PRELIMINARY

XLE OCS Model: HE-XE103
12 Digital DC Inputs / 12 Digital Outputs
2 Analog Inputs (Medium Resolution)

XLE OCS Model: HE-XE104
24 Digital DC Inputs / 16 Digital Outputs
2 Analog Inputs (Medium Resolution)

Want More Information?
To download the XLE User Manual (MAN0805), refer to *Technical Support* in this document.

1 Specifications

HE-XE103 / 104 Specifications

Digital DC Inputs	XLE103	XLE104
Inputs per Module	12 including 4 configurable HSC inputs	24 including 4 configurable HSC inputs
Commons per Module	1	
Input Voltage Range	12 VDC / 24 VDC	
Absolute Max. Voltage	35 VDC Max.	
Input Impedance	10 kΩ	
Input Current	Positive Logic	Negative Logic
Upper Threshold	0.8 mA	-1.6 mA
Lower Threshold	0.3 mA	-2.1 mA
Max Upper Threshold	8 VDC	
Min Lower Threshold	3 VDC	
OFF to ON Response	1 ms	
ON to OFF Response	1 ms	
HSC Max. Switching Rate	10 kHz	

Analog Inputs, Medium Resolution	XLE103	XLE104
Number of Channels	2	2
Input Ranges Safe input voltage range Input Impedance (Clamped @ -0.5 VDC to 12 VDC)	0 - 10 VDC 0 – 20 mA 4 – 20 mA -0.5 V to +12V Current Mode: 100 Ω Voltage Mode: 500 k Ω	
Nominal Resolution %AI full scale Max. Over-Current	10 Bits 32,000 counts 35 mA	
Conversion Speed	All channels converted once per ladder scan	
Max. Error at 25°C	TBD	
Additional error for temperatures other than 25°C	TBD	
Filtering	160 Hz hash (noise) filter 1-128 scan digital running average filter	

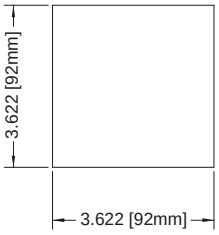
Digital DC Outputs	XLE103	XLE104
Outputs per Module	12 including 2 configurable PWM outputs	16 including 2 configurable PWM outputs
Commons per Module	1	
Output Type	Sourcing / 10 K Pull-Down	
Absolute Max. Voltage	28 VDC Max.	
Output Protection	Short Circuit	
Max. Output Current per point	0.5 A	
Max. Total Current	4 A Continuous	
Max. Output Supply Voltage	30 VDC	
Minimum Output Supply Voltage	10 VDC	
Max. Voltage Drop at Rated Current	0.25 VDC	
Max. Inrush Current	650 mA per channel	
Min. Load	None	
OFF to ON Response	1 ms	
ON to OFF Response	1 ms	
Output Characteristics	Current Sourcing (Pos logic)	

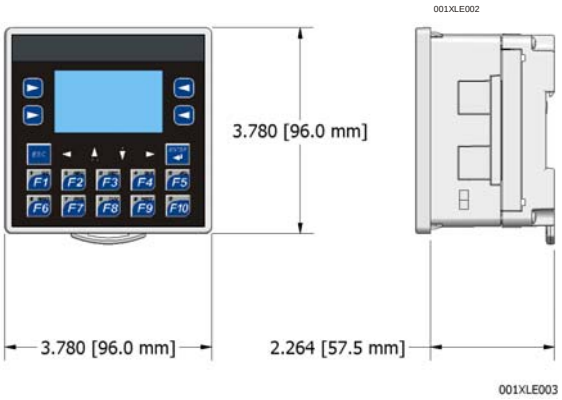
General Specifications	
Required Power (Steady State)	130 mA @ 24 VDC
Required Power (Inrush)	30 A for 1 ms @ 24 VDC
Primary Power Range	10 – 30 VDC
Relative Humidity	5 to 95% Non-condensing
Operating Temperature	0° to 50° Celsius
Terminal Type	Screw Type,5 mm Removable
CE / UL	See Compliance Table at http://www.heapg.com/Support/compliance.htm
Weight	12.5 oz. (354.36 g)

2 Panel Cut-Out and Dimensions

Refer to XLE User Manual (MAN0805) for panel box information and a handy checklist of requirements.

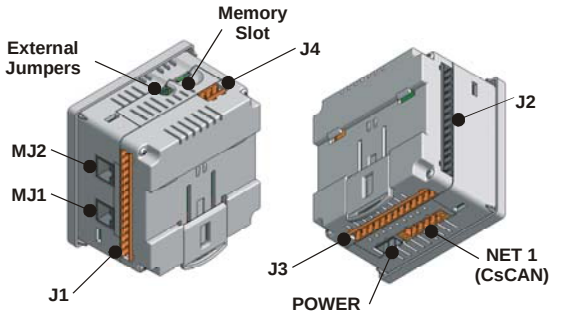
Note:
The tolerance to meet **NEMA** standards is ± 0.005" (0.1 mm).





3 Ports / Connectors / Cables

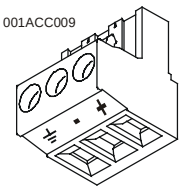
Note: The case of the XLE is black, but for clarity, it is shown in a lighter gray color.



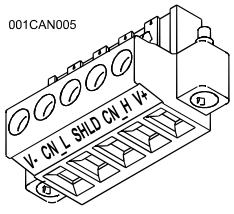
To Remove Back Cover:
Unscrew 4 screws located on the back of the unit.
Lift lid.

CAUTION: Do not overtighten screws when screwing the lid back on.

I/O Jumpers: (Not Shown)
I/O Jumpers (JP) are located internally. To access, remove back cover of unit.
The I/O Jumpers, External Jumpers and **Connectors** (J1- J4) are described in the ***Wiring and Jumpers*** section of this document.



Power Connector



CAN Connector

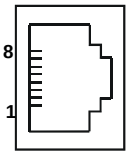
Power Up:
Connect to Earth Ground.
Apply 10 – 30 VDC.
Screen lights up.

Use the CAN Connector when using CsCAN network.

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

Serial Communications:
MJ1: Use for Cscape programming and Application-Defined Communications.

MJ2: Use for Application-Defined Communications



Pin	MJ1 Pins		MJ2 Pins	
8	TXD	OUT	TXD	OUT
7	RXD	IN	RXD	IN
6	0 V	Ground	0 V	Ground
5	NC	No Connect	NC	No Connect
4	CTS	OUT	TX-	OUT
3	RTS	IN	TX+	OUT
2	RX- / TX-	IN / OUT	RX-	IN
1	RX+ / TX+	IN / OUT	RX+	IN

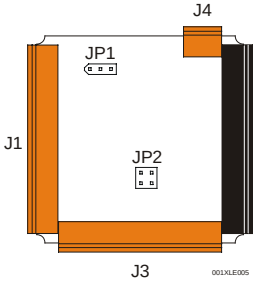
4 Wiring and Jumpers

Wire according to the type of inputs / outputs used and select the appropriate jumper option.

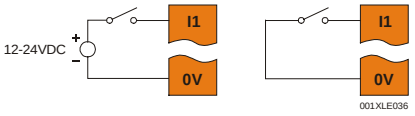
Wiring Specifications

- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.
- For shielded Analog I/O wiring, use the following wire type or equivalent: Belden 8441, 18 AWG or larger.
- For CAN wiring, use the following wire type or equivalent: Belden 3084, 18 AWG or larger.

Location of I/O jumpers (JP) and wiring connectors (J1 – J4).



Positive Logic vs. Negative Logic Wiring
The XLE can be wired for Positive Logic inputs or Negative Logic inputs.

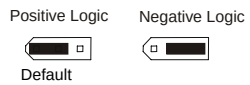


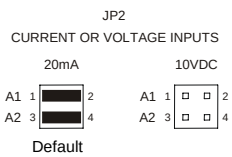
Positive Logic In Negative Logic In

a. I/O Jumpers Settings (JP1 – JP3)

Note: The Cscape Module Setup configuration must match the selected I/O (JP) jumper settings.

JP1 Digital DC Inputs



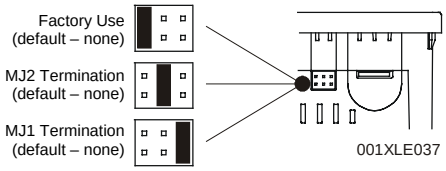


b. External Jumpers Settings

The External Jumpers are used for termination of the RS-485 ports. The XLE is shipped unterminated.

To terminate, select one of the jumpers shipped with the product and insert it based upon the option that is desired.

As seen when looking at the top of the XLE unit. Refer to Section 3 for the location of the External Jumpers.

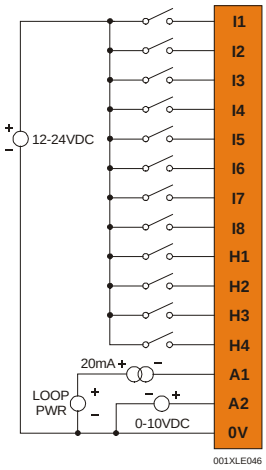


c. Wiring Examples

Note: The wiring examples show **Positive Logic** input wiring.

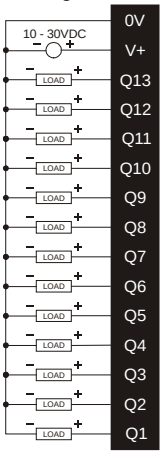
J1 Orange	XE103 / XE104 Name
I1	IN1
I2	IN2
I3	IN3
I4	IN4
I5	IN5
I6	IN6
I7	IN7
I8	IN8
H1	HSC1 / IN9
H2	HSC2 / IN10
H3	HSC3 / IN11
H4	HSC4 / IN12
A1	Analog IN1
A2	Analog IN2
0V	Ground

XE103 / 104 J1 Orange
Positive Logic
Digital In



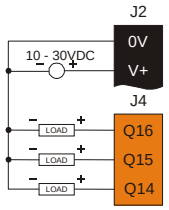
J2 Black	XE103	XE104
0V	Ground	
V+	V+ *	
NC	No Connect	OUT13
Q12	OUT12	
Q11	OUT11	
Q10	OUT10	
Q9	OUT9	
Q8	OUT8	
Q7	OUT7	
Q6	OUT6	
Q5	OUT5	
Q4	OUT4	
Q3	OUT3	
Q2	OUT2 / PWM2	
Q1	OUT1 / PWM1	
V+* Supply for Sourcing Outputs		

XE103 / 104 J2 Black
Positive Logic
Digital Out



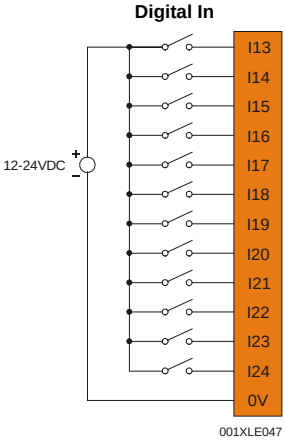
J4 Orange	XE104
Q16	OUT16
Q15	OUT15
Q14	OUT14

XE104 J4 Orange
Positive Logic
Digital Out



J3 Orange	XE104
I13	IN13
I14	IN14
I15	IN15
I16	IN16
I17	IN17
I18	IN18
I19	IN19
I20	IN20
I21	IN21
I22	IN22
I23	IN23
I24	IN24
0V	Ground

XE104 J3 Orange
Positive Logic
Digital In



5 Safety

When found on the product, the following symbols specify:

Warning: Electrical Shock Hazard.

Warning: Consult user documentation.

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.

- 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.