Installation and Operating Instructions

STExplorer™
PC Software Utility for the UIV Density Compensation Module (DCM)
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STExplorer™
PC Software Utility for Universal UIV Cut Monitor Density Compensation Module (DCM)
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Section 1: Introduction

1.1 STExplorer™ Description

STExplorer™ is a PC software utility designed to provide connectivity and configuration functionality for the Drexelbrook UIV Cut Monitor with the Density Compensation Module (DCM). STExplorer™ is a successor to HRTWin.

The UIV CM-DC system measures the percentage of water in oil and compensates for changes in oil density using input from a customer supplied density measurement device.

Each AMETEK Drexelbrook Universal IV CM-DO system consists of a

1. **Density Compensation Module (DCM)**
   - Power - four-wire
   - HART 7.0 4-20 mA
   - Modbus

2. **UIV CM or UIV CMT RF Admittance transmitter**
   - with a 700 series sensing element

3. **Customer Supplied Coriolis meter or other device providing density & temperature outputs via ModBus**

Configuration and calibration of the DCM is accomplished via the onboard keypad and LCD display or remotely by a PC running STExplorer™ software with a HART modem.

1.2 Minimum PC Hardware Requirements

- **Operating System:** Windows 7 or greater
- **CPU:** Pentium Processor at 1 GHZ
- **RAM:** 1 GB
- **Hard Drive:** 25 MB available disk space

Section 2: STExplorer™ Software Installation Process

2.1 Software installation


2.1.2 Run STExpolorer.exe and follow the on screen instructions.
Section 3: Operating Instructions

3.1 Wiring the Device

3.1.1 Instrument Connections for Operation: Refer to the DCM Operating manual for standard power and communication wiring of the DCM.

3.1.2 HART Modem: STExplorer requires the use of a HART modem to establish communication directly with the DCM module. The HART modem can be connected anywhere on the DCM side of the 4-20mA loop. Note: Minimum loop resistance for HART® communications is 250 $\Omega$.

If the housing cover can be removed then the HART modem can be connected directed to the DCM at these locations

If the housing cover cannot be removed due to hazardous area requirements then the HART modem can be connected anywhere on the DCM side of the 4-20mA loop. This can be in the control panel where loop access is available.
3.2 Establishing Communications with the DCM

3.2.1 Run STExplorer.exe
3.2.2 Select Devices from the menu
3.2.3 Add Device

3.2.4 Select “UIV CM DC” from the Device Type drop down list
3.2.5 Select the proper COM Port from the Comm Port drop down list

3.2.6 Select “Connect”, “Add Device” will change from grayed out to normal
3.2.7 Select “Add Device”
3.2.8 Select “Close” to close screen
Section 4: Using the Variable Handler

4.1 Variable Handler Overview

The variable handler is the PC interface that provides the user access to the parameter values that can be changed (read or write) in the DCM.

4.2 Using Variable Handler for Manual Set up

4.2.1 Select Tools from the menu
4.2.2 Select Variable Handler GUI from the drop down list
4.2.3 Select “Modbus – Manual Setup” from the drop down box of available lists

**List Options (Each List is detailed in Section 7)**
- Device Information (7.1)
- Display Items (7.2)
- Modbus Advanced Settings (Ametek Service Team Only) (7.3)
- Modbus Auto-Detect (7.4)
- Modbus – Manual Setup (7.5)
- Modbus – Master Settings (7.6)
- Modbus – Slave Settings (7.7)
- Output (7.8)

4.2.4 Select “Load List”
4.2.5 The selected list variables are displayed. From this screen you can read the values to collect the current measurements from the DCM and or enter required values and write them back to device. This step requires the user to know the Coriolis/PLC communication settings. Please reference the Modbus mapping assignments list in Coriolis/PLC user manual.

![Variable Handler GUI](image)

4.2.6 To Read the device

1. Select “Read All” to verify that the data matches the expected Coriolis/PLC values
2. If displayed numbers do not match the expected values follow Write to device instructions below.
4.2.7 To Write to device
   1. Enter the new value in the associated text box
   2. The text box will turn red indicating that the value is pending update to the CM-DC
   3. Click “Write All” to update the CM-DC
   4. If an error or unexpected value is displayed on the DCM display screen go to Section 4.3 Using Auto Detect

4.3 Using Auto Detect

4.3.1 Select Modbus – Auto Detect from the drop down menu list
4.3.2 Select “Load List”
4.3.3 Select “Read All” to populate the values.

4.3.4 NOTE: The numbers displayed in the text box in some cases represents the coded value from the menu structure in the DCM operating manual. The customer can use the mouse over feature to determine the correct value meaning. Simply put the mouse cursor entirely within the text box and the corresponding values will appear.
4.4 Setting up the DCM as a Master

4.4.1 Select Modbus – Master Settings from the drop down menu list
4.4.2 Select “Load List”
4.4.3 Select “Read All” to populate the values.
4.4.4 Write over any value to match the mapping assignments in the Coriolis/PLC user manual
4.4.5 Select “Write All”

This value should read 1

These values should match the mapping assignments in the Coriolis/PLC user manual
4.5 Setting up the DCM as a Slave

4.5.1 Select Modbus – Slave Settings from the drop down menu list
4.5.2 Select “Load List”
4.5.3 Select “Read All” to populate the values.
4.5.4 Write over any value to match the mapping assignments in the Coriolis/PLC user manual
4.5.5 Select “Write All”

This value should read 1

These values should match the user requirements
Section 5: Using the Flash Update Utility

5.1 Flash Update Utility Overview
The Flash Update Utility is used to update the device when new revisions of the device become available. This software allows updating the DCM software via HART.

5.2 Instructions

5.2.1 Select Tools from the menu
5.2.2 Add Device
5.2.3 Select Update Device Firmware from the drop down list

5.2.4 Select the connected device to update
5.2.5 Select the Available Module to update
5.2.6 Select the bootloader file (*.fls) for the available module. This will show up in the Flash Update File location. If STExplorer™ detects the selected .fls file and it does not match the user selection of device and module, an error will be generated.

5.2.7 Select the update device button. The current status will be displayed until complete. The current status will read “Update Complete – Device Ready” when successful.
Section 6: Troubleshooting

6.1 Identifying a Problem/Symptom
Use TABLE 6-1 as a guide to find and correct a problem when it occurs. Most problems are not related to transmitter failure. It is important to be methodical when tracking down a problem. If you experience a problem that you cannot solve using this guide, call the Drexelbrook 24-hour Service 215-674-1234.

You may also E-mail us: drexelbrook.service@ametek.com. Further service information may be found at our World Wide Web address www.drexelbrook.com.

When you contact us, be prepared to give the service person as much information as you can about the model numbers, serial numbers, application requirements, and the materials being measured.

6.2 Troubleshooting Connections
When troubleshooting the connections, verify the following items.
1. Loop devices are wired in series.
2. There is at least 250 ohms total loop resistance for HART communications.
3. There is at least 19 VDC available for the transmitter when a loop current of 22 mA is flowing.
4. The open circuit voltage does not exceed 30 VDC
5. Power the unit from a portable source. 3 – 9 volt batteries in series will produce 27 VDC

<table>
<thead>
<tr>
<th>Problem /Symptom</th>
<th>Tests in order of probability</th>
<th>Reference</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error Connecting – The device did not respond – Error Code 7</td>
<td>Check com port selection to verify HART modem is connected to proper COM port</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No display on U-IV CM or DCM Module</td>
<td>Check power at DCM Check power at U-IV CM</td>
<td>Section 2.2.2 U-IV CM manual</td>
<td></td>
</tr>
<tr>
<td>Can’t communicate with transmitter using Drexelbrook PC Software</td>
<td>Check modem is connected to correct loop connections Check for 250 Ω resistance (min.) in the loop. Check voltage at transmitter Try another modem Power from a battery source</td>
<td>Section 2.2.2</td>
<td>Often a result of loop connection problems or output current &gt; 20 mA</td>
</tr>
</tbody>
</table>
7.0 Appendix A

Optional Lists in Variable Handler

7.1 Device Information (These are Read only variables)

7.2 Display Items (These are Read only variables)
7.3 Modbus Advanced Settings *(Ametek Service Team Only)*

<table>
<thead>
<tr>
<th>Settings</th>
<th>Read</th>
<th>Write</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Order Serial Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final assembly number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master Micro Assembly Serial Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HART Micro Assembly Serial Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronics Serial number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RCM Date code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: day, month, year-1900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modbus: Density Enable/Disable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density scaler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modbus: Temperature Enable/Disable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature scaler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toggle Flow rate from Corolis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flowrate scaler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flowrate threshold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English/Metric units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>API/STD units</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.4 Modbus Auto-Detect (All values read/writable) Value reference cross over needed

7.5 Modbus – Manual Setup (All values read/writable) Value reference cross over needed
7.6 Modbus – Master Settings (All values read/writable) Value reference cross over needed

7.7 Modbus – Slave Settings (All values read/writable) Value reference cross over needed
7.8 MultiCal Variable List

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
<th>Read</th>
<th>Write</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Cal 7 actual water temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7.9 Output (All writable variables except Loop Current)
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LIMITATION OF LIABILITY: The Seller shall not be liable for any damages, whether direct, indirect, incidental, or consequential, resulting from the use, non-use, or performance of the products or services provided under this Agreement.

EXCLUSIVE REMEDY: The Buyer's sole and exclusive remedy under this Agreement shall be the repair or replacement of the product or the return of the purchase price.

APPLICABLE LAW: This Agreement is subject to the laws of the Commonwealth of Pennsylvania, and any disputes arising thereunder shall be settled by arbitration in accordance with the rules of the American Arbitration Association.

ACCEPTANCE: This Agreement shall be deemed to be an offer to sell, and the Buyer's acceptance shall be evidenced by the Buyer's signature on this Agreement.

WARRANTY: The Seller warrants that the goods shall be free from defects in material and workmanship for a period of ninety (90) days from the date of shipment. The Buyer may return any nonconforming goods within thirty (30) days of delivery for repair, replacement, or credit.

EXCHANGE: The Buyer may return any goods that do not conform to the specifications within thirty (30) days of delivery for repair, replacement, or credit.

RETURN: The Buyer may return any nonconforming goods within thirty (30) days of delivery for repair, replacement, or credit.

DISPUTES: Any disputes arising under this Agreement shall be settled by arbitration in accordance with the rules of the American Arbitration Association.

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AMENDMENT: This Agreement may be amended only in writing signed by authorized representatives of both parties.

ENTIRE AGREEMENT: This Agreement constitutes the entire agreement between the parties and supercedes all prior agreements and understandings, whether oral or written.

INDEMNITY: The Buyer shall indemnify and hold harmless the Seller from any claims, damages, costs, or expenses arising from the Buyer's use of the products or services provided under this Agreement.

SEVERABILITY: If any provision of this Agreement is held to be invalid or unenforceable, the remaining provisions shall remain in full force and effect.

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