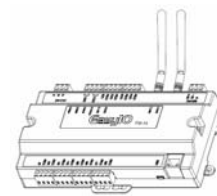
Wireless Network

EasyIO FW-14 comes with on board wireless connection.
It comply to IEEE 802.11 standards.
It supports B/G/N band.

Each unit is supplied with two (2) 2dBi female SMA jack antenna.

Buttons and Indications

The controller will do a hardware reset when the Reset Button is pressed whenever manual restart is required.

The Service button is used to activate the built-in boot loader program for software upgrade.

Each digital output has a correspondence LED to indicate its current state.
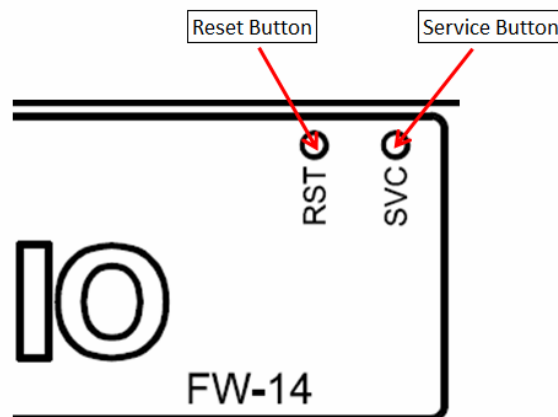
Image shows the Reset button, Service button and also TXRX indicators.
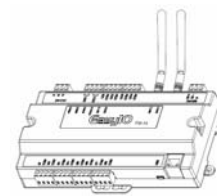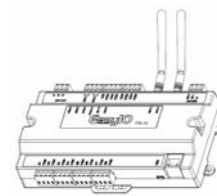*Image shown is an EasyIO FW-14 unit.*

Image shows the Status indicator, Error indicator and individual Digital Output indicator Button and LED indications. Image shown is an EasyIO FW-14.

		LED Conditions	Description
1	🔴	ERR	Pattern: continuously blinking. ERR is to indicate whenever there is Communication errors. Pattern: constantly light up. The controller is undergoing firmware upgrading. This is normal during firmware upgrade process.
2	🟢	STS	STS is used to indicate the heartbeat of the Microcontroller. The STS LED will blink at 1-second interval in normal operation Condition.
3	🟠	TX/RX	TXRX is used to indicate when there are Communication activities in Port 1. (Transmitting or Receiving) on the Communication port.

Login Details

EasyIO FW-14 Series details are as below.

Default IP address   : 192.168.10.14
Default Subnet   : 255.255.255.0
Default Gateway   : 192.168.10.1

Note :
In order to login, the host PC (laptop) has to be in the same subnet. Example:
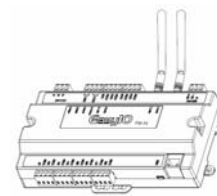*IP address : 192.168.10.123*
Subnet   : 255.255.255.0

Sedona Login via CPT
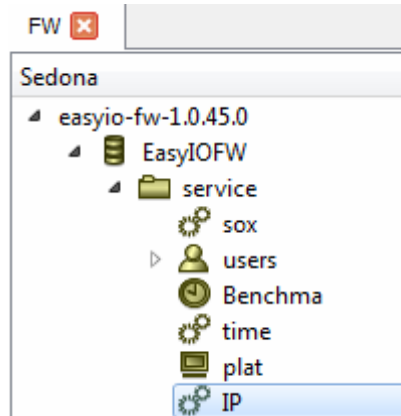Username   : admin
Password   : <no password>

Changing IP address

By default the EasyIO FW-14 series controller IP address is 192.168.10.14.
Changing the IP address can only be done via CPT Tool.

Step 1
Login to the FW-14 via Sedona workbench. Locate the object *"IP"* under the Sedona service folder.


Step 2
Go into the property sheet of the "IP" object.

| easyioFW::IPConfig[IP]	
Name	IP
status	Ok
currentIpAddress	192.168.10.14
currentSubnetMask	255.255.255.0
currentGateway	192.168.10.1
newIpAddress	192.168.8.14
newSubnetMask	255.255.255.0
newGateway	192.168.10.1
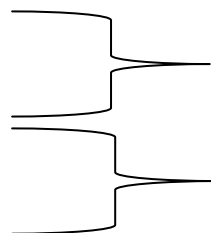
Current IP address that is assign to the controller

New IP address field. Key in the required IP address in these fields. Make sure the IP address and subnet is correct before saving
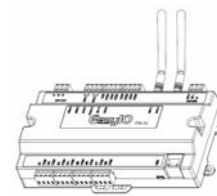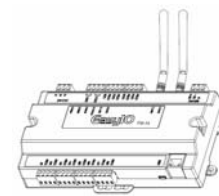
Step 3
Save the Sedona apps and cycle power.
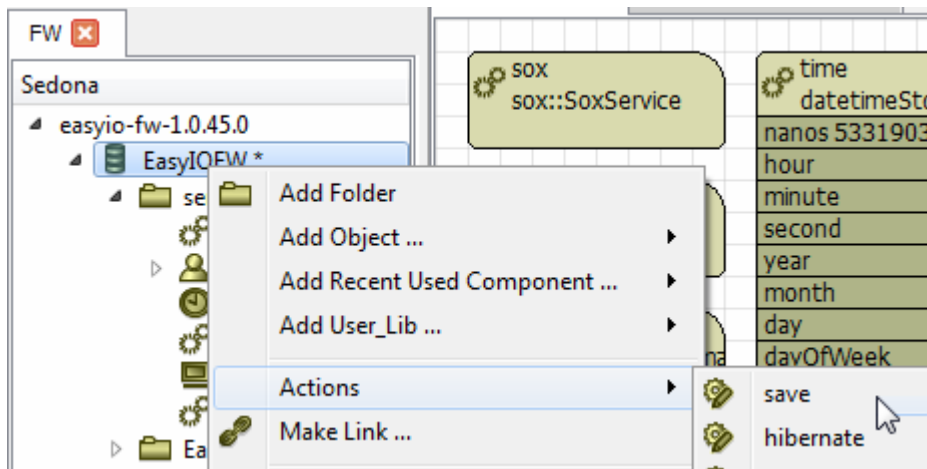
Step 4
Reconnect to the controller via Sedona workbench using the new configured IP address.

Restore factory settings

This function is done with just the by pressing the "Service" button while the controller is booting up.

A restore to factory settings will do the following;

1. Restore the IP address to the default which is **192.168.10.14**
2. Clear the Sedona application in the Sedona VM back to default (default app is an empty app)
3. A default Sedona apps default login is admin,<no password>.

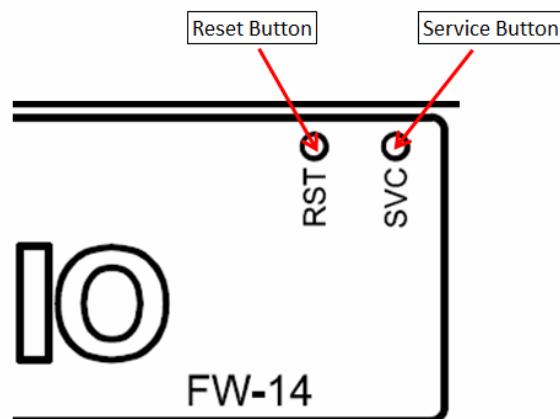Follow the steps below to restore to factory settings.

Step 1
Make sure you backup the Sedona apps if you have connection to the EasyIO FW-14.
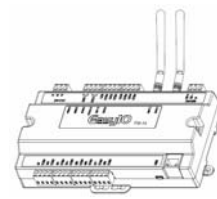
Step 2
Cycle power and within 5 seconds press and HOLD down the service button until the Error LED starts to flash.
This process will take approximately 10 seconds before the error Led start to blink.

Step 3
Once the Red LEDflashes, a momentary press of the service button will restore back the FW-14 controller back to factory default state.

Technical Support

For technical issue, please contact

Email :support@easyio.com