Mercedes-Benz Wallbox Charger Communications ##############
ABL Sursum 2W22M1
38400 baud 8 bits 1 stop bit even parity. Modbus Protocol. Terminate with 120 ohms at each cable end.

Picoscope Test 38400 baud 1 stop bit even parity						
	Charger Activity					
Packet	Not Connected	Connected & Locked	Key First Turned	Charging	Charged	
1	>	>	>	>	>	> for comms from charger : for comms to charger
2	0	0	0	0	0	Charger Address 1
3	1	1	1	1	1	Charger Address 2
4	0	0	0	0	0	Function 1 Function 03 is request command
5	3	3	3	3	3	Function 2 Function 10 is write command
6	0	0	0	0	0	Number of Registers 1 Take Number of Registers and divide by 2 to determine register count
7	2	2	2	2	2	Number of Registers 2 This example is a register count of 1
8	0	0	0	0	0	Register Data 1 4 bytes for each register count
9	4	4	4	4	4	Register Data 2
10	A	B	B	C	B	Register Data 3
11	1	1	2	2	2	Register Data 4
12	5	4	4	3	4	CRC1 Longitudinal CRC for ASCII Modbus
13	5	5	4	4	4	CRC2
14	CR	CR	CR	CR	CR	
15	LF	LF	LF	LF	LF	
16	NUL	NUL	NUL	NUL	NUL	
LED State	Periodic	Periodic		Periodic	Continuous	
LED Colour	Blue Pulse	Yellow		Green Pulse	Green	
Charger State	A1	B1	B2	C2	B2	

IEC 61851-1 Ed.2 Mode 3. A to B2 to B2 to CD to B2 to A

A1	Blue Pulse	Waiting for vehicle to be connect State
B1	Yellow	Connected to vehicle
B2	Green	Connected to vehicle and waiting for charge request
C2	Green Pulse	Charging without ventilation
D.	Green Pulse	Charging with ventilation
B2	Green	Charging ended by vehicle
E.	Red and 4 green pulses	Error
A'	Red and some other pulses	Vehicle not recognised
	Red and some other pulses	Error CS
	Red and some other pulses	Error EV
	Red and some other pulses	Locking Error
	Red and some other pulses	Ventilation Fault
	?	Manual State

Query Commands

	Serial Number & Device Type	Status	Scan Device 1	Response	Config 2	Response (Status?)
1	:	:	:	>	:	>
2 Device ID M	0	0	0	0	0	0
3 Device ID L	1	1	1	1	1	1
4 Function M	0	0	0	0	0	0
5 Function L	3	3	3	3	3	3
6 Reg Beg M	0	0	0	0	0	0
7 Reg Beg	0	0	0	4	0	2
8 Reg Beg	5	2	0	0	0	0
9 Reg Beg L	0	E	1	1	4	4
10 Reg Cnt M	0	0	0	8	0	E
11 Reg Cnt	0	0	0	1	0	2
12 Reg Cnt	0	0	0	1	0	1
13 Reg Cnt L	8	5	2	?	1	4
14 CRC M	A	C	F	?	F	CR
15 CRC L	4	9	9	?	7	LF
16	CR	CR	CR	A	CR	
17	LF	LF	LF	5	LF	
18				CR		
19				LF		

Serial Number & Device Type Report Formats (8 Registers)

Packet 6 Packet 7	1 0	Register Count x 2 (2 bytes per register)						
Registers	R0	R1	R2	R3	R4	R5	R6	R7
Data	Device Type / Serial No. Identifier (50xx)	Device Type First & Second Character	Device Type Third & Fourth Character	Device Type Fifth & Sixth Character	Serial Number First & Second Character	Serial Number Third & Fourth Character	Serial Number Fifth & Sixth Character	Serial Number Seventh & Eighth Character

Status Report Formats (5 Registers)

Packet 6 Packet 7	0 A	Register Count x 2 (2 bytes per register)			
Registers	R0	R1	R2	R3	R4
Data	Status Identifier (2Exx) and Outlet State	EV Connected, Max Current, Input EN1 and Input EN2	L1 Current	L2 Current	L3 Current

Set Commands

	Lock Outlet	Unlock Outlet	Set Device ID Sequence: Set All Devices to E2 State	Set Device ID (After set to E2)	Reset All Devices	Set 01 to E2 State	Reset 01
1	:	:	:	:	:	:	:
2 Device ID M	0	0	0	0	0	0	0
3 Device ID L	1	1	0 (B/Cast)	0 (B/Cast)	0 (B/Cast)	1	1
4 Function M	1	1	1	1	1	1	1
5 Function L	0	0	0	0	0	0	0
6 Reg Beg M	0	0	0	0	0	0	0
7 Reg Beg	0	0	0	0	0	0	0
8 Reg Beg	0	0	0	2	0	0	0
9 Reg Beg L	5	5	5	C	5	5	5
10 Reg Cnt M	0	0	0	0	0	0	0
11 Reg Cnt	0	0	0	0	0	0	0
12 Reg Cnt	0	0	0	0	0	0	0
13 Reg Cnt L	1	1	1	1	1	1	1
14 # Bytes M	0	0	0	0	0	0	0
15 # Bytes L	2	2	2	2	2	2	2
16 Data M	E	A	E	F	5	E	5
17 Data	0	1	2	0	A	2	A
18 Data	E	A	E	0	5	E	5
19 Data L	0	1	2	1	A	2	A
20 CRC M	2	A	2	D	3	2	3
21 CRC L	7	5	4	0	4	3	3
22	CR	CR	CR	CR	CR	CR	CR
23	LF	LF	LF	LF	LF	LF	LF
	Send Twice with 20ms gap				Send Twice with 20ms gap		

Query Responses

		Serial Number & Device ID		Status		
1		>		>		
2		0		0	Dev MSB	
3		1		1	Dev LSB	
4		0		0	Func MSB	
5		3		3	Func LSB	
6		1		0	#Reg MSB	
7		0		A	#Reg LSB	
8	Register 0	5	Info flg MSB	2	Status flg MSB	
9	Register 0	0	Info flg LSB	E	Status flg LSB	
10	Register 0	NR	NU	A,B,C or E	Outlet State MSB	A1: Not Connected. B1: Connected. B2: Connected & Released. C2/C3/C4: Connected & Charging
11	Register 0	NR	NU	1,2,3,4 or 0	Outlet State LSB	E0: Outlet Locked
			Device Chr1		EN1, EN2, EV	
12	Register 1		MSB	0 to 7	Connected x	
13	Register 1		Device Chr1 LSB		Max Current MSB+	
			Device Chr2			
14	Register 1		MSB		Max Current +	x Bit0: InputEN1 off, Bit1: Input EN2 off, Bit2: EV Not Connected
15	Register 1		Device Chr2 LSB		Max Current LSB+	+ round((value/10(/(26.7/16.0) to get Max Current from PWM at 26.7% is 16A from IEC 62196 Typ2
			Device Chr3			
16	Register 2		MSB		Current L1 MSB*	* If the charging current is x1000 or <2, set the value to 0. Current = value/10
17	Register 2		Device Chr3 LSB		Current L1*	
			Device Chr4			
18	Register 2		MSB		Current L1*	
19	Register 2		Device Chr4 LSB		Current L1 LSB*	
			Device Chr5			
20	Register 3		MSB		Current L2 MSB*	
21	Register 3		Device Chr5 LSB		Current L2*	
			Device Chr6			
22	Register 3		MSB		Current L2*	
23	Register 3		Device Chr6 LSB		Current L2 LSB*	
24	Register 4		Serial Chr1 MSB		Current L3 MSB*	
25	Register 4		Serial Chr1 LSB		Current L3*	
26	Register 4		Serial Chr2 MSB		Current L3*	
27	Register 4		Serial Chr2 LSB		Current L3 LSB*	
28	Register 5		Serial Chr3 MSB		CRC1	
29	Register 5		Serial Chr3 LSB		CRC2	
30	Register 5		Serial Chr4 MSB		CR	
31	Register 5		Serial Chr4 LSB		LF	
32	Register 6		Serial Chr5 MSB			
33	Register 6		Serial Chr5 LSB			
34	Register 6		Serial Chr6 MSB			
35	Register 6		Serial Chr6 LSB			
36	Register 7		Serial Chr7 MSB			
37	Register 7		Serial Chr7 LSB			
38	Register 7		Serial Chr8 MSB			
39	Register 7		Serial Chr8 LSB			
40			CRC1			
41			CRC2			
42			CR			
43			LF			