



Product Code: CS013A

## Introduction

The Bus Bar type of EMUS G1 Dual Range Current Sensor is designed specifically for use in battery packs that consists of prismatic form factor cells. It doubles as an interconnecting bus bar, and due to the galvanic isolation between the sensor and the conducting part, it can be installed anywhere in the battery pack between two adjacent, series-connected cells.



## Applications

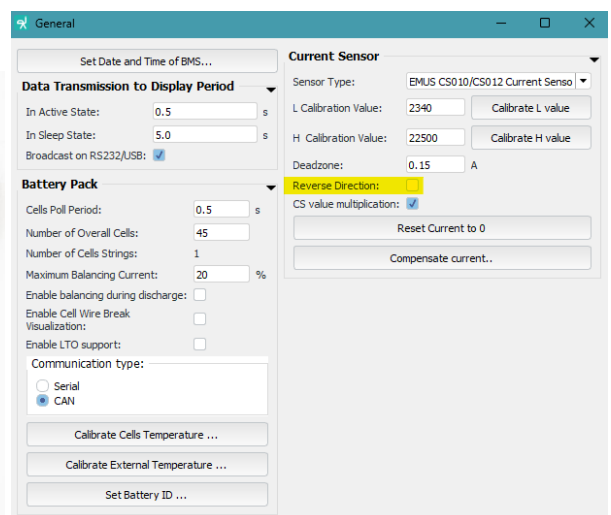
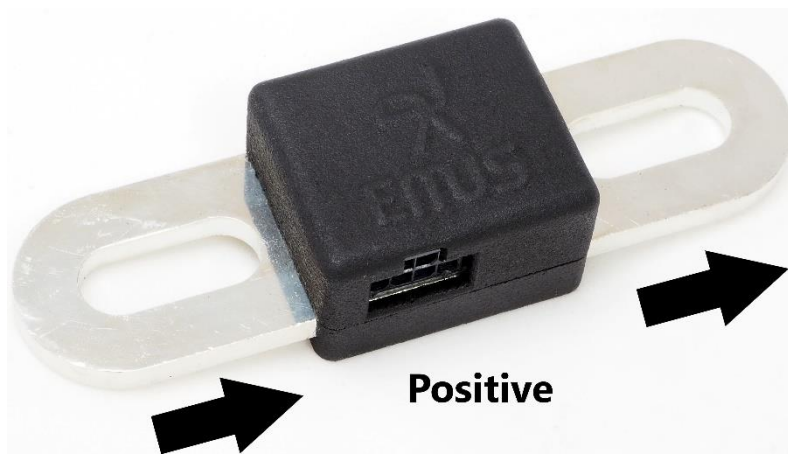
- High power batteries requiring high current draw
- Specifically designed to be used in EMUS battery management system
- EMI can affect to the current sensor, and it is also recommended to calibrate it once installed
- Under frequent high currents, recalibration maintenance could be needed

## Features

- Two separate measurement channels with different sensitivity, which allows to accurately measure small currents without sacrificing the range of measurable values
- Hall-effect current measurement method which provides the characteristic galvanic isolation between the sensor and the conductive part

## Measurement Direction

The Bus Bar Type Current Sensor is intended to measure positive current in the direction detailed in the picture below. It is possible to change the direction parameter using EMUS G1 Control Panel. Charging currents must always be perceived as Positive by the current sensor for correct functioning.



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## Mechanical Information

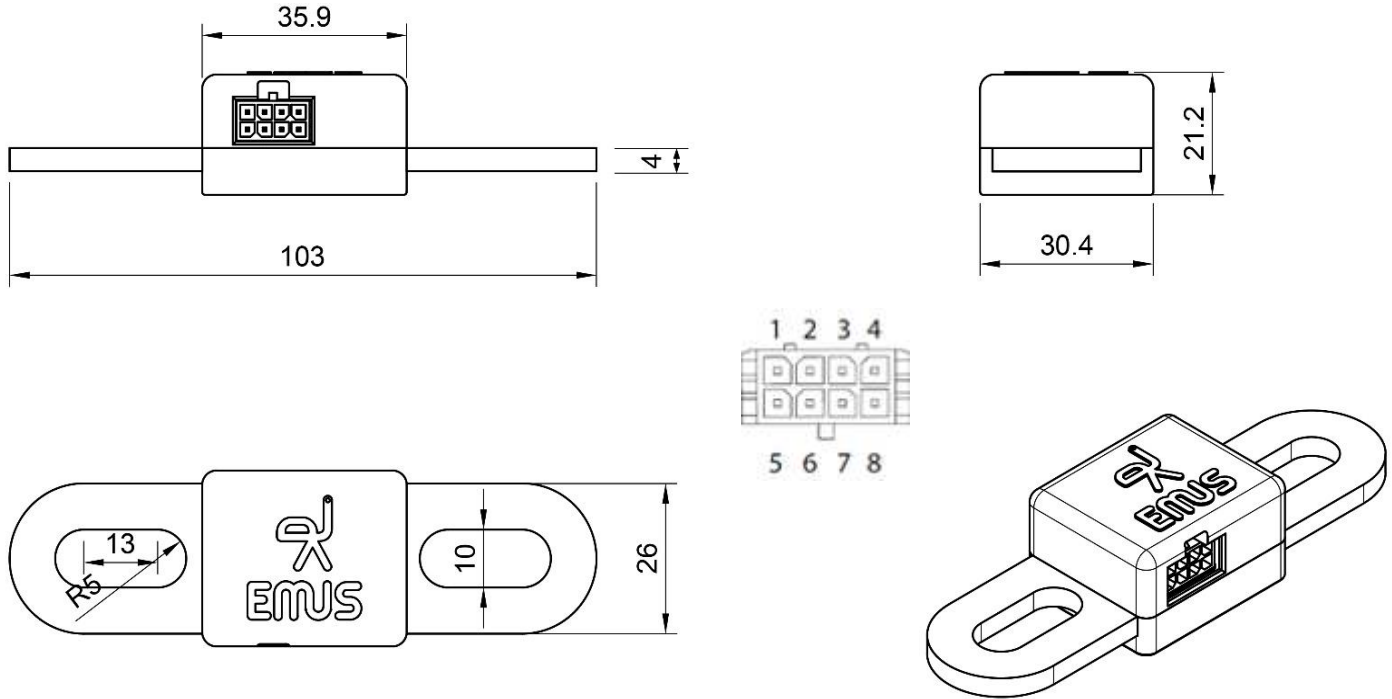


Table 1. CS013A pin assignment

Pin No.	Assignment	Mating Housing	Terminal
1	LOW RANGE	8 Pin Molex Micro-fit Header 43025-0800	43030-0003 (recommended crimp tool Molex Hand Crimp Tool P/N: 638190000)
2	HIGH RANGE		
3	GND		
4	N.C		
5	REFERENCE		
6	N.C		
7	+5V		
8	N.C		

## Electrical Characteristics

Table 2. CS013A electrical characteristics

Item	Conditions	Value
Nominal Current range	Tested up to	±350A
	Hardware ready*	±500A
Peak current range	Tested up to	±350A
	Hardware ready*	±1000A
Accuracy	<350A	±0.5%
Noise	<80A	±55mA



# Current Sensor Bus Bar Type

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Item	Conditions	Value
	>80A	±500mA
Resolution	With G1 CU021, FW 2.7 (10bit ADC)	<80A
		>80A
Basis Isolation DC Voltage	-	1kV
Supply voltage	-	5.0 VDC
Current consumption	At typical supply voltage	25 mA
Conductor resistance	-	20 µ0hm

\*For further software information contact. support@emusbms.com

## Other specifications

Table 3. CS013A other specifications

Item	Value
Operating temperature	-40 to +85 °C
IP rating	IP40
Weight	98 g
Sensor calibration procedure	<ol style="list-style-type: none"> <li>1. Open EMUS Control Panel (from version 2.7..)</li> <li>2. Check for correct Sensor Type</li> <li>3. To Calibrate L value</li> <li>4. Run constant current from 30 up to 70A</li> <li>5. Make sure you connect current measurement device to measure actual value</li> <li>6. Press Calibrate L value, enter momentary current value from measurement device</li> <li>7. Make same process for H Value, only run current of more than 130A</li> </ol>
Default calibration values	L: 2340 / H: 22500