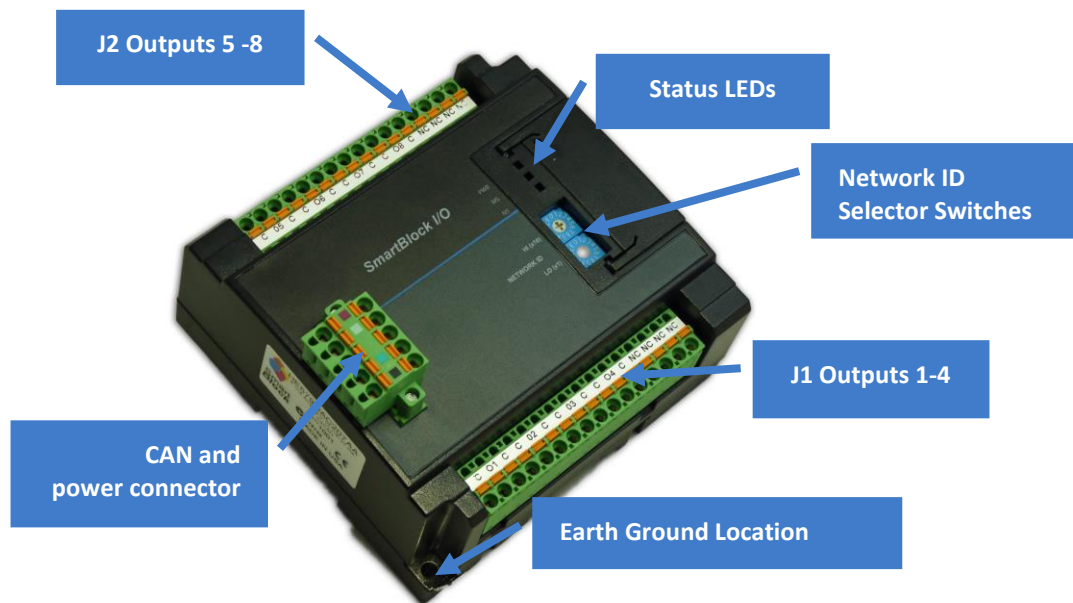


SmartBlock I/O Module - HE579DAC107/HE579DAC207

8/4 Channel Current and Voltage Output
0-5V / 0-10V / 4-20mA / 0-20mA - CsCAN

1. SPECIFICATIONS / DIMENSIONS

ANALOG OUT					
Number of Outputs	8 (207) or 4 (107)	Isolation (Power to Analog Output)	1000V DC IEC61010-1 300V RMS		
Output Ranges	0-5V, 0-10V DC 4-20mA, 0-20mA DC	Isolation Method	Magnetic		
Resolution	14 bits	Output Clamp	-.5/+24V, 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					
Steady State @ 24 VDC (Voltage Mode 2KΩ)	(207) 145mA (107) 105mA	Cooling Method	Self-cooling		
Inrush @ 24 VDC (Voltage Mode 2KΩ)	(207) 255mA (107) 190mA	Relative Humidity	5 to 95% Non-condensing		
Voltage Input	10-30 VDS	Altitude for use	Up to 2,000m		
Operating Temperature	0° to 60°C	Pollution Degree	2 or lower		
Storage Temperature	-25° to 70°C	Weight	12oz/340g		
		Atmosphere	Free from corrosive gases and excessive dust		
DIMENSIONS					
Width	4.48" (113.7mm)	Length	4.56" (115.8mm)	Height	2.16" (54.8mm)
				Height w/ connector	2.84" (72.1mm)



2. TECHNICAL SUPPORT

North America:

Tel: 317 916-4274 Fax: 317 639-4279

Web: <http://www.heapg.com>

Email: techspt@heapg.com

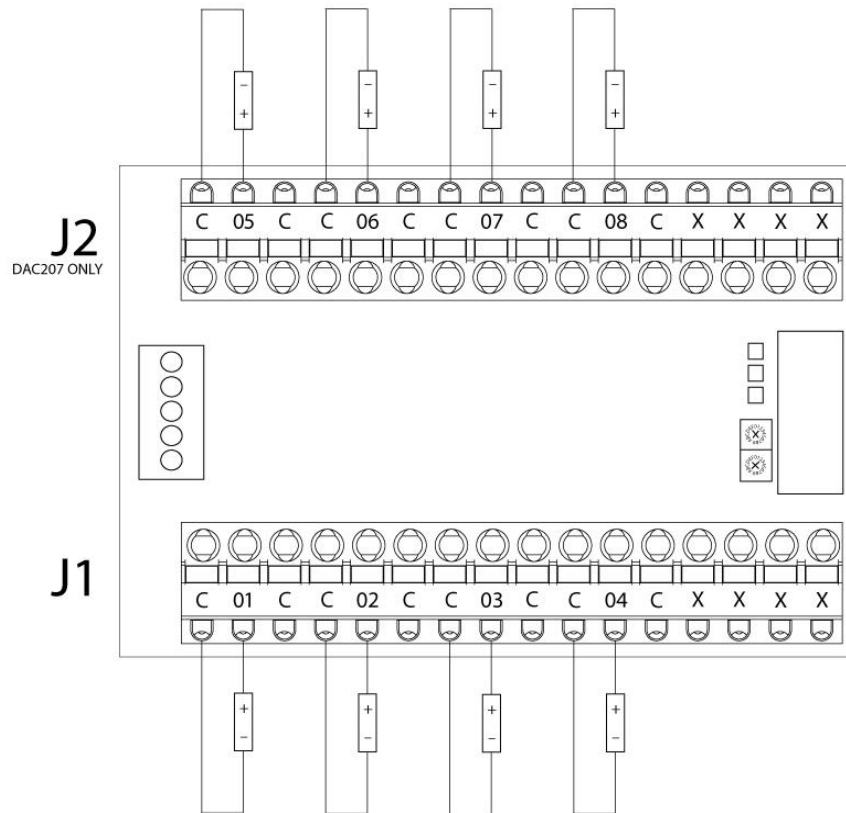
Europe:

Tel: +353-21-4321266 Fax: +353-21-4321826

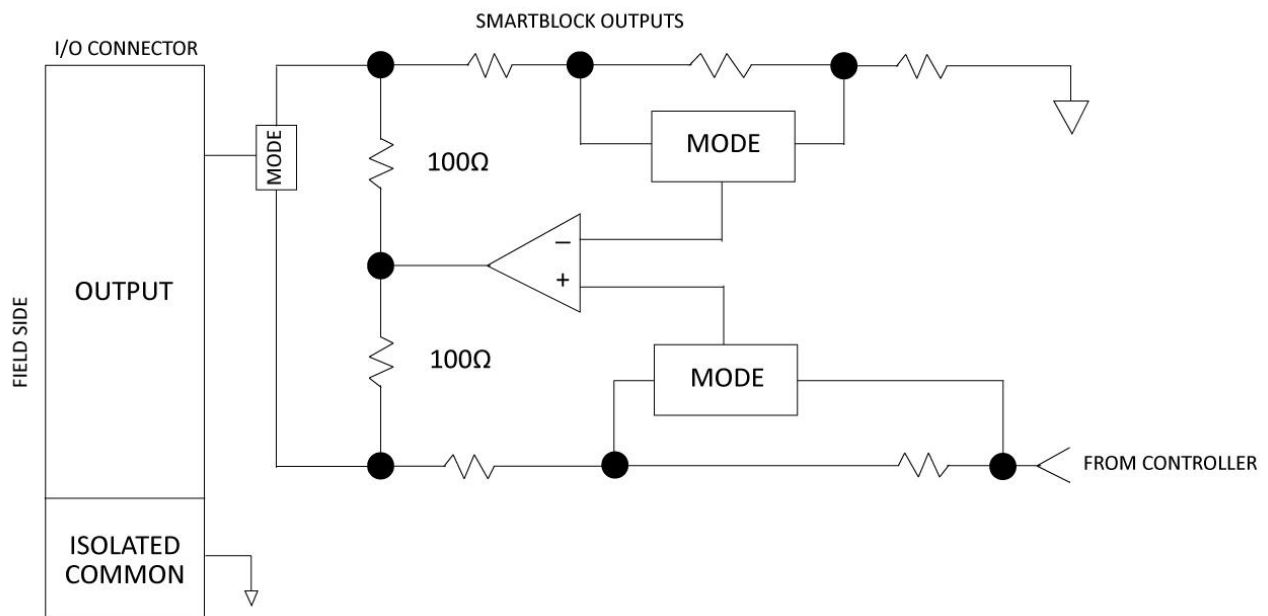
Web: <http://www.horner-apg.com>

Email: tech.support@horner-apg.com

3. WIRING



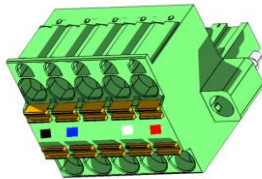
NOTE: 'X' is not internally connected
'C' terminals are connected together internally, but isolated from bus and power circuits



4. 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 separate supply for the controller and I/O is recommended for best noise immunity.

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.



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	–

5. CONFIGURATION

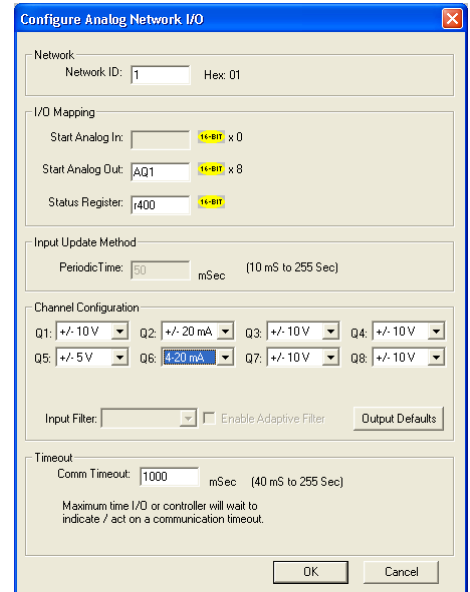
For most applications, the I/O scanner built into Cscape and the OCS firmware will provide a fast, robust, and easy to use method to configure and scan the SmartBlock I/O. For advanced operations, such as on-the-fly changes to the output type, please see the following chapter on network data and the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

To configure SmartBlock I/O from Cscape open the Hardware Configuration dialog from the Controller | Hardware Configuration menu:

1. Select the option for **CsCAN I/O**.
2. Click **Add**.
3. Select the **SmartStix** Tab and select the device to be configured.

The DAC207 SmartBlock has the same configuration and network signature as the SmartStix version. You can replace a SmartStix device with a SmartBlock in this case with no programming changes. As of Cscape version 9.30, the configuration for the DAC207 is found in the SmartStix tab. This will be added to the SmartBlock tab in a future release for convenience.

To the right is the configuration for DAC207 device, configuration definitions are listed below:



Configuration Type	Definition
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 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.
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. NETWORK DATA

Consumed Digital Data – This data is sent from the controller to the SmartBlock. *For typical applications the I/O configuration setup in Cscape will automatically populate this data.* For more advanced applications you may use NetPut functions to write this data. Please see the advanced programming guide MAN0880 for more details.

Bit	Description	
1-8	Mode Bit 1 bit per channel	0 = Voltage Mode 1 = Current mode
17-20	Scale Bit 1 bit per channel	0 = ±10V or ±20mA 1 = ±5V or 4-20mA
73-80	Hold Last State	1 = Hold last State 0 = go to default value

Consumed Analog Data – This data is sent from the controller to the SmartBlock. *For typical applications the I/O configuration setup in Cscape will automatically populate this data.* For more advanced applications you may use NetPut functions to write this data. Please see the advanced programming guide MAN0880 for more details.

Word	Description	
1-8	Analog Data	Data for analog output channels 1 to 8
9-16	Default Data	Analog output default state on error or stop (if selected)

Produced Digital Data – This data is sent from the SmartBlock to the controller. *Normally this data is mapped into specific registers in the I/O configuration in Cscape.* For advanced applications NetGet functions can be used to obtain this data. Since this data is broadcast to all controllers on the network additional controllers can use NetGet functions to obtain this data as well.

Bit	Description
1-32	Not Used
33-48	Status and Diagnostic Data
49-56	Firmware Version
57-64	Device Class – 10 for the DAC207 68 for DAC107

7. SETTING ID SWITCHES

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

NOTE: The CsCAN Baud Rate for SmartBlock I/O is fixed at 125Kbaud



Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex				
	HI	LO		HI	LO		HI	LO		HI	LO		HI	LO		HI	LO		HI	LO		HI	LO			
1	0	1	29	1	D	57	3	9	86	5	6	114	7	2	142	8	E	170	A	A	198	C	6	226	E	2
2	0	2	30	1	E	58	3	A	87	5	7	115	7	3	143	8	F	171	A	B	199	C	7	227	E	3
3	0	3	31	1	F	59	3	B	88	5	8	116	7	4	144	9	0	172	A	C	200	C	8	228	E	4
4	0	4	32	2	0	60	3	C	89	5	9	117	7	5	145	9	1	173	A	D	201	C	9	229	E	5
5	0	5	33	2	1	61	3	D	90	5	A	118	7	6	146	9	2	174	A	E	202	C	A	230	E	6
6	0	6	34	2	2	62	3	E	91	5	B	119	7	7	147	9	3	175	A	F	203	C	B	231	E	7
7	0	7	35	2	3	63	3	F	92	5	C	120	7	8	148	9	4	176	B	0	204	C	C	232	E	8
8	0	8	36	2	4	64	4	0	93	5	D	121	7	9	149	9	5	177	B	1	205	C	D	233	E	9
9	0	9	37	2	5	65	4	1	94	5	E	122	7	A	150	9	6	178	B	2	206	C	E	234	E	A
10	0	A	38	2	6	66	4	2	95	5	F	123	7	B	151	9	7	179	B	3	207	C	F	235	E	B
11	0	B	39	2	7	67	4	3	96	6	0	124	7	C	152	9	8	180	B	4	208	D	0	236	E	C
12	0	C	40	2	8	68	4	4	97	6	1	125	7	D	153	9	9	181	B	5	209	D	1	237	E	D
13	0	D	41	2	9	69	4	5	98	6	2	126	7	E	154	9	A	182	B	6	210	D	2	238	E	E
14	0	E	42	2	A	70	4	6	99	6	3	127	7	F	155	9	B	183	B	7	211	D	3	239	E	F
15	0	F	43	2	B	72	4	8	100	6	4	128	8	0	156	9	C	184	B	8	212	D	4	240	F	0
16	1	0	44	2	C	73	4	9	101	6	5	129	8	1	157	9	D	185	B	9	213	D	5	241	F	1
17	1	1	45	2	D	74	4	A	102	6	6	130	8	2	158	9	E	186	B	A	214	D	6	242	F	2
18	1	2	46	2	E	75	4	B	103	6	7	131	8	3	159	9	F	187	B	B	215	D	7	243	F	3
19	1	3	47	2	F	76	4	C	104	6	8	132	8	4	160	A	0	188	B	C	216	D	8	244	F	4
20	1	4	48	3	0	77	4	D	105	6	9	133	8	5	161	A	1	189	B	D	217	D	9	245	F	5
21	1	5	49	3	1	78	4	E	106	6	A	134	8	6	162	A	2	190	B	E	218	D	A	246	F	6
22	1	6	50	3	2	79	4	F	107	6	B	135	8	7	163	A	3	191	B	F	219	D	B	247	F	7
23	1	7	51	3	3	80	5	0	108	6	C	136	8	8	164	A	4	192	C	0	220	D	C	248	F	8
24	1	8	52	3	4	81	5	1	109	6	D	137	8	9	165	A	5	193	C	1	221	D	D	249	F	9
25	1	9	53	3	5	82	5	2	110	6	E	138	8	A	166	A	6	194	C	2	222	D	E	250	F	A
26	1	A	54	3	6	83	5	3	111	6	F	139	8	B	167	A	7	195	C	3	223	D	F	251	F	B
27	1	B	55	3	7	84	5	4	112	7	0	140	8	C	168	A	8	196	C	4	224	E	0	252	F	C
28	1	C	56	3	8	85	5	5	113	7	1	141	8	D	169	A	9	197	C	5	225	E	1	253	F	D

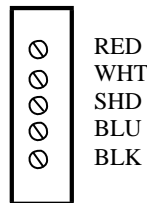
8. LED INDICATORS

HE579DAC107 and HE579DAC207 provide diagnostic and status LED indicators

Diagnostic LED Indicators		
Diagnostic LED	State	Meaning
MS indicates fault status of the Network	Solid Red	RAM or ROM test failed
	Blinking Red	I/O test failed
	Blinking Green	Module is in power-up state
	Solid Green	Module is running normally
NS Indicates fault status of the Network	Solid Red	Network Ack or Dup ID test failed
	Blinking Red	Network ID test failed
	Blinking Green	Module is in Life Expectancy default state
	Solid 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 illuminate **RED** when the I/O point is ON.

9. NETWORK CABLE



Pin	Description
1	V+
2	CAN_H
3	Shield
4	CAN_L
5	V-

Recommended Cable	
Thick: (Max Distance = 500m)	Belden 3082A
Thin: (Max Distance = 100m)	Belden 3084A

- NOTES:**
- 1) 12-24 VDC must be supplied to the network
 - 2) For detailed wiring information, refer to Chapter Two in the **Control Station Hardware Manual (MAN0227)**, where a checklist is provided that covers panel box layout requirements and minimum clearances.

10. 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

- All applicable codes and standards should be followed in the installation of this product.
- Shielded, twisted-pair wiring should be used for best performance.
- Shields are to be terminated to frame ground.
- In severe applications, shields should be tied directly to the ground block within the panel.
- Ungrounded thermocouple sensors are preferred due to their isolated electrical characteristics.
- Interposing terminal strips between the sensor and the module can cause errors due to cold-junction effect.
- If interposing terminal strips must be used, use specially constructed terminal blocks that match the material characteristics of the thermocouple sensor.
- 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 floors 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.