Case Study – How to use your phone to connect with Modbus RTU/RS485
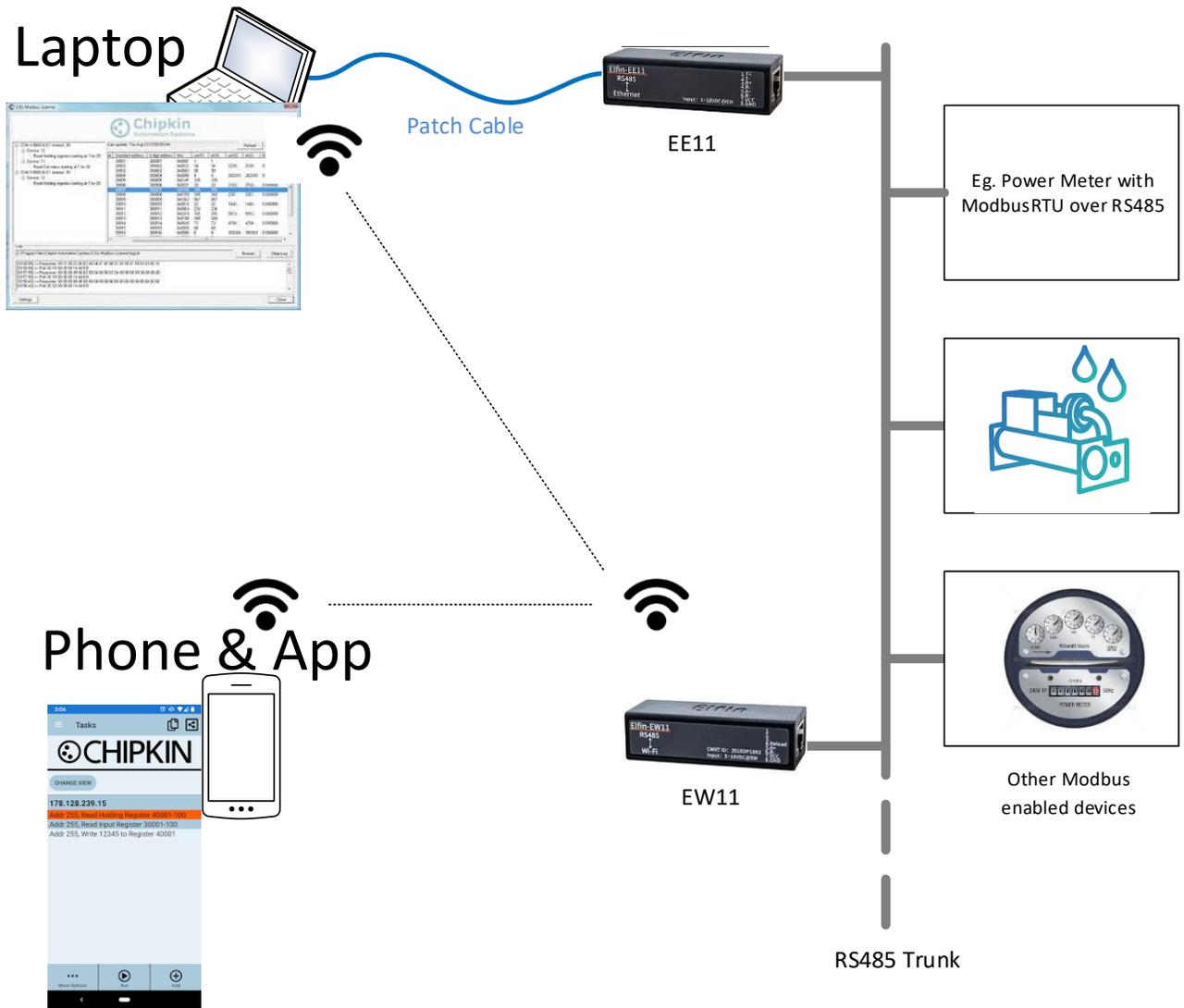
How ?
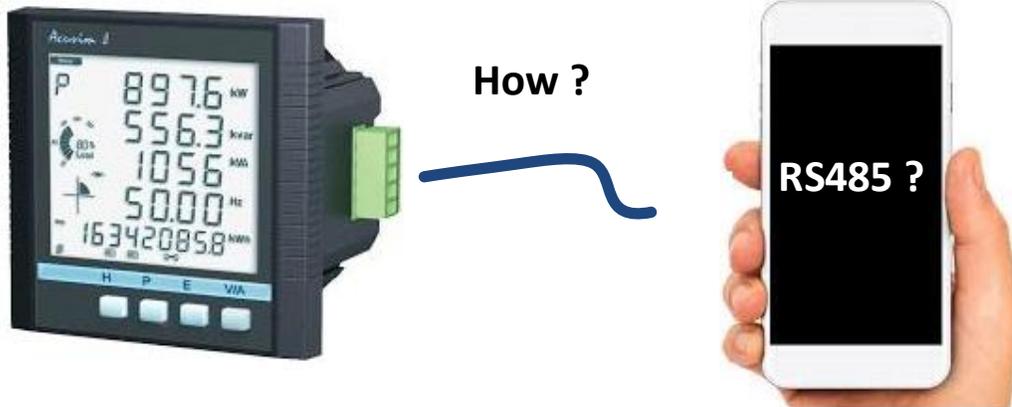
RS485 ?

RS485 and Modbus RTU on your phone ?
-
Solved !

Here is the problem – there is no RS485 port on a phone. This is also true for most laptops.

In this case study we illustrate a method for solving this problem using a **$10 device** as a solution.

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Block Diagram

Application – Modbus RTU

The Chipkin Modbus Scanner App allows your phone to talk RS485 to ModbusRTU enabled devices. Establish a connection using the wiring and methods shown below - in this case study. Then, run the Chipkin Modbus Scanner. Set the IP Address to the IP address of the EE11/EW11. Connect the EE11/EW11 to the RS485 trunk. Make sure you have the baud rate set correctly in the module. Now simply poll as if you were using Modbus TCP but thanks to the converter module you are using ModbusRTU

**Chipkin Modbus Scanner App with EE11/EW11 allows you to
read and write Modbus RTU data from your phone.**

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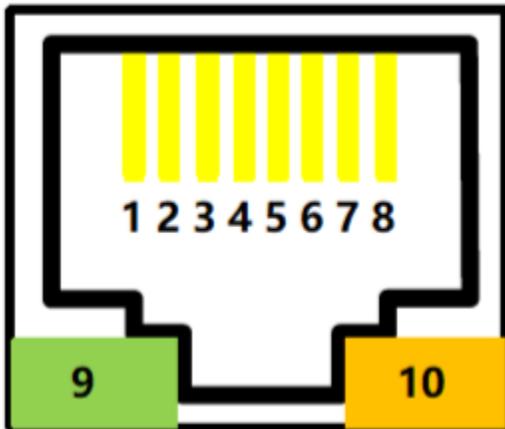**Email**: dfs@chipkin.com   **Website:** www.chipkin.com

Hardware & Software Connections

Ethernet to RS485 EE11 Module showing connection pins

Pinout for RJ45 on the EE11 module.

Its possible to avoid the use of RJ45 to terminal block adapter

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Pin	Description	Net Name	Signal Type	Comment
1	Ethernet TX+	TX+	O	Connect to Standard Ethernet RJ45 PIN1
2	Ethernet TX-	TX-	O	Connect to Standard Ethernet RJ45 PIN2
3	Ethernet RX+	RX+	I	Connect to Standard Ethernet RJ45 PIN3
4	Ethernet RX-	RX-	I	Connect to Standard Ethernet RJ45 PIN6
5	UART1_TXD	RS485_A+	IO	RS485 A+
6	UART1_RXD	RS485_B-	IO	RS485 B-
7	Power VCC	VCC	Power	5~18VDC
8	Power GND	GND	Power	
9	**Green LED** Net Status	Net	O	On:Bootup OK. 0.3s Off -> 3s On: Ethernet connection is OK. 0.3s Off ->0.3s On: No Ethernet connection.
10	**Amber LED** Data Transfer	Active	O	Off: No data transfer 0.3s Off -> 0.9s On: UART TX Output 0.3s Off -> 0.3s On: UART RX Receive On: UART bidirection.

Wiring diagram – EE11 to Ethernet, Power and RS485

Ethernet Patch Cable

A+ 5

B- 6

RS485
Connect to Trunk
Plus to Plus

7 — 5-18 Volts

8 — 0 Volts
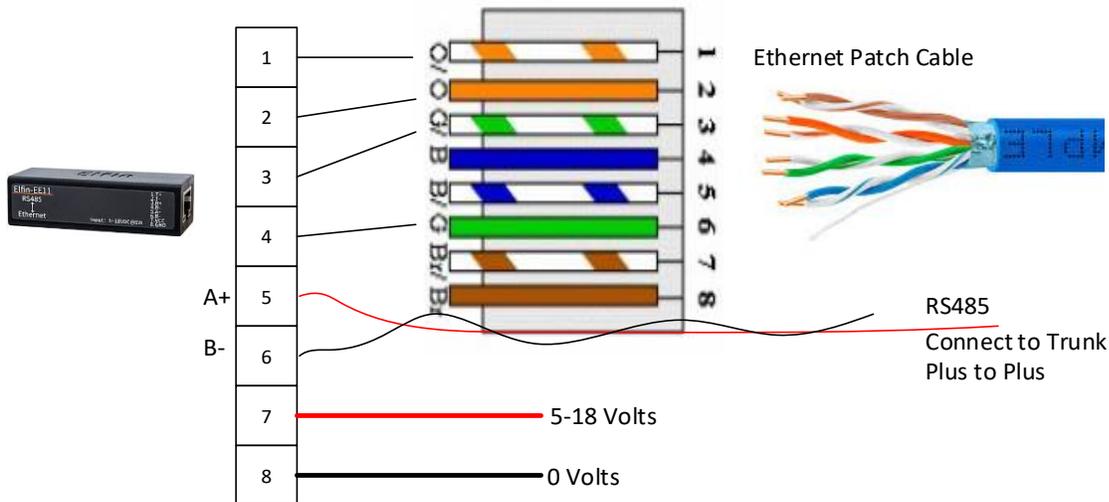
Ethernet to RS485 EW11 Wireless Module showing connection pins

Configuration of EE11 and EW11

Connect the EE / EW to your local network. If there is no DHCP on your network (unlikely) then the IP Address of the module is 1569.254.1.1. If there is DHCP, the IP address will be allocated automatically.

Password and User = "admin"

Learn the IP using your Router – Look through the list of connected clients.

Basic Settings

This menu show the basic settings of the device

| LAN Setup | WAN Setup | Gateway Function | Port Forwarding | Port Triggering | DMZ | DNS |

Private LAN Setting

Private LAN IP Address	192.168.1.1
Subnet Mask	255.255.255.0
LAN DHCP Status	Enabled Disabled DHCP Reservation
DHCP Lease Time	1 Week ▼
DHCP Start IP	192.168.1.10
DHCP End IP	192.168.1.200

Save Changes   Cancel   Help

Connected Devices   Refresh

Host Name	IP Address	MAC Address	type	Interface	Status
HunterACC-5278	192.168.1.14	00:1e:c0:35:95:65	DHCP-IP	WiFi-2.4G	Active
Unknown	192.168.1.168	00:50:4e:12:47:84	Self-assigned	Ethernet	Active
AnaGonzalez	192.168.1.16	40:4e:36:1f:67:93	DHCP-IP	WiFi-2.4G	Active
DESKTOP-NQSKND5	192.168.1.20	58:cb:52:85:22:0d	DHCP-IP	WiFi-5G	Active
DESKTOP-NQSKND5	192.168.1.17	70:bc:10:5d:aa:c7	DHCP-IP	WiFi-5G	Active
PMC5	192.168.1.10	74:d4:35:75:f9:80	DHCP-IP	Ethernet	Active
Eport-EE11	192.168.1.15	98:d8:63:4a:de:af	DHCP-IP	Ethernet	Active
cassis	192.168.1.11	c8:60:00:56:87:18	DHCP-IP	Ethernet	Active
AnaGonzalez	192.168.1.19	f0:79:59:38:a1:29	DHCP-IP	Ethernet	Active

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Set EE11 settings as follows

Serial Port Settings
change the device serial port settings

Basic Settings

Baud Rate	9600
Data Bit	8
Stop Bit	1
Parity	None

Buffer Settings

Buffer Size	512
Gap Time	50

Flow Control Settings

Flow Control	Disable

Cli Settings

Cli	Always
Waiting Time	300

Protocol Settings

Protocol	Modbus

Submit   Reset

Communication Settings
change the device socket settings

Basic Settings

Name	netp
Buffer Size	512
Keep Alive(s)	60
Timeout(s)	0

Protocol Settings

Protocol	Tcp Server
Local Port	502
Max Accept	5

Security Settings

Security	Disable

Route Settings

Route	Uart

Submit   Delete   Reset

System Settings
Change the device system settings

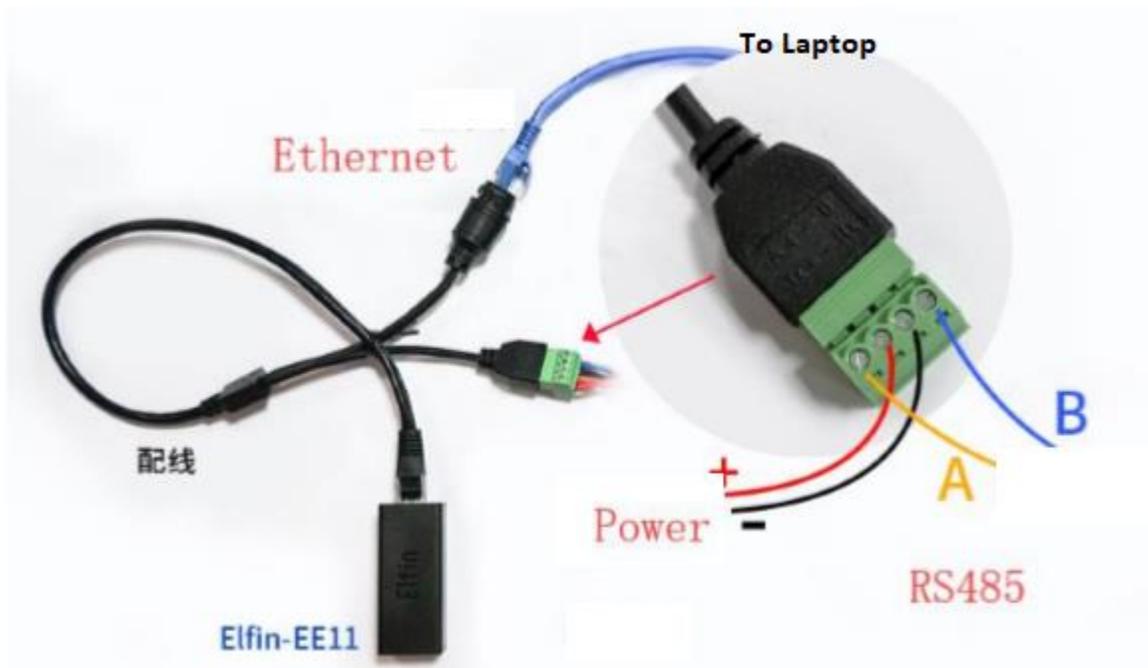| Authentication	
User Name	admin
Password	•••••

Default=admin

Simplified wiring – Purchase the adapter cable with the EE11.

EE11 Interface Conversion Cable

To Laptop

Ethernet

配线

Elfin-EE11

Power + −

A
B

RS485

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Pain in the butt

The EE11 and EW11 do not contain an internal battery power source. Power is 5-18 VDC so there are many solutions. USB provides 5 well-regulated volts and the EE11/EW11 draw hardly any current so you could make a power cable using a USB connector. One other small pain is that you need to set the baud rate, parity on the EE11 to match the settings of the RS485 trunk you intend connecting to.

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