



## Color-Touch OCS

### Products Specifications and Installation Data

For complete information on Color OCS, refer to the *Color-Touch OCS Hardware Manual* (MAN0465).

## 1 SPECIFICATIONS / PRODUCT DESCRIPTIONS

**Table 1 - Color Touch OCS Specifications**

| Color Touch Models                       | OCS3xx (6-inch)  | OCS451 (8-inch)   | OCS551 (10-inch)  | OCS651 (12-inch)  |
|--|--|---|---|---|
| <b>Display Type (LCD with backlight)</b> | 320 x 240<br>(TFT and STN models available.)   | 800 x 600<br>TFT  | 800 x 600<br>TFT  | 800 x 600<br>TFT  |
| <b>Display Size</b>                      | 5.7"   | 8.4"  | 10.4"   | 12.1"   |
| <b>Display Screen Dimensions</b>         | 4.6"W x 3.5"H<br>(117 x 88mm)  | 6.7"W x 5"H<br>(170 x 128mm)  | 8.3"W x 6.2"H<br>(211 x 159mm)  | 9.7"W x 7.3"H<br>(246 x 185mm)  |
| <b>Display Memory</b>                    | 2 MBytes   | 8 MBytes  |   |   |
| <b>User Keys</b>                         | 5 configurable keys +<br>System Key  | 7 configurable keys + System Key  |   |   |
| <b>Screens Supported</b>                 | 1,023 screens<br>(50 data fields per<br>screen)  | 1,023 screens<br>(300 objects per screen)   |   |   |
| <b>Number of Colors</b>                  | 16   | 32,768  |   |   |
| <b>Primary Power</b>                     | <b>Steady State Current:</b><br>24VDC(+/-10%).<br>450mA @ 24VDC<br><b>Inrush Current:</b><br>(17A @ 24VDC) for<br>1ms.   | <b>Steady State Current:</b><br>24VDC(+/-10%).<br>1.0A @ 24VDC<br><b>Inrush Current:</b><br>(17A @ 24VDC) for<br>400µsec. | <b>Steady State Current:</b><br>24VDC(+/-10%).<br>1.6A @ 24VDC<br><b>Inrush Current:</b><br>(17A @ 24VDC) for<br>400µsec. | <b>Steady State Current:</b><br>24VDC(+/-10%).<br>1.6A @ 24VDC<br><b>Inrush Current:</b><br>(17A @ 24VDC) for<br>400µsec. |
| <b>Height</b>                            | 5.46" (138.6mm)  | 7.0" (178mm)  | 9.09" (231.0mm)   | 10.22" (259.6mm)  |
| <b>Width</b>                             | 7.12" (180.85mm)   | 9.17" (233mm)   | 11.96" (303.8mm)  | 12.85" (326.4mm)  |
| <b>Mounting Depth</b>                    | 3.00" (76.2 mm)  | 3.7" (94mm)   | 3.7" (94mm)   | 3.7" (94mm)   |
| <b>Keypad Material</b>                   | Faceplate made of Lexan® HP92 by GE Plastics.<br>The material is resistant to most corrosive substances found in industrial environments. The material also holds up well in most industrial conditions. |   |   |   |
| <b>Protocols supported</b>               | CsCAN, Modbus Master, Modbus Slave, and ASCII Read and Write   |   |   |   |
| <b>Serial Ports:</b>                     | CsCAN (up to 253 drops) or DeviceNet Slave (Explicit Messaging, Polled Connection, Polled Snooping)  |   |   |   |
| <b>CAN Ports:</b>                        | 3 RS-232 / RS-485 Ports. Software Selectable.  |   |   |   |
| <b>Serial Ports</b>                      | 1 CAN (DeviceNet slave or CsCAN peer)  |   |   |   |
| <b>Network Ports</b>                     | On-board Ethernet 10BaseT supports TCP/IP with EGD and SRTP, CsCAN TCP, Modbus TCP Slave   |   |   |   |
| <b>Communications Options</b>            | EIAJ RC-5720 Plastic Fiber, TX+RX 10m max. host (OCS or hub) to base   |   |   |   |
| <b>Expansion I/O</b>                     | SmartStix support  |   |   |   |
| <b>Remote I/O</b>                        |  |   |   |   |

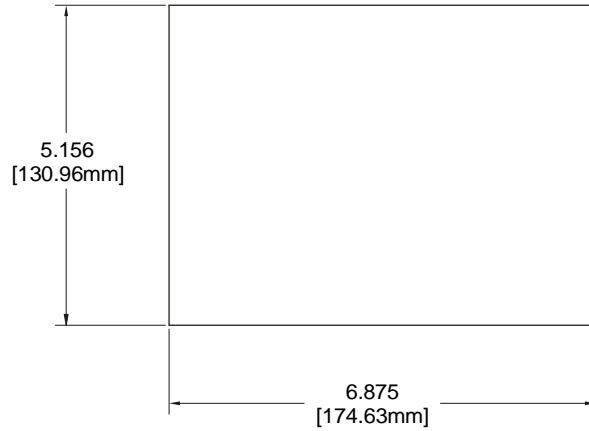
| continued                        |  |                 |  |                  | Table 1 - Color Touch OCS Specifications |  |  |  |
|----------------------------------|--|-----------------|--|------------------|--|--|--|--|
| Color Touch Models               | OCS3xx (6-inch)  | OCS451 (8-inch) | OCS551 (10-inch)   | OCS651 (12-inch) |  |  |  |  |
| Microprocessor(s)                | Dual Processors: Intel80C296 (control); Hitachi SH3 (graphics)   |                 | Dual Processors: Intel80C296 (control); Hitachi SH3-DSP (graphics) |                  |  |  |  |  |
| Control Memory                   | 256K Ladder Memory plus 32KB Register Space  |                 |  |                  |  |  |  |  |
| Control Scan Rate                | 0.7mS / K Ladder Logic (typical)   |                 |  |                  |  |  |  |  |
| Portable Memory                  | None   |                 | Compact FLASH (CF) slot  |                  |  |  |  |  |
| Operating Temperature & Humidity | 32 to 122°F (0 to +50°C), 5 to 85% Non-condensing  |                 |  |                  |  |  |  |  |
| Storage Temperature              | 14 to 140°F (-10 to +60°C)   |                 |  |                  |  |  |  |  |
| UL                               | Please refer to Compliance Table located at <a href="http://www.heapg.com/Support/compliance.htm">http://www.heapg.com/Support/compliance.htm</a>  |                 |  |                  |  |  |  |  |
| CE                               | Please refer to Compliance Table located at <a href="http://www.heapg.com/Support/compliance.htm">http://www.heapg.com/Support/compliance.htm</a><br>OCS301 / 351: To maintain FCC and CE Radiated Emissions limits, you must install a ferrite (part number: 0461164181 available from Fair-Rite Corporation) within 25mm from the OCS end of the Ethernet cable. |                 |  |                  |  |  |  |  |

| Table 2 - Product Descriptions              |   |                    |         |                               |
|---|---|--------------------|---------|-------------------------------|
| Color Touch OCS                             | Network   |                    |         | Screen Type                   |
| OCS300                                      | CsCAN, DeviceNet  |                    |         | 5.7" STN<br>with 16 colors    |
| OCS301                                      | CsCAN, DeviceNet, On-Board Ethernet 10BaseT   |                    |         | 5.7" STN<br>with 16 colors    |
| OCS350                                      | CsCAN, DeviceNet  |                    |         | 5.7" TFT<br>with 16 colors    |
| OCS351                                      | CsCAN, DeviceNet, On-Board Ethernet 10BaseT   |                    |         | 5.7" TFT<br>with 16 colors    |
| OCS451                                      | CsCAN, DeviceNet, On-Board Ethernet 10BaseT   |                    |         | 8" TFT<br>with 32,768 colors  |
| OCS551                                      |   |                    |         | 10" TFT<br>with 32,768 colors |
| OCS651                                      |   |                    |         | 12" TFT<br>with 32,768 colors |
| All Color Touch OCS Models                  | Functions   |                    |         |                               |
|   | Control   | Display and Keypad | Network | I/O                           |
|   | Yes   | Yes                | Yes     | Yes                           |
| Other Products Commonly Used with Color OCS |   |                    |         |                               |
| SmartStack Modules                          | Provides a wide variety of I/O options for the Color Touch OCS. Require little space and are easy to install. Up to <u>four</u> option modules can be connected to a controller.  |                    |         |                               |
| Fiber Optic Extension System (FOX104 / 404) | Extends a high-speed Color Touch OCS backplane enabling SmartStack I/O Modules to be mounted several meters from the Color Touch OCS. The FOX, also, significantly increases the number of SmartStack I/O modules supported by one Color Touch OCS. |                    |         |                               |
| SmartStix Modules                           | Is a family of remote I/O products for the Color Touch OCS.   |                    |         |                               |

## 2 INSTALLATION

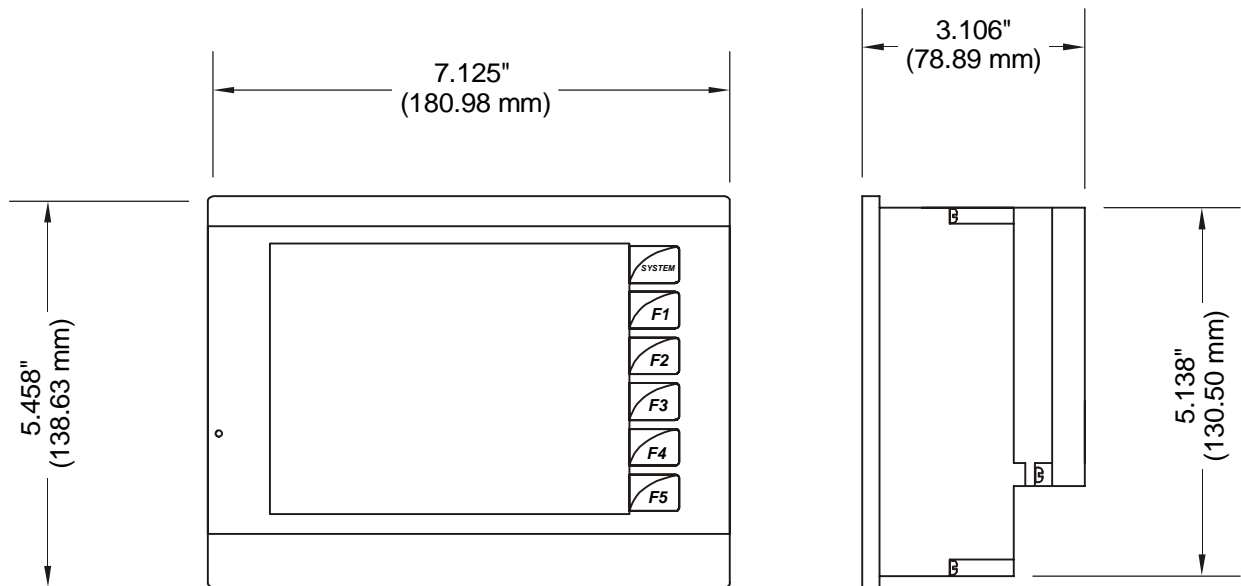
**Note:** Prior to mounting, observe requirements for the panel layout design and adequate clearances in the *Color-Touch OCS Hardware Manual (MAN0465)*. A checklist is provided in Chapter 2: Installation.

### 2.1 OCS3xx (6-inch)



001OCS003

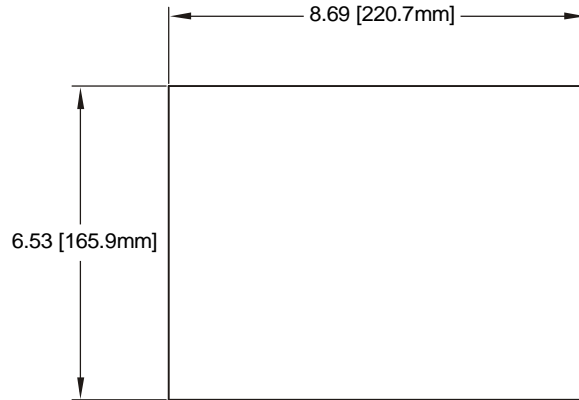
Figure 1 - Panel Cut-out for OCS3xx



001OCS007

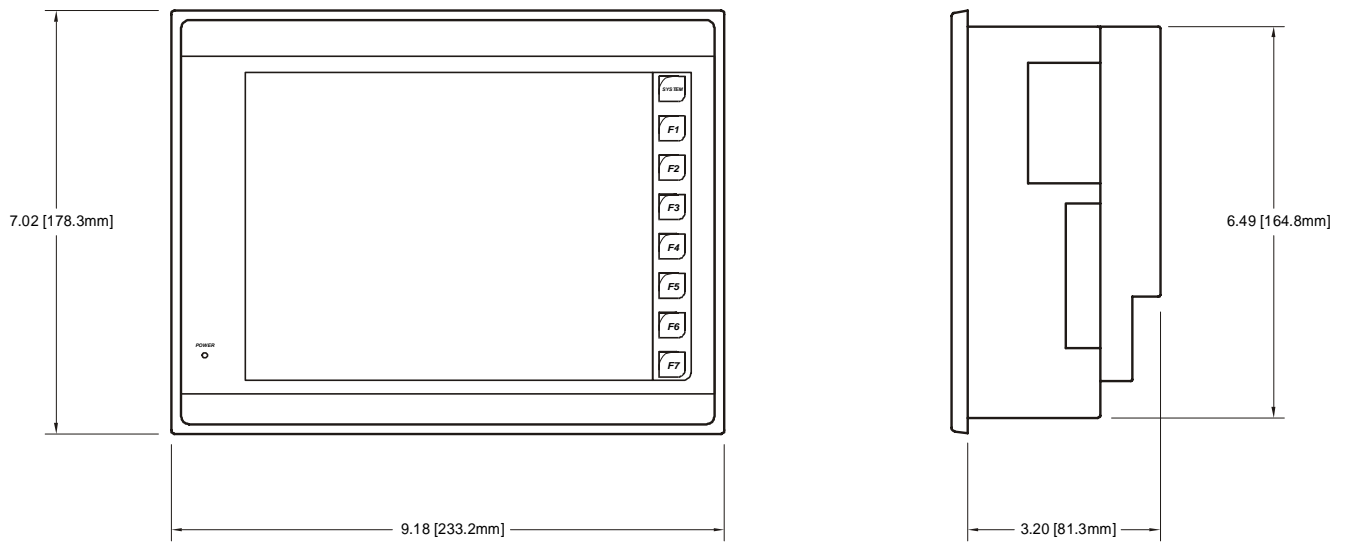
Figure 2 - Dimensions for OCS3xx

2.2 OCS451 (8-inch)



001OCS017

Figure 3 – Panel Cut-out (OCS451)



001OCS018

Figure 4 – Dimensions (OCS451)

2.3 OCS551 (10-inch)

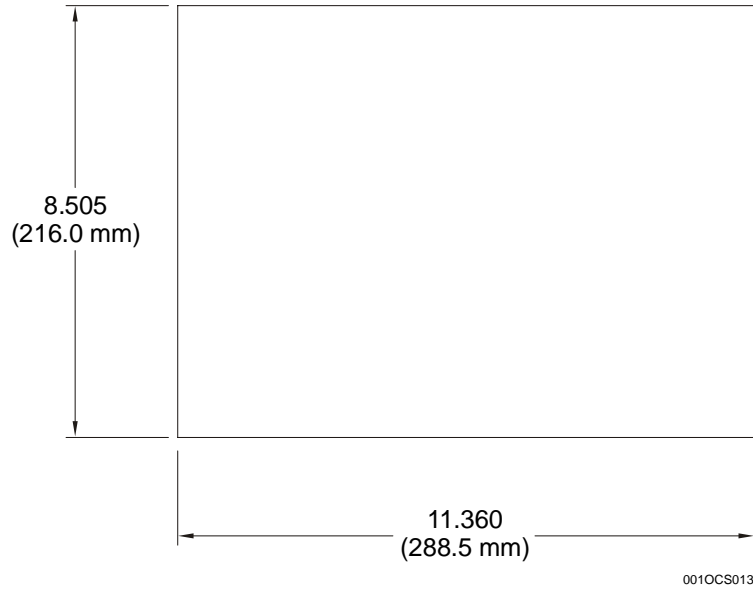


Figure 5 – Panel Cut-out (OCS551)

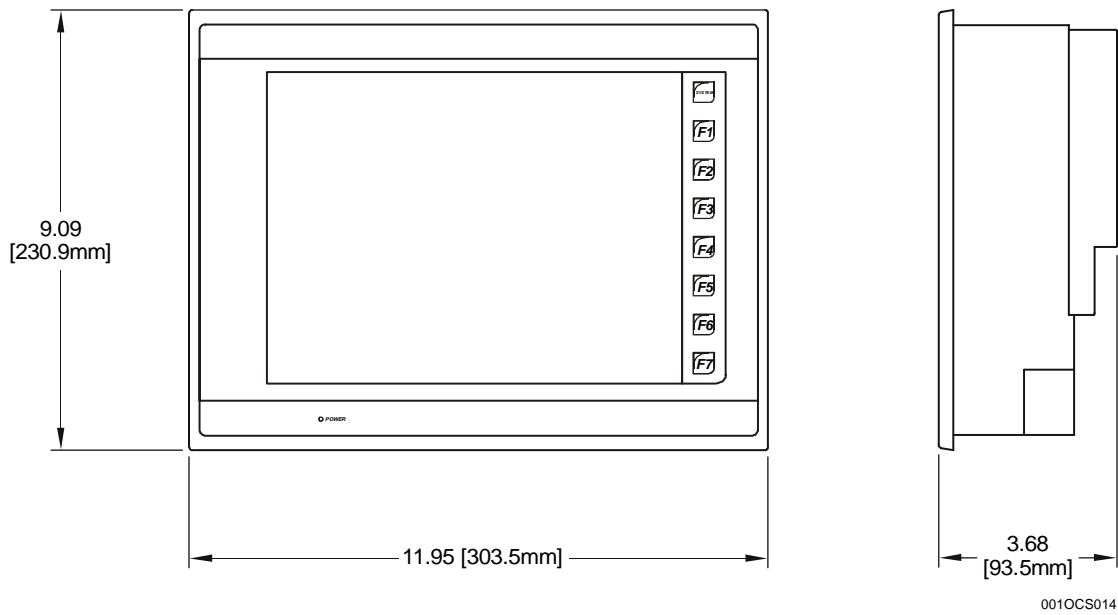
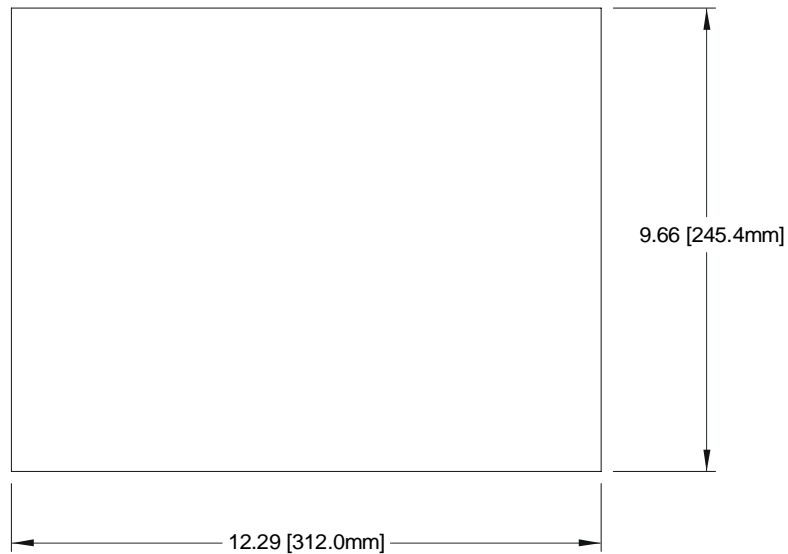


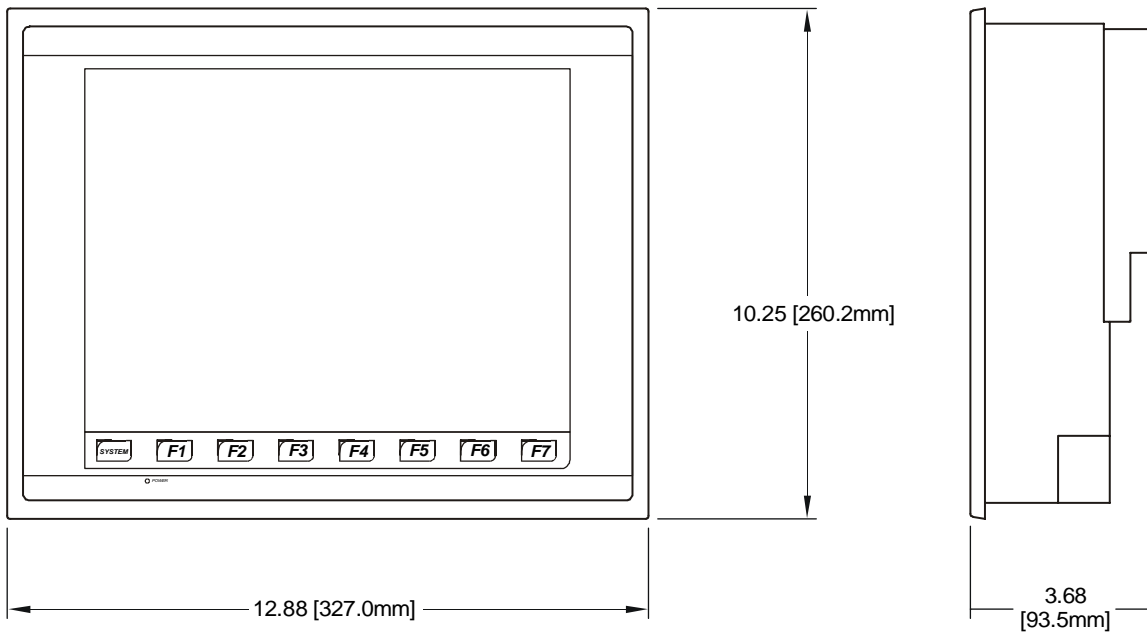
Figure 6 – Dimensions (OCS551)

2.4 OCS651 (12-inch)



001OCS015

Figure 7 – Panel Cut-out (OCS651)



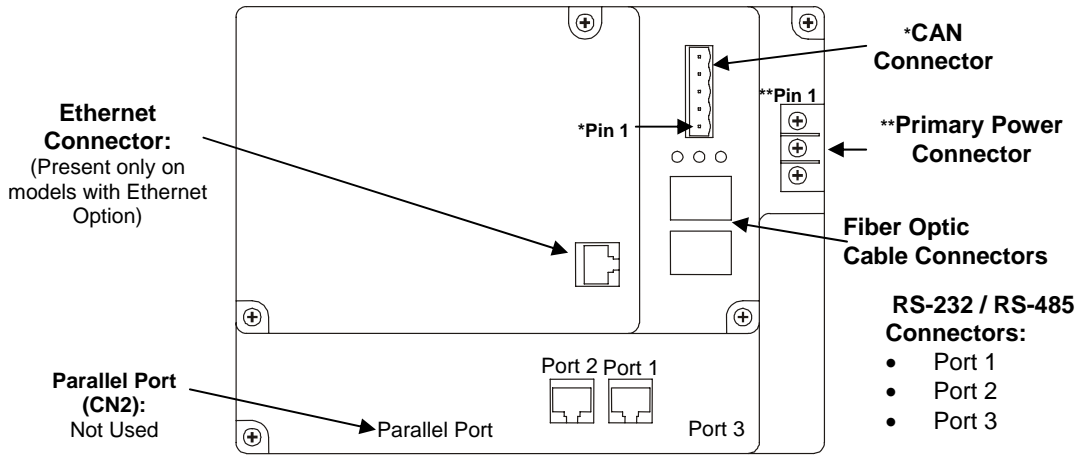
001OCS016

Figure 8 – Dimensions (OCS651)

2.5 Ports and Connectors

The Color Touch OCS has power, network, programming and fiber optic ports. Depending upon the model used, the Color Touch OCS comes equipped either with or without an Ethernet connector. Three RS-232 and RS-485 ports are available.

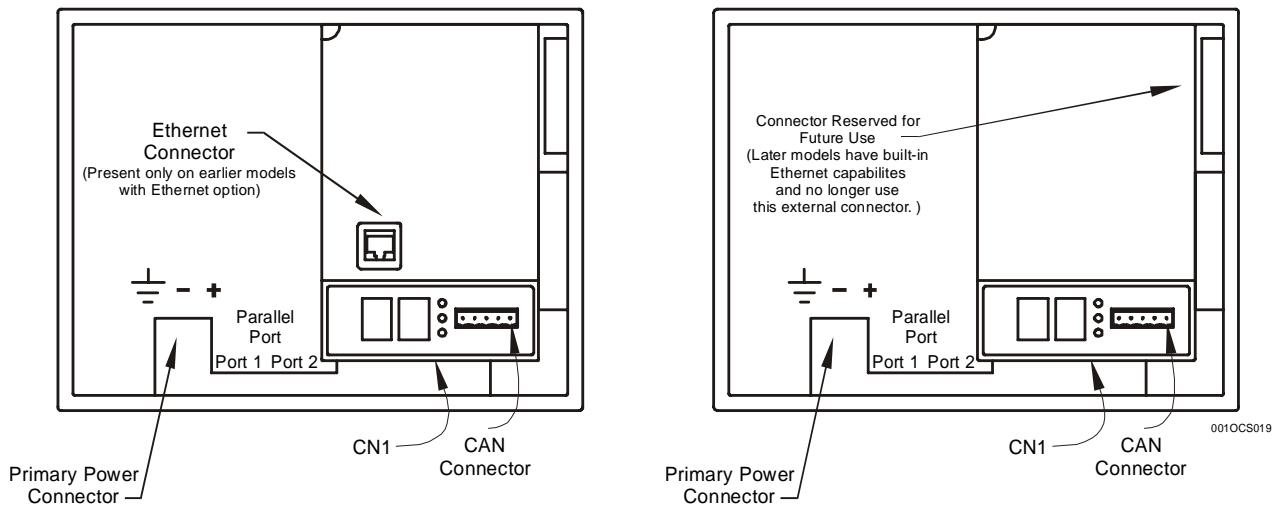
2.5.1 OCS3xx



**Note:** In the unlikely event that the label is removed, Port 1,2 and 3 correspond with the following markings on the case: Port 1 (MJ1); Port 2 (MJ2); Port 3 (CN1)

Figure 9 – Location of Ports and Connectors (OCS3x1 with Ethernet Option Shown)

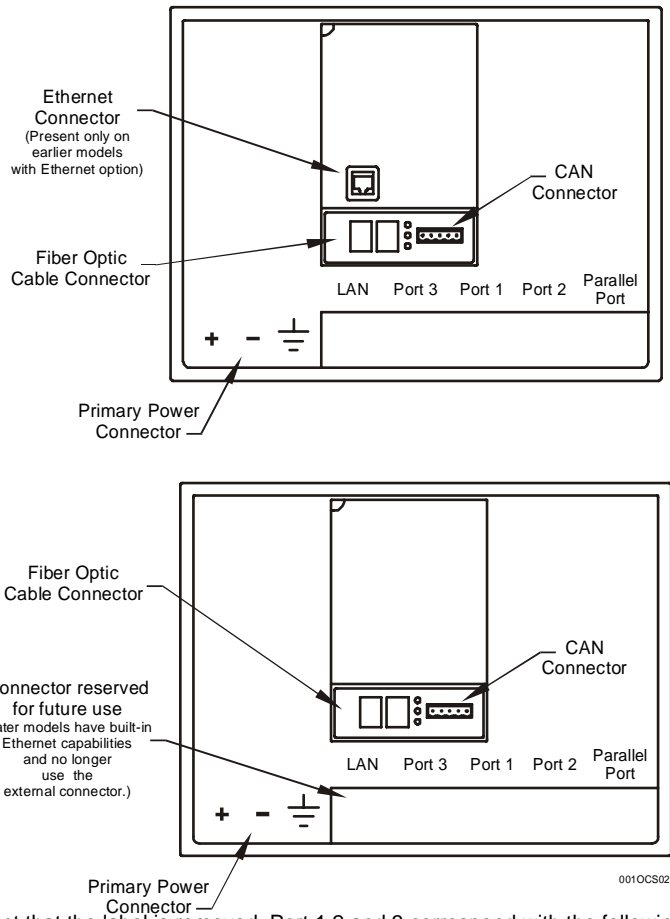
2.5.2 OCS451



**Note:** In the unlikely event that the label is removed, Port 1,2 and 3 correspond with the following markings on the case: Port 1 (MJ1); Port 2 (MJ2); Port 3 (CN1)

Figure 10 – 8” OCS451 Port and Connector Locations

2.5.3 OCS551

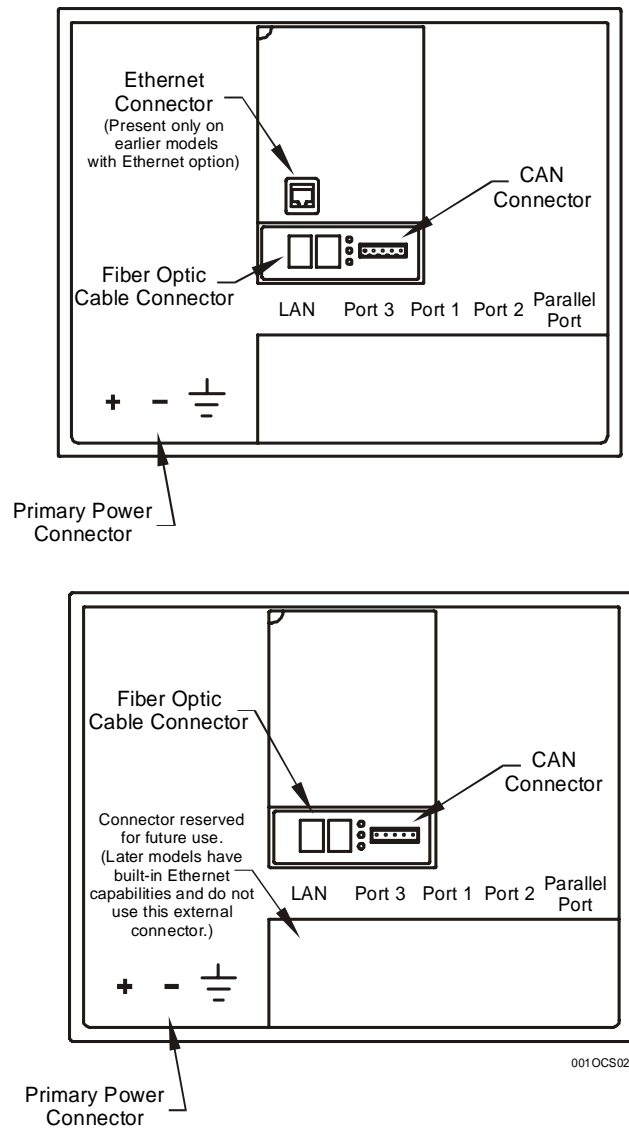


**Note:** In the unlikely event that the label is removed, Port 1,2 and 3 correspond with the following markings on the case: Port 1 (MJ1); Port 2 (MJ2); Port 3 (CN1).

**Figure 11 – 10” OCS551 Port and Connector Locations**




2.5.4 OCS651



**Note:** In the unlikely event that the label is removed, Port 1,2 and 3 correspond with the following markings on the case: Port 1 (MJ1); Port 2 (MJ2); Port 3 (CN1).

**Figure 12 – 12” OCS651 Port and Connector Locations**

2.6 Primary Power Port / Grounding

| Table 3 – Primary Power Port Pins   |                            |
|---|----------------------------|
| Signal Pin  | Description                |
| V+  | Input power supply voltage |
| V-  | Input power supply ground  |
|  | Frame Ground               |

Note: Power Supply Voltage Range is from 24VDC  $\pm$ 10%.

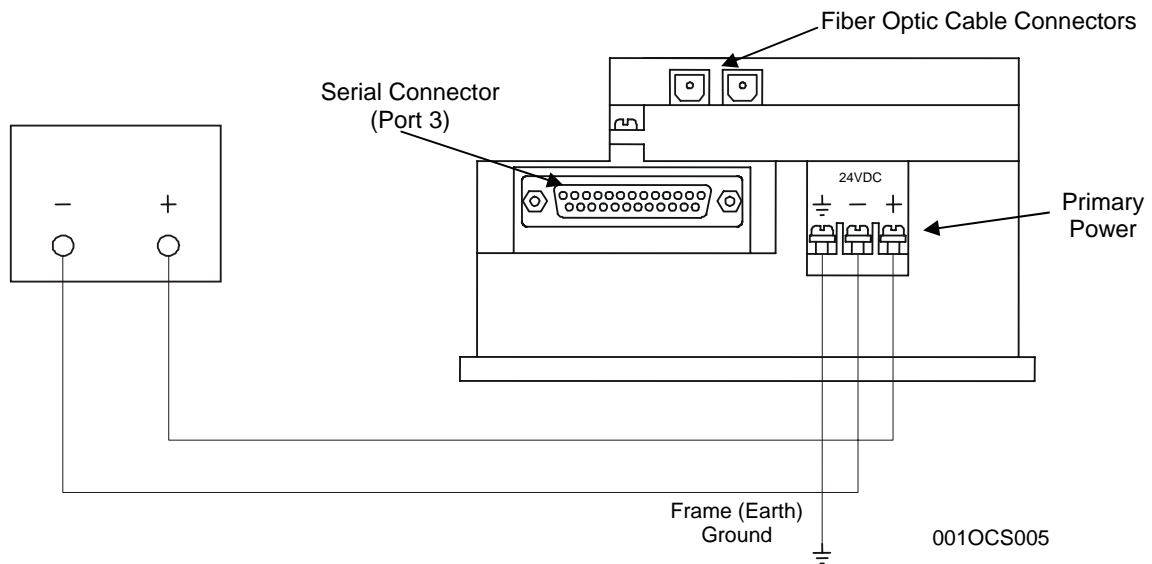
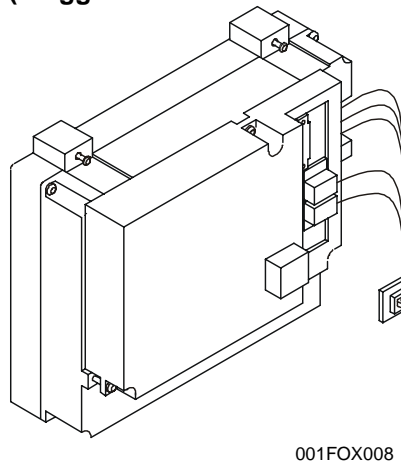


Figure 13 – Grounding (OCS3xx Shown as an Example)

2.7 Using Fiber Optic Cables ( Suggested Method of Securing)



Note: Fiber Optic Cables can be bundled with the Power Cable

Figure 14 –Securing Fiber Optic Cables  
(OCS3xx Shown as an Example)

2.8 CAN Network / DeviceNet Network Port and Wiring

| Table 4 – CAN Port Pins |        |             |
|-------------------------|--------|-------------|
| Pin                     | Signal | Description |
| 1                       | V-     | Power -     |
| 2                       | CN_L   | Signal -    |
| 3                       | SHLD   | Shield      |
| 4                       | CN_H   | Signal +    |
| 5                       | V+     | Power +     |

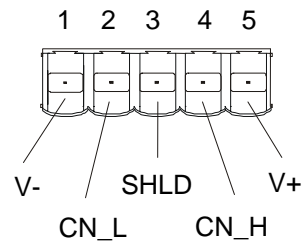
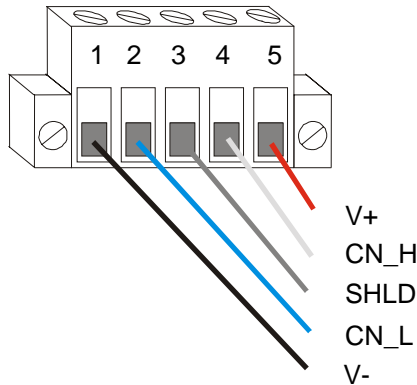


Figure 15– Network Connector (CAN Port)

Figure 16 - Looking at the Color Touch OCS

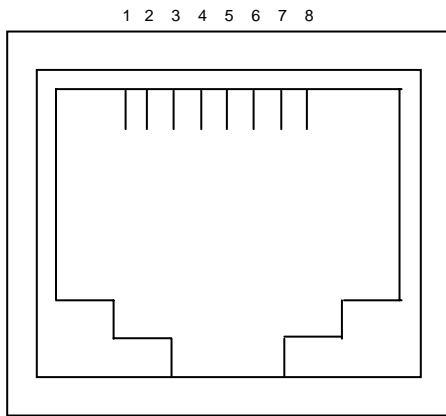
**Note:** To optimize CAN network reliability in electrically noisy environments, the CAN power supply needs to be isolated (dedicated) from the primary power.

2.9 RS-232 Port / RS-485 Port

There are a variety of ways to connect to the RS-232 and RS-485 ports; Two modular jacks (MJ1 and MJ2) and a serial connector (CN1) are available for use.

| Table 5 – Ports and Functions (Port 1, 2, and 3) |                              |   |
|--|------------------------------|---|
| RS-232   | RS-485                       | Functions   |
| Port 1   | Port 1                       | Programming, Debugging<br>Monitoring, Configuring.  |
| Port 1,<br>Port 2,<br>Port 3                     | Port 1,<br>Port 2,<br>Port 3 | Ladder Logic-Controlled Serial<br>Communications<br><br>(e.g. communications to printers,<br>bar code scanners, terminals,<br>Modbus, and other types of<br>applications. |
| Port 3   | Port 3                       | Modems  |

a. Port 1 / Port 2 Modular Jacks

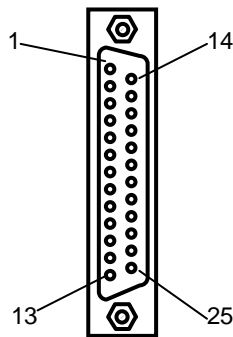


| Port 1<br>Port 2<br>Pin | Signal |
|-------------------------|--------|
| 1                       | +SD/RD |
| 2                       | -SD/RD |
| 3                       | +5V    |
| 4                       | +5V    |
| 5                       | 0V     |
| 6                       | 0V     |
| 7                       | RXD    |
| 8                       | TXD    |

Output power supply: Max. 150mA

Figure 17– Close-up of Port 1 /Port 2 (RS-232 and RS-485)

b. Port 3 Connector



| Pin # | Signal   | Pin # | Signal                               |
|-------|----------|-------|--------------------------------------|
| 1     | FG       | 14    | OCS3xx -RTS<br>OCS451, 551, 651 +RTS |
| 2     | TXD      | 15    | Not Used                             |
| 3     | RXD      | 16    | Not Used                             |
| 4     | RTS      | 17    | OCS3xx +RTS<br>OCS451, 551, 651 -RTS |
| 5     | CTS      | 18    | -CTS                                 |
| 6     | Not Used | 19    | +CTS                                 |
| 7     | SG       | 20    | Not Used                             |
| 8     | Not Used | 21    | Not Used                             |
| 9     | +5V      | 22    | Not Used                             |
| 10    | 0V       | 23    | Not Used                             |
| 11    | Not Used | 24    | +RD                                  |
| 12    | +SD      | 25    | -RD                                  |
| 13    | -SD      |       |                                      |

Figure 18 –RS-232 / RS-485 Connector (Port 3)

Port 3

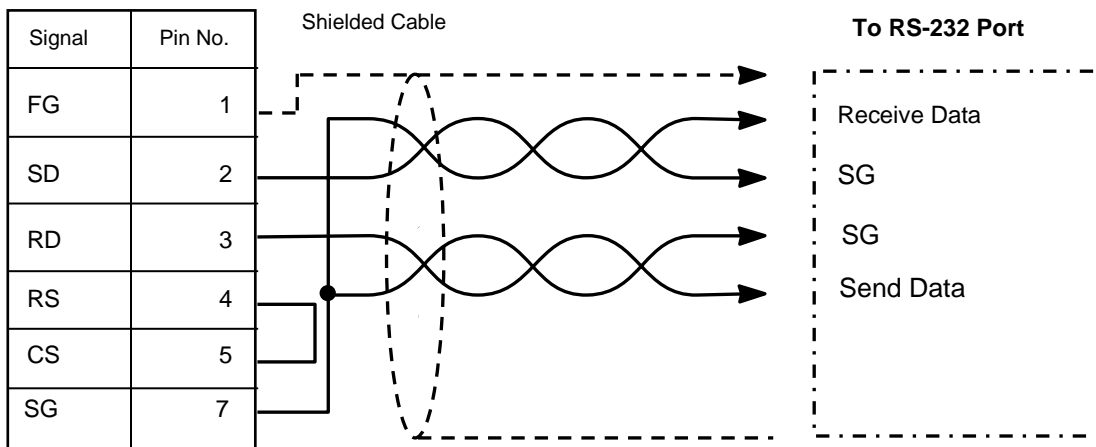


Figure 19 - RS-232 Port (Port 3)

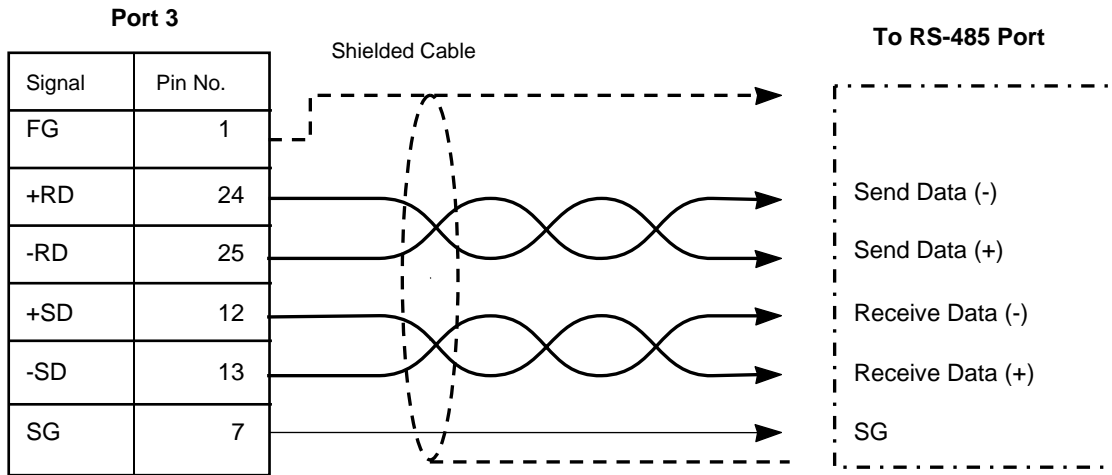


Figure 20 - RS-485 Port (Port 3)

**2.10 CE Requirement for Ethernet Modules (OCS301 / OCS351)**

To maintain FCC and CE Radiated Emissions limits, you must install a ferrite (part number: 0461164181 available from Fair-Rite Corporation) within 25mm from the OCS end of the Ethernet cable. This requirement applies to Ethernet Modules OCS301 and OCS351.

**3 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.

## 4 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 |
| <b>QX Series Hardware</b><br>e.g. HE-QX451, HE-QX551, HE-QX651, HE-QX500                                     | MAN0798       |
| <b>NX Series Hardware</b><br>e.g. HE-NX220, HE-NX221, HE-NX250, HE-NX251                                     | MAN0781       |
| <b>Operator Control Station Hardware (OCS, OCX)</b><br>e.g., OCS1XX / 2XX; Graphic QCS250                    | MAN0227       |
| <b>Remote Control Station Hardware</b><br>RCS (except RCS116), RCX (e.g., RCS210, RCS250)                    |               |
| <b>Color Touch QX Hardware</b><br>e.g., OCS300, OCS 301, OCS 350, OCS 351<br>e.g., OCS 451, OCS 551, OCS 651 | MAN0465       |
| <b>LX Series Hardware</b><br>e.g., LX-280 / LX-300; RCS116   | MAN0755       |
| <b>MiniQX / MiniRCS / MiniOCX / MiniRCX Hardware</b><br>e.g., HE500QXxxx                                     | MAN0305       |
| Other Useful References  |               |
| CAN Networks   | MAN0799       |
| Cscape Programming and Reference   | MAN0313       |
| DeviceNet™ Implementation  | SUP0326       |
| Wiring Accessories and Spare Parts Manual  | MAN0347       |

## 5 TECHNICAL SUPPORT

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

**North America:**

(317) 916-4274

[www.heapg.com](http://www.heapg.com)

email: [techspt@heapg.com](mailto:techspt@heapg.com)

**Europe:**

(+) 353-21-4321-266

[www.horner-apg.com](http://www.horner-apg.com)

email: [techsupport@hornerirl.ie](mailto:techsupport@hornerirl.ie)

NOTES