WatchMon - Wifi UDP protocol

Version

0.1 – 16/11/2016 – intial draft
0.3 – 12/12/2016 – interim to woody
0.4 – 19/3/2017 – Software 1.0.23
0.5 – 23/4/2017 – Software 1.0.24

Communication Overview

Outbound messages are broadcast to
Supervisor broadcasts to udp port 18542 at IP 255.255255.255

Payload format

- Pos 0   ":" Start Header character colin (0x3A)
- Pos 1..2 UInt16   MessageType
- Pos 3   "," seperator comma
- Pos 4 uint16 SystemID
- Pos 6 uint16 HubID (default 0 - future extension of SystemID)

Code snippet

```
udpTxMsg[0] = 0x3A; // :
udpTxMsg[1] = UDP_CMDMODE_TELEMETY_INFO;
udpTxMsg[2] = UDP_CMDTYPE_STATUS_RAPID_INFO;
udpTxMsg[3] = 0x2C; // ,
udpTxMsg[4] = lowByte(data.SystemSetup.SystemID);
udpTxMsg[5] = highByte(data.SystemSetup.SystemID);
udpTxMsg[6] = lowByte(data.SystemSetup.HubID);
udpTxMsg[7] = highByte(data.SystemSetup.HubID);
```

Wifi Broadcast modes

- Idle – no broadcast communication
- Limited - Only send Discover MsgType every 1.5 Seconds
- Verbose (default) - All messages scheduled in their relevate frequency slot transmitted at 49mS interval
- Disabled - module powered down

Frequency - A : 147 milli seconds
- 0x415A – Individual Cells Basic Status
- 0x4232 – Individual Cells Full Info

Frequency - B : 294 milliseconds
- 0X3E5A – Telemetry - Combined Status Rapid Info

Frequency - C : 1.55 seconds
- 0X3F33 – Telemetry - Combined Status Fast Info
- 0x5732 – System Disco Info
- 0X4732 – Telemetry - Logic Control Status Info
- 0x4932 – Telemetry - Remote Status Info

Frequency - D : 22 seconds
- 0X405A – Telemetry - Combined Status Slow Info
- 0X4A33 – Hardware - System Setup configuration - display
- 0X4B33 – Hardware - Cell Group Setup configuration - display
- 0X4C58 – Hardware - Shunt Setup configuration - display
- 0X4D58 – Hardware - Expansion Setup configuration - display
- 0X4E58 – Control logic - Remote Setup configuration - display
- 0X4F58 – Control logic - Critical Setup configuration - display
- 0X5033 – Control logic - Charge Setup configuration - display
- 0X5158 – Control logic - Discharge Setup configuration - display
- 0X5258 – Control logic - Thermal Setup configuration - display
- 0X5333 – Hardware - Integration Setup configuration - display
- 0x5457 – Telemetry - Daily Session Info
- 0x7857 – Telemetry - Shunt Metric Info
- 0x5632 – Telemetry - Life Metric Info

Legacy Msg Types
from prior SW releases
- Cells_Rapid_Stats_Info = 0X435A, // 67,
- Cells_Grpstatus_Info = 0X445A, // 68,
- SHUNT_STATUS1_INFO = 0X455A, //69,
- SHUNT_STATUS2_INFO = 0X465A, //70,
- SYSTEM_EXTSTATUS_INFO = 0X485A, //72,
- SYSTEM_SETUP_INFO = 0X4A59, // 74,
- CELLGRP_SETUP_INFO = 0X4B59, // 75,
- SHUNT_SETUP_INFO = 0X4C59, // 76,
- EXPANS_SETUP_INFO = 0X4D59, // 77,
- REMOTE_SETUP_INFO = 0X4E59, // 78,
- CRITICAL_SETUP_INFO = 0X4F59, // 79,
- CHARGE_SETUP_INFO = 0X5059, // 80,
- DISCHG_SETUP_INFO = 0X5159, // 81,
- THERMAL_SETUP_INFO = 0X5259, // 82,
- COMPORT_SETUP_INFO = 0X5359, // 83,
- 0x7857 – Shunt Metric Info =, // 120 Was 85, (Freq-D : 22S)
- 0X5058 – Control logic - Charge Setup configuration – display
- 0x495A – Telemetry - Remote Status Info
- 0X475A – Telemetry - Logic Control Status Info
- 0x5775 – System Disco Info
- 0X3F5A – Telemetry - Combined Status Fast Info
- 0X4A58 – Hardware - System Setup configuration – display

- 0X5358 – Hardware - Integration Setup configuration - display

Obsolete from 1.0.24

- 0x425A – Individual Cells Full Info
- 0X3F32 – Telemetry - Combined Status Fast Info
- 0X4B58 – Hardware - Cell Group Setup configuration - display
- 0x5657 – Telemetry - Life Metric Info

Messages payload formatting

Telemetry - Combined Status Rapid Info
Identifier: 0x3E5A – <mark>Recommended to monitor</mark>
Frequency: 294 milliseconds
Data Length: 48 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Min Cell Voltage	8	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Voltage	10	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Min Cell Volt Reference	12	Uint8		Node Identifier
Max Cell Volt Reference	13	Uint8		Node Identifier
Min Cell Temperature	14	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Min Cell Temperature	15	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Min Cell Temp Reference	16	Uint8		Node Identifier
Max Cell Temp Reference	17	Uint8		Node Identifier
Min Cell Bypass Current	18	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Max Cell Bypass Current	20	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Min Cell Bypass Reference	22	Uint8		Node Identifier
Max Cell Bypass Reference	23	Uint8		Node Identifier
Min Bypass Temperature	24	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Min Bypass Temperature	25	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Min Bypass Temp Reference	26	Uint8		Node Identifier
Max Bypass Temp Reference	27	Uint8		Node Identifier
Average Cell Voltage	28	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Average Cell Temperature	30	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Num# of Cells Above Initial Bypass	31	Uint8		
Num# of Cells Above Final Bypass	32	Uint8		
Num# of Cells in Bypass	33	Uint8		
Num# of Cells Overdue	34	Uint8		
Num# of Cells Active	35	Uint8		
Num# of Cells in System	36	Uint8		
CMU port TX NodeID	37	Uint8		
CMU port RX NodeID	38	Uint8		
CMU port RX USN	39	Uint8	0 to 254	Serial number packet counter
Shunt Voltage	40	Uint16		Multiple (100) according to setup
Shunt Amp	42	Float	mA	(+ charge , - discharge)
Shunt Rx Ticks	46	Uint8	0 to 254	Incremental packet counter
Shunt Tx Ticks	47	Uint8	0 to 254	Incremental packet counter

Telemetry - Combined Status Fast Info

Identifier: 0X3F33 – <mark>Recommended to monitor</mark>

Frequency: 1.55 seconds

Version: 3

Data Length: 80 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
CMU Poller Mode	8	Uint8	0 = Idle, 1 = Normal, 2 = Start collection, 3= Collection running, 4 = Start synchronisation, 5 = Sync Running, 6 = Start NetworkTest, 9 = NetworkTest running, 7 = Start BypassTest, 8 = BypassTest running, 10 = Start Reboot All, 11 = Reboot All devices, 12 = Start Simulator, 13 = Simulator running,	
CMU Port TX Ack count	9	Uint8		
CMU Port TX Op Status NodeID	10	Uint8		Node Identifier
CMU Port TX Op Status USN	11	Uint8	0 to 254	Serial packet counter
CMU Port TX Op Parameter NodeID	12	uint8		Node Identifier
Min Cell Volt	13	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Volt	15	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Min Cell Temp	17	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Max Cell Temp	18	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
CMU Port RX Op Status NodeID	19	Uint8		Node Identifier
CMU Port RX Op Status Group Acknowledgement	20	Uint8		
CMU Port RX Op Status USN	21	Uint8	0 to 254	Serial packet counter
CMU Port RX Op Parameter NodeID	22	Uint8		Node Identifier

System Op status	23	Uint8	Timeout = 0,
			Idle = 1, // LED = green slow pulse
			Charging = 2, // LED = blue slow pulse
			Discharging = 3, // LED = green solid
			Full = 4, // LED = blue double blink
			Empty = 5, // LED = green double blink
			Simulator = 6 , // LED = rainbow pulse
			CriticalPending = 7, // LED = red fast pulse
			CriticalOffline = 8, // LED = red slow pulse
			MqttOffline = 9, // LED = white blink
			AuthSetup = 10, // LED = white solid	

System Auth Mode	24	Uint8	0 = Default 1 = Technician 2 = Factory	
System Supply Volt	25	Uint16	0 to 6,500 mV	1mV / bit and nil offset
System Ambient Temp	27	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
System Device Time	28	Uint32	Date Time	1sec/bit since 1.1.1970
Shunt State of Charge	32	Uint8	-5% to +105%	0.5% / bit and 5% offset
Shunt Celsius	33	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Shunt Nom. Capacity to full	34	Float	mAh	
Shunt Nom. Capacity to empty	38	Float	mAh	
Shunt Poller Mode	42	Uint8	0 = Start sync,	

Field	Offset	Data Type	Format / Range	Resolution / Notes
			1 = Sync running, 2 = Normal, 3 = Idle,	
Shunt Status	43	Uint8	Timeout = 0, Discharging = 1, Idle = 2, Charging = 4	
Shunt Lo State of Charge Re Calibration	44	Bool	0 or 1	
Shunt Hi State of Charge Re Calibration	45	Bool	0 or 1	
Expansion Output Battery On	46	Bool	0 or 1	
Expansion Output Battery Off	47	Bool	0 or 1	
Expansion Output Load On	48	Bool	0 or 1	
Expansion Output Load Off	49	Bool	0 or 1	
Expansion Output Relay 1	50	Bool	0 or 1	
Expansion Output Relay 2	51	Bool	0 or 1	
Expansion Output Relay 3	52	Bool	0 or 1	
Expansion Output Relay 4	53	Bool	0 or 1	
Expansion Output PWM1	54	Uint16		
Expansion Output PWM2	56	Uint16		
Expansion Input Run LED Mode	58	Bool	0 or 1	
Expansion Input Charge Normal Mode	59	Bool	0 or 1	
Expansion Input Battery Contactor	60	Bool	0 or 1	
Expansion Input Load Contactor	61	Bool	0 or 1	
Expansion Input Signal In	62	Uint8		
Expansion Input AIN1	63	Uint16		
Expansion Input AIN2	65	Uint16		
Min Bypass Session	67	Float	mAh	mAh
Max Bypass Session	71	Float	mAh	mAh
Min Bypass Session Reference	75	Uint8		Node Identifier for Min
Max Bypass Session Reference	76	Uint8		Node Identifier for Max
Rebalance Bypass extra	77	Bool	0 or 1	When invoked
Repeat Cell Volt Counter	78	Uint16	0 to 6700	Num of msg with cell voltage unchanged

System Discovery Information

Identifier: 0X5732 <mark>Recommended to monitor</mark>
Frequency: 1.55 seconds
Data Length: 50 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
System Code	8	Text 8		
Firmware Version	16	Uint16		
Hardware Version	18	Uint16		
Device Time	20	Uint32	Unix Epoch	seconds since 1-1-1970

System Op status	24	Uint8	Timeout = 0, Idle = 1, // LED = green slow pulse
			Charging = 2, // LED = blue slow pulse
			Discharging = 3, // LED = green solid
			Full = 4, // LED = blue double blink
			Empty = 5, // LED = green double blink
			Simulator = 6 , // LED = rainbow pulse	

			CriticalPending = 7, // LED = red fast pulse
			CriticalOffline = 8, // LED = red slow pulse
			MqttOffline = 9, // LED = white blink
			AuthSetup = 10, // LED = white solid	

System Auth Mode	25	Uint8	0 = Default 1 = Technician 2 = Factory	
Critical BattOkState	26	Bool	0 or 1	
Charge PowerRate State	27	Uint8	Off = 0, Limited = 2, Normal = 4,	
Discharge PowerRate State	28	Uint8	Off = 0, Limited = 2, Normal = 4,	
Heat On State	29	Bool	0 or 1	
Cool On State	30	Bool	0 or 1	
Min Cell Volt	31	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Volt	33	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Avg Cell Volt	35	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Min Cell Temp	37	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Num of active Cellmons	38	Uint8	0 to 254	
CMU Port Rx USN	39	Uint8		Rx
CMU Poller Mode	40	Uint8	Idle = 0, Normal = 1, Start collection = 2, Collection running = 3, Start syncronisation = 4, Sync Running = 5, Start NetworkTest = 6, NetworkTest running = 9, Start BypassTest = 7, BypassTest running = 8, Start Reboot All = 10, Reboot All devices = 11, Start Simulator = 12, Simulator running = 13, Undefined = 255,	
Shunt SoC	41	uint8	-5% to +105%	0.5% / bit and 5% offset
Shunt Voltage	42	Uint16		Multiple (100) according to setup
Shunt Current	44	Float	mA	(+ charge , - discharge)
Shunt Status	48	Uint8	Timeout = 0, Discharging = 1, Idle = 2, Charging = 4	
Shunt RX ticks	49	Uint8		

Telemetry - Logic Control Status Information

Identifier: 0X4732
Frequency: 1.55 seconds
Data Length: 79 bytes
Version 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
Critical is Battery OK – current State	8	Bool	0 or 1	
Critical Is Battery OK – live calc	9	Bool	0 or 1	
Critical Is Transition	10	Bool	0 or 1	
Critical Has Cells Overdue	11	Bool	0 or 1	
Critical Has Cells in Low Voltage State	12	Bool	0 or 1	
Critical Has Cells in High Voltage State	13	Bool	0 or 1	
Critical Has Cells in Low Temp	14	Bool	0 or 1	
Critical has Cells in high Temp	15	Bool	0 or 1	
Critical Has Supply Voltage Low	16	Bool	0 or 1	
Critical Has Supply Voltage High	17	Bool	0 or 1	
Critical Has Ambient Temp Low	18	Bool	0 or 1	

Critical Has Ambient Temp High	19	Bool	0 or 1	
Critical Has Shunt Voltage Low	20	Bool	0 or 1	
Critical Has Shunt Voltage High	21	Bool	0 or 1	
Critical Has Shunt Low Idle Volt	22	Bool	0 or 1	
Critical Has Shunt Peak Charge	23	Bool	0 or 1	
Critical Has Shunt Peak Discharge	24	Bool	0 or 1	
Charging Is ON State	25	Bool	0 or 1	
Charging is Limited Power	26	Bool	0 or 1	
Charging is in Transition	27	Bool	0 or 1	
Charging Power Rate – current state	28	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,	
Charging Power Rate - live calc	29	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,	
Charging Has Cell Volt High	30	Bool	0 or 1	
Charging Has Cell Volt Pause	31	Bool	0 or 1	
Charging Has Cell Volt Limited Power	32	Bool	0 or 1	
Charging Has Cell Temp Low	33	Bool	0 or 1	
Charging Has Cell Temp High	34	Bool	0 or 1	
Charging Has Ambient Temp Low	35	Bool	0 or 1	
Charging Has Ambient Temp High	36	Bool	0 or 1	
Charging Has Supply Volt High	37	Bool	0 or 1	
Charging Has Supply Volt Pause	38	Bool	0 or 1	
Charging Has Shunt Volt High	39	Bool	0 or 1	
Charging Has Shunt Volt Pause	40	Bool	0 or 1	
Charging Has Shunt Volt Lim Power	41	Bool	0 or 1	
Charging Has Shunt Soc High	42	Bool	0 or 1	
Charging Has Shunt Soc Pause	43	Bool	0 or 1	
Charging Has Cells Above Initial Bypass	44	Bool	0 or 1	
Charging Has Cells Above Final Bypass	45	Bool	0 or 1	
Charging Has Cells In Bypass	46	Bool	0 or 1	
Charging Has Bypass Complete	47	Bool	0 or 1	
Charging Has Bypass Temp Relief	48	Bool	0 or 1	
Discharging Is ON State	49	Bool	0 or 1	
Discharging is Limited Power	50	Bool	0 or 1	
Discharging is in Transition	51	Bool	0 or 1	
Discharging Power Rate – current state	52	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,	
Discharging Power Rate – live calc	53	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,	
Discharging Has Cell Volt Low	54	Bool	0 or 1	
Discharging Has Cell Volt Pause	55	Bool	0 or 1	
Discharging Has Cell Volt Limited Power	56	Bool	0 or 1	
Discharging Has Cell Temp Low	57	Bool	0 or 1	
Discharging Has Cell Temp High	58	Bool	0 or 1	
Discharging Has Ambient Temp Low	59	Bool	0 or 1	
Discharging Has Ambient Temp High	60	Bool	0 or 1	
Discharging Has Supply Volt Low	61	Bool	0 or 1	
Discharging Has Supply Volt Pause	62	Bool	0 or 1	
Discharging Has Shunt Volt Low	63	Bool	0 or 1	
Discharging Has Shunt Volt Pause	64	Bool	0 or 1	
Discharging Has Shunt Volt Limited Power	65	Bool	0 or 1	
Discharging Has Shunt Soc Low	66	Bool	0 or 1	
Discharging Has Shunt Soc Pause	67	Bool	0 or 1	
Thermal Heat ON – current state	68	Bool	0 or 1	
Thermal Heat ON – live calc	69	Bool	0 or 1	
Thermal Transition Heat ON	70	Bool	0 or 1	
Thermal Ambient Temp Low	71	Bool	0 or 1	
Thermal Cells In Temp Low	72	Bool	0 or 1	
Thermal Cool ON – current state	73	Bool	0 or 1	
Thermal Cool ON – live calc	74	Bool	0 or 1	

	75	Bool	0 or 1	
Thermal Transition Cool ON	75	Bool	0 or 1	
Thermal Ambient Temp High	76	Bool	0 or 1	
Thermal Cells In Temp High	77	Bool	0 or 1	
Charging Has Bypass Session Low	78	Bool	0 or 1	

Telemetry - Remote Status Information

Identifier: 0X4932
Frequency: 1.55 seconds
Data Length: 62 bytes
Version: 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
Canbus RX ticks	8	Uint8	0 to 254	
Canbus RX unknown ticks	9	Uint8	0 to 254	
Canbus TX ticks	10	Uint8	0 to 254	
Charge Actual Celsius	11	Uint8		User-defined
Charge Target Volt	12	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Charge Target Amp	14	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Charge Target VA	16	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Charge Actual Volt	18	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Charge Actual Amp	20	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Charge Actual VA	22	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Charge Actual Flags 1	24	Uint32		User-defined
Charge Actual Flags 2	28	Uint32		User-defined
Charge Actual Rx Time	32	Uint32	Unix Epoch	seconds since 1-1-1970
reserved	36			
Discharge Actual Celsius	37	Uint8		User-defined
Discharge Target Volt	38	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Discharge Target Amp	40	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Discharge Target VA	42	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Discharge Actual Volt	44	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Discharge Actual Amp	46	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Discharge Actual VA	48	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Discharge Actual Flags 1	50	Uint32		User-defined
Discharge Actual Flags 2	54	Uint32		User-defined
Discharge Actual Rx Time	58	Uint32	Unix Epoch	seconds since 1-1-1970

Telemetry - Combined Status Slow Information

Identifier: 0X405A
Frequency: 22 seconds
Data Length: 46 bytes
Version: 1

Field	Offset	Data Type	Format / Range	Resolution / Notes
Sys Start up Time	8	Uint32	Unix Epoch	seconds since 1-1-1970
Sys Process Control	12	Bool	0 or 1	
Sys Is Initial Start up	13	Bool	0 or 1	

Field	Offset	Data Type	Format / Range	Resolution / Notes
Sys Ignore When Cells Overdue	14	Bool	0 or 1	
Sys Ignore When Shunts Overdue	15	Bool	0 or 1	
Monitor Daily Session Stats for system	16	Bool	0 or 1	
Setup Version for System	17	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Cell Group	18	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Shunt	19	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Expansion	20	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Comms Channel	21	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Critical	22	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Charge	23	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Discharge	24	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Thermal	25	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Remote	26	Uint8	0 to 255	Incremental version number when saved to track when updates made
Setup Version for Scheduler	27	Uint8	0 to 255	Incremental version number when saved to track when updates made
Shunt Estimated Duration To Full in mins	28	Uint16		1 minute / bit and nil offset
Shunt Estimated Duration To Empty in mins	30	Uint16		1 minute / bit and nil offset
Shunt Recent Charge mAh Average	32	Float	mAh	
Shunt Recent Discharge mAh Average	36	Float	mAh	
Shunt Recent Nett mAh	40	Float	mAh	
Has Shunt SoC Count Lo	44	Bool	0 or 1	
Has Shunt SoC Count Hi	45	Bool	0 or 1	

Hardware - System Setup configuration - display

Identifier: 0X4A33
Frequency: 22 seconds
Data Length: 68 bytes
Version: 3

Field	Offset	Data Type	Format / Range	Resolution / Notes
Preset ID	8	Uint16		
Firmware Version	10	Uint16		
Hardware Version	12	Uint16		
Serial Number	14	Uint32		
System Code	18	Text 8		
System Name	26	Text 20		
Asset Code	46	Text 20		
Allow Tech Authority	66	Bool	0 or 1	
Setup Version	67	Uint8	0 to 255	Incremental version number when saved to track when updates made

Hardware - Cell Group Setup configuration - display

Identifier: 0X4B33
Frequency: 22 seconds
Data Length: 40 bytes
Version 3

Field	Offset	Data Type	Format / Range	Resolution / Notes
Setup Version	8	Uint8	0 to 255	Incremental version number when saved to track when updates made
Battery Type ID	9	Uint8	0 = Custom, 1 = Li-FePO4 Typical 4 = Li-FePO4 Long Life, 2 = Li-Ion Performance 3 = Li-Ion Long Life	
First Node ID	10	Uint8		Node Identifier
Last Node ID	11	Uint8		Node Identifier
Nominal Cell Voltage	12	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Low Cell Voltage	14	Uint16	0 to 6,500 mV	1mV / bit and nil offset
High Cell Voltage	16	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Bypass Voltage Level	18	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Bypass Amp Limit	20	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Bypass Temp Limit	22	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Low Cell Temp	23	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
High Cell Temp	24	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Diff Nom Cells in Series	25	Bool	0 or 1	
Nom Cells in Series	26	Uint8		
Allow Entire Range	27	Bool	0 or 1	
First Node ID of Entire Range	28	Uint8		Node Identifier
Last Node ID of Entire Range	29	Uint8		Node Identifier
Bypass Extra Mode	30	Uint8	0 = None, 1 = Idle Shunt 2 =Same cell volt,	
Bypass Latch Interval	31	Uint16		
CellMon Type ID	33	Uint8	0 = Custom, 1 = GenMon2W, 2 = GenMon8W, 3 = LongMon, 4 = BlockMonM8, 5 = BlockMonM14 6 = EndMon, 7 = ManyMon,	
Bypass Impedance	34	Float		
Bypass CellVolt low cutout	38	Uint16	0 to 6,500 mV	1mV / bit and nil offset

Hardware - Shunt setup configuration - display

Identifier: 0X4C58
Frequency: 22 seconds
Data Length: 46 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Shunt Type ID	8	Uint8	0 = None, 1 = SFP102MOD 100uOhm 375A 150V 2 = SFP101EVB 72uOhm 500A 150V 3 = SFP101EVB 25uOhm 1500A 150V 4 = SFP102MOD (4k) 375A 750V 5 = SFP102MOD (3k) 375A 600V 254 = Simulator 255 = Custom	
Voltage Scale	9	Uint16		

Amp Scale	11	Uint16		
Charge Idle	13	Uint16		
Discharge Idle	15	Uint16		
SoC Count Low	17	uint8	-5% to +105%	0.5% / bit and 5% offset
SoC Count High	18	uint8	-5% to +105%	0.5% / bit and 5% offset
SoC Lo Recalibration	19	uint8	-5% to +105%	0.5% / bit and 5% offset
SoC Hi Recalibration	20	uint8	-5% to +105%	0.5% / bit and 5% offset
Monitor SoC Low Recalibration	21	Bool	0 or 1	
Monitor SoC High Recalibration	22	Bool	0 or 1	
Monitor in Bypass Recalibration	23	Bool	0 or 1	
Nominal Capacity in mAh	24	Float		
Granularity in Volts	28	Float		
Granularity in Amps	32	Float		
Granularity in mAh	36	Float		
Granularity in Celcius	40	Float		
Reverse Flow	44	Bool	0 or 1	
Setup Version	45	Uint8	0 to 255	Incremental version number when saved to track when updates made

Hardware - Expansion setup configuration - display

Identifier: 0X4D58
Frequency: 22 seconds
Data Length: 17 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes

Relay 1 Value	8	Uint8	0 = None = 0,
			1 = Manual On
			2 = Critical Batt Ok
			3 = Warning Alert On // obsolete
			4 = Charging On
			5 = Discharging On
			6 = Heating Required
			7 = Cooling Required
			8 = Run / Idle input
			9 = Charge / Normal input
			10 = Bypass Complete	

Relay 2 Value	9	Uint8	0 = None = 0,
			1 = Manual On
			2 = Critical Batt Ok
			3 = Warning Alert On // obsolete
			4 = Charging On
			5 = Discharging On
			6 = Heating Required
			7 = Cooling Required
			8 = Run / Idle input
			9 = Charge / Normal input
			10 = Bypass Complete	

Relay 3 Value	10	Uint8	0 = None = 0,
			1 = Manual On
			2 = Critical Batt Ok
			3 = Warning Alert On // obsolete
			4 = Charging On
			5 = Discharging On
			6 = Heating Required
			7 = Cooling Required
			8 = Run / Idle input
			9 = Charge / Normal input
			10 = Bypass Complete	

Relay 4 Value	11	Uint8	0 = None = 0,	

Field	Offset	Data Type	Format / Range	Resolution / Notes

			1 = Manual On
			2 = Critical Batt Ok
			3 = Warning Alert On // obsolete
			4 = Charging On
			5 = Discharging On
			6 = Heating Required
			7 = Cooling Required
			8 = Run / Idle input
			9 = Charge / Normal input
			10 = Bypass Complete	

Monitor Run/Idle Mode	12	Bool	0 or 1	
Monitor Charge Normal Mode	13	Bool	0 or 1	
Extension Template	14	Uint8	0 = None 1 = 12v Expansion Board R1 2 = 48v Expansion Board R1 255 = Custom	
Neo Pixel Ext Status Mode	15	Uint8	0 = None = 0, 1 = Repeat = 1, 2 = 8 segment SoC%	
Setup Version	16	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic - Remote Setup configuration - display

Identifier: 0X4E58
Frequency: 22 seconds
Data Length: 45 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Charge Normal Volt	8	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Charge Normal Amp	10	Uint16	0 to 650.00 A	Default multiple 100, defined with configuration (i.e. 0.01A / bit, 12000 = 120.0A)
Charge Normal VA	12	Uint16		
Charge Limited Power Voltage	14	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Charge Limited Power Amp	16	Uint16	0 to 650.00 A	Default multiple 100, defined with configuration (i.e. 0.01A / bit, 12000 = 120.0A)
Charge Limited Power VA	18	Uint16		
Charge Scale16 Voltage	20	Uint16		Default multiple 100
Charge Scale16 Amp	22	Uint16		Default multiple 100
Charge Scale16 VA	24	Uint16		Default multiple 1
Discharge Normal Volt	26	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Discharge Normal Amp	28	Uint16	0 to 650.00 A	Default multiple 100, defined with configuration (i.e. 0.01A / bit, 12000 = 120.0A)
Discharge Normal VA	30	Uint16		
Discharge Limited Power Voltage	32	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Discharge Limited Power Amp	34	Uint16	0 to 650.00 A	Default multiple 100, defined with configuration (i.e. 0.01A / bit, 12000 = 120.0A)
Discharge Limited Power VA	36	Uint16		
Discharge Scale16 Voltage	38	Uint16		Default multiple 100
Discharge Scale16 Amp	40	Uint16		Default multiple 100
Discharge Scale16 VA	42	Uint16		Default multiple 1
Setup Version	44	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic - Critical Setup configuration - display

Identifier: 0X4F58
Frequency: 22 seconds
Data Length: 63 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Control Mode	8	Uint8	0 = Auto 1 = Manual ON 2 = Manual OFF	
Auto Recovery	9	Bool	0 or 1	
Ignore Overdue Cells	10	Bool	0 or 1	
Monitor Low Cell Voltage	11	Bool	0 or 1	
Monitor High Cell Voltage	12	Bool	0 or 1	
Low Cell Voltage	13	Uint16	0 to 6,500 mV	1mV / bit and nil offset
High Cell Voltage	15	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Monitor Low Cell Temp	17	Bool	0 or 1	
Monitor High Cell Temp	18	Bool	0 or 1	
Low Cell Temp	19	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
High Cell Temp	20	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Low Supply Voltage	21	Bool	0 or 1	
Monitor High Supply Voltage	22	Bool	0 or 1	
Low Supply Voltage	23	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
High Supply Voltage	25	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor Low Ambient Temp	27	Bool	0 or 1	
Monitor High Ambient Temp	28	Bool	0 or 1	
Low Ambient Temp	29	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
High Ambient Temp	30	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Low Shunt Voltage	31	Bool	0 or 1	
Monitor High Shunt Voltage	32	Bool	0 or 1	
Monitor Low Idle Shunt Voltage	33	Bool	0 or 1	
Low Shunt Voltage	34	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
High Shunt Voltage	36	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Low Idle Shunt Voltage	38	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor Shunt Voltage Peak Charge	40	Bool	0 or 1	
Shunt Peak Charge	41	Uint16		
Shunt C-rate Charge	43	Uint16		
Monitor Shunt Peak Discharge	45	Bool	0 or 1	
Shunt Peak Discharge	46	Uint16		
Shunt C-rate Discharge	48	Uint16		
Stop Timer Interval	50	Uint32		1mS / bit and nil offset
Start Timer Interval	54	Uint32		1mS / bit and nil offset
Time Out Manual Override	58	Uint32		1mS / bit and nil offset
Setup Version	62	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic – Charging setup configuration - display

Identifier: 0X5033
Frequency: 22 seconds
Data Length: 60 bytes
Version: 3

Field	Offset	Data Type	Format / Range	Resolution / Notes
Control Mode	8	Uint8	0 = Auto 1 = Manual ON 2 = Manual OFF 3 = Manual Limited Power	
Allow Limited Power Stage	9	Bool	0 or 1	
Allow Limited Power Bypass	10	Bool	0 or 1	
Allow Limited Power Complete	11	Bool	0 or 1	
Initial Bypass Current	12	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Final Bypass Current	14	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Monitor Cell Low Temp	16	Bool	0 or 1	
Monitor Cell High Temp	17	Bool	0 or 1	
Cell Low Temp	18	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Cell High Temp	19	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Ambient Low Temp	20	Bool	0 or 1	
Monitor Ambient High Temp	21	Bool	0 or 1	
Ambient Low Temp	22	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Ambient High Temp	23	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Supply High	24	Bool	0 or 1	
Supply Voltage High	25	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Supply Voltage Resume	27	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor High Cell Voltage	29	Bool	0 or 1	
Cell Voltage High	30	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Cell Voltage Resume	32	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Cell Voltage Limited Power	34	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Monitor Shunt Voltage High	36	Bool	0 or 1	
Shunt Voltage High	37	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Shunt Voltage Resume	39	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Shunt Voltage Limited Power	41	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor Shunt SoC High	43	Bool	0 or 1	
Shunt SoC High	44	Uint16	-5% to +105%	0.5% / bit and 5% offset
Shunt SoC Resume	45	Uint16	-5% to +105%	0.5% / bit and 5% offset
Stop Timer Interval	46	Uint32		1mS / bit and nil offset
Start Timer Interval	50	Uint32		1mS / bit and nil offset
Setup Version	54	Uint8	0 to 255	Incremental version number when saved to track when updates made
Bypass Session Low	55	float		mAh
Allow Bypass Session	59	Bool	0 or 1	

Control Logic - Discharge Setup configuration - display

Identifier: 0X5158
Frequency: 22 seconds
Data Length: 49 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Control Mode	8	Uint8	0 = Auto 1 = Manual ON	

Field	Offset	Data Type	Format / Range	Resolution / Notes
			2 = Manual OFF 3 = Manual Limited Power	
Allow Limited Power Stage	9	Bool	0 or 1	
Monitor Cell Temp Low	10	Bool	0 or 1	
Monitor Cell Temp High	11	Bool	0 or 1	
Cell Temp Low	12	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Cell Temp High	13	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Ambient Low	14	Bool	0 or 1	
Monitor Ambient High	15	Bool	0 or 1	
Ambient Temp Low	16	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Ambient Temp High	17	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Supply Low	18	Bool	0 or 1	
Supply Voltage Low	19	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Supply Voltage Resume	21	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor Cell Voltage Lo	23	Bool	0 or 1	
Cell Voltage Low	24	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Cell Voltage Resume	26	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Cell Voltage Limited Power	28	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Monitor Shunt Voltage Low	30	Bool	0 or 1	
Shunt Voltage Low	31	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Shunt Voltage Resume	33	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Shunt Voltage Limited Power	35	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor Shunt SoC Low	37	Bool	0 or 1	
Shunt SoC Low	38	Uint8	-5% to +105%	0.5% / bit and 5% offset
Shunt SoC Resume	39	Uint8	-5% to +105%	0.5% / bit and 5% offset
Stop Timer Interval	40	Uint32		1mS / bit and nil offset
Start Timer Interval	44	Uint32		1mS / bit and nil offset
Setup Version	48	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic - Thermal Setup configuration - display

Identifier: 0X5258
Frequency: 22 seconds
Data Length: 36 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Control Mode Heat	8	Uint8	0 = Auto 1 = Manual ON 2 = Manual OFF	
Monitor Low Cell Temp	9	Bool	0 or 1	
Monitor Low Ambient Temp	10	Bool	0 or 1	
Low Cell Temp	11	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Low Ambient Temp	12	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Stop Timer Interval Heat	13	Uint32		1mS / bit and nil offset
Start Timer Interval Heat	17	Uint32		1mS / bit and nil offset
Control Mode Cool	21	Uint8	0 = Auto 1 = Manual ON 2 = Manual OFF	
Monitor High Cell Temp	22	Bool	0 or 1	
Monitor High Ambient Temp	23	Bool	0 or 1	
Monitor In Cell Bypass	24	Bool	0 or 1	
High Cell Temp	25	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
High Ambient Temp	26	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Stop Timer Interval Cool	27	Uint32		1mS / bit and nil offset
Start Timer Interval Cool	31	Uint32		1mS / bit and nil offset

Field	Offset	Data Type	Format / Range	Resolution / Notes
Setup Version	35	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic - Integration Setup configuration - display

Identifier: 0X5333
Frequency: 22 seconds
Data Length: 18 bytes
Version: 3

Field	Offset	Data Type	Format / Range	Resolution / Notes
USB TX Broadcast	8	Bool	0 or 1	
Wifi UDP TX Broadcast	9	Bool	0 or 1	
Wifi Broadcast Mode	10	Uint8	0 = None, 1 = Verbose, 2 = Limited, 3 = Disabled	
Canbus TX Broadcast	11	Bool	0 or 1	
Canbus Mode	12	Uint8	0 = None, 1 = Native, 2 = Elcon / TC-charger 3 = En-Power 500k charger 4 = Solax power SK 5 = Sma Sunny Island v3.1 6 = Brusa NLG5 charger 7 = En-Power 250k charger 8 = Solax power SK limited 9 = Brusa NLG6 charger 10 = Sma alternative 11 = Eltek FlatPack2 HE2000/48 12 = Emerson R48-2000e3 42 = Project42	
Canbus Base Address	13	Uint32		
Setup Version	17	Uint8	0 to 255	Incremental version number when saved to track when updates made

Telemetry – Daily Session information

Identifier: 0X5457
Frequency: 22 seconds
Data Length: 61 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Min Cell Voltage	8	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Voltage	10	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Min Supply Voltage	12	Uint16	0 to 65.00 V	10mV / bit and nil offset
Max Supply Voltage	14	Uint16	0 to 65.00 V	10mV / bit and nil offset
Min Reported Temperature	16	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset #1
Max Reported Temperature	17	uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset #1
Min Shunt Volt	18	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Max Shunt Volt	20	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Min Shunt SoC	22	uint8	-5% to +105%	0.5% / bit and 5% offset
Max Shunt SoC	23	uint8	-5% to +105%	0.5% / bit and 5% offset
Temperature Band A > 60ºC	24	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Temperature Band B > 55ºC	25	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Temperature Band C > 41ºC	26	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Temperature Band D > 33ºC	27	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Temperature Band E > 25ºC	28	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Temperature Band F > 15ºC	29	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)

Temperature Band G > 0ºC	30	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Temperature Band H >-40ºC	31	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band A > 87.5%	32	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band B > 75.0%	33	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band C > 62.5%	34	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band D > 50.0%	35	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band E > 37.5%	36	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band F > 25.0%	37	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band G > 12.5%	38	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
SOC% Band H > 0.0%	39	Uint8	0 to 240	6min/bit elapsed (240 = 24.0h)
Shunt Peak Charge	40	Uint16	0.01A / bit	Default multiple 100, defined with configuration
Shunt Peak Discharge	42	Uint16	0.01A / bit	Default multiple 100, defined with configuration
Critical Events	44	Uint8	0 to 255	Number of events within session
Start Time	45	Uint32	Unix Epoch	seconds since 1-1-1970
Finish Time	49	Uint32	Unix Epoch	seconds since 1-1-1970
Cumulative Shunt Amp Hour Charge	53	Float	Reported in mAh	Total counted in 1 min intervals
Cumulative Shunt Amp Hour Discharge	57	Float	Reported in mAh	Total counted in 1 min intervals

Telemetry – Shunt metrics information

Identifier: 0X7857
Frequency: 22 seconds
Data Length: 76 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
Shunt SoC Cycles	8	Uint16		
Last Time Accumulation Saved	10	Uint32	Unix Epoch	seconds since 1-1-1970
Last Time SoC Lo Recal	14	Uint32	Unix Epoch	seconds since 1-1-1970
Last Time SoC Hi Recal	18	Uint32	Unix Epoch	seconds since 1-1-1970
Last Time SoC Lo Count	22	Uint32	Unix Epoch	seconds since 1-1-1970
Last Time SoC Hi Count	26	Uint32	Unix Epoch	seconds since 1-1-1970
Has Shunt SoC Lo Count	30	Bool	0 or 1	
Has Shunt SoC Hi Count	31	Bool	0 or 1	
Estimated Duration to Full in minutes	32	Uint16		
Estimated Duration to Empty in minutes	34	Uint16		
Recent Charge in Avg mAh	36	Float		
Recent Discharge in Avg mAh	40	Float		
Recent Nett mAh	44	Float		
Serial Number	48	Uint32		
Manu Code	52	Uint32		
Part Number	56	Uint16		
Version Code	58	Uint16		
PNS1	60	Text 8		
PNS2	68	Text 8		

Telemetry – Lifetime metrics information

Identifier: 0X5632
Frequency: 22 seconds
Data Length: 115 bytes
Version 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
First Sync Time	8	Uint32	Unix Epoch	seconds since 1-1-1970
Count Startup	12	Uint32		1 event ON / bit
Count Critical Battery OK	16	Uint32		1 event ON / bit
Count Charge On	20	Uint32		1 event ON / bit
Count Charge Limited Power	24	Uint32		1 event ON / bit
Count Discharge On	28	Uint32		1 event ON / bit
Count Discharge Limited Power	32	Uint32		1 event ON / bit
Count Heat On	36	Uint32		1 event ON / bit
Count Cool On	40	Uint32		1 event ON / bit
Count Daily Session	44	Uint16		1 event ON / bit
Most Recent Time Critical On	46	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Critical Off	50	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Charge On	54	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Charge Off	58	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Charge Limited Power	62	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Discharge On	66	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Discharge Off	70	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Discharge Limited Power	74	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Heat On	78	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Heat Off	82	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Cool On	86	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Cool Off	90	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Bypass Initialised	94	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Bypass Completed	98	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Bypass Tested	102	Uint32	Unix Epoch	seconds since 1-1-1970
Recent Bypass Outcomes	106	Uint8	0 = Not Tested, 1 = Preparing, 2 = Testing, 3 = Passed Ok, 4 = Failed,	
Most Recent Time wizard setup	107	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Rebalancing Extra	111	Uint32	Unix Epoch	seconds since 1-1-1970

Telemetry - Cell node status

Identifier: 0X415A
Frequency: 22 seconds
Data Length: variable

Field	Offset	Data Type	Format / Range	Resolution / Notes
CMU Port – RX Node ID	8	Uint8		
Records	9	Uint8		
First Node ID	10	Uint8		Node Identifier
Last Node ID	11	Uint8		Node Identifier
Node ID	idx+0			
USN	Idx+1			
Min Cell Voltage	Idx+2	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Voltage	Idx+4	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Temp	Idx+6	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Bypass Temp	Idx+7	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Bypass Amp	Idx+8	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Node Status	Idx+10	Uint8	None = 0, HighVolt = 1, HighTemp = 2, Ok = 3, Timeout = 4, LowVolt = 5, Disabled = 6, InBypass = 7, InitialBypass = 8, FinalBypass = 9, MissingSetup = 10, NoConfig = 11, CellOutLimits = 12, Undefined = 255,	

Telemetry - Cell node full info

Identifier: 0X4232
Data Length: 52 bytes
Version 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
Node ID	8	Uint8		Node Identifier
USN	9	Uint8		
Min Cell Voltage	10	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Voltage	12	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Temp	14	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Bypass Temp	15	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Bypass Amp	16	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Error Data Counter	18	Uint8		
Reset Counter	19	Uint8		
Operating Status	20	Uint8	None = 0, HighVolt = 1, HighTemp = 2, Ok = 3, Timeout = 4, LowVolt = 5, Disabled = 6, InBypass = 7, InitialBypass = 8, FinalBypass = 9, MissingSetup = 10, NoConfig = 11, CellOutLimits = 12, Undefined = 255,	
Is Overdue	21	Bool	0 or 1	
Param - Low Cell Voltage	22	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Param - High Cell Voltage	24	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Param - Bypass Voltage Level	26	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Param - Bypass Amp	28	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Param - Bypass Temp Limit	30	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Param – High Cell Temp	31	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Param – Raw Volt Cal Offset	32	Uint8		
Device – FW version	33	Uint16		
Device – HW version	35	Uint16		
Device – Boot version	37	Uint16		
Device – Serial Num	39	Uint32		
Bypass Initial Date	43	Uint32	Unix Epoch	seconds since 1-1-1970
Bypass Session mAh	47	Float		Session milli Amp Hour
Repeat CellV	51	Uint8	0 to 250	Counter when same

LEGACY Messages

Telemetry - Combined Status Fast Info Legacy

Identifier: 0X3F5A

Frequency: 1.55 seconds

Version 2

Data Length: 66 bytes

Field	Offset	Data Type	Format / Range	Resolution / Notes
CMU Poller Mode	8	Uint8	0 = Idle, 1 = Normal, 2 = Start collection, 3= Collection running, 4 = Start synchronisation, 5 = Sync Running, 6 = Start NetworkTest, 9 = NetworkTest running, 7 = Start BypassTest, 8 = BypassTest running, 10 = Start Reboot All, 11 = Reboot All devices, 12 = Start Simulator, 13 = Simulator running,	
CMU Port TX Ack count	9	Uint8		
CMU Port TX Op Status NodeID	10	Uint8		Node Identifier
CMU Port TX Op Status USN	11	Uint8	0 to 254	Serial packet counter
CMU Port TX Op Parameter NodeID	12	uint8		Node Identifier
Min Cell Volt	13	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Volt	15	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Min Cell Temp	17	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Max Cell Temp	18	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
CMU Port RX Op Status NodeID	19	Uint8		Node Identifier
CMU Port RX Op Status Group Acknowledgement	20	Uint8		
CMU Port RX Op Status USN	21	Uint8	0 to 254	Serial packet counter
CMU Port RX Op Parameter NodeID	22	Uint8		Node Identifier

System Op status	23	Uint8	Timeout = 0,
			Idle = 1, // LED = green slow pulse
			Charging = 2, // LED = blue slow pulse
			Discharging = 3, // LED = green solid
			Full = 4, // LED = blue double blink
			Empty = 5, // LED = green double blink
			Simulator = 6 , // LED = rainbow pulse
			CriticalPending = 7, // LED = red fast pulse
			CriticalOffline = 8, // LED = red slow pulse
			MqttOffline = 9, // LED = white blink
			AuthSetup = 10, // LED = white solid	

System Auth Mode	24	Uint8	0 = Default 1 = Technician 2 = Factory	
System Supply Volt	25	Uint16	0 to 6,500 mV	1mV / bit and nil offset
System Ambient Temp	27	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
System Device Time	28	Uint32	Date Time	1sec/bit since 1.1.1970
Shunt State of Charge	32	Uint8	-5% to +105%	0.5% / bit and 5% offset
Shunt Celsius	33	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Shunt Nom. Capacity to full	34	Float	mAh	

Shunt Nom. Capacity to empty	38	Float	mAh	
Shunt Poller Mode	42	Uint8	0 = Start sync, 1 = Sync running, 2 = Normal, 3 = Idle,	
Shunt Status	43	Uint8	Timeout = 0, Discharging = 1, Idle = 2, Charging = 4	
Shunt Lo State of Charge Re Calibration	44	Bool	0 or 1	
Shunt Hi State of Charge Re Calibration	45	Bool	0 or 1	
Expansion Output Battery On	46	Bool	0 or 1	
Expansion Output Battery Off	47	Bool	0 or 1	
Expansion Output Load On	48	Bool	0 or 1	
Expansion Output Load Off	49	Bool	0 or 1	
Expansion Output Relay 1	50	Bool	0 or 1	
Expansion Output Relay 2	51	Bool	0 or 1	
Expansion Output Relay 3	52	Bool	0 or 1	
Expansion Output Relay 4	53	Bool	0 or 1	
Expansion Output PWM1	54	Uint16		
Expansion Output PWM2	56	Uint16		
Expansion Input Run LED Mode	58	Bool	0 or 1	
Expansion Input Charge Normal Mode	59	Bool	0 or 1	
Expansion Input Battery Contactor	60	Bool	0 or 1	
Expansion Input Load Contactor	61	Bool	0 or 1	
Expansion Input Signal In	62	Uint8		
Expansion Input AIN1	63	Uint16		
Expansion Input AIN2	65	Uint16		

System Discovery Information Legacy

Identifier: 0X5775
Frequency: 1.55 seconds
Data Length: 46 bytes
Version: 1

Field	Offset	Data Type	Format / Range	Resolution / Notes
System Code	8	Text 8		
Firmware Version	16	Uint16		
Hardware Version	18	Uint16		
Device Time	20	Uint32	Unix Epoch	seconds since 1-1-1970
Critical BattOkState	24	Bool	0 or 1	
Charge On State	25	Bool	0 or 1	
Charge Limited power	26	Bool	0 or 1	
Discharge On State	27	Bool	0 or 1	
Discharge Limited Power	28	Bool	0 or 1	
Heat On State	29	Bool	0 or 1	
Cool On State	30	Bool	0 or 1	
Min Cell Volt	31	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Volt	33	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Avg Cell Volt	35	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Min Cell Temp	37	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Num of active Cellmons	38	Uint8	0 to 254	
CMU Port USN	39	Uint8		
Shunt Voltage	40	Uint16		Multiple (100) according to setup

Shunt Current	42	Float	mA		(+ charge , - discharge)
~~Shunt Status~~	~~44~~	~~Uint8~~	~~Timeout = 0,~~ ~~Discharging = 1,~~ ~~Idle = 2,~~ ~~Charging = 4~~		
~~Shunt RX ticks~~	~~45~~	~~Uint8~~			

Telemetry - Logic Control Status Information Legacy

Identifier: 0X475A

Frequency: 1.55 seconds

Data Length: 78 bytes

Version: 1

Field	Offset	Data Type	Format / Range	Resolution / Notes
Critical is Battery OK – current State	8	Bool	0 or 1	
Critical Is Battery OK – live calc	9	Bool	0 or 1	
Critical Is Transition	10	Bool	0 or 1	
Critical Has Cells Overdue	11	Bool	0 or 1	
Critical Has Cells in Low Voltage State	12	Bool	0 or 1	
Critical Has Cells in High Voltage State	13	Bool	0 or 1	
Critical Has Cells in Low Temp	14	Bool	0 or 1	
Critical has Cells in high Temp	15	Bool	0 or 1	
Critical Has Supply Voltage Low	16	Bool	0 or 1	
Critical Has Supply Voltage High	17	Bool	0 or 1	
Critical Has Ambient Temp Low	18	Bool	0 or 1	
Critical Has Ambient Temp High	19	Bool	0 or 1	
Critical Has Shunt Voltage Low	20	Bool	0 or 1	
Critical Has Shunt Voltage High	21	Bool	0 or 1	
Critical Has Shunt Low Idle Volt	22	Bool	0 or 1	
Critical Has Shunt Peak Charge	23	Bool	0 or 1	
Critical Has Shunt Peak Discharge	24	Bool	0 or 1	
Charging Is ON State	25	Bool	0 or 1	
Charging is Limited Power	26	Bool	0 or 1	
Charging is in Transition	27	Bool	0 or 1	
Charging Power Rate – current state	28	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,	
Charging Power Rate - live calc	29	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,	
Charging Has Cell Volt High	30	Bool	0 or 1	
Charging Has Cell Volt Pause	31	Bool	0 or 1	
Charging Has Cell Volt Limited Power	32	Bool	0 or 1	
Charging Has Cell Temp Low	33	Bool	0 or 1	
Charging Has Cell Temp High	34	Bool	0 or 1	
Charging Has Ambient Temp Low	35	Bool	0 or 1	
Charging Has Ambient Temp High	36	Bool	0 or 1	
Charging Has Supply Volt High	37	Bool	0 or 1	
Charging Has Supply Volt Pause	38	Bool	0 or 1	
Charging Has Shunt Volt High	39	Bool	0 or 1	
Charging Has Shunt Volt Pause	40	Bool	0 or 1	
Charging Has Shunt Volt Lim Power	41	Bool	0 or 1	
Charging Has Shunt Soc High	42	Bool	0 or 1	
Charging Has Shunt Soc Pause	43	Bool	0 or 1	
Charging Has Cells Above Initial Bypass	44	Bool	0 or 1	
Charging Has Cells Above Final Bypass	45	Bool	0 or 1	
Charging Has Cells In Bypass	46	Bool	0 or 1	
Charging Has Bypass Complete	47	Bool	0 or 1	
Charging Has Bypass Temp Relief	48	Bool	0 or 1	
Discharging Is ON State	49	Bool	0 or 1	
Discharging is Limited Power	50	Bool	0 or 1	
Discharging is in Transition	51	Bool	0 or 1	
Discharging Power Rate – current state	52	Uint8	0 = Off,	

Field	Offset	Data Type	Format / Range	Resolution / Notes	
			2 = Limited power, 4 = Normal power,		
Discharging Power Rate – live calc	53	Uint8	0 = Off, 2 = Limited power, 4 = Normal power,		
Discharging Has Cell Volt High	54	Bool	0 or 1		
Discharging Has Cell Volt Pause	55	Bool	0 or 1		
Discharging Has Cell Volt Limited Power	56	Bool	0 or 1		
Discharging Has Cell Temp Low	57	Bool	0 or 1		
Discharging Has Cell Temp High	58	Bool	0 or 1		
Discharging Has Ambient Temp Low	59	Bool	0 or 1		
Discharging Has Ambient Temp High	60	Bool	0 or 1		
Discharging Has Supply Volt High	61	Bool	0 or 1		
Discharging Has Supply Volt Pause	62	Bool	0 or 1		
Discharging Has Shunt Volt High	63	Bool	0 or 1		
Discharging Has Shunt Volt Pause	64	Bool	0 or 1		
Discharging Has Shunt Volt Lim Power	65	Bool	0 or 1		
Discharging Has Shunt Soc High	66	Bool	0 or 1		
Discharging Has Shunt Soc Pause	67	Bool	0 or 1		
Thermal Heat ON – current state	68	Bool	0 or 1		
Thermal Heat ON – live calc	69	Bool	0 or 1		
Thermal Transition Heat ON	70	Bool	0 or 1		
Thermal Ambient Temp Low	71	Bool	0 or 1		
Thermal Cells In Temp Low	72	Bool	0 or 1		
Thermal Cool ON – current state	73	Bool	0 or 1		
Thermal Cool ON – live calc	74	Bool	0 or 1		
Thermal Transition Cool ON	75	Bool	0 or 1		
Thermal Ambient Temp High	76	Bool	0 or 1		
Thermal Cells In Temp High	77	Bool	0 or 1		

Telemetry - Remote Status Information Legacy

Identifier: 0X495A
Frequency: 1.55 seconds
Data Length: 46 bytes
Version: 1

Field	Offset	Data Type	Format / Range	Resolution / Notes
Charge Target Volt	8	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Charge Target Amp	10	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Charge Target VA	12	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Charge Actual Volt	14	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Charge Actual Amp	16	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Charge Actual VA	18	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Charge Actual Celsius	20	Uint8		User-defined
Charge Actual Flags	21	Uint16		User-defined
Charge Actual Rx Time	23	Uint32	Unix Epoch	seconds since 1-1-1970
Discharge Target Volt	27	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Discharge Target Amp	29	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)
Discharge Target VA	31	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Discharge Actual Volt	33	Uint16	0 to 650.00 V	User-defined (i.e. 10mV / bit, 5400 = 54.00V)
Discharge Actual Amp	35	Uint16	0 to 650.00 A	User-defined (i.e. 10mA / bit, 12000 = 120.0A)

Field	Offset	Data Type	Format / Range	Resolution / Notes
Discharge Actual VA	37	Uint16	0 to 65,000	User-defined (i.e. 1VA / bit, 5000 = 5.00kVA)
Discharge Actual Celsius	39	Uint8		User-defined
Discharge Actual Flags	40	Uint16		User-defined
Discharge Actual Rx Time	42	Uint32	Unix Epoch	seconds since 1-1-1970

Hardware - System Setup configuration – display legacy

Identifier: 0X4A58
Frequency: 22 seconds
Data Length: 67 bytes
Version: 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
Preset ID	8	Uint16		
Firmware Version	10	Uint16		
Hardware Version	12	Uint16		
Serial Number	14	Uint32		
System Code	18	Text 8		
System Name	26	Text 20		
Asset Code	46	Text 20		
Setup Version	66	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic – Charging setup configuration – display legacy

Identifier: 0X5058
Frequency: 22 seconds
Data Length: 55 bytes
Version: 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
Control Mode	8	Uint8	0 = Auto 1 = Manual ON 2 = Manual OFF 3 = Manual Limited Power	
Allow Limited Power Stage	9	Bool	0 or 1	
Allow Limited Power Bypass	10	Bool	0 or 1	
Allow Limited Power Complete	11	Bool	0 or 1	
Initial Bypass Current	12	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Final Bypass Current	14	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Monitor Cell Low Temp	16	Bool	0 or 1	
Monitor Cell High Temp	17	Bool	0 or 1	
Cell Low Temp	18	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Cell High Temp	19	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Ambient Low Temp	20	Bool	0 or 1	
Monitor Ambient High Temp	21	Bool	0 or 1	
Ambient Low Temp	22	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Ambient High Temp	23	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Monitor Supply High	24	Bool	0 or 1	
Supply Voltage High	25	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Supply Voltage Resume	27	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor High Cell Voltage	29	Bool	0 or 1	
Cell Voltage High	30	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Cell Voltage Resume	32	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Cell Voltage Limited Power	34	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Monitor Shunt Voltage High	36	Bool	0 or 1	
Shunt Voltage High	37	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration

Field	Offset	Data Type	Format / Range	Resolution / Notes
Shunt Voltage Resume	39	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Shunt Voltage Limited Power	41	Uint16	0 to 65.00 V	Default multiple 100, defined with configuration
Monitor Shunt SoC High	43	Bool	0 or 1	
Shunt SoC High	44	Uint16	-5% to +105%	0.5% / bit and 5% offset
Shunt SoC Resume	45	Uint16	-5% to +105%	0.5% / bit and 5% offset
Stop Timer Interval	46	Uint32		1mS / bit and nil offset
Start Timer Interval	50	Uint32		1mS / bit and nil offset
Setup Version	54	Uint8	0 to 255	Incremental version number when saved to track when updates made

Control Logic - Integration Setup configuration – display legacy

Identifier: 0X5358
Frequency: 22 seconds
Data Length: 14 bytes
Version: 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
USB TX Broadcast	8	Bool	0 or 1	
Wifi UDP TX Broadcast	9	Bool	0 or 1	
Canbus TX Broadcast	10	Bool	0 or 1	
Canbus Mode	11	Uint8	0 = None, 1 = Native, 2 = Elcon / TC-charger 3 = En-Power 500k charger 4 = Solax power SK 5 = Sma Sunny Island v3.1 6 = Brusa NLGxx charger 7 = En-Power 250k charger 42 = Project42,	
Wifi Broadcast Mode	12	Uint8	0 = None, 1 = Verbose, 2 = Limited, 3 = Disabled	
Setup Version	13	Uint8	0 to 255	Incremental version number when saved to track when updates made

Telemetry - Combined Status Fast Info legacy

Identifier: 0X3F32
Frequency: 1.55 seconds
Data Length: 77 bytes
Version: 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
CMU Poller Mode	8	Uint8	0 = Idle, 1 = Normal, 2 = Start collection, 3= Collection running, 4 = Start synchronisation, 5 = Sync Running, 6 = Start NetworkTest, 9 = NetworkTest running, 7 = Start BypassTest, 8 = BypassTest running, 10 = Start Reboot All, 11 = Reboot All devices, 12 = Start Simulator, 13 = Simulator running,	
CMU Port TX Ack count	9	Uint8		

CMU Port TX Op Status NodeID	10	Uint8			Node Identifier
CMU Port TX Op Status USN	11	Uint8	0 to 254		Serial packet counter
CMU Port TX Op Parameter NodeID	12	uint8			Node Identifier
Min Cell Volt	13	Uint16	0 to 6,500 mV		1mV / bit and nil offset
Max Cell Volt	15	Uint16	0 to 6,500 mV		1mV / bit and nil offset
Min Cell Temp	17	Uint8	-40ºC to 125ºC		1ºC/bit and 40ºC offset
Max Cell Temp	18	Uint8	-40ºC to 125ºC		1ºC/bit and 40ºC offset
CMU Port RX Op Status NodeID	19	Uint8			Node Identifier
CMU Port RX Op Status Group Acknowledgement	20	Uint8			
CMU Port RX Op Status USN	21	Uint8	0 to 254		Serial packet counter
CMU Port RX Op Parameter NodeID	22	Uint8			Node Identifier

System Op status	23	Uint8	Timeout = 0,
			Idle = 1, // LED = green slow pulse
			Charging = 2, // LED = blue slow pulse
			Discharging = 3, // LED = green solid
			Full = 4, // LED = blue double blink
			Empty = 5, // LED = green double blink
			Simulator = 6 , // LED = rainbow pulse
			CriticalPending = 7, // LED = red fast pulse
			CriticalOffline = 8, // LED = red slow pulse
			MqttOffline = 9, // LED = white blink
			AuthSetup = 10, // LED = white solid		

System Auth Mode	24	Uint8	0 = Default 1 = Technician 2 = Factory		
System Supply Volt	25	Uint16	0 to 6,500 mV		1mV / bit and nil offset
System Ambient Temp	27	Uint8	-40ºC to 125ºC		1ºC/bit and 40ºC offset
System Device Time	28	Uint32	Date Time		1sec/bit since 1.1.1970
Shunt State of Charge	32	Uint8	-5% to +105%		0.5% / bit and 5% offset
Shunt Celsius	33	Uint8	-40ºC to 125ºC		1ºC/bit and 40ºC offset
Shunt Nom. Capacity to full	34	Float	mAh		
Shunt Nom. Capacity to empty	38	Float	mAh		
Shunt Poller Mode	42	Uint8	0 = Start sync, 1 = Sync running, 2 = Normal, 3 = Idle,		
Shunt Status	43	Uint8	Timeout = 0, Discharging = 1, Idle = 2, Charging = 4		
Shunt Lo State of Charge Re Calibration	44	Bool	0 or 1		
Shunt Hi State of Charge Re Calibration	45	Bool	0 or 1		
Expansion Output Battery On	46	Bool	0 or 1		
Expansion Output Battery Off	47	Bool	0 or 1		
Expansion Output Load On	48	Bool	0 or 1		
Expansion Output Load Off	49	Bool	0 or 1		
Expansion Output Relay 1	50	Bool	0 or 1		
Expansion Output Relay 2	51	Bool	0 or 1		
Expansion Output Relay 3	52	Bool	0 or 1		
Expansion Output Relay 4	53	Bool	0 or 1		
Expansion Output PWM1	54	Uint16			

Expansion Output PWM2	56	Uint16		
Expansion Input Run LED Mode	58	Bool	0 or 1	
Expansion Input Charge Normal Mode	59	Bool	0 or 1	
Expansion Input Battery Contactor	60	Bool	0 or 1	
Expansion Input Load Contactor	61	Bool	0 or 1	
Expansion Input Signal In	62	Uint8		
Expansion Input AIN1	63	Uint16		
Expansion Input AIN2	65	Uint16		
Min Bypass Session	67	Float	mAh	mAh
Max Bypass Session	71	Float	mAh	mAh
Min Bypass Session Reference	75	Uint8		Node Identifier for Min
Max Bypass Session Reference	76	Uint8		Node Identifier for Max

Telemetry - Cell node full info legacy

Identifier: 0X4258
Data Length: 51 bytes
Version: 1

Field	Offset	Data Type	Format / Range	Resolution / Notes
Node ID	8	Uint8		Node Identifier
USN	9	Uint8		
Min Cell Voltage	10	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Voltage	12	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Max Cell Temp	14	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Bypass Temp	15	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Bypass Amp	16	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Error Data Counter	18	Uint8		
Reset Counter	19	Uint8		
Operating Status	20	Uint8	None = 0, HighVolt = 1, HighTemp = 2, Ok = 3, Timeout = 4, LowVolt = 5, Disabled = 6, InBypass = 7, InitialBypass = 8, FinalBypass = 9, MissingSetup = 10, NoConfig = 11, CellOutLimits = 12, Undefined = 255,	
Is Overdue	21	Bool	0 or 1	
Param - Low Cell Voltage	22	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Param - High Cell Voltage	24	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Param - Bypass Voltage Level	26	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Param - Bypass Amp	28	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Param - Bypass Temp Limit	30	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Param – High Cell Temp	31	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Param – Raw Volt Cal Offset	32	Uint8		
Device – FW version	33	Uint16		
Device – HW version	35	Uint16		
Device – Boot version	37	Uint16		
Device – Serial Num	39	Uint32		

Field	Offset	Data Type	Format / Range	Resolution / Notes
Bypass Initial Date	43	Uint32	Unix Epoch	seconds since 1-1-1970
Bypass Session mAh	47	Float		Session milli Amp Hour

Hardware - Cell Group Setup configuration - legacy

Identifier: 0X4B58
Frequency: 22 seconds
Data Length: 39 bytes
Version 2

Field	Offset	Data Type	Format / Range	Resolution / Notes
Battery Type ID	8	Uint8	0 = Custom, 1 = Li-FePO4 Typical 4 = Li-FePO4 Long Life, 2 = Li-Ion Performance 3 = Li-Ion Long Life	
Cell Group ID	9	Uint8		
First Node ID	10	Uint8		Node Identifier
Last Node ID	11	Uint8		Node Identifier
Nominal Cell Voltage	12	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Low Cell Voltage	14	Uint16	0 to 6,500 mV	1mV / bit and nil offset
High Cell Voltage	16	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Bypass Voltage Level	18	Uint16	0 to 6,500 mV	1mV / bit and nil offset
Bypass Amp Limit	20	Uint16	0 to 2,500 mA	1mA / bit and nil offset
Bypass Temp Limit	22	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Low Cell Temp	23	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
High Cell Temp	24	Uint8	-40ºC to 125ºC	1ºC/bit and 40ºC offset
Diff Nom Cells in Series	25	Bool	0 or 1	
Nom Cells in Series	26	Uint8		
Allow Entire Range	27	Bool	0 or 1	
First Node ID of Entire Range	28	Uint8		Node Identifier
Last Node ID of Entire Range	29	Uint8		Node Identifier
Allow Bypass Latch	30	Bool	0 or 1	
Bypass Latch Interval	31	Uint16		
CellMon Type ID	33	Uint8	0 = Custom, 1 = GenMon2W, 2 = GenMon8W, 3 = LongMon, 4 = BlockMonM8, 5 = BlockMonM14 6 = EndMon, 7 = ManyMon,	
Bypass Impedance	34	Float		
Setup Version	38	Uint8	0 to 255	Incremental version number when saved to track when updates made

Telemetry – Lifetime metrics information legacy

Identifier: 0X5657
Frequency: 22 seconds
Data Length: 107 bytes
Version 1

Field	Offset	Data Type	Format / Range	Resolution / Notes
First Sync Time	8	Uint32	Unix Epoch	seconds since 1-1-1970
Count Startup	12	Uint32		1 event ON / bit
Count Critical Battery OK	16	Uint32		1 event ON / bit

Count Charge On	20	Uint32		1 event ON / bit
Count Charge Limited Power	24	Uint32		1 event ON / bit
Count Discharge On	28	Uint32		1 event ON / bit
Count Discharge Limited Power	32	Uint32		1 event ON / bit
Count Heat On	36	Uint32		1 event ON / bit
Count Cool On	40	Uint32		1 event ON / bit
Count Daily Session	44	Uint16		1 event ON / bit
Most Recent Time Critical On	46	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Critical Off	50	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Charge On	54	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Charge Off	58	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Charge Limited Power	62	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Discharge On	66	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Discharge Off	70	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Discharge Limited Power	74	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Heat On	78	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Heat Off	82	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Cool On	86	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Cool Off	90	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Bypass Initialised	94	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Bypass Completed	98	Uint32	Unix Epoch	seconds since 1-1-1970
Most Recent Time Bypass Tested	102	Uint32	Unix Epoch	seconds since 1-1-1970
Recent Bypass Outcomes	106	Uint8	0 = Not Tested, 1 = Preparing, 2 = Testing, 3 = Passed Ok, 4 = Failed,	