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Connecting Modbus Devices to viewLinc 5.1

Vaisala's viewLinc Enterprise Server software supports measurement data acquisition from Modbus TCP and RTU devices. This technical note describes methods that will allow Modbus devices to communicate with viewLinc. Adding a Modbus device to viewLinc involves two steps: first establish communication between viewLinc and the device, and then define the device in viewLinc.

Establishing Communication

The connection process differs depending on whether the device is Modbus TCP or Modbus RTU.

Modbus TCP

Modbus TCP devices communicate over Ethernet. Turn on the Modbus device and connect it to the same network as your viewLinc server. Follow the steps on page two to define the device in viewLinc.

Modbus RTU

Modbus RTU devices communicate serially (typically over RS-485). In order to establish communication between a Modbus RTU device and your viewLinc server, the Modbus device needs to be connected to the network by an Ethernet-to-serial adapter device. Vaisala recommends using a Digi Portserver TS device for this purpose.

Connecting RTU Modbus Devices

In order to connect the Modbus device to a Digi Portserver, you need a cable with appropriate connectors. The Digi Portserver TS uses an RJ45 connector with the pinout below (Source: PortServer® TS Family Quick Start Guide). The pinout on the Modbus device's side will depend on the connectors available on that device. Please refer to the manufacturer's documentation for specifications. Different Modbus RTU devices may require different settings or connections, depending on the model and adapter required. Always ensure the device is connected and communicating properly before proceeding.
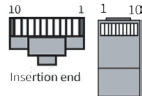
Review serial pinouts

Pin positions for connecting serial devices

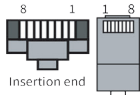PortServer TS products use an RJ-45 10-wire jack (female), with Pin 1 in the following location.

Pin 1

For a 10-wire connector, Pin 1 of the connector is shown here.

Insertion end

Top view

For an 8-wire connector, connect the pins to the center 8 pins of the 10-wire jack.

Insertion end

Top view

Serial port pin assignments

Pin # on 10-wire connector	Pin # on 8 wire connector	EIA-232	MEI versions only	
			EIA-422/485 Full-Duplex	EIA-485 Half-Duplex
1		RI	TxD-	N/A
2	1	DSR*	RxD-	DATA-
3	2	RTS	RTS+	N/A
4	3	CGND	CGND	CGND
5	4	TxD	TxD+	N/A
6	5	RxD	RxD+	DATA+
7	6	SGND	SGND	SGND
8	7	CTS	CTS+	N/A
9	8	DTR	RTS-	N/A
10		DCD*	CTS-	N/A

*Use the Altpin setting to swap these two signals.

Note The CTS and RTS control signals are available as separate differential signals in the EIA-422/EIA-485 4-wire mode. Do not use these differential signals in 2-wire mode. The CTS and RTS differential signals are not terminated or biased internally. Any termination or biasing must be done externally.

Defining a Modbus Device in viewLinc

The configuration process in viewLinc for TCP or RTU is similar. In viewLinc use the "Add Modbus Device" function to define various parameters such as: device model, serial number, calibration information. Then, add the Modbus registers that contain the measurement data. To add a Modbus device in viewLinc, perform the following steps:

STEP 1
Log into viewLinc as a user with rights to **Manage System**. Ensure that the license for Non-Vaisala Modbus Devices has been enabled if you will be connecting a non-Vaisala Modbus device. This is not required for Vaisala Modbus devices.

STEP 2
Navigate to **Sites Manager** and select **Hosts and Devices**.

STEP 3
In the Hosts and Devices tree select a viewLinc Device Host server, then select **Configure >> Add Device >> Vaisala Modbus Device** or **Non-Vaisala Modbus Device**.

STEP 4
In the **Add Modbus Device** window enter a device **Description** (do not use < or >), **Model** (do not use dashes, --), then add a unique **Serial Number** (alphanumeric only).

STEP 5
Select Communication Type; either **Modbus TCP** or **Modbus RTU Serial**. Enter the communication settings: the IP address, port number, and unit ID. These must be a unique combination for Modbus TCP devices.

STEP 6
Enter **viewLinc Channel Details** for each channel you want to add to viewLinc from the Modbus device. Use the **channel save icon** to commit your channel settings and enable additional channels for this device. Each channel must have its communication tested in order to verify correct configuration.

STEP 7
Click **Add** to save this Modbus device to the system, or click **Save as template** to quickly add similar Modbus devices in the future.

Find more information on Modbus device additions in the viewLinc User Guide. Also see viewLinc's interactive tour on adding devices, which can be found inside the viewLinc software. The tour will prompt you through these setup steps.

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