X10 OCS QUICK REFERENCE GUIDE

MODEL A BUILT-IN I/O: 12 DIGITAL IN, 12 DIGITAL OUT, 4 ANALOG IN/RTD IN, 2 ANALOG OUT
MODEL R BUILT-IN I/O: 12 DIGITAL IN, 6 RELAY OUT, 2 PWM OUT, 4 ANALOG IN/RTD IN, 2 ANALOG OUT

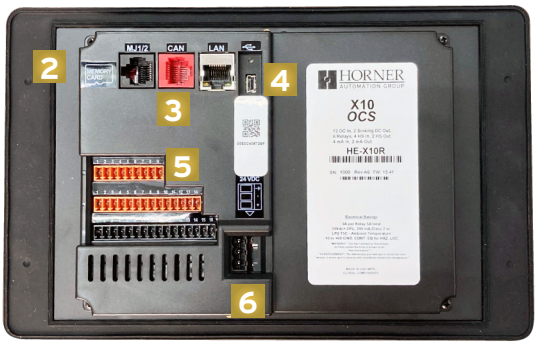
GENERAL SPECIFICATIONS

Primary Pwr. Range	9 - 30VDC	
	X10A	X10R
Typical power back-light 100%	305mA @ 24V	295mA @ 24V
Typical Power back-light 50%	205mA @ 24V	200mA @ 24V
Power Backlight Off	140mA @ 24V	140mA @ 24V
Inrush Current	30A < 1ms	
Real Time Clock	Battery backed; lithium coin cell CR2450	
Battery Life	7 - 10 years	
Clock Accuracy	+/- 90 secs/month @ 20°C	
Relative Humidity	5 to 95% Non-condensing	
Operating Temp.	-10°C to +60°C	
Storage Temp.	-20°C to +70°C	
Weight	39 oz. / 1105.6g	
Pollution Degree	2	
Altitude	Up to 2000m	
Mounting Clips	4 composite type	
Housing Material	Polycarbonate, UL rated	
Panel Seal	Silicone rubber	
Front Panel	Type 1, 4X indoor use only, 12, 12K and 13	
Packaging	100% Recyclable paper fiber materials	
Included in Box	Controller, 3 x I/O connectors, 4 x mounting clips, 1 x power connector, Quick Reference Guide	

CONTROLLER OVERVIEW

1. Touch Screen
2. High Capacity microSD Slot
3. RS232/RS485 Serial Connector, CAN port (via RJ45), LAN Port (Ethernet)
4. USB Mini-B Port
5. Analog I/O, DC Inputs, DC Outputs
6. DC Power

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

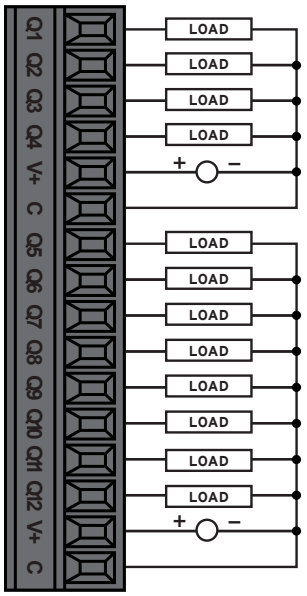


technical specifications continued on next page...

X10 Wiring

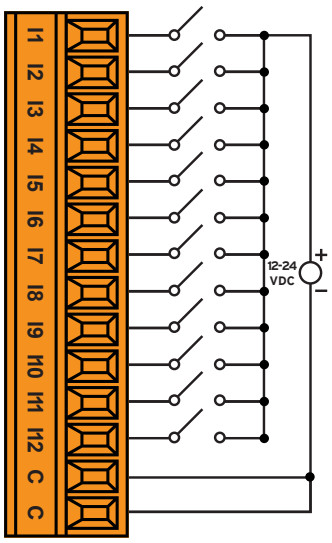
J1 Wiring Model A - Digital Out

POSITION/PIN		DIGITAL MODEL
1	Q1	Output 1 (PWM)
2	Q2	Output 2 (PWM)
3	Q3	Output 3
4	Q4	Output 4
5	V+	External V+
6	C	Common
7	Q5	Output 5
8	Q6	Output 6
9	Q7	Output 7
10	Q8	Output 8
11	Q9	Output 9
12	Q10	Output 10
13	Q11	Output 11
14	Q12	Output 12
15	V+	External V 2 +
16	C	Common



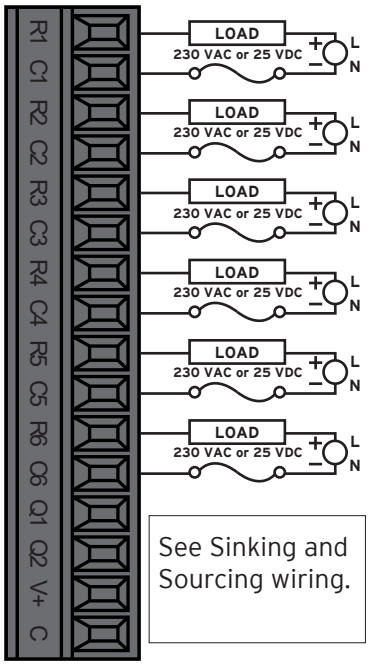
J2 Wiring: Model R & Model A - Digital Input

POSITION/PIN		DIGITAL MODEL
1	I1	Input 1
2	I2	Input 2
3	I3	Input 3
4	I4	Input 4
5	I5	Input 5
6	I6	Input 6
7	I7	Input 7
8	I8	Input 8
9	I9	Input 9 (HSC1)
10	I10	Input 10 (HSC2)
11	I11	Input 11 (HSC3)
12	I12	Input 12 (HSC4)
13	C	Common
14	C	Common



J1 Wiring: Model R - Relay and Digital Out

POSITION/PIN		DIGITAL MODEL
1	R1	Relay 1 N.O.
2	C1	Relay 1 C
3	R2	Relay 2 N.O.
4	C2	Relay 2 C
5	R3	Relay 3 N.O.
6	C3	Relay 3 C
7	R4	Relay 4 N.O.
8	C4	Relay 4 C
9	R5	Relay 5 N.O.
10	C5	Relay 5 C
11	R6	Relay 6 N.O.
12	C6	Relay 6 C
13	Q1	Output 1
14	Q2	Output 2
15	V+	External V+
16	C	Common



See Sinking and Sourcing wiring.

NOTE: Internal 10kΩ resistors between: V+ and Q1; V+ and Q2

X10 MODELS:

Power Wiring Connector

Primary Power Range: 9-30VDC

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

wiring: I-O continued on next page...

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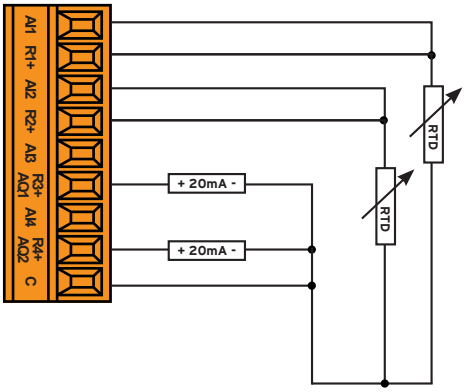
wiring: I-O continued...

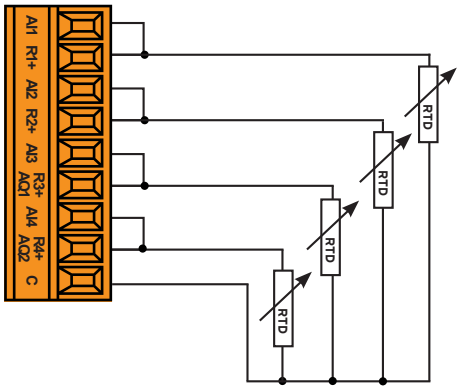
RTD: 2 x 3 - Wire RTD & 2 x 4-20mA Output

PIN	Wire	Connection
1	AI1	**RTD Sense**
2	R1+	**RTD Excitation**
3	AI2	**RTD Sense**
4	R2+	**RTD Excitation**
5	AI3	**No Connection**
6	R3+ or AQ1	**mA Output**
7	AI4	**No Connection**
8	R4+ or AQ2	**mA Output**
9	C	**Common**



RTD: 4 x 2 - Wire RTD Connection

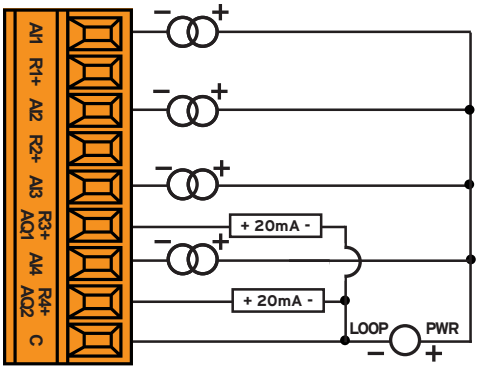
PIN	Wire	Connection
1	AI1	**RTD Sense**
2	R1+	**RTD Excitation**
3	AI2	**RTD Sense**
4	R2+	**RTD Excitation**
5	AI3	**RTD Sense**
6	R3+ or AQ1	**RTD Excitation**
7	AI4	**RTD Sense**
8	R4+ or AQ2	**RTD Excitation**
9	C	**Common**



If AQ1 is used, RTD3 is unavailable.
If AQ2 is used, RTD4 is unavailable.

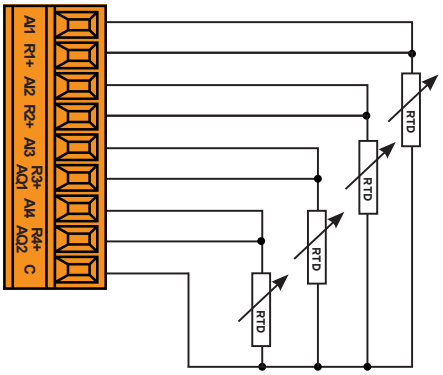
4 x 4 - 20mA Input / 4-20mA Output

PIN	Wire
1	AI1
2	R1+
3	AI2
4	R2+
5	AI3
6	R3+or AQ1
7	AI4
8	R4+or AQ2
9	C



RTD: 4 x 3 - Wire RTD Connection

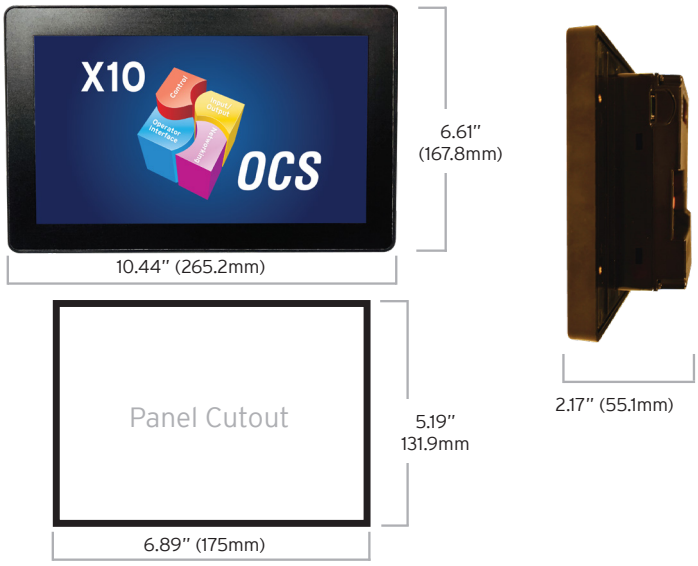
PIN	Wire	Connection
1	AI1	**RTD Sense**
2	R1+	**RTD Excitation**
3	AI2	**RTD Sense**
4	R2+	**RTD Excitation**
5	AI3	**RTD Sense**
6	R3+ or AQ1	**RTD Excitation**
7	AI4	**RTD Sense**
8	R4+ or AQ2	**RTD Excitation**
9	C	**Common**



If AQ1 is used, RTD3 is unavailable.
If AQ2 is used, RTD4 is unavailable.

DIMENSIONS & INSTALLATION

Panel Cutout



Installation Procedure

This equipment is panel mounted and is meant to be installed in an enclosure suitable for the environment, such that the back of the equipment is only accessible with the use of a tool.
This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D; Class II, Division 2 Groups F and G; and Class III Hazardous Locations or Non-Hazardous Locations only.

The X10 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.

1. Carefully locate an appropriate place to mount the X10. 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 175mm x 131.9mm (with a tolerance of +0.1mm/ -0mm) opening into which the X10 is to 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/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).
   NOTE: Torque Rating is 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.

SAFETY

WARNINGS

1. **WARNING** - Do not disconnect while circuit is live unless area is known to be non-hazardous.
   AVERTISSEMENT - Ne pas déconnecter pendant que le circuit est sous tension à moins que la zone ne soit connue pour être non dangereuse.
2. WARNING - EXPLOSION HAZARD - Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.
   AVERTISSEMENT - RISQUE D'EXPLOSION - Ne débranchez pas l'équipement tant que la puissance électrique n'a pas été retirée ou que la zone n'est pas dangereuse.
3. WARNING - Do not disconnect while circuit is live unless area is known to be non-hazardous.
   AVERTISSEMENT - Ne débranchez pas lorsque le circuit est sous tension, à moins que la zone ne soit reconnue comme non dangereuse.
4. To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.
5. 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.
6. Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.
7. 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.
8. 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.
9. If the equipment is used in a manner not specified by Horner APG, the protection provided by the equipment may be impaired.

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

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.

TECHNICAL SUPPORT

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
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technical.support@horner-apg.com