

## HCIO High Current Input Output Module

HCIO - GS09313-200REVB

### Overview:

The HCIO is a high current FET output drive module. The module is designed to handle high current outputs utilizing "Smart" FET's. The module can be programmed with current limits for each function. The module communicates via the J1939 CAN-bus, allowing the programming of each current point limit while monitoring the actual current being used on each output. The module has 12 outputs and is capable of a maximum total current of 80 Amps using either 12 or 24 Volt system power. The unit also has 8 digital inputs to allow for additional functional inputs to the control system. The module is sealed in a rugged Cinch enclosure with an IP67 rating. The ability to run very high currents in a small package is achieved by using the built-in heat sinks mounted inside the Cinch enclosure. The module has additional ability to ensure safe shutdown on excessive current points per output.



### Mechanical:

- Rugged outer housing is designed for severe mobile applications. The IP67 rating allows for a sealed environment in the worst conditions.
- The ability to dissipate heat is due to 2 heat sinks that reject heat through the base of the module. The unit should be mounted to a steel/aluminum plate to allow for optimal heat rejection.
- Quick mount header plug connectors with screw mount retention ensures excellent contact for all the pins even under severe vibration.

### Electrical:

- Electrical supply voltage range: 9 to 32 VDC
- 24 independent indicator positions (2 rows of 12 indicators)
- Each indicator position backlit by 4 SMT white LED's
- CAN communication using SAE J1939 protocol @ 250Kbps

### System Features:

- High Current Input Output module for use in a control system using SAE J1939 as the CAN communication protocol
- 80 Amps max total current @ 80°C, 12/24 VDC
- 40 Amps max per bank (2 banks per module)
- Sealed IP67 rating for harsh environmental conditions
- Tested to ISO13766- Electromagnetic Interference, Field Immunity, and Electrostatic Discharge
- Operating and Storage: -40 to +80°C
- CAN Source Addressing through external resistance values
- Time delay for overcurrent can be configured for high inrush current seen on certain loads

### Electrical Features:

- 12 Digital Outputs (15 Amps max per output)
- 6 Sourcing Digital Inputs (> 4.0 VDC)
- 2 Sinking (Ground) Digital Inputs (< 1.5 VDC)
- Jump Start protection to 48 VDC for 3 minutes
- Reverse Polarity Protection to -28 VDC for 1 minute
- Each output is configurable to a maximum current setting via the J1939 commands for maximum limitation from the "Smart" FET. This allows for safe functionality of each output without shorting to high amperage.
- Upon overcurrent, immediate alarm and notification is sent to the Master Controller warning of the overcurrent condition and subsequent shutdown.
- Resumption of normal output operation is automatic once overcurrent issue is resolved.
- 2 CAN High and CAN Low pins for through module CAN-bus communication

## HCIO High Current Input Output Module

**Electrical Connections:**

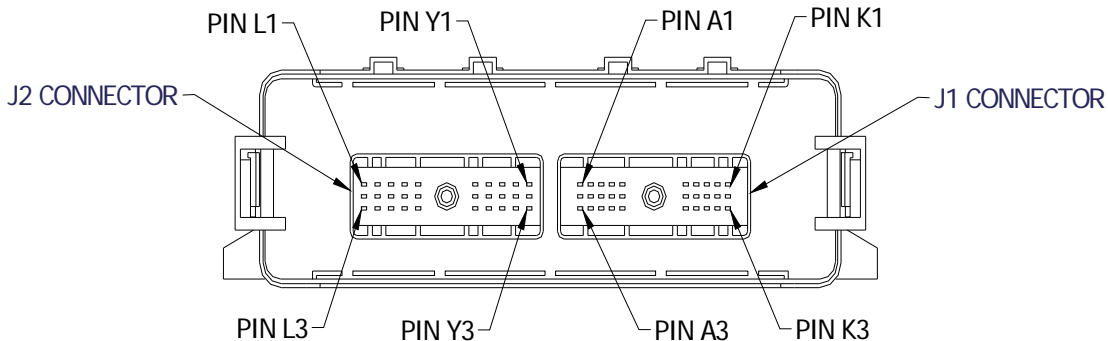
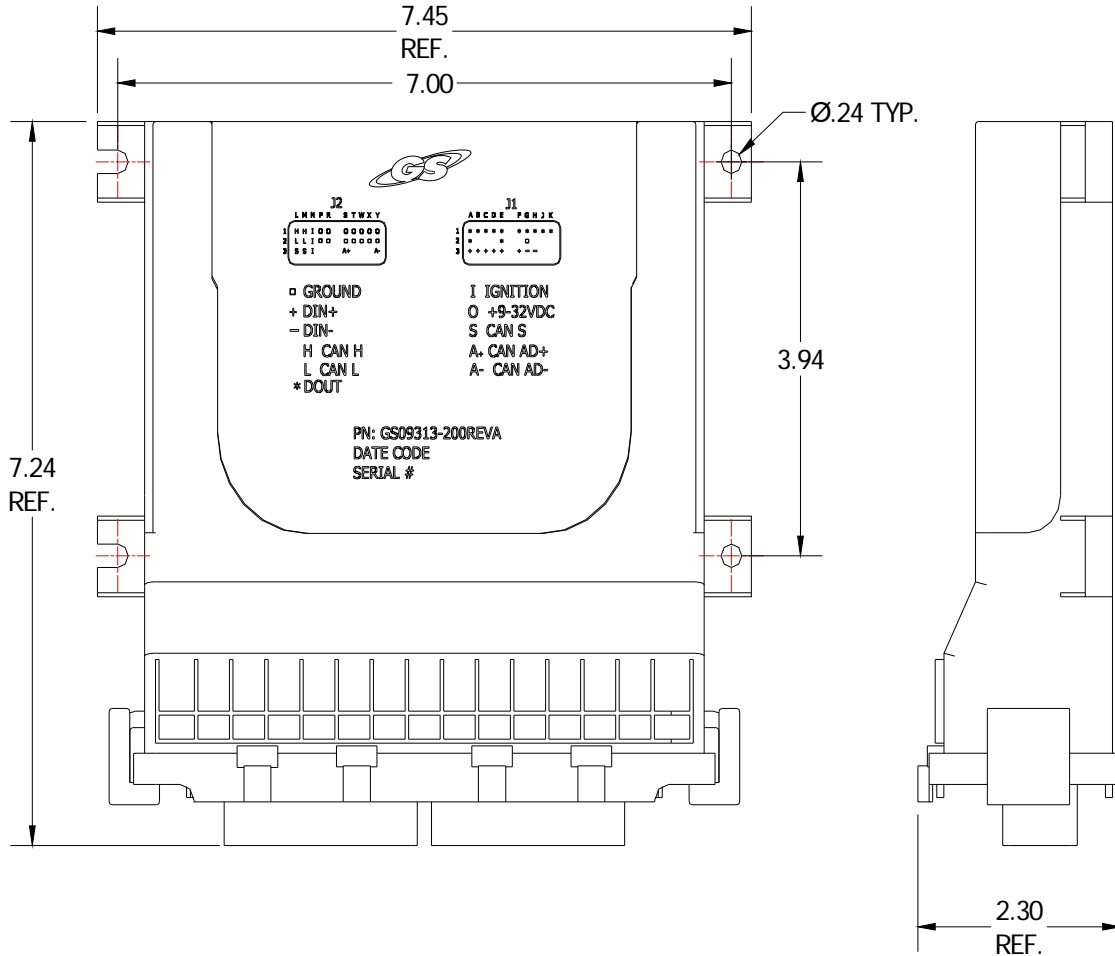
J1 CONNECTOR PINOUT		J2 CONNECTOR PINOUT	
PIN	FUNCTION	PIN	FUNCTION
A1	12/24V OUTPUT ON/OFF 1	L1	CAN HIGH
B1	12/24V OUTPUT ON/OFF 2	M1	CAN HIGH
C1	12/24V OUTPUT ON/OFF 3	N1	IGNITION (DEVICE ON/OFF)
D1	12/24V OUTPUT ON/OFF 4	P1	INPUT POWER (12/24V)
E1	12/24V OUTPUT ON/OFF 5	R1	INPUT POWER (12/24V)
F1	12/24V OUTPUT ON/OFF 6	S1	INPUT POWER (12/24V)
G1	12/24V OUTPUT ON/OFF 7	T1	INPUT POWER (12/24V)
H1	12/24V OUTPUT ON/OFF 8	W1	INPUT POWER (12/24V)
J1	12/24V OUTPUT ON/OFF 9	X1	INPUT POWER (12/24V)
K1	12/24V OUTPUT ON/OFF 10	Y1	INPUT POWER (12/24V)
A2	12/24V OUTPUT ON/OFF 11	L2	CAN LOW
B2		M2	CAN LOW
C2		N2	IGNITION (DEVICE ON/OFF)
D2		P2	GROUND BATTERY
E2	12/24V OUTPUT ON/OFF 12	R2	GROUND BATTERY
F2		S2	GROUND BATTERY
G2		T2	GROUND BATTERY
H2		W2	GROUND BATTERY
J2		X2	GROUND BATTERY
K2		Y2	GROUND BATTERY
A3	INPUT ON/OFF 1	L3	CAN SHIELD
B3	INPUT ON/OFF 2	M3	CAN SHIELD
C3	INPUT ON/OFF 3	N3	IGNITION (DEVICE ON/OFF)
D3	INPUT ON/OFF 4	P3	
E3	INPUT ON/OFF 5	R3	
F3	INPUT ON/OFF 6	S3	CAN ADDRESS RESISTOR INPUT
G3	GROUND INPUT ON/OFF 7	T3	
H3	GROUND INPUT ON/OFF 8	W3	
J3		X3	
K3		Y3	CAN ADDRESS RESISTOR RETURN

**Mating Connector Info:**

Connector J1: Cinch p/n 581 01 30 029  
 Connector J2: Cinch p/n 581 01 30 028  
 Terminal (20 GXL, 18 TXL): Cinch p/n 425 00 00 872  
 Terminal (18 GXL, 16 TXL, 16 GXL): Cinch p/n 425 00 00 873  
 Cavity Plug: Cinch p/n 581 00 00 011



## HCIO High Current Input Output Module



**!!!!!!!!!!!!WARNING!!!!!!!!!!!!**

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCT AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE

This document and other information from GS North America LLC its subsidiaries and authorized distributors provide product and/or system options for further investigations by users having technical expertise. It is important that you analyze all aspects of your application, including consequences of any failure, and review the information concerning the products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met. The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by GS North America LLC and its subsidiaries at any time without notice