



XL10e OCS Base Controller Datasheet

for
HE-XV1E0, HE-XV1E2, HE-XV1E3, HE-XV1E4, HE-XV1E5
HEXT501C100, HEXT501C112, HEXT501C113 HEXT501C114 HEXT501C115

1 Specifications

Specifications	
Required Power (Steady state)	650 mA @ 24 VDC 1.3A @ 12 VDC
Required Power (Inrush)	25 A for <1 ms @ 24 VDC – DC Switched 15 A for <1 ms @ 12VDC – DC Switched 2.5 A for 1 ms @ 24 VDC - AC Switched
Primary Power Range	10 – 30 VDC
Relative Humidity	5 to 95% Non-condensing
Clock Accuracy	+/- 35 ppm maximum at 25° C (+/- 1.53 Minutes per Month)
Operating Temp	-10°C to +60°C
Storage Temp	-30°C to +70°C
Display Type	10.4" VGA TFT (550 nit typical)
Screen Resolutions	640 x 480
Display Memory	2.75 MB
Scan Rate	Controller 0.2 mS/K
Display Life	Minimum 50000 hours (50% brightness, 25 deg C)
User Keys	7 user-defined Function keys and a System Key
Screens supported	1023
Colors	32768
Weight	70 oz. (2 kg)
CE / UL	USA: http://www.heapg.com/Pages/TechSupport/ProductCert.html Europe: http://www.horner-apg.com/en/support/certification.aspx
Connectivity	
Serial	2 Serial Ports – Each RS232 & RS485
Ethernet	10/100-Mbps – Auto MDX
USB-A	For USB Flash Drives
USB-B	Mini B for connecting to PC (Programming, Envision...)
Removable Media	Removable Media for upto 2 GB of storage for programs, data logging or screen capture...
CAN	Remote I/O, Peer to Peer, PC, Programming...
Remote I/O	SmartStix, SmartBlock, SmartMod or SmartRail

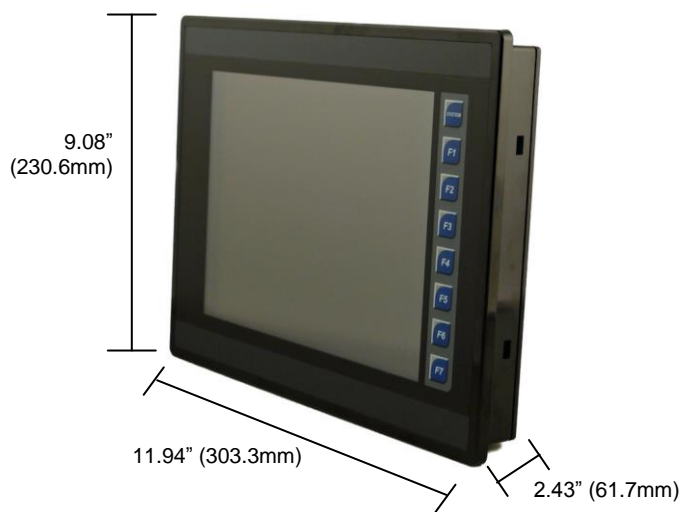
2 Installation

1. Prior to mounting, observe requirements for the panel layout design and spacing/clearances in the OCS XL10e Series Manual (MAN0883).
2. Cut the host panel.
3. Insert the OCS through the panel cutout (from the front). The gasket material needs to be between the host panel and the OCS.

Caution: Do not force the OCS into the panel cutout. An incorrectly sized panel cutout can damage the touch screen.

4. Install and tighten the mounting clips (provided with the OCS) until the gasket material forms a tight seal.
5. Connect cables as needed such as communications, programming, power and CsCAN cables to the ports using the provided connectors.
6. Begin configuration procedures.

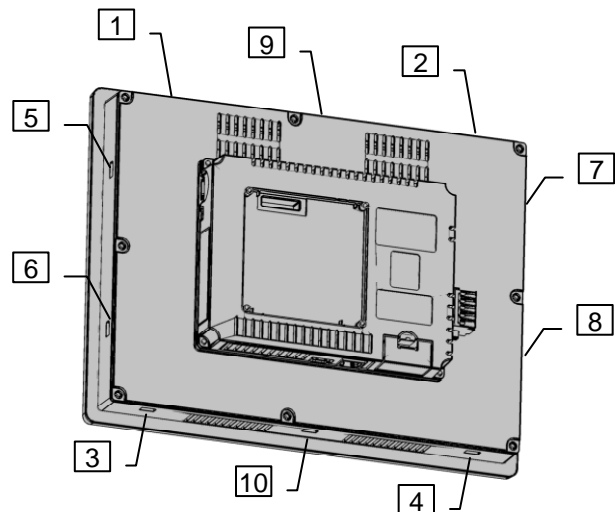
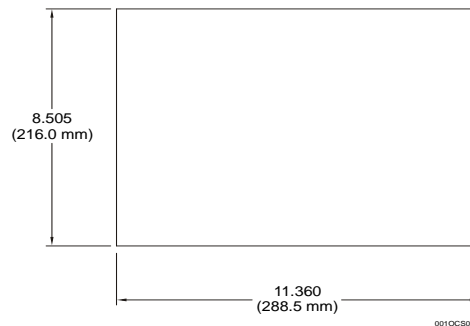
3 Panel Cut-Out and Dimensions



Note: Max. panel thickness: 5 mm.

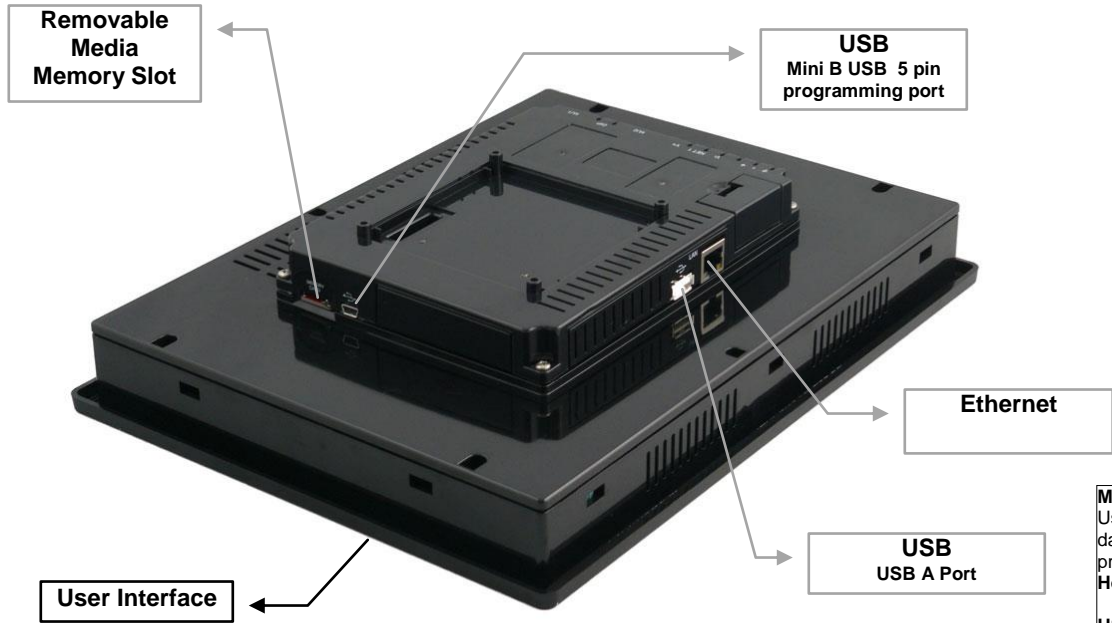
Refer to the User Manual (MAN0883) for panel box information and a checklist of requirements.

Note: The tolerance to meet NEMA standards is $\pm 0.005"$ (0.1 mm).



There are 10 mounting clip locations on the XL10e.
For minimal mounting use four clips at 1, 2, 3 & 4 or 5, 6, 7 & 8.
For IP67 mounting use eight clips at locations 1 to 8.
For NEMA 4X mounting use ten clips in all locations.
The unit includes 8 clips order HE500ACC604 for additional
Recommended Torque Rating: 1.0-1.5nm (10-13 lbs. ft).

4 Ports and Connectors



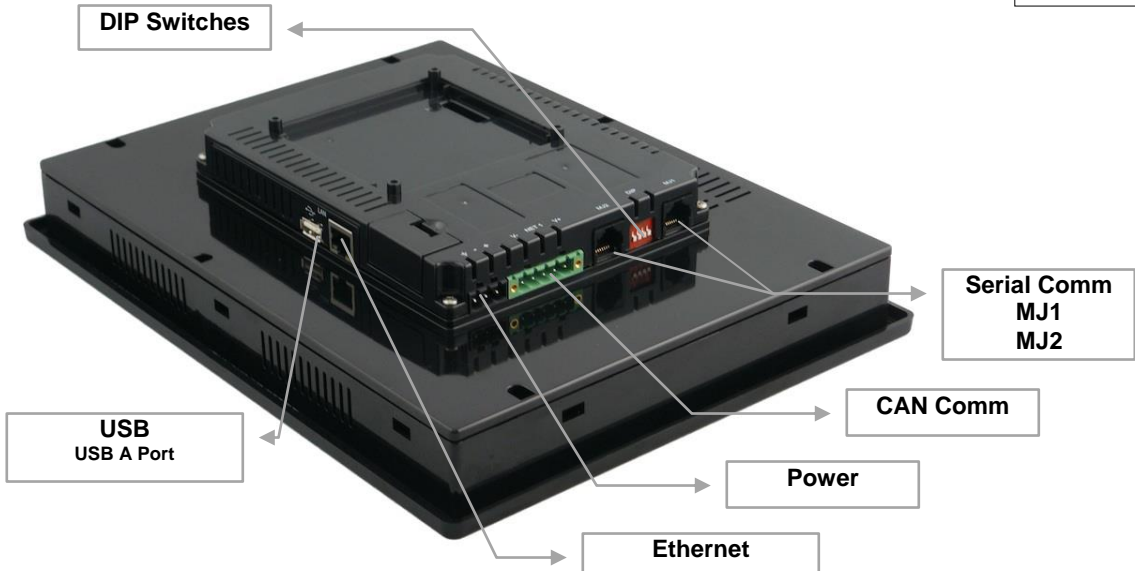
Micro SD Memory Slot: Uses **Removable Memory** for data logging, screen captures, program loading and recipes. **Horner Part No.: HE-MC1**

USBA: For flash drive connectivity

Serial Communications: **MJ1/MJ2:** (RS-232 / RS-485) Used for Cscape programming and Application-Defined Communications.

Ethernet: Used for Cscape programming and Application-Defined Communications.

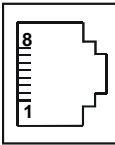
USBB: For network communication and programming of OCS



4.1 Serial Communications:

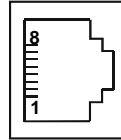
MJ1: (RS-232 / RS-485) Use for Cescape programming and Application-Defined Communications.

MJ2: (RS-232 / RS-485) Use for Application-Defined Communications.



Pin	MJ1 Pins		MJ2 Pins	
	Signal	Direction	Signal	Direction
8	TXD	OUT	TXD	OUT
7	RXD	IN	RXD	IN
6	0 V	Ground	0 V	Ground
5*	+5 60mA	OUT	+5 60mA	OUT
4	RTS	OUT	TX-	OUT
3	CTS	IN	TX+	OUT
2	RX- / TX-	IN / OUT	RX-	IN
1	RX+ / TX+	IN / OUT	RX+	IN

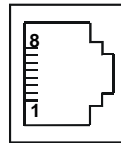
MJ2 Pinouts in Half and Full Duplex Modes



Pin	MJ2 Pins	
	Signal	Direction
8	TXD	OUT
7	RXD	IN
6	0 V	Ground
5*	+5 60mA	OUT
4	TX-	OUT
3	TX+	OUT
2	TX-/RX-	IN/OUT
1	TX+/RX+	IN/OUT

* +5V 60mA Max

MJ2 Half Duplex Mode



Pin	MJ2 Pins	
	Signal	Direction
8	TXD	OUT
7	RXD	IN
6	0 V	Ground
5*	+5 60mA	OUT
4	TX-	OUT
3	TX+	OUT
2	RX-	IN
1	RX+	IN

* +5V 60mA Max

MJ2 Full Duplex Mode

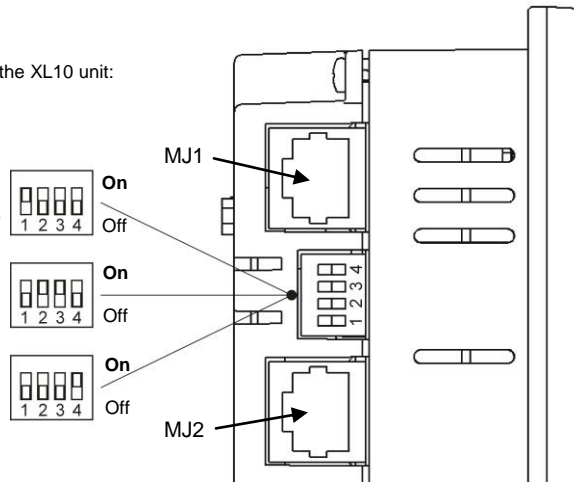
Functions	Port 1 (MJ1)	Port 2 (MJ2)
RS-232	✓	✓
Hardware Handshaking	✓	X
Programming	✓	X
Ladder function controlled	✓	✓
Serial Downloadable Protocols	✓	✓
RS 485 Full duplex	X	✓
RS 485 Half duplex	✓	✓

4.2 External DIP Switch Settings

As seen when looking at the side of the XL10 unit:

The DIP Switches are used for termination of the RS-485 ports. The XL10 is shipped un-terminated.

To terminate, select one of the DIP Switches and configure it based upon the option that is desired.

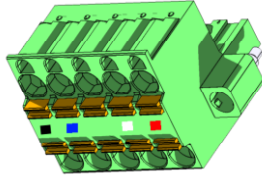


- SW1 - ON enables **MJ2** RS485 port termination (121 Ohms). OFF disables **MJ2** RS485 port termination.
- SW2 & SW3 - ON places **MJ2** RS485 port in half-duplex mode. OFF places **MJ2** RS485 port in full-duplex mode.
- SW4 - ON enables **MJ1** RS485 port termination (121 Ohms). OFF disables **MJ1** RS485 port termination.

4.3 Built-in I/O Details

Models	Description	Manual
HE-XV1E2 HEXT501C112	12DC in (4HSC), 6 Relay out, 4 Analog In	MAN0946
HE-XV1E3 HEXT501C113	12 DC in (4HSC), 12 DC out (2 PWM), 2 Analog in	MAN0947
HE-XV1E4 HEXT501C114	24 DC in (4HSC), 16 DC out (2 PWM), 2 Analog in	
HE-XV1E5 HEXT501C115	12 DC in (4HSC), 12 DC out (2 PWM), 2 Universal Analog In (T/C, RTD, mV, mA, V) & 2 Analog out (mA, V)	MAN0953

4.4 CAN Network Port and Wiring



CAN Connector

Use the CAN Connector when using CsCAN network.

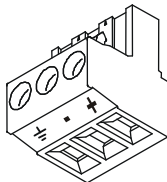
Torque rating 4.5 – 7 Lb-In
(0.50 – 0.78 N-m)

NET1 Port Pin Assignments			
Pin	Signal	Signal Description	Direction
1	V-	CAN Ground - Black	-
2	CN_L	CAN Data Low - Blue	In/Out
3	SHLD	Shield Ground - None	-
4	CN_H	CAN Data High - White	In/Out
5	V+ (NC)	No Connect - Red	-

4.5 Ethernet Port

Speeds	10 BaseT Ethernet (10-Mbps) 100 BaseTx Fast Ethernet (100-Mbps)
Modes	Half or Full Duplex
Auto-Negotiation	Both 10/100-Mbps and Half/Full Duplex
Connector Type	Shielded RJ-45
Cable Type (Recommended)	CAT5 (or better) UTP
Port	Auto MDI/MDI-X

4.6 Power Port and Wiring



Power Connector

Power Up:

Connect to Earth Ground.
Apply 10 - 30 VDC.
Screen lights up with slight delay.

Torque rating 4.5 – 7 Lb-In
(0.50 – 0.78 N-m)

Primary Power Port Pins		
Pin	Signal	Description
1	Ground	Frame Ground
2	V-	Input Power Supply Ground
3	V+	Input Power Supply Voltage

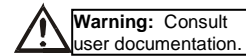
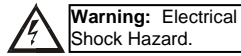
6 Technical Support

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

North America: Tel: 317 916-4274 Fax: 317 639-4279 Web: http://www.heapg.com Email: techsppt@heapg.com	Europe: Tel: +353-21-4321266 Fax: +353-21-4321826 Web: http://www.horner-apg.com Email: tech.support@horner-apg.com
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5 Safety

When found on the product, the following symbols specify:



This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or Non-hazardous locations only.

WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.
AVERTISSEMENT - RISQUE D'EXPLOSION - AVANT DE DECONNECTER L'EQUIPMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX.

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 – EXPLOSION HAZARD – Substitution of components may impair suitability for Class I, Division 2

AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIAL INACCEPTABLE POUR LES EMBLEMES DE CLASSE 1, DIVISION 2.

WARNING - The USB parts are for operational maintenance only. Do not leave permanently connected unless area is known to be non-hazardous.

WARNING – EXPLOSION HAZARD - BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS.

AVERTISSEMENT - RISQUE D'EXPLOSION - AFIN D'EVITER TOUT RISQUE D'EXPLOSION, S'ASSURER QUE L'EMPLACEMENT EST DESIGNE NON DANGEREUX AVANT DE CHANGER LA BATTERIE.

WARNING - Battery May Explode If Mistreated. Do Not Recharge, Disassemble or Dispose Of In Fire

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.

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.

Radiated Emission Compliance: For compliance requirement, a ferrite (Horner P/N FBD006 supplied with the unit) needs to be placed on the AC/DC line with one loop.

- 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:
 - Connect the safety (earth) ground on the power connector 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.

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