Modbus Testing and Configuration Guide (V1.0)

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1. *Introduction*

This guide lays out the steps to use the Modbus communication between a PC and a EPC2.0+

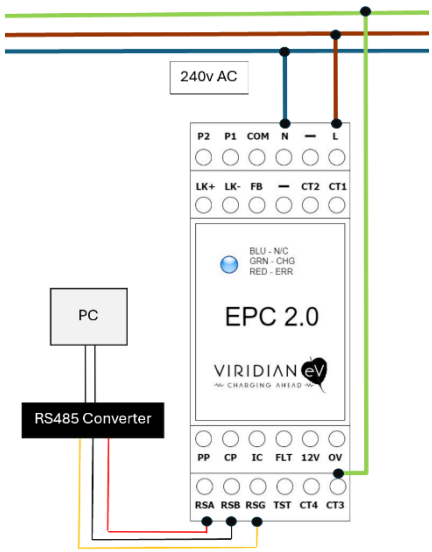
2. *Hardware*

You will need:

- PC running windows
- USB to RS485 converter (Amazon Link Here)
- 240V power supply

The EPC must be powered with a 240v AC supply to test the RS485 communication. Isolate the supply before making any connections. The indicator light on the top will show when the EPC is powered correctly.

The Modbus communication has three lines. A, B & Ground signal lines must be connected for the communication to work correctly.



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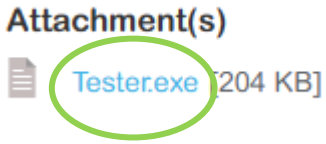
3. Software Setup

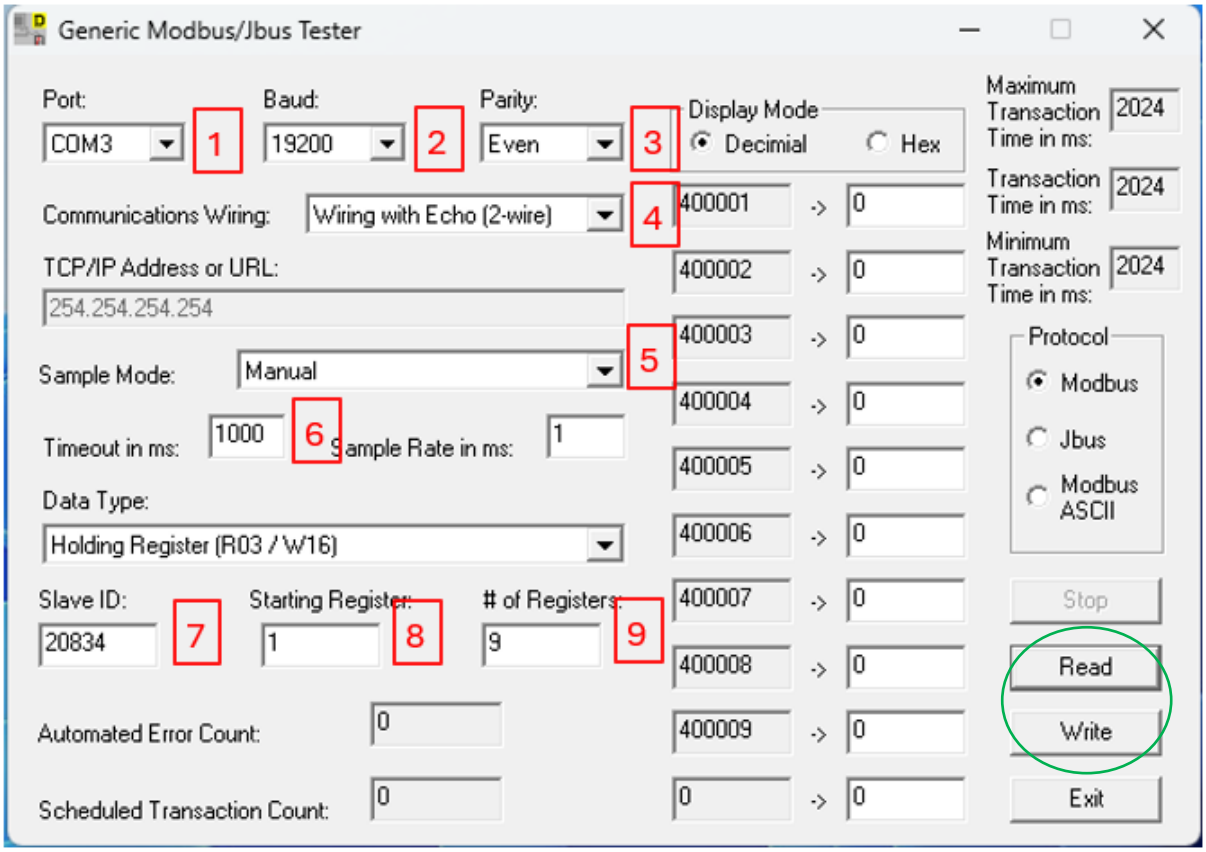
Modbus simulator install and setup

Download the Tester.exe file available on the below webpage:

https://www.se.com/uk/en/faqs/FA180037/



When the program is run it will display the below. All the fields that need to be filled in are listed below.



Factory Communication Settings

1. Com Port – Select the com port used by your PC for the RS485 converter
2. Baud Rate - 19200
3. Palirity - Even
4. Communication Wiring – Wiring with No Echo (4 Wire)
5. Sample Mode - 20
6. Timeout - 1000
7. Slave ID - 101
8. Starting Registered – 1-52 (this defines the register displayed in the top position on the tester)
9. No. of Registers – 1-10 (this defines how many resisters are displayed by the tester)

Use the “Read” button to display the register values currently on the device. Once the values are displayed, they can be adjusted.

Use the “Write” button the write the register values back to the device.

Use the “Register Map” below to identify the settings on the unit you would like to read or change. Some Register locations are read only and cannot be changed via Modbus.

Note: The EPC2.0+ comes configured as RCM enabled, if a RCM is not fitted the unit will report an error on power up and not initiate a charge.

To change the configuration read register 40048, change the “1” to “0” and write to the EPC. The unit will no longer look for a RCM to be connected.

Warning: The values written to the device will supersede any DIP switch configuration.

Placing all DIP switches in the ON position and powering up the unit will restore factory settings to the EPC. This includes any settings that have been changed via Modbus.

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charging ahead

EPC 2 PLUS MODBUS Register Map V104

Register	Read	Write	Function	Values	Default Value	Length
40001	Y	Y	R	0-255	0	16-bit
40002	Y	Y	G	0-255	0	16-bit
40003	Y	Y	B	0-255	0	16-bit
40004	Y	Y	LED Control Register	0 = Default Automatic, 1 = Colour and Brightness set by RGB registers	0	16-bit
40005	Y	Y	Lock Control	0=Chargepoint controlled, 1=Latch on, 2=Latch off	40013 Register value	16-bit
40006	Y	Y	Charge Disable	0 = state C disabled, 1 = auto start charging, 2 = Writing 2 to this register in state B or A will allow charge point to enter State C once and value will automatically return to 0	40014 Register Value	16-bit
40007	Y	Y	Active Charging Current	0, 6A-32A, Alloted current to advertise to EV	fallback @ startup	16-bit
40008	Y	N	Measured Voltage L1 N	Measured Voltage L-N terminals. Displays Volts x 10, value includes 1 decimal place	N/A	16-bit
40009	Y	N	Measured Current CT1	Measured Current in Amps x 10, Value indicates 1 decimal place	N/A	16-bit
40010	Y	N	Measured Power		N/A	16-bit
40011						16-bit
40012	Y	N	Active State	0=A, 1=B, 2=C, 3=D, 4=F	N/A	16-bit
40013	Y	Y	Lock Behaviour on Power Loss	0=Chargepoint controlled, 1=Latch on, 2=Latch off	0	16-bit
40014	Y	Y	Charge Disable behaviour on power loss	0 = state C disabled	1	16-bit
40015	Y	N	Error Code	See error code table A	N/A	16-bit
40016	Y	N	Connected Cable Current Rating in Amps	PP Current Rating	N/A	16-bit
40017	Y	N	EVSE Advertised Current	The current being advertised to the EV at this moment in time.		16-bit
						16-bit
40022	Y	Y	Baud Rate	1200, 2400, 4800, 9600, 19200, 57600	19,200	16-bit
40023	Y	Y	Parity	0 = none, 1 = even, 2 = odd	1	16-bit
40024	Y	Y	Server Address	If address bits are set to 1,1 Server address is this value 1-255	102	16-bit
						16-bit
40029	Y	Y	Comms Timeout	If no data received within XmS default to Fallback Current, 0 = no timeout, Allowed Values 1,000 - 60,000	0	16-bit
40030						16-bit
40031	Y	Y	Fallback Current	0-32 - Current to advertise on comms loss	32	16-bit
						16-bit
40043	Y	Y	Property Fuse Rating	Property maximum fuse rating in Amps for Supply Optimisation	100	16-bit
40044						
40045	Y	Y	Maximum Charging Current	6-32 Maximum current EVSE is capable of based on wiring and components	32	16-bit
40046	Y	Y	Lock Feedback Enable	1 = Feedback Enabled, 0 = Feedback Disabled, 2 = Default behaviour (on for motor, off for solenoid)	2	16-bit
40047	Y	Y	Lock Feedback Switch Polarity	1 = Hella Actuator, 0 = Phoenix Contact socket	1	16-bit
40048	Y	Y	RCM Enabled	1 = RCM Enabled, 0 = RCM disabled	1	16-bit
40049	Y	N	Socket / Tethered	1 = Socket, 0 = Tethered	SW1 Position	16-bit
40050	Y	N	Solenoid / Motor	1 = Solenoid. 0 = Motor	SW2 Position	16-bit
40051	Y	N	PEN Loss Enabled / Disabled	1 = PEN Loss Enabled, 0 = PEN Loss Disabled	SW3 Position	16-bit
40052	Y	Y	PEN Loss Developer Mode	0 = PEN Loss limits locked, 1 = PEN Loss Limits writable	0 @ startup	16-bit
40053	Y	See Note	PEN Loss Import Lower Voltage Limit	Lower Trip Threshold for Voltage Based PEN Loss Detection (Import) - Voltage x 10 (1 Decimal)	2065	16-bit
40054	Y	See Note	PEN Loss Import Upper Voltage Limit	Upper Trip Threshold for Voltage Based PEN Loss Detection (Import) - Voltage x 10 (1 Decimal)	2535	16-bit
40055	Y	See Note	PEN Loss Export Lower Voltage Limit	Lower Trip Threshold for Voltage Based PEN Loss Detection (Export) - Voltage x 10 (1 Decimal)	2065	16-bit
40056	Y	See Note	PEN Loss Export Upper Voltage Limit	Upper Trip Threshold for Voltage Based PEN Loss Detection (Export) - Voltage x 10 (1 Decimal)	2595	16-bit
40057	Y	Y	Import / Export Register	Auto Detected Values (Requires connected CT): 0 = Import, 1 = Export. Manual Override 2 = Force Import Mode, 3 = Force Export Mode. Defaults to Import mode on power cycle.	0 @ startup	16-bit

Error Code Register

MSB							LSB
8	7	6	5	4	3	2	1
Reserved	Reserved	Supply CT Failure	Mains Voltage Outside Limits	Reserved	Failed Diode Check	DC Residual Current Fault	RCM Self Test Fail

MODBUS Settings	Default Value
Baud Rate	19200
Stop Bits	1
Data Bits	8
Parity	Even

Note:

PEN Loss Thresholds are readable at all times. Writing Values requires setting of PEN Loss Developer Mode after startup. Developer Mode will reset to disabled on power cycle.

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