

For detailed installation, configuration and other information, refer to the hardware manual of the controller you are using. See the **Additional References** section in this document.

1 SPECIFICATIONS

Table 1 – FOX104 / FOX404	
Maximum number of stacks (total number of hubs and bases)	5
Maximum number of cable drops to any specific hub or base	3 (See Section Six for Example Setups)
Maximum length of Fiber Optic cable	10 Meters per Drop
Base ID#	Each Base or Hub must have a unique Base ID #.
Expansion I/O	EIAJ RC-5720 Plastic Fiber, TX+RX 10m per drop max host (OCS or hub) to base
Type of Fiber Optic Cable	EIAJ RC-5720 (RC)
Primary Power	9-30VDC @ 400mA maximum
Power Draw	9-30VDC @ 400mA maximum
Height	4.25" (108 mm)
Width	6.63" (168.3 mm)
Mounting Depth	4.7" (119.4 mm)
Operating Temperature	32 - 122°F (0 - 50°C)
Humidity	5% to 95% non-condensing
UL	Class I, Groups A, B, C, D, Division 2
CE	Yes

2 INSTALLATION

2.1 Mounting Orientation

The base of the FOX104 / FOX404 need to be mounted with the proper orientation. Proper orientation helps to ensure a good connection when SmartStack Modules are installed. Up to four SmartStack Modules can be installed per FOX104 / FOX404. The FOX104 / FOX404 is installed inside a panel box.

Caution: Do not instack more than four SmartStack Modules per OCS/RCS/FOX. Improper operation or damage to the OCS/RCS/FOX and SmartStack Modules could result.

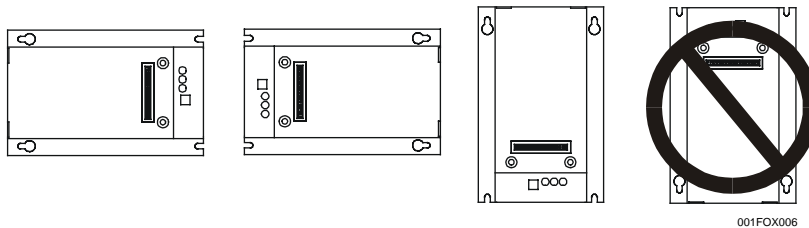


Figure1 – FOX104 / FOX404 Orientation

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2.2 Mounting Instructions (Back Plane / DIN-Rail)

There are two ways to mount the FOX104 / FOX404 in a panel box. It can either be hard-mounted to the back plane *or* mounted on a DIN-Rail strip.

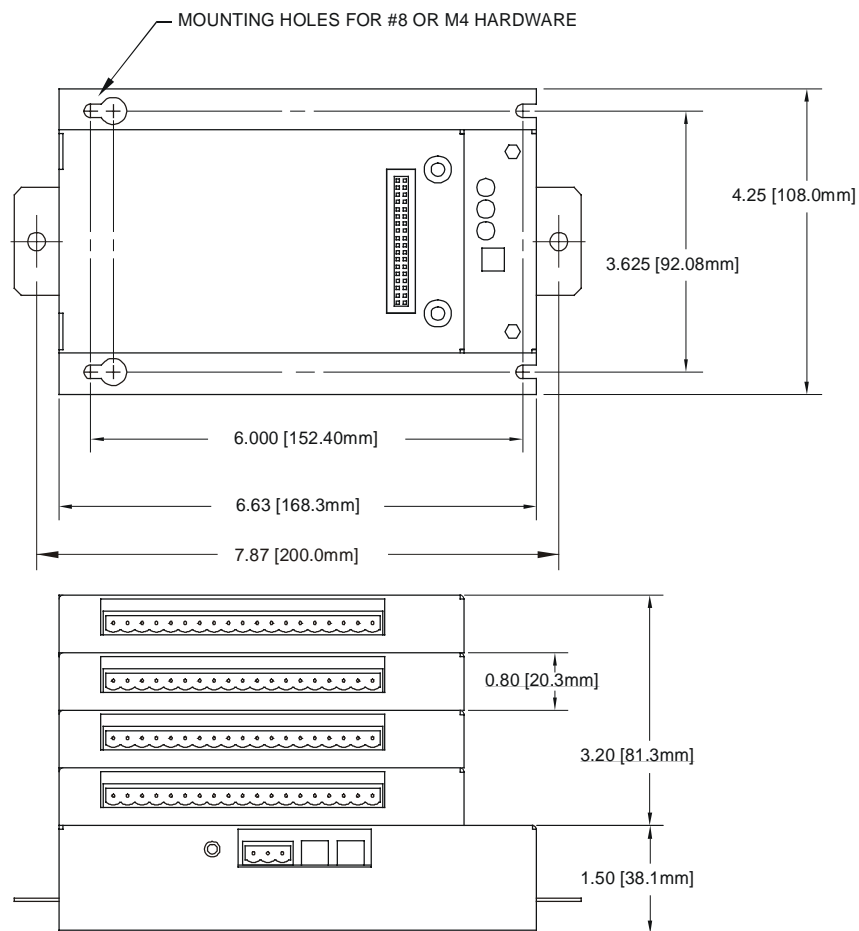
a. Back Plane Mounting

1. Read the Installation Chapter in the hardware manual of the controller you are using prior to mounting the FOX104 / FOX404. Observe requirements for the panel layout design and adequate clearances. A checklist is provided for your convenience in the hardware manual. (See the **Additional References** section in this document.)
2. Drill holes. (Refer to Figure 2.)

Warning: Make sure the power and network connectors are removed from the FOX.

3. Install and tighten washers and nuts. Do not over-tighten.
4. Connect the communications and power cables to the FOX104 / FOX404 ports using the provided connectors.
5. Install up to four SmartStack Modules on the FOX104 / FOX404.

2.3 Dimensions and Hole Pattern



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NOTE: Use #8-32 or M4 mounting hardware consisting of four pan head screws with external tooth lock washers.

Figure 2 – FOX104/404 Hole Pattern (Top) and Viewed with 4 SmartStack I/O Modules (Bottom)

b. DIN-Rail Mounting

1. Read the Installation Chapter in the hardware manual of the controller you are using prior to mounting the FOX104 / FOX404. Observe requirements for the panel layout design and adequate clearances. A checklist is provided for your convenience in the hardware manual. (See the **Additional References** section in this document.)
2. Determine length of DIN-Rail needed. (Refer to Figure 2.)
3. Noting the proper location, attach two (2) DIN-Rail mounting clips (included with FOX unit) to the DIN-Rail by hooking the clips over the top of the Rail and rocking down and snapping over the bottom of the Rail. (Refer to Figure 3.)
4. Adjust clips as necessary by sliding them along the DIN-Rail to align with the holes in the tabs of the FOX unit. Using the provided screws, mount the Fox unit to the clips. Tighten screws as necessary to hold the unit securely. (Refer to Figure 3.)

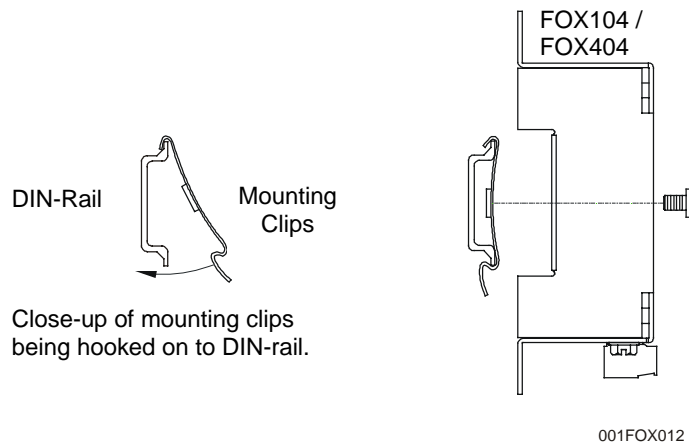


Figure 3 – (Left) DIN-Rail and Mounting Clips, and (Right) FOX104 / FOX404 DIN-Rail Mounting

2.4 *Fiber Optic Cable Installation*

Important considerations for installing the FOX include the following guidelines:

- a. To ensure reliable communication between the FOX base and OCS/RCS module, high quality cables need to be installed. See Table 2 for fiber cable part numbers.
- b. The maximum fiber optic cable distance is 10 meters between drops.
- c. During installment of the fiber optic cable, all direction changes need to adhere to a **Minimum Bend Radius** of one inch (25.44mm).

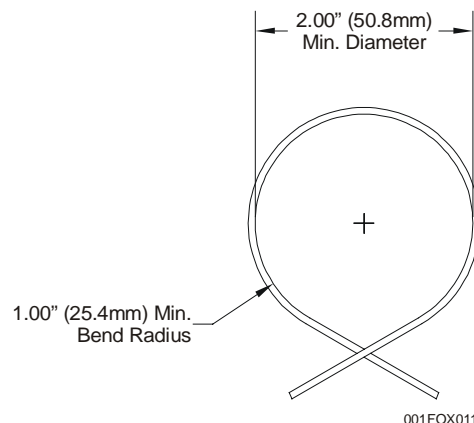


Figure 3 – Fiber Optic Cable Bend Radius

3 Ports, Connectors, and Wiring

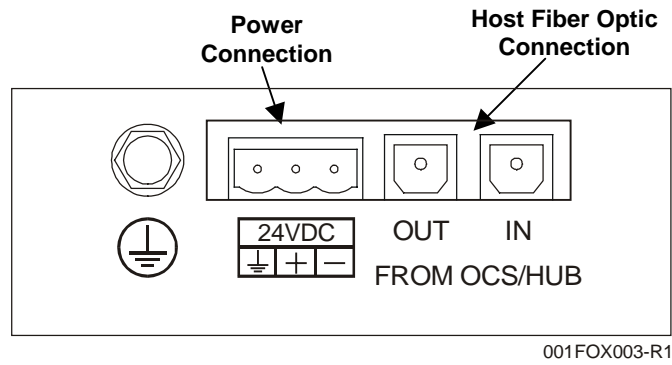


Figure 4 – FOX104 / FOX404 Connectors

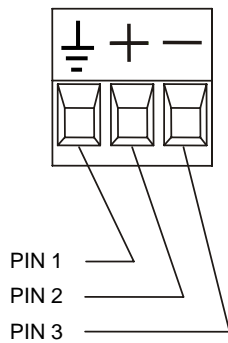


Figure 5 - FOX Power Connector

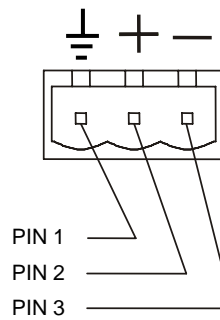


Figure 6 - FOX Power Connector

Note: Power Supply Voltage Range is from 10-30 VDC.

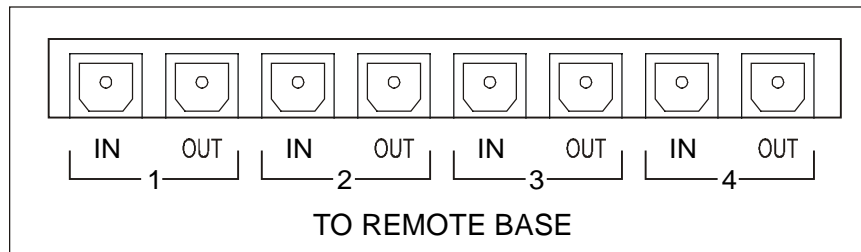


Figure 7 – FOX404

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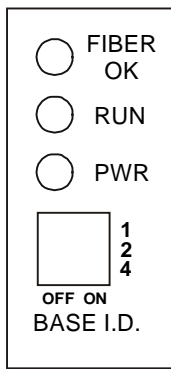
Table 2 – Fiber Optic Cables	
Feet (Meters)	Part Number
3.3 ft. (1 m)	HE800CBF001
6.6 ft. (2 m)	HE800CBF002
16.4 ft. (5 m)	HE800CBF005
32.8 ft. (10 m)	HE800CBF010

4 Base ID Switches

Each FOX104 / FOX404 needs a unique Base ID. (Refer to Figure 7 for location of Base ID Switches.) Set Base ID switches using the following table.

Table 3 - Base ID Switches			
ON = 1 OFF = 0			
Base ID	Switch Number		
	4	2	1
Illegal	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1

5 FOX104 / FOX404 LEDs



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Table 4 – FOX104 / FOX404 LEDs	
FIBER OK	ON indicates FOX's fiber input cable is properly connected and is receiving a carrier.
PWR	ON indicates FOX is receiving power.
RUN	<ul style="list-style-type: none"> • OFF indicates OCS is in IDLE/STOP mode or no power to the FOX or one of the fiber cables are detached or there is a configuration mismatch. • Flashing indicates DO / IO mode or RUN with no ladder program. • ON indicates ladder code running.

Figure 8– FOX104 / FOX404 LEDs

6 Example Setups

Note: The following examples depict the FOX100, but they also apply to the FOX110.

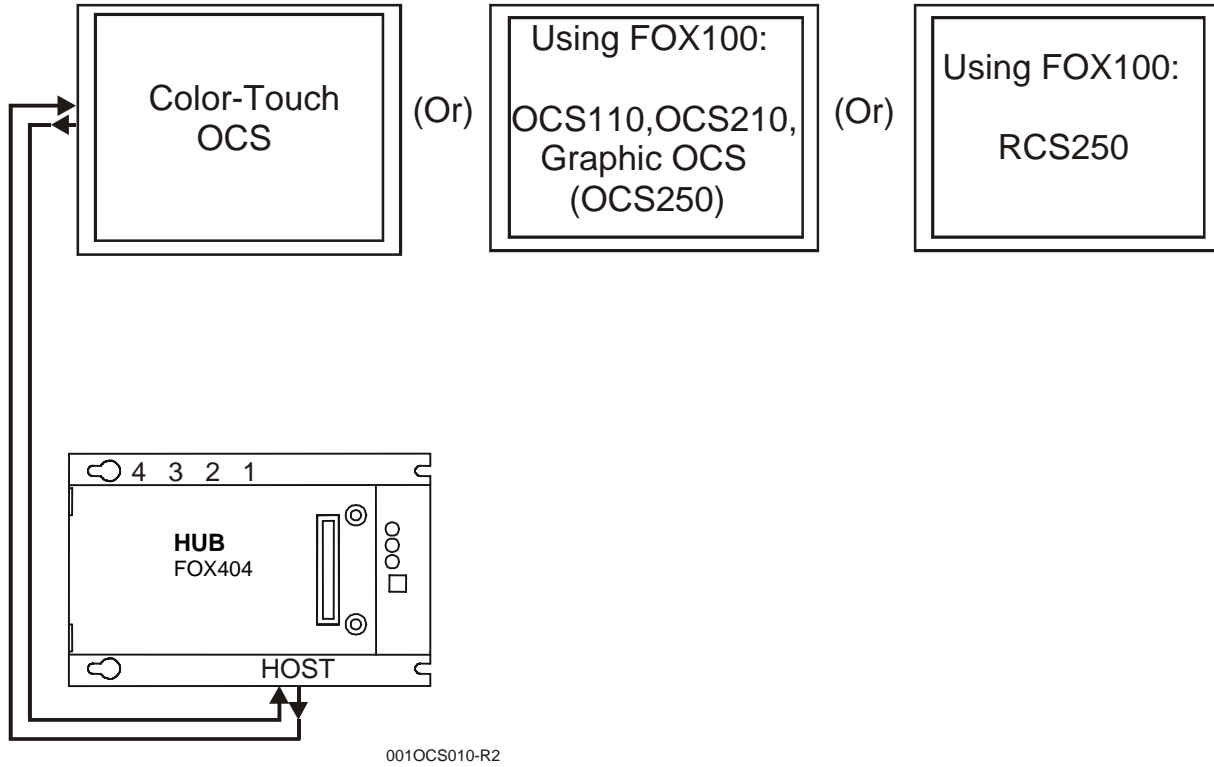


Figure 9 – OCS/RCS to FOX404 (Single Hub) via FOX100

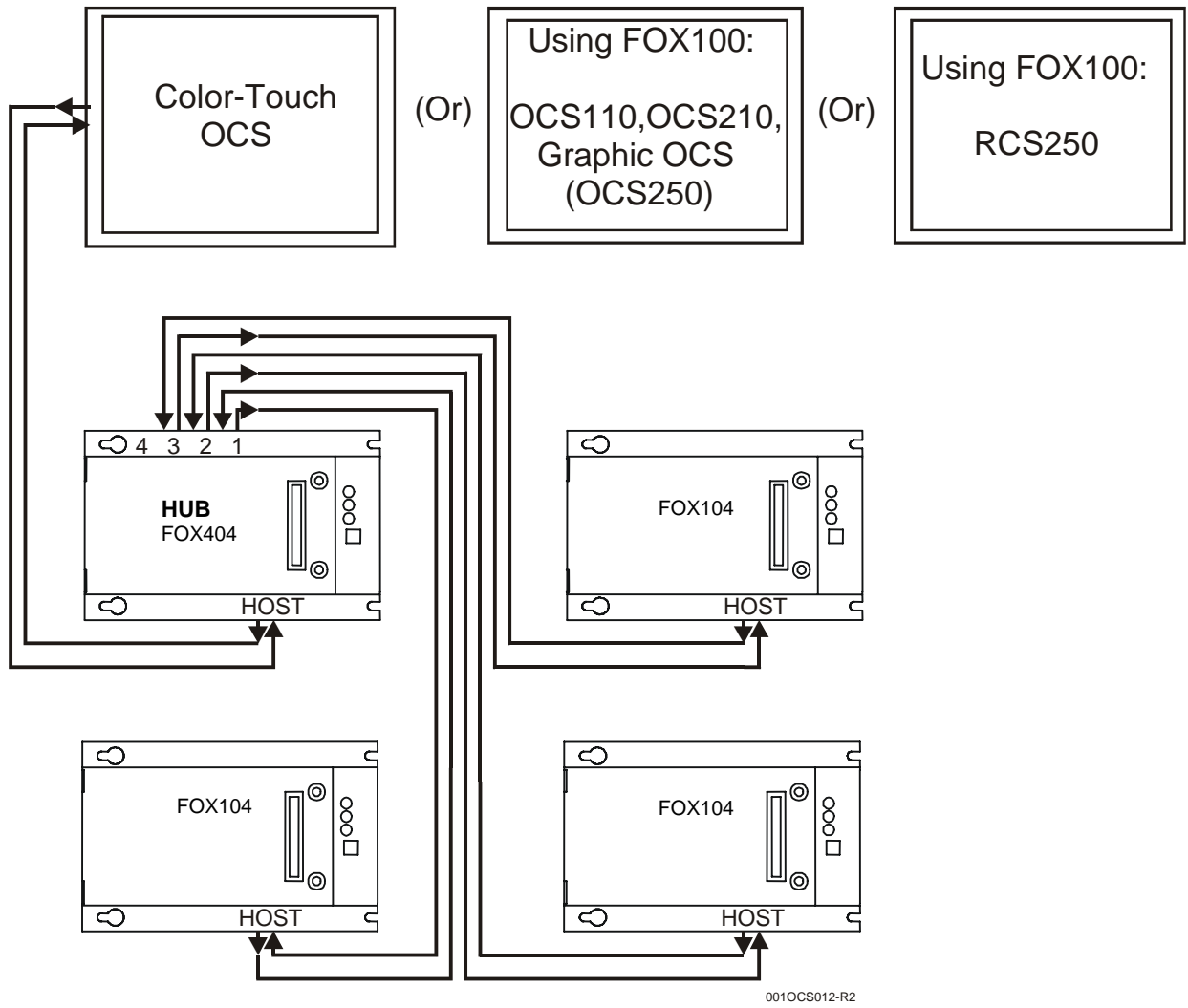


Figure 10– OCS/RCS to FOX (One Hub [FOX404] and Multiple Bases [FOX104]) via FOX100

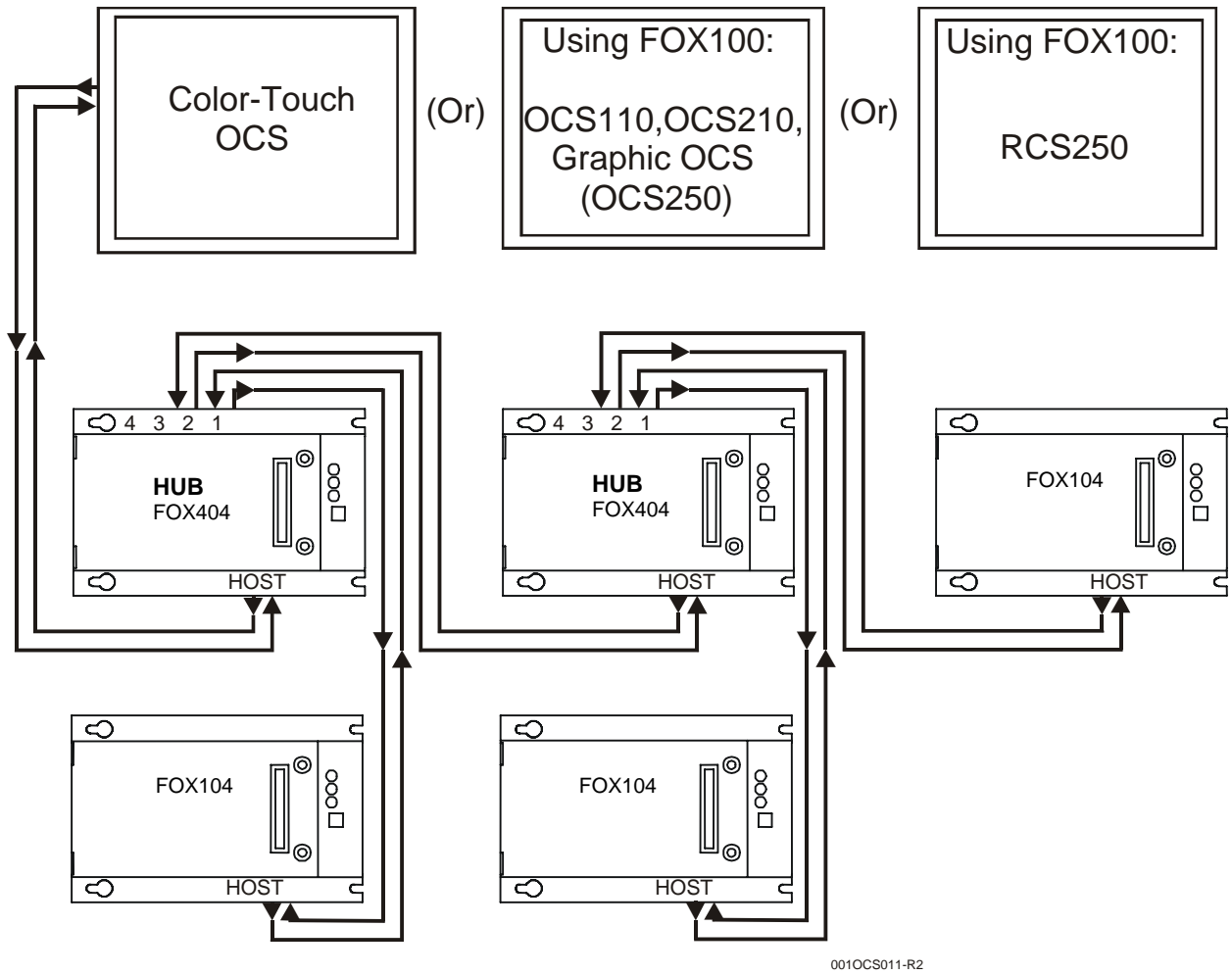


Figure 11 – OCS/RCS to FOX (Multiple Hubs [FOX404] and Bases [FOX104]) via FOX100

7 SAFETY

When found on the product, the following symbols specify:



Warning: Consult user documentation.



Warning: Electrical Shock Hazard.

WARNING: To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

WARNING: To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.

WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

WARNING: In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

WARNING: Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

For detailed installation and a handy checklist that covers panel box layout requirements and minimum clearances, refer to the hardware manual of the controller you are using. (See the **Additional References** section in this document.)

- All applicable codes and standards need to be followed in the installation of this product.
- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.

Adhere to the following safety precautions whenever any type of connection is made to the module.

- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

8 ADDITIONAL REFERENCES

The following table indicates the hardware manual numbers for the controller you are using. Hardware manuals contain detailed installation, configuration and other pertinent information. See the **Technical Support** section in this document for the web site address to download references and obtain revised editions.

Additional References	
Controller	Manual Number
OCS NX Series Hardware e.g. HE-NX220, HE-NX221, HE-NX250, HE-NX251	MAN0781
Operator Control Station Hardware (OCS, OCX) e.g., OCS1XX / 2XX; Graphic OCS250	MAN0227
Remote Control Station Hardware (RCS [except RCS116], RCX) e.g., RCS210, RCS250	
Color Touch OCS Hardware e.g., OCS300, OCS301, OCS350, OCS351 e.g., OCS451, OCS551, OCS651	MAN0465
OCS LX Series Hardware e.g., LX280 / LX300; RCS116	MAN0755
MiniOCS / MiniRCS / MiniOCX / MiniRCX Hardware e.g., HE500OCSxxx	MAN0305
Other Useful References	
Cscape Programming and Reference	MAN0313
DeviceNet™ Implementation	SUP0326
Wiring Accessories and Spare Parts Manual	MAN0347

9 TECHNICAL SUPPORT

For assistance and manual updates, contact Technical Support at the following locations:

North America:

(317) 916-4274

www.heapg.com

email: techspt@heapg.com

Europe:

(+) 353-21-4321-266

www.horner-apg.com

email: techsupport@hornerirl.ie