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2025-04-08

SINOMAGS 希磁科技

CURRENT SENSOR

PRODUCT SERIES: STB-CAB500x-xxx

PRODUCT PART NUMBER: STB-CAB500N-xxF

VERSION: Ver 1.3

Sinomags Technology Co., Ltd.

Web site: www.sinomags.com

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CONTENT

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1. Characteristic

CAB500 Series current sensor is based on Sinomags Open loop fluxgate technology, with CANBUS digital output. It can be used to measure 500A rated current. Using a proprietary Digital Compensation technology. This product brings the best combination of performance and reliability.

- Error ± 30mA @ <±10A, Accuracy ±0.3% @ <±30A; Accuracy ±0.5% @ <±500A.
- High electromagnetic compatibility against complex electromagnetic interference environment.
- Excellent anti magnetic interference.
- CANBUS output, convenient for system integration.
- Ultra-high over current capability

2. General parameters

Working temperature: -40˚C~+85˚C；
Storage temperature: -40˚C~+85˚C
Insulation resistance： >= 500 MΩ；
Rms voltage for AC insulation test 50Hz 1min 2.5KV
Over-voltage 24V/1 minute
Electrostatic discharge voltage 4KV

3. Electrical parameters

Parameter	Symbol	Unit	Specification			Conditions
			Min	Type	Max	
Nominal Measuring Range	I_{PN}	A	-500		500	
Supply Voltage	U_C	V	7.2	12	18	Full accuracy
Current Consumption @I_P=0A	I_C	mA		33		U_C=12V, T=25˚C
Current Consumption @I_P=500A	I_C	mA		146		U_C=12V, T=25˚C
All Temperature Sensitivity error Accuracy @ I_P≤10A	X_G	A	-0.03		0.03	=-40 to 85˚C; ± 3 sigma
All Temperature Sensitivity error Accuracy @ 10A＜I_P≤30A	X_G	%	-0.3		0.3	=-40 to 85˚C; ± 3 sigma
All Temperature Sensitivity error Accuracy @ 30A＜I_P≤500A	X_G	%	-0.5		0.5	=-40 to 85˚C; ± 3 sigma
Offset=0A	I_{OS}	A	-0.03		0.03	=-40 to 85˚C; ± 3 sigma
Linearity error with I_{PN}	ε_L	%		0.2		@room temperature
Temperature coefficient of G	TCG	ppm/˚C		20		

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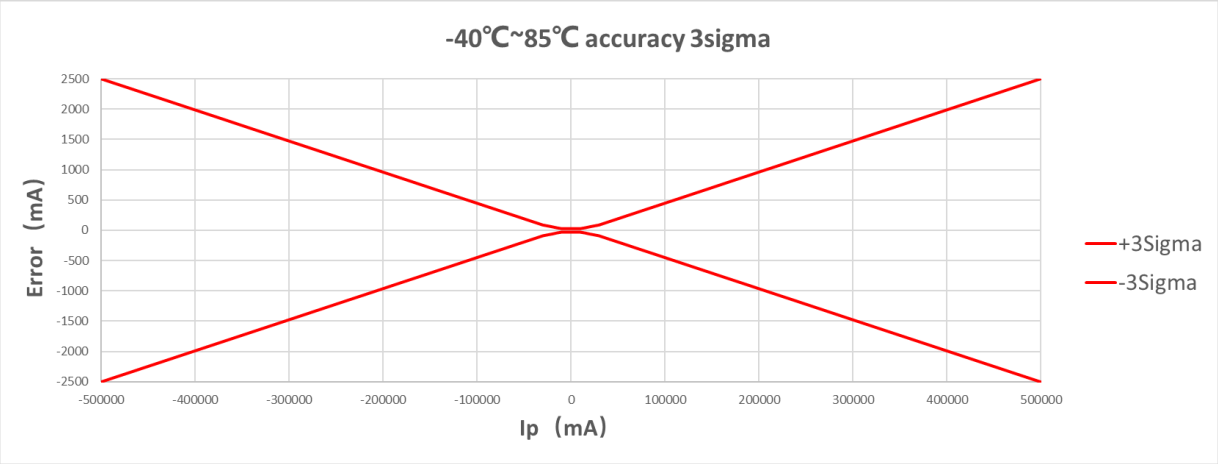
4. Total Error Graph for CAB-500 Series

Performances are considered with average value over 10 CAN frames(100ms)



5. CAB-500 CAN Output specification

CANBUS speed refer to product version table,
CANBUS protocol: version 2.0A/B
CAN oscillator tolerance: 0.3125%
Byte order: big endian (Motorola)
120 ohm termination resistor to be added externally, internal CAN no impedance

Message Description	CAN ID	name	Data Length (bytes)	Type of frame	Message launch type	Signal description	Signal Name	Start bit	Len-gth
Current Ip （mA）	0x3C2	CAB500	8	standard	Cyclic message every 10ms	Ip Value： 80000000H= 0mA, 7FFFFFFFH= - 1mA, 80000001H= 1mA	IP_VALUE	24	32
						b0:Error indication (0=Normal ,1=failure)	ERROR_INDICATION	32	1
						b7-b1:Error information	ERROR_INFORMATION	33	7
						Vacant bits (fix to 0)	UNDEFINE	40	8
							PCBA Ver	48	8
							FIRMWARE Ver	56	8

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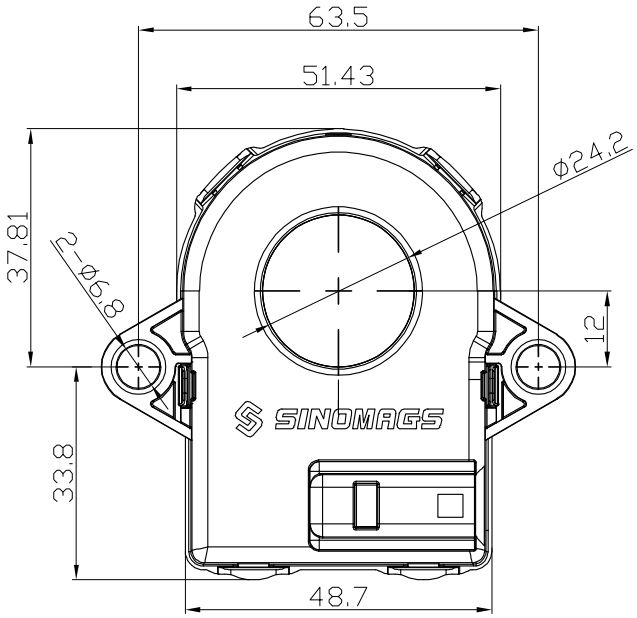
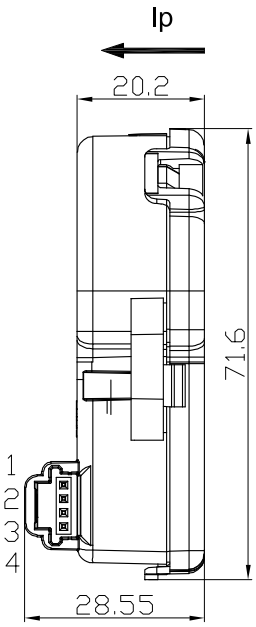
6. Diagnostic Trouble Code (DTC)

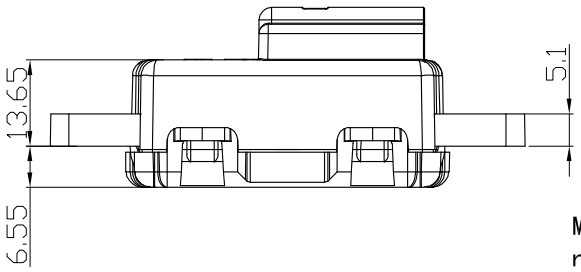
FAILLURE MODE	Ip VALUE	ERROR INDICATION	ERROR INFORMATION
Overcurrent Detection Ip> Approximate 520A	FFFFFFFF	1	0x41
Fluxgate under frequency	FFFFFFFF	1	0x42
Signal not available for more than 100ms	FFFFFFFF	1	0x44
Supply voltage out of range	FFFFFFFF	1	0x46
Flash CRC error	FFFFFFFF	1	0x48

7. Dimensions：(in mm)

Connector type：TYCO 1473672-1



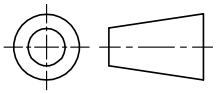




Terminals

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

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm



Mechanical characteristics

1. Unspecified tolerance: ±0.5mm
2. Plastic housing material: PBT+ GF30%
3. Mounting screw M6, torque recommendation 3 Nm
4. Mass：58g±5g

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8. Application

- Hybrid and electric vehicle battery pack
- Accurate current measurement for battery management applications

9. Product definition statement