

CURRENT SENSOR

PRODUCT SERIES: STB-CAB500x-xxx

PRODUCT PART NUMBER: STB-CAB500x-xxx

VERSION: Ver 5.6



Sinomags Technology Co., Ltd.

Web site: www.sinomags.com

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1. Characteristic

CAB500 Series current sensor is based on Sinomags Active Close Loop 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 $\pm 0.2A$ @ $\leq \pm 30A$, Error $\pm 0.5A$ @ $\leq \pm 100A$; Error $\pm 1.5A$ @ $\pm 100A \sim \pm 300A$; Error $\pm 2.5A$ @ $\pm 300 \sim \pm 500A$.

- High electromagnetic compatibility against complex electromagnetic interference environment.

- Excellent anti magnetic interference.
- Can bus output, convenient for system integration.
- Ultra-high over current capability

2. General parameters

Working temperature: $-40^{\circ}C \sim +85^{\circ}C$;

Storage temperature: $-40^{\circ}C \sim +85^{\circ}C$

Insulation resistance: $\geq 500 M\Omega$;

Rms voltage for AC insulation test 50Hz 1min 2.5KV

Over-voltage 24V/1 minute

Electrostatic discharge voltage 4KV

3. Electrical parameters

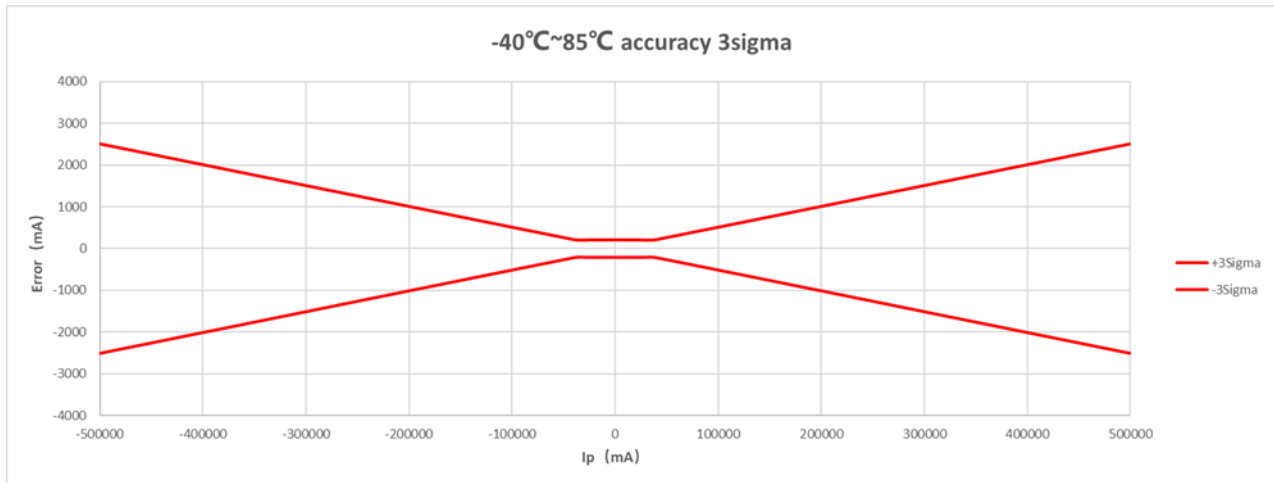
3.1. Supply Voltage $U_C = 12V$

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		26		$U_C=12V, T=25^{\circ}C$
Current Consumption @ $I_P=500A$	I_C	mA		250		$U_C=12V, T=25^{\circ}C$
Factory Sensitivity error Accuracy	X_G	%	-0.2		0.2	$=-40$ to $85^{\circ}C$; ± 3 sigma($> \pm 30A$)
All Temperature Sensitivity error Accuracy	X_G	%	-0.5		0.5	$=-40$ to $85^{\circ}C$; ± 3 sigma($> \pm 30A$)
Offset=0A	I_{OS}	A		± 0.2		$=-40$ to $85^{\circ}C$; ± 3 sigma
Linearity error with I_{PN}	ϵ_L	%		0.1		@room temperature
Temperature coefficient of G	TCG	ppm/ $^{\circ}C$		20		

3.2 Supply Voltage $U_C = 24V$

Parameter	Symbol	Unit	Specification			Conditions
			Min	Type	Max	
Nominal Measuring Range	I_{PN}	A	-500		500	
Supply Voltage	U_C	V	7.2	24	32	Full accuracy
Current Consumption @ $I_P=0A$	I_C	mA		26		$U_C=24V, T=25^{\circ}C$
Current Consumption @ $I_P=500A$	I_C	mA		85		$U_C=24V, T=25^{\circ}C$
Factory Sensitivity error Accuracy	X_G	%	-0.2		0.2	$=-40$ to $85^{\circ}C$; ± 3 sigma($> \pm 30A$)
All Temperature Sensitivity error Accuracy	X_G	%	-0.5		0.5	$=-40$ to $85^{\circ}C$; ± 3 sigma($> \pm 30A$)
Offset=0A	I_{OS}	A		± 0.2		$=-40$ to $85^{\circ}C$; ± 3 sigma
Linearity error with I_{PN}	ϵ_L	%		0.1		@room temperature
Temperature coefficient of G	TCG	ppm/ $^{\circ}C$		20		

4. Total Error Graph for CAB-500



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 impedance = 4.8 Kohm

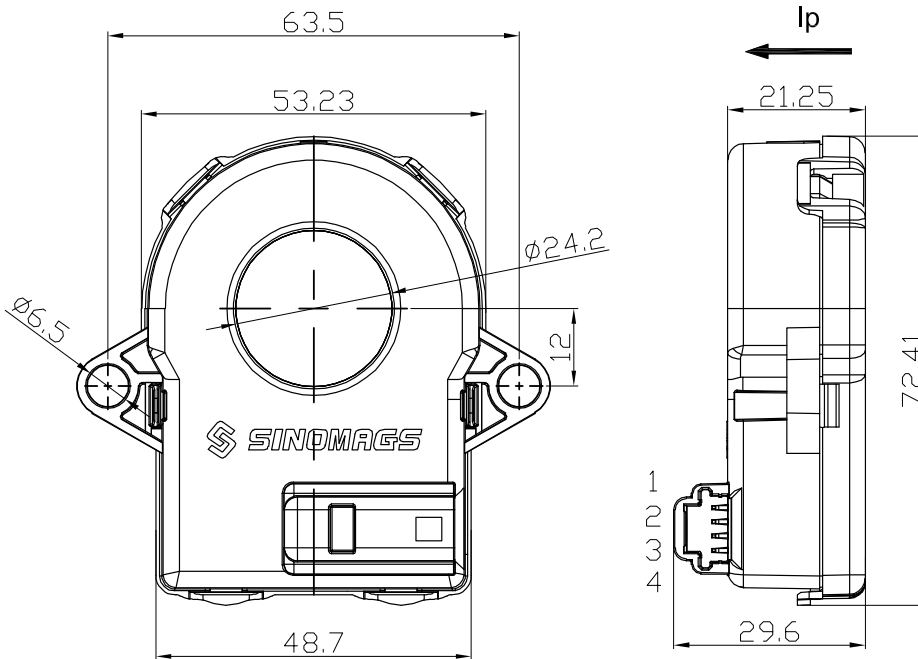
Message Description	CAN ID	name	Data Length (bytes)	Type of frame	Message launch type	Signal description	Signal Name	Start bit	Length
Current Ip (mA)	0x3C2	CAB500	8	standard	Cyclic message every 10ms	Ip Value: 80000000H= 0mA, 7FFFFFFFH= - 1mA, 80000001H= 1mA	IP_VALUE	24	32
						b0:Error indication (0=Normal ,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

6. Diagnostic Trouble Code (DTC)

FAILLURE MODE	Ip VALUE	ERROR INDICATION	ERROR INFORMATION
Overcurrent Detection Ip> Approximate 520A	FFFFFFFF	1	0x41
Closed-loop reference voltage over range	FFFFFFFF	1	0x42
Signal not available for more than 100ms	FFFFFFFF	1	0x44
Supply voltage out of range	FFFFFFFF	1	0x46

7. Dimensions: (in mm)

Connector type: TYCO 1473672-1



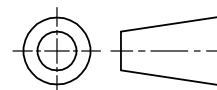
Terminals

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: $\pm 0.5\text{mm}$
2. Plastic housing material: PA66+ GF30%
3. Mounting screw M6, torque max 3 Nm
4. Mass: $78\text{g} \pm 5\text{g}$

8. Application

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

9. Product definition statement

	STB	-	CAB	500	M	-	5	2	C	1
Current sensor										
Product information										
Rated current										
Installing form										
	M:	Perforation $\varnothing$ 24.2mm, mounting hole $\varnothing$ 6.5mm								
	N:	Perforation $\varnothing$ 24.2mm, mounting hole $\varnothing$ 4.3mm								
Baud rate										
	1:	125k								
	2:	250k								
	5:	500k								
CAN ID										
	1:	3C1								
	2:	3C2								
	3:	3C3								
	4:	3C4								
	5:	3C5								
	9:	3C0								
Edition										
	Blank:	Imported								
	C:	China-Made								
	H:	24V power supply								
Matched resistance										
	Blank:	4.8k Ω								
	1:	120 Ω								