XL15+ OCS Datasheet - Model 0

No Built-In I/O

HG-003

Table of Contents

Part Numbers

Global Part Number	HE-XP7E0
European Part Number	HEXT751C100

User Manual and Add-Ons

Find the documents via the Documentation Search.

Part #	Description
MAN1106	User Manual for XL15+ OCS
MAN1142	Renata CR2032 lithium battery
HE-BAT019	Programming Cables
HE-XCK	2 channel Analog Output I/O option kit, selectable 0-10V, +/-10V, 4-20mA.
HE-XDAC007	4 channel Analog Output I/O option kit, selectable 0-10V, +/-10V, 4-20mA.
HE-XDAC107	Blank I/O Board
HE-XKIT	Adapter, RJ45 (8P8C) male to 8-position terminal strip.
HE200MJ2TRM	Ferrite core for filtering out electrical noise.

Battery Maintenance

The XL15+ uses a replaceable non-rechargeable 3V Lithium coin-cell battery to run the Real-Time Clock and to keep the retained register values. This battery is designed to maintain the clock and memory for 7 to 10 years. Please reference **MAN1106** providing instructions on how to replace the battery.

TECHNICAL SPECIFICATIONS

General Specifications

Required Power (Steady State)	2137mA @ 10V (19.5W)
	886mA @ 24V (8.86W)
Heater Option	800mA @ 24VDC
Power Backlight 50%	385mA (9.6W)
Power Backlight Off	290mA (7W)
Inrush Current	25A for < 1ms @ 24VDC DC
Primary Pwr. Range	18–30VDC
Clock Accuracy	+/ - 20 ppm maximum at 25°C (+/- 1 min/month)
Real Time Clock	With Battery (5-10 Yrs life, Replaceable)
Relative Humidity	5 to 95% non-condensing
Operating Air Temp	-10°C to +60°C
Storage Temp	-30°C to +70°C
Weight	7.63 lbs/3.46 kg (without I/O)
Certifications (UL/CE)	North America or Europe

Control and Logic

Control Lang. Support	Advanced Ladder Logic Full IEC 1131-3 Languages
Logic Program Size & Scan Rate	2MB
Online Programming Changes	Supported in Advanced Ladder
Logic Scan Rate	.006ms/kB
Digital Inputs	2048
Digital Outputs	2048
Analog Inputs	512
Analog Outputs	512
Gen. Purpose Registers	49,999 (words) Retentive
	16,384 (bits) Retentive
	16,384 (bits) Non-retentive

USB Webcams

USB Webcams supported should support the UVC (USB Video class) protocol for the OCS to be able to display video. Most USB based video devices support this today. Special feature such as zoom and high definition are not supported by the OCS.

XL15+ User Manual [MAN1106]

The User Manual includes extensive information on:

- Built-in I/O
- I/O Status and Calibration
- Common %S & %SR Registers
- HSC/PWM/Totalizer/Quadrature & Accumulator Registers
- Resource Limits

Display

Display Type	15" XGA TFT (500 cd/m^2 typical)
Resolution	1024 x 768
Color	24-bit (16,777,216)
Built-In Storage	4 GB
User-Program Screens	1023 max pages; 1023 objects per page
Backlight	LED - 50,000 hour life
Brightness Control	0-100% via System Register
Touchscreen	Resistive w/laminated cover, 1,000,000+ touch life

Connectivity

3x Serial Ports	RS-232 full handshaking or RS-485 half duplex on first Modular Jack (MJ1) RS-232 or RS-485 on second Modular Jack (MJ2) RS-232 or RS-485 on third Modular Jack (MJ3)(Software Controlled RS-485 Termination/Biasing)
USB mini-B	USB 2.0 (480 Mbps) Programming & Data Access
3x USB A (500mA max)	USB 2.0 (480 Mbps) for USB flash drives (2TB)
2x CAN	125 kbps – 1 Mbps, Remote I/O, Peer-to- Peer Comms, Cscape (Isolated Ports)
2 x Ethernet	1 Gb (Auto-MDX), Modbus TCP C/S, HTTP, FTP, SMTP, Cscape, Ethernet IP
Remote I/O	SmartRail, SmartStix, SmartBlock, SmartMod
Removable Memory	microSD, SDHC, SDXC IN FAT32 format, support for 128 GB max.Application Updates, Datalogging, more
Audio	Beeper, Mic In, Line Out

# CONTROLLER OVERVIEW

Port Controllers

HG-004

1. Virtual Function Keys Slide in from the Right Upon Touching Top Right Corner of Screen
2. Optional Built-In I/O
3. High Capacity microSD Slot
4. USB Mini-B Port
5. Dual CAN Port
6. USB A Ports (3)
7. Mic Input / Audio Output
8. Dual Ethernet LAN Port
9. Mini Display Port Video Output
10. Wide-Range DC Power
11. Dual CAN Port
12. RS232/RS485 Serial Ports (3)

NOTE: See Precaution #12 on page 4 about USB and grounding.

Power Wiring

HG-007
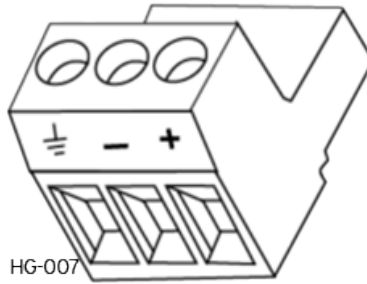
Primary Power Port Pins		
PIN	**Signal**	**Description**
1	Ground	Frame Ground
2	DC-	Input Power Supply Ground
3	DC+	Input Power Supply Voltage

DC Input/Frame

- Solid/Stranded Wire: 12-24 awg (2.5-0.2mm)
- Strip length: 0.28" (7mm)
- Torque Rating: 4.5 – 7 in-lbs (0.50 – 0.78 N-m)

DC- is internally connected to I/O V-, but is isolated from CAN V-. A Class 2 power supply must be used.

Power Up

1. Attach ferrite core with a minimum of two turns of the DC+ and DC- signals from the DC supply that is powering the controller.
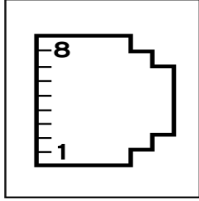

HG-006

2. Connect to earth ground.
3. Apply recommended power.
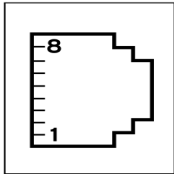
COMMUNICATIONS

Serial Communications

MJ1 Serial Ports

MJ1: RS-232 w/full handshaking or RS-485 half-duplex via software switch
RS-485 termination and biasing via software

HG-008

| MJ1 PINS		
PIN	**SIGNAL**	**DIRECTION**
8	TXD	OUT
7	RXD	IN
6	0V	GROUND
5	+5V @ 60mA	OUT
4	RTS	OUT
3	CTS	IN
2	RX-/TX-	IN/OUT
1	RX+/TX+	IN/OUT

MJ2/3 Serial Ports

MJ2/3: RS-232 or RS-485 half or full-duplex, software selectable RS-485 termination and biasing, software selectable

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MJ2/3 PINS		
PIN	**SIGNAL**	**DIRECTION**
8	TXD RS232	OUT
7	RXD RS232	IN
6	0V	GROUND
5	+5V @ 60mA	OUT
4	TX- RS485	OUT
3	TX+ RS485	OUT
2	RX- RS485	IN
1	RX+ RS485-	IN

NOTE: Attach optional ferrite core with a minimum of two turns of serial cable. See website for more details.
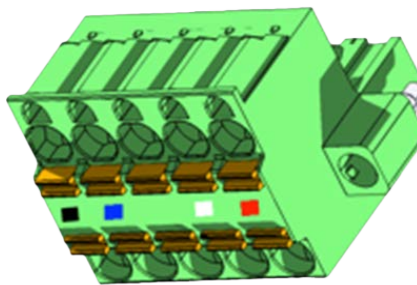[Part #: HE-FBD001]

Ethernet
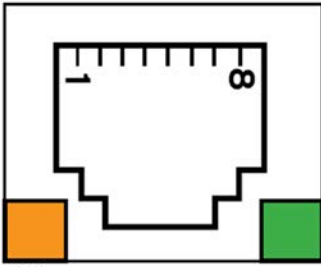
Green LED indicates link - when illuminated, data communication is available.

Orange LED indicates activity - when flashing, data is in transmission.
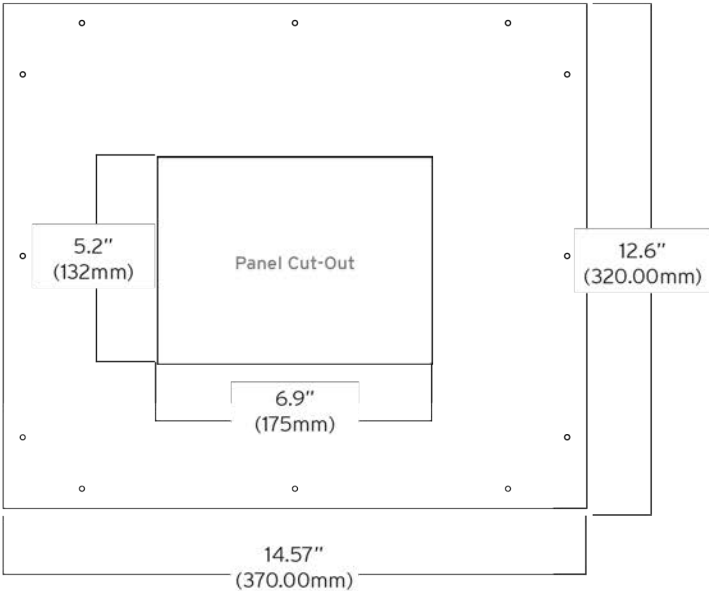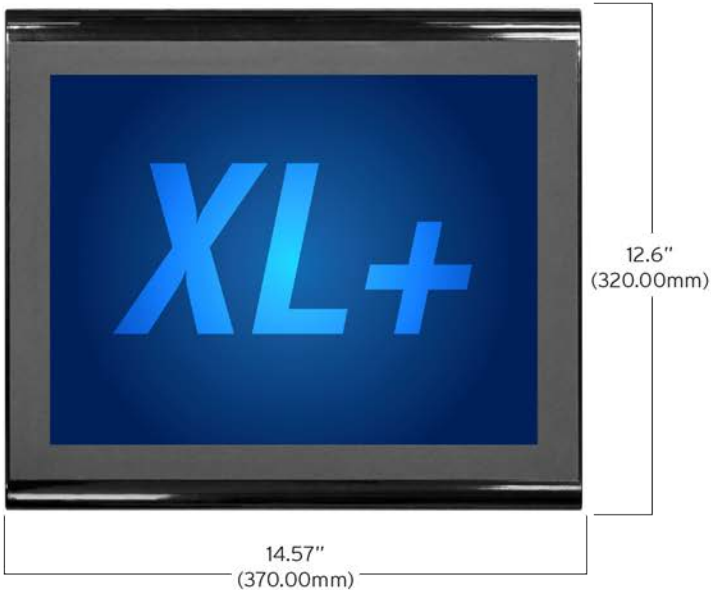
CAN Communications

HG-001

CAN Pin Assignments		
PIN	**SIGNAL**	**DESCRIPTION**
1	V-	CAN Ground – Black
2	CN_L	CAN Data Low – Blue
3	SHLD	Shield Ground – None
4	CN_H	CAN Data High – White
5	V+ (NC)	No Connect – Red

- **Solid/Stranded Wire**: 12-24 awg (2.5-0.2mm).
- **Strip Length**: 0.28" (7mm).
- Locking spring-clamp, two-terminators per conductor.
- **Torque, Terminal Hold-Down Screws**: 4.5 – 7 in-lbs (0.50 – 0.78 N-m).

V+ pin is not internally connected, the SHLD pin is connected to Earth ground via a 1MΩ resistor and 10 nF capacitor.

DIMENSIONS & INSTALLATION

12.6"
(320.00mm)

14.57"
(370.00mm)

4.08"
(103.63mm)

5.2"
(132mm)

Panel Cut-Out

6.9"
(175mm)

12.6"
(320.00mm)

14.57"
(370.00mm)

Panel Tolerance: +/-0.5mm
HG-005

NOTE: For mounting template, please refer to MAN1124.

Installation Procedure

The XL15+ is a panel mounted device and is meant to be an enclosure suitable for the equipment, such that the equipment is only accessible with the use of a tool. The XL15+ is suitable for use in Class I, Division II, Groups F and G, and Class III Hazardous Locations or non-hazardous locations only.

The XL15+ allows unique installation options that simplify installation for systems that may not need robust vibration or water resistance.

If the system does not experience shock or vibration and will not be exposed to weather or wash down conditions the unit can be installed by cutting the rectangular opening and installing the four supplied clips.

For systems that may experience shock or vibration or are installed outdoors or in wash down environments, the rectangular cut and clips are used and perimeter holes must be drilled in the panel. The supplied studs are then inserted into the perimeter of the controller and supplied nuts will secure the perimeter of the unit to the panel.

Please reference the XL15+ Quick Reference Guide (MAN1124) for Mounting Template.

1. Remove all connectors from the XL15+ OCS unit.
2. Carefully locate an appropriate place to mount the XL+. Be sure to leave enough room at the top of the unit for insertion and removal of the microSD card. Also leave enough room at the bottom for the insertion and removal of USB FLASH drives and wiring
3. Carefully cut the host panel per the diagram, with a tolerance of +/- 0.5mm. Remove any burrs/sharp edges and ensure the panel is not warped in the cutting process.
   - If the opening is too large, water may leak into the enclosure, potentially damaging the OCS.
   - If the opening is too small, the OCS may not fit through the hole without damage.
4. Make sure both inner and outer gaskets are installed on the XL15+ OCS and are free from dust and debris. Check that the corners of the gasket are secure. Insert the OCS through the panel cutout (from the front). The gasket needs to be between the host panel and the OCS.
5. The two (2) spring clips will latch the unit in the panel.
6. Insert each of the four (4) mounting clips into the slots in the XL15+ OCS case. One clip should be installed on each corner. Lightly tighten each screw so the clip is held in place.
7. Tighten the screws on the clips such that the gasket is compressed against the panel. Recommended torque is 7-10 in-lbs (0.79-1.13 Nm). If the perimeter studs are needed, it is recommended to use a thread locker (similar to 242 Blue Loctite). Use supplied lock washers and nut.

   NOTE: Recommended torque is 3-4 in-lbs (0.34- 0.45 Nm).

8. Reinstall the I/O Removable Terminal Blocks.
   Connect communications cables to the serial port, USB ports, Ethernet port, and CAN port as required.

SAFETY & MAINTENANCE

Warnings

1. To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.
2. 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.
3. Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.
4. In the event of repeated failure, do NOT replace the fuse again as repeated failure indicates a defective condition that will NOT clear by replacing the fuse.
5. 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.
6. 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.
7. **WARNING** - Battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.
8. **WARNING - EXPLOSION HAZARD** - Batteries must only be changed in an area known to be non-hazardous.
9. **WARNING** - Do not disconnect while circuit is live unless are is know to be non-hazardous.

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

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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. Use caution when connecting controllers to PCs via serial or USB. PCs, especially laptops, may use "floating power supplies" that are ungrounded. This could cause a damaging 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.