1   PRODUCT DESCRIPTION

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.

The **FOX100** allows an OCS/RCS to connect up to five Fiber Optic Expansion bases and hubs (i.e., FOX104 and FOX404).

> **Note:** The FOX100 is designed for use only with the following OCS/ RCS controllers: OCS110 / OCS210 / Graphic OCS250, and RCS250.

2   FOX SPECIFICATIONS

Table 1 – FOX100 Hub and Base Specifications	
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 Five 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

3   INSTALLATION

Refer to the hardware manual of the controller you are using for more information. (See the *Additional References* section in this document.)

3.1   Connectors

The FOX100 must be placed in the first slot of the controller. For **Ethernet** capability, the SmartStack Ethernet Module (ETN1xx) is plugged into the FOX100. (In this case, the ETN needs to occupy the second slot of the controller.)

>   **Note:** The FOX100 has a 10-pin connector, which is reserved for factory use only.

IN ⬚ ⬚ **OUT**   FIBER I/O
TO REMOTE BASE

Figure 1 – FOX100 Connectors   001FOX007

FIBER OPTIC MODULE   **IN** ⬚ ⬚ **OUT**   FIBER I/O
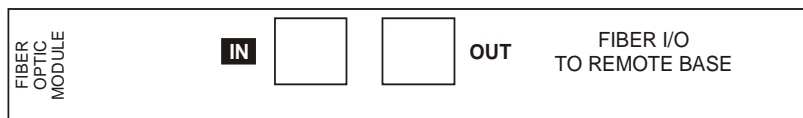TO REMOTE BASE

Figure 2 – FOX100 Connectors   001FOX010

3.2   Fiber Optic Cable Installation

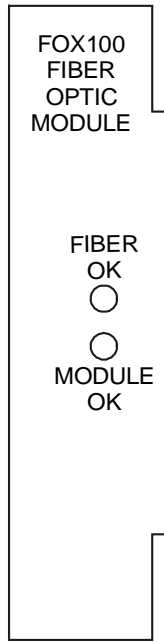Important considerations for installing the FOX include the following guidelines:

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).

2.00" (50.8mm)
Min. Diameter

1.00" (25.4mm) Min.
Bend Radius
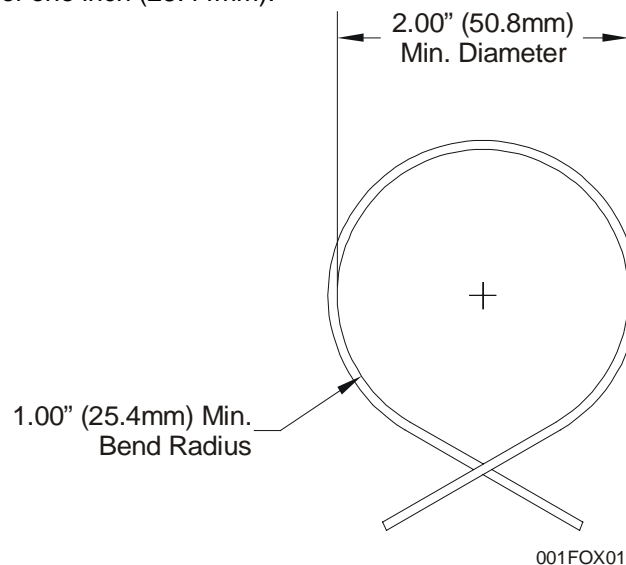
001FOX011

Figure 3 – Fiber Optic Cable Bend Radius

4   LEDs

```
FOX100
FIBER
OPTIC
MODULE



FIBER
OK
○

○
MODULE
OK
```

001FOX009

Figure 4 – FOX 100 LEDs

Table 2 – LEDs (FOX100)	
LED	**Meaning**
Module OK	ON if firmware is loaded and operating properly.
Fiber OK	ON indicates a Fiber carrier is being received from first base/hub.

5   Example Setups

The following graphics depict the use of a FOX100 in a variety of setups.

The FOX100 allows an OCS/RCS to connect up to five Fiber Optic Expansion bases and hubs (i.e., FOX104 and FOX404). When the FOX100 / 110 is used with a FOX104 or FOX404, they extend a high-speed OCS/RCS backplane enabling SmartStack I/O Modules to be mounted several meters from the OCS/RCS. They also significantly increase the number of SmartStack I/O modules supported by one OCS/RCS.
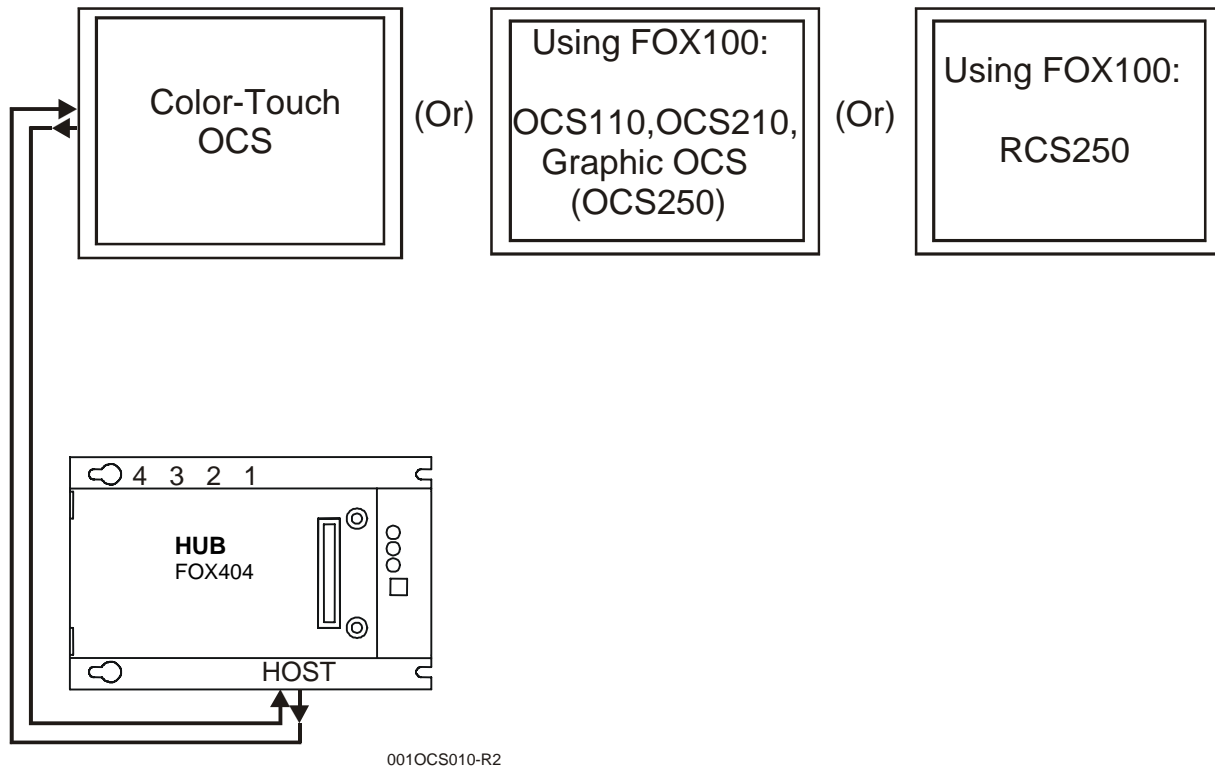

001OCS010-R2

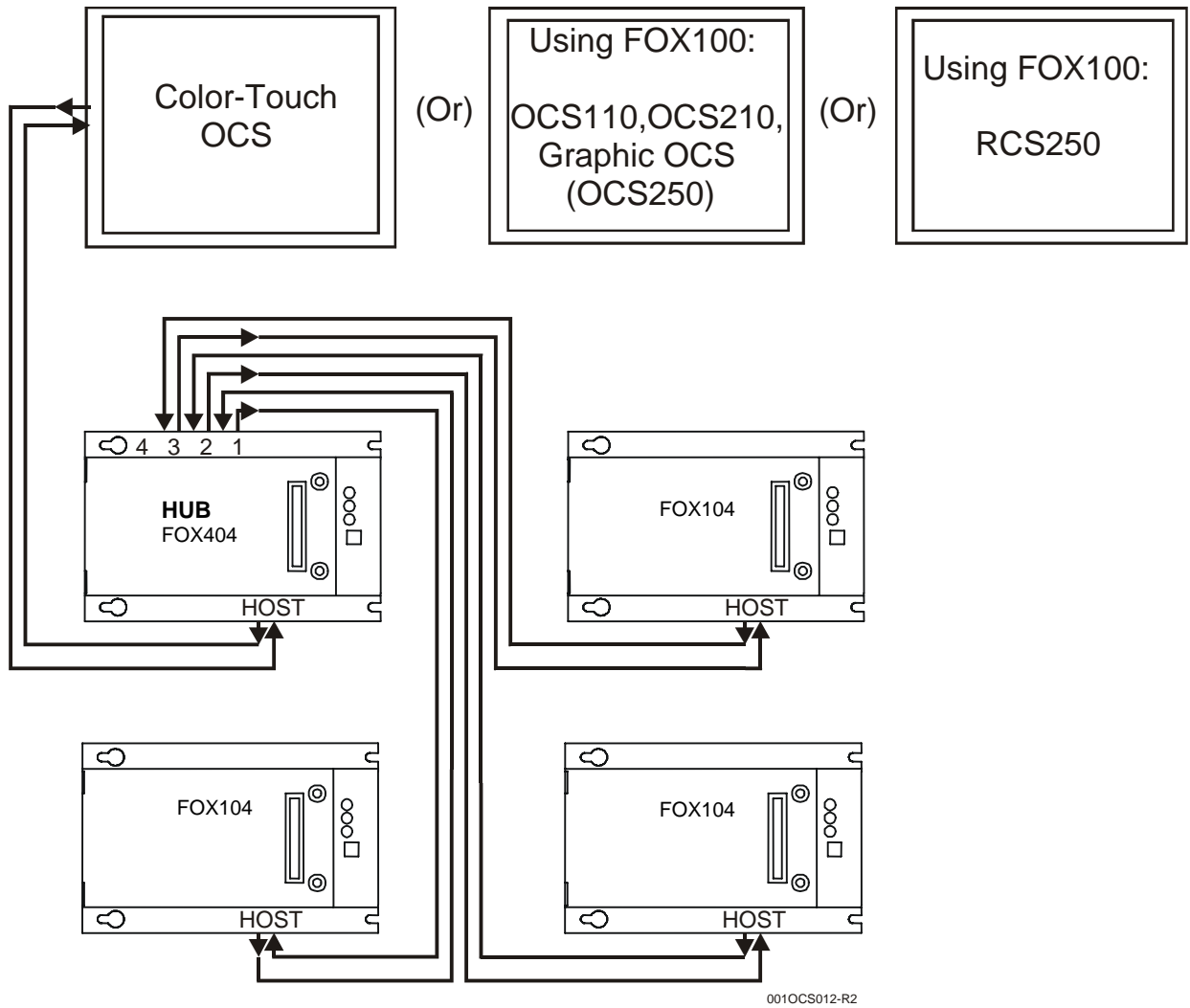**Figure 5 – OCS/RCS to FOX404 (Single Hub) via FOX100 / FOX110**
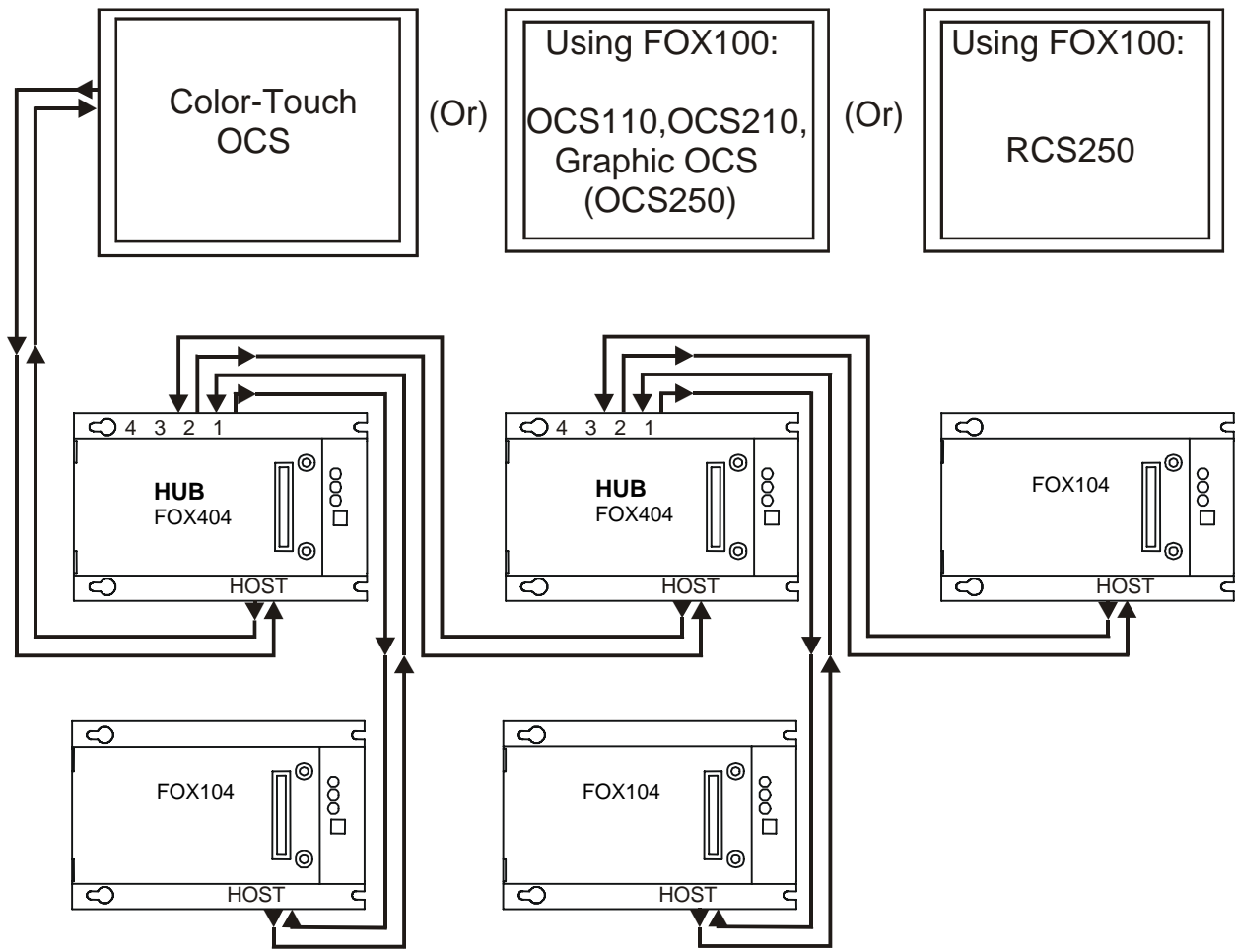
**Figure 6 – OCS/RCS to FOX (One Hub [FOX404] and Multiple Bases [FOX104])
via FOX100**

001OCS011-R2

**Figure 7 – OCS/RCS to FOX (Multiple Hubs [FOX404] and Bases [FOX104])
via FOX100**

6   SAFETY

All applicable codes and standards need to be followed in the installation of this product.

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 <u>not</u> replace the fuse again as a repeated failure indicates a defective condition that will <u>not</u> 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 <u>handy checklist</u> 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 <u>not</u> 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.

7   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

8   TECHNICAL SUPPORT

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

North America:
(317) 916-4274
www.heapg.com
email: techsppt@heapg.com

Europe:
(+) 353-21-4321-266
www.horner-apg.com
email: techsupport@hornerirl.ie