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Instruction manual for Battery Management System to Victron Direct converter

Battery management system

The BMS is connected over CAN with a speed of 500kb.

Retrieved codes from BMS

BMS id	Description
0x100	Voltage, ampere and remaining capacity
0x101	Capacity, charge cyles and SOC
0x102	Cell status
0x103	Pack info
0x107	Cell 1, 2 and 3 voltage
0x108	Cell 4, 5 and 6 voltage
0x109	Cell 7, 8 and 9 voltage
0x10A	Cell 10, 11 and 12 voltage
0x10B	Cell 13, 14 and 15 voltage
0x10C	Cell 16, 17 and 18 voltage
0x10D	Cell 19, 20 and 21 voltage
0x10E	Cell 22, 23 and 24 voltage
0x10F	Cell 25, 26 and 27 voltage
0x110	Cell 28, 29 and 30 voltage
0x356	State of Charge
0x110	Pack voltage, ampere and temperature

Victron Direct

The VED information is sent using an serial connection with a speed of 19200b.

VE Direct output codes

VED Code	Format	Description
PID	...	Product id
V	mV	Main voltage
V2	mV	Pack voltage
I	mA	Main ampere
I2	mA	Pack ampere
T	dgr.C.	Pack temperature
P	W	Instantaneous power
CE	mA	Consumed ampere-hours
SOC	promille	State of charge

VED Code	Format	Description
TTG	minutes	Time to go
ERR		Error/alarm status bits (see error table)
Relay	ON/OFF	Rleay status (always OFF)
MON	0..2	Monitor mode (always 0)
AR		Alarm reason (always 0)
H1	mAh	Depth of deepest discharge (always 0)
H2	mAh	Depth of last discharge (always 0)
H3	mAh	Depth of average discharge (always 0)
H4	cylces	Number of charge cycles
H5	Count	Number of full discharges
H6	mA	Cumulative ampere-hour drawn
H7	mV	Lowest cell voltage
H8	mV	Highest cell voltage
H9	sec.	seconds since last full charge

BMS Error table

Bit	Description
0	Single cell over voltage
1	Single cell under voltage
2 *	Pack over voltage
3	Pack under voltage
4 *	Charge over temp
5	Charge under temp
6	Discharge over temp
7	Discharge under temp
8 *	Charge over current
9	Discharge over current
10	Short circuit
11	BMS IC Error
12	Software FET lock
13	
14	
15	

- Alarm bits from BMS are used for VE.Direct errors

VE Direct Error table

ERR The error code of the device (relevant when the device is in the fault state). See the table below for the possible values.

Code	Description
0	No error
2 *	Battery voltage too high
17 *	Charger temperature too high
18 *	Charger over current

Code	Description
19	Charger current reversed
20	Bulk time limit exceeded
21	Current sensor issue (sensor bias/sensor broken)
26	Terminals overheated
28	Converter issue (dual converter models only)
33	Input voltage too high (solar panel)
34	Input current too high (solar panel)
38	Input shutdown (due to excessive battery voltage)
39	Input shutdown (due to current flow during off mode)
65	Lost communication with one of devices
66	Synchronised charging device configuration issue
67 *	BMS connection lost
68	Network misconfigured
116	Factory calibration data lost
117	Invalid/incompatible firmware
119	User settings invalid

- Bits are used for "ERR" code in VE.Direct protocol

Note1: Error 19 can be ignored, this condition regularly occurs during start-up or shutdown of the MPPT charger. Since version 1.15 this error will no longer be reported. Note2: Error 21 can be ignored for 5 minutes, this condition regularly occurs during start-up or shutdown of the MPPT charger. Since version 1.16 this warning will no longer be reported when it is not persistent.