CS09H-500A-C SERIES CLOSED LOOP HALL CURRENT SENSOR/TRANSDUCER

DESCRIPTION:

This series of current sensors are based on the principle of closed-loop Hall sensor with temperature calibration technology, using single power supply, CAN bus output, automotive product design, suitable for pure electric vehicles, plug-in hybrid electric vehicles and other energy storage equipment peak current ±500A DC , AC or pulsating current measurement.

FEATURES:

- ◆ High precision, low temperature drift, help customers accurately calculate battery SOC
- ◆ Large amount of process over current protection ability
- ◆ Panel installation, compatible with many products on the market, easy to replace
- ◆ Wide working voltage range, and strong self-recovery ability, ensure CAN bus communication stable and reliable
- ◆ Output signal: high-speed CAN, a variety of output optional, convenient for different applications
- ◆ Internal digital low pass frequency filter
- ◆ Connector type: TE MPN 1473672-1

ADVANTAGES:

- ◆ High overall accuracy: The error is 0.3% at room temperature
  The error is 0.5% in an overtemperature environment
- ◆ Full range current isolation

APPLICATIONS:

- ◆ Hybrid and electric vehicle battery pack
- ◆ Conventional lead-acid batteries
- ◆ Accurate current measurement for battery management applications(SOC, SOH, SOF,etc...).

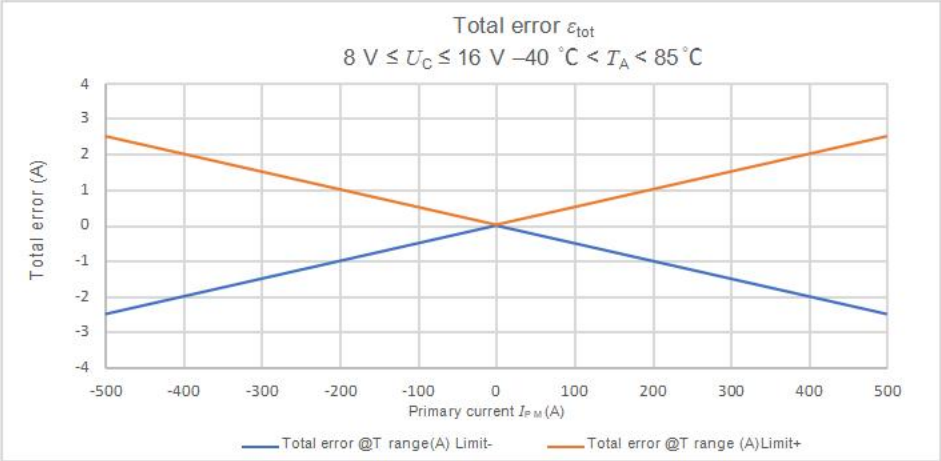
Absolute Maximum Ratings (Not Operating)

Parameter	Symbol	Unit	Specification	Conditions
To load Over-voltage	V_C	V	32	400 ms
Over-voltage	V_C	V	24	10 minutes
Reverse input voltage	V_C	V	-50	10 minutes
Minimum input voltage	V_{Cmin}	V	6	Continuous, not measuring
Maximum input voltage	V_{Cmax}	V	18	Continuous, not measuring
CAN work, low voltage fault alarm, non-measurement	V_C	V	6~7	CAN continuous
CAN work, Over-voltage fault alarm, non-measurement	V_C	V	18~24	CAN continuous
Creepage distance	dcp	Mm	7.2	
Clearance	d_{CI}	Mm	7.0	
RMS voltage for AC insulation test	Vd	KV	2.5	50 Hz, 1 min
Voltage for DC insulation test	Vd	KV	5.0	
Insulation resistance	R_{INS}	MΩ	500	500V@ 1min
IP level			IP42	1 min

General Operating Specification:

Parameter		Symbol	Unit	Specification			Conditions
				Min.	Typ.	Max.	
Primary current measurement range		I_{PN}	A	-500		500	
Supply voltage		U_C	V	7	12	18	full precision
Maximum voltage hysteresis		U_{up}	V		18.1		when Uc rises
			V		17.7		when Uc falls
Minimum voltage hysteresis		U_{LOW}	V		7.1		when Uc rises
			V		6.8		when Uc falls
Current consumption@Ip=0A		I_C	mA		20	30	@ VC= 12.0V, CAN work normally
Current consumption@Ip=500A		I_C	mA		150	200	@VC= 12.0 V, CAN work normally
Working temperature		T_A	℃	-40		85	temperature range, accuracy guaranteed to ±3 δ
Total accuracy		X_G	%	-0.5		0.5	T = -40 ~ 85℃ ; ± 3δ
Regional error	IP=± 6A	X_G	V	-0.2A		0.2A	T = -40 ~ 85℃
	IP=± 80A	X_G	V	-0.5A		0.5A	
	IP=±350A	X_G	V	-1.75A		1.75A	
	IP=±500A	X_G	V	-2.5A		2.5A	
Linearity		ε_L	%		0.1		at room temperature
Gain temperature drift		TCG	ppm/℃		20		

Error graph:



Influence of external magnetic field:

CS09H-500A-C Series Closed Loop Hall current sensors use a very precise technology and provide customers with current measurement needs of applications.

In order to achieve this accuracy, some conditions must be observed when designing the sensor environment:

- ◆ Main busbar alignment
- ◆ Bus bar shape
- ◆ Contactor location

CAN output specification:

- ◆ CAN protocol 2.0 A/B
- ◆ Bit order: big-endian mode (Motorola)
- ◆ CAN oscillator tolerance : 0.3125 %
- ◆ No sleep mode capability

Message Description	CAN ID	Name	Data length (Nb bytes)	Type of frame	Send cycle	Information description	Signal name	Start bit	End bit
Primary current IP (mA)	See the product model list for details	CS09H - 500Ip	8	standard frame	10ms loop sending	Ip current value: 80000000H=0mA, 7FFFFFFFH=-1mA, 8000001H=1mA	IPVALUE	0	31
						Fault identification bit (0=normal, 1=fault)	ERROR INDICATION	32	32
						Fault information (when the fault flag is 0, it is 0x64)	ERROR INFORMATION	33	39
						Fixed at 0x48 0x11	SENSORNAME	40	55
						Software version	SWRevision	56	63

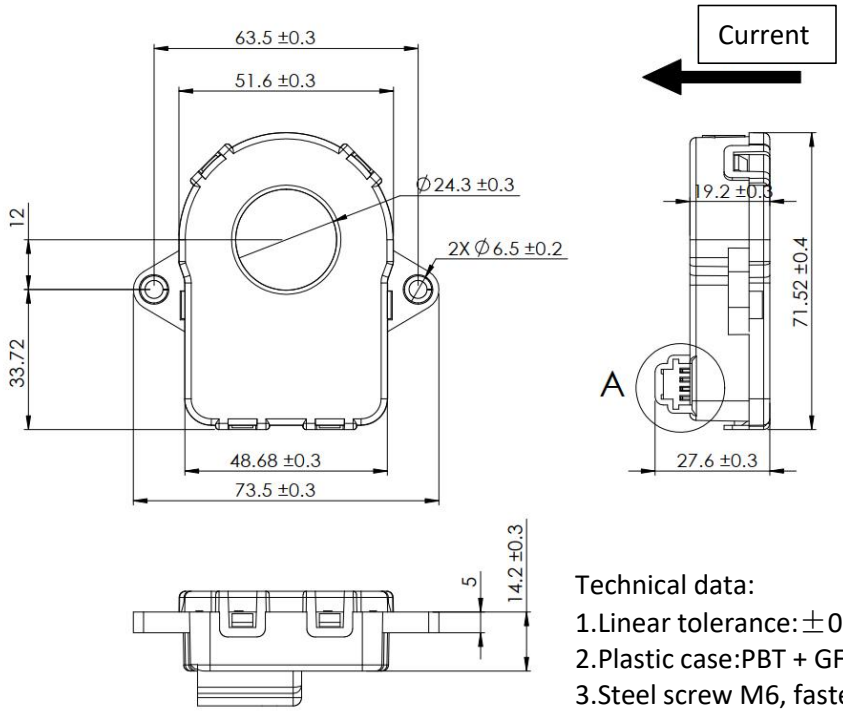
Fault management:

SN	Failure mode	IP value	Fault flag	Error code
1	CRC check error failure	0x FFFFFFFF	1	0x40
2	A FE overload fault	0x FFFFFFFF	1	0x41
3	A FE error failure	0x FFFFFFFF	1	0x42
4	Internal LUT failure	0x FFFFFFFF	1	0x44
5	Power supply undervoltage fault	0x FFFFFFFF	1	0x46
6	Power supply Over-voltage fault	0x FFFFFFFF	1	0x47

Product model list:

SN	**PRODUCT NUMBER**	**CAN ID**	**CAN COMMUNICATION BAUD RATE (KBPS)**
1	CS09H-500A-C20	0x03C0	250
2	CS09H-500A-C21	0x03C1	250
3	CS09H-500A-C22	0x03C2	250
4	CS09H-500A-C23	0x03C3	250
5	CS09H-500A-C24	0x03C4	250
6	CS09H-500A-C25	0x03C5	250
7	CS09H-500A-C26	0x03C6	250
8	CS09H-500A-C27	0x03C7	250
9	CS09H-500A-C28	0x03C8	250
10	CS09H-500A-C29	0x03C9	250
11	CS09H-500A-C50	0x03C0	500
12	CS09H-500A-C51	0x03C1	500
13	CS09H-500A-C52	0x03C2	500
14	CS09H-500A-C53	0x03C3	500
15	CS09H-500A-C54	0x03C4	500
16	CS09H-500A-C55	0x03C5	500
17	CS09H-500A-C56	0x03C6	500
18	CS09H-500A-C57	0x03C7	500
19	CS09H-500A-C58	0x03C8	500
20	CS09H-500A-C59	0x03C9	500

Mechanical Dimensions:



Technical data:
1.Linear tolerance:±0.5mm
2.Plastic case:PBT + GF 30 %
3.Steel screw M6, fastening torque 3 N-m

Main materials:

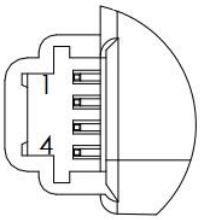
- **Plastic case:** PBT + GF 30 %
- **Core:** Permalloy
- **Gross weight:** 87g

Installation recommendation:

- **Assembly:** The sensor must be assembled with plastic rivets;
- **Maximum load of fixed ear:** 70N;
- **Connector type:** TE MPN 1473672-1.

Linker description:

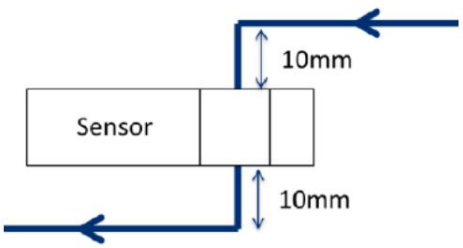
electrical connectors TE MPN 1473672-1



PIN OUT	
1	CAN-L
2	CAN-H
3	GND
4	Uc

Primary side bus wiring suggestion:

- S-type wiring is recommended
- If you have any questions about busbar wiring design,or to integrate multiple sensors into complex system, please contact our technical support.



Safety

This device must be used according to IEC61010-1.

This device must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the operating instructions.

Caution, risk of electrical shock.

When operating the device, certain parts can carry hazardous voltage (eg. primary busbar, power supply).
Ignoring this warning can lead to injury and/or cause serious damage.
This is a built-in device, whose conducting parts must be inaccessible after installation.
A protective housing or additional shield can be used.
Main supply must be able to be disconnected.

Youtube 视屏链接 https://www.youtube.com/watch?v=dcARKQsIpSI