United Electric Controls provides these DTM instructions for use with the UE Vanguard WirelessHART toxic & combustible gas detector.

The objective of this manual is to provide the user with (i) a list of hardware and software equipment needed to configure the Vanguard using the DTM (ii) screen shot instructions for DTM setup and (iii) screen shot instructions for Vanguard configuration.

Instructions for configuring the UE Vanguard WirelessHART toxic & combustible gas detector using a Device Descriptor (DD)- based 475 Handheld Communicator can be found at www.ueonline.com/vanguard.

Instructions for operating the UE Vanguard WirelessHART toxic & combustible gas detector can be found at www.ueonline.com/vanguard.
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1.0 GENERAL

1.1 NORMAL OPERATION OVERVIEW

Under normal operation, the four variables (Table 1) are communicated via WirelessHART 7.2 communication protocol every 8 seconds by default, using burst message 0. The update rate is programmable from 1 second up to 3600 seconds*. Up to three burst messages (0-2) can be configured using the device description (DD). The burst message transmits a chosen HART command to publish data. HART commands that can be burst include: 1, 2, 3, 9, 33, and 48 (Table 2). The default configuration uses command 9.

<table>
<thead>
<tr>
<th>Device Variable</th>
<th>Process Variable</th>
<th>Units</th>
<th>Accessibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Variable (PV)</td>
<td>Gas Concentration</td>
<td>ppm or %LEL</td>
<td>Read</td>
</tr>
<tr>
<td>Secondary Variable (SV)**</td>
<td>Temperature</td>
<td>Degrees C</td>
<td>Read</td>
</tr>
<tr>
<td>Tertiary Variable (TV)</td>
<td>Days Since Calibration</td>
<td>Days</td>
<td>Read</td>
</tr>
<tr>
<td>Quaternary Variable (QV)</td>
<td>Battery Voltage</td>
<td>Volts</td>
<td>Read</td>
</tr>
</tbody>
</table>

Table 1

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Read Primary Variable</td>
</tr>
<tr>
<td>2</td>
<td>Read Loop Current and Percentage Range</td>
</tr>
<tr>
<td>3</td>
<td>Read Dynamic Variables and Loop Current</td>
</tr>
<tr>
<td>9</td>
<td>Read Device Variables with Status</td>
</tr>
<tr>
<td>33</td>
<td>Read Device Variables</td>
</tr>
<tr>
<td>48</td>
<td>Read Additional Device Status</td>
</tr>
</tbody>
</table>

Table 2

*Recommended minimum is 8 seconds.

**Not available on hydrocarbon sensors.
2.0 DEVICE TYPE MANAGER (DTM)

2.1 EQUIPMENT LIST

Hardware

- HART Modem. Resistor not required.
- Vanguard detector (software version 3.05 onwards)
- Windows-based laptop (OS version 7 onwards) with installed software (see below)

Software

- FDT Frame Application (e.g., PACTware, Fieldmate, Fieldcare..etc). PACTWARE version 5.0 onwards recommended
- HART Communication DTM (e.g., vendor such as CodeWrights)
- HART Modem driver (if required)
- Vanguard Device Type Manager (DTM)

Visit http://www.ueonline.com/vanguard for links to download the Vanguard DTM and recommended frame applications and HART communication DTM.
2.2 SETUP PROCEDURE (Using PACTware)

1. Insert a battery into the Vanguard device.
2. Give the calibration side button of the Vanguard a push to ensure that power is supplied to the unit. Tip: Check that the device display screen toggles with each push.
3. Connect the USB end of the HART modem to the laptop, and clip ends of the HART modem to the HART terminals on the back of the Vanguard device. See Figure 1.

4. Launch the PACTware software.

5. Right click on “HOST PC”. Select “Add device”.

Figure 1.
6. Select the HART Communication DTM (in this case we installed the one from CodeWrights). Click OK. This communication DTM is needed to provide HART communication functionality.

7. Ensure that the right communication port (COM Port) is selected. This COM port is the USB port that the HART modem is connected to the laptop.

Note: Verify that the COM port selected matches that of the modem. To change the assigned COM port, double click on the COM port field and select the serial interface option that indicates 'Device\VCP0' which is the default name of the modem. In this case, COM port 6 is selected. Click Apply and OK. Call inside sales at +1 617 923 6977 or email insidesales@ueonline.com for troubleshooting.
8. Right Click on the COM port field. Select “Connect”.
Right Click on COM port field again. Select “Add device”.

9. Right click on “Vanguard TCD50 DTM” to highlight in blue. This adds the Vanguard DTM to the application stack. Click OK.
10. Activate the pushbutton on the Vanguard once to ensure that it is not in low power mode. Right click on the Vanguard icon on the left panel. Click “Connect”. Double click on the Vanguard icon on the left panel.

11. DTM interface successfully launched and the “Connected” status will be indicated. Otherwise, close out the PACTware program and repeat steps 4 to 10 again or call inside sales at +1 617 923 6977 or email insidesales@ueonline.com for troubleshooting.
2.3 VANGUARD CONFIGURATION

The following sections describe how to modify the main parameters for Vanguard operation:

A. Network ID & Join Key
B. Long Tag
C. Gas Concentration
D. Burst Rate

2.3.1. Network ID & Join Key

1. Select the Overview option
2. Select the “Wireless Setup” tab
3. Input the network ID and Join Key parameters
4. Click Apply
2.3.2. Long Tag

1. Select the Overview option
2. Select the “HART Setup” tab
3. Input the desired device name in the “Long Tag” field. This field drives what is published on the Vanguard display screen and the gateway. Note: There is a 32 character limit on the long tag field.
4. Click Apply

2.3.3. Gas Concentration

1. Select the Overview option
2. Select the “Gas Concentration Setup” tab
3. Input the desired calibration gas concentration. Ensure this value matches calibration bottle concentration.
4. Click Apply
2.3.4 **Burst Rate**

1. Select the Overview option
2. Select the “Burst Mode Setup” tab
3. Select “Burst Setup”

4. Click Next. This warning can be ignored as it is applicable only to loop powered devices (The Vanguard is not a loop powered device).
5. Select "Message 0" and click Next.

Note: Message 0 (containing command 9, bursting at 8 seconds) is the default burst message arrangement. Refer to normal operation overview section for other commands that can be burst.

6. Input desired burst rate interval. Default factory setting is 8 seconds. Click Next.

Note: Reducing the burst rate below 8 seconds will likely result in less than 5 years of
7. We recommend keeping the burst max update time to the default setting of 60 seconds. Click Next.

Note: This field value matters only if the burst trigger function is enabled. The burst trigger function is an advanced feature that allows you to vary burst rates based on gas concentration. Please contact inside sales at +1 617 923 6977 or email insidesales@ueonline.com for more information.

8. Click Next
9. Select “Finished” from the drop down menu and click Next.

Note: By selecting “Finished”, it completes the configuration of the burst command. Other HART commands can be selected from the drop down for advanced configuration. Refer to normal operation overview section for other commands that can be burst.

10. Select “No” from the drop down menu. Click Next.

Note: Select Yes to activate burst trigger function. The burst trigger function is an advanced feature that allows you to vary burst rates based on gas concentration. Please contact inside sales at +1 617 923 6977 or email insidesales@ueonline.com for more information.
11. Click Next

12. Click Next to return to Burst Mode setup page

End of Manual