

TRILLIUM GEN 1 – CAN BASIC PROTOCOL (REV B)



Connection:

The battery has an internal 1 K Ω resistor between CANH and CANL. A 120 Ω terminator is required between CANH and CANL on each end of the CAN bus. The signal ground line is internally connected to the negative battery terminal.

The connector is a 3-pin IP67 connector:

- Deutsch DTM04-3P, 0460-202-20141 Pins, WM-3P Wedgelock
 - Pin 1: Ground (internally connected to B-)
 - Pin 2: CANH
 - Pin 3: CANL
- Mates with Deutsch DTM06-3S, 0462-201-20141 Sockets, WM-3S Wedgelock

Protocol:

CAN 2.0A, standard frames (11-bit identifier), 1,000 kHz bit rate, data is sent in order starting with byte [0], all multiple byte values are transmitted in Intel or little-endian format. (e.g. 0x1234 = [0x34][0x12])

Sleep Mode:

The CAN port goes into a low power sleep mode whenever the battery is manually turned off by using the status button. Any activity on the CAN bus after that will wake the port out of sleep mode, even if the battery is still turned off.

The battery is shipped from the factory with the CAN port enabled. It can be disabled via a CAN Control Message as described in the following table.

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BATTERY BROADCAST MESSAGES							
ID	NAME	BROADCAST INTERVAL	BYTE #	TYPE	CONTENTS	EXAMPLE	MEANING
0x071D	Heartbeat	200 msec	0	Status	Battery CAN State: 0x04 Stopped 0x05 Operational 0x7F Preoperational (normal startup state, waiting for Start CAN command)	0x05	Battery CAN State = 0x05 = Operational
0x019D	Data Message 1	200 msec				0x59FF00	
			0-1	Signed Integer	"Battery Temperature: -40.0°C to +85°C in 1/8°C Units"		Temperature = 0xFF59/8 = -167/8 = -20.875°C
			2	Status	"Battery Status: 0x00 Disconnected 0x01 Connected"		Battery Status = 0x00 = Disconnected
0x029D	Data Message 2	200 msec				0xCB0001CD340000	
			0-1	Signed Integer	"Battery Temperature: -40.0°C to +85°C in 1/8°C Units"		Temperature = 0x00CB/8 = 203/8 = 25.375°C
			2	Status	"Battery Status: 0x00 Disconnected 0x01 Connected"		Battery Status = 0x01 = Connected
			3-6	Unsigned Integer	"Battery Voltage: 0 V to 4,194,303 V in 1/1024 V units"		Battery Voltage = 0x000034CD/1024 = 13517/1024 = 13.20 V
0x039D	Data Message 3	200 msec				0x000044	
			0-1	Unsigned Integer	Reserved		
			2	Unsigned Integer	"State of Charge: 0 to 100 in 1% units"		State of Charge = 0x44 = 68%
BATTERY CONTROL MESSAGES							
0x00	Set Battery CAN State	N/A				0x011D	
			0	Status	"Desired State: 0x01 Go to Operational State (start broadcasting Data Messages) 0x02 Go to Stopped State (stop broadcasting Data Messages) (Heartbeat message broadcast will continue in Stopped State)"		Desired State = 0x01 = Operational
			1	Status	"Message Destination: 0x00 Broadcast to all Devices 0xNN Battery-Specific Device ID (NN = Battery Address)"		Message Destination = 0x1D = Set CAN State on battery address 0x1D (factory default battery address)

Revision List:

A	14 November 2018	First Release
B	17 July 2019	Corrected mating connector socket P/N, identified as-shipped status of CAN port.