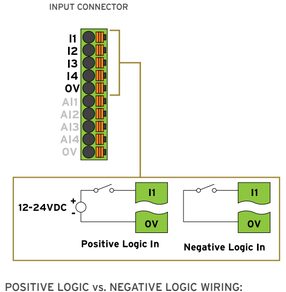
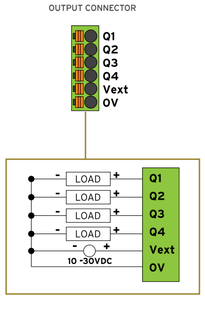
7.1 - Wiring Connectors: Digital Input



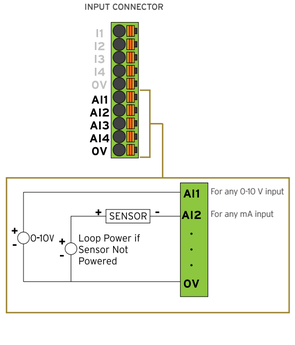
POSITIVE LOGIC vs. NEGATIVE LOGIC WIRING:

The X5 can be wired for Positive Logic inputs or Negative Logic inputs.

7.2 - Wiring Connectors: Digital Output



7.3 - Wiring Connectors: Analog Input



7.4 - Wiring Connectors: Power

PIN	SIGNAL	DESCRIPTION
1	Ground	Frame Ground
2	DC-	Power Supply Common
3	DC+	Power Supply Voltage

Primary Power Range: 10-30VDC





8 - Precautions

All applicable codes and standards need to be followed in the installation of this product. Adhere to the following safety precautions whenever any type of connection is made to the module:

1. Connect the safety (earth) ground on the power connector first before making any other connections.
2. When connecting to the electric circuits or pulse-initiating equipment, open their related breakers.
3. Do NOT make connection to live power lines.
4. Make connections to the module first; then connect to the circuit to be monitored.
5. Route power wires in a safe manner in accordance with good practice and local codes.
6. Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
7. Ensure hands, shoes, and floor are dry before making any connection to a power line.
8. Make sure the unit is turned OFF before making connection to terminals.
9. Make sure all circuits are de-energized before making connections.
10. Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.
11. Use copper conductors in Field Wiring only, 60/75°C.
12. Do not disconnect while circuit is live unless area is known to be non-hazardous.
13. Do not remove or replace jumpers or connectors while circuit is live unless the area is known to be free of ignitable concentrations of flammable gases or vapors.
14. EXPLOSION HAZARD – substitution of components may impair suitability for intended use.
15. Use caution when making connections to the controller to protect against static discharge. Special care must be taken when inserting or adjusting I/O or communication boards.
16. Use caution when connecting controllers to PCs via serial or USB. PCs and especially laptops may use "floating power supplies" that are ungrounded. This could cause a voltage potential between the laptop and controller. Ensure the controller and laptop are grounded for maximum protection. Consider using a USB isolator due to voltage potential differences as a preventative measure.
17. Failure to follow these guidelines can damage the controller.

FCC Compliance

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
2. This device must accept any interference received, including interference that may cause undesired operation.

Technical Support

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

North America
+1 (317) 916-4274
www.hornerautomation.com
techsppt@heapg.com

Europe
+353 (21) 4321-266
www.hornerautomation.eu
technical.support@horner-apg.com

Micro X5
HE-X5

BUILT-IN I/O: 4 DIGITAL DC INPUTS, 4 DIGITAL DC OUTPUTS, 4 ANALOG INPUTS

GETTING STARTED

1. Read this document to fully understand the Micro X5 and safety requirements
2. Connect 10-30VDC power and I/O according to the quick reference guide and data sheet.
3. Refer to the X5 User Manual for further instructions, MAN1039, or the X5 datasheet, MAN1040.



MAN1210_04_EN_X5_QRG

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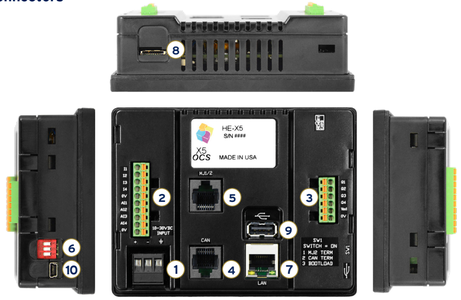
1 - General Specifications

1.1 General	
Primary Power Range	10-30VDC
Required Power (Steady State)	270mA @ 12 VDC 150mA @ 24 VDC
Required Power with Backlight @ 50%	96mA @ 24 VDC
Power Backlight Off @ (0%)	86mA @ 24 VDC
Inrush Current	20A for < 1 ms at 24VDC Switched
Relative Humidity	5 to 95% Non-condensing
Operating Temperature	-10°C to +60°C
Storage Temperature	-30°C to +70°C
Weight	9.6 oz / 271 g 10 oz / 283 g
Included in Box	Controller, 3 x I/O connectors, 4 x mounting clips, 1 x power connector, Quick Reference Guide
Altitude	Up to 2000m
Rated Pollution Degree	2 Rating
Certifications (UL/CE)	USA: https://hornerautomation.com/certifications/ Europe: https://hornerautomation.eu/support/certifications-2/

1.2 Connectivity	
Serial Ports	2 (1xRS-232, 1x2-wire RS-485)
Serial Protocols	Modbus RTU, GE SNP, GPS, BACnet MSTP (See Cscape for additional protocols)
CAN	CAN 125kbps - 1Mbps
Ethernet	1 x 10Mbps/100Mbps
USB (2)	1 x Mini Program, 1 x USB Flash
microSD	1 x SD, SDHC, SDXC in FAT32 format

1.3 User Interface / Control & Logic	
Display	Resistive 4.3" Touchscreen 450 cd/m² (nits)
Resolution	WQVGA (480 x 272)
Backlight	White LED
Control Language Support	Advanced ladder logic Full IEC 61131-3 languages

2 - Port Connectors



1. Power
2. Input Connector
3. Output Connector
4. CAN Port
5. Serial Ports
6. DIP Switches
7. Ethernet Port
8. microSD Slot
9. USB A Port
10. USB Mini B Port

NOTE: See Precaution #16 about USB and grounding.

3 - Installation Procedure

The X5 utilizes a clip installation method to ensure a robust and watertight seal to the enclosure. Please follow the steps below for the proper installation and operation of the unit. This equipment is a panel mounted device and is meant to be installed in an enclosure suitable for the environment, such that the equipment is only accessible with the use of a tool.

1. Carefully locate an appropriate place to mount the X5. Be sure to leave enough room at the top of the unit for insertion and removal of the microSD™ card.
2. Carefully cut the host panel per the diagram, creating a 90.5mm x 119.5mm (with a tolerance of +0.5 / -0 mm) opening into which the X5 may be installed. If the opening is too large, water may leak into the enclosure, potentially damaging the unit. If the opening is too small, the OCS may not fit through the hole without damage.
3. Remove any burrs and/or sharp edges and ensure the panel is not warped in the cutting process.
4. Install and tighten the four mounting clips (provided in the box) until the gasket forms a tight seal. For standard composite mounting clips (included with product), use a torque rating of 2-3 in-lbs (0.23-0.34 Nm). For optional metal mounting clips, use a torque rating of 4-8 in lbs (0.45-0.90 Nm).
5. Connect communications cables to the serial port, USB ports, and CAN port as required.

4 - Panel Cut-Out



5 - Hazardous Location Notice

1. THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS I, DIVISION 2, GROUPS A B C D or NON-HAZARDOUS LOCATIONS ONLY.

2. **WARNING** - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.
   AVERTISSEMENT - RISQUE D'EXPLOSION LA SUBSTITUTION DECOMPOSANTS PEUT RENDRECE MATE RIEL INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE I, DIVISION 2

3. **WARNING** - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS AND FREE OF IGNITABLE CONCENTRATIONS.
   ATTENTION - RISQUE D'EXPLOSION - NE DECONNECTEZ PAS L'EQUIPEMENT A MOINS DE L'AVOIR MIS HORS TENSION OU QUE LA ZONE EST CONNUE NON-DANGEUREUSE ET NE CONTIENT PAS DE CONCENTRATIONS INFLAMMABLES.

4. **WARNING -** DO NOT ATTEMPT TO REPLACE THE LITHIUM BATTERY AS IT IS SOLDERED ONTO THE BOARD. THE DEVICE IS INTENDED FOR USE WITH ONE LITHIUM BATTERY INSTALLED. THE DEVICE SHALL NOT BE OPERATED WITH MORE THAN ONE LITHIUM BATTERY INSTALLED.
   ATTENTION - NE TENTEZ PAS DE REMPLACER LA PILE AU LITHIUM COMME CELLE-CI EST SOUDÉE À L'ORDRE. LE DISPOSITIF EST CONÇU POUR ÊTRE UTILISÉ AVEC UNE PILE AU LITHIUM INSTALLÉE. L'APPAREIL NE DOIT PAS ÊTRE UTILISÉ AVEC PLUS D'UNE BATTERIE AU LITHIUM INSTALLÉE.

6 - Connecting the X5 to a PC

The X5 can communicate with Cscape using USB to USB, USB to serial adapters, serial port communications via MJ1 Port, or CAN (CsCAN).

Drivers are normally installed with Cscape and also available at: https://hornerautomation.com/support-files

Next, connect a PC's (Personal Computer running a Microsoft Windows operating system) USB port via USB cable to the USB mini B port on the X5.

Now that the X5 is plugged in, go to the Cscape menu Controller > Connection Wizard, choose the connection method. If connecting for the first time, USB is the suggested connection method.

When communication is established, the OCS CsCAN node ID appears next to Local in Cscape's bottom status bar, and Target displays the controller mode: `Target ###(I/D/R)`.

If the controller is not communicating, you may need to set the Target ID of the controller in Cscape or change the controllers ID on the unit itself. The Target ID allows directing communications to a particular unit when multiple units are connected via a CsCAN network. Units without CsCAN network ports respond to any network ID and do not require the ID to be configured.

For more information, review the Cscape Configuration chapter of the X5/X5 Prime OCS User Manual, MAN1039.

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