

# CURRENT SENSOR

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PRODUCT SERIES: STB-CAB500x-xxx

PRODUCT PART NUMBER: STB-CAB500N-xxF

VERSION: Ver 1.2



Sinomags Technology Co., Ltd.

Web site: [www.sinomags.com](http://www.sinomags.com)

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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  $\pm 30\text{mA}$  @  $<\pm 10\text{A}$ , Accuracy  $\pm 0.3\%$  @  $<\pm 30\text{A}$ ; Accuracy  $\pm 0.5\%$  @  $<\pm 500\text{A}$ .
- 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

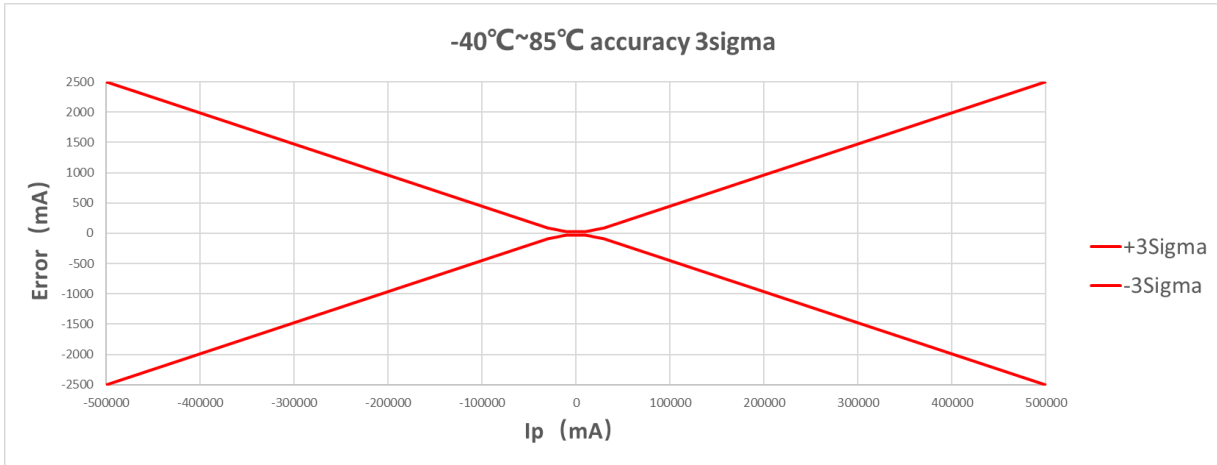
Working temperature:  $-40^{\circ}\text{C}\sim+85^{\circ}\text{C}$ ;  
 Storage temperature:  $-40^{\circ}\text{C}\sim+85^{\circ}\text{C}$   
 Insulation resistance:  $\geq 500\text{M}\Omega$ ;  
 Rms voltage for AC insulation test 50Hz 1min 2.5KV  
 Over-voltage 24V/1 minute  
 Electrostatic discharge 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 @ $I_P=0\text{A}$	$I_C$	mA		33		$U_C=12\text{V}$ , $T=25^{\circ}\text{C}$
Current Consumption @ $I_P=500\text{A}$	$I_C$	mA		146		$U_C=12\text{V}$ , $T=25^{\circ}\text{C}$
All Temperature Sensitivity error Accuracy @ $I_P \leq 10\text{A}$	$X_G$	A	-0.03		0.03	$=-40$ to $85^{\circ}\text{C}$ ; $\pm 3$ sigma
All Temperature Sensitivity error Accuracy @ $10\text{A} < I_P \leq 30\text{A}$	$X_G$	%	-0.3		0.3	$=-40$ to $85^{\circ}\text{C}$ ; $\pm 3$ sigma
All Temperature Sensitivity error Accuracy @ $30\text{A} < I_P \leq 500\text{A}$	$X_G$	%	-0.5		0.5	$=-40$ to $85^{\circ}\text{C}$ ; $\pm 3$ sigma
Offset=0A	$I_{OS}$	A	-0.03		0.03	$=-40$ to $85^{\circ}\text{C}$ ; $\pm 3$ sigma
Linearity error with $I_{PN}$	$\epsilon_L$	%		0.2		@room temperature
Temperature coefficient of G	TCG	ppm/ $^{\circ}\text{C}$		20		

## 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 impedance = 4.8 Kohm

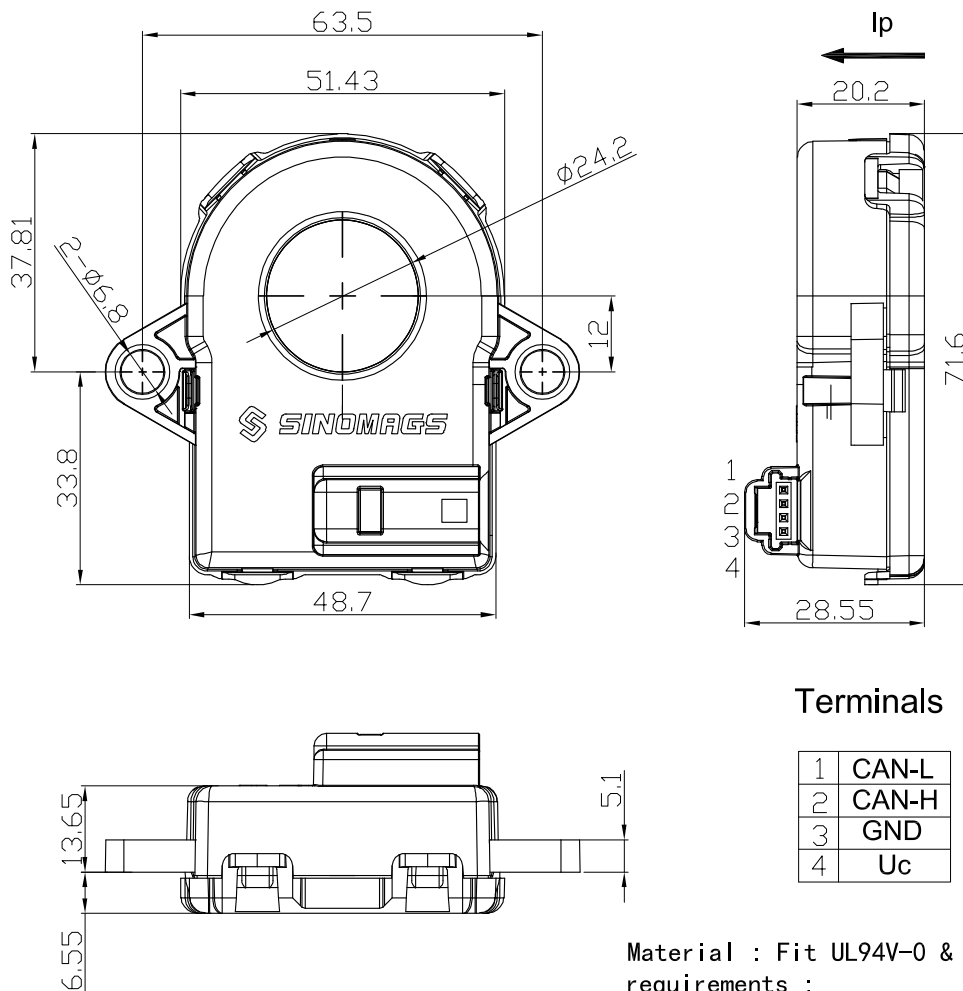
Message Description	CAN ID	name	Data Length (bytes)	Type of frame	Message launch type	Signal description	Signal Name	Start bit	Len-gth
Current Ip (mA)	0x3C2	CAB500	8	standard	Cyclic message every 10ms	Ip Value: 80000000H= 0mA, 7FFFFFFFH= - 1mA, 80000001H= 1mA	IP_VALUE	24	32
						b0:Error indication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

## 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



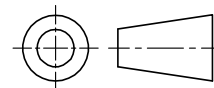
### Terminals

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

Material : Fit UL94V-0 & RoHS requirements ;

General tolerance :  $\pm 0.5$

Unit :mm



### Mechanical characteristics

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

## 8. Application

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

## 9. Product definition statement

	STB	-	CAB	500	N	-	5	2	F
Current sensor									
Product information									
Rated current									
Installing form									
N:	Perforation $\varnothing$ 24.2mm, mounting hole $\varnothing$ 6.8mm								
Baud rate									
1:	125k								
2:	250k								
5:	500k								
CAN ID									
1:	3C1								
2:	3C2								
3:	3C3								
4:	3C4								
5:	3C5								
9:	3C0								
Edition									
F:	Fluxgate								
Resistance of matching									
Blank:	4800 $\Omega$								
1:	120 $\Omega$								