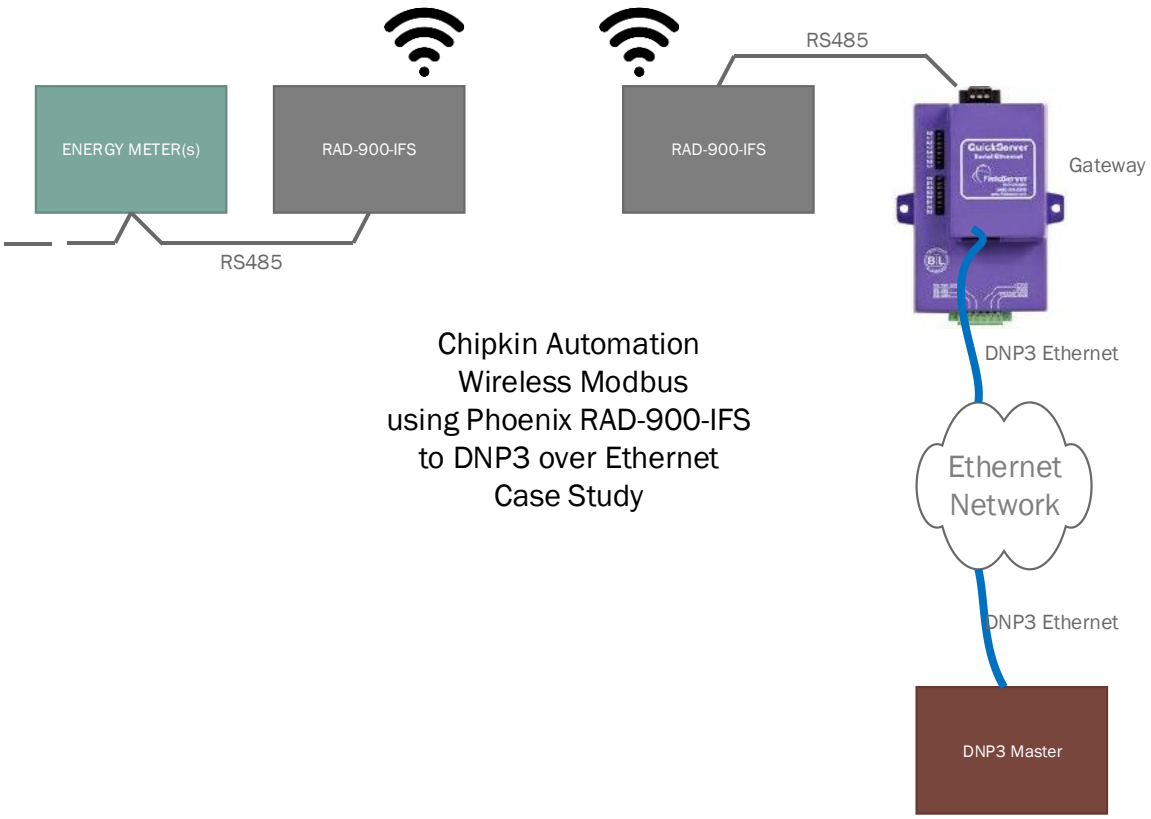
Case Study
Wireless Modbus
using
Phoenix RAD-900-IFS
to DNP3 over Ethernet

In this project the customer could not bring an Ethernet access point to the location where the power meters were installed. A wireless solution was required as per the block diagram below.



Chipkin Automation
Wireless Modbus
using Phoenix RAD-900-IFS
to DNP3 over Ethernet
Case Study

Introduction

Running new conduit and cable was impossible, but getting the data was essential.

In this application the inconvenience of a location without a network drop was overcome using a wireless solution from Phoenix Contact. RS485 ModbusRTU power meters located in a location where running new conduit would have been expensive and possibly disruptive.

The problem arises because you have limited choices when you install new power meters on existing equipment.

Chipkin Automation Systems

Protocol to protocol – Enabling the IOT Internet of Things

Products that support approx.. 140 major protocols. If we don't have a solution for you we will make you one. More than a dozen customers a year have a custom driver developed for them.

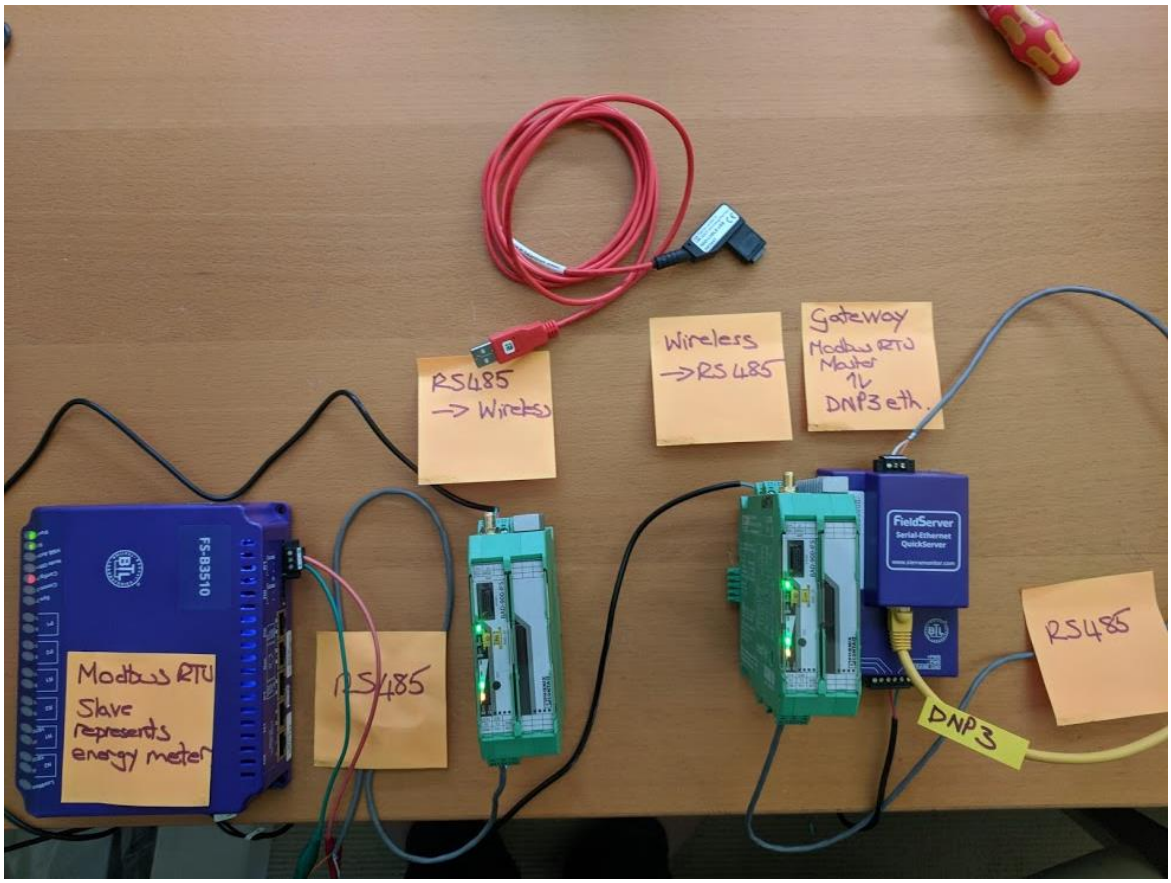
Chipkin are highly regarded for their outstanding support. System integration isn't always trivial even if that is what they tell you.

The Chipkin BACnet stack comes with a 100% copyright infringement indemnity to make corporate lawyers happy. Customers get direct access to the stack developers for coaching and problem solving.

Lab Setup

Purple unit on left is a ModbusRTU server device. In this case a gateway has been programmed to be a Modbus Server, emulating a series of Power Meters with the same set of registers and points as the installed energy meters at the customer's site.

The purple unit on the right is a gateway configured to read Modbus data from a series of RS485 connected Energy meters and to serve the data to a remote monitoring station that uses DNP3.0 Ethernet over TCP/IP.



Requirements

Wireless module - RAD-900-IF

https://goo.gl/j6VyAS

PSI-CONF Software

https://goo.gl/9gTKAz

PSI-CONF USB Cable – Proprietary cable is required

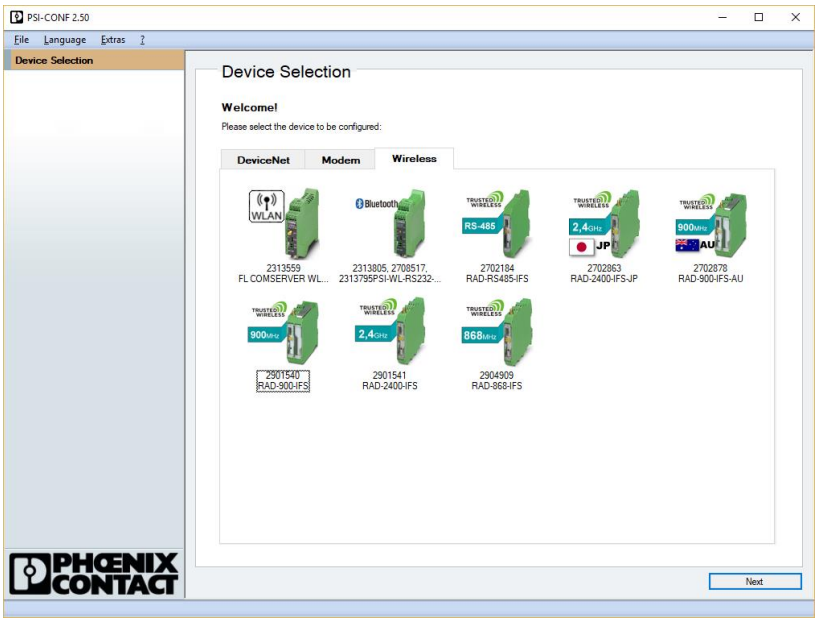
https://goo.gl/na78QX

QS-1010 Dual RS485 gateway

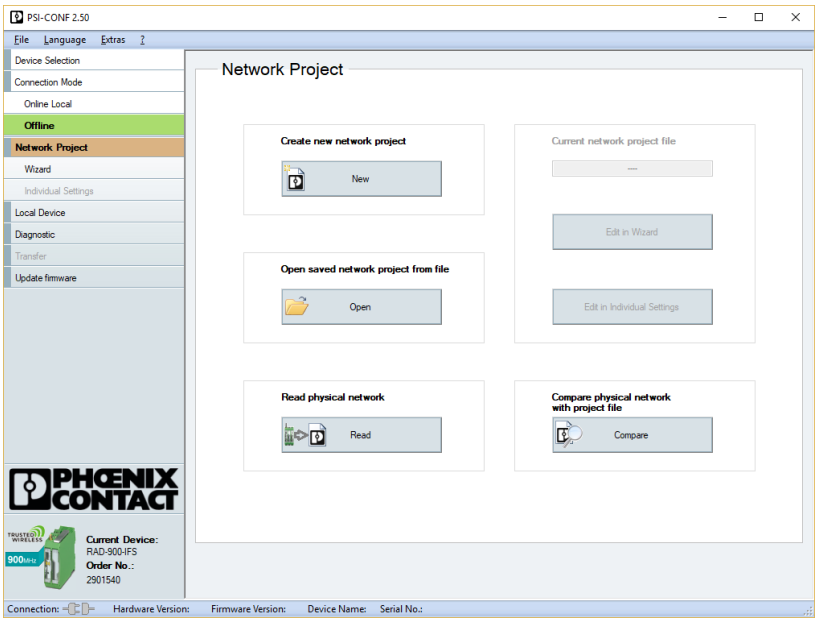
http://store.chipkin.com/products/fieldserver-devices/quickserver-gateways

Wireless Module Configuration

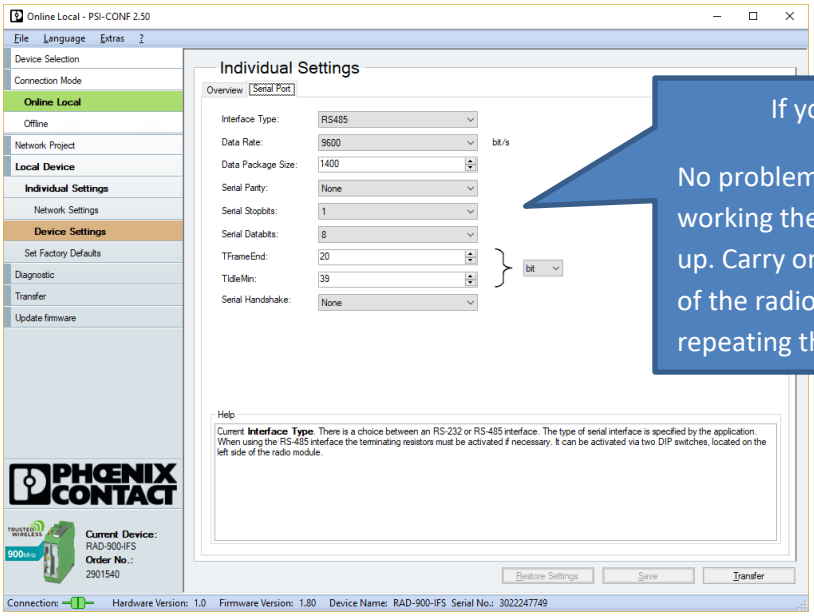
Step 1 – Launch the software



Step 2 – Connect the cable. Read from the Devices

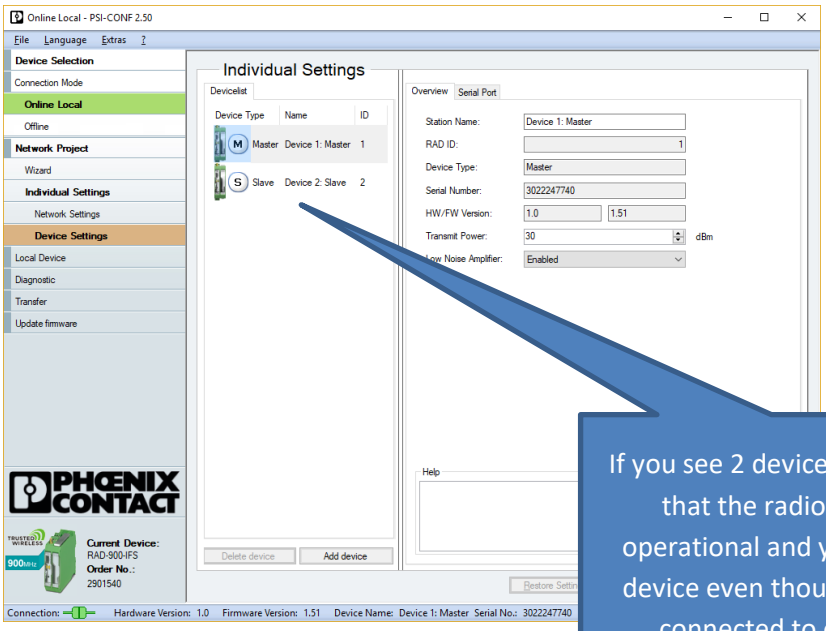


Step 3 : Edit Individual Settings



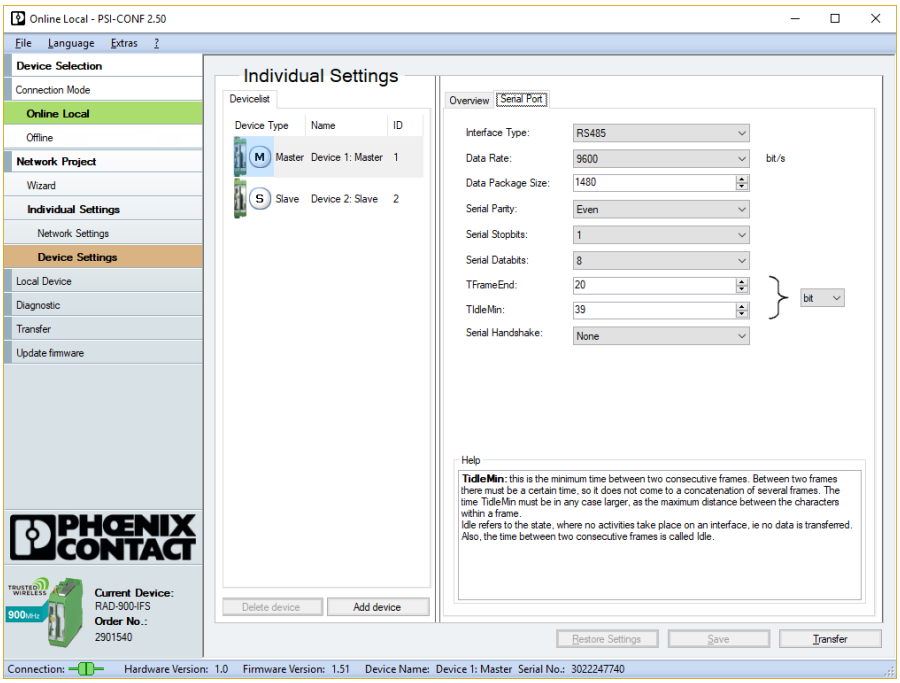
If you see 1 device.

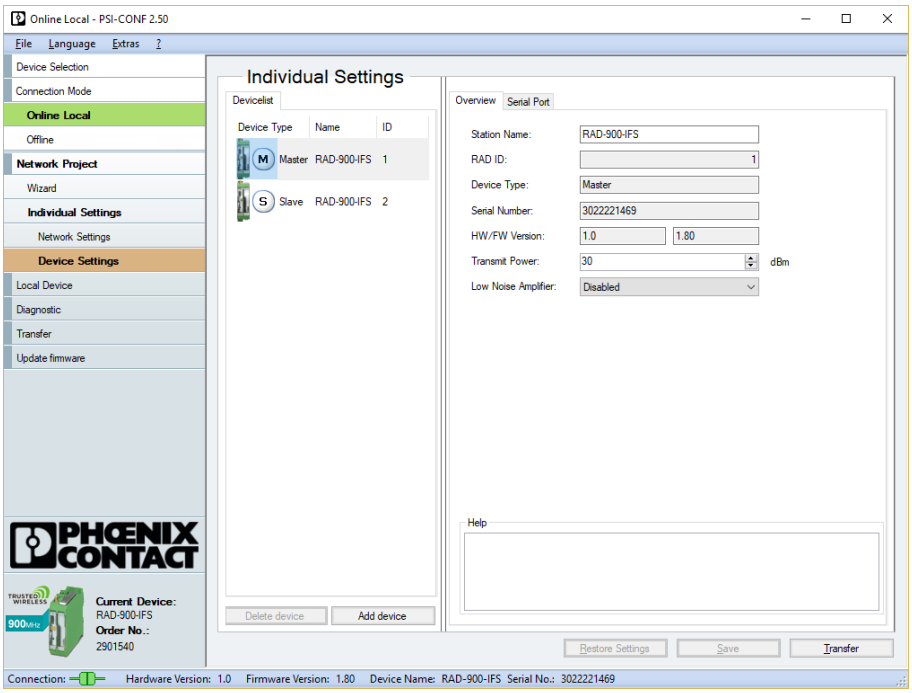
No problem. Once things are working the 2nd device will show up. Carry on, connecting to each of the radio modules and repeating the steps.

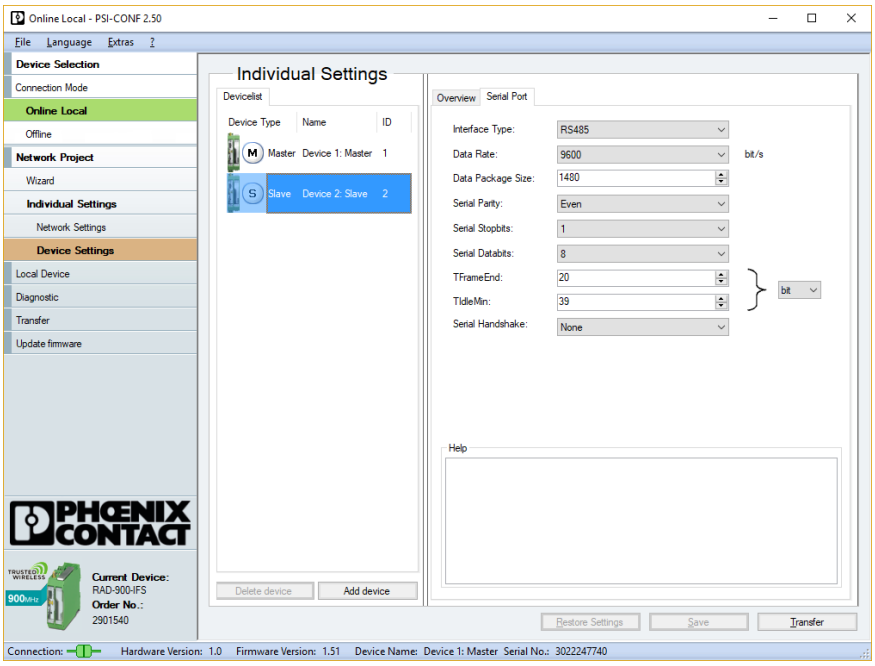


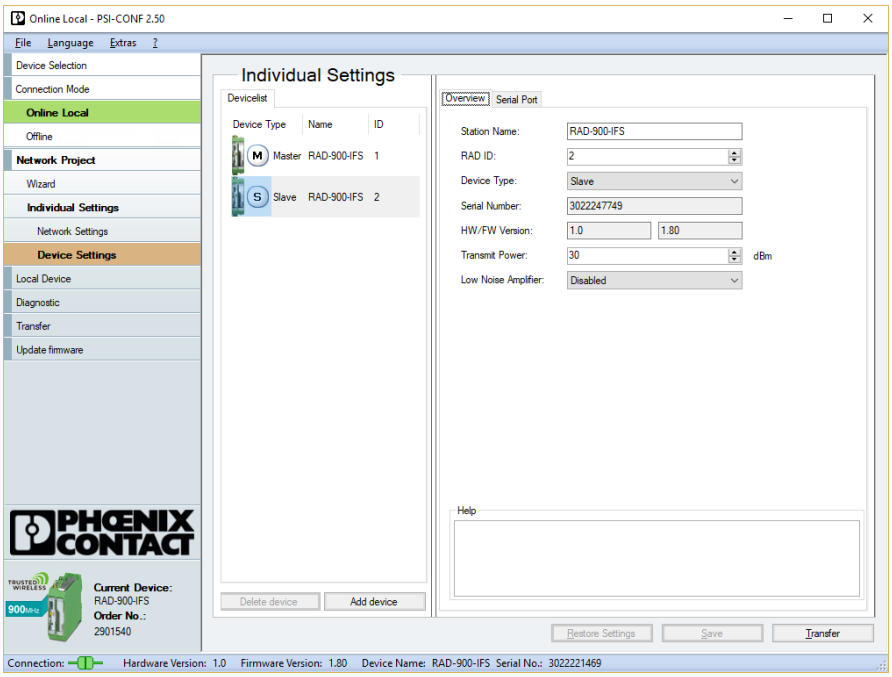
If you see 2 devices here it means that the radio network is operational and you see the 2nd device even though the cable is connected to one device.

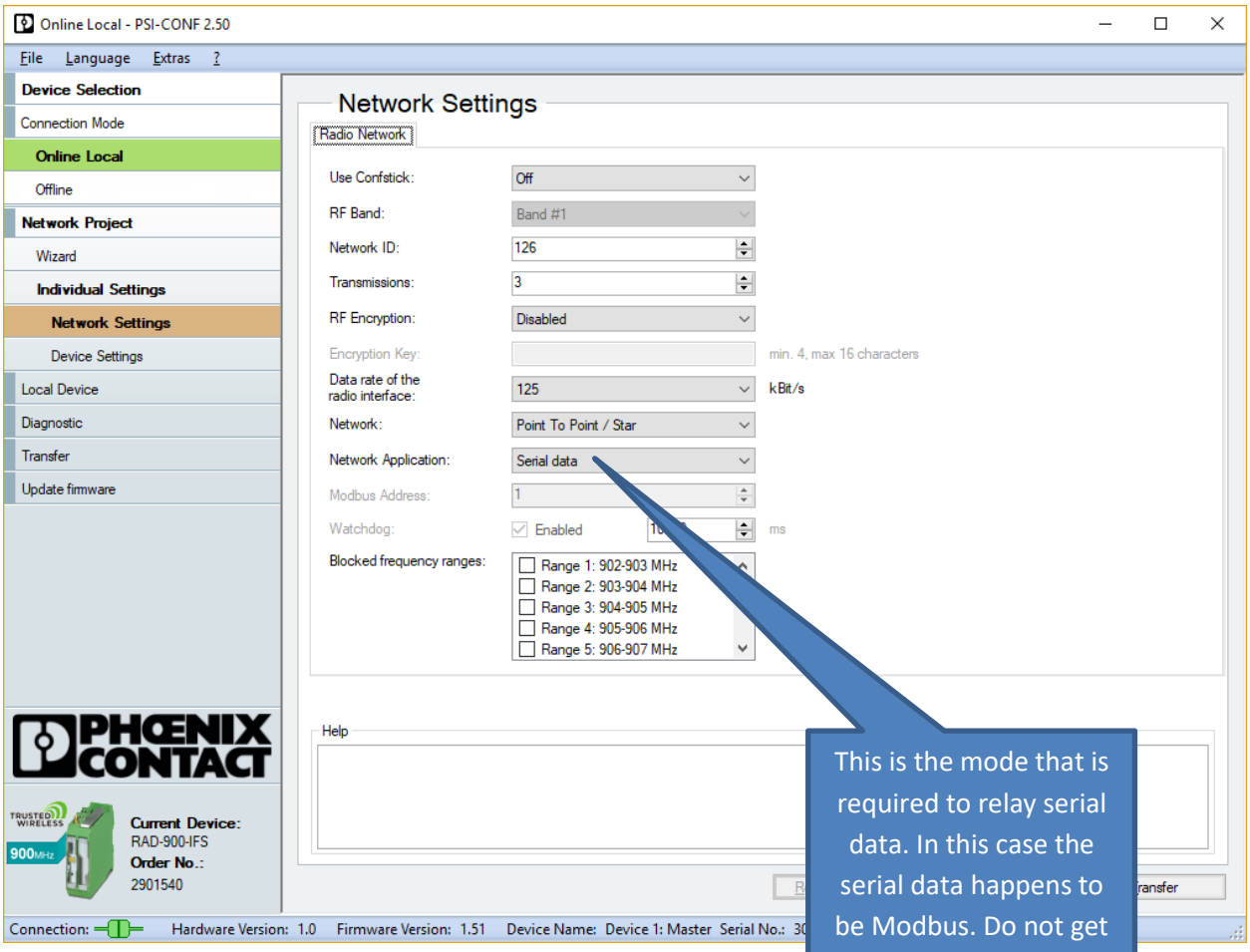
Step 4: Make Sure the RS485 settings match the settings for the Energy Meters and The Gateway.



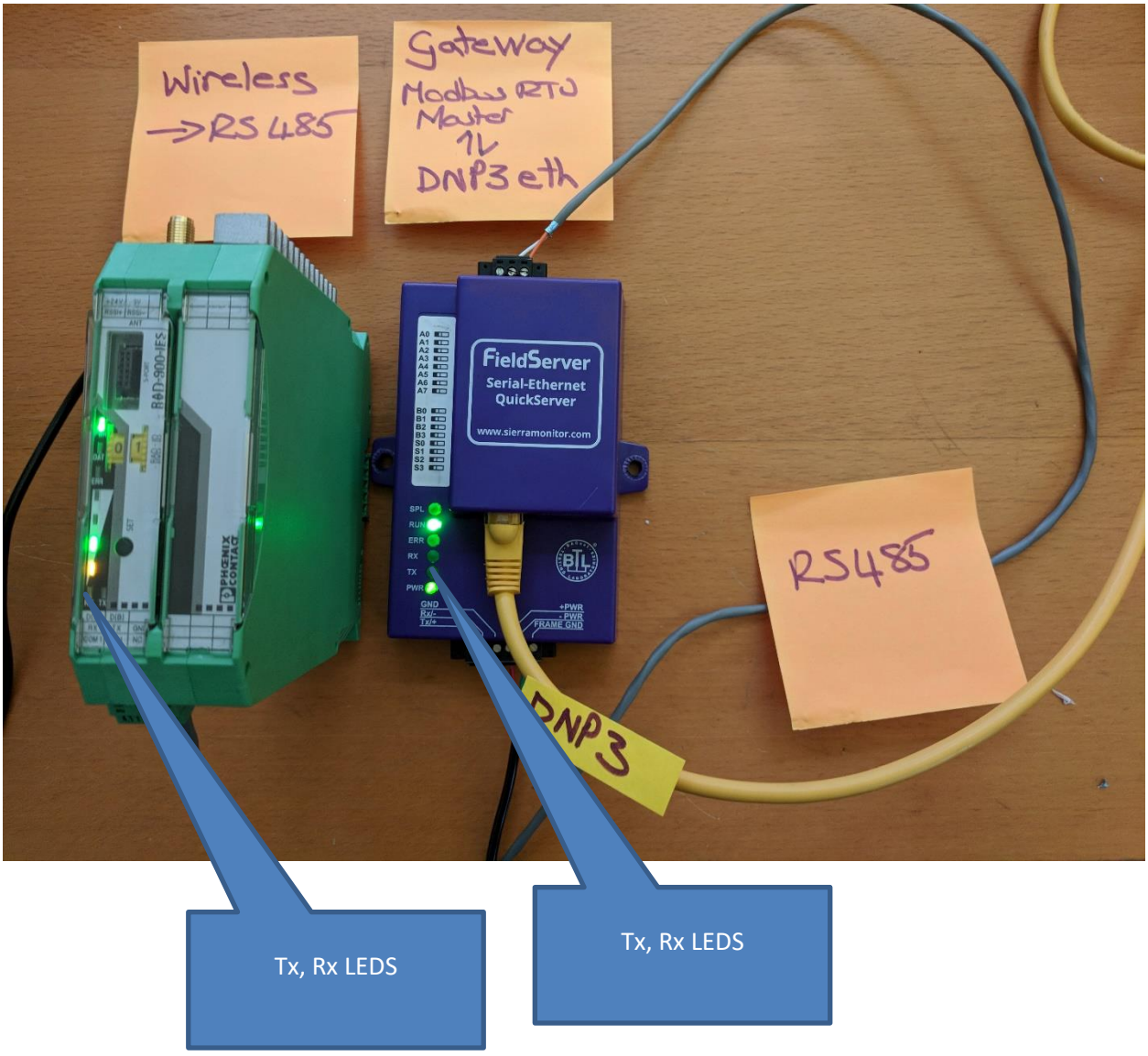






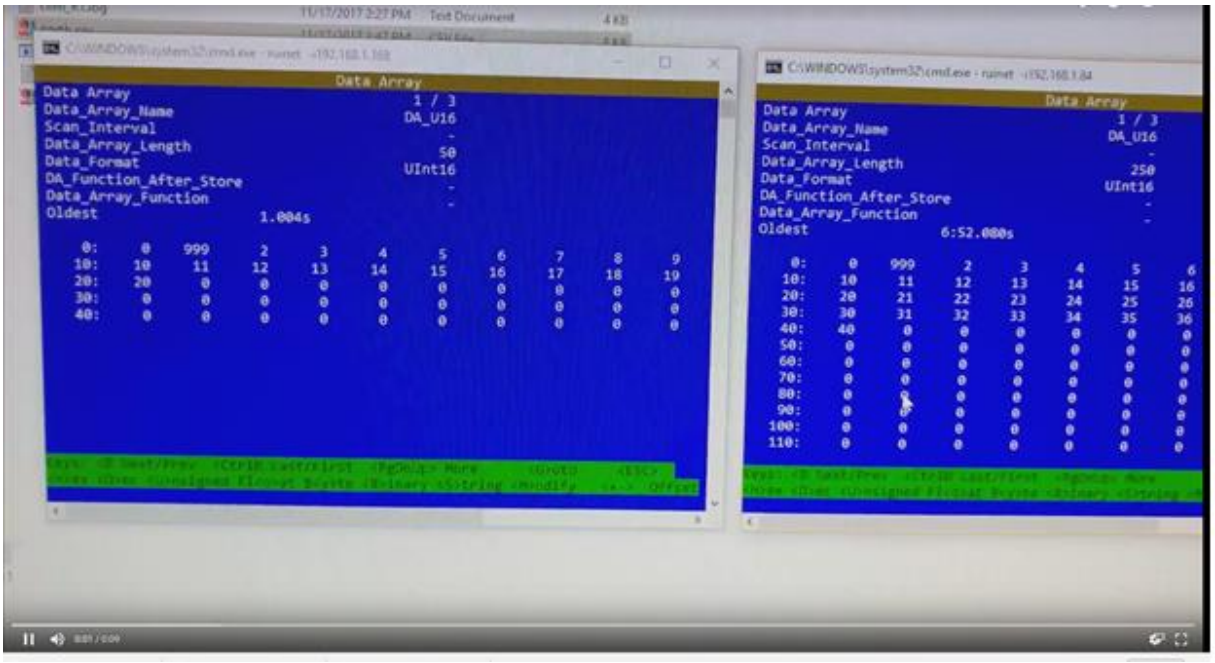


Step 5 – Check for communications



Step 6 : Check for Data Transfer

The one screen represents the server data (right) and the other screen represents the data inside the gateway.



Images and Videos

https://photos.app.goo.gl/f6pM6OVaSWSgib4j2

All Vid file names to begin with Chipkin Automation Wireless Modbus using Phoenix RAD-900-IFS to DNP3 over Ethernet and Quickserver protocol gateway

VID_20171117_163155

Data Transfer as indicated by the Tx,Rx LEDS and the number of message and bytes sent and received by the gateway.

VID_20171117_163116

Data Transfer as indicated by the Tx,Rx LEDS

VID_20171117_155333

Data transfer shown by displaying server (energy Meter) data and the data in the Modbus master of the gateway.

VID_20171117_155300

VID_20171117_153331

Data Transfer as indicated by the Tx,Rx LEDS