

EXL10 OCS DATASHEET

MODEL 0 No Built-In I/O

1 TECHNICAL SPECIFICATIONS

1.1 General Specifications

| | |
|-------------------------------|---|
| Required Power (Steady State) | 650mA @ 24VDC |
| Required Power (Inrush) | 25A for < 1ms @ 24VDC, DC switched |
| Primary Power Range | 10 - 30VDC |
| Relative Humidity | 5 to 95% non-condensing |
| Clock Accuracy | + / - 20 ppm maximum at 25°C (+/- 1 min/month) |
| Real Time Clock | Battery Backed, Rechargeable Lithium |
| Surrounding Air Temp | -10°C to +60°C |
| Storage Temp | -20°C to +60°C |
| Weight | 4.375 lbs. / 1984.45g |
| Certifications (UL/CE) | North America: https://hornerautomation.com/certifications/ Europe: http://www.horner-apg.com/en/support/certification.aspx |

1.2 Control & Logic

| | |
|--------------------------|--|
| Control Language Support | Advanced Ladder Logic Full IEC 61131-3 Languages Tag-Based Editor |
| Logic Program Size | 1 MB, maximum |
| Logic Scan Rate | 0.013ms/kB |
| Digital Inputs | 2048 |
| Digital Outputs | 2048 |
| Analog Inputs | 512 |
| Analog Outputs | 512 |
| Gen. Purpose Registers | 50,000 (words) Retentive 16,384 (bits) Retentive 16,384 (bits) Non-retentive |

1.3 Connectivity

| | |
|------------------------|---|
| Serial Ports | 1 RS-232 and 1 RS-485 on first Modular Jack (MJ1/2) 1 RS-232 or 1 RS-485 on second Modular Jack |
| USB mini-B | USB 2.0 (480MHz) Programming & Data Access |
| USB A | USB 2.0 (480MHz) for USB flash drives (2TB) |
| CAN Port Isolated 1 kV | Remote I/O, Peer-to-peer Comms, Cscape |
| CAN Protocols | CsCAN, CANopen, DeviceNet, J1939 |
| 2 x Ethernet | 10/100 Mb (Auto-MDX) |
| Ethernet Protocols | TCP/IP, Modbus TCP, FTP, SMTP, EGD, ICMP, ASCII, Cscape, Ethernet IP, HTTP |
| Remote I/O | SmartRail, SmartStix, SmartBlock, SmartMod |
| Removable Memory | microSD, SDHC, SDXC IN FAT32 format, support for 32GB max. Application Updates, Datalogging, and more |
| Audio | Mic In, Line In, Line Out |

1.4 User Interface

| | |
|-----------------------|--|
| Display Type | 10.4" VGA TFT (550 nit typical) |
| Resolution | 640 x 480 |
| Color | 16-bit (65,536) |
| Screen Memory | 27MB |
| User-Program. Screens | 1023 max pages; 1023 objects per page |
| Backlight | LED - 50,000 hour life |

Wiring Details:

Solid/Stranded wire - 12-24 awg (2.5-0.2mm²).
Strip length - 0.28" (7mm).
Torque rating: 4.5 - 7 in-lbs (0.50 - 0.78 N-m).

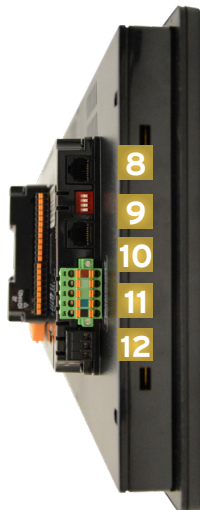
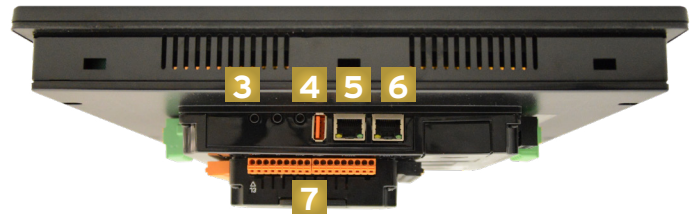
EXL10 User Manual [MAN1029]

The User Manual includes extensive information on:

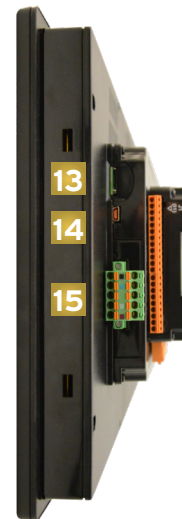
- Built-in I/O
- Common %S & %SR Registers
- HSC/PWM/Totalizer/Quadrature & Accumulator Registers
- Resource Limits

2 CONTROLLER OVERVIEW

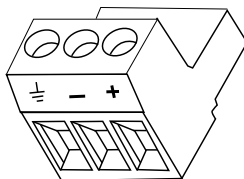
2.1 - Overview of EXL10



1. Touchscreen
2. Function Keys
3. Audio Out/In
4. USB 2.0 'A': Flash Storage
5. LAN1 Port
6. LAN2 Port
7. Built-In I/O
8. MJ1/MJ2: RS-232 & 1/2 Duplex RS-485
9. Dip Switches
10. MJ3: RS-232/485
11. CAN1: Can I/O & Fieldbus Port
12. Power: 10-30VDC In
13. microSD: Data Storage
14. USB mini 'B': Programming
15. CAN 2: CAN I/O



2.2 - Power Wiring



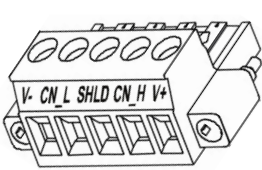
DC Input / Frame
Solid/Stranded Wire: 12-24 awg (2.5-0.2 mm).
Strip Length: 0.28" (7 mm).
Torque Rating: 4.5 - 7 in-lbs (0.50 - 0.78 N-m).
 DC- is internally connected to I/O V-, but is isolated from CAN V-.
 A Class 2 power supply must be used.

Primary Power Port Pins

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

3 COMMUNICATIONS

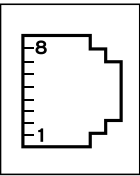
3.1 - CAN Communications



| 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 |

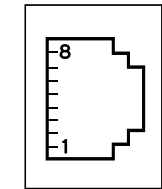
Solid/Stranded Wire: 12-24 awg (2.5-0.2mm).
Strip Length: 0.28" (7 mm).
 Locking spring-clamp, two-terminators per conductor.
Torque Rating: 4.5 in-lbs (0.50 N-m).
 V+ pin is not internally connected, the SHLD pin is connected to Earth ground via a 1 MΩ resistor and 10 nF capacitor.

3.2 - Serial Communications



MJ1/2 Independent Serial Ports
 MJ1: RS-232 w/full handshaking
 MJ2: RS-485 Half-Duplex

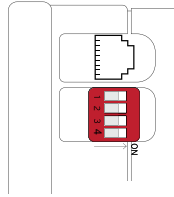
| MJ1 PINS | | | MJ2 PINS | |
|----------|------------|-----------|------------|-----------|
| PIN | SIGNAL | DIRECTION | SIGNAL | DIRECTION |
| 8 | TXD | OUT | -- | -- |
| 7 | RXD | IN | -- | -- |
| 6 | 0V | GROUND | 0V | GROUND |
| 5 | +5V @ 60mA | OUT | +5V @ 60mA | OUT |
| 4 | RTS | OUT | -- | -- |
| 3 | CTS | IN | -- | -- |
| 2 | -- | -- | RX- / TX- | IN / OUT |
| 1 | -- | -- | RX+ / TX+ | IN / OUT |



MJ3 SERIAL PORT
 2 Multiplexed Serial Ports on One Modular Jack (8posn)

| MJ3 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 |

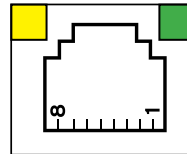
3.3 - Dip Switches



| DIP SWITCHES | | | |
|--------------|-----------------------|-----------------|---------|
| PIN | NAME | FUNCTION | DEFAULT |
| 1 | MJ3 RS485 Termination | ON = Terminated | OFF |
| 2 | MJ3 Duplex | ON = Half | OFF |
| 3 | | OFF = Full | OFF |
| 4 | MJ2 RS485 Termination | ON = Terminated | OFF |

The DIP switches are used to provide a built-in termination to both the MJ1, MJ2 & MJ3 ports if needed. The termination for these ports should only be used if this device is located at either end of the multidrop/daisy-chained RS-485 network.

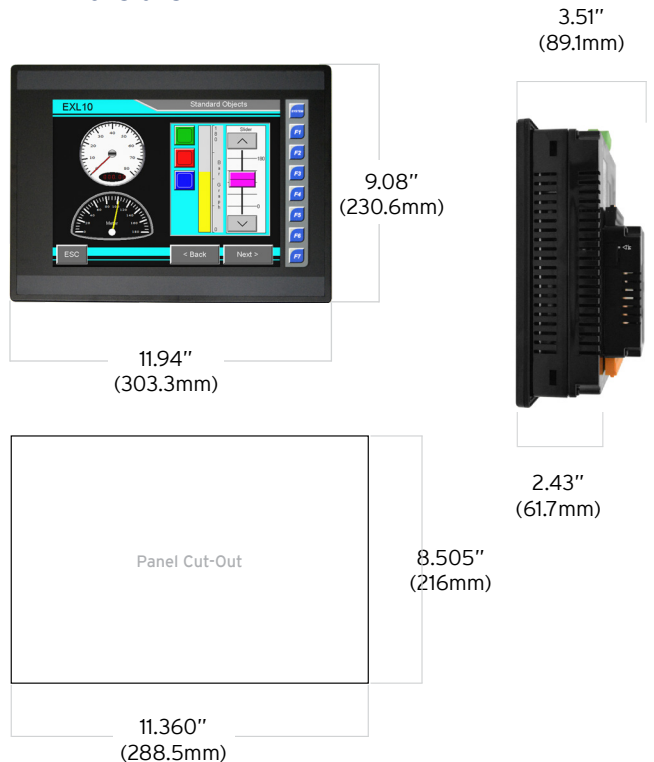
3.4 - Ethernet Communications



Green LED indicates link - when illuminated, data communication is available.
 Yellow LED indicates activity - when flashing, data is in transmission.

4 DIMENSIONS & INSTALLATION

4.1 - Dimensions



dimensions & installation continued...

4.2 - Installation Procedure

The EXL10 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.

- Carefully locate an appropriate place to mount the EXL10. Be sure to leave enough room at the top of the unit for insertion and removal of the microSD™ card.
- Carefully cut the host panel per the diagram, creating a 216mm x 288.5mm +/-0.1 mm opening into which the EXL10 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.
- Remove any burrs and or sharp edges and ensure the panel is not warped in the cutting process.
- Remove all Removable Terminals from the EXL10. Insert the EXL10 through the panel cutout (from the front). The gasket must be between the host panel and the EXL10.
- Install and tighten the four mounting clips (provided in the box) until the gasket forms a tight seal.
NOTE: Max torque is 0.8 to 1.13 N m, or 7-10 in-lbs.
- Reinstall the EXL10 I/O Removable Terminal Blocks. Connect communications cables to the serial port, USB ports, Ethernet port, and CAN port as required.

5 BATTERY

5.1 Backup Battery

The EXL10 has an advanced battery system that uses a rechargeable lithium battery. The battery powers the real time clock when power is removed, and it is needed for register data retention. Please reference the EXL10 User Manual [MAN1029] which provides instructions on how to replace the battery.

NOTE: For detailed rechargeable battery information, refer to the Battery Manual [MAN1142].

6 SAFETY & WARNINGS

6.1 - WARNINGS

- To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.
- 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.
- Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.
- 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.
- 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.

6.2 - FCC COMPLIANCE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation

6.3 - 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:

- Connect the safety (earth) ground on the power connector first before making any other connections.
- When connecting to the electric circuits or pulse-initiating equipment, open their related breakers.
- Do NOT make connection 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.
- Use copper conductors in Field Wiring only, 60/75°C.

7 PART NUMBER BUILDER

7.1 Part Number Builder

GLOBAL MODEL NUMBERS

I/O

HE-XV1E

- 0 (model 0)
- 2 (model 2)
- 3 (model 3)
- 4 (model 4)
- 5 (model 5)
- 6 (model 6)

EUROPEAN MODEL NUMBERS

I/O

HEXT505C1

- 00 (model 0)
- 12 (model 2)
- 13 (model 3)
- 14 (model 4)
- 15 (model 5)
- 16 (model 6)

8 TECHNICAL SUPPORT

8.1 - Contact Information

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

North America

(317) 916-4274
www.hornerautomation.com
techsppt@heapg.com

Europe

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