

FIMER

**How to connect
FIMER Ethernet
inverters
with VSN700
Data Logger over
Ethernet**

How to connect supported device with VSN700-05 Data Logger over Ethernet

Basic information

VSN700-05 Data Logger is a monitoring device developed by FIMER. VSN700-05 Data Logger can be used to monitor any FIMER inverter, usually over RS485 serial communication line. With the introduction of new FIMER inverters featuring Ethernet communication interfaces the VSN700-05 can also be used for properly polling, logging and transmitting the inverter data to Aurora Vision Cloud.

Features

With VSN700 Data Logger the extensive monitoring of any FIMER inverter, both string and central type, is possible. Monitored signals can be seen from the Aurora Vision cloud portal.

Supported models

All FIMER string and central inverters are compatible with VSN700-05 Data Logger. The maximum number of inverters that are possible to connect to the logger depends on the logger model. Please refer to the logger documentation for getting further information.

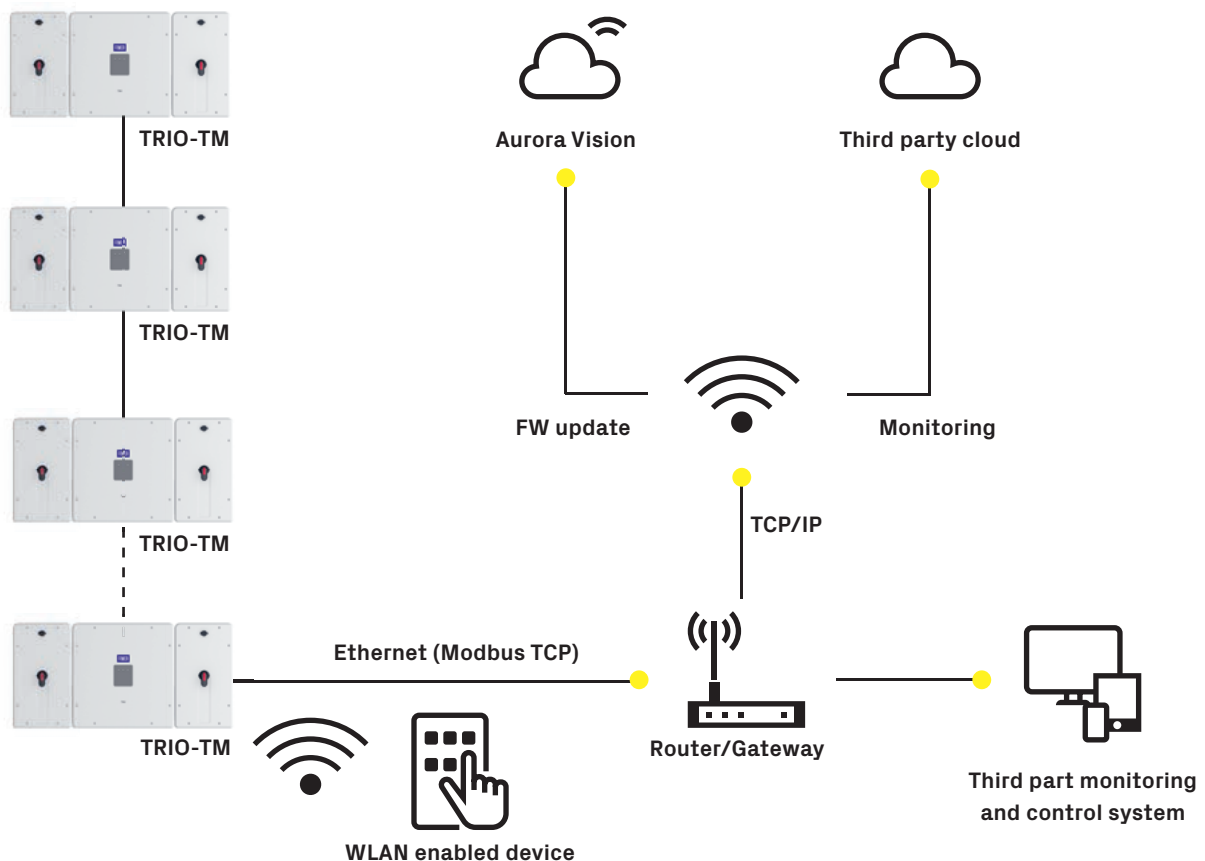
In the present document, we refer to the VSN700-05 Data Logger model. Theoretically it is capable to manage up to 32 devices by RS485 and similar, featuring 2 RS485 ports, it would be able to monitor up to 64 devices.

Anyway, referring to the specific case, where the VSN700-05 is supposed to be connected with the inverters over Ethernet communication bus, we recommend to connect no more than to 2 central inverters (like PVS800) or no more than 20 FIMER string inverters (like TRIO-TM inverter family) to a single VSN700-05 Data Logger.

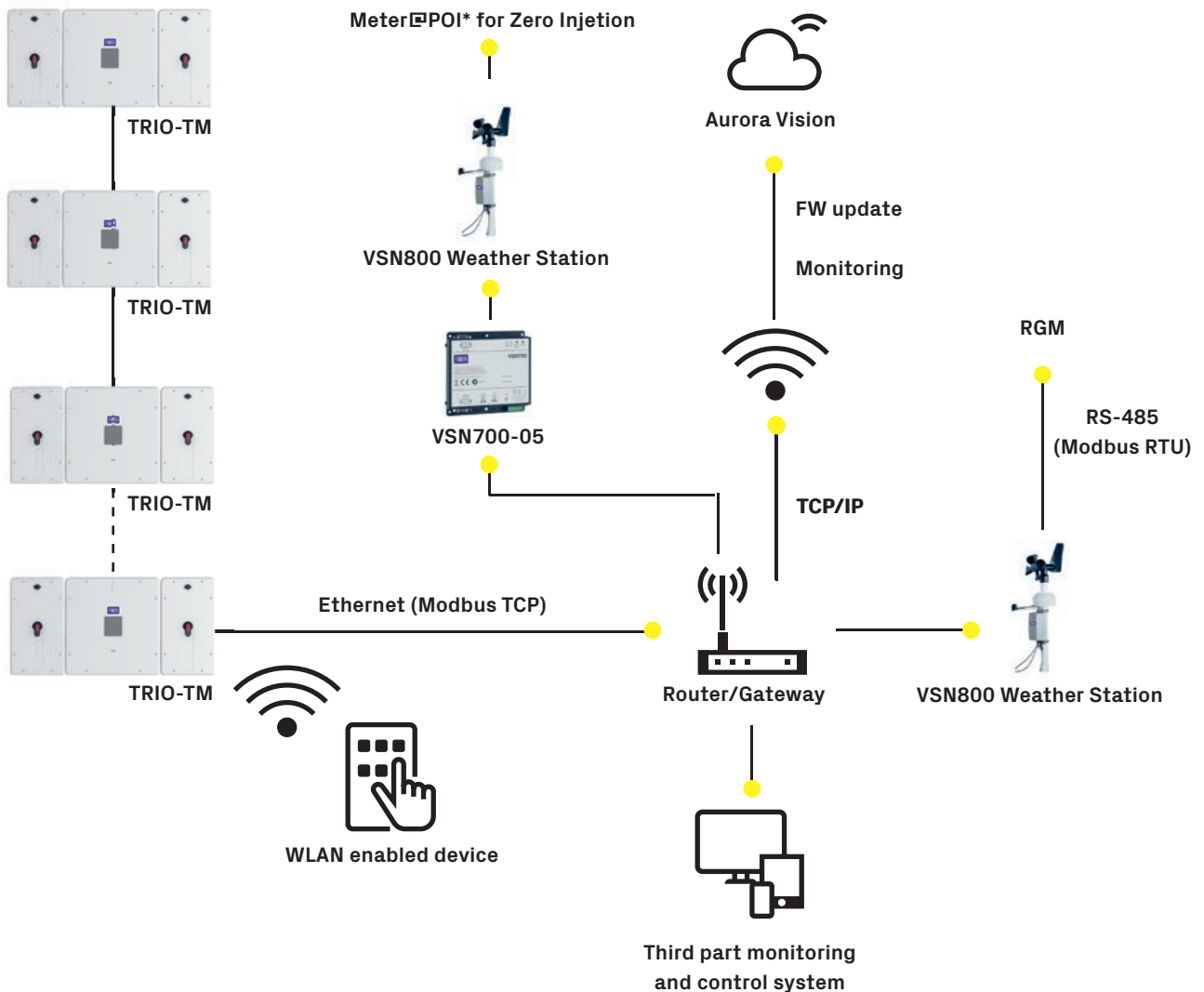
As anticipated above there are two possibilities how to connect VSN700-05 Data Logger to FIMER string inverter: Aurora Protocol or Modbus / RTU and Modbus / TCP.

Communicating with VSN700-05 over Modbus/TCP

FIMER string inverters supporting Ethernet communication interfaces, enabled daisy chain over Ethernet bus, are considered. Usually such inverters feature logging capability which enables the transmission of telemetry data to Aurora Vision without the need of installing any additional external device like the VSN700-05 Data Logger, as shown in the following picture:



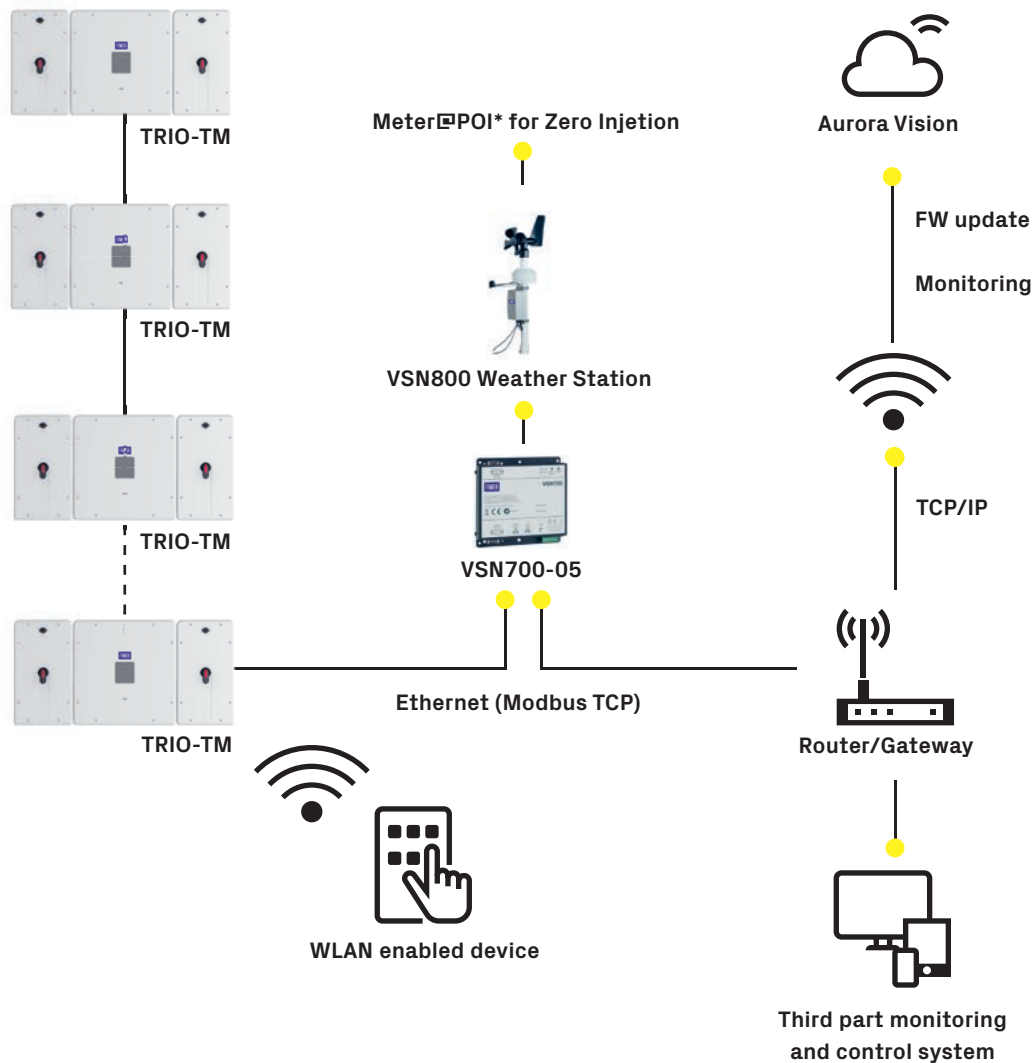
However end users may want to use the external VSN700-05 for many reasons (for example because already available on the field or for getting third party devices, like meters and environmental sensors, to be properly monitored) as shown in the below picture:



As shown above, all inverters are connected with each other over Ethernet Daisy Chain bus and the last inverter directly to the router; VSN700-05 is also connected in parallel to the router for enabling the input of telemetry data from third party devices to Aurora Vision. Modbus TCP Sunspec communication protocol is the recommended one for enabling monitoring and controlling of inverters by a third party control system that has to be connected to the same router of the inverters. The above scheme does not require any specific setting besides the standard as indicated in both inverter and VSN700-05 Logger user manual.

As an alternative scheme; inverters connected in daisy chain layout over Ethernet bus may also be simply connected to Internet without being directly linked to the router. Like shown by the following picture:

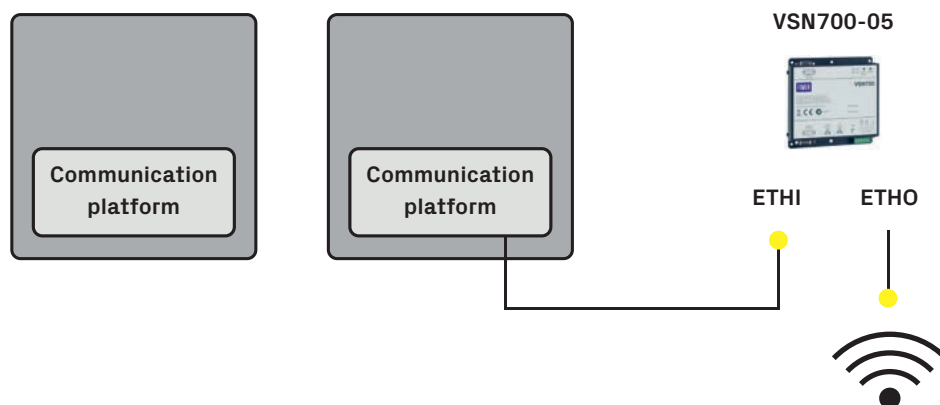
* POI: stands for Point of Interconnection



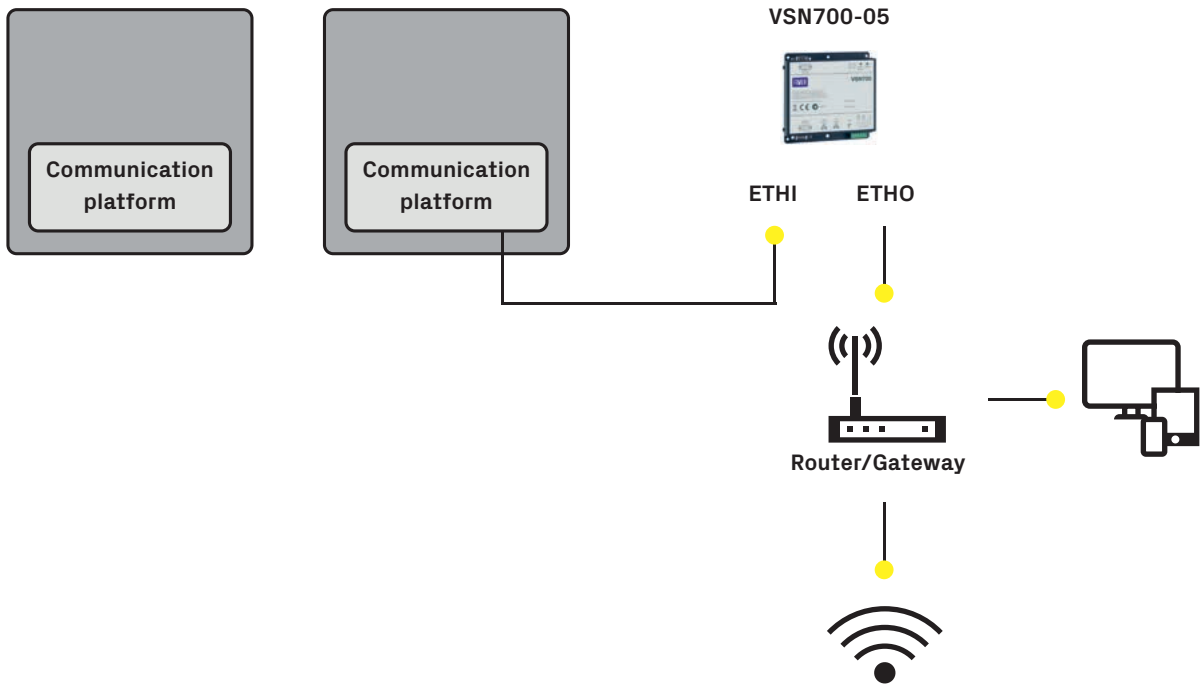
In this case the last Ethernet port of inverter is connected to the Ethernet port (ETH1) of VSN700-05 Data Logger that acts as main logger for the entire solar plant.

Specific VSN700-05 Data Logger setting

As anticipated above, the recommended way to connect the inverters to the VSN700-05 Data Logger is to create an Ethernet Daisy Chain with the inverters and connect this one directly to the router. Anyway, as described previously, it is also possible to get Internet passing through the VSN700-05 Data Logger. In this case, the Ethernet port of the last inverter of the daisy chain has to be connected to the ETH1 port of the VSN700-05, like shown by the following picture:



Because the ETH1 (that is usually used for configuring the VSN700-05 by PC) is now used by the Ethernet port of the inverter, we can't connect the computer to ETH1 for logger's parameters setting. We have to connect the computer to the router where the logger is also connected.

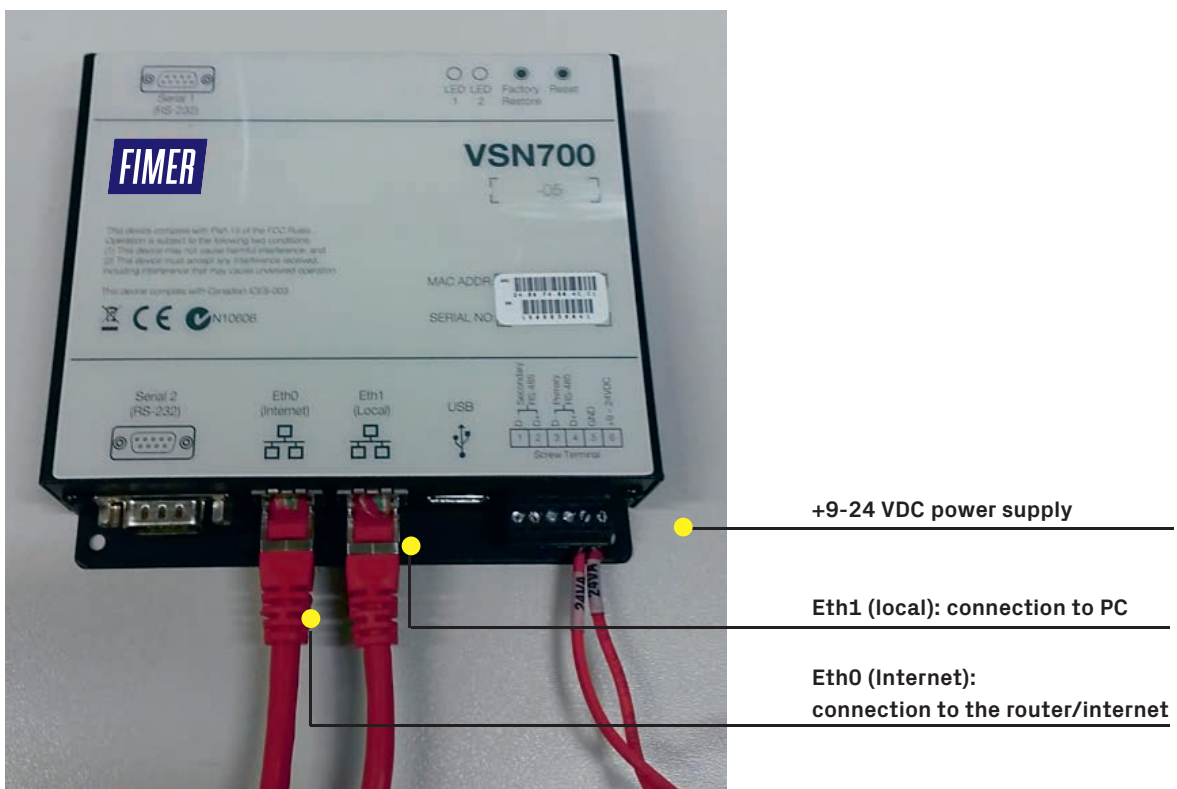


We have to be able to access the logger's internal webpage via ETH0 to setup the communication and thus we have to open port 80 from the logger's ETH0-firewall.

Below is described the procedure allowing opening port 80 from logger's ETH0-firewall and enable so the logger's setting via ETH0 ports.

VSN700-05 ports settings → Opening port 80

- Power up the Aurora Logger by connecting +9-24V power supply to the logger screw terminal pins 5 and 6

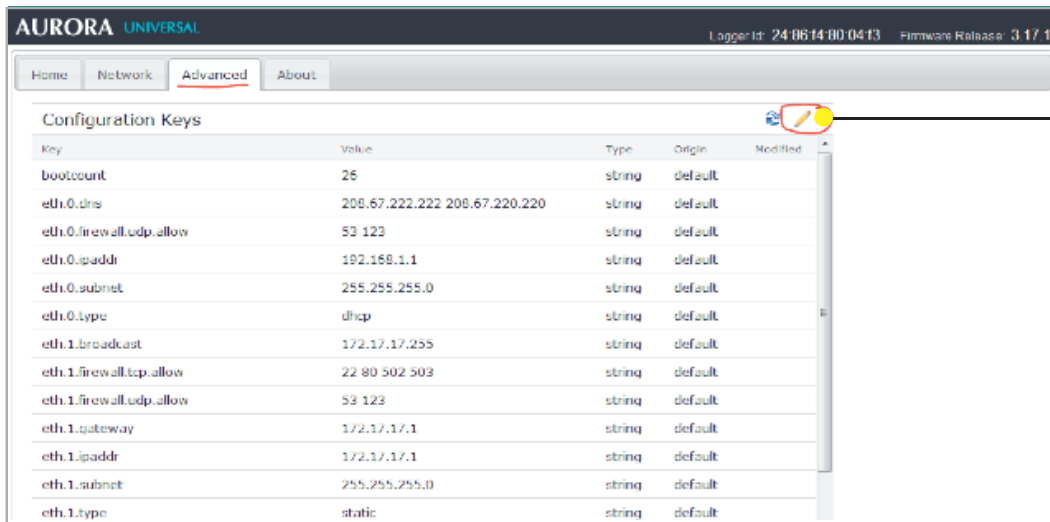


Note: Make sure that the network- and firewall-settings on your PC allow connection.

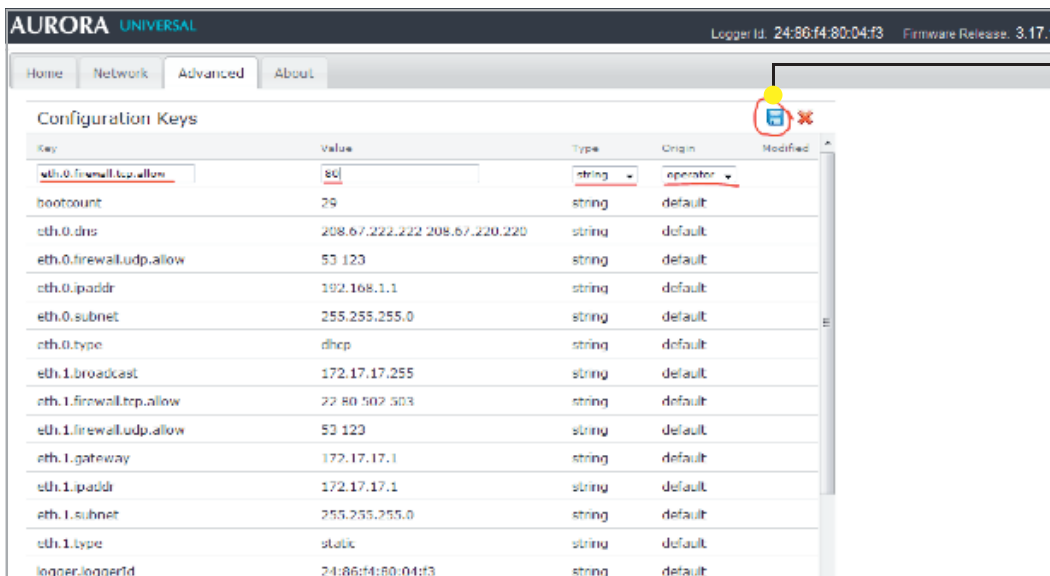
- Connect your computer to the logger's ETH1-port. The logger is acting as a DHCP server, meaning that it will give your computer an IP-address in range 172.17.17.X. Make sure that the computer you are using is in DHCP-mode, meaning that it is not using a static IP-address. Some computers are not able to use an IP-address other than in the range that is specified in the company IT policy in the computer's native LAN-port, so you might need to use a USB-to-LAN adapter like D-Link DUB-E100 to use the 172.17.17.X IP-address given by the logger.
- In your web browser go to the address logger's internal webpage by going to address http://172.17.17.1.
- You should land to a page looking like this:



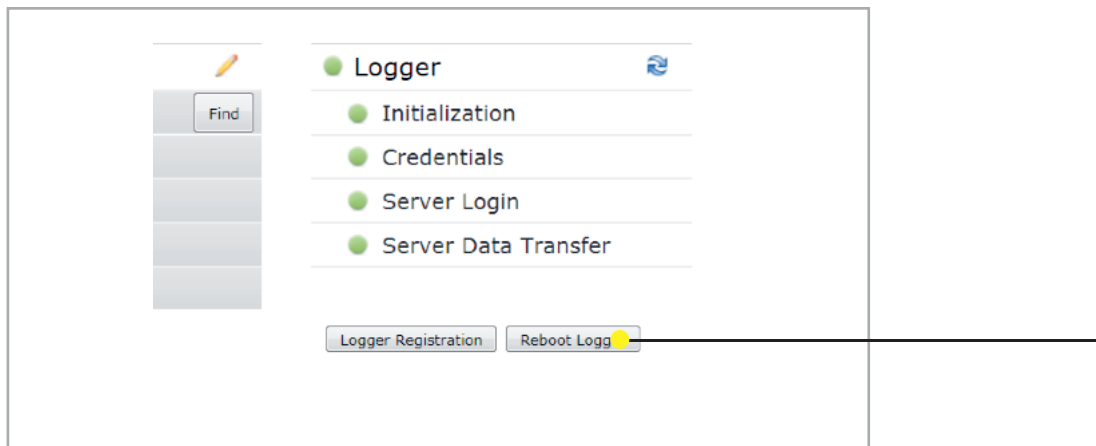
- Go to the "Advanced" tab and click on the little pencil icon to edit the Keys and their Values:



- Find the Key eth.0.firewall.tcp.allow and add the Value 80, separated by a space if there are other values. If this Key does not exist it can be entered (must be exact), along with its Value in the two blank slots at the top.
- Then click the blue Apply icon that is to the left of the red X to apply and save the settings:

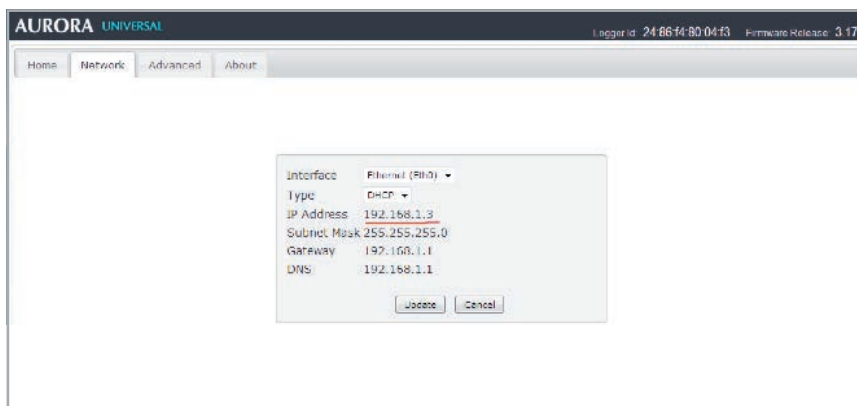


- After saving the changes it may be necessary to reboot logger. (There is a software button for this in the Home tab).



- After the restart routine (lasts about 1 minute), navigate to the “Network” tab and write down the IP address that is assigned to Eth0 from the field “IP Address”.

From now on you can access the Aurora Logger configuration UI through Eth0 so you can leave your PC plugged into the office LAN (or whatever LAN you are connecting the data logger’s Eth0 to). Instead of browsing to 172.17.17.1 you would browse to the IP address that is assigned to Eth0, for example 192.168.1.3



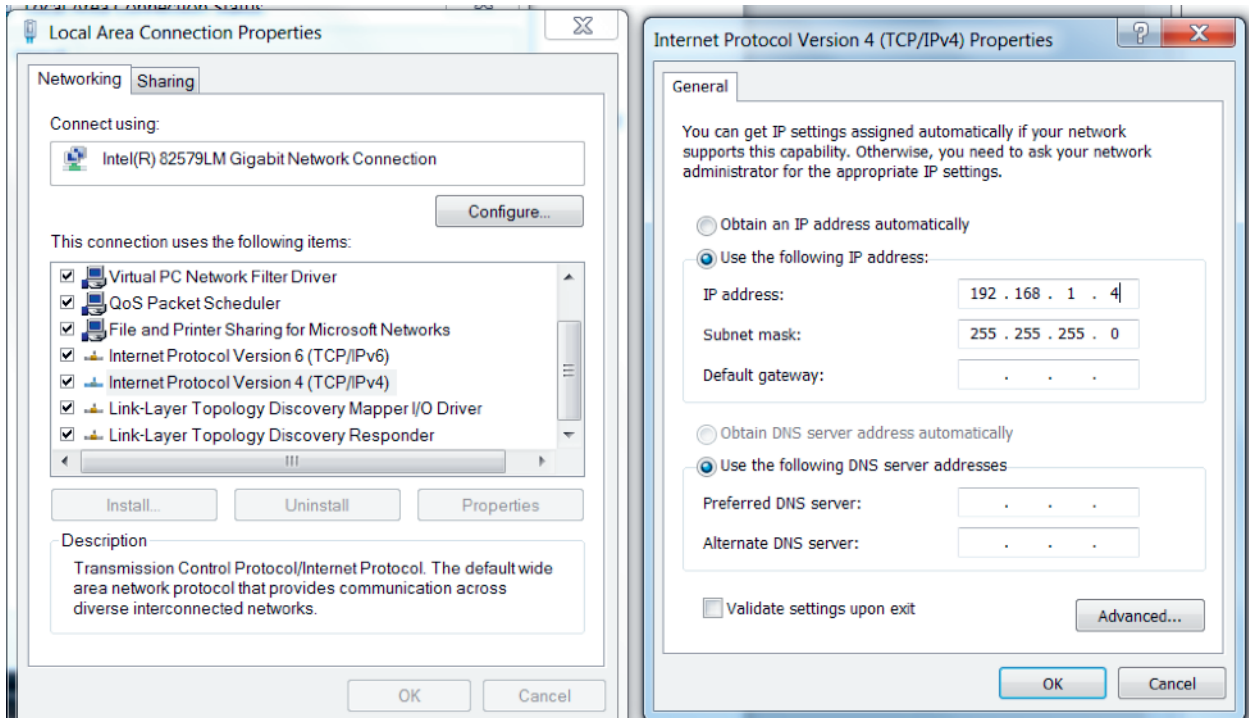
Setting ethernet device network parameters

- Connect your Ethernet device to the local Switch the logger is connected with
- Please make sure that the Ethernet device is configured in order let it to
 - auto-negotiate the network speed
 - get an IP address to be automatically assigned by the VSN700-05 Data logger
 - communicate over Modbus/TCP protocol
 - get a valid Modbus Slave ID, for example “1” in this example)

VSN700-05 network settings

If you are connected via switch or router to ETH0 of the VSN700-05, log in using that IP-address which you got earlier.

Note that PC and VSN700-05 should be in same IP-area, when using switch or router. In our example IP is 192.168.1.3 for Aurora and 192.168.1.4 for PC.



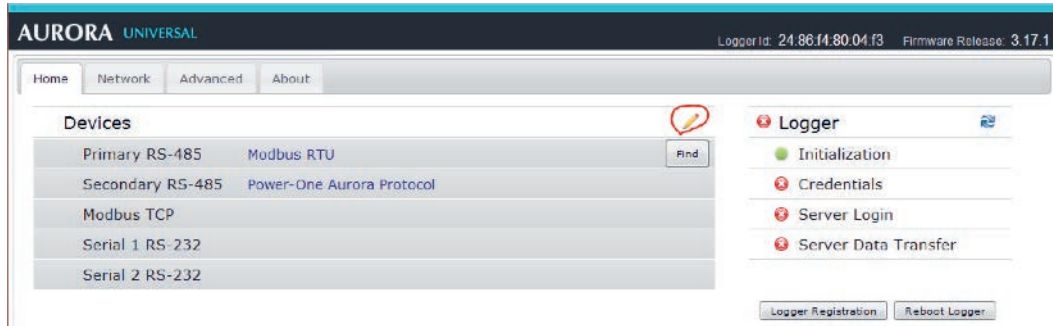
Connect an Ethernet cable to the Ethernet port of the device being configured and the VSN700-05's Eth1 (local)" port:



Eth1 (local): connection to PC

You can also connect your PC directly to ETH1 (local). Log in to the VSN700-05 in address http://172.17.17.1 and the Ethernet device can be connected to switch

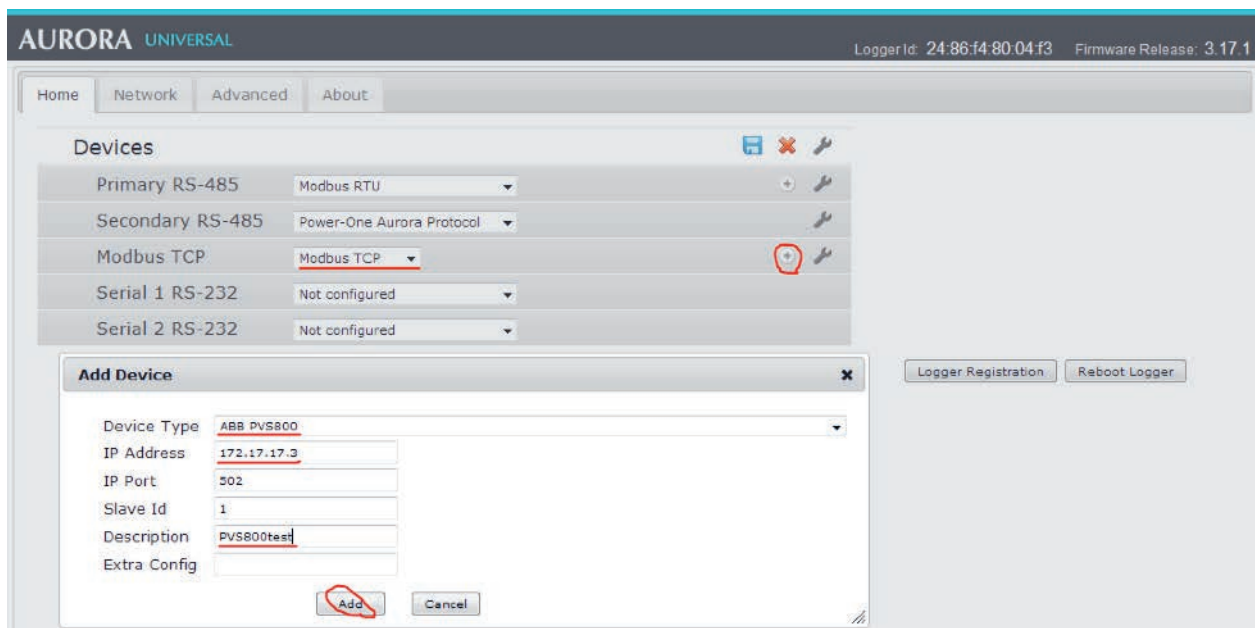
Press the little pen in tab "Home" to change the device connection settings



In the "Modbus TCP" section, select the "Modbus TCP" option from the drop down menu and then add a new device by pressing "+" button.

After this select the "Device Type", set the "IP Address" assigned to the device being connected, set the "IP port" to 502, set the "Slave ID" assigned, and give a suiting "Description"

to identify the device, in case you need to change configurations later. Leave the "Extra config" blank. Click "Add".



Click the blue "Apply" icon that is to the left of the red X to apply and save the settings. 3

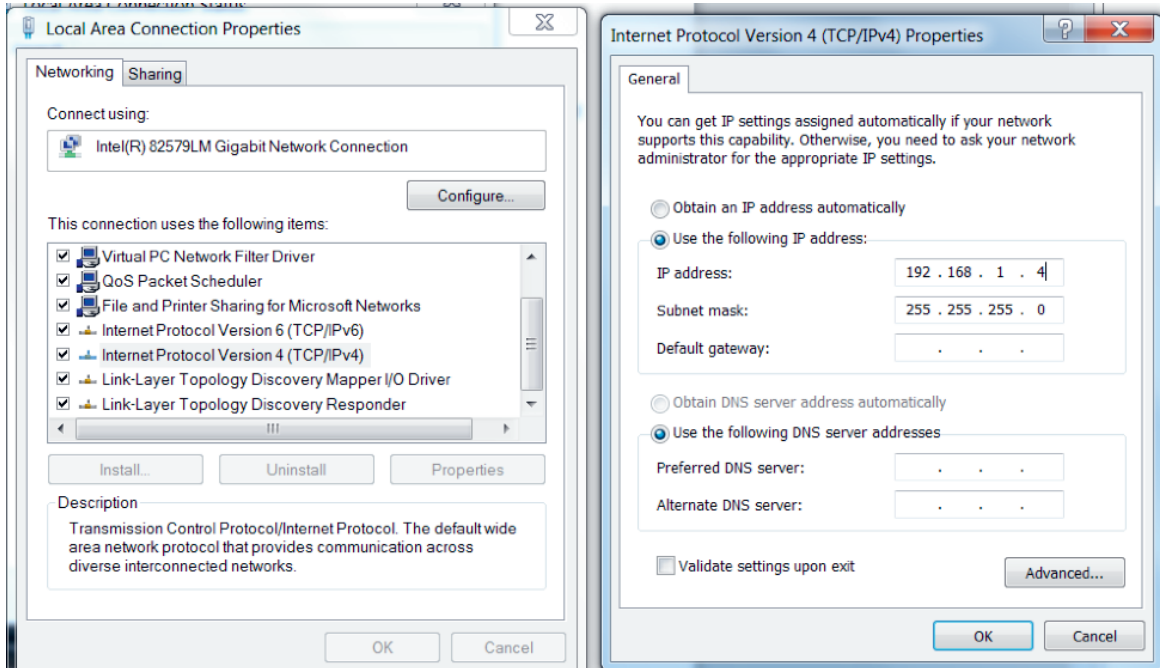
Restart the logger.

Ethernet device parameters should now be accessible to VSN700-05.

VSN700-05 settings for Ethernet inverter / device

If you are connected via switch or router to ETH0, log in using that IP-address which you got earlier.

Note:
that PC and VSN700-05 should be in same IP-area .when using switch or router. In our example IP is 192.168.1.3 for Aurora and 192.168.1.4 for PC



Connect an Ethernet cable to Ethernet port of the Ethernet device and to the logger's "Eth1 (local)" port



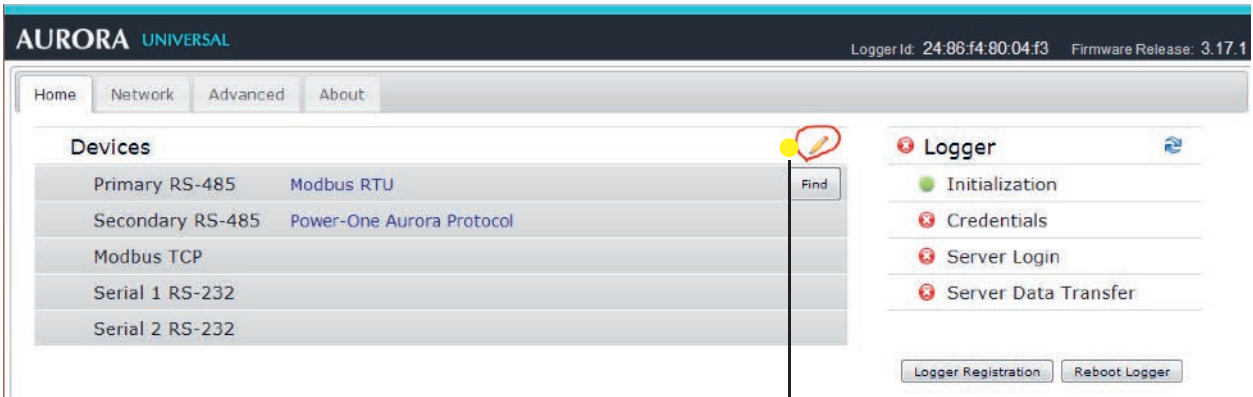
+9-24 VDC power supply

Eth1 (local) to the inverter's/ device's Ethernet port

Eth0 (Internet): connection to the router/internet

You can also connect your PC directly to ETH1 (local). Log in to VSN700-05 in adress <http://172.17.17.1> and the Ethernet inverter / device can be connected to switch.

Press the little pen in tab "Home" to change the device connection settings



Press the little pen in tab

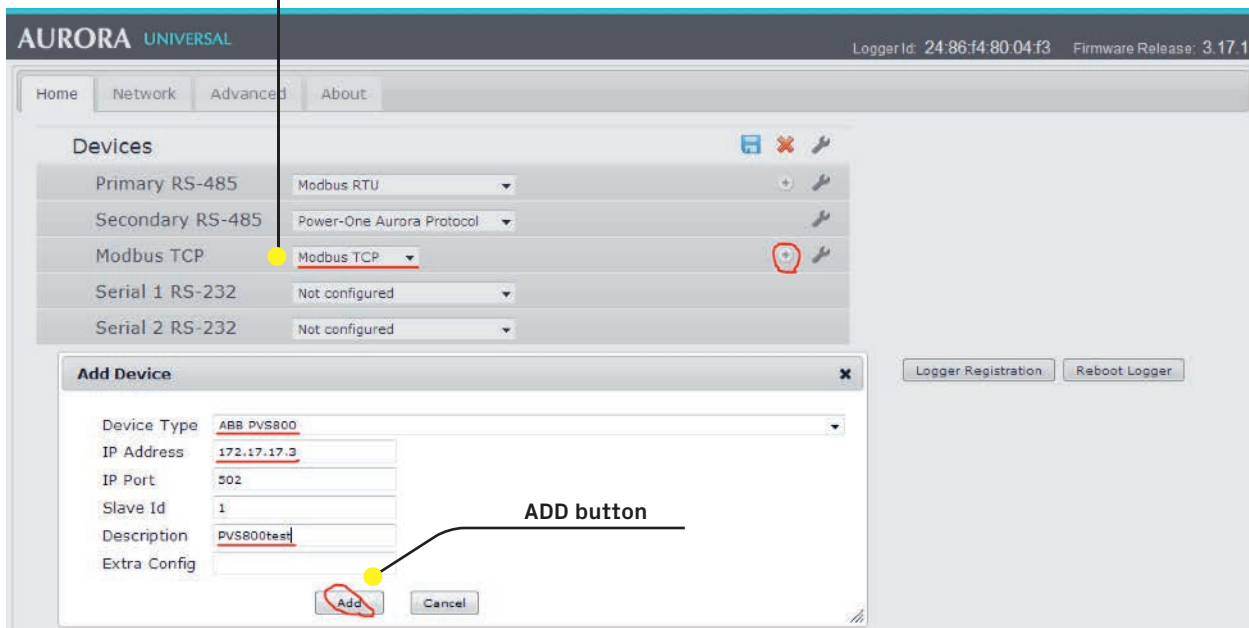
In the "Modbus TCP" section, select the "Modbus TCP" option from the drop down menu and then add a new device by pressing "+". After this select the "Device Type" to be the model of the Ethernet device being connected (for example "ABB PVS800"), set the "IP Address" same as the Ethernet device's address, set the "IP port" to 502, set the "Slave ID" to same as the Ethernet device setting (for example "PVS800" parameter 52.01), and give a suitable "Description" to identify the device, in case you need to change configurations later. Leave the "Extra config" blank.

Click "Add"



Click on ADD button

Select the "Modbus TCP"



Click the blue "Apply" icon that is to the left of the red X to apply and save the settings. Restart the logger.

Ethernet device parameters should now be accessible to VSN700-05 Data Logger UI.