SmartBlock I/O Module
HE579MIX577/977 Isolated
4/8 Analog Inputs 2/4 Analog Outputs

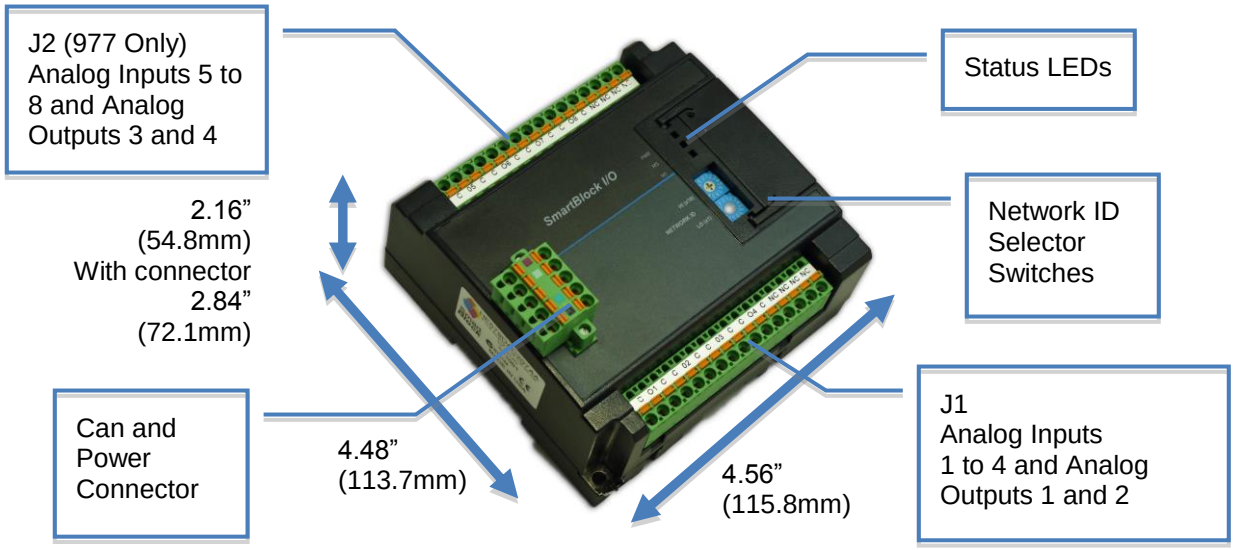
1 SPECIFICATIONS

Analog Inputs High Resolution		
Steady State Current Consumption	120mA @ 24v	
Number of Channels	4 (577) or 8 (977)	
Input Ranges	0 to 10 VDC 0 to 5 VDC 0 to 20 mA 4 – 20 mA	
Safe input voltage range	-0.5 to +30 V	
Isolation	3K VDC 2.5K VAC Test IEC61010-1 400V RMS	
Input Impedance	Current Mode: 55 Ω	Voltage Mode: 1 meg Ω
Nominal Resolution	16 Bits	
%AI full scale	32,000 counts	
Max. Over-Current	35 mA	
Max. Error at 25°C (excluding zero)	0.1%	
Additional error for temperatures other than 25°C	TBD	
Filtering	16 Hz hash (noise) filter 1-128 scan digital running average filter	

ANALOG OUT			
Number of Outputs	2 (577) or 4 (977)	**Isolation (Power to Analog Output)**	3K VDC 2.5K VAC Test IEC61010-1 400V RMS
Output Ranges	0-5V, 0-10V DC 4-20mA, 0-20mA DC	**Isolation Method**	Magnetic
Resolution	14 bits	**Output Clamp**	+24V -.5V, 600Wpk
Accuracy, 25°C	0.1%	**Output Type**	Sourcing
Load Resistance	V: 500 ohms Min mA: 500 ohms Max	**Register Value for Nominal Full Scale**	32000

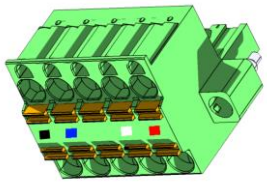
General Specifications	
Voltage Input	10-30 VDC
Relative Humidity	5 to 95% Non-condensing
Required Power (Steady State)	4W (150mA @ 24VDC)
Required Power (Inrush)	DC Switched: 12A 50uS AC Switched: 120mA 10mS
Operating Temperature	0° to 60° Celsius
Weight	12oz/340g

2 DIMENSIONS AND INSTALLATION



CAN Network & Power Connector

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



CAN Network & Power Port Pin Assignments			
Pin	**Signal**	**Signal Description**	**Direction**
1	V-	CAN and Device 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+	Positive DC Voltage Input (10-30VDC) - Red	–

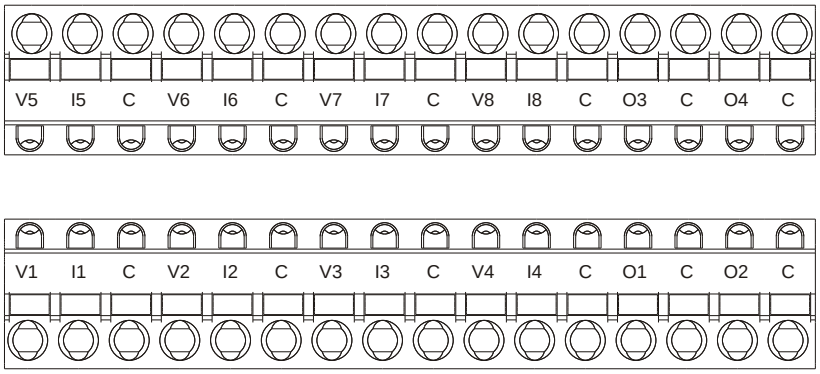
Network, Power and Grounding:
A single 5 pin connector is used to make both a network connection and power input. A quality class 2 power supply should be used for this product. If the power is run with the network cable, care must be taken such that the voltage does not drop below the lower supply limit on longer runs.

A quality earth ground is required for safe and proper operation. The best ground is achieved by screwing the lower left grounding location into a grounded back plate. Alternately a ground can be connected to the spade lug.

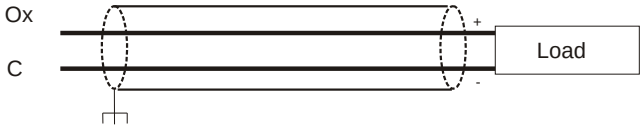
Please see Horner manual MAN0799 for details on CAN wiring.

3 WIRING

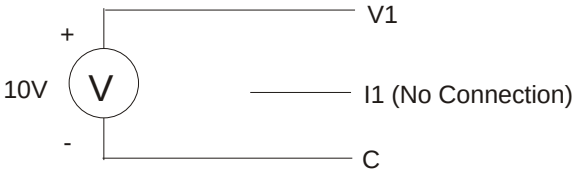
977 Only

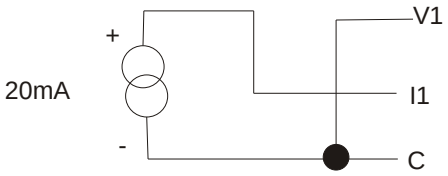


Channel wiring detail with shielded cable



INPUTS



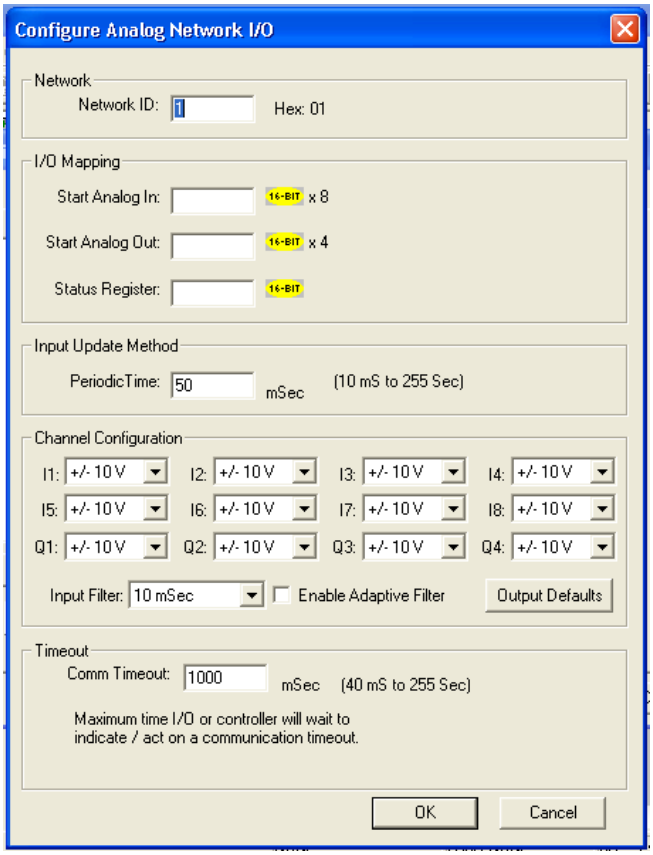


4 CONFIGURATION

For most applications the I/O scanner built into Cscape and the OCS firmware will provide a fast, robust and easy to use method to configure and scan the SmartBlock I/O. For advanced operations such as on-the-fly changes to the input type please see the following chapter on network data and the SmartStix and SmartBlock programming guide.

To configure SmartBlock I/O from Cscape open the Hardware Configuration dialog from the Controller | Hardware Configuration menu. Select the option for CsCAN I/O, then click Add. Select the SmartBlock Tab and select the device to be configured.

Below is the configuration for MIX577/977 device.



Network ID – This should match the ID of the rotary switch on the SmartBlock unit and should be unique to the network.

I/O Mapping – These registers define how the OCS controller registers are mapped to the data to and from the SmartBlock I/O. These registers do no have to match the I/O types typically used for I/O such as %AI, Q… Any standard controller registers may be used such as %R, %T and %M.

Input Update Method – This defines how often analog data is sent from the SmartBlock to the CsCAN network. Digital data is transmitted on change of state.

Channel Configuration – This selects how each analog channel is configured including filtering.

Timeout – This sets the time a controller will wait before assuming the host OCS is off-line.

6 INSTALLATION / SAFETY

Warning: Remove power from the OCS controller, CAN port, and any peripheral equipment connected to this local system before adding or replacing this or any module

a) All applicable codes and standards should be followed in the installation of this product.
b) Shielded, twisted-pair wiring should be used for best performance.
c) Shields are to be terminated to frame ground.
d) In severe applications, shields should be tied directly to the ground block within the panel.
e) Ungrounded thermocouple sensors are preferred due to their isolated electrical characteristics
f) Interposing terminal strips between the sensor and the module can cause errors due to cold junction effect.
g) If Interposing terminal strips must be used, use specially constructed terminal blocks, which match the material characteristics of the thermocouple sensor.
h) Horner thermocouple input modules use a high impedance differential circuit to support the use of grounded or ungrounded thermocouples. For grounded thermocouples, the specified **Common Mode Range** allows for ground potential differences between the machine ground and the PLC ground within that range. For ungrounded or floating thermocouples the high impedance inputs are subject to common mode noise pickup. For noisy environments it is recommended that one side of all ungrounded thermocouples be grounded near the PLC. This does not affect open thermocouple detection or measurement accuracy and reduces the effect of common mode noise if present. This PLC side ground connection must not be used with grounded thermocouples or accuracy will be affected. Any thermocouple should be grounded in one place at most.

When found on the product, the following symbols specify:

Warning: Consult user documentation.

Warning: Electrical Shock Hazard.

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

Adhere to the following safety precautions whenever any type of connection is made to the module.

- Connect the green safety (earth) ground 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.

7 TECHNICAL SUPPORT

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