

Introduction

EMUS Cell Module is the device that measures cell's voltage, temperature, and its own temperature. It broadcasts all measured values to the G1 Control Unit. Also, cell module using previously mentioned values regulates the balancing current to keep cell's voltage lower than the balancing threshold, while at same time keeping its own temperature lower than certain maximum value to protect itself from overheating.



Applications

- Any lithium chemistry, series connected battery pack up to 80 cells using TOP/BOT isolators or CGM
- Energy storage systems
- Photovoltaics battery systems
- Electric vehicles
- Recommended up to ~150Ah. Higher cell capacity could lead to longer balancing periods

Features

- Integrated port for optional external temperature sensor (100kΩ NTC by code ETS04)
- Integrated internal temperature sensor for overheating protection
- Digital I/O, Analog, proprietary serial interface for communication
- Balancing level indicating red LED
- Communication indicating green LED
- Maximum balancing current up to 1.0A

Mechanical Information

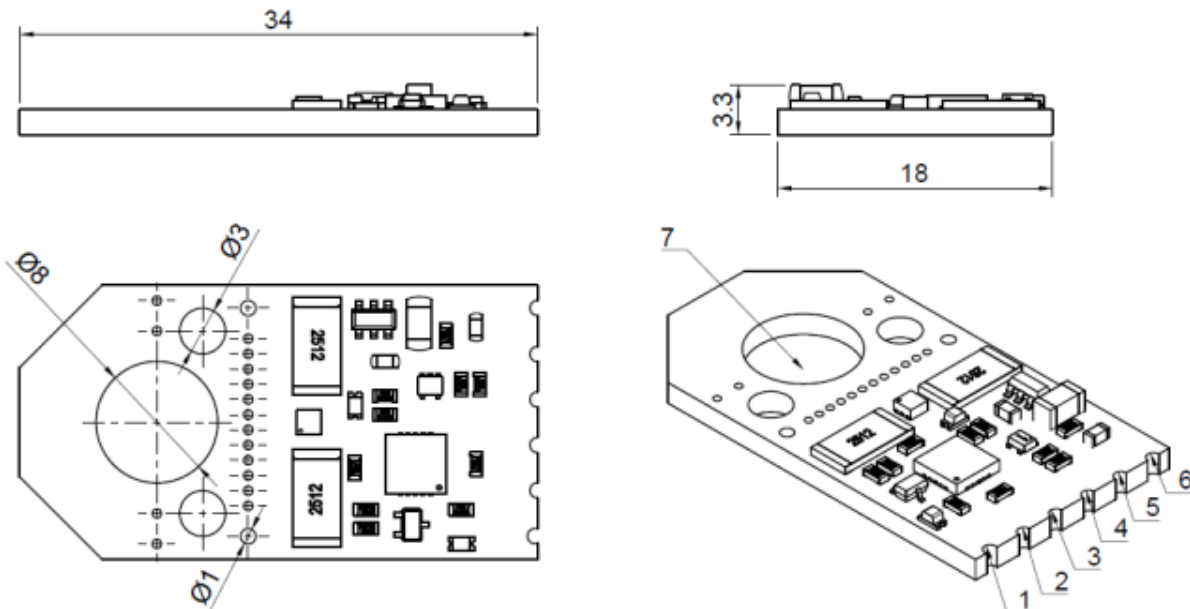


Table 1. CM021A pin assignment

Terminal No.	Assignment
1	DN
2	Temperature sensor GND
3	CELL+
4	
5	Temperature sensor (optional)
6	UP
7	CELL-



G1 Cell Module – Small Type

Product Code: CM021A

Table 2. Recommended tightening torque

No.	Terminal Bolt type	Recommended tightening torque (Nm)
1	M5	10
2	M6	12
3	M8	14
4	M14	24

Electrical Characteristics

Table 3. CM021A electrical characteristics

Item	Value
Operating Voltage	2.0 VDC to 4.55 VDC
Voltage measuring range	2.0 VDC to 4.55 VDC
Voltage measurement resolution	10mV
Voltage measurement error	±10mV
Maximum balancing current	900mA @ 4.20V* 800mA @ 3.60V*
Internal temperature measuring range	-40°C to 85°C
Internal temperature measurement resolution	1°C
Internal temperature measurement accuracy	±5°C
External temperature measuring range	-99°C to 154°C
External temperature measurement resolution	1°C
External temperature measurement accuracy	±5°C
Current consumption in active mode, when communication LED is on, supply voltage = 3.60V	2.9 mA
Current consumption in sleep mode, supply voltage = 3.60V	35µA
Balancing resistor resistance	4.1 Ω
Balancing resistor rated power	2 W

*Maximum balancing current depend on environmental thermal conditions

Other Specifications

Table 4. CM021A other specifications

Item	Value
Operating temperature	-40°C to +85°C
IP Rating	IP21
Weight	8 g
Dimensions	34x18x3.3 mm
Mounting hole	M8
CELL + wire length	0.1m
CELL + wire ring terminal type	-
Communication wire length	0.1m
External temperature sensor type	SR PASSIVES NTC, 100 kΩ P/N NTCM-100K-B4250
Sleep mode timeout when not balancing	60 ms
Sleep mode timeout when balancing	10 s
Wakeup source	Cell communication signal edge, watchdog timeout (8 s)