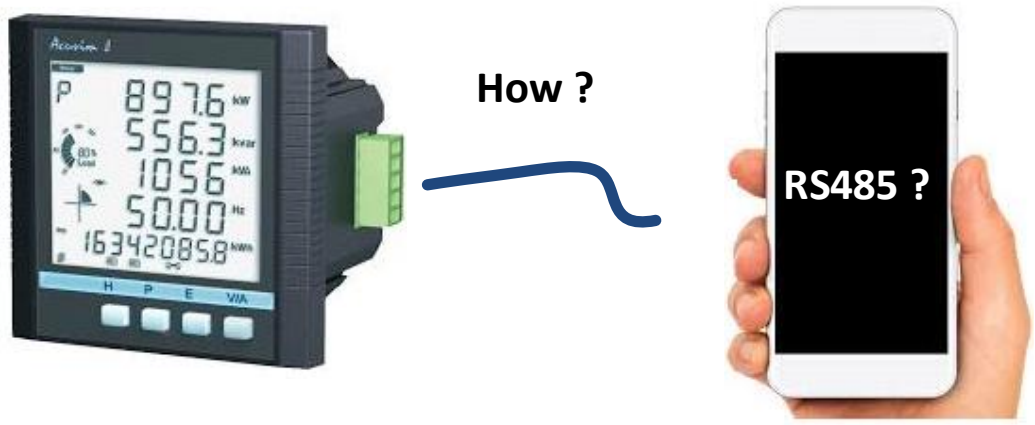
# Case Study – How to use your phone to connect with Modbus RTU/RS485




# 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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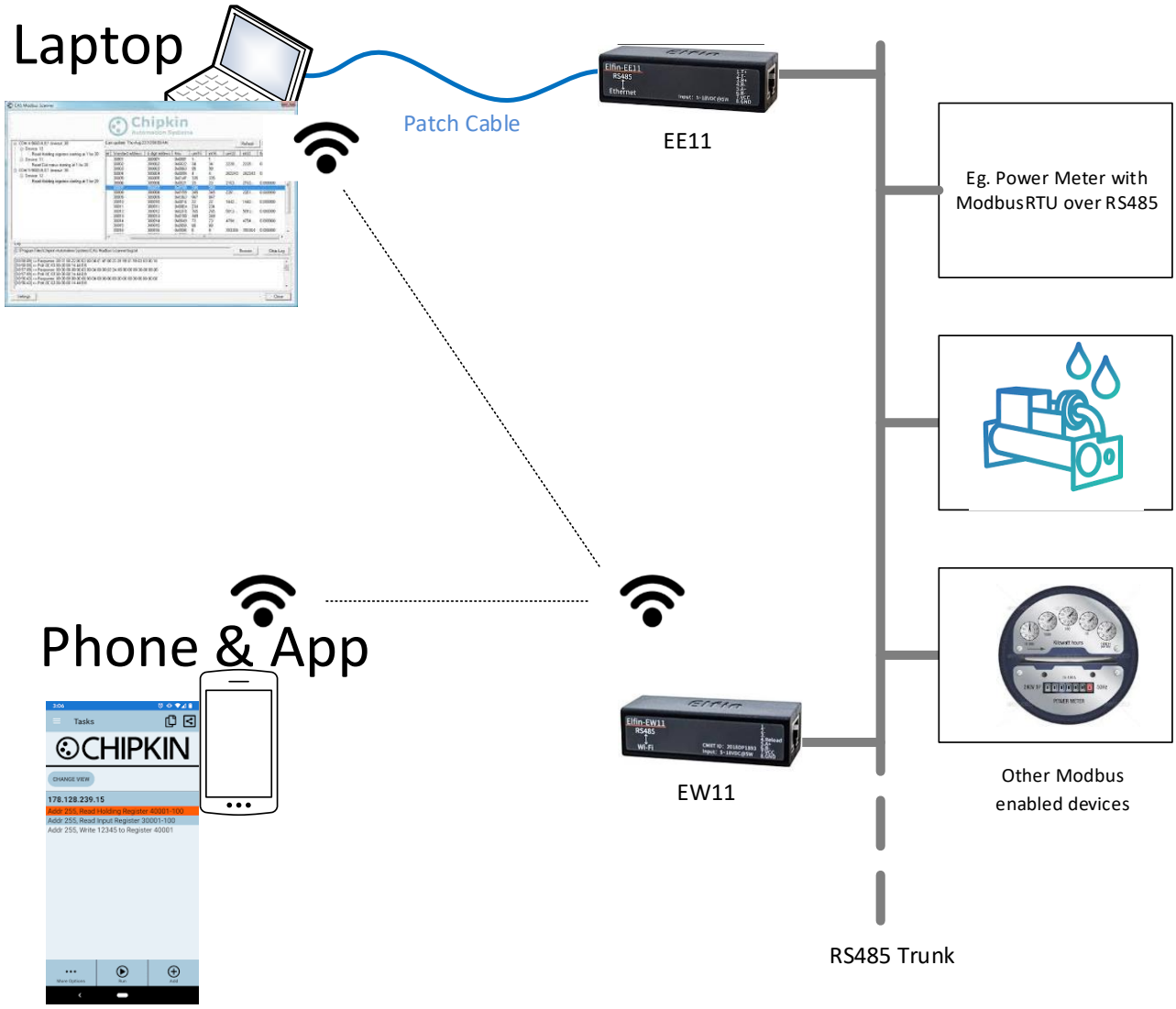
Block Diagram



**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

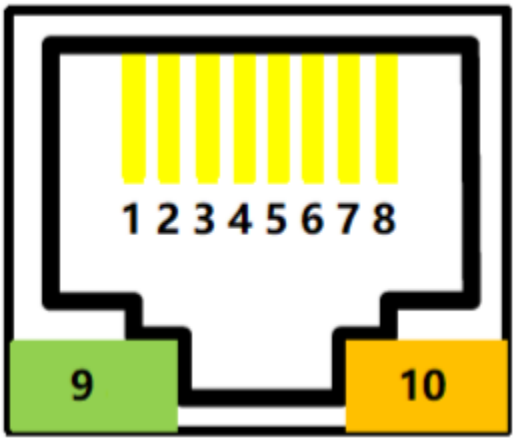
**Chipkin Modbus Scanner App with EE11/EW11 allows you to read and write Modbus RTU data from your phone.**


# Hardware & Software Connections

Ethernet to RS485 EE11 Module showing connection pins

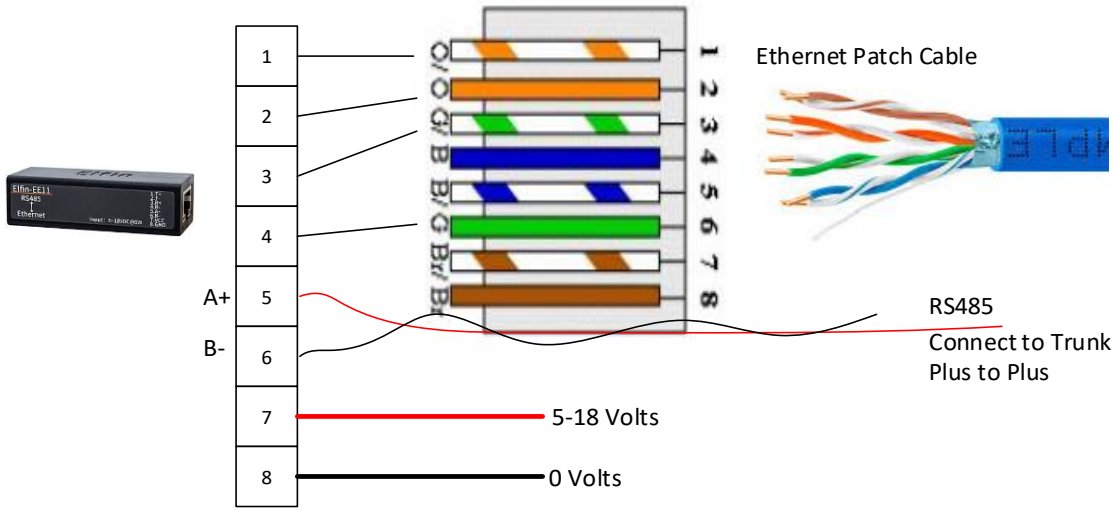

Pinout for RJ45 on the EE11 module.

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



| 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.<br>0.3s Off -> 3s On: Ethernet connection is OK.<br>0.3s Off ->0.3s On: No Ethernet connection. |
| 10 | **Amber LED** Data Transfer | Active | O | Off: No data transfer<br>0.3s Off -> 0.9s On: UART TX Output<br>0.3s Off -> 0.3s On: UART RX Receive<br>On: UART bidirection. |

Wiring diagram – EE11 to Ethernet, Power and RS485




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 |

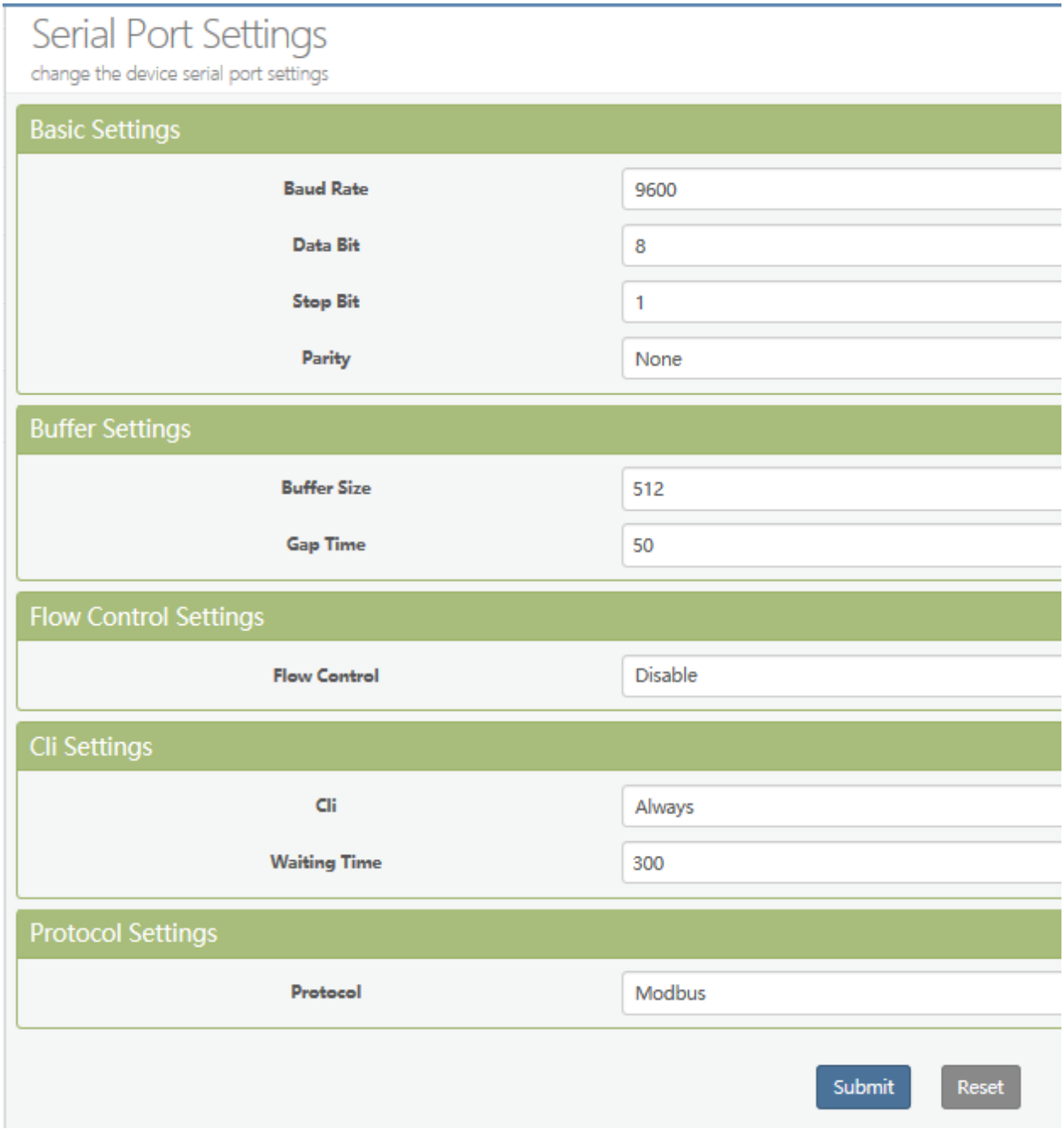
Save Changes | Cancel | Help

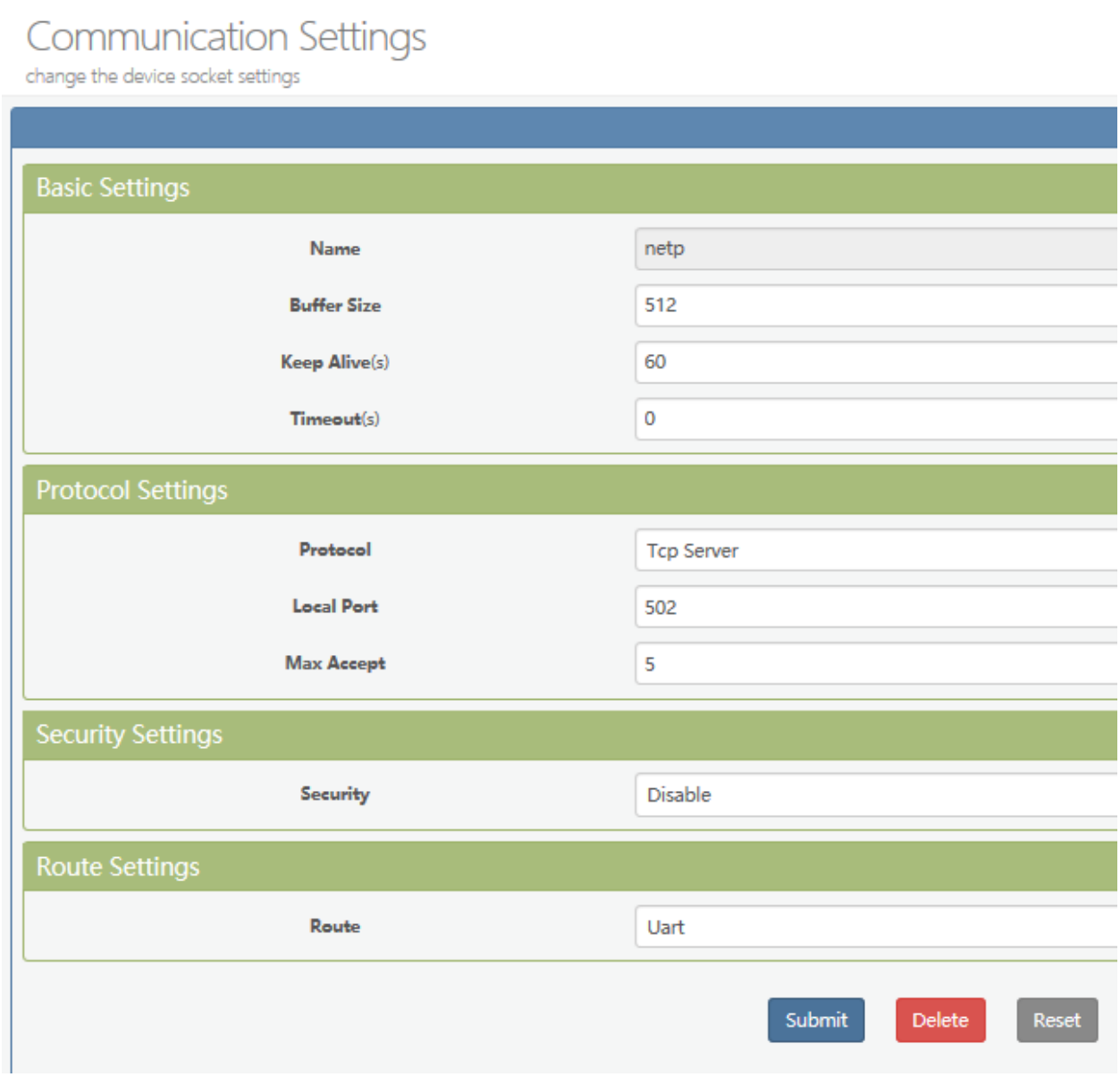
## Connected Devices

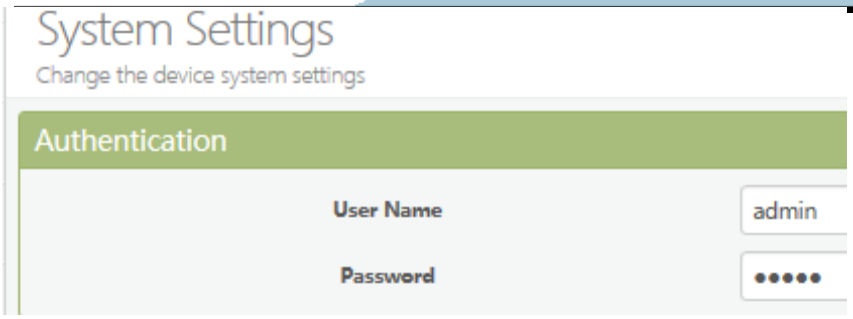
Refresh

| 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 |

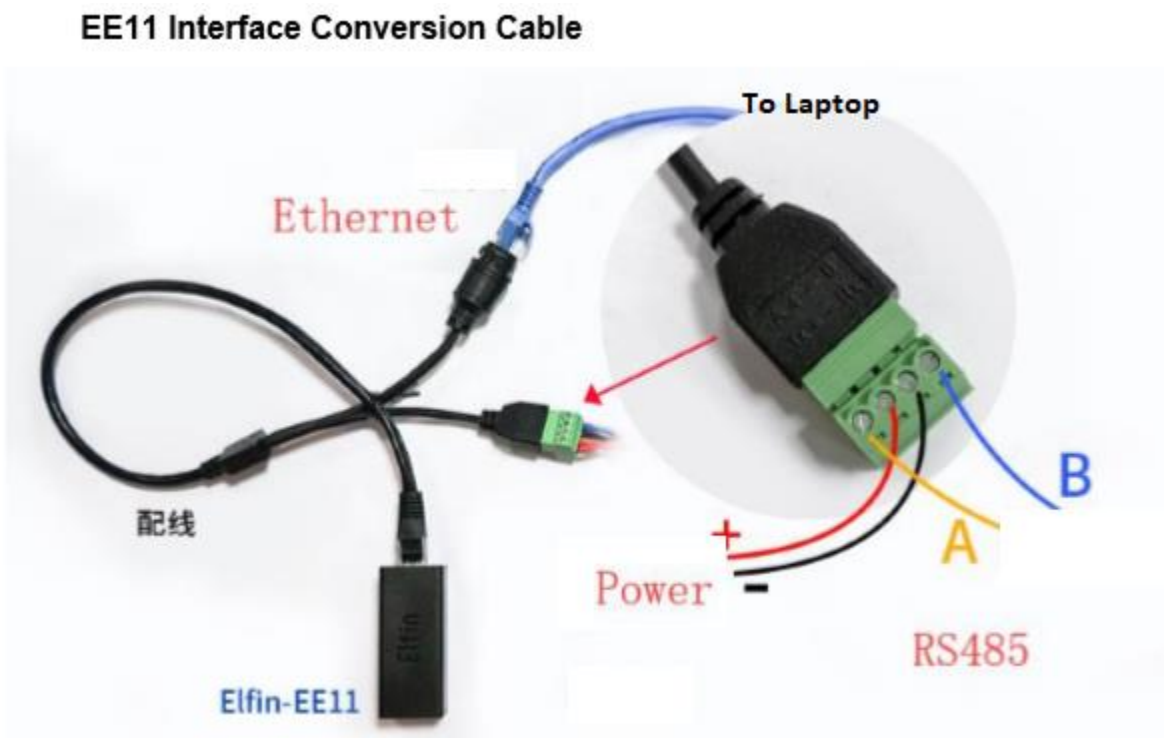
Set EE11 settings as follows




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




**Simplified wiring – Purchase the adapter cable with the EE11.**




**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.