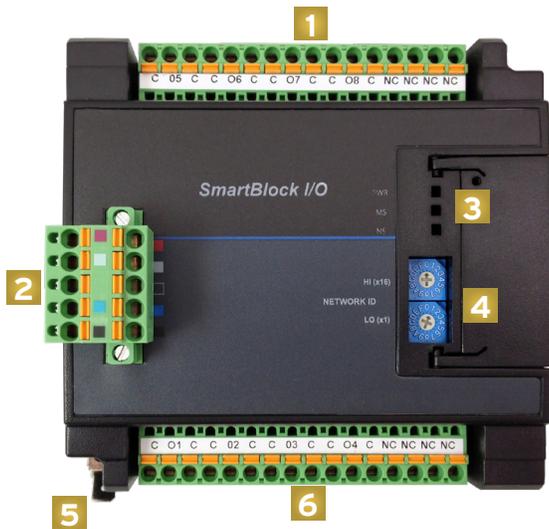




## 2 PORT CONNECTORS AND POWER WIRING

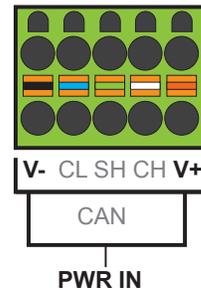


1. 977 Only - J2 Analog Inputs 5 to 8; Analog Outputs 3 & 4
2. CAN and Power Connector
3. Status LEDs
4. Network ID Selector Switches
5. Earth Ground
6. J1 - Analog Inputs 1 to 4; Analog Outputs 1 & 2

### Power Wiring

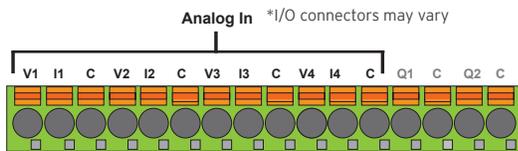
A single 5-pin connector is used to make both a network connection and power input. A quality Class 2 power supply should be used for this product. If the power is run with the network cable, care must be taken so that the voltage does not drop below the lower supply limit on longer runs.

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

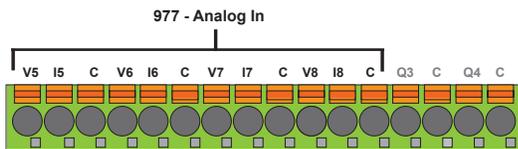


## 3 ANALOG INPUT WIRING

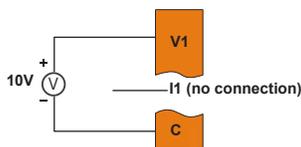
### J1 Wiring - MIX577 & 977 Analog Input



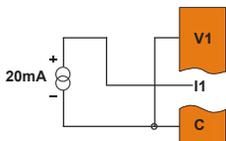
### J2 Wiring - MIX977 - Analog Input



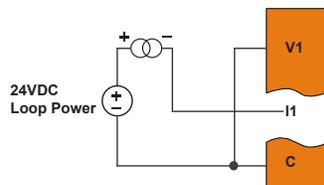
#### 10V Analog In



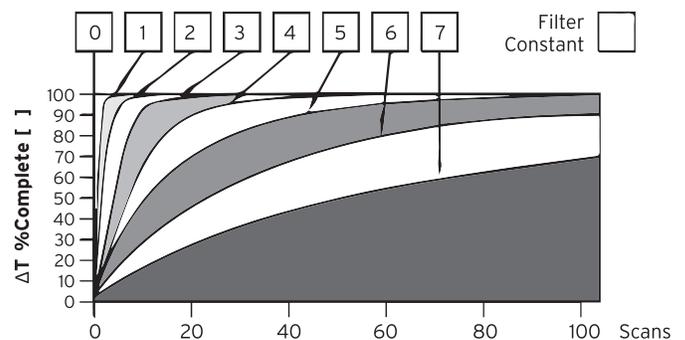
#### 20mA Analog In - Self Powered



#### 20mA Analog In - Not Self-Powered



Each Analog Input may be specified separately in the Cscape configuration as having a range of 0-10VDC, 0-20mA DC, or 4-20mA DC. For whichever range is configured, the Analog Input registers %AI1 - %AI2 will contain values between 0 - 32000 to match measurements in that range. Using this raw value, the Scaling function in Cscape, and the connected sensor's given range, it is easy to get a measurement for display, alarming, datalogging, or any other purpose required. Alternately, the raw value may be used directly for PID loops.

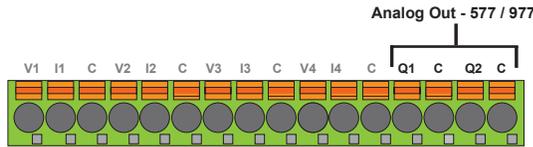


Analog filtering module response to a temperature change in the analog in. The illustration above demonstrates the effect of digital filtering on (set with Filter Constant).

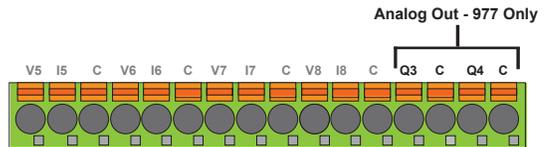
Data Values	
INPUT MODE:	DATA FORMAT, 12-bit INT:
0-20mA, 4-20mA	0-32000

## 4 ANALOG OUTPUT WIRING

### J1 Wiring - MIX577 & 977 Analog Output



### J2 Wiring - MIX977 - Analog Output



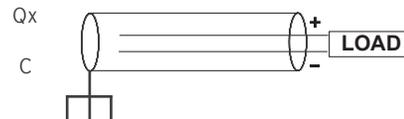
#### Removing and Inserting Connectors:

Use a small screwdriver to gently pry up the connector. Gently press on connector to snap into place.

#### Wiring Details:

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 Nm).

Channel wiring detail with shielded cable

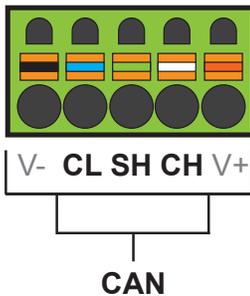


## 5 CAN COMMUNICATIONS

The CAN port is provided via three connections on the CAN/Power: CAN\_LOW (CL), CAN\_HIGH (CH), and V- (C). It may be used to communicate with other OCS products using Horner's CsCAN protocol. A 24VDC power source will be required on the CsCAN bus in order to power the expansion I/O modules.

**NOTE:** For detailed wiring information, refer to CAN Network Manual (MAN0799).

**NOTE:** 12-24VDC must be supplied to the network.



#### Wiring Details

- Locking Spring-Clamp
- Two-terminators per Conductor
- Torque Rating: 4.5 in-lbs (0.50 N-m)
- SHLD and V+ pins are not internally connected

#### CAN Port Pins

PIN	SIGNAL	DESCRIPTION
1	V-	CAN and Device Ground - Black
2	CN L	CAN Data Low - Blue
3	SHLD	Shield Ground - None
4	CN H	CAN Data High - White
5	V+	Positive DC Voltage Input (10-28VDC) - Red

#### Recommended Cable

Thick	Max Distance = 500m	Belden 3082A
Thin	Max Distance = 100m	Belden 3084A

## 6 DIAGNOSTIC LED INDICATORS

Diagnostic LED	State	Meaning
MS indicates fault status of the Module	Solid Red	RAM or ROM test failed
	Flashing Red	I/O test failed
	Flashing Green	Module is in power-up state, no config from OCS
	Solid Green	Module is running normally
NS indicates fault status of the Network	Solid Red	Network Ack or Dup ID test failed
	Flashing Red	Network ID test failed
	Flashing Green	Controlling OCS is offline.
	Green	Network is running normally.

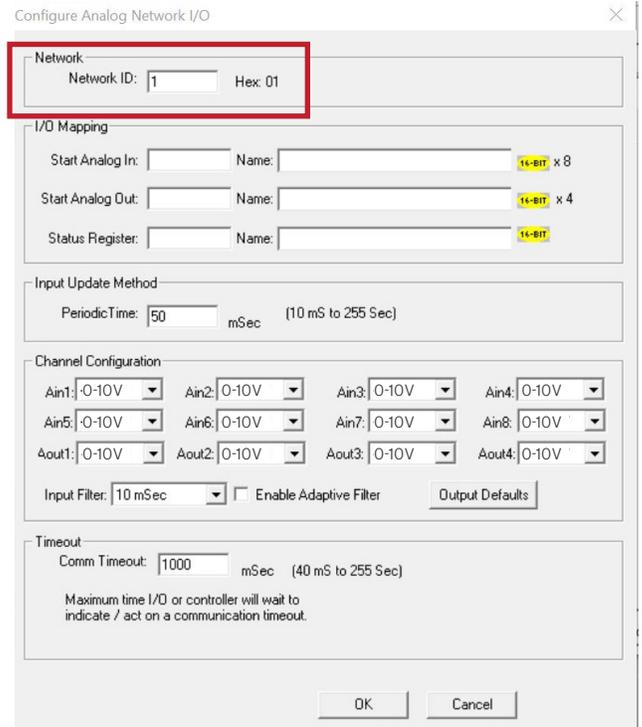
Status LED Indicators - The Power Status LED illuminates **RED** when power is applied to the module. There are I/O status LED indicators for each of the Digital I/O points, which illuminates **RED** when the I/O point is ON.

## 7 CSCAPE CONFIGURATION

The HE579MIX577 and HE579MIX977 SmartBlock modules are configured through the Hardware Configuration menu in Cscape. To open the configuration screen to configure module and input settings:

1. Select **Controller** from Cscape the top navigation bar.
2. Select **Hardware Configuration** from dropdown menu.
3. Select **CAN1 (CsCAN) I/O** tab.
4. Click on **Add** button.
5. Select **SmartBlock** tab.
6. Select either **HE579MIX577** or **HE579MIX977**
7. Click **OK**.

HE579MIX977 Cscape Configuration Screen



<b>Network ID</b>	The Unique CAN ID of this device. Enter any decimal number between 1 and 253 here and note the translated hexadecimal value. Set the hexadecimal Network ID rotary switches on the device to translated value.
<b>I/O Mapping</b>	These registers define how the OCS controller registers are mapped to the data to and from the SmartBlock I/O. These registers do not 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.
<b>Input Update Method</b>	This defines how often analog data is sent from the SmartBlock to the CsCAN network. Digital data is transmitted on change of state.
<b>Channel Configuration</b>	This selects how each analog channel is configured including filtering.
<b>Timeout</b>	This sets the time a controller will wait before assuming the host OCS is offline.

## 8 CSCAN SMARTBLOCK I/O STATUS REGISTER DEFINITION

Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1
				Version Error	Incorrect Module	Not Configured	Offline
Bit 16	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9
Send						Reconfig (Sticky)	Lifetime (Sticky)

**NOTE:** The Status Register, viewed in INT format, is designed to be zero if there are no faults and non-zero if faults occur. Moving a value of 0 into the status register clears faults that remain on after they have been remedied, or "sticky".

## 9 NETWORK DATA

Bit	I/O Type	Description
1-4 (577/977) 5-8 (977 Only)	Analog Input	0 to 10VDC 0 to 5VDC 0 to 20mA 4 to 20mA
1-2 (577/977) 3-4 (977 Only)	Analog Output	0 to 10VDC 0 to 5VDC 0 to 20mA 4 to 20mA

## 10 SETTING ID SWITCHES

Configure SmartBlock in Cscape before this step, then use the hexadecimal number converted during Cscape configuration.

CsCAN Network IDs are set using the hexadecimal number system from 01 to FD. The decimal equivalent is 1-253. Refer to the Conversion Table below, which shows the decimal equivalent of hexadecimal numbers. Set a unique Network ID by inserting a small Phillips screwdriver into the two identical switches.

Network ID Switches

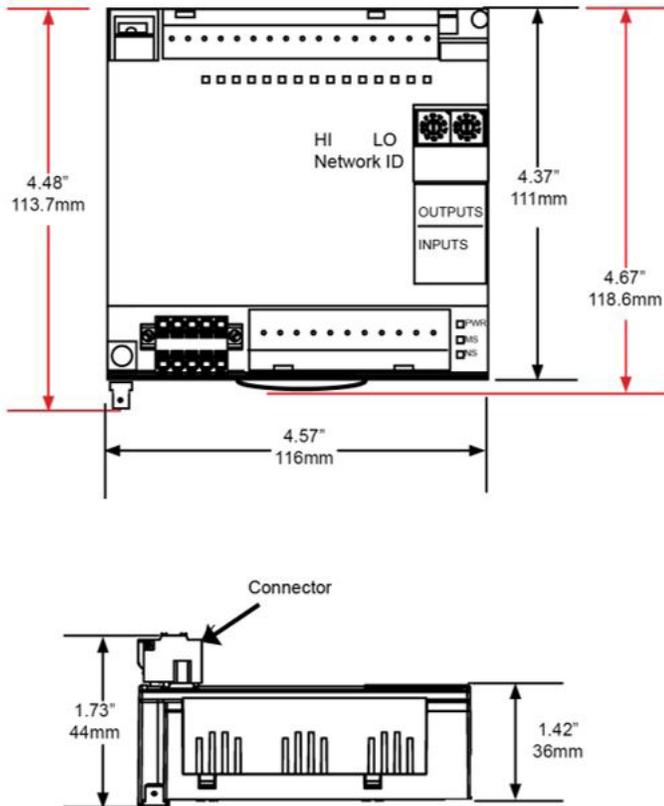


**NOTE:** The CsCAN Baud Rate for SmartBlock I/O is fixed at 125kBd.

Setting ID Switches - Conversion Chart

Dec	Hex																											
	Hi	Lo																										
1	0	1	29	1	D	57	3	9	85	5	5	113	7	1	141	8	D	169	A	9	197	C	5	225	E	1		
2	0	2	30	1	E	58	3	A	86	5	6	114	7	2	142	8	E	170	A	A	198	C	6	226	E	2		
3	0	3	31	1	F	59	3	B	87	5	7	115	7	3	143	8	F	171	A	B	199	C	7	227	E	3		
4	0	4	32	2	0	60	3	C	88	5	8	116	7	4	144	9	0	172	A	C	200	C	8	228	E	4		
5	0	5	33	2	1	61	3	D	89	5	9	117	7	5	145	9	1	173	A	D	201	C	9	229	E	5		
6	0	6	34	2	2	62	3	E	90	5	A	118	7	6	146	9	2	174	A	E	202	C	A	230	E	6		
7	0	7	35	2	3	63	3	F	91	5	B	119	7	7	147	9	3	175	A	F	203	C	B	231	E	7		
8	0	8	36	2	4	64	4	0	92	5	C	120	7	8	147	9	4	176	B	0	204	C	C	232	E	8		
9	0	9	37	2	5	65	4	1	93	5	D	121	7	9	149	9	5	177	B	1	205	C	D	233	E	9		
10	0	A	38	2	6	66	4	2	94	5	E	122	7	A	150	9	6	178	B	2	206	C	E	234	E	A		
11	0	B	39	2	7	67	4	3	95	5	F	123	7	B	151	9	7	179	B	3	207	C	F	235	E	B		
12	0	C	40	2	8	68	4	4	96	6	0	124	7	C	152	9	8	180	B	4	208	D	0	236	E	C		
13	0	D	41	2	9	69	4	5	97	6	1	125	7	D	153	9	9	181	B	5	209	D	1	237	E	D		
14	0	E	42	2	A	70	4	6	98	6	2	126	7	E	154	9	A	182	B	6	210	D	2	238	E	E		
15	0	F	43	2	B	71	4	7	99	6	3	127	7	F	155	9	B	183	B	7	211	D	3	239	E	F		
16	1	0	44	2	C	72	4	8	100	6	4	128	8	0	156	9	C	184	B	8	212	D	4	240	F	0		
17	1	1	45	2	D	73	4	9	101	6	5	129	8	1	157	9	D	185	B	9	213	D	5	241	F	1		
18	1	2	46	2	E	74	4	A	102	6	6	130	8	2	158	9	E	186	B	A	214	D	6	2412	F	2		
19	1	3	47	2	F	75	4	B	103	6	7	131	8	3	159	9	F	187	B	B	215	D	7	243	F	3		
20	1	4	48	3	0	76	4	C	104	6	8	132	8	4	160	A	0	188	B	C	216	D	8	244	F	4		
21	1	5	49	3	1	77	4	D	105	6	9	133	8	5	161	A	1	189	B	D	217	D	9	245	F	5		
22	1	6	50	3	2	78	4	E	106	6	A	134	8	6	162	A	2	190	B	E	218	D	A	246	F	6		
23	1	7	51	3	3	79	4	F	107	6	B	135	8	7	163	A	3	191	B	F	219	D	B	247	F	7		
24	1	8	52	3	4	80	5	0	108	6	C	136	8	8	164	A	4	192	C	0	220	D	C	248	F	8		
25	1	9	53	3	5	81	5	1	109	6	D	137	8	9	165	A	5	193	C	1	221	D	D	249	F	9		
26	1	A	54	3	6	82	5	2	110	6	E	138	8	A	166	A	6	194	C	2	222	D	E	250	F	A		
27	1	B	55	3	7	83	5	3	111	6	F	139	8	B	167	A	7	195	C	3	223	D	F	251	F	B		
28	1	C	56	3	8	84	5	4	112	7	0	140	8	C	168	A	8	196	C	4	224	E	0	252	F	C		
																										253	F	D

## 11 INSTALLATION DIMENSIONS AND SAFETY



The RCC modules are suitable for use in the Class I, Division 2, Groups A, B, C and D Hazardous Locations, or nonhazardous locations only.

**WARNING** - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

**ATTENTION** - RISQUE D'EXPLOSION - NE DÉBRANCHEZ PAS L'ÉQUIPEMENT SAUF SI L'ALIMENTATION A ÉTÉ COUPÉE OU SI LA ZONE N'EST PAS DANGEREUSE.

Device shall be installed into an enclosure that is only accessible with the use of a tool.

### INSTALLATION PROCEDURE

1. The RCC modules conveniently mount on a DIN rail.
2. Be sure the DIN rail is in a horizontal position before installing the unit.
3. The orientation shown to the right is necessary to prevent the unit from slipping off the DIN rail.
4. Align the unit on the DIN rail then push the DIN rail clip until it clicks into place. Check to ensure that the unit is secure on the DIN rail.
5. Do NOT mount the unit on its side as this may cause the unit from slipping off the DIN rail.

**NOTE:** The spade connector for grounding and the DIN rail clip add to the overall measurements. The CAN/PWR and LAN connectors also add to the measurements.

### 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. 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.

### 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 PART NUMBERS

The global part numbers are **HE579MIX577** and **HE579MIX977**.

## 13 TECHNICAL SUPPORT

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

**North America**  
+1 (317) 916-4274  
www.hornerautomation.com  
techsppt@heapg.com

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