

ES-600

High precision, Automotive grade current sensing module



FEATURES

- 5KV Galvanic isolation
- Housing design IP40 compliant
- CAN2.0B interface isolated, 120Ω internal terminated
- Accuracy of current measurement $\pm 0.1\%$
- Current measurement range $\pm 600A$

APPLICATIONS

- Battery current monitoring for automotive applications
- Grid energy storage
- UPS
- Charging station



CHARACTERISTICS

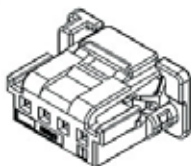
Rated current measurement range	$\pm 600A$
Overcurrent measurement	Rated current: $\pm 600A$ Peak current: $\pm 22,400A$ 1,400A for 25s 1,800A for 15s 2,000A for 10s 22,400A for 50ms
Current measurement accuracy	$\pm 0.1\%$
Current offset error	$\leq \pm 30mA$
Power consumption	$\leq 200mW @ 12VDC$
Interface	CAN2.0B isolated 120Ω terminated
Grade	Automotive
Power consumption	$\leq 200mW @ 12VDC$

Power supply	4.5V to 40V
Current consumption	18mA @12V
Operating temperature range	$-40^{\circ}C$ to $105^{\circ}C$
Storage temperature range	$-40^{\circ}C$ to $125^{\circ}C$
Storage humidity	95%
Set-up time	150 to 200 ms.
Absolute temperature measurement error	$-1^{\circ}C$ to $1^{\circ}C$
Voltage isolation	5KV
Current offset error	$\leq \pm 30mA$
Noise	$\leq 20mA$
Current linearity	0.01%
Current value error	-0.1 to 1% error of reading (-600A~600A) In nominal measurement range
Resolution	1mA
Communication	CAN2.0B; 500 kbit/s 120Ω termination (Option: 250Kbit/s, 500Kbit/s, 1Mbit/s)
Overcurrent value error	$\pm 0.5\%$ / $\pm 1\%$ typ. (-5000A ~ 5000A; -22400A ~ 22400A)
Overcurrent offset error	180mA
Noise	100mA
Overcurrent linearity	0.1%

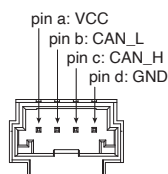
INTERFACE



Male connector:
Molex Part # 5600200420
4-pin Power & CAN



Female connector:
Molex Part # 5601230400
4-pin Power & CAN



For more detail please see the Molex datasheets:
https://www.molex.com/pdm_docs/sd/5601230400_sd.pdf
https://www.molex.com/pdm_docs/sd/5600200420_sd.pdf

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CAN PROTOCOL

The module uses the standard CAN2.0A/B communication protocol, and all messages use a standard frame structure. The data length of the message frame is between 1-8 bytes. The default baud of the module is 500kbps, and it can also support 1Mbps/250kbps.

Frame type	CANID	Length	byte0	byte1	byte2	byte3	byte4	byte5	byte6	byte7
Current (mA)	0x0301	6	0x00	B[3:0]: Cyclic counter individually for each channel 0-F B[4]: Overcurrent flag B[5]: Measurement error B[6]: Unit, 0/mA 1/uA	32-bit current value			—	—	—
Temperature (0.1°C)	0x0325	6	0x04	B[3:0]: Cyclic counter individually for each channel 0-F B[4]: Alarming of overtemperature on board B[5]: Alarming of overtemperature on shunt	32-bit temperature value			—	—	—

The 32-bit current/temperature data uses the big-endian format by default, that is, the high-order bit is first, the low-order bit is behind, the circle is a signed integer.

Example of message frame 1:

Data: 0x00 0x00 0x00 0x00 0x03 0xE8

Explanation:

0x00 Current channel flag

0x00 Unit: mA, Cyclic counter 0, no error

0x00 0x00 0x03 0xE8 0x000003E8 = 1000 = 1000Ma = 1A

Example of message frame 2:

Data: 0x04 0x00 0x00 0x00 0x01 0x0A

Explanation:

0x04 Temperature data flag

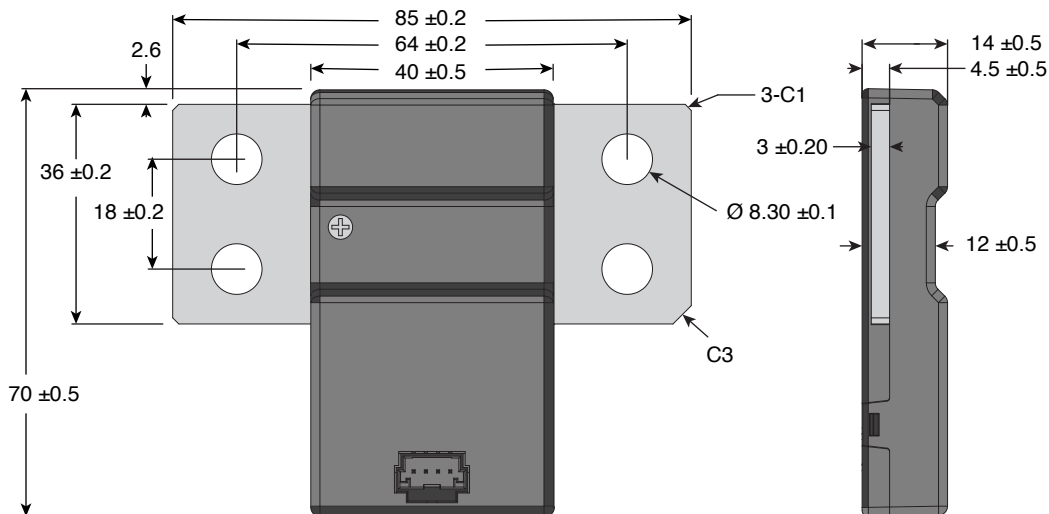
0x00 Cyclic counter 0, no alarming

0x00 0x00 0x01 0x0A 0x0000010A = 266 = 26.6°C

Note: The CANID code of module data channel, sampling interval, working mode, bit rate, etc. can be modified by the special tools provided, and the above are only the factory default values.

DIMENSIONS

mm



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