

DNP3 Protocol for MHT410



Read also:

- MHT410 Quick Guide (M211736EN), delivered with the product
- MHT410 User Guide (M211737EN), available at <http://www.vaisala.com/MHT410>

MHT410 can be used as a DNP3 outstation (starting from software version 1.2.0). It supports serial communication only. Serial communication is based on RS-485 hardware, and therefore MHT410 can be used in multidrop topology.

The MHT410 device profile files for DNP3 are available for download at <http://www.vaisala.com>.

DNP3 protocol is available from the RS-485 line of the MHT410 screw terminals, which can support only one protocol at a time (DNP3, Modbus, or Vaisala Industrial Protocol). The factory default protocol is Modbus. To take DNP3 to use, you must change the communication protocol and other DNP3-related settings via the MHT410 service port, using Vaisala Industrial Protocol commands.

Table 1 Default Communication Settings

Setting	Factory default	Options
Communication protocol	Modbus	DNP3, Modbus, Vaisala Industrial Protocol
Communication parameters	Baud rate: 19200 Parity: None Number of data bits: 8 Number of stop bits: 1	Baud rate: 300, 600, 1200, 4800, 9600, 19200, 38400, 57600 Parity: None Number of data bits: 8 Number of stop bits: 1, 2
Data link address	4	0 ... 32767
Host address	3	0 ... 32767

Connecting via Service Port



- Vaisala USB service cable (219690)
- Computer with:
 - Windows operating system
 - Free USB port
 - Terminal application (e.g. PuTTY available from <http://www.vaisala.com/software>)
 - Driver for Vaisala USB service cable installed (available on the cable installation media and from <http://www.vaisala.com/software>)

You can connect to the transmitter via Vaisala Industrial Protocol on a computer using the service port located under the transmitter cover.



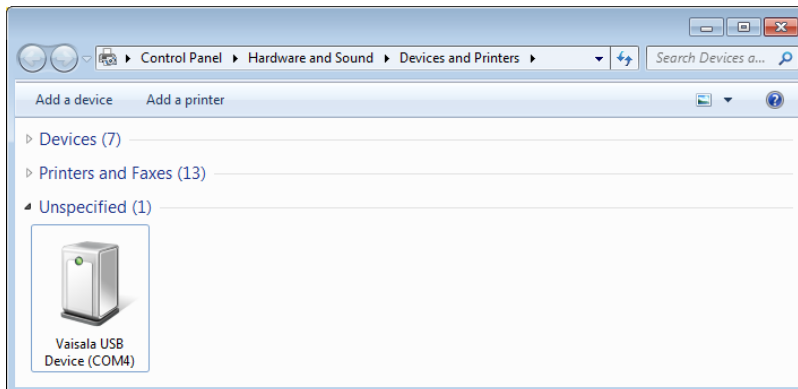
If you have not used the Vaisala USB cable before, install the driver before attempting to use the cable.

Installing the Driver for the USB Service Cable



Only Windows® operating systems are supported by the driver of the USB service cable.

1. Connect the USB service cable to a USB port on your computer. Windows® detects the new device and installs the appropriate driver.
2. Open **Devices and Printers** from the Windows® Start menu. Use search to find it if necessary (search for "devices").
3. Locate the cable in the list of devices:
 - If the device is listed as **Vaisala USB Device** with a COM port number in brackets, the cable is ready for use. **Note the COM port number, you will need it later.**
 - If the device is listed as **Vaisala USB Instrument Cable** without a COM port number listed, you must install the driver manually.



4. To install the driver manually:
 - a. Disconnect the USB service cable from the computer.
 - b. Download the Vaisala USB driver at <http://www.vaisala.com/software> (select the appropriate USB Instrument Driver Setup for your cable).
 - c. Run the USB driver installation program *Vaisala USB Device Driver Setup.exe*. Accept the installation defaults.
 - d. Go back to [step 1](#) and verify that the driver installation works as expected.

Connecting USB Cable

To connect the USB service cable to the service port:

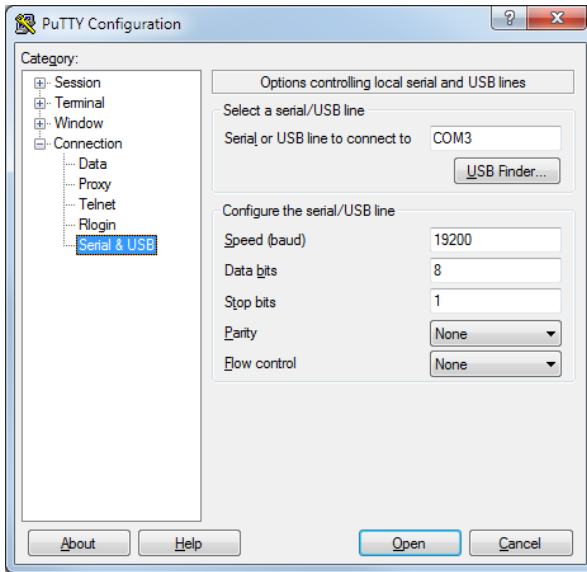
1. Make sure the USB cable is connected to your computer.
2. Open the screws on the transmitter cover, and open the cover.
3. Connect the USB service cable to the service port connector on the transmitter.
4. Configure the terminal application settings.

Configuring Terminal Application Settings

The steps below describe how to connect to the transmitter using the PuTTY terminal application for Windows (available for download at <http://www.vaisala.com/software>) and a USB service cable:

1. Make sure the USB service cable is connected to your PC and the service port of the transmitter.
2. Start the PuTTY application.

3. Select **Connection > Serial & USB** and check that the correct COM port is selected in the **Serial or USB line to connect to** field. If you are using the PuTTY terminal application supplied by Vaisala, you can click the **USB Finder** button to open the Vaisala USB Instrument Finder program.




4. Check that the other serial settings are correct, and change if necessary.

Table 2 Service Port Serial Interface Settings

Property	Value
Baud rate	19200
Parity	None
Data bits	8
Stop bits	1
Flow control	None

5. Select **Terminal**. Use the following settings:
 - **Local Echo:** "Force on". This setting ensures that your typing is shown on the session window.
 - **Send line ends with line feeds (CR+LF):** Selected. This setting ensures that all text lines remain visible on the session window.
6. Click the **Open** button to open the connection window and start using the serial line.

 If PuTTY is unable to open the serial port you selected, it will show you an error message instead. If this happens, restart PuTTY and check the settings.

Taking DNP3 Protocol into Use

- ▶ 1. To active the DNP3 communication mode, type `smode dnp3` in the terminal window and press Enter.
Example:

```
smode dnp3
Serial mode      :      DNP3
```

- Optional: To change the baud rate or number of stop bits, type `seri [baud rate] N 8 [number or stop bits]` and press Enter.
 - Baud rate options: 300, 600, 1200, 4800, 9600, 19200 (default), 38400, 57600
 - Stop bit number options: 1 (default), 2

Example (set baud rate to "38400" and number of stop bits to "2"):

```
seri 38400 N 8 2
Baud P D S      :   38400 N 8 2
```



Do not change the other communication parameters: parity ("N") or number of data bits ("8"). If you change these settings, DNP3 communication will not work on MHT410.

- Optional: To change the data link address (default: 4), type `dnp3 addr [data link address]` and press Enter.

Data link address range: 0 ... 32767

Example (change data link address to "10"):

```
dnp3 addr 10
DNP3 ADDR      :          4 -> 10
DNP3 HOST      :          3
```



The DNP HOST setting is currently not used. The current implementation of the DNP3 protocol on MHT410 only sends responses to the host that sends a request.

- To save the settings, reset the transmitter by typing `reset` and pressing Enter.

```
reset
MHT410 / 1.2.0
```

- Close the PuTTY terminal application.
- Disconnect the USB cable from the service port, and close the transmitter cover.