

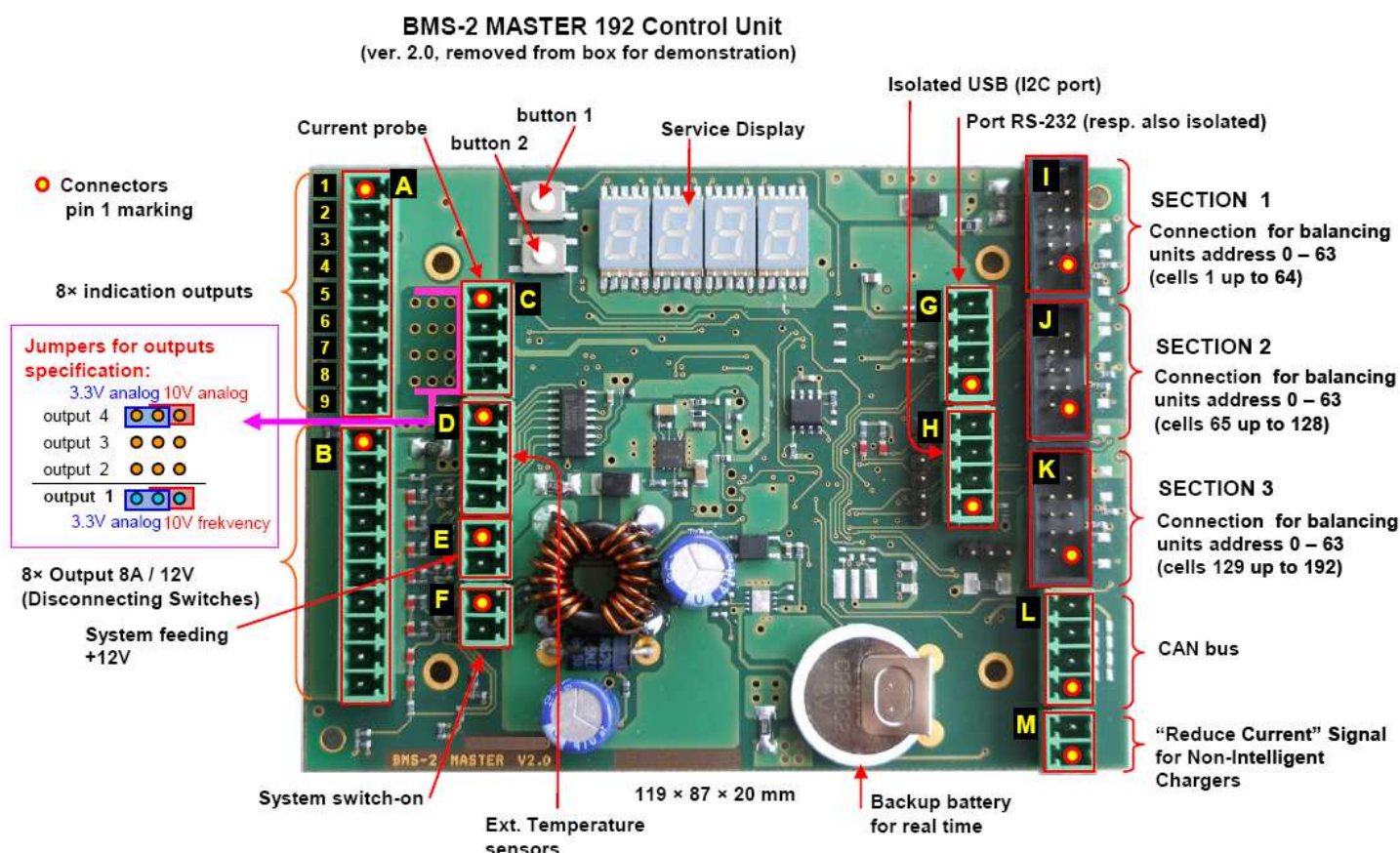
RT-BMS Component Information



Frequently Asked Questions concerning the RT-BMS system and installation

Q: What is the use of all the connectors on the BMS board?

Answer: Please check the description of all the connectors below. (Please note that by standard not all connectors are mounted on the board. Please contact us for any demand concerning the additional connectors)



The detailed description of the connectors:

Connector A (indication):

- Pin 1: Digital output open collector 4 (1A / 12V) – free
- Pin 2: Digital output open collector 3 (1A / 12V) – free
- Pin 3: Digital output open collector 2 (1A / 12V) – Error
- Pin 4: Digital output open collector 1 (1A / 12V) – Fuel reserve
- Pin 5: GND
- Pin 6: Analog. / digital. output 4 (range 0 / +3.3V / 10V) – min. U of cell [V]
- Pin 7: Analog. / digital. output 3 (range 0 / +3.3V / 10V) – max. U of cell [V]
- Pin 8: Analog. / digital. output 2 (range 0 / +3.3V / 10V) – Current [A]
- Pin 9: A / D / frequency output 1 (range 0 / +3.3V / 10V) – Battery charge [%]

Note: by default, outputs 2 to 4, possibly also 1 are analog

Connector C (current probe):

- Pin 1: current probe supply (+5V or +12V)
- Pin 2: Sense +
- Pin 3: current range of probe
- Pin 4: GND

Connector D (Ext. Temperature sensors):

- Pin 1: sensor 1: KTY 81-210
- Pin 2: GND of sensor 1
- Pin 3: sensor 2: KTY 81-210
- Pin 4: GND of sensor 2

The detailed description of the connectors (continued):

Connector B (power disconnecting switches, O.C.):

- Pin 1: minus pole of battery 12V (power GND) – **separate cable !**
- Pin 2: minus pole of battery 12V (power GND) – **separate cable !**
- Pin 3: Main Current (for motor controller)
- Pin 4: Antispark Current (for motor controller)
- Pin 5: Charging Current 1 (**main** or small power – finishing)
- Pin 6: Charging Current 2 (**not** or full power)
- Pin 7: Battery Warming
- Pin 8: Battery Cooling
- Pin 9: AUX 1 (reserve)
- Pin 10: AUX 2 (reserve)

Connector H (I2C bus, connection of USBCOM3):

- Pin 1: +5V / +12V output
- Pin 2: SCL
- Pin 3: SDA
- Pin 4: GND

Connector G (port RS-232):

- Pin 1: feeding (internal or external)
- Pin 2: Rx D
- Pin 3: TX D
- Pin 4: GND

Connector M (auxiliary charger controlling):

- Pin 1: OPT +
- Pin 2: OPT –

Connector E (System supply):

- Pin 1: supply (+12V)
- Pin 2: minus pole of battery 12V (system GND)

Connector F (BMS switch-on):

- Pin 1: (system GND) minus pole of battery 12V
- Pin 2: internal switch-on supply (+12V)

Connector L (CAN BUS):

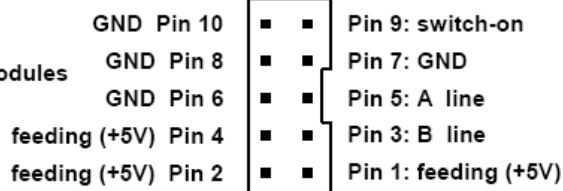
- Pin 1: GND
- Pin 2: CAN L
- Pin 3: GND
- Pin 4: CAN H

Connector I, J, K (connection bus for modules 0 – 63):

(I=section 1, cells 1 - 64, J= section 2, cells 65 - 128, K= section 3, cells 129 - 192)

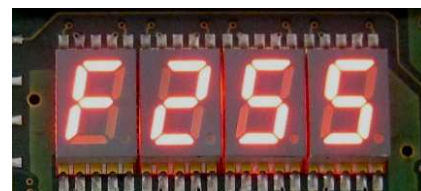
- Pin 1: feeding (+5V)
- Pin 2: feeding (+5V)
- Pin 3: line A
- Pin 4: feeding (+5V)
- Pin 5: line B
- Pin 6: GND
- Pin 7: GND
- Pin 8: GND
- Pin 9: switch-on modules
- Pin 10: GND

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Q: My BMS Master displays F255 all the time. What does it mean?

Answer: The error F255 means: “All settings erased”. This means the EPROM of the BMS Master does not contain any operational settings. You need to connect the computer and make the settings using the BMS software. If F255 appears repeatedly, please contact us for more support.



Q: What do the values of the display mean? I see cXXX and dxxx always repeating.

Answer: The Master unit is working properly when the voltage of the highest and lowest cells in the series is displayed. “CXXX” is the highest voltage; “DXXX” is the lowest voltage. (You can remember D as Down).



Control unit displayed, over and over:

- Cx.xx** cell voltage with the highest value
- dx.xx** cell voltage with the lowest value
- X.xxx** difference between highest and lowest cell voltage

Sample:

- C3.14** means cell with highest voltage has 3,14V
- d3.02** means cell with lowest voltage has 3,02V
- 0.127** means difference is 0,127V

Q: How do I know that there is any problem with the function of the CBU units?



Answer: All CBU units are tested for their basic functions when manufactured. However it is not possible to test the functions of each CBU in long term. This means there may be a higher failure rate. That is why we always recommend to order more units to have spare units on hand. During the first setup and the initial operation, we also recommend monitoring of the voltage of each cell with a standard voltmeter or the CellLog device to see the voltage for the cells.

We always suggest that you at first install the MASTER + CBU only on just small number of batteries (e.g. just 4 cells) so that you understand how the BMS works and how to setup and manage. After you get the experience, we suggest to make the full installation of the complete system with many cells. Anyway, we strongly suggest that you install the BMS by small number of CBUs. Eg: 4 CBU then + 4CBU then again + 4CBU. If you install all modules at one time it may be difficult to locate some problem.

Please see the error messages for the CBU operations:

FXXX measuring / balancing unit address, which signalize some problem, and follow
XXXX error number

Error messages:

BMS error indicates which balancing/measuring unit is faulty (its address, e.g. F041 = cell number 42), the list of error of balancing units is as follows:

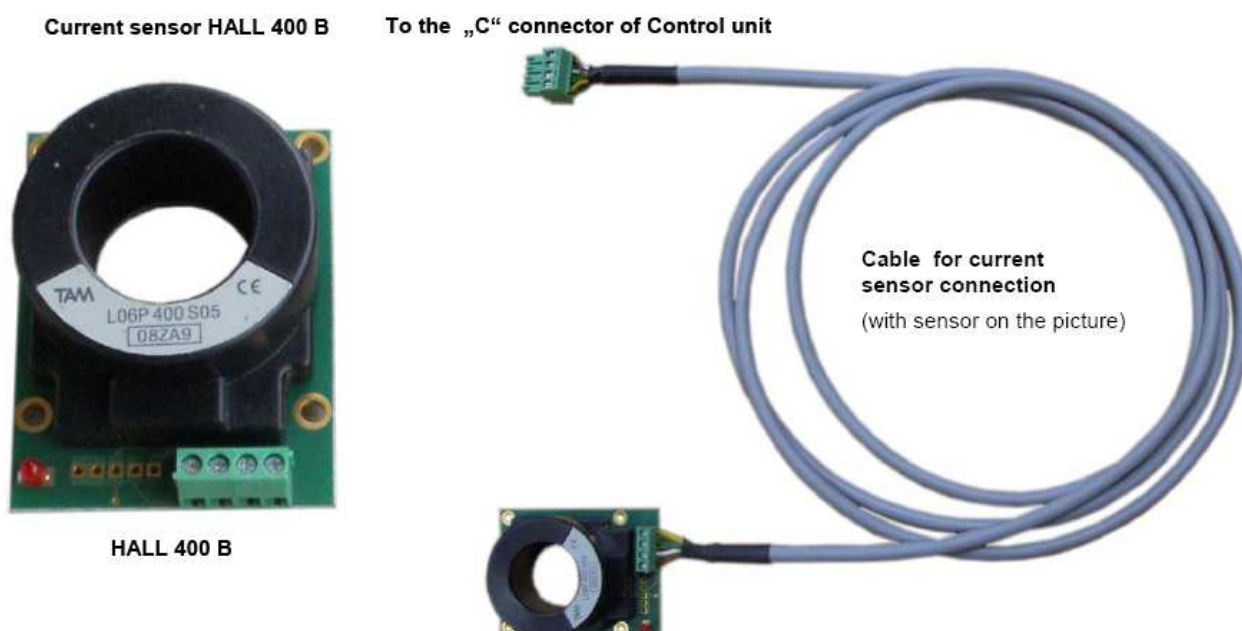
- 1 : damaged EEPROM
- 2 : damaged temperature sensor
- 4 : overheating > 140 °C
- 8 : damaged DC / DC XXXX
- 16 : damaged balancing FET – balancing current flows all the time and discharge cell !!!
- 32 : damaged balancing FET – balancing current not flows and cell is not balancing

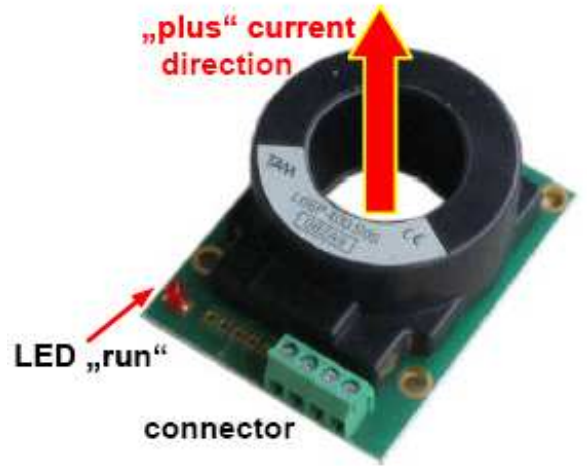
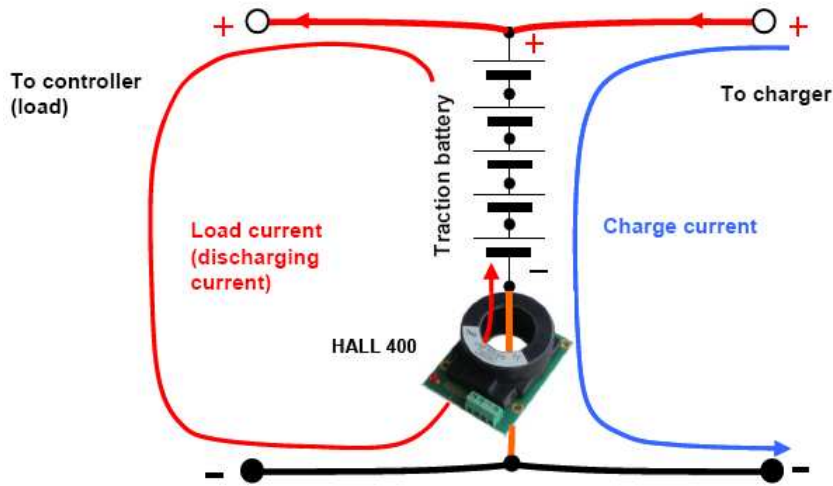
Error message (number) can be sum of more faults, for example 24 = 16 + 8 = damaged XXXX + balancing current flows all the time (bad FET).

In all cases is service mission necessary !!!

Q: How to connect the current sensor?

Answer: Please see the photos. (Note: the current sensor is supplied with the BMS-Master unit)





Q: How to connect the USB communication module?

Answer: Please see the photos. (Note: the USB module is supplied with the BMS-Master unit)

Communication module USBCOM 3:



Cable CC-10 for USBCOM 3+ module connection:



<http://www.yttrium-power.com/>

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