



A Leader in Level Measurement

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

2.1.1. Download the STExplorer™ files from Ametek website. Follow the Software Download link at <http://www.drexelbrook.com/Analytical-Products/Universal-IV-CM.aspx> and select STExplorer™ Installer Files.

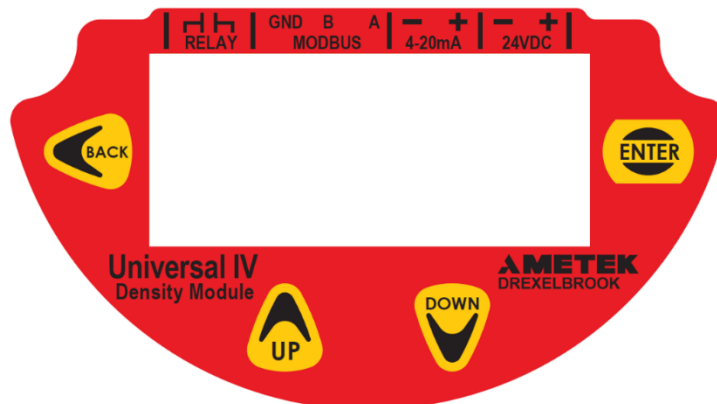
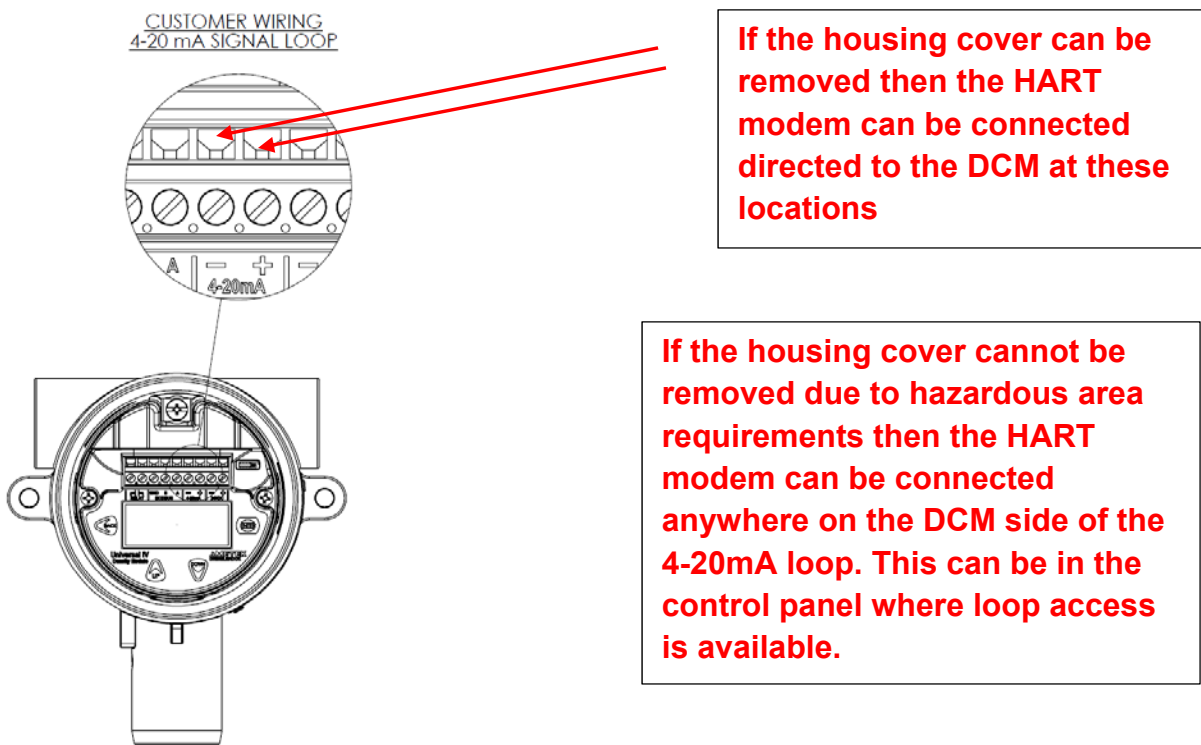
2.1.2 Run STExpolorer.exe and follow the on screen instructions.

Section 3: Operating Instructions

3.1 Wiring the Device

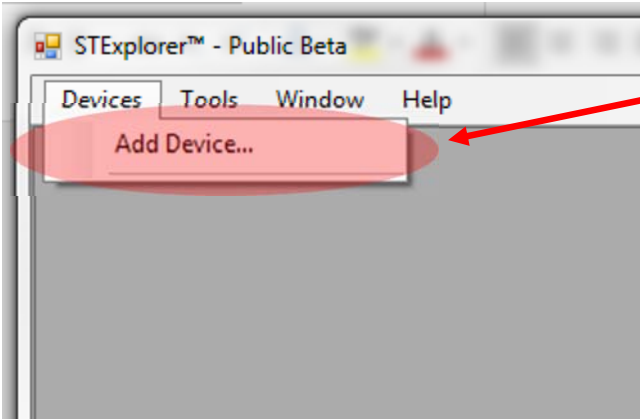
3.1.1 Instrument Connections for Operation: Refer to the DCM Operating manual for standard power and communication wiring of the DCM.

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 Ω .

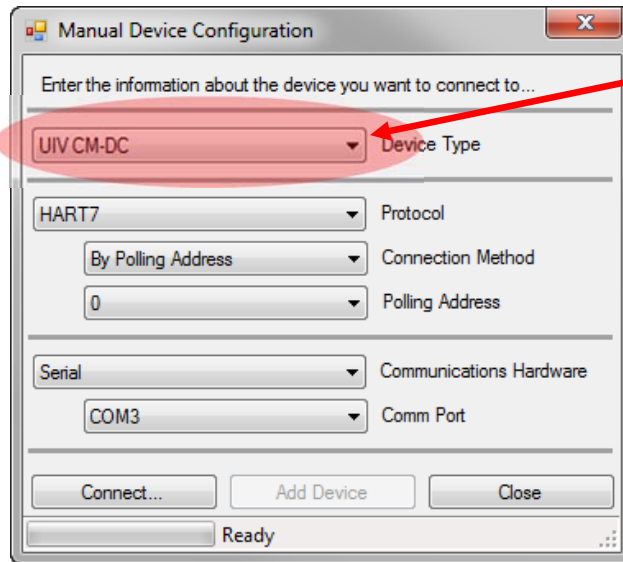


3.2 Establishing Communications with the DCM

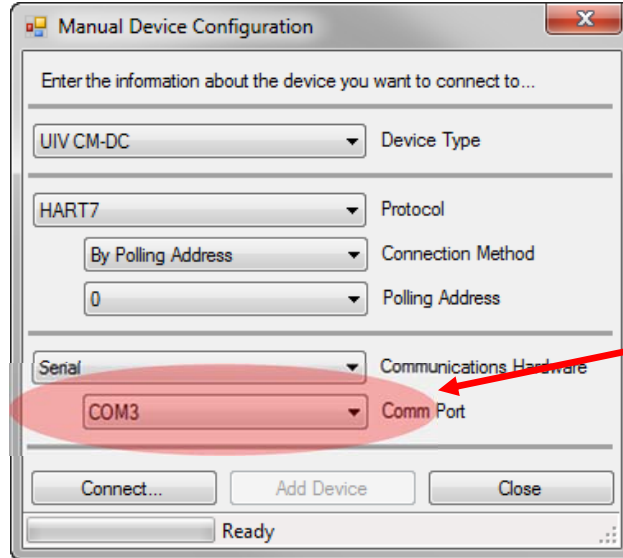
- 3.2.1 Run STExplorer.exe
- 3.2.2 Select Devices from the menu
- 3.2.3 Add Device



- 3.2.4 Select "UIV CM DC" from the Device Type drop down list



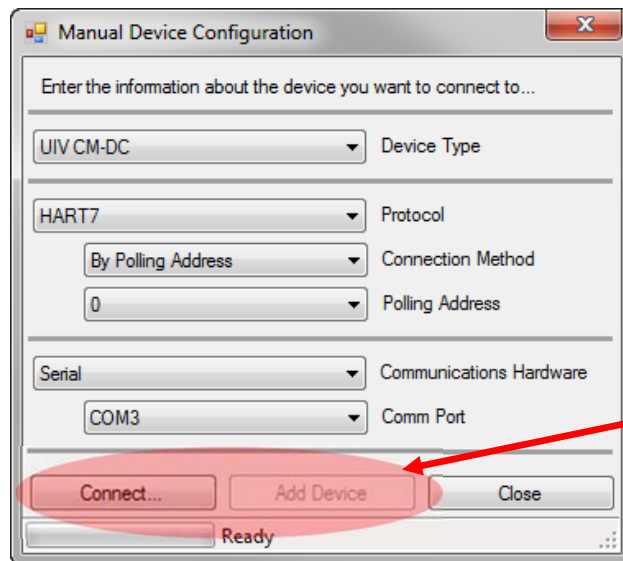
3.2.5 Select the proper COM Port from the Comm Port drop down list



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

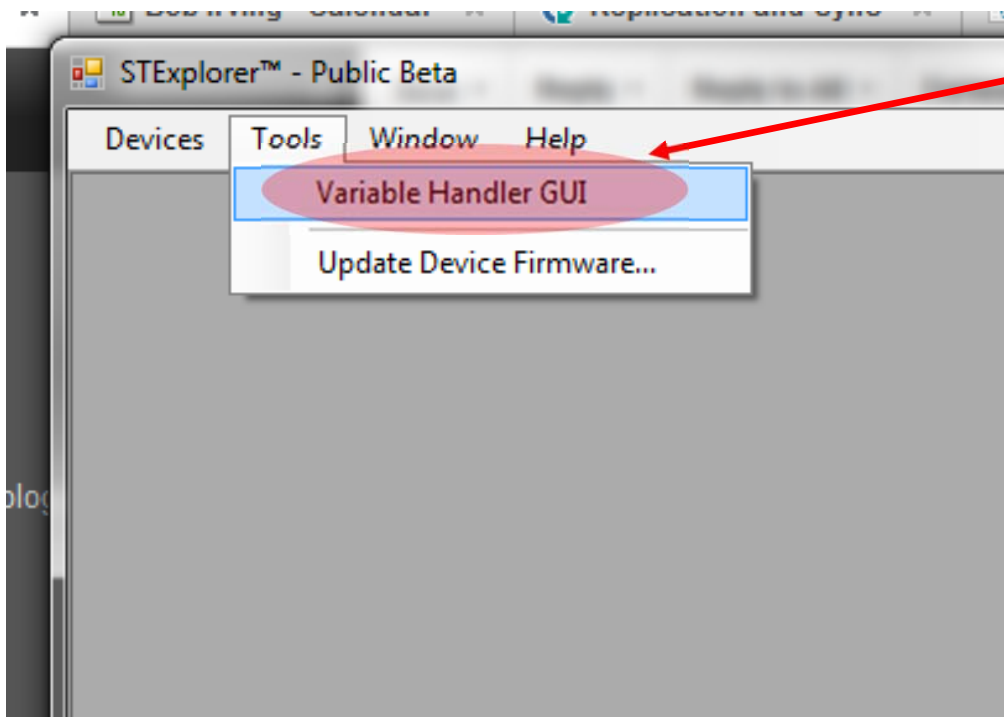
4.1 Variable Handler Overview

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)

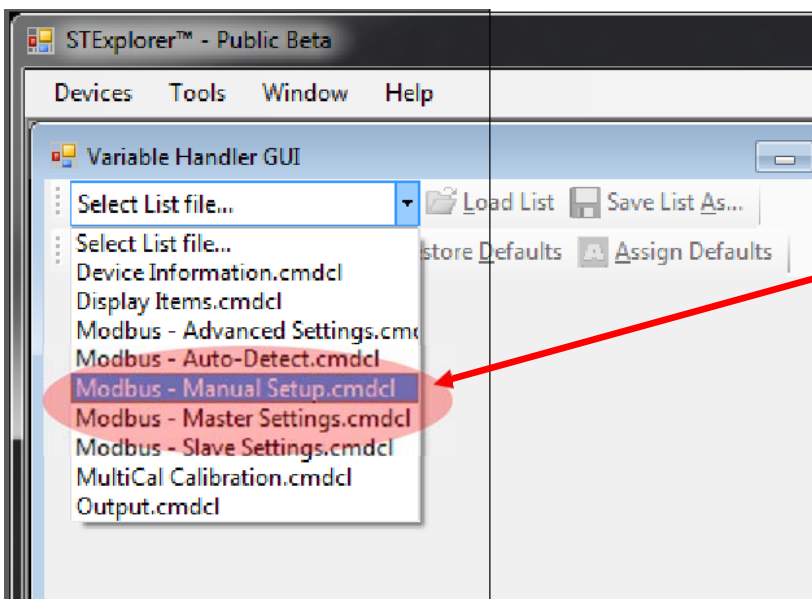
Modbus Auto-Detect (7.4)

Modbus – Manual Setup (7.5)

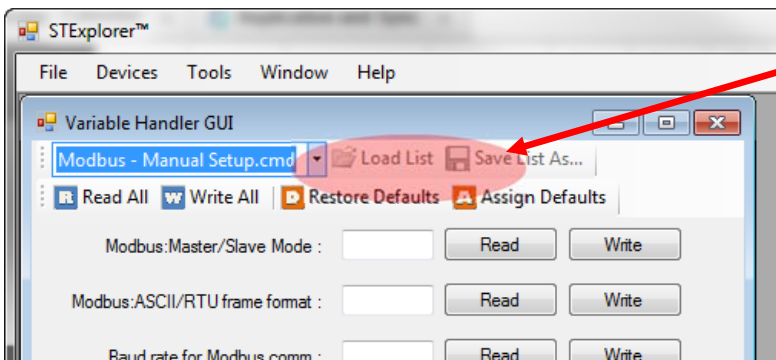
Modbus – Master Settings (7.6)

Modbus – Slave Settings (7.7)

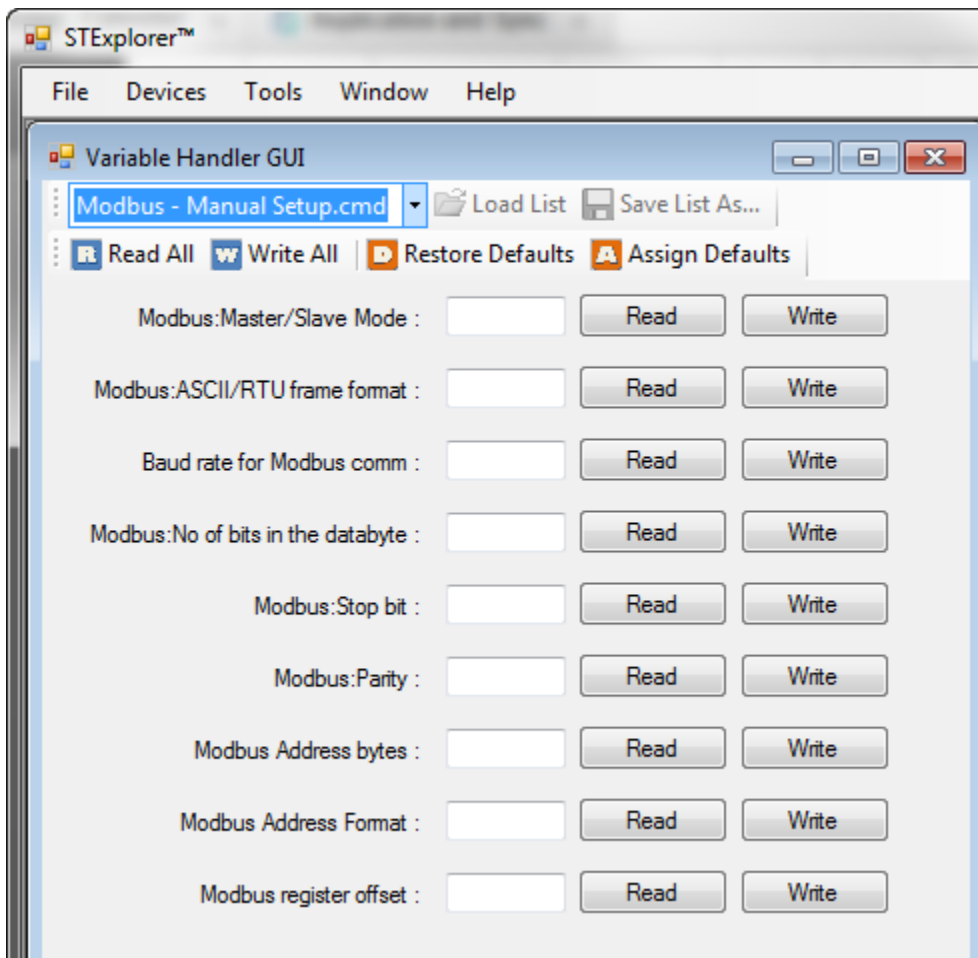
Output (7.8)



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.



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

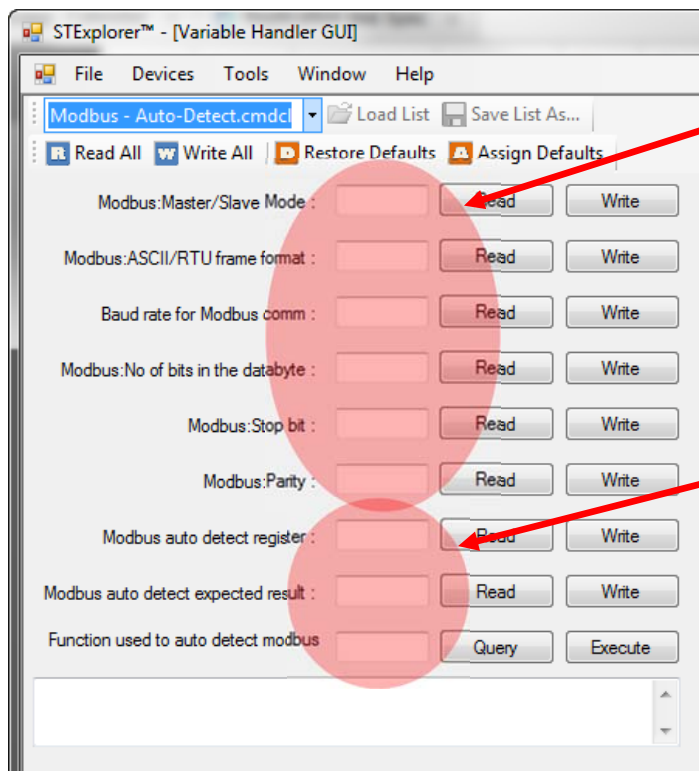
1. Enter the new value in the associated text box
2. The text box will turn red indicating that the value is pending update to the CM-DC
3. Click “Write All” to update the CM-DC
4. If an error or unexpected value is displayed on the DCM display screen go to Section 4.3 Using Auto Detect

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.



These values will match the values indicated from the previous step

Describe how we use these 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

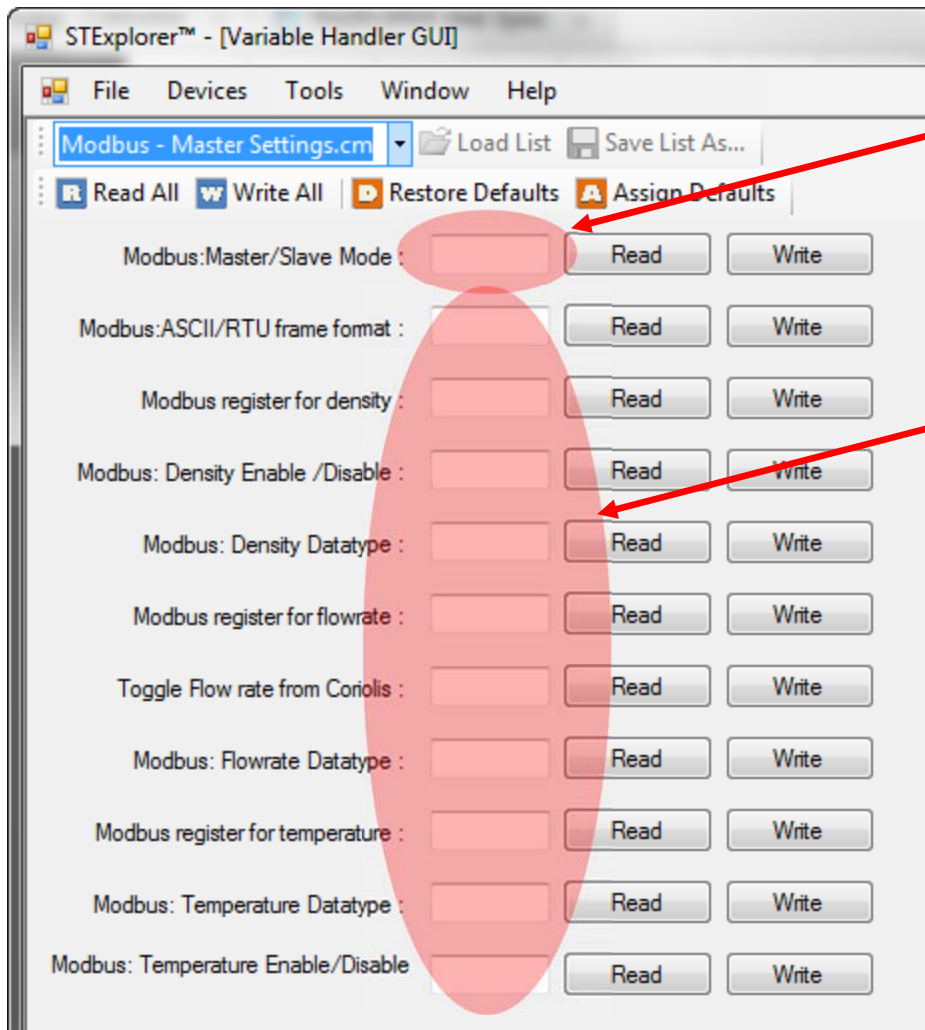
4.4.1 Select Modbus – Master Settings from the drop down menu list

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

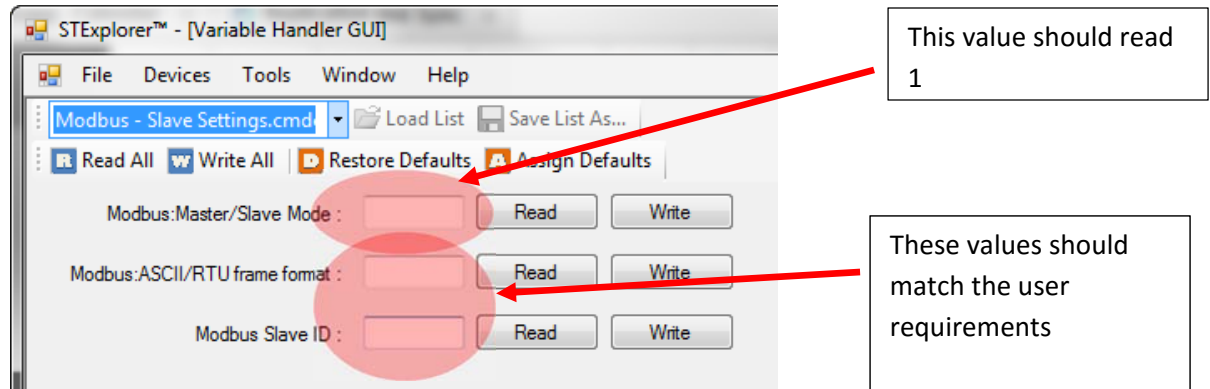
4.5.1 Select Modbus – Slave Settings from the drop down menu list

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”



Section 5: Using the Flash Update Utility

5.1 Flash Update Utility Overview

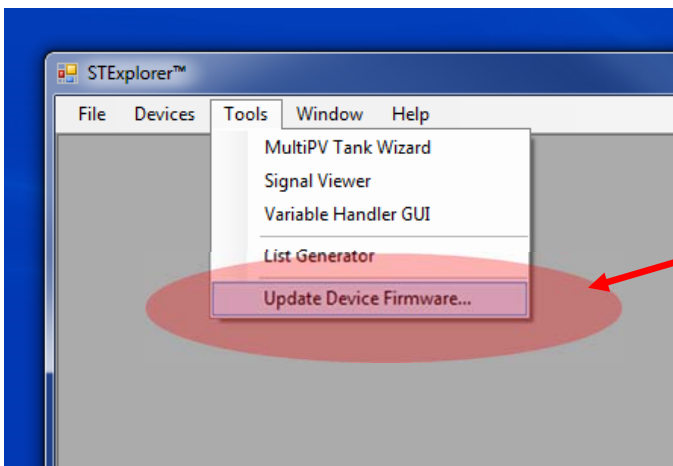
The Flash Update Utility is used to update the device when new revisions of the device become available. This software allows updating the DCM software via HART.

5.2 Instructions

5.2.1 Select Tools from the menu

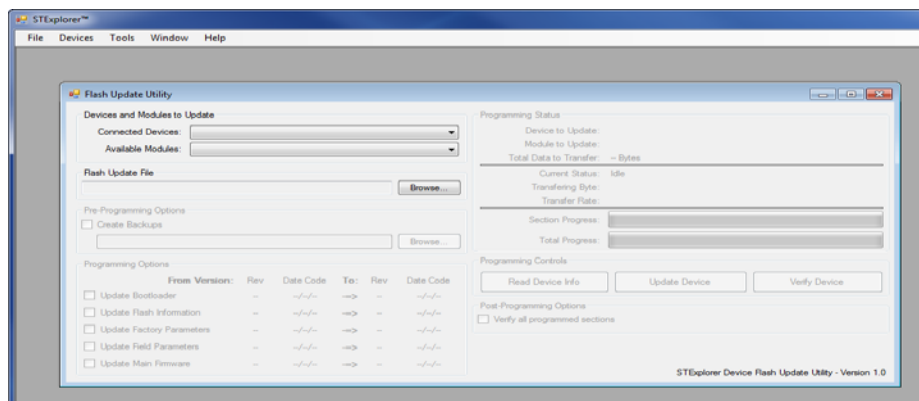
5.2.2 Add Device

5.2.3 Select Update Device Firmware from the drop down list

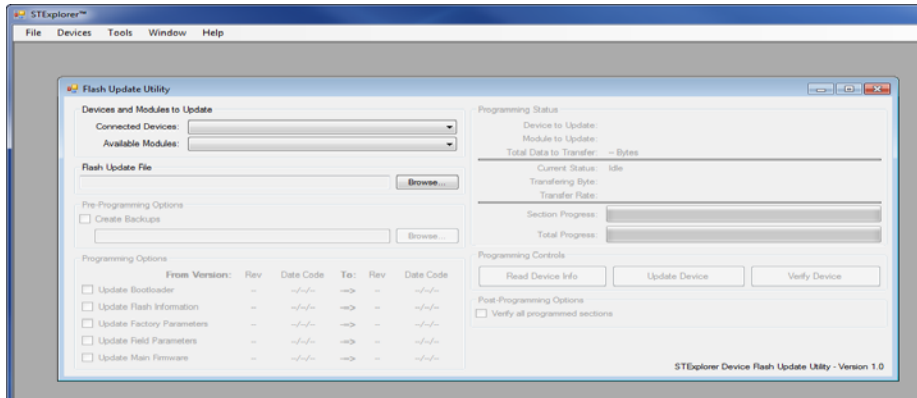


5.2.4 Select the connected device to update

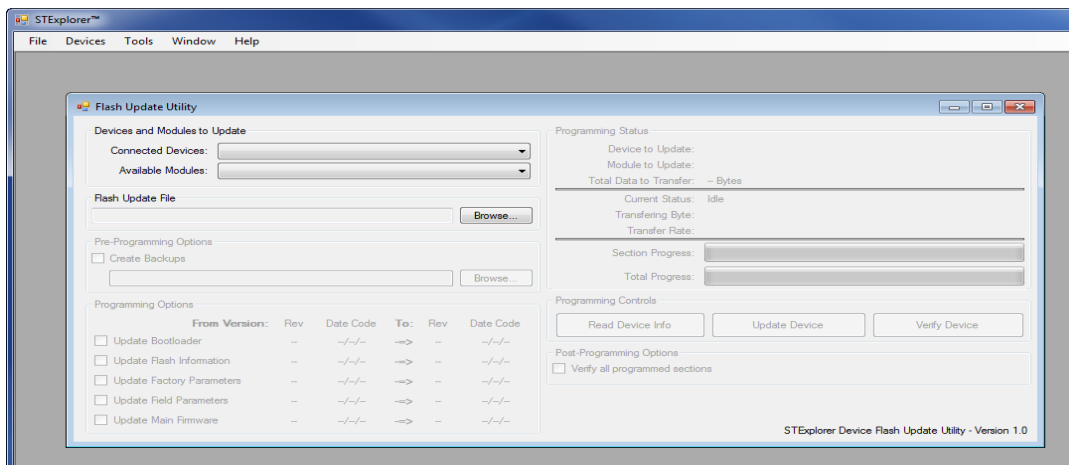
5.2.5 Select the Available Module to update



5.2.6 Select the bootload 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

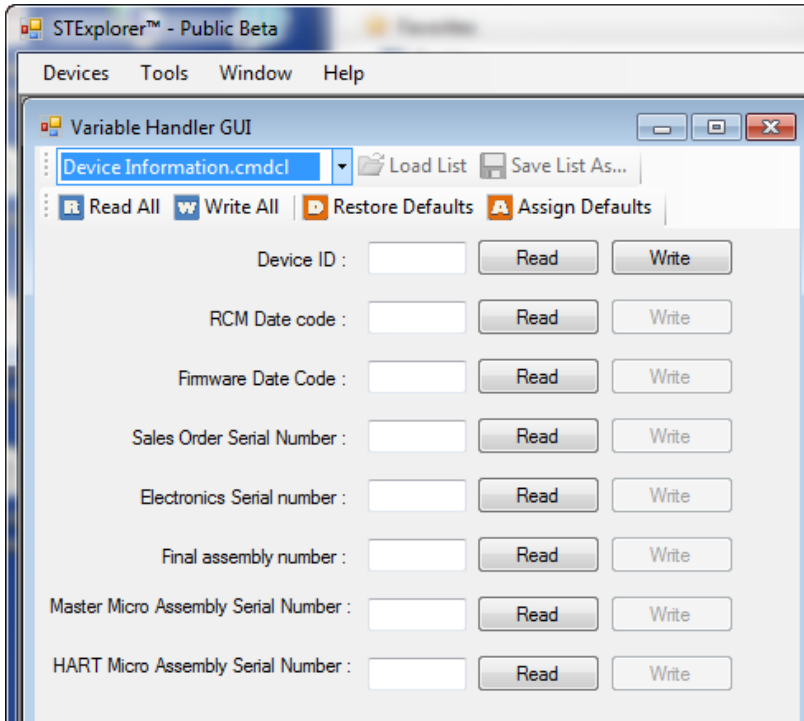
TABLE 6-1

Problem /Symptom	Tests in order of probability	Reference	Comments
Error Connecting – The device did not respond – Error Code 7	Check com port selection to verify HART modem is connected to proper COM port		
No display on U-IV CM or DCM Module	Check power at DCM Check power at U-IV CM	Section 2.2.2 U-IV CM manual	
Can't communicate with transmitter using Drexelbrook PC Software	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	Section 2.2.2	Often a result of loop connection problems or output current > 20 mA

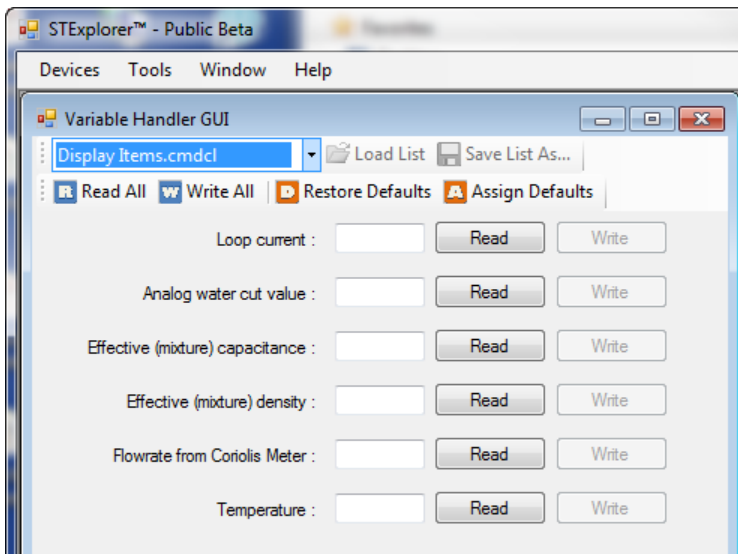
7.0 Appendix A

Optional Lists in Variable Handler

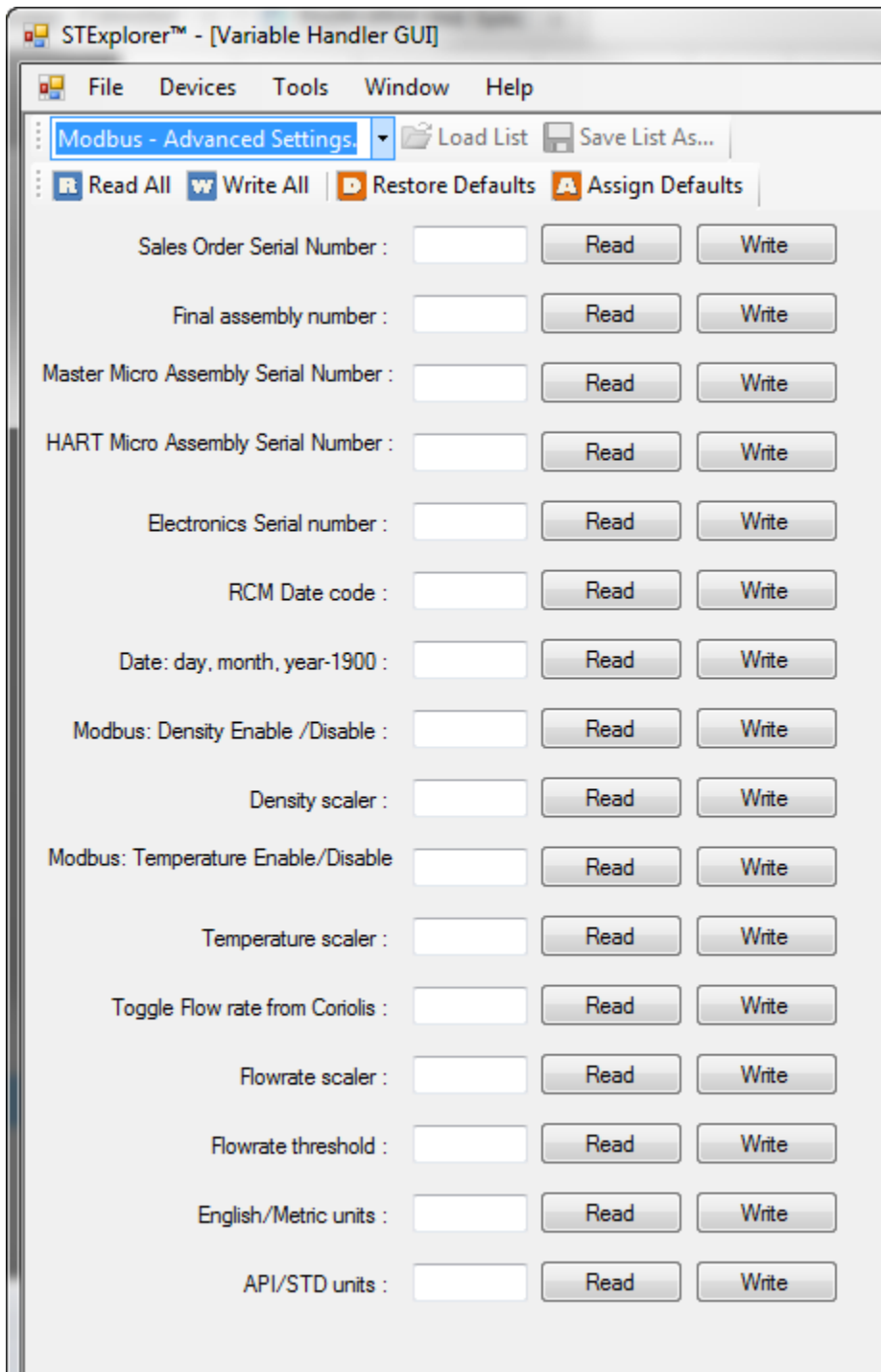
7.1 Device Information (These are Read only variables)



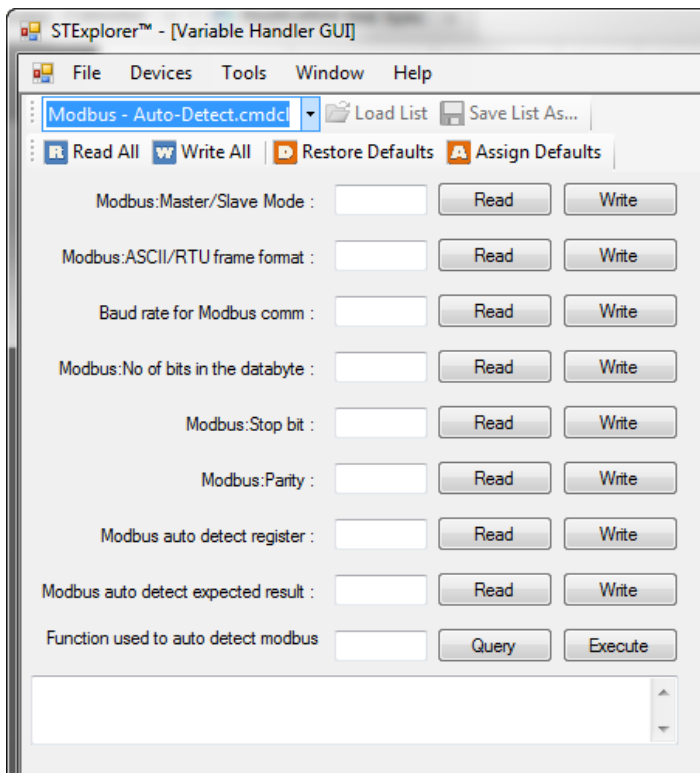
7.2 Display Items (These are Read only variables)



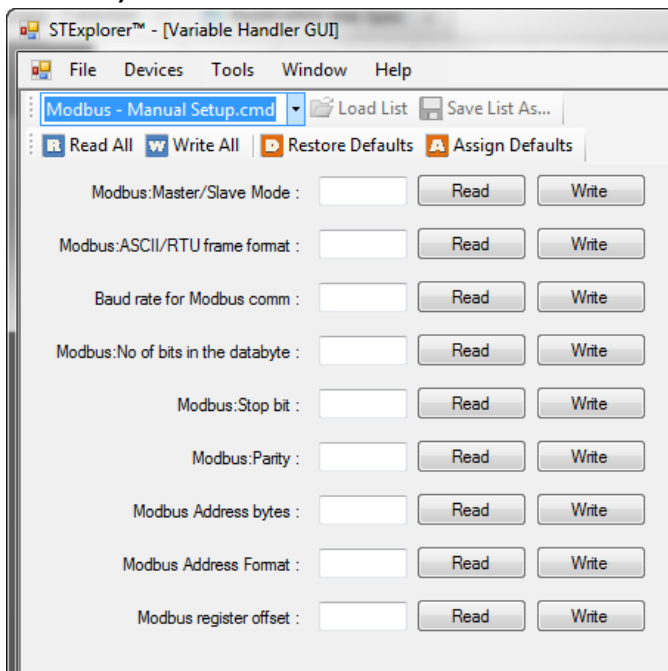
7.3 Modbus Advanced Settings (Ametek Service Team Only)



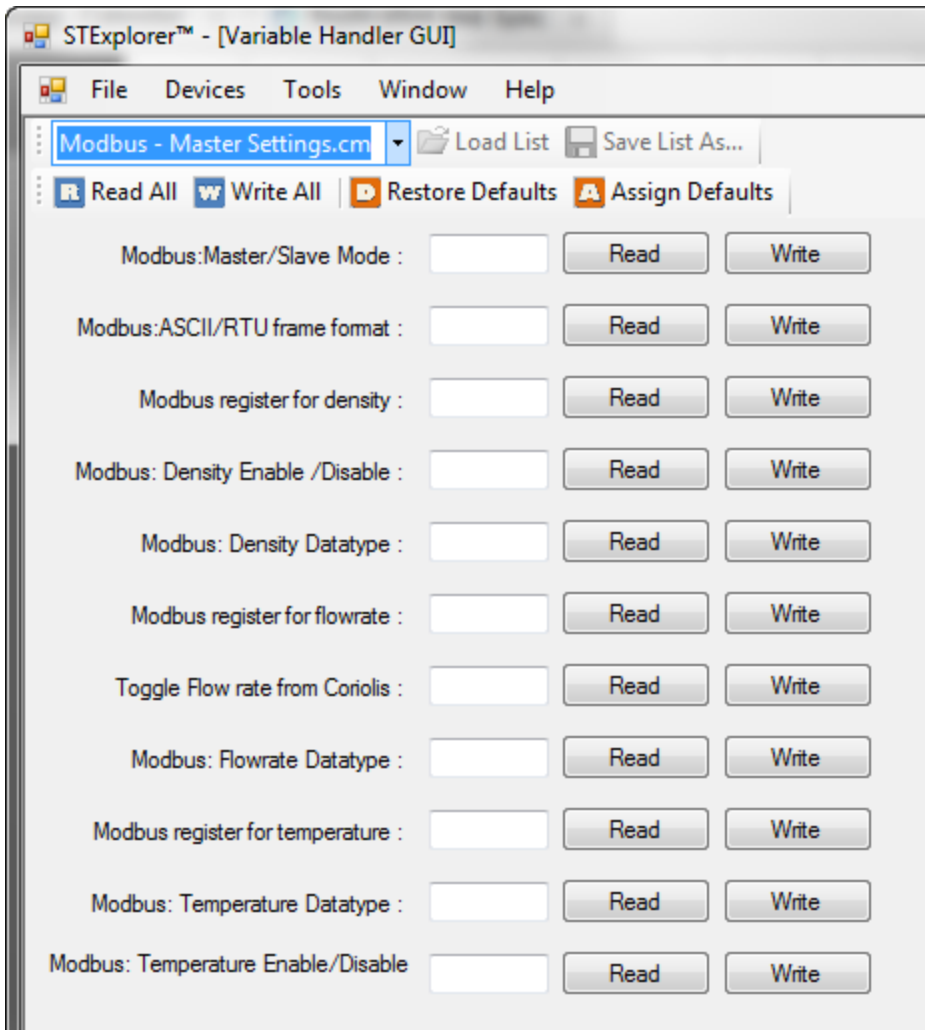
7.4 Modbus Auto-Detect (All values read/writable) Value reference cross over needed)



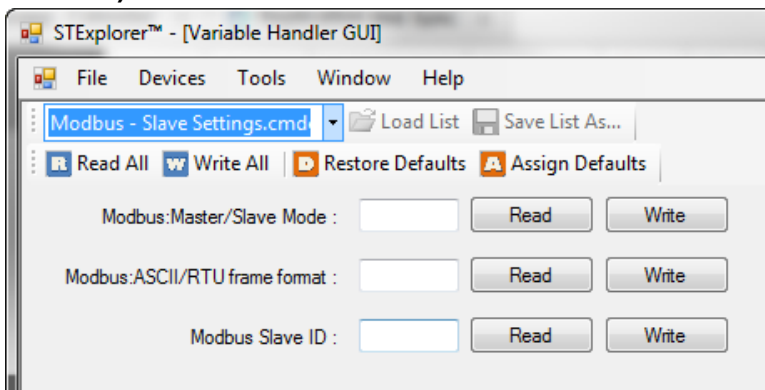
7.5 Modbus – Manual Setup (All values read/writable) Value reference cross over needed)



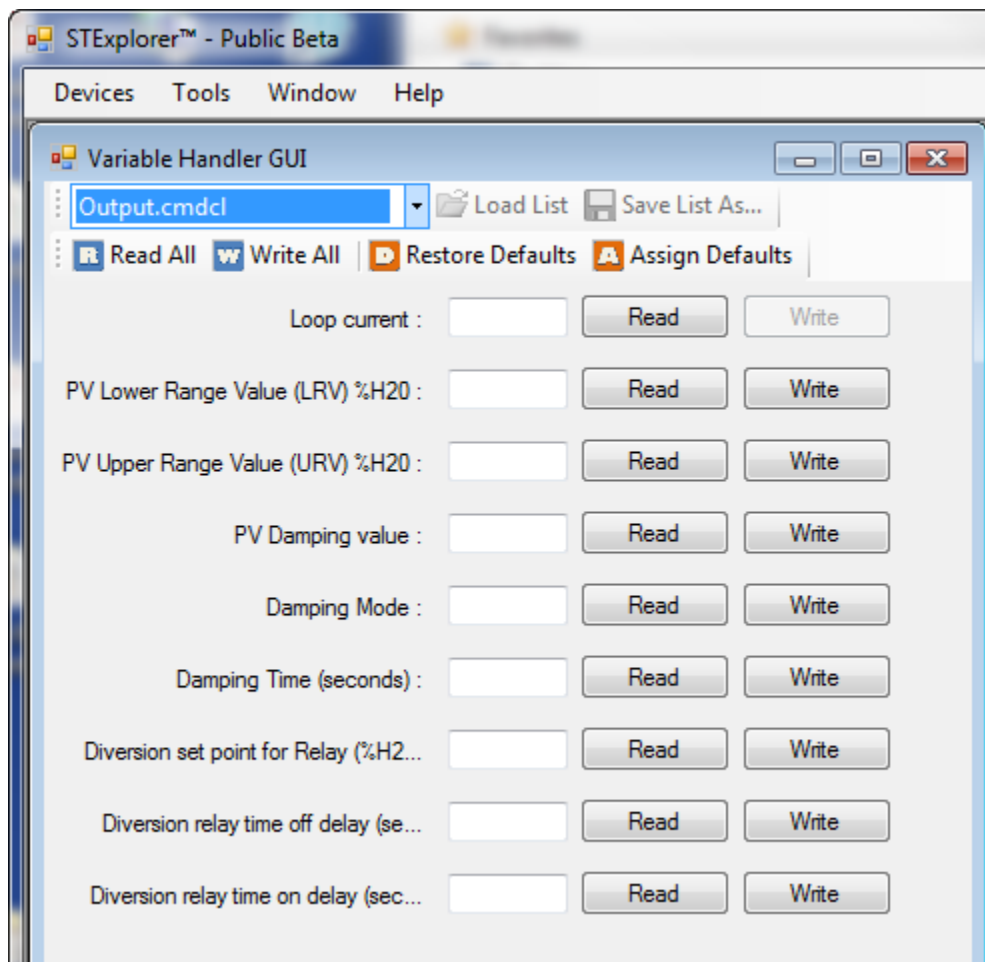
7.6 Modbus – Master Settings (All values read/writable) Value reference cross over needed)



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



7.9 Output (All writable variables except Loop Current)



8.0 Terms and Conditions of Sale

Form 440-0001-001 3/1/2006

TERMS AND CONDITIONS OF SALE



GENERAL: ALL ORDERS ARE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS. ANY ACCEPTANCE OF ANY OFFER OF BUYER FOR ANY GOODS OR SERVICES IS CONDITIONED UPON THESE TERMS AND CONDITIONS, AND SELLER OBJECTS TO ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY BUYER IN ANY DOCUMENT, WHICH SHALL NOT BE BINDING UPON SELLER. No salesman or other party is authorized to bind the AMETEK DREXELBROOK Division of AMETEK, Inc. (hereinafter "Seller") by any agreement, warranty, statement, promise, or understanding not herein expressed, and no modifications shall be binding on Seller unless the same are in writing and signed by an executive officer of Seller or his or her duly authorized representative. Verbal orders shall not be executed until written notification has been received and acknowledged by Seller.

QUOTATIONS: Written quotations are valid for thirty (30) days unless otherwise stated. Verbal quotations expire the same day they are made.

PRICES: All prices and terms are subject to change without notice. Buyer-requested changes to its order ("Orders"), including those affecting the identity, scope and delivery of the goods or services, must be documented in writing and are subject to Seller's prior approval and adjustments in price, schedule and other affected terms and conditions. Orders requiring certified test data in excess of commercial requirements, are subject to a special charge.

ORDER ACCEPTANCE: All Orders are subject to final approval and acceptance by Seller at its office located at 205 Keith Valley Road, Horsham, Pennsylvania 19044.

TERMS OF PAYMENT: Seller's standard terms of payment for Buyers who qualify for credit are net thirty (30) days from date of invoice. All invoices must be paid in United States dollars.

CREDIT: Seller reserves the right at any time to revoke any credit extended to Buyer or otherwise modify terms of payment if Buyer fails to pay for any shipments when due or if in Seller's opinion there is a material adverse change in Buyer's financial condition. Seller may, at its option, cancel any accepted Order if Buyer fails to pay any invoices when due.

DELIVERY: Shipments are F.O.B. place of manufacture ("Shipping Point") and the Buyer shall pay all freight, transportation, shipping, duties, fees, handling, insurance, storage, demurrage, or similar charges from Shipping Point. Delivery of goods to common carrier shall constitute delivery and passing of title to the Buyer, and all risk of loss or damage in transit shall be borne by Buyer. Any claims or losses for damage or destruction after such delivery shall be the responsibility of Buyer.

Seller reserves the right to make delivery in installments which shall be separately invoiced and paid for when due, without regard to subsequent deliveries. Delay in delivery of any installment shall not relieve Buyer of its obligation to accept remaining deliveries.

Acknowledged shipping dates are approximate only and based on prompt receipt of all necessary information from Buyer and Buyer's compliance with terms of payment.

TAXES: All sales, excise and similar taxes which Seller may be required to pay or collect with respect to the goods and/or services covered by any Order, shall be for the account of the Buyer except as otherwise provided by law or unless specifically stated otherwise by Seller in writing.

TERMINATION AND HOLD ORDERS: No Order may be terminated by Buyer except upon written request by Buyer and approval by Seller, and if said request is approved by Seller, under the following conditions: (1) Buyer agrees to accept delivery of all of the units completed by Seller through the workday on which Seller receives the written termination request; (2) Buyer agrees to pay to Seller all direct costs and expenses applicable to the portion of the Order that is incomplete.

WARRANTY:

A. Hardware: Seller warrants its goods against defects in materials and workmanship under normal use and service for one (1) year from the date of invoice.

B. Software and Firmware: Unless otherwise specified, Seller warrants for a period of one (1) year from date of invoice that standard software or firmware, when used with Seller specified hardware, shall perform in accordance with Seller's published specifications. Seller makes no representation or warranty, expressed or implied, that the operation of the software or firmware shall be uninterrupted or error-free, or that functions contained therein shall meet or satisfy the Buyer's intended use or requirements.

C. Services: Seller warrants that services, including engineering and custom application, whether provided on a fixed cost or time and material basis, shall be performed in accordance with generally accepted industry practices.

D. Remedies: Seller's liability under this section is restricted to replacing, repairing, or issuing credit (at Seller's option) for any returned goods and only under the following conditions: (1) Seller must be promptly notified, in writing, as soon as possible after the defects have been noted by the Buyer, but not later than (1) year from date of invoice from Seller; (2) The defective goods are to be returned to the place of manufacture, shipping charges prepaid by the Buyer; (3) Seller's inspection shall disclose to its satisfaction that the goods were defective in materials or workmanship at the time of shipment; (4) Any warranty service (consisting of time, travel and expenses related to such services) performed other than at Seller's factory, shall be at Buyer's expense.

E. Repaired/Reconditioned Goods: As to out-of-warranty goods which Seller has repaired or reconditioned, Seller warrants for a period of sixty (60) days from date of its invoice only new components replaced in the most recent repair/reconditioning.

F. Returns and Adjustments: No goods may be returned unless authorized in advance by Seller and then only upon such conditions to which Seller may agree. Buyer must obtain an RMA (Return Material Authorization) number from Seller prior to any return shipment and such RMA number must appear on the shipping label and packing slip. Buyer shall be responsible for the returned goods until such time as Seller receives the same at its plant and for all charges for packing, inspection, shipping, transportation, or insurance associated with returned goods. In the event that credit for returned goods is granted, it shall be at the lesser of the then current prices or the original purchase price. Claims for shortage or incorrect material must be made within five (5) days after receipt of shipment.

ALL OTHER WARRANTIES, FOR ANY OF SELLER'S GOODS OR SERVICES, WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE ARE EXCLUDED.

INTELLECTUAL PROPERTY: Seller's sale of goods or provision of related documentation or other materials to Buyer shall not transfer any intellectual property rights to Buyer unless Seller specifically agrees to do so in writing. Seller shall retain ownership of all applicable patents, trademarks, copyrights and other intellectual property rights. Buyer shall not use, copy or transfer any such items in violation of Seller's intellectual property rights or applicable law, or for any purposes other than that for which the items were furnished.

Seller shall defend any lawsuit brought against the Buyer based on a claim that the design or construction of the goods sold hereunder by Seller infringe any United States or Canadian Patent, Copyright or Mask Work Registration, provided that Buyer promptly notifies Seller of such claim in writing and further provided that, at Seller's expense, (1) Buyer gives Seller the sole right to defend or control the defense of the suit or proceeding, including settlement, and (2) Buyer provides all necessary information and assistance for that defense. In the event of a charge of infringement, Seller's obligation under the agreement shall be fulfilled if Seller, at its option and expense, either (i) settles such claim; (ii) procures for Buyer the right to continue using such goods; (iii) replaces or modifies goods to avoid infringement; or (iv) accepts the return of any infringing goods and refunds their purchase price; or (v) defends against such claim.

If Buyer furnishes specifications or designs to Seller, the obligations of Seller set forth above shall not apply to goods made by Seller using such specifications or designs, and Buyer shall defend, indemnify and hold Seller harmless against any third party claims for infringement which arise out of Seller's use of specifications or designs furnished by Buyer.

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PACKAGING/WEIGHTS AND DIMENSIONS: Buyer specified packing or marking may be subject to additional charges not otherwise included in the price of the goods. Published weights and dimensions are estimates or approximate only and are not warranted.

FORCE MAJEURE: Seller shall not be responsible for delays in delivery or any failure to deliver due to causes beyond Seller's control, including but not limited to the following items: acts of God, war, terrorism, mobilization, civil commotion, riots, embargoes, domestic or foreign governmental regulations or orders, governmental priorities, port congestion, acts of the Buyer, its agents or employees, fires, floods, strikes, lockouts and other labor difficulties, shortages of or inability to obtain shipping space or transportation, inability to secure fuel, supplies or power at current prices or on account of shortages thereof, or due to limitations imposed by the extent of availability of Seller's normal manufacturing facilities.

If a delay excused per the above extends for more than ninety (90) days and the parties have not agreed upon a revised basis for continuing providing the goods or services at the end of the delay, including adjustment of the price, then Buyer, upon thirty (30) days' prior written notice to Seller may terminate the Order with respect to the unexecuted portion of the goods or services, whereupon Buyer shall promptly pay Seller its reasonable termination charges upon submission of Seller's invoices thereof.

LIMITATION OF LIABILITY: Seller's liability for any claim of any kind, except infringement of intellectual property rights, shall not exceed the purchase price of any goods or services which give rise to the claim. SELLER SHALL IN NO EVENT BE LIABLE FOR BUYER'S MANUFACTURING COSTS, LOST PROFITS, LOSS OF USE OF THE GOODS OR SERVICES, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS, CLAIMS OF BUYER'S CUSTOMERS FOR DAMAGES, OR OTHER SPECIAL, PROXIMATE, INCIDENTAL, INDIRECT, EXEMPLARY OR CONSEQUENTIAL DAMAGES. Any action against Seller must be brought within eighteen (18) months after the cause of action accrues. These disclaimers and limitations of liability shall apply regardless of the form of action, whether in contract, tort or otherwise, and further shall extend to the benefit of Seller's vendors, appointed distributors and other authorized resellers as third-party beneficiaries.

PROHIBITION FOR HAZARDOUS USE: Goods sold hereunder generally are not intended for application in and shall not be used by Buyer in the construction or operation of a nuclear installation or in connection with the use or handling of nuclear material, or for any hazardous activity or critical application, where failure of a single component could cause substantial harm to persons or property, unless the goods have been specifically approved for such a use or application. Seller disclaims all liability for any loss or damage resulting from such unauthorized use and Buyer shall defend, indemnify and hold harmless the Seller against any such liability, whether as a result of breach of contract, warranty, tort (regardless of the degree of fault or negligence), strict liability or otherwise.

EXPORT CONTROL: Buyer shall comply with all export control laws and regulations of the United States, and all sales hereunder are subject to those laws and regulations. Seller shall not be named as shipper or exporter of record for any goods sold hereunder unless specifically agreed to in writing by Seller. At Seller's request, Buyer shall furnish Seller with end-user and end-user information to determine export license applicability. Buyer warrants, in accordance with U.S. Export Law, that goods sold hereunder shall not be destined for facilities or activities involving nuclear, chemical or biological weapons, or related missile delivery systems in named prohibited regions or countries.

GOVERNING LAW: Seller intends to comply with all laws applicable to its performance under any order. All matters relating to interpretation and effect of these terms and any authorized changes, modifications or amendments thereto shall be governed by the laws of the Commonwealth of Pennsylvania. No government contract regulations or clauses shall apply to the goods or services, this agreement, or act to bind Seller unless specifically agreed to by Seller in writing.

NON-WAIVER BY SELLER: Waiver by Seller of a breach of any of these terms and conditions shall not be construed as a waiver of any other breach.

SEVERABILITY AND ENTIRE AGREEMENT: If any provision of these terms and conditions is unenforceable, the remaining terms shall nonetheless continue in full force and effect. This writing, together with any other terms and conditions Seller specifically agrees to in writing, constitutes the entire terms and conditions of sale between Buyer and Seller and supercedes any and all prior discussions, and negotiations on its subject matter.