CANID\_MSG\_BMS\_CELLVsmR

Battery module BMS node “**CELL V**oltage **s**tring & **m**odule **R**esponse”,

payload layout

11/08`/2021

**Initiator** of command:

EMC sends and module(s) respond with cell readings

CANID\_CMD\_BMS\_CELLVQ'

payload [0] U8: Module identification

[7:6]

11 = All modules respond

10 = All modules on identified string respond

01 = Only identified string and module responds

00 = spare; no response expected

[5:4] Battery string number (0 – 3) (string #1 - #4)

[3:0] Module number (0 – 15) (module #1 - #16)

Battery module **response** to command:

29b CAN ID maps to string and module.

CANID\_MSG\_BMS\_CELLVsmR

where:

s = string number

m = module within string

DLC: 4, 6, or 8

PAYLOAD\_TYPE: U16\_U16\_U16\_U16

DLC determines number of U16 readings.

U16 readings sent little Endian, i.e. low order byte sent first.

payload [0-1] U16 – Payload Identification

[15:14] Winch (0 - 3)(winch #1 - #4)

[13:12] Battery string (0 – 3) (string #1 - #4)

[11:8] Module (0 – 15) (module #1 - #16)

[7:3] Cell (0 - 31) (cell #1 - #18, current sensor #19)

[2:0] Group sequence number (0 - 7)

payload [2-3] U16 – Cell n reading (0.1 mv) or (current 0.1a)

payload [4-5] U16 – Cell n+1 reading (0.1 mv)

payload [5-6] U16 – Cell n+2 reading (0.1 mv)

**Narrative**

This CAN msgs follows the the general approach used for CANID\_CMD\_BMS\_MISCsmR. The main difference is that in normal operations CAN cell voltages will be read at a high rate during operations.

A payload carries up to three cell voltages as 16b unsigned integers, calibrated in 0.1mv units. Zero represents no reading, zero, or negative values. For an 18 cell module three CAN msgs will convey all 18 cell voltages. And additional msg is required if the current sensor reading associated with cell measurement is used. The DLC sets the number of readings in the payload.

Since three (or four) CAN msgs are required to send all cell readings there is a chance for one or more to be missing. Readings that are coordinated with current measurements will be misleading of a cell reading CAN msg is missing. For those receiving the msgs, the sequence number provides a means for detecting a missing cell reading.

CANID\_CMD\_BMS\_MISCsmR