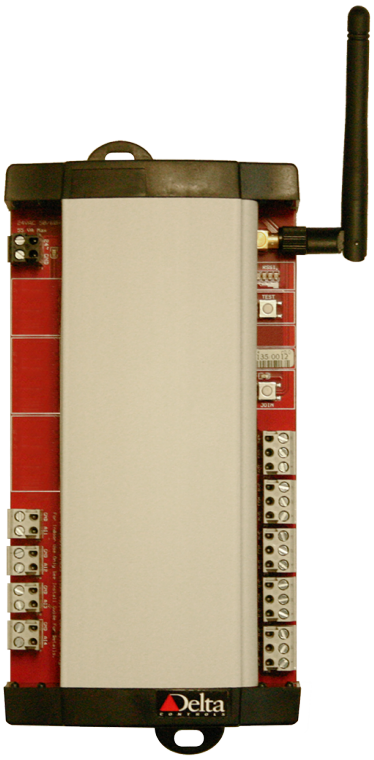
Do it right. Delta™ CONTROLS

eM-410R4 enteliMESH Controller Installation Guide

Product Description



The eM-410R4 provides wireless remote I/O to a Wireless Coordinator. The controller has fixed algorithms that can be loaded in from the enteliTOUCH and configured to meet specific applications. The eM-410R4 also functions as a wireless repeater/router to extend the range of Delta enteliMESH devices.

Specifications

Power	24 VAC
Power Consumption	8 VA, 50 VA maximum with fully loaded BO's
Ambient Ratings	32° to 131°F (0° to 55°C)
	10 to 90% RH (non condensing)
Communication Ports	ISM 2.4 GHz frequency band, wireless digital spread spectrum 802.15.4 compliant
Technology	32-bit ARM processor
Inputs	4 Universal inputs - 10 bit A/D (supporting 0-5v, 0-10v, 10k , 4-20mA)
Outputs	4 Binary Relay Outputs, 0.5 Amp @ 24VAC, jumper selectable for internal or external power, LED

	status indication
	1 Analog Output (0-10 VDC)
Compliance	CE (ETSI)
	IC
	FCC, Class B, Part 15
Listings	UL916

Listings and Compliance Declaration available for download at https://support.deltacontrols.com

Package Contents

- Product: eM-410R4 enteliMESH Controller
- eM-410R4 Installation Guide

Related Documents

- enteliMESH Application Guide
- ORCAview Technical Reference Guide
- enteliTOUCH User Guide

Cautions and Warnings

This controller is an Electro-statically sensitive device. Proper ESD protection (ground strap) should be used when installing this product so that damage to the product does not occur.

Equipment damage or loss of data may occur if these procedures are not followed as specified.

Installations requiring CE conformance: All wiring for CE rated products must use an extra low voltage (SELV) or protective extra low voltage (PELV) transformer. Use safety-isolating transformers, (Class II transformer) per EN61558. The transformer must be rated for 100% duty cycle.

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.

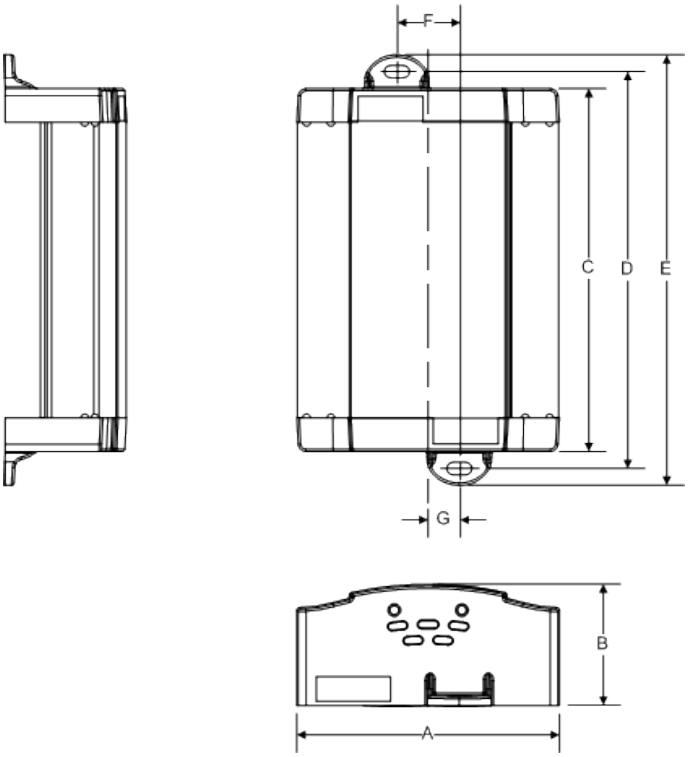
FCC ID: YRR-eM410R4
IC ID: 9100A-eM410R4

Mounting and Dimensions

The includes a plastic enclosure that can be quickly mounted with two screws (not provided). This controller should be mounted in an appropriate location within packaged equipment or another enclosure that meets code requirements.

Dimension	mm ±0.5	inches
PCB width	100	4
PCB length	184	7 1/4

A	101	4
B	46.5	1 7/8
C	191	7 1/2
D	204	8
E	217	8 1/2
F	24	1
G	12	1/2

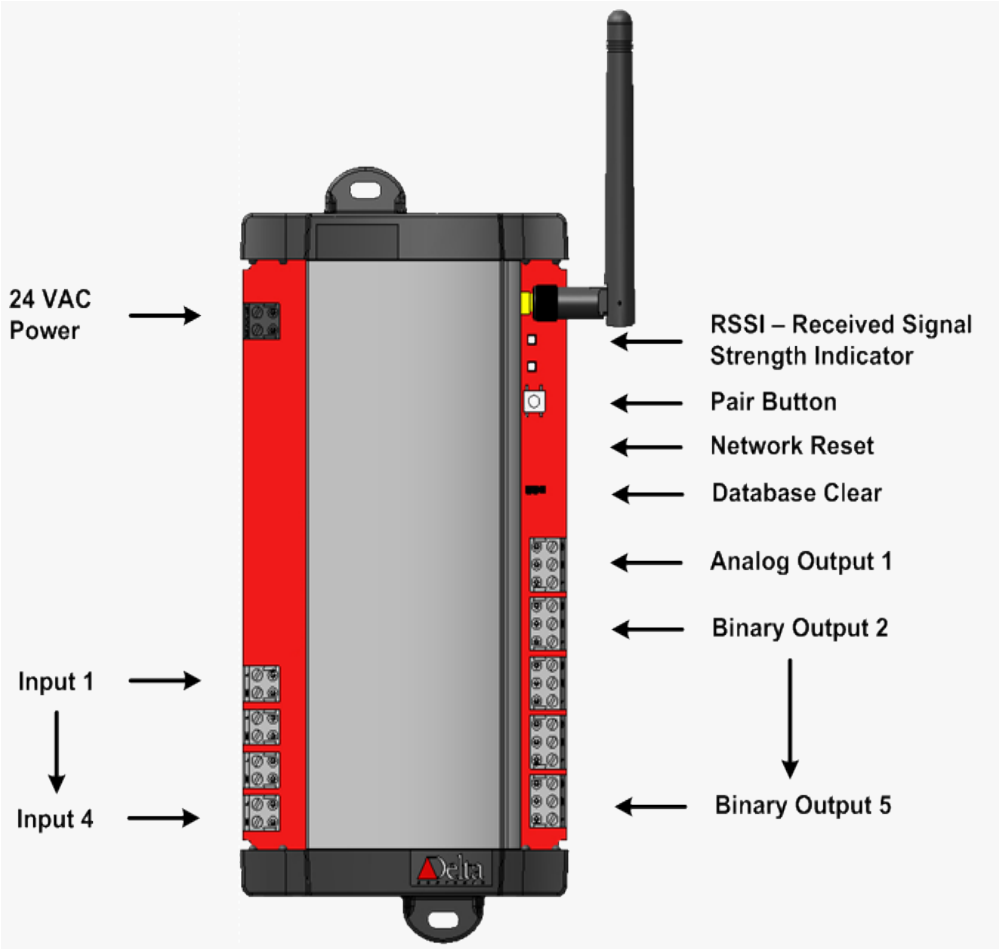


Mounting wireless product inside a metal enclosure may reduce signal strength. An optional remote antenna can be used to extend the antenna and mount it externally on the enclosure.

Board Layout

eM-410R4 Layout Drawing

Feature	eM-410R4
Automatic Channel Selection	✅
Automatic PAN ID Selection	✅
Automatic Device Address Selection	✅
Battery Powered	❌
Hybrid Powered	❌

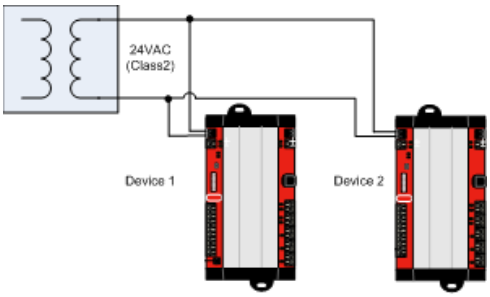


AC Powered	☑
Optional Antenna Mounting	☑
Routing Capable	☑
Inputs	☑
Outputs	☑
subPAN Capable	☑
Fixed Algorithm	☑

Power Wiring

Most Delta Controls devices use a 24Vac Class 2, half wave rectified power supply (excluding DSM-050, ADM-2W704, which are FULL wave rectified). A single transformer may be used to power multiple controllers and/or auxiliary field devices (actuators, etc) provided the following conditions are met:

- All devices MUST be half wave rectified. Mixing power between half wave and full wave rectified devices will damage both the transformer and connected equipment.
- The transformer is properly sized, including line losses for the total VA requirements.
- Polarity is observed between controllers (with respect to 24~ and Gnd).
- The transformer secondary is fused for its maximum rated load (4A max for Class 2 circuits).



General Wiring

All wiring must conform to NEC and local codes and regulations. Use earth ground isolating step-down Class 2 transformers. Do not use autotransformers. Determine supply transformer rating by summing total VA of product and

output loads.

	Risk of Electric Shock or Fire
	* More than one disconnect switch may be required to de-energize the equipment before servicing.
	* Do not interconnect the outputs of different Class 2 circuits.

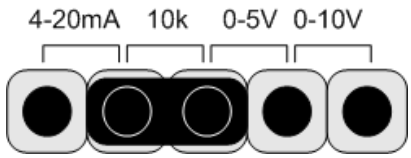
	* All terminals are acceptable for Class 2 Circuit connections only
	* Use copper conductors only
	* Apply minimum 6.0 lb-in torque for tightening field wires into the terminal blocks

Input and Output Configuration

To connect input and output devices to this controller follow standard Delta Control wiring guidelines. Refer to separate documentation for additional details (Delta Wiring Guidelines).

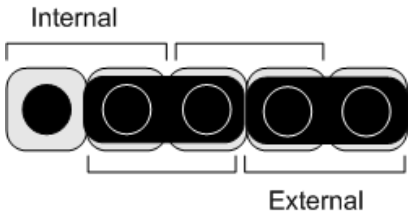
Input Configuration

The input must be configured to accept the signal used by the input device. Place the jumper for each input in the correct location on the Input Type Selector Block. The diagram to the right shows the factory default selection of 10 K .	
4-20mA	= For Sensors that use a 4 to 20 mA signal.
10K	= for 10K Thermistor temperature sensors, as well as Dry Contact binary inputs.
5V	= for sensors that use a 0-5VDC signal
10V	= for sensors that use a 0-10VDC signal



Binary Output Configuration

Binary Output Power Source: The relay outputs can be selected to use either an internal or external power source by placing the two jumpers in the correct locations. The diagram to the right shows the factory default selection of External Power Source.	
Internal	24 VAC Power is provided internally from within the board right to the output terminals. No external transformer is required. Note that the power supply should be sized appropriately to handle the additional loading.
External	Power needs to be provided externally to the board from a nearby transformer appropriately connected to the output wiring. The associated relay outputs are not “hot” contacts, except by means of the external transformer.
Note	The relays on this board are suitable for switching 24 VAC and 24 VDC. They are perfect for “dry contact” applications.



Status Indicators

LED	Function	Description
RSSI (Received Signal Strength Indicator)	LED Status	Displays the received signal strength, communication status and controller troubleshooting.
		No communications - Solid Red
		Moderate communications - Solid Amber
		Good communications - Solid Green
Join Status	Join Status Indicator	Solid green indicates that the controller is connected to the network.
		Solid red on startup indicates that the controller has not been joined to the network.
		Flashing green indicates that the controller has lost the network connection.

Revision History

EM410R4InstallGuide	Rev:19: 2010-10-20T16:53:45

Include Files	Revision data