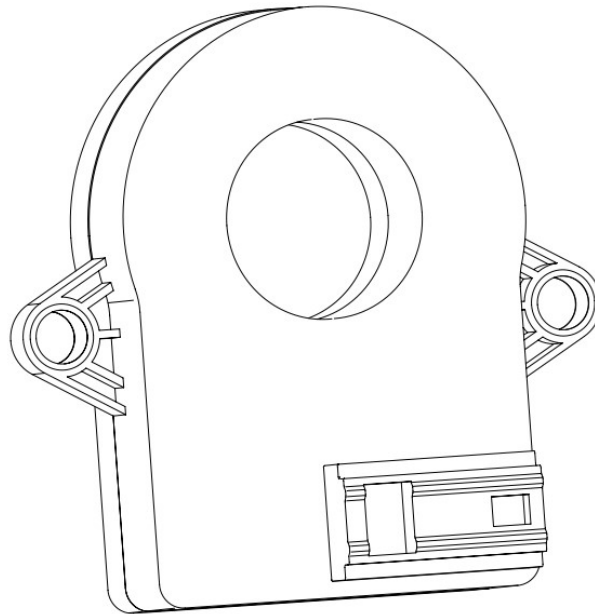


PRODUCT SPECIFICATION

30FCS01-01 SERIES FLUXGATE CURRENT SENSOR



DRAWN		ENGINEER STEVEN XU	APPROVAL NAIRAN GUO	ECN # ECN000065	DATE 02-MAY-2023
SHEET 1 OF 9	TITLE PRODUCT SPECIFICATION		DRAWING NUMBER 30FCS01-01-PSP		REV 1

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REVISION LOG

Revision	Description	Date	Changes
1	Initial release	02/5/2023	1st version Initial Release

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1 GENERAL DATA

1.1 DESCRIPTION

In this specification a sensor is described that has the objective to measure current value using in EV/PHEV/ Charging piles and Energy Storage Equipment.

The sensor is based on fluxgate technology, not only has the ability of high precision and low bias current detection, but also has the characteristics of high and low voltage isolation.

The sensor will provide a CAN output, with high accuracy and very low offset.

1.2 CODING

Sensor coding conform to the envelope drawing : 30FCS01-01-ENV

1.3 CONFIGURATION

The shape, material and the dimensions of the sensor are in accordance with the envelope drawing : 30FCS01-01-ENV

1.4 GENERAL REQUIREMENTS

The performance of the sensor is in accordance with the requirements as defined in chapter 2 of this specification and can only be guaranteed if the sensor is used in environmental conditions as specified in this document. Any deviation from usage as defined in this document will void this specification. Test climate unless mentioned otherwise is according to : ISO 16750

1.5 LEGAL DISCLAIMER PRODUCT USE (AUTOMOTIVE SENSORS)

Churod Electronics products are developed for automotive applications. They may only be used within the parameters of these Product Specifications. Churod Electronics products are provided with the express understanding that there is no warranty of fitness for a particular purpose. They are not fit for use other than specified, tested and validated within the release process during product launch. Fit for use warranty claims will be compared with the provided PPAP release package. Warranty claims that goes beyond of what is agreed in that PPAP package will not be awarded.

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2 CHARACTERISTICS

2.1 GENERAL PROPERTIES

2.1.1 Operating measurement current range

The Primary nominal DC or RMS current is : -500A to 500A
in the herein defined operating temperature range,
operating voltage range and life time.

2.1.2 Operating temperature range

The operating temperature range is : -40 to 85 °C

2.1.3 Current clamping value

Current clamping value of the sensor is : -530A to 530A

2.2 OPERATING ENVIRONMENT

2.2.1 Operating ambient temperature range

The operating ambient temperature range : -40 to +85 °C
The minimum and maximum operating temperature is
the lowest and highest temperature respectively at
which the sensor will perform according to the
characteristics listed in this chapter.

2.2.2 Storage temperature range

The storage temperature range : -40 to +85 °C
The minimum respectively maximum storage
temperature is the lowest respectively highest ambient
temperature at which the sensor can be kept for longer
periods of time without negative effects on
performance.

2.2.3 Protection rating

The sensor complies to : IP42
under the condition that the electrical connector is
applied.

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ELECTRICAL CHARACTERISTICS

2.3.1 Supply voltage (Vcc)

The sensor requires a transient protected and regulated voltage supply. The sensor will operate properly at any supply voltage in the range

: 8 to 16 VDC, 12 VDC Typ.

2.3.2 Power consumption

The sensor Current consumption @Ip=0A
Current consumption @Ip=500A

: 40 mA Typ. 45mA Max;
: 140 mA Typ. 160mA Max;

2.3.3 Input / Output signal

The sensor communicates by CAN
CAN version

: 2.0B

2.3.4 BAUD rate

Baud rate

: 500Kbps

2.3.5 DBC file

Refer to the latest DBC file.

Message Description	Can ID	Data length	Message launch type	Signal description	Signal name	Start bit	End bit
Return current Ip (mA)	0x3C2	8 bytes	Cyclic transmitted message 10ms cycle	Ip value: 80000000h=0mA 7FFFFFFFh=-1mA 80000001h=1mA	IP_VALUE	0	31
				b0 error information 0=normal, 1=failure	ERROR_INDICATION	32	32
				b7 to b1: RxQuality (0 to 100%)	ERROR_INFORMATION	33	39
				fixed to 0	VACANT_DATA_2BYTES	40	55
				CRC-8 POLY: 8+X2+X+1	CRC_8	56	63

2.3.6 Electrical parameters

The parameters as listed in Table 1&2&3 are tested at room temperature unless otherwise specified.

Table 1: Basic parameters

Parameter	Min	Typical	Max	Unit	Remark
Supply voltage	8	12	16	VDC	
Start-up voltage	6			VDC	
Current consumption @Ip=0A		40	45	mA	
Current consumption @Ip=500A		140	160	mA	

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Table 2: Absolute max rating (not operating)

Parameter	Min	Typical	Max	Unit	Remark
Load dump overvoltage		32		VDC	
Over-voltage		24		VDC	
Reverse polarity		-16		VDC	
Creepage distance		7.2		mm	
Clearance		6.95		mm	
RMS voltage for AC insulation test		2.5		KV	
Insulation resistance		500		Mohm	

Table 3: Performance in operating

Parameter	Min	Typical	Max	Unit	Remark
Primary nominal DC or RMS current	-500		500	A	
Current clamping value	-530		530	A	
Voltage clamping value Max@ Uc increases		18		VDC	
Voltage clamping value Max@ Uc decreases		17.35		VDC	
Voltage clamping value Min@ Uc increases		7.72		VDC	
Voltage clamping value Min@ Uc decreases		7.27		VDC	
Linearity error		0.1		%	
Output noise	-10		10	mA	
Start-up time		20		mS	
Setting time after overload		20		mS	

2.3.7 Current output accuracy

Ip (A)	Total error @ 25 °C (A)	Total error @ T range (A)
-500	±1.5	±2.5
0	±0.01	±0.01
500	±1.5	±2.5

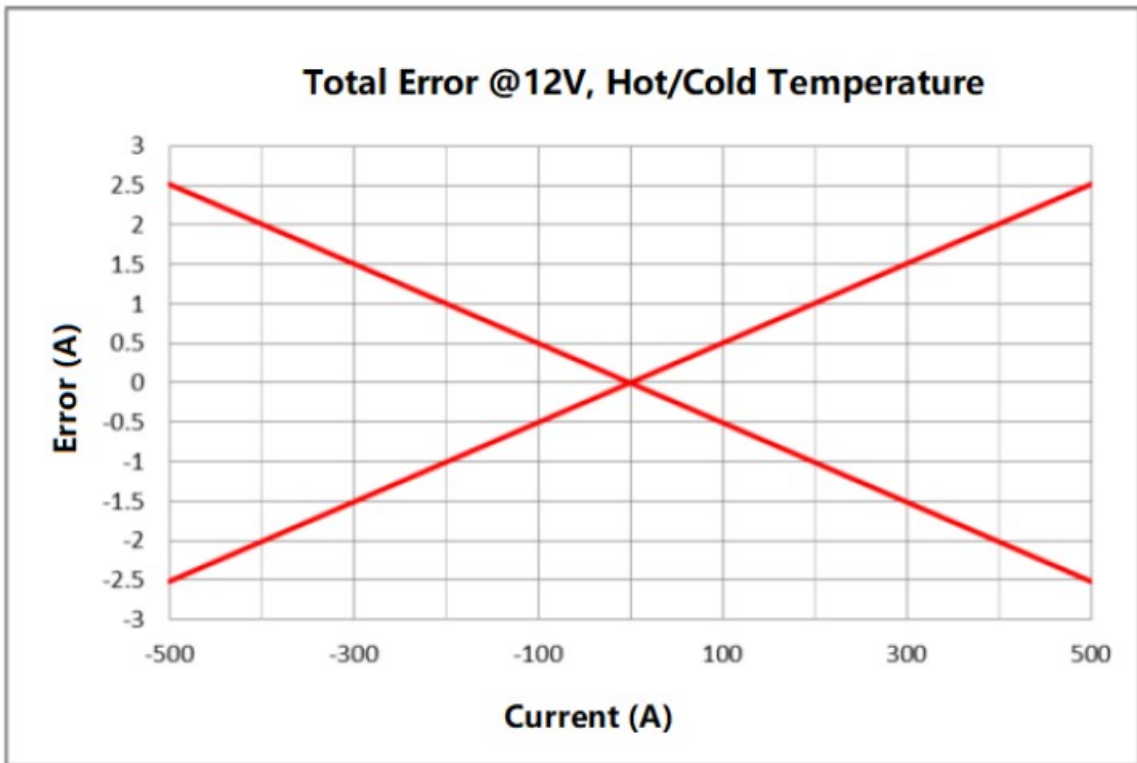
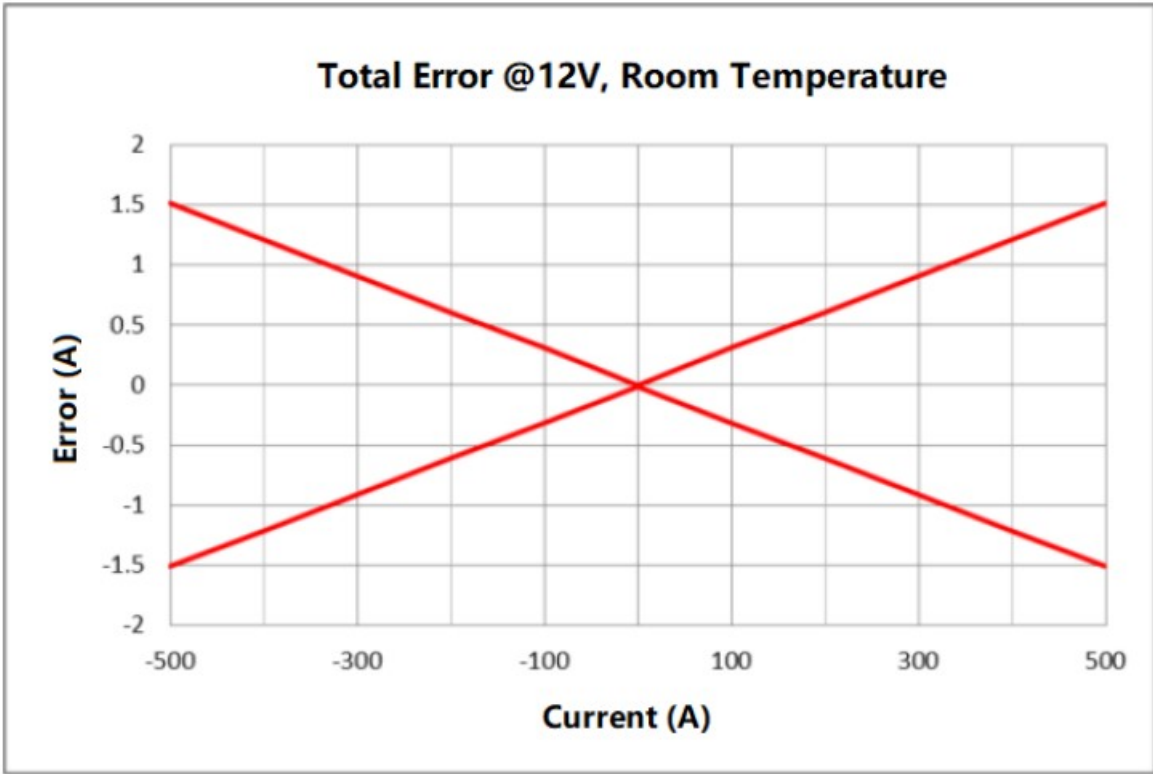
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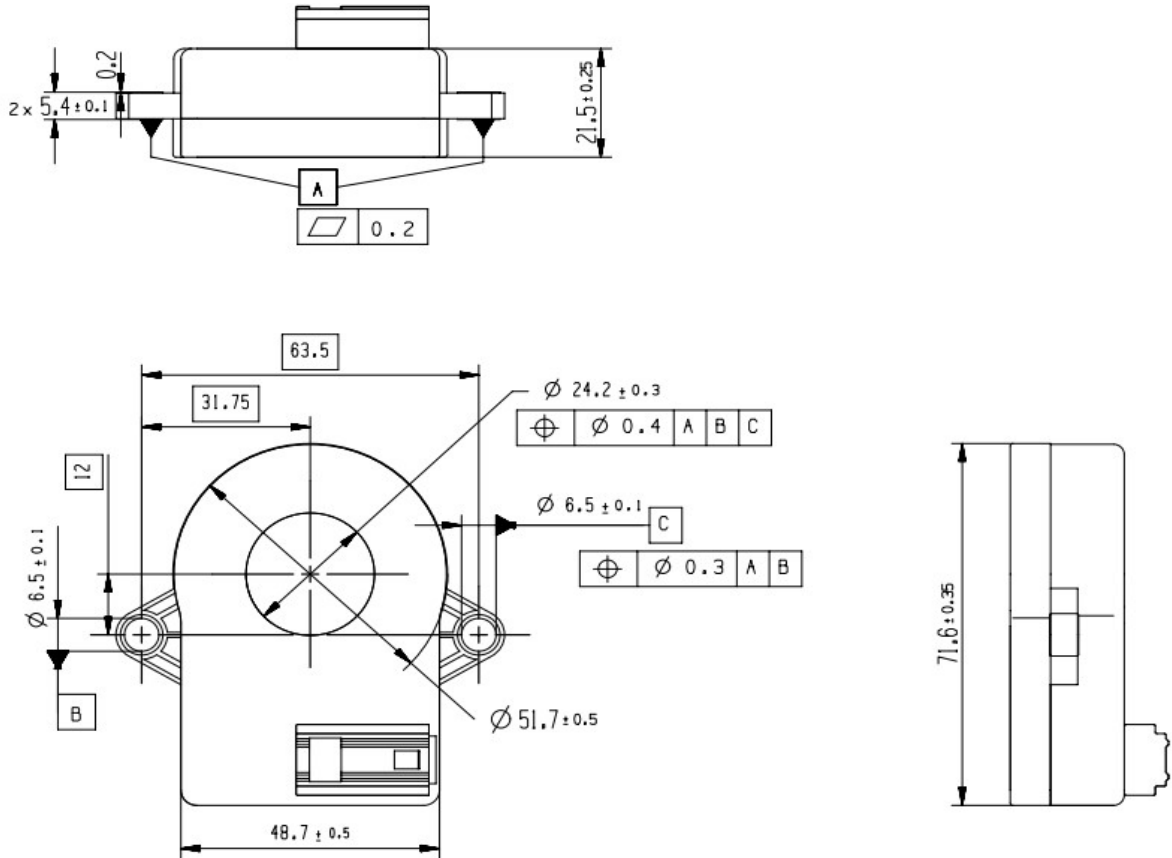


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MECHANICAL CHARACTERISTICS

2.4.1 Dimensions

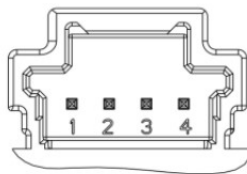
Sensor dimensions conform to the envelope drawing : 30FCS01-01-ENV



2.4.2 Connector pin sequence

The connector pin sequence : see below figure.

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



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