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1 WirelessHART Gateway

Connections and Interfaces

Figure 1.1 RS485, Ethernet and power supply connections of the Gateway

1 RS485 terminal blocks (daisy chain possibility)
2 Ethernet terminal block
3 Redundant power supply connection
4 Antenna connection
Installing the WirelessHART Gateway

1. Install the Gateway in a good location considering the propagation of the radio signal.
   > Further information: chapter 3.1 of the WHA-GW manual.

![Figure 1.2 Poor positioning (left) and good positioning (right)]

2. Connect the Gateway to the host system using RS485, Ethernet or both. If you are using the Ethernet connection, there are two wiring options (see following figure).
   > Further information: chapters 3.3 and 3.4 of the WHA-GW manual.

![Figure 1.3 Connecting an Ethernet cable to the Ethernet terminal block]

3. Screw the antenna to the antenna connection and then connect the Gateway to a power supply (see figure 1.1).
   > Further information: chapters 3.5 and 3.6 of the WHA-GW manual.
Parameterizing the WirelessHART Gateway

1. You may parameterize the Gateway using the DTM software or the browser-based web interface. Depending on your type of connection, configure the network connection and the communication DTM parameters (see table below).
   For further information refer to chapters 4 and 5.1 of the WHA-GW manual.

2. Power up the Gateway and set at least the two parameters **Network ID** and **Join Key** (Parameter > Wireless Communication > Setup, see following screenshot). Then press **Write Join Information**. Other parameters depending on your application can be set later. For further information refer to chapter 5.4.1 of the WHA-GW manual.

<table>
<thead>
<tr>
<th>Parameterization</th>
<th>via RS485 Comm DTM</th>
<th>via Ethernet Comm DTM</th>
<th>via web interface</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Required software</strong></td>
<td>PACTware and &quot;HART Communication&quot; DTM</td>
<td>PACTware and &quot;HART IP Communication&quot; DTM</td>
<td>Web browser</td>
</tr>
<tr>
<td><strong>Windows® settings</strong></td>
<td>Check COM port of RS485–RS232/USB converter; Device Manager &gt; Ports(COM &amp; LPT)</td>
<td>Local Area Connection Properties &gt; Internet Protocol (TCP/IP): IP address: 192.168.1.x (x being a number between 0 ... 255 except &quot;1&quot;) Subnet mask: 255.255.255.0</td>
<td></td>
</tr>
</tbody>
</table>
2 WirelessHART Adapter

Connections and Interfaces

1 Terminal block for connection of wired HART field device(s)
2 Pins for connection of HART modem
3 Battery connector
4 Button
5 LEDs
Installing the WirelessHART Adapter

1. Install the adapter in a good location considering the propagation of the radio signal (see Figure 1.2 on page 5).
   > Further information: chapters 3.1 and 3.2 of the WHA-ADP manual.

2. Choose one of the four different ways of connecting a field device to the adapter (see following table). Then connect the field device to the adapter.
   > Further information: chapter 3.3 of the WHA-ADP manual.

<table>
<thead>
<tr>
<th>Installation</th>
<th>In a 4…20 mA loop</th>
<th>Stand-alone</th>
</tr>
</thead>
<tbody>
<tr>
<td>With</td>
<td></td>
<td></td>
</tr>
<tr>
<td>communication resistor *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without communication resistor *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-wire device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-wire device</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Alternative wiring options can be found in the manual
Connecting the battery

1. Insert the battery as shown in the following figure. The clips of the battery should snap into place.
   > Further information: chapter 4.2 of the WHA-ADP manual.

2. Power the adapter by plugging the battery cable into the battery connector as shown in the following figure.
   > Further information: chapter 4.2 of the WHA-ADP manual.

Parameterizing the field device

1. Connect a configuration tool (e.g. PACTware) to the field device using a HART modem.
   - If the adapter shall power the field device, power the adapter by connecting the battery. During the start-up phase of the adapter the field device goes on and off again.
   - If – after starting the communication – the field device does not power up again, power the field device for 5 minutes (time can be configured) by pushing the adapter button for more than 10 seconds until the LED flashes.
   > Further information: chapter 4.1 of the WHA-ADP manual.

2. Set the following parameters for the field device.
   - Device Tag and Long Tag (Hart 6 and 7 instruments) or Device Tag and Message (Hart 5 instruments).
   - Polling address should be 1 or higher in case of a stand-alone installation of a 2-wire device. This reduces the power consumption. In any case note down the address.
   > Further information: chapter 4.1 of the WHA-ADP manual.
Parameterizing the WirelessHART Adapter

1. Connect a configuration tool (e.g. PACTware) to the adapter using a HART modem and pins 7 and 8 (see figure 2.1).
   > Further information: chapter 4.3 of the WHA-ADP manual.

2. Set the following parameters for the adapter.
   > Further information: chapter 5 of the WHA-ADP manual.

**Note!**
The following parameters marked with an asterisk (*) may be configured wirelessly at a later time. For security reasons the other parameters have to be configured using the wired connection.

**Parameterization > Identification**
Set **Device Tag**, **Long Tag** and **Country Code**. Best practice: provide a link to the attached field device under **Descriptor**.

**Parameterization > Wireless Communication (see following screenshot)**
Set **Network ID** and **Join Key**. Press **Execute Join** to initiate the join sequence. Wait until "Normal operation commencing" is shown.

**Parameterization > Wired Communication (see following screenshot)**
Check if the field device was found by the adapter. If not, adjust the parameters. Especially **Lowest Scan Address** and **Highest Scan Address** have to match the actual field device address. In this case rescan the wired interface using **Scan Subdevices**. If still no instrument can be found, please check the settings under **Power Supply**.
* Parameterization > Device Variable Mapping

Define the device variables the adapter shall provide. Best practice: "Temperature" as SV, "RSL of best neighbour" as TV, and "Estimated Lifetime" as QV. The PV is always the loop current.

* Parameterization > Application Settings > ... (see following screenshot)

- For simple 4 ... 20 mA transmitters set the corresponding parameters in the 4-20 mA submenu.
- For HART devices set the Burst Mode and Event Notification parameters and press Apply to activate the burst mode. Best practice: see following table.

![Parameterization interface screenshot](image)

**Figure 2.5** Parameterization > Application Settings > Burst Mode (see following table)

<table>
<thead>
<tr>
<th>DTM Parameter</th>
<th>Burst Mode 1 values</th>
<th>Burst Mode 2 values</th>
<th>Burst Mode 3 values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burst Mode Control Code</td>
<td>Wireless</td>
<td>Wireless</td>
<td>Wireless</td>
</tr>
<tr>
<td>Device Index</td>
<td>WHA-ADP</td>
<td>WHA-ADP</td>
<td>Field Device</td>
</tr>
<tr>
<td>Period (min. and max.)</td>
<td>00:05:00</td>
<td>00:05:00</td>
<td>depending on your application</td>
</tr>
<tr>
<td>Trigger Mode</td>
<td>Continuous</td>
<td>Continuous</td>
<td>Continuous</td>
</tr>
<tr>
<td>Burst Command Number</td>
<td>3</td>
<td>48</td>
<td>3</td>
</tr>
</tbody>
</table>

* Parameterization > Power Supply

Check that the best values for power management of the field device(s) are used. If in doubt consult the manual of the field device or contact its supplier.
WirelessHART Temperature Converter

Installing the WirelessHART temperature converter

1. Install the temperature converter in a good location considering the propagation of the radio signal (see Figure 1.2 on page 5).
   > Further information: chapters 3.1 and 3.2 of the WHA-UT manual.

2. Connect the temperature sensor(s) to the terminals of the sensor interface.
   > Further information: chapter 3.3 of the WHA-UT manual.

Figure 3.1 Connecting RTDs and/or TCs to the sensor interface

1. Input 1
2. Input 2
3. Two TCs
4. Two RTDs in 2-wire configuration
5. One TC and one RTD in 2-wire configuration (the two channels are interchangeable)
6. One RTD in 3-wire configuration
7. One RTD in 4-wire configuration
Parameterizing the WirelessHART temperature converter

1. Power the temperature converter by inserting the battery into the battery holder observing polarity.
   > Further information: chapter 4.1 of the WHA-UT manual.

2. Switch the temperature converter on by pressing button A (the upper button) for 5 seconds.
   > Further information: chapter 4.2 of the WHA-UT manual.

3. Connect a configuration tool (e.g. PACTware) to the temperature converter using a modem and the HART connectors located above the sensor interface.
   Note that you must use 20 preambles for HART communication with the WHA-UT. Otherwise the WHA-UT will not respond.
   > Further information: chapter 4.3 of the WHA-UT manual.

4. Set the following parameters for the temperature converter (view next page).
   > Further information: chapter 5 of the WHA-UT manual.

Figure 3.2 Connections and Interfaces

1 Button A
2 Button B
3 Wired HART connectors for HART modem
4 Sensor terminals
5 Battery
6 Red fault LED
7 Yellow communication LED
8 Green power LED
Note!
The parameters marked with an asterisk (*) may be configured wirelessly at a later time. For security reasons the other parameters have to be configured with the wired connection.

Parameterization > Identification
Set Device Long Tag and Short Device Tag.

Parameterization > Wireless Communication (see following screenshot)
Set Network ID and Join Key. Press Execute Join to initiate the join sequence. Wait until "Normal operation commencing" is shown.

* Parameterization > Application Settings > Sensor
Set the Sensor Type connected to input 1 or input 2 of the temperature converter.

* Parameterization > Application Settings > Burst Mode (see following screenshot)
Define the device variables the adapter shall provide and press Apply to activate the burst mode. Best practice: see following table.

<table>
<thead>
<tr>
<th>DTM Parameter</th>
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<tr>
<td>Period (min. and max.)</td>
<td>depending on application</td>
<td>00:05:00</td>
</tr>
<tr>
<td>Burst Command Number</td>
<td>3</td>
<td>48</td>
</tr>
</tbody>
</table>