



Dresser™ MeterWare Software Manual



Series D D630/D800/D1000 meters



Series K 10C25 meters



ES3



ETC

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1 Introduction

This manual provides step-by-step instructions to install and use the Dresser™ MeterWare User Terminal software.

This software is used to configure the following equipment (referred to as “units” in this manual):

- Dresser™ Series D D630/D800/D1000 meter
- Dresser™ Series K 10C25 meter
- ES3 Electronic Temperature Compensator with mechanical backup
- ETC Electronic Temperature Compensator

This manual helps you to:

- Install the Dresser MeterWare User Terminal software on your computer.
- Install the drivers and set up the IrDA (infrared) cable on your computer to communicate with the unit.
- Connect the unit to your computer to:
 - Configure the unit.
 - Calibrate the unit.
 - Save and upload configuration files.
 - Download Data Logs and Audit Logs.
 - Configure advanced settings.
 - Upgrade the unit’s firmware.
 - Troubleshoot problems.
 - Clear Faults and Alarms.

2 Before Configuration

Perform all steps in this section before configuring the Dresser MeterWare software and using it to communicate with the unit.

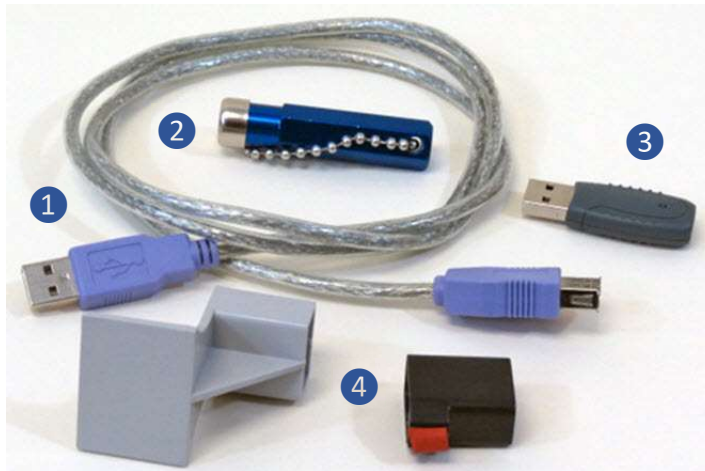
2.1 Required Equipment

The following equipment is needed to perform the steps in this section. Contact Customer Service to request these parts or assistance.

- Dresser MeterWare software files
- Dresser™ Communications Kit, which includes the parts listed in Table 1

Table 1: Communications Kit Contents

| Item | Part | Purpose |
|------|------------------------------------|---|
| 1 | USB extension cable | Connects the IR (infrared) dongle USB connector to the computer's USB port |
| 2 | Magnet | Initializes and scrolls through LCD (liquid-crystal display) screens on the unit |
| 3 | IR dongle (with USB connection) | Communicates with the IR window on the unit |
| 4 | IrDA cable holders | Aligns the IrDA device with the unit's IR window and holds it in place Holders are included for the Series D/Series K and for the ES3/ETC units. |

**Figure 1: Communications Kit**

Note: The package or appearance of the items may differ from the ones shown in Figure 1.

2.2 Install Dresser MeterWare Software



Note: The Dresser MeterWare software is currently supported to run on Microsoft Windows 7 and Windows 10. Contact Customer Support if you are using a different Windows version.

1. Close all programs currently open on your computer. **Do not turn off your computer.**



Note: Do **not** plug in the IR dongle until instructed to do so.

2. Insert the Dresser MeterWare software USB card into your computer or acquire the installation files.
3. From the list of installation files, double-click to run **Installer.exe**.



Note: The user installing the software must have administrative rights on the computer. If needed, contact your IT Department prior to beginning this installation process.

4. On the MeterWare menu screen, click **Install MeterWare**.



Figure 2: Click Install MeterWare

5. On the **Select Destination Location** screen, perform the following steps:
 - a. Verify the computer has at least the indicated amount of free disk space.
 - b. Select where to install the MeterWare files. Perform one of the following steps:
 - To install the files to the default directory provided, click **Next**.

The number in the default directory path indicates the MeterWare version you are installing. In this example, the version is 2.0.0.1.

 - To select a location, click **Browse** or enter the directory path, then click **Next**.

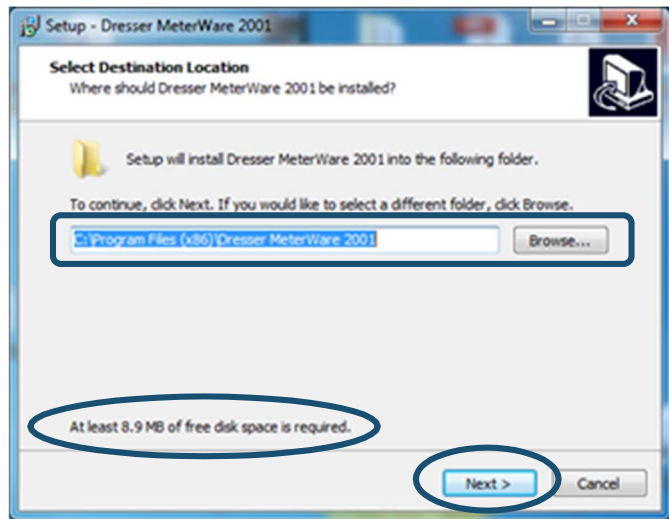


Figure 3: Select installation location

6. On the **Select Start Menu Folder** screen, select where to create the MeterWare shortcut in the Start Menu directory.

Perform one of the following steps:

- To install to the default location provided, click **Next**.
- To select a location, click **Browse** or enter the directory path, then click **Next**.

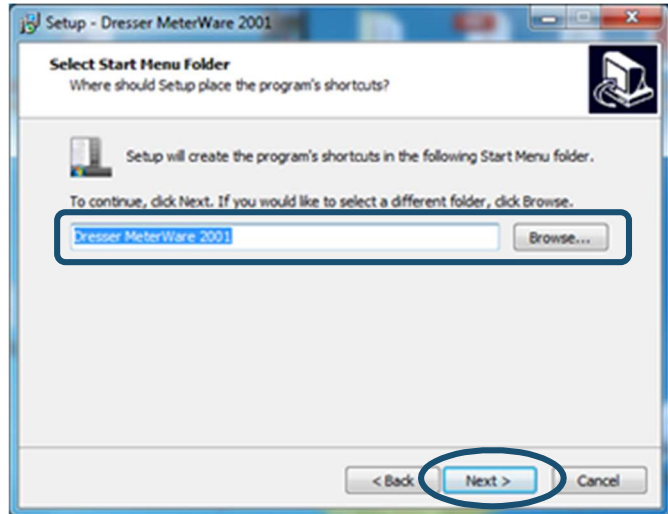


Figure 4: Select the Start Menu folder

7. On the **Select Additional Tasks** screen, select the checkbox that corresponds to the MeterWare shortcut icons to create as follows:

- Select **Create a desktop shortcut** to create a MeterWare icon on your desktop.
- Select **Create a Quick Launch shortcut** to create a MeterWare icon in the quick launch area on your taskbar.

8. Click **Next**.

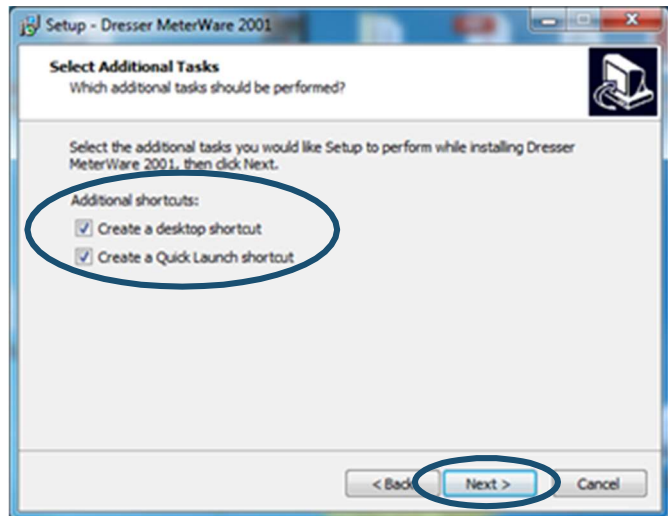


Figure 5: Select MeterWare icons to create

9. On the **Ready to Install** screen, verify the information is correct.

10. Click the appropriate choice:

- Click **Install** to start the installation.
- Click **Back** to review or change your choices.
- Click **Cancel** if you do not currently want to install the software.

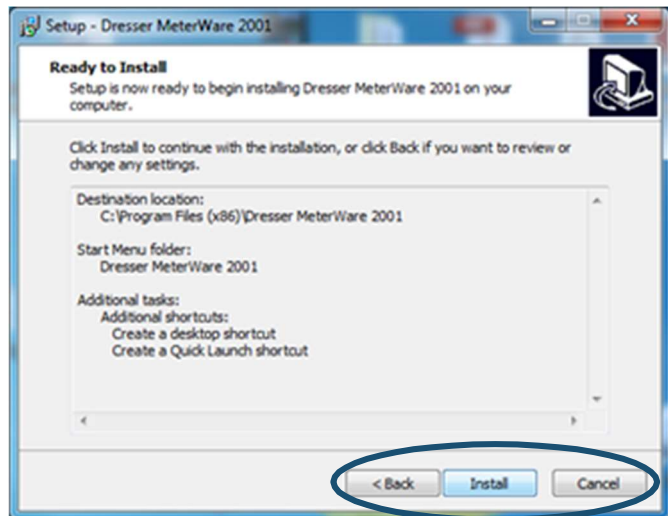


Figure 6: Verify information and begin installation

After you click **Install**, the software automatically installs. A status indicator displays during the process.

When installation successfully completes, a completion screen displays.

11. If you do not currently want to start the software, clear the **Launch Dresser MeterWare** checkbox.
12. Click **Finish**.

If the **Launch Dresser MeterWare** checkbox is selected, the Dresser MeterWare program starts.

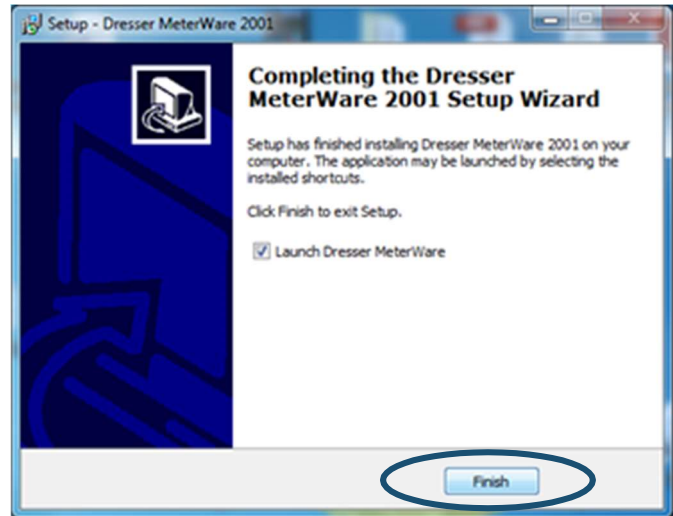


Figure 7: Installation complete; choose to launch software

13. Perform the steps in Section 2.3 to set up IrDA communication for the MeterWare software to communicate with a unit.

2.3 Set Up IrDA Communication

The unit communicates with the Dresser MeterWare software on your computer by using the IrDA cable. The IrDA cable refers to the IR dongle connected to the USB extension cable from the Communications Kit. The IR dongle requires a device driver to be installed before it can be used.

2.3.1 Determine If IrDA Drivers Installed

Perform the following steps if you want to determine if the IrDA drivers are already installed on your computer; otherwise, proceed to Section 2.3.2.

1. Plug the IR dongle into the computer's USB port.
2. Start Windows Device Manager:
 - In Windows 7, click **Start > Control Panel > System > Device Manager**.
 - In Windows 10, enter **Device Manager** in the search box (or Cortana) or click **Start (Windows icon) > Windows System > Control Panel > Device Manager**.
3. Determine if **USB-Infrared Adapter** displays in the **Infrared devices** section.

If the device does not display, install the IR dongle driver (refer to Section 2.3.2).

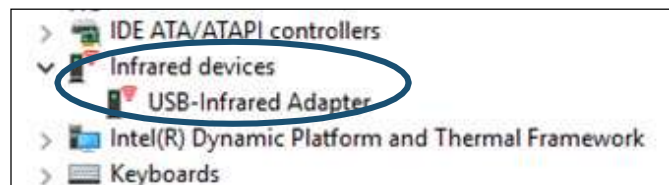


Figure 8: Verify IR dongle driver installed

2.3.2 Install IR Dongle Drivers

Perform the following steps to install the IrDA drivers on your computer:



Note: The user installing the IrDA drivers must have administrative rights on the computer. If needed, contact your IT Department prior to beginning this installation process.

1. Verify the IR dongle is not plugged into the computer's USB port.
2. Insert the Dresser MeterWare software USB card that contains the IR dongle driver into your computer or acquire the IR dongle driver installation files.
3. From the list of installation files, double-click **Installer.exe**.
4. On the MeterWare menu screen (refer to Figure 2), click **Install IR Drivers**.
5. Follow the screen prompts to complete the driver installation.
6. Plug the IR dongle into the computer's USB port.

Depending on your operating system, you might see a pop-up icon or message on the bottom right corner of your screen saying that you have plugged in the IR dongle and the driver was installed successfully.

7. Confirm the IR dongle driver has been installed successfully in the Windows Device Manager:
 - In Windows 7, click **Start > Control Panel > System > Device Manager**.
 - In Windows 10, enter **Device Manager** in the search box (or Cortana) or click **Start (Windows icon) > Windows System > Control Panel > Device Manager**.

If the driver has been successfully installed, an **Infrared devices** section displays the **USB-Infrared Adapter** as one of the devices running.

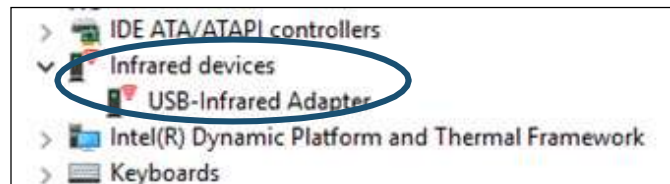


Figure 9: Verify IR dongle driver installed

2.4 Connect to the Unit

This section provides information about establishing a connection for the Dresser MeterWare software on the computer to communicate with the unit.



Note: In this manual, the IrDA cable refers to the IR dongle connected to the USB extension cable.

2.4.1 Connect the IrDA Cable from the Computer to the Unit

Perform the following steps to put the IrDA cable together and align it with the unit's IR window.



Note: The IrDA cable holder and location may vary depending on the type of unit (refer to Figure 10 through Figure 13).

1. Plug the USB extension cable connector into the computer's USB port.
2. Plug the wide end of the USB extension cable onto the IR dongle.
3. Insert the correct IrDA cable holder onto the unit.
4. Insert the IR dongle into the IrDA cable holder to align it with the IR window on the unit.

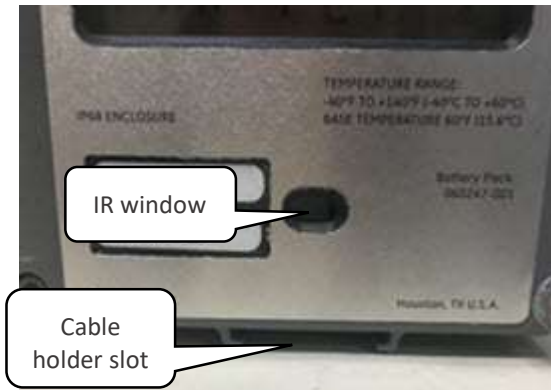


Figure 10: Location for holder installation

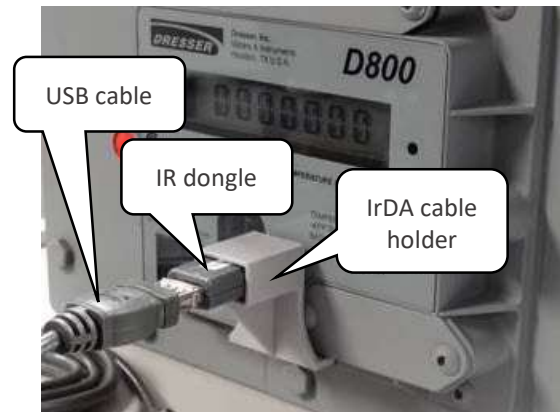


Figure 11: IrDA connected to Series D

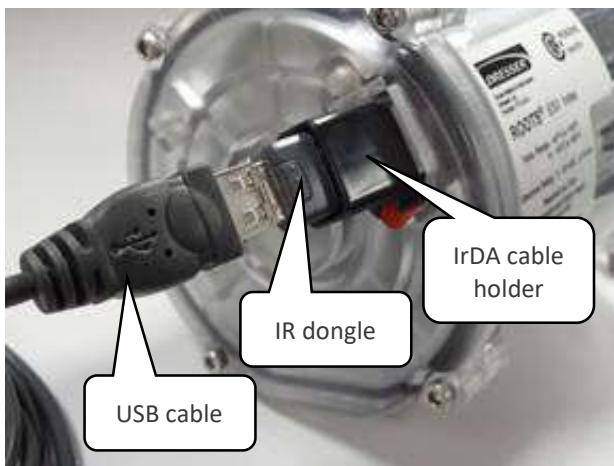


Figure 12: IrDA connected to an ES3/ETC unit

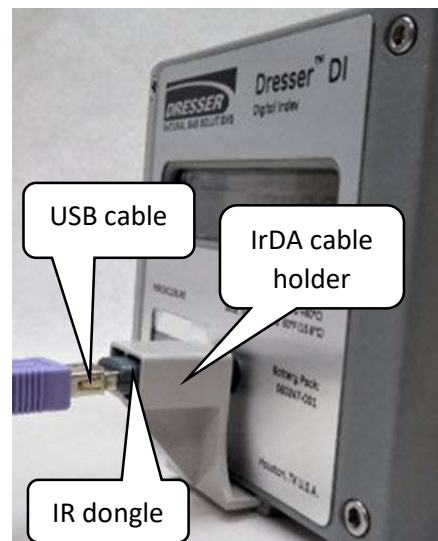


Figure 13: IrDA connected to a Series K

2.4.2 Establish Connection Between MeterWare and the Unit

Perform the following steps to be able to transmit information between the MeterWare software and the unit:

1. Connect the IrDA cable from the computer to the unit (refer to Section 2.4).
2. Double-click the Dresser MeterWare icon to start the MeterWare software.



Figure 14: Double-click the Dresser MeterWare icon

3. On the **Welcome** screen, note the revision number and release date of the MeterWare software.

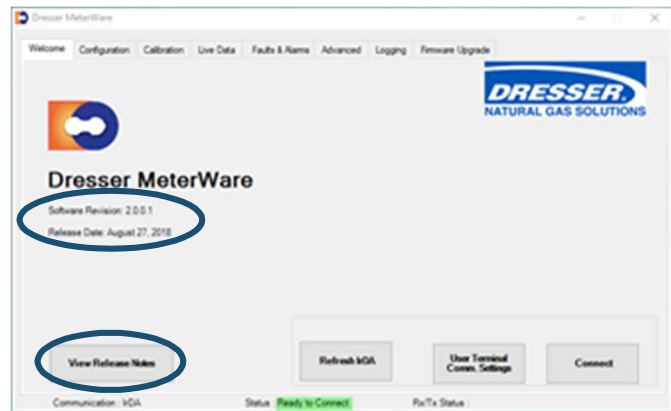


Figure 15: Welcome screen – verify software revision



Note: Verify the installed revision of the MeterWare software is compatible with the version of the firmware in the unit. Click **View Release Notes** on the **Welcome** screen to view information about compatibility. The unit's firmware is displayed on the **Live Data** screen.

If you have an older revision of the MeterWare software, update it to the latest one. Contact your Customer Support Representative for part numbers and availability.

- Wake the unit up by using the magnet supplied in the Communications Kit, as shown in Figure 16 and Figure 17.



Figure 16: ES3/ETC Index:
Swipe magnet along the Swipe line



Figure 17: Series D/Series K:
Swipe magnet vertically across the black dot by the LCD screen

- Observe the **Status** at the bottom of the screen as the MeterWare software finds the unit.

The **Status** changes from **Searching** to **In Range** in yellow, then changes to **Ready to Connect** in green when it is successful.

If it cannot connect, verify the IrDA cable is properly connected and positioned.

- Click **Connect**.

A green progress bar displays during the process.

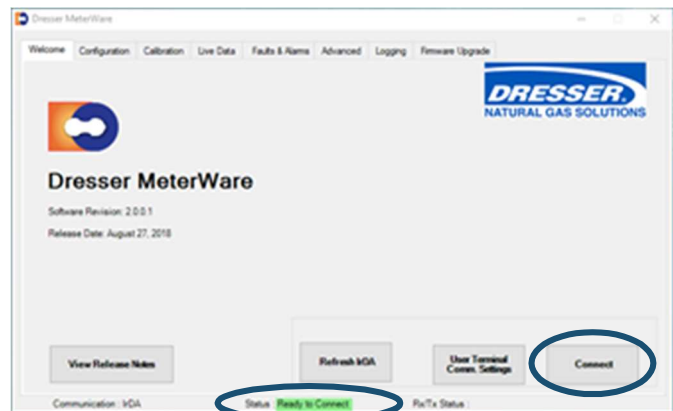


Figure 18: Welcome screen – ready to connect

If connection to the unit is successful, a picture of the connected unit displays, and the **Status** area at the bottom of the screen displays **Connected**. The **Connect** button changes to **Disconnect**.

- Refer to Section 3 for information about configuring the unit.



Figure 19: Connection is successful



Note: The **Refresh IrDA** option on the **Welcome** screen checks that all services for IrDA are enabled and running on the Windows operating system, and the MeterWare software is ready to connect to the unit.

3 Configuration

This section provides information about configuring the unit.



Note: The steps in Section 2 must be performed successfully before the steps in this section.

3.1 Use the Configuration Screen

To access the **Configuration** screen, click the **Configuration** tab, as shown in Figure 20.

On the **Configuration** screen, you can perform the following tasks:

- **Volume:** Specify meter data (such as type, size, and ID), flow and volume data, and pulse output allocation (refer to Section 3.3).
- **Compensations:** Set temperature and pressure settings for the unit to use for live or fixed data measurement (refer to Section 3.4).
- **Customize LCD:** Select parameters to display on the LCD screen of the unit (refer to Section 3.5).
- **Upload to Unit:** Upload any configuration changes from the Dresser MeterWare software to the unit.
- **Open/Save Configuration File:** Open and save configuration files (refer to Section 3.15).
- **Create Report:** Create configuration reports (refer to Section 3.16).
- **Quick Configuration Summary:** View a summary of configuration settings, and directly configure a parameter (refer to Section 3.2).

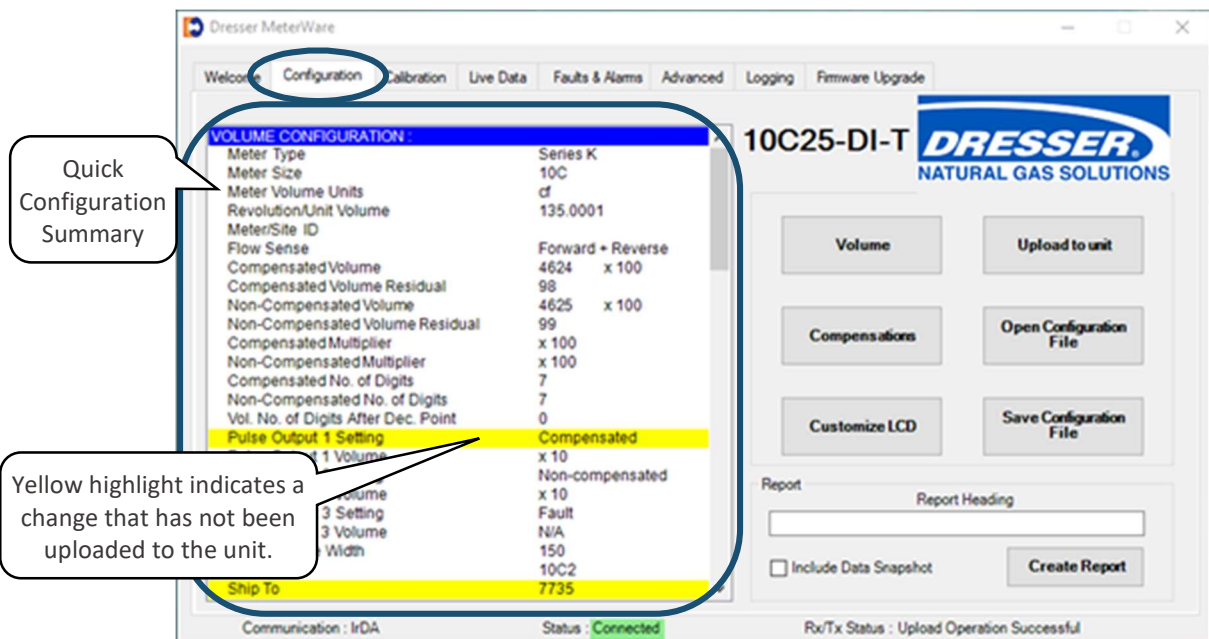


Figure 20: Configuration screen

3.2 Quick Configuration Summary

The Quick Configuration Summary is an area on the **Configuration** screen (refer to Figure 20). This area displays the parameters and their current values. (Scroll through the list to see additional parameters.) Parameter values are set on the individual screens. A single parameter can be configured by double-clicking the parameter in this list to display the screen to change the value.

Parameters highlighted in yellow have changes that have not been uploaded to the unit (refer to Figure 20). Click **Upload to unit** to update the parameter values on the unit and clear the highlighting.

3.3 Configure Volume Configuration Parameters

The volume configuration parameter values specify meter data (such as type, size, and ID), flow and volume data, and pulse output allocation.

Perform the following steps to view and change the volume configuration parameters:

1. On the **Configuration** screen (Figure 20), click **Volume**.
2. Use the **Volume Configuration** screen (Figure 21) to configure the parameters as described in Sections 3.3.1 through 3.3.5.
3. After making changes, click **OK**.



Note: Clicking **Cancel** on the **Volume Configuration** screen removes all the changes made.

4. On the **Configuration** screen, the changed parameters display in the Quick Configuration Summary with a yellow highlight. Click **Upload to unit** to upload the changes to the unit and clear the highlighting.

The screenshot shows the 'Volume Configuration' dialog box with several sections and callouts:

- Display Settings:** A table with columns for parameter name, multiplier, and digits.

| Display | Multiplier | Digits |
|--------------------------------------|---------------|--------|
| Compensated Volume | 0004624 x 100 | 7 |
| Non-compensated Volume | 0004625 x 100 | 7 |
| Number of Digits after Decimal Point | | 0 |
- Meter Data Settings:** Includes dropdowns for 'Type' (Series K) and 'Size' (10C), a text field for 'Meter / Site ID', and input fields for 'Cust No' (10C2) and 'Ship To' (7735).
- Flow Setting:** A dropdown menu for 'Flow Sense' set to 'Forward + Reverse'.
- Volumes Settings:** Input fields for 'Compensated Volume' (462498 cf) and 'Non-compensated Volume' (462599 cf).
- Pulse Output Allocation Settings:** Includes dropdowns for 'Pulse Output 1 (Form A)' (Compensated), 'Pulse Output 2 (Form A)' (Non-compensated), and 'Pulse Output 3 (Form B)' (Fault). It also shows 'Form A Pulse Width' (150 ms) and 'Fault Pulse Width = 500ms'.
- Action Buttons:** 'OK' and 'Cancel' buttons at the bottom.

Figure 21: Volume Configuration screen

3.3.1 Display Settings

These values specify the number of digits displayed for these parameters on the unit’s LCD screen.

Table 2: Display Settings

| Parameter | Values | Notes |
|---|--------|--|
| Compensated Volume Non-compensated Volume* | 5–8 | Select the number of digits to display on the LCD. |
| Number of Digits after Decimal Point | 0–2 | |

* For ES3 units, the number of digits displayed in the **Non-compensated Volume** field is commonly set to the number of digits displayed on the uncorrected mechanical counter (refer to Figure 22).



Figure 22: Non-compensated index matching LCD screen

3.3.2 Meter Data Settings

These parameters specify information about the unit. Some of the parameters are set at the Factory and are not user configurable for some units.

Type and Size Parameters

The **Type** and **Size** parameter values in the Meter Data settings may vary depending on the unit that is being configured:

- For ES3 units, the **Type** and **Size** parameter values may vary depending on the configuration of the mechanical gear reduction assembly, which is meter size/type specific. These parameters are not user configurable and are set prior to the unit leaving the Factory.
- For ETC units, the **Type** and **Size** parameters are user configurable for the fully electronic units.
 - Meter Type

Meter Types available are Series B and Series A (LMMA) meters for imperial and metric versions.

If an ETC is connected that has a hardware and a software configuration for a Series B meter, only the **Series B** and **Series B Metric** selections are available. This is also true for an ETC shipped from the Factory configured for a Series A meter.

- Meter Size

The following meter types have the available meter sizes:

- Series B meter: **8C** through **16M**
- Series A (LMMA) meter: **1.5M** through **16M**
- For Series D and Series K Meters, the parameters are not user configurable and are set prior to the unit leaving the Factory.

Meter/Site ID Parameter

This parameter is user configurable. It is used to specify company meter site identifiers, such as location or serial number.

Cust No and Ship To Parameters

The **Cust No** and **Ship To** parameters are codes set at the Factory to identify the customer and the customer’s location. They are referenced in the default file name of a saved Configuration file. These parameters are user configurable upon receipt of the unit.

3.3.3 Pulse Output Allocation Settings

The units have user-programmable pulse outputs. The specific pulse outputs available depend on the type of unit:

- ES3/ETC with AMR (automatic meter reading)
- ES3/ETC without AMR
- Series D/Series K (all meters are AMR-ready)

Table 3: Pulse Output Allocation Settings

| Parameter | Values | Notes |
|---|---|--|
| Pulse Output 1 Pulse Output 2 (both Form A) | Compensated Non-compensated Fault Disabled | <ul style="list-style-type: none"> • Select based on meter site requirements. • Compensated/Non-compensated sends a pulse every specified number of cubic feet (cf). For example, if x10 is specified, a pulse is sent every ten (10) cf of flow. • Fault sends a pulse if the pulse output is wired into a device that can receive it. The pulse is sent as either a continuous string every thirty (30) seconds or as a single (latched) pulse, depending on the pulse output setting (refer to Section 3.8.6). • Disabled does not send a pulse. |
| Form A Pulse Width (in ms) | 50, 150, 250 | <ul style="list-style-type: none"> • Select based on the unit’s wiring connection. • The default configuration is 150 ms. |
| Pulse Output 3 (Form B)* | Fault Disabled | <ul style="list-style-type: none"> • Fault sends a pulse if the pulse output is wired into a device that can receive it. The pulse is sent as either a continuous string every thirty (30) seconds or as a single (latched) pulse, depending on the pulse output setting (refer to Section 3.8.6). • Disabled does not send a pulse. • For the ES3/ETC without AMR, the Form B pulse is unavailable and the term Disabled displays grayed out. |

* The pulse width on Form B pulse is not user configurable. As stated on the Volume Configuration screen, the fault pulse width standard is 500 ms.

3.3.4 Flow Setting

The **Flow Sense** parameter specifies the direction the gas flows through the meter (forward or reverse).

If the accessory unit is an ES3 or an ETC that is mounted on a Dresser rotary meter, a directional flow arrow is on the nameplate of the meter on the cylinder.

For the Dresser Series D and Series K meters, a small triangular arrow is on the top of the meter next to the left ferrule (spud).

The volume accumulation methods are based on the capability to read either the forward or the reverse flow directions, as shown in Table 4.

Table 4: Volume Accumulation Methods

| Volume Accumulation | Measured Flow Source | | |
|---------------------------|----------------------|---------|---|
| | Forward | Reverse | Calculated Flow |
| Forward minus (-) Reverse | ✓ | ✓ | Volume in Reverse flow is subtracted from the volume calculated in Forward flow. |
| Reverse minus (-) Forward | ✓ | ✓ | Volume in Forward flow is subtracted from the volume calculated in Reverse flow. |
| Reverse | X | ✓ | Volume in Reverse flow only is calculated. All flow in the Forward direction is ignored. |
| Forward | ✓ | X | Volume in Forward flow only is calculated. All flow in the Reverse direction is ignored. |
| Forward plus (+) Reverse | ✓ | ✓ | Volume in Reverse and Forward flow are calculated. Calculated volume is the total of all flow in both directions. |

3.3.5 Volumes Settings

Set these parameters to specify the **Compensated Volume** and **Non-compensated Volume** values to be displayed on the LCD screen.

When the volume parameter values are entered or changed for **Compensated Volume** and **Non-compensated Volume**, the box is highlighted in yellow. The highlighting indicates the new volumes have not yet been uploaded to the unit.

After the **Upload to unit** task is performed, the highlighting is cleared from this screen. For more information about uploading changes to the unit, refer to Section 3.2.

For ES3 units, the **Non-compensated Volume** parameter is commonly set to match the **Non-compensated Volume** value displayed on the uncorrected mechanical counter.

3.4 Configure Temperature and Pressure Compensation

These parameters set the temperature and pressure settings for the unit to use for live or fixed data measurement.

Perform the following steps to view and change the compensation parameters:

1. On the **Configuration** screen (Figure 20), click **Compensations**.
2. Use the **Compensation Configuration** screen (Figure 23 and Figure 24) to configure the parameters as described in Section 3.4.1 and 3.4.2.
3. After making changes, click **OK**.



Note: Clicking **Cancel** on the **Compensation Configuration** screen removes all the changes made.

4. On the **Configuration** screen, the changes display in the Quick Configuration Summary with a yellow highlight. Click **Upload to unit** to upload the changes to the unit and clear the highlighting.

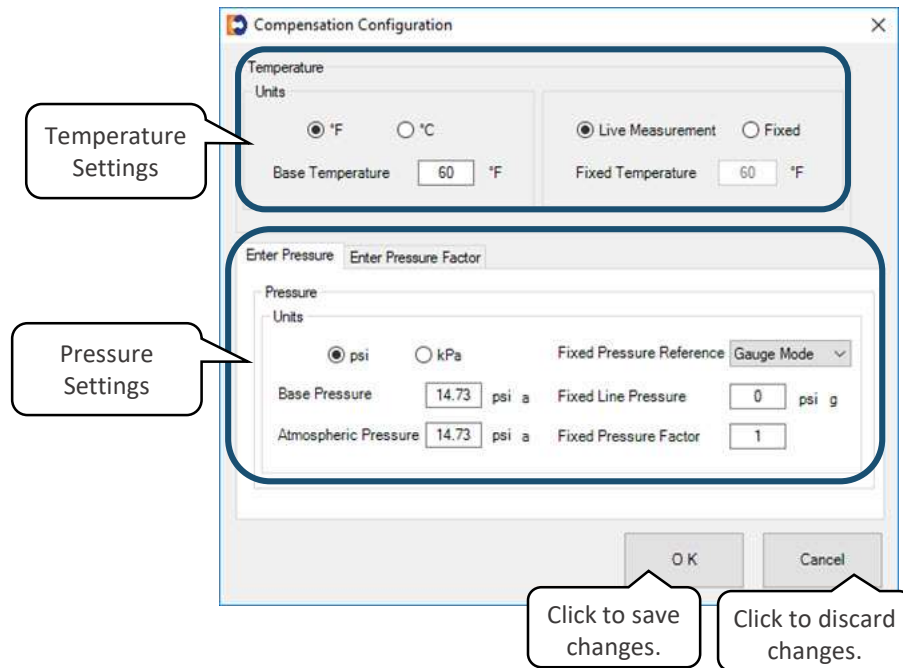


Figure 23: Compensation Configuration screen

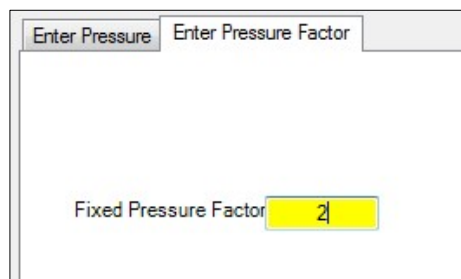


Figure 24: Fixed Pressure Factor alternate screen

3.4.1 Temperature Settings

The units can provide either live or fixed temperature measurements (refer to Table 5).

Table 5: Temperature Settings

| Parameter | Values | Notes |
|--|------------------------|---|
| Units | °F °C | Select to measure temperature as Fahrenheit or Celsius. |
| Base Temperature | User configurable | Enter the contract base temperature. |
| Fixed Temperature* | User configurable | Select the Fixed parameter to access this field. |
| Live or fixed temperature | Live Measurement Fixed | Select to record the temperature live or specify it. |
| * Specify a Fixed Temperature value even if the Live Measurement parameter is selected. If the unit experiences a temperature fault, you can select to correct for temperature using this Fixed Temperature parameter value (refer to Section 3.8.4, Step 3). | | |

3.4.2 Pressure Settings

The units can provide either live or fixed pressure measurements (refer to Table 6).

Table 6: Pressure Settings

| Parameter | Values | Notes |
|--------------------------|------------------------------------|---|
| Units | psi or kPa | Select to measure pressure as psi (pounds per square inch) or kPa (kiloPascals). |
| Base Pressure | User configurable | Enter the contract base pressure. |
| Atmospheric Pressure | User configurable | Enter the average atmospheric pressure. |
| Fixed Pressure Reference | Absolute Mode Gauge Mode | Select the mode for the Fixed Line Pressure parameter. |
| Fixed Line Pressure | User configurable or calculated | Enter the known pressure value. The value entered is used to calculate the other value. |
| Fixed Pressure Factor | User configurable or calculated | For example, if you enter a value for the Fixed Line Pressure parameter, the unit calculates the Fixed Pressure Factor parameter value. The Fixed Pressure Factor parameter can be set on the Enter Pressure tab or on the Fixed Pressure Factor tab (Figure 24). |

3.5 Customize the LCD Screens

The **LCD Settings** screen selections determine which parameters display on the unit's LCD screen, depending on whether the unit is configured to be Compensated or Non-Compensated.

Perform the following steps to view and change the LCD screen parameters:

1. On the **Configuration** screen (Figure 20), click **Customize LCD**.
2. To choose which parameters display on the unit's LCD screen, use the **LCD Settings** screen (Figure 25) to select () or clear () the checkboxes, as described in Section 3.5.1 and 3.5.2.

3. After making changes, click **OK**.



Note: Clicking **Cancel** on the **LCD Settings** screen removes all the changes made.

4. On the **Configuration** screen, the changes display in the Quick Configuration Summary with a yellow highlight. Click **Upload to unit** to upload the changes to the unit and clear the highlighting.

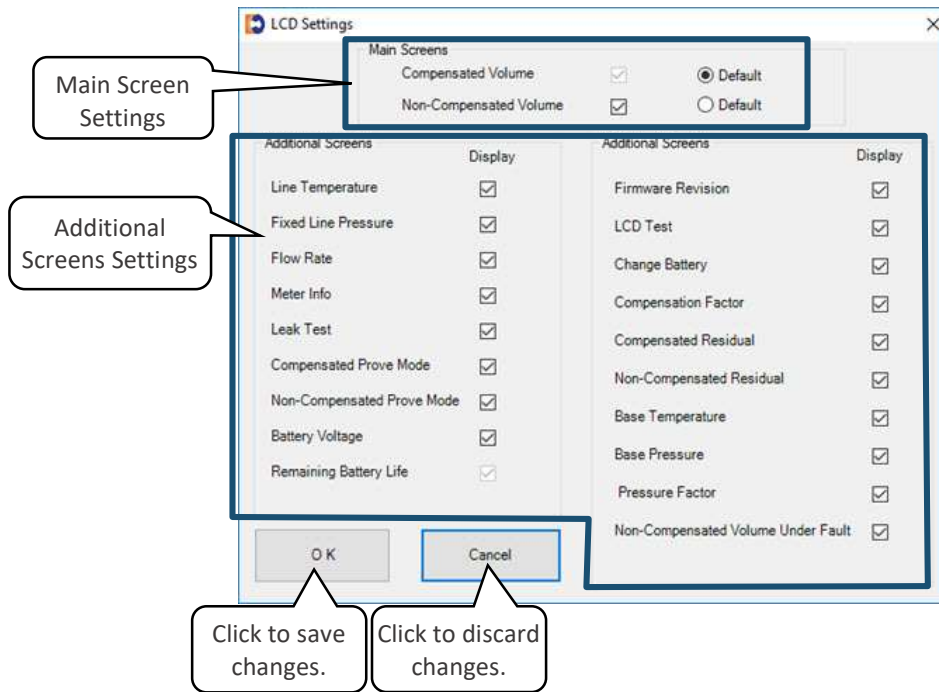


Figure 25: LCD Settings screen

3.5.1 Main Screen

The Main Screens default settings are determined by whether your unit is configured to be Compensated or Non-Compensated.

For a Compensated unit:

- If the unit was ordered from the Factory as a Compensated device, **Compensated Volume** is the default main screen.
- The option to clear the **Compensated Volume** checkbox is unavailable (grayed out).

For a Non-Compensated unit:

- If the unit was ordered from the Factory as a Non-Compensated device, **Non-Compensated Volume** is the default main screen.
- The option to clear the **Non-Compensated Volume** checkbox is unavailable (grayed out).

- The following additional screen parameters are unavailable (grayed out). For more information about additional screens, refer to Section 3.5.2.

- Line Temperature
- Fixed Line Pressure
- Compensated Prove Mode
- Compensation Factor
- Non-Compensated Residual
- Remaining Battery Life

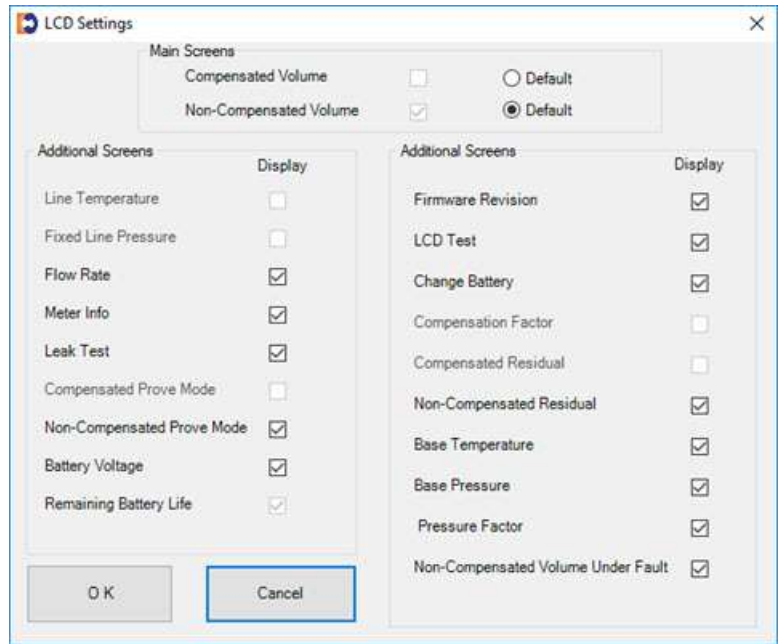


Figure 26: Screens unavailable in non-compensated mode

3.5.2 Additional Screens Settings

The following user-selectable parameters specify the LCD screens to display.

Table 7: Additional LCD Screens

| Parameter | Displayed on LCD Screen | Function |
|----------------------------|-------------------------|---|
| Compensated Volume | COMPENSATED VOLUME | Displays non-compensated volume that has been corrected to standard conditions |
| Non-Compensated Volume | NON-COMPENSATED VOLUME | Displays actual non-compensated volume |
| Line Temperature* | LINETEMP | Displays live line temperature |
| Fixed Line Pressure* | FIXED P | Displays the line pressure as entered by the user |
| Flow Rate | FLOWRATE | Displays uncorrected flow rate (average of latest thirty (30) seconds of captured data) |
| Meter Info | MTR INFO | Displays meter size and type |
| Leak Test | LEAKTEST | Performs a functional test to determine low flow leakage downstream of the meter |
| Compensated Prove Mode* | PROVE CV | Allows for compensated volume accuracy testing |
| Non-Compensated Prove Mode | PROVE UV | Allows for non-compensated volume accuracy testing |
| Battery Voltage | BATTVOLT | Displays battery voltage |
| Remaining Battery Life** | REM LIFE | Calculates remaining battery life and displays it in months |

| Parameter | Displayed on LCD Screen | Function |
|------------------------------------|---|---|
| Firmware Revision | FIRM REV | Displays the current firmware revision |
| LCD Test | LCD TEST | Tests all display segments |
| Change Battery | BATT.CHNG | Saves data to memory and resets remaining battery life to 240 months |
| Compensation Factor* | COMPFCTR | Displays the factor applied to non-compensated volume to calculate compensated volume |
| Compensated Residual | COMPENSATED RESIDUAL | Displays extended compensated volume data beyond the value displayed on the compensated volume screen |
| Non-Compensated Residual* | NON-COMPENSATED RESIDUAL | Displays extended non-compensated volume data beyond the value displayed on the non-compensated volume screen |
| Base Temperature | BASE T | Displays base temperature as entered by the user |
| Base Pressure | BASE P | Displays base pressure as entered by the user |
| Pressure Factor | PRESS FA | Displays fixed pressure factor |
| Non-Compensated volume under fault | NCVOLFLT | Displays non-compensated volume that has accumulated since a fault occurred |
| * | Not available on Non-Compensated configured devices | |
| ** | Selected to display by default; it cannot be changed. | |

3.6 Perform a Single Point Calibration

Complete the following steps to perform a single point calibration:

1. On the **Calibration** screen, click **Single Point Calibration**.



Figure 27: Click Single Point Calibration



Note: This procedure requires a stable and accurate temperature reference device for comparison. Allow enough time for the temperature to stabilize between the new temperature probe and the reference temperature device.

For the best results, submerge the new temperature probe and the reference temperature device in a temperature-controlled liquid bath.

2. On the **Temperature Calibration** screen, click **Update Live Temperature**.

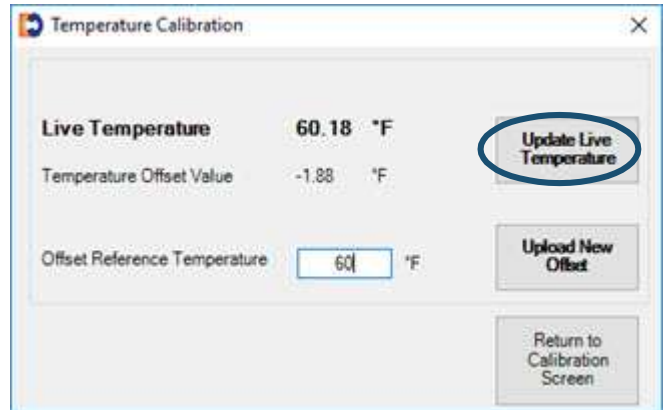


Figure 28: Click Update Live Temperature selection

The **Live Temperature** value automatically updates, and the **Offset Reference Temperature** value is highlighted.

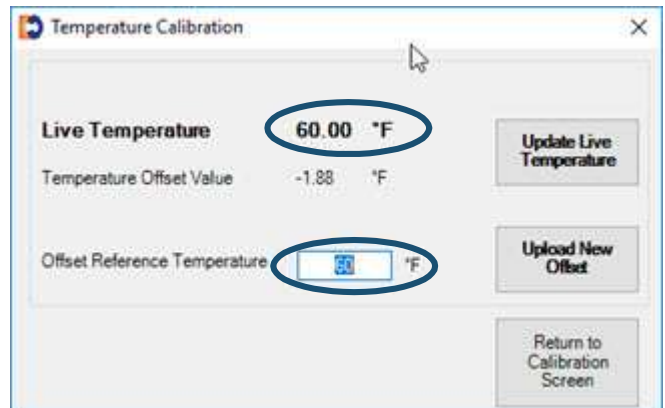


Figure 29: Offset Reference Temperature selected

3. Enter the temperature from the calibrated temperature reference instrument in the **Offset Reference Temperature** field.
 Changed data is highlighted in yellow to indicate that changes have been made in the software but have not been uploaded to the unit.
4. Click **Upload New Offset**.

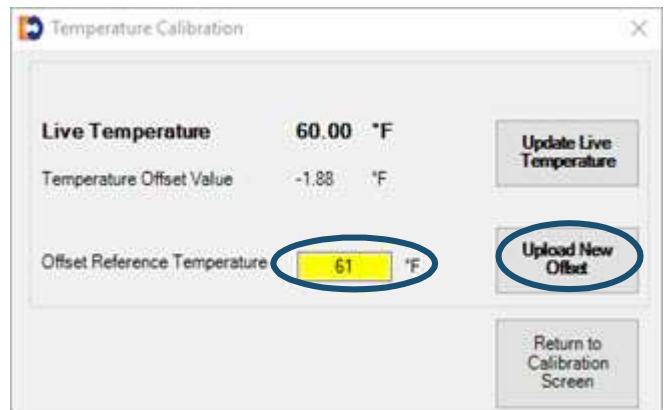


Figure 30: Enter and upload offset reference temperature

5. On the **Enter Password** screen, enter the password. The default password is the number zero (0).
6. Click **OK** to upload the new reference temperature.
Clicking **Cancel** does not save the changes.

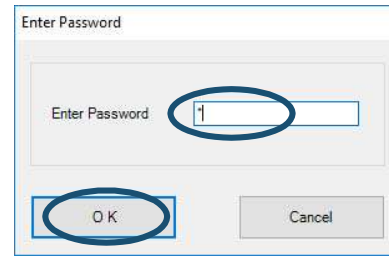


Figure 31: Enter Password

7. Click **OK** when a **Status Info** screen displays that the calibration operation completed successfully.

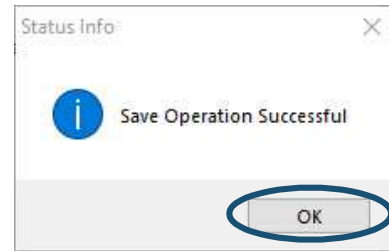


Figure 32: Click OK on the Status Info screen

8. On the **Temperature Calibration** screen, click **Return to Calibration Screen** to complete the calibration process.

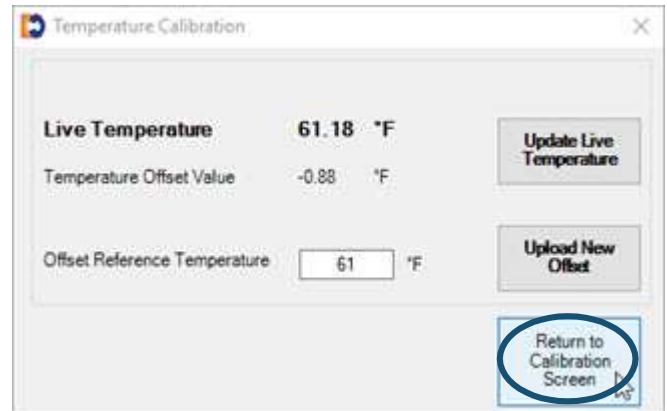


Figure 33: Click Return to Calibration Screen selection

3.7 Use the Live Data Screen

The **Live Data** screen presents the unit’s information at the specified time and date.

Click **Update Values** to update the information.

Although volume information and compensation parameters are available on the LCD screens and in the Data Log reports, the **Live Data** screen information is useful when attempting to troubleshoot a problem with a particular unit.

The **Live Data** screen also displays the following information:

- The status of Present and Occurred Faults and Alarms:
 - **Set** displays when a fault or alarm is active or has existed.
 - **Clear** displays when no fault or alarm is active or has existed.
- Fault Counts
- Unit Serial Number
- Firmware Revision
- Meter Site ID
- PCB (printed circuit board) Revision
- Battery Voltage

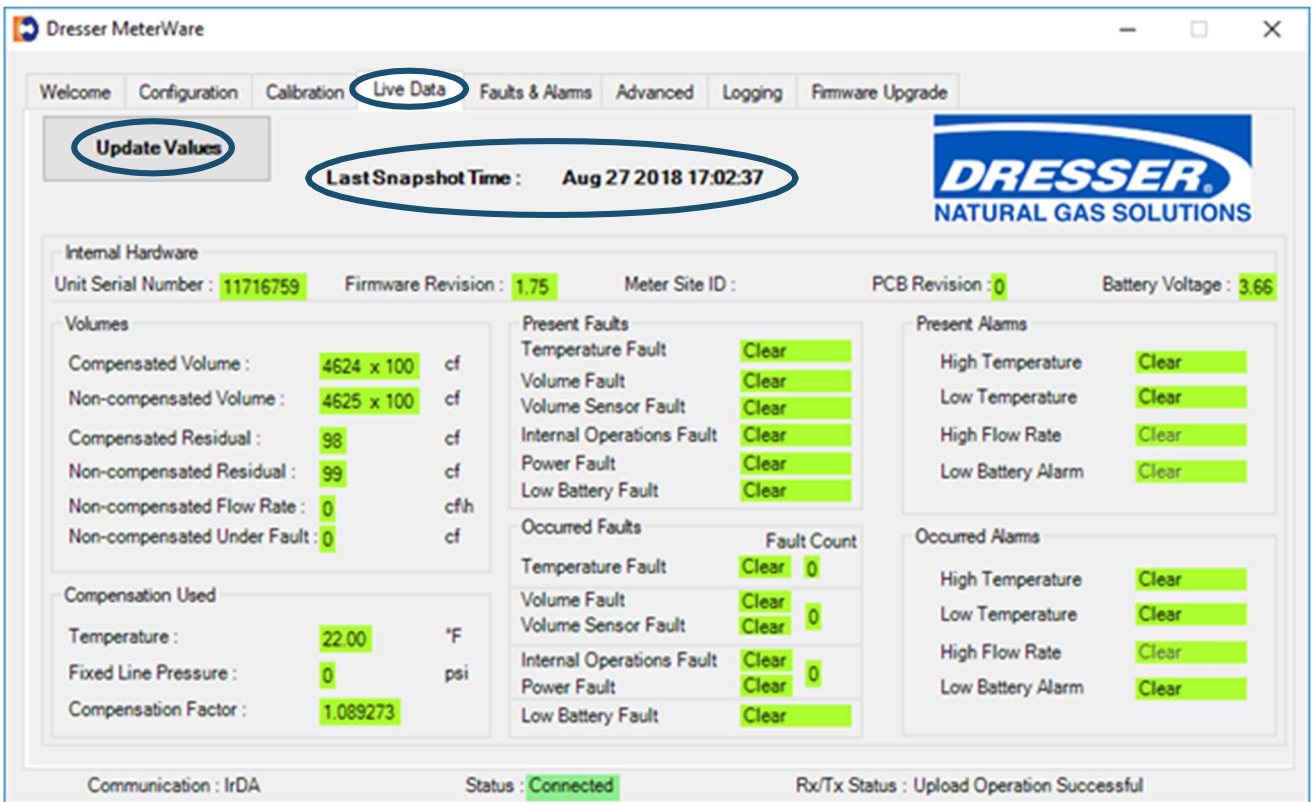


Figure 34: Live Data screen

3.8 Configure and Clear Faults and Alarms

Faults and alarms indicate that a problem exists or a parameter value has moved out of its specified limits. Faults and alarms that have occurred may display on the Live Data screens and on the LCD screen, depending on the unit's configurations and settings.

3.8.1 Fault Types

A fault indicates a problem with the unit's electronics hardware or firmware.

Table 8: Fault Types

| Fault Type | LCD Screen Display | Occurs When |
|--------------------------|--------------------|---|
| Temperature Fault | T FLT | The temperature probe is faulty or disconnected from the meter electronics. |
| Volume Fault | VOL FLT | The volume input pulses are out of sequence. |
| Volume Sensor Fault | VOL SNSR FLT | An open wire on the volume input board or mag pickup is present. |
| Internal Operation Fault | INT FLT | A memory access fault is present. |
| Power Fault | PWR FLT | A power problem occurred or battery wiring is disconnected. |
| Low Battery Fault | LOW BATT | The battery voltage drops below 2.7 V. |

3.8.2 Alarm Types

An alarm indicates when a battery has low voltage or when line temperature or flow rate has moved above or below the desired limits.

Table 9: Alarm Types

| Alarm Type | LCD Screen Display | Occurs When |
|------------------------------|--------------------|---|
| High Temperature Alarm Limit | HIGHT. AL. | The temperature rises above the user-defined limit. |
| Low Temperature Alarm Limit | LOWT. AL. | The temperature drops below the user-defined limit. |
| High Flow Rate Alarm Limit | HIGHFL. AL. | The flow rate rises above the user-defined limit. Note: Default high flow alarm allows for a 20% overspeed. |
| Low Battery Alarm | LBATT AL. | The battery voltage drops below 3.0 V (not user configurable). |

3.8.3 Faults & Alarms Screen

On the **Faults & Alarms** screen, you can:

- Clear occurred faults and alarms.
- Clear the Non-compensated Volume Under Fault register.
- Set parameters for high and low temperature alarms (refer to Section 3.8.4).

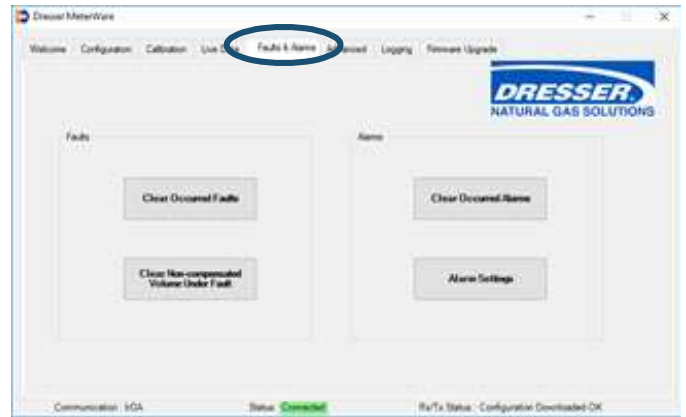


Figure 35: Faults & Alarms screen

3.8.4 Set Alarm Limits

Perform the following steps to set parameters for high and low temperature alarms:

1. On the **Faults & Alarms** screen, click **Alarm Settings**.

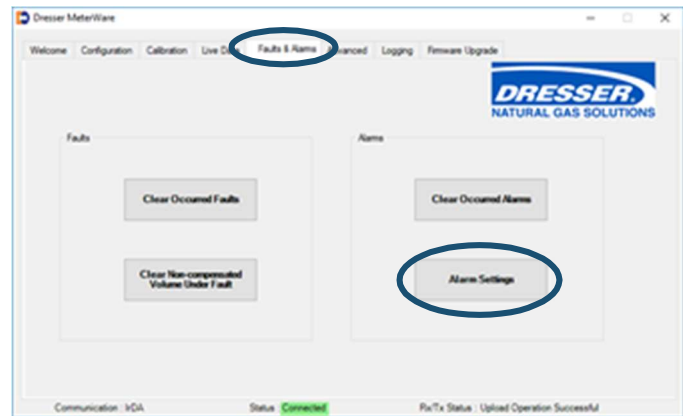


Figure 36: Click Alarm Settings

2. On the **Alarm Settings** screen, enter the high and low temperature limits in the appropriate fields.
3. Select the **Use Fixed Temp. Under Fault** checkbox if the unit should use the fixed temperature for volume correction in a fault situation.

Changed data is highlighted in yellow to indicate that changes have been made in the software but have not been uploaded to the unit.

4. Click **OK** to save the settings.

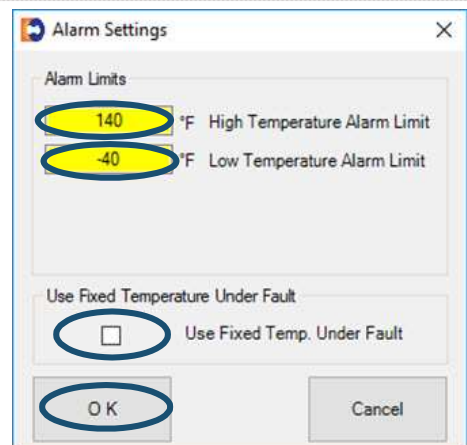


Figure 37: Select the temperature alarm settings

5. Click the **Configuration** screen.
6. Click **Upload to unit** to save the changes to the unit.

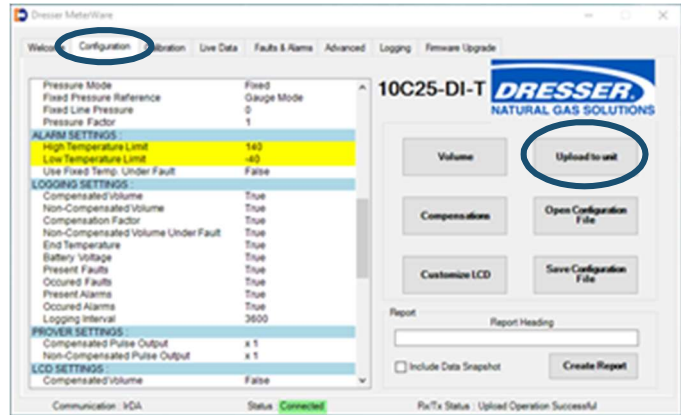


Figure 38: Upload alarm settings

3.8.5 Clear Occurred Faults and Alarms

To clear occurred faults and alarms on the **Faults & Alarms** screen (refer to Figure 35), click **Clear Occurred Faults**, **Clear Occurred Alarms**, or **Clear Non-compensated Volume Under Fault**.

3.8.6 Configure Pulse Output Faults and Alarms

Perform the following steps to configure the type of pulse output faults and alarms:

1. On the **Advanced** screen, click **Faults and Alarms Configuration**.

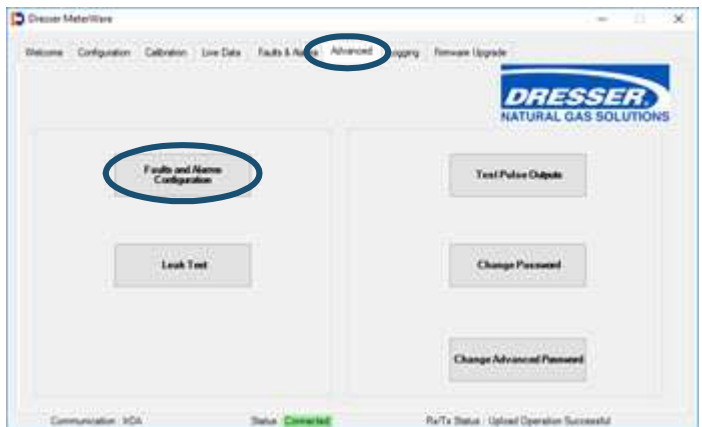


Figure 39: Click Faults and Alarms Configuration

2. On the **Faults and Alarms Configuration** screen, make the appropriate selections:

- a. Select the type of pulse output alarm:
 - **Continuous Pulse** sends a steady string of pulses until the alarm or fault is acknowledged and cleared.
 - **Single (Latched) Pulse** sends one pulse output when the alarm or fault occurs.
- b. Select the alarms for the pulse to send notifications.

User-configurable alarms include:

- High Temperature
- Low Temperature
- High Flow

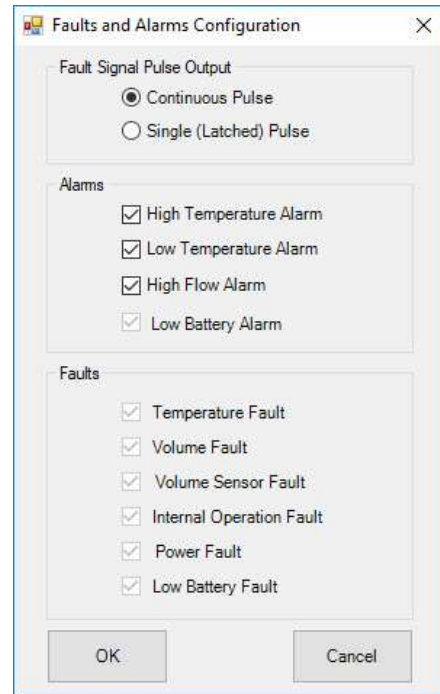


Figure 40: Select faults and alarms

3. Click **OK**.



Note: The **Low Battery Alarm** and the **Faults** checkboxes are unavailable (grayed out). The **High Flow Alarm** is not user configurable; it is set to 20% overspeed at the Factory.

A message displays asking if you want to update the changes to the unit.

4. To upload the changes, click **OK**; otherwise, click **Cancel** to return to the **Faults and Alarms Configuration** screen.

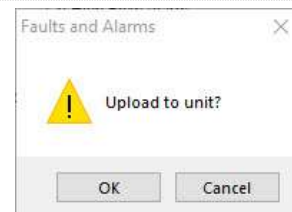


Figure 41: Click OK to upload to unit

5. On the **Enter Password** screen, enter the password. The default password is the number zero (0).

6. Click **OK** to upload the settings.

Clicking **Cancel** does not save the changes.

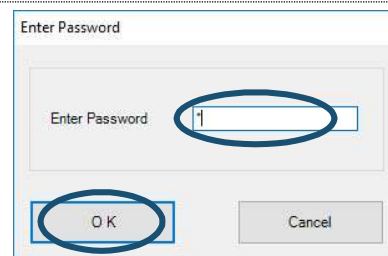


Figure 42: Enter password

- Click **OK** when a **Status Info** screen displays that the operation completed successfully.

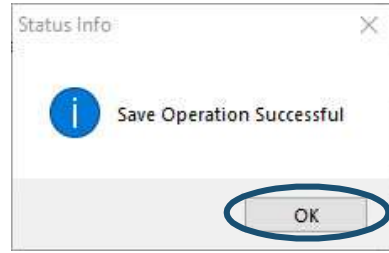


Figure 43: Click OK on the Status Info screen

3.9 Perform a Leak Test



Note: These steps apply to the Series D and Series K meters.

A common industry practice is to perform a leak test on a meter set after installation. The leak test feature can detect a leak (or gas flow) at any point downstream of the meter.

WARNING

While performing a downstream leak test, adhere to federal, state, company, and local codes and procedures as applicable.

Perform the following steps to perform a leak test on a meter set:

- On the **Advanced** screen, click **Leak Test**.

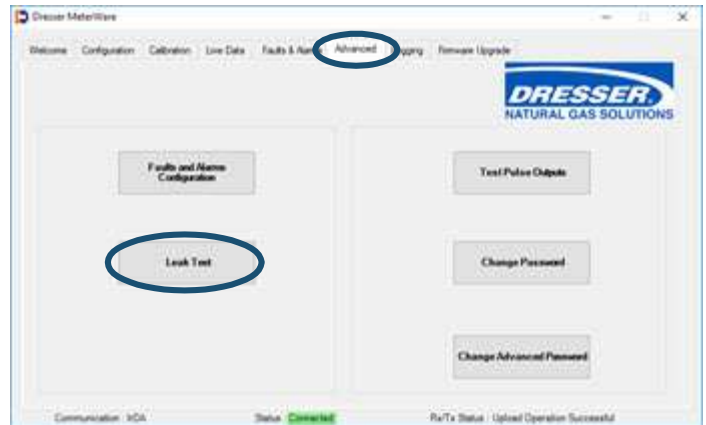


Figure 44: Click Leak Test

2. On the **Set Leak Test Parameters** screen, select the test parameters.
 - Use the default parameters displayed to run a one (1) minute leak test with a maximum flow of 60 cfh. Skip to Step 4.
 - To change the default leak test parameters, proceed to Step 3.

Figure 45: Set Leak Test Parameters

3. To change the default leak test parameters (refer to Figure 45), perform the following steps:
 - a. In the **Set Time** fields, enter the number of hours and minutes for the test to run.
 - b. In the **Enter Flow Rate/Hour** field, enter the flow rate per hour to use.
 - c. Click **Config** to start the process to upload these settings to the unit.
 - d. On the **Enter Password** screen (refer to Figure 42), enter the password. The default password is the number zero (0).
 - e. Click **OK** to upload the settings.
Clicking **Cancel** does not save the changes.
 - f. Click **OK** when a **Status Info** screen displays that the configuration upload completed successfully (refer to Figure 43).

Figure 46: Configure Leak Test Parameters

4. On the **Set Leak Test Parameters** screen, click **Run** to start the leak test.



Note: If an error message displays that one of the values has not been configured, perform steps Step 3.c through Step 4.

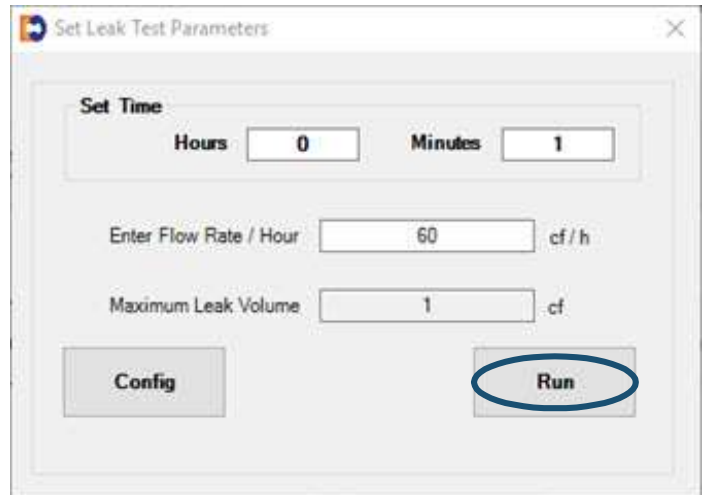


Figure 47: Click Run to start the leak test

5. A message displays to show the number of minutes the leak test will run.
- Click **Yes** to proceed with the leak test.
 - Click **No** to change the settings, and return to Step 3.

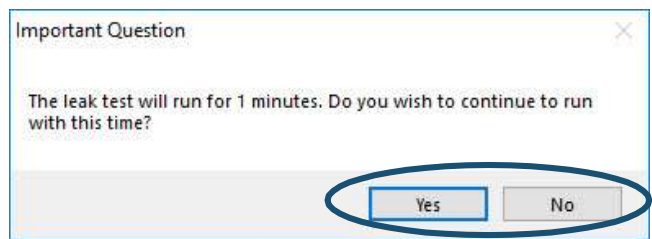


Figure 48: Respond to leak test length question

A countdown clock on the **Set Leak Test Parameters** screen displays the progress of the test.

After the leak test process completes, **PASS** or **FAIL** displays.

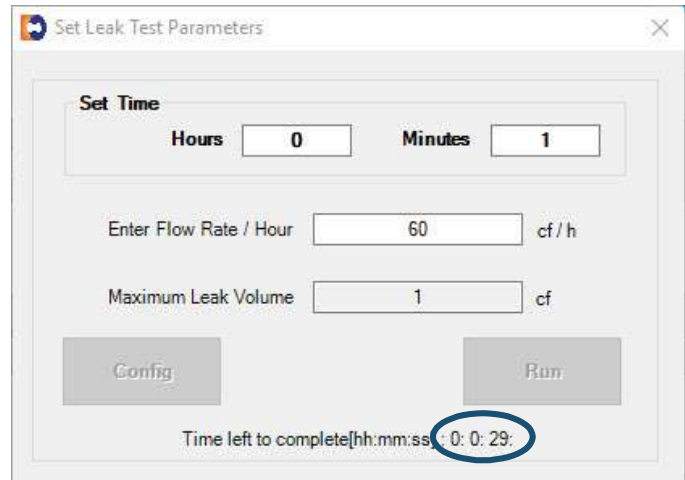


Figure 49: Observe leak test countdown

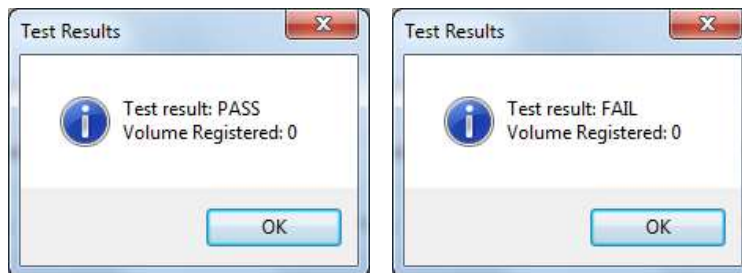


Figure 50: Receive leak test results

3.10 Test Pulse Outputs

Perform the following steps to send test pulses to the pulse outputs:

1. On the **Advanced** screen, click **Test Pulse Outputs**.

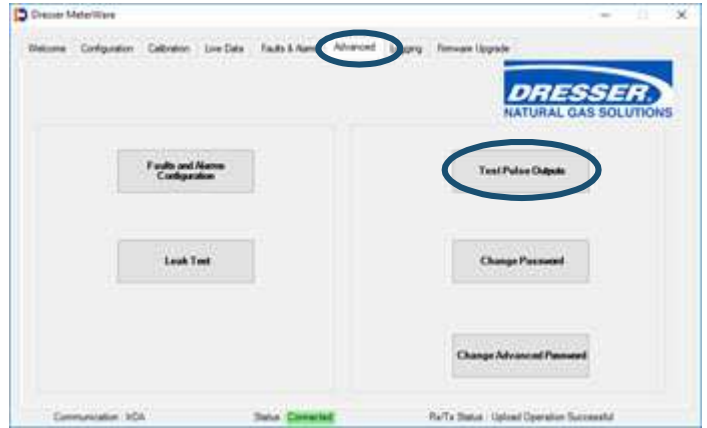


Figure 51: Select Test Pulse Outputs

2. In the provided field, enter the number of pulses (1–30) to send to Pulse Outputs 1, 2, and 3.

The pulse width of the Compensated and Non-Compensated Volume test pulses is the pulse width specified on the **Volume Configuration** screen. For example, if a pulse width is set to 50 ms, test pulses sent for both Form A pulses are 50 ms.

If the unit has a Form B pulse output (for example, an ES3/ETC unit with AMR) that is enabled on the **Volume Configuration** screen, the specified number of pulses with a pulse width of 500 ms is also sent.

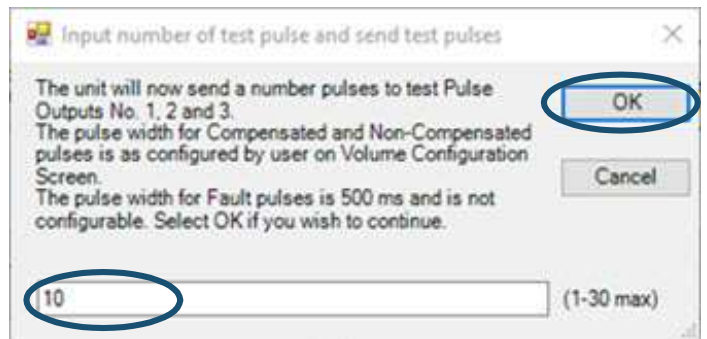


Figure 52: Enter number of test pulses

3. On the **Enter Password** screen, enter the password. The default password is the number zero (0).
4. Click **OK** to upload the settings.
Clicking **Cancel** does not save the changes.

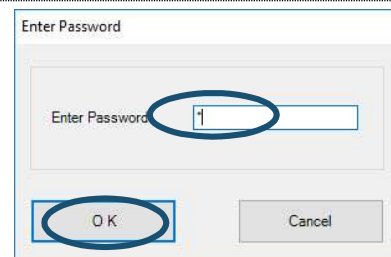


Figure 53: Enter password

- Click **OK** when the **Status Info** screen displays “Pulse Output Test sent successfully.”

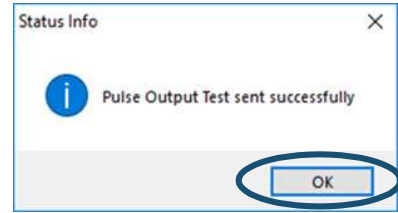


Figure 54: Click OK on Status Info screen

3.11 Change Passwords

A password is required when writing information to the unit, such as uploading to the unit, configuring and clearing faults and alarms, configuring leak parameters, and uploading a configuration file.

The advanced password is required when upgrading the firmware.

- On the **Advanced** screen, click **Change Password** or **Change Advanced Password**.

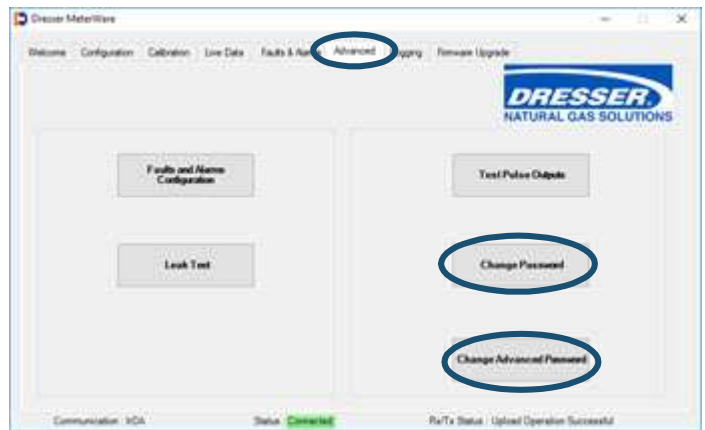


Figure 55: Change password selection

- On the **Change Password** or the **Change Advanced Password** screen:

- In the **Existing Password** field, enter the current password.

The Factory default password is the number zero (0).

- In the **New Password** and the **Verify Password** fields, enter the new password.

Passwords can only be numeric characters; no alphabetic characters are permitted.

- Click **OK** to upload the settings.

Clicking **Cancel** does not save the changes.

A Status message displays if the password was changed.

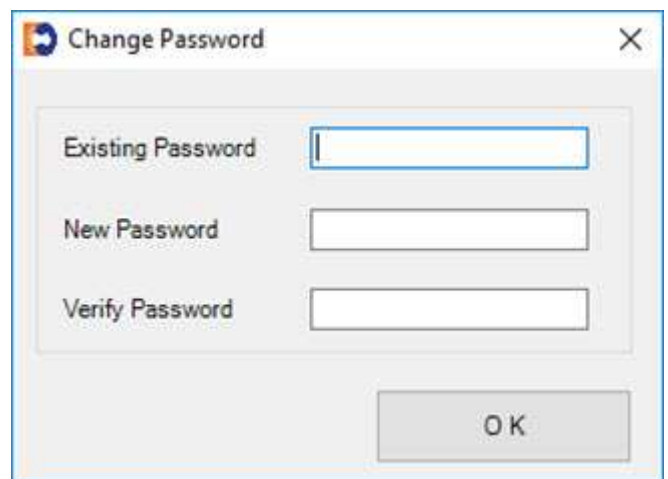


Figure 56: Change Password entries

3.12 Data Log Report

Data Log reports can be used for various purposes. Their primary purpose is to collect billing information, such as Compensated and Non-Compensated volumes.

The units store 150 days (up to 3,600 hours) of hourly logged data. The logging interval is fixed at one hour, and it is not user configurable. The **Logging** screen displays the number of logs currently stored in memory. When the memory is full, the most recent log replaces the oldest log in the memory. All logs are stored in non-volatile memory (E² Prom).

The Data Log report is saved as a CSV (comma-separated values) file for easy import into spreadsheets, such as Microsoft Excel.

If the ES3/ETC units or Series D/Series K meters do not have any present or occurred faults or alarms, the Data Log Report displays **CLEAR** in all hourly logs. If there is a present or occurred fault or alarm, the Data Log Report displays **SET** in that hourly log.

Data Log parameters include:

- Log Number
- Log Date & Time
- Compensated Volume (ft³ or m³)
- Non-compensated Volume (ft³ or m³)
- Compensation Factor
- Non-compensated Volume Under Fault (ft³ or m³)
- End Temperature
- Battery Voltage
- Present Fault – Temperature
- Present Fault – Volume
- Present Fault – Internal Operation
- Present Fault – Low Battery Fault
- Present Fault – Volume Sensor Fault
- Present Fault – Power Fault
- Occurred Fault – Temperature
- Occurred Fault – Volume
- Occurred Fault – Internal Operation
- Occurred Fault – Low Battery Fault
- Occurred Fault – Volume Sensor Fault
- Occurred Fault – Power Fault
- Present Alarm – High Temperature
- Present Alarm – Low Temperature
- Present Alarm – High Flow
- Present Alarm – Low Battery
- Occurred Alarm – High Temperature
- Occurred Alarm – Low Temperature
- Occurred Alarm – High Flow
- Occurred Alarm – Low Battery



Note: The time on your computer is used by the MeterWare software for this process.

Perform the following steps to download Data Logs:

1. On the **Logging** screen:
 - a. Select the start date and time of the Data Log to download. If a date and time are not selected, all available logs are downloaded.

The **Number of Hourly Log Records** value displays the number of records currently stored.
 - b. Click **Download Data Log** to begin the download.

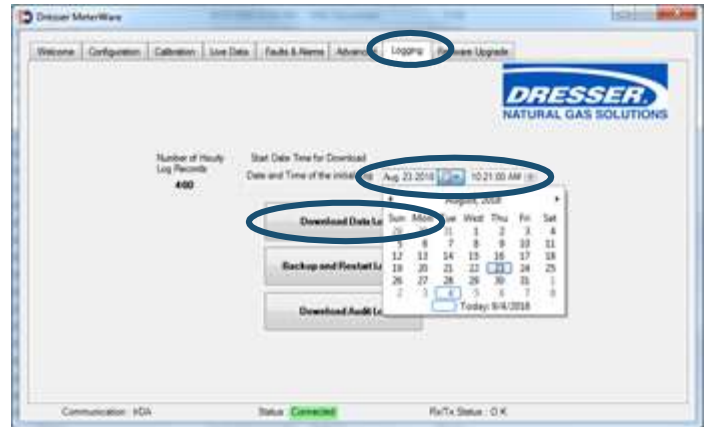


Figure 57: Enter date and time, and click Download Data Log

A Data Log download progress screen displays.

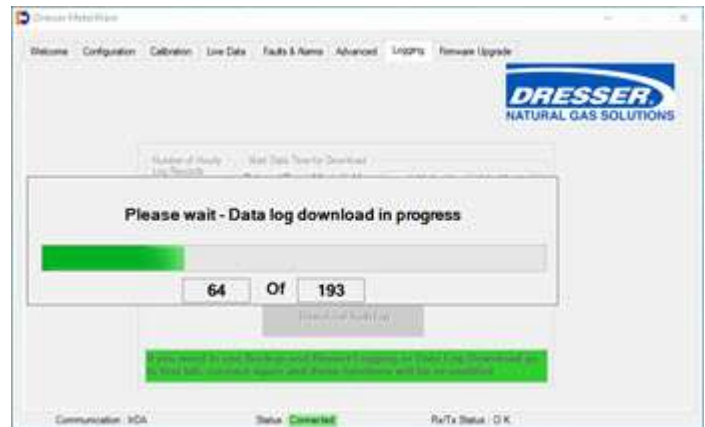


Figure 58: Data Log downloading progress displays

2. On the **Save As** screen:
 - a. Select the location for the .csv file to be saved.

Select an existing location or create a new one to save your Data Log downloads. Choose a location that you can easily remember and find. You might want to record the selected location in a place other than the computer.
 - b. Enter the name of the .csv file in the **File name** field. The default file name is DataLogTest.csv.
 - c. Click **Save**.

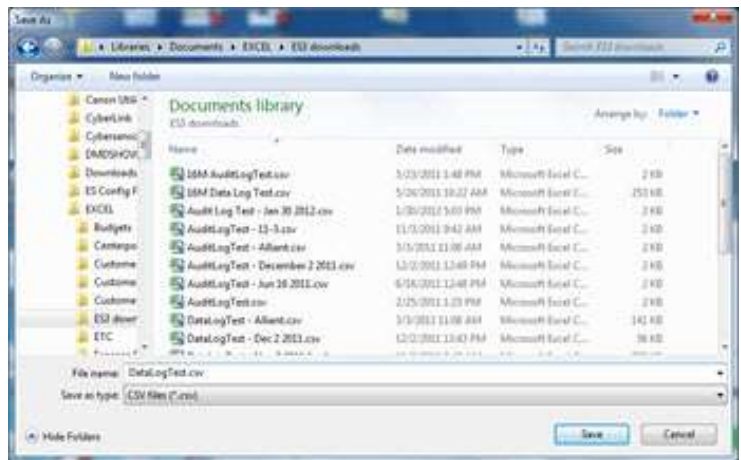


Figure 59: Specify the location and name of the .csv file

After the Data Log has downloaded, the **Logging** screen displays. Notice that there is now a message highlighted in green.

3. Take the actions specified in this message to reactivate the **Download Data Log** option and be able to download another Data Log.

These actions include:

- a. Click the **Welcome** screen.
- b. Click **Disconnect**.
- c. Click **Connect**.
- d. Click the **Logging** screen.



Figure 60: Download Data Log reactivation message

3.13 Backup Logs and Restart Logging

Backup and Restart Logging on the **Logging** screen creates a download file of all of the Data Logs on the unit and then deletes them from the unit.

The file is saved as a CSV (comma-separated values) file for easy import into spreadsheets, such as Microsoft Excel.

Before you begin this process:

- Be sure you no longer need to access the Data Logs on the unit.
- Allow enough time to complete the download. The time it takes to download all of the Data Logs depends on how many are stored in the unit. **Number of Hourly Log Records** on the **Logging** screen displays the current number of Data Logs stored on the unit.

Perform the following steps to create a backup file of all Data Logs, then delete them from the unit:

1. On the **Logging** screen, click **Backup and Restart Logging** to begin the download.

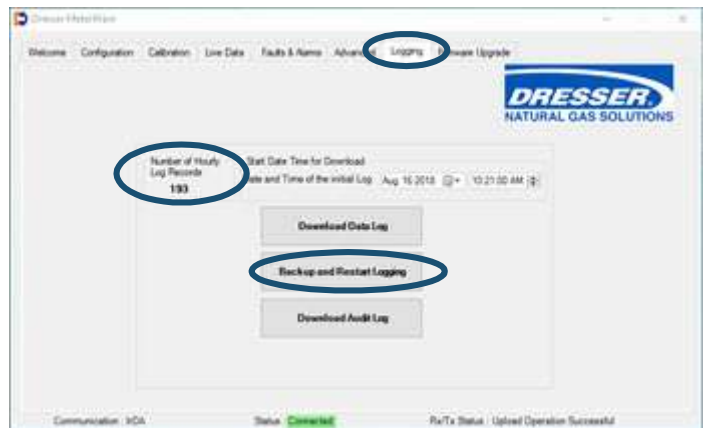


Figure 61: Click Backup and Restart Logging

A Data Log download progress screen displays.

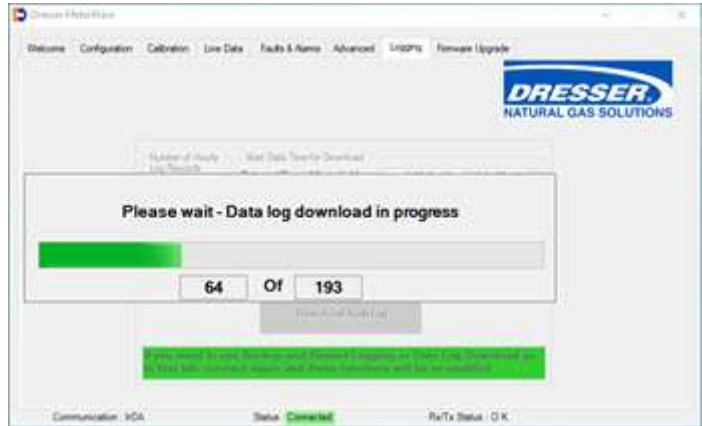


Figure 62: Data Log downloading progress displays

2. On the **Save As** screen:
 - a. Select the location for the .csv file to be saved.

Select an existing location or create a new one to save your Data Log downloads. Choose a location that you can easily remember and find. You might want to record the selected location in a place other than the computer.

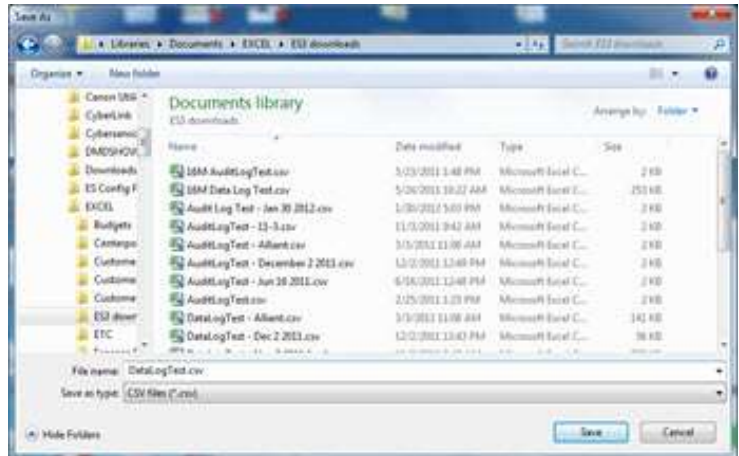


Figure 63: Specify the location and name of the .csv file

- b. Enter the name of the .csv file in the **File name** field. The default file name is DataLogTest.csv.
 - c. Click **Save**.
3. After the backup log has downloaded, the **Logging** screen displays. Notice that there is now a message highlighted in green.

4. Take the actions specified in this message to reactivate the **Download Data Log** and **Backup and Restart Logging** options.

These actions include:

- a. Click the **Welcome** screen.
- b. Click **Disconnect**.
- c. Click **Connect**.

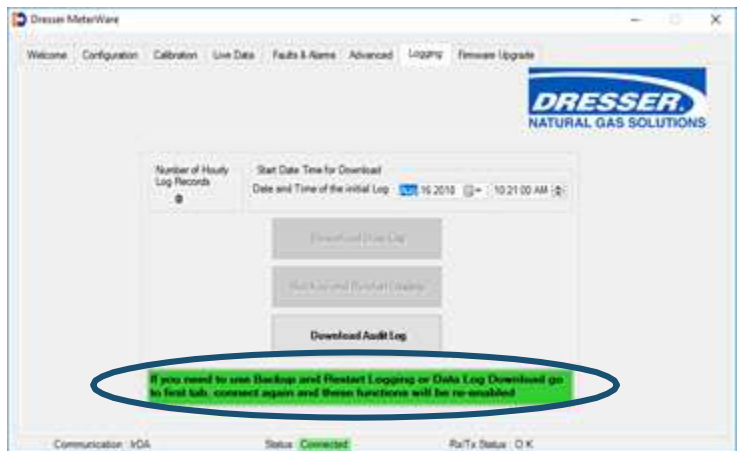


Figure 64: Download Data Log reactivation message

3.14 Audit Log Reports

The Audit Log includes a tracking facility that details parameter changes. The log maintains the parameter change and its original information. Each entry is date and time stamped. The Audit Log cannot be deleted.

The Audit Log is saved as a CSV (comma-separated values) file for easy import into spreadsheets, such as Microsoft Excel.

Changes recorded in the Audit Log include:

- Parameters that have changed
- Date and time the change occurred
- Old value
- New value

Parameters captured in the Audit Log include:

- Meter Type
- Meter Size
- Revolution/Unit Volume
- Flow Sense
- Temperature Units
- Base Temperature
- Temperature Mode
- Fixed Temperature
- Pressure Units
- Base Pressure
- Atmospheric Pressure
- Pressure Factor
- Fixed Pressure
- Pressure Mode
- Compensated Multiplier
- Non-compensated Multiplier
- Pulse Output 1
- Pulse Output 2
- Pulse Output 3
- Pulse Output 1 Selected
- Pulse Output 2 Selected
- Pulse Output 3 Selected
- Telemetry Form A Pulse Width
- Compensated Volume
- Non-compensated Volume
- Non-compensated Volume Under Fault
- Pressure Calculation Type
- User Temperature Calibration Offset
- High Temperature Alarm Limit
- Low Temperature Alarm Limit
- Volume Display Decimal Places
- Corrected and Uncorrected Number of Digits

Perform the following steps to download the Audit Log:

1. On the **Logging** screen, click **Download Audit Log**.

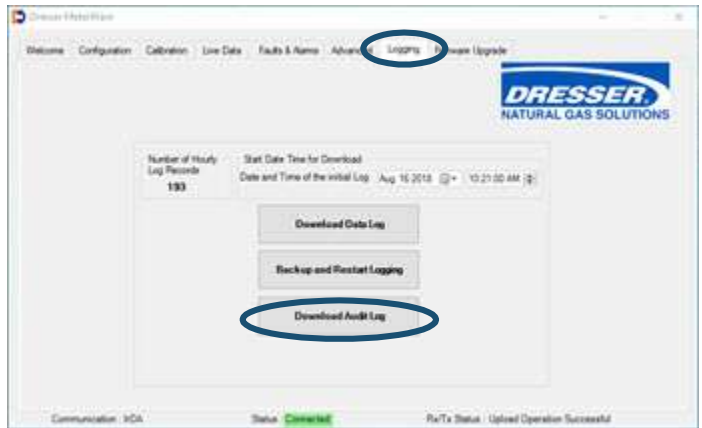


Figure 65: Click Download Audit Log

2. On the **Save As** screen:
 - a. Select the location for the .csv file to be saved.

Select an existing location or create a new one to save your Audit Log downloads. Choose a location that you can easily remember and find. You might want to record the selected location in a place other than the computer.

- b. Enter the name of the .csv file in the **File name** field. The default file name is AuditLogTest.csv.
 - c. Click **Save**.

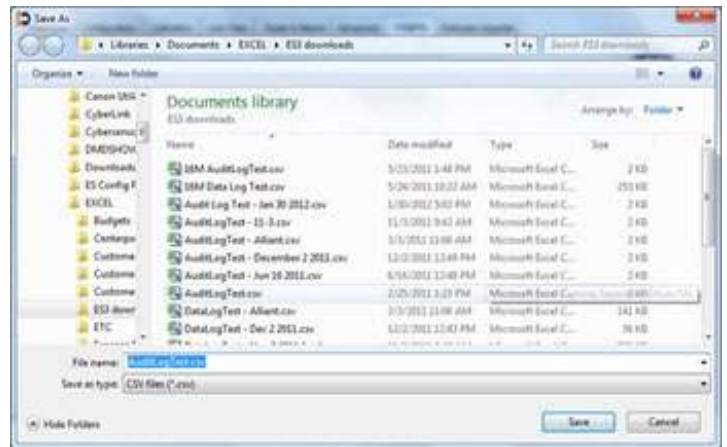


Figure 66: Specify the location and name of the .csv file

3.15 Save and Upload Configuration Files

The Dresser MeterWare software provides a simple way to save the configuration for an initial unit to a file and then upload the saved configuration file to other units of the same size and type.

This feature is useful when configuring more than one unit of the same size and type or when resetting a unit to a particular configuration.

3.15.1 Save the Configuration to a File

Perform the following steps to save a unit's configuration to a file:

1. On the **Configuration** screen, click **Save Configuration File**.

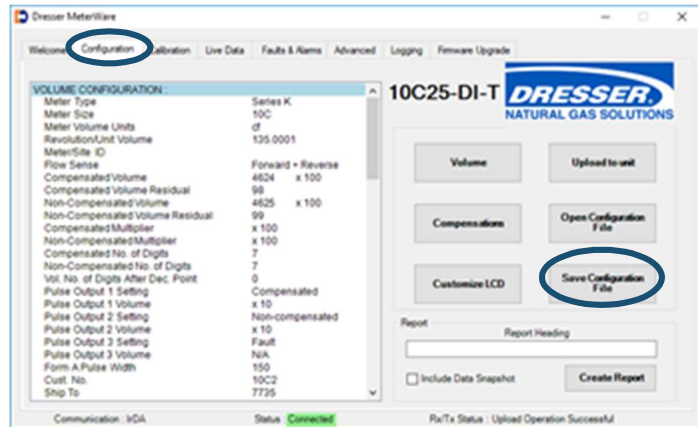


Figure 67: Click Save Configuration File

2. On the **Save As** screen:
 - a. Select the location for the .es3 file to be saved.

Select an existing location or create a new one to save your configuration files. Choose a location that you can easily remember and find.

Enter the name of the .es3 file in the **File name** field.

The default file name includes the **Cust. No** and **Ship to** fields on the **Volume Configuration** screen if they are filled in.

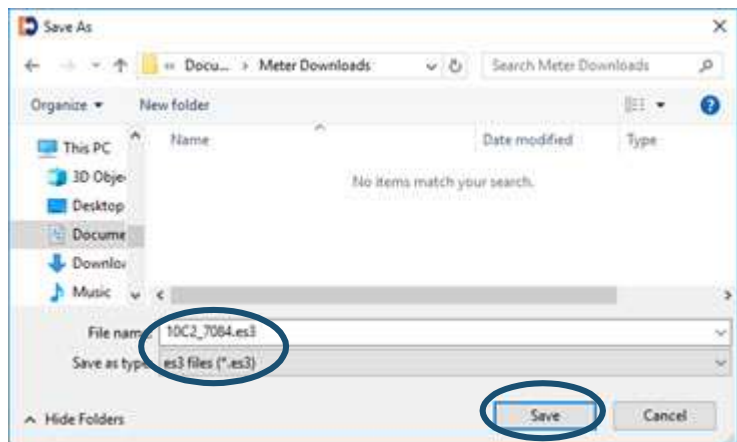


Figure 68: Specify the location and name of the configuration file

- b. Click **Save**.



Note: Make note of the location and the file name and use them when uploading this file at a later time.

3.15.2 Upload the Configuration File to a Unit

Perform the following steps to upload a configuration file to a connected unit:

1. On the **Configuration** screen, click **Open Configuration File**.

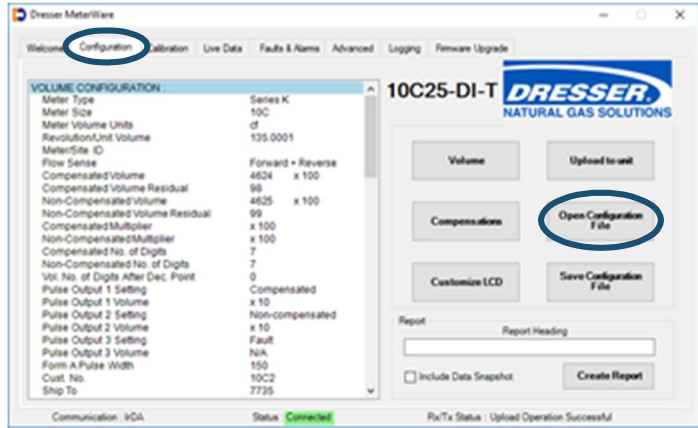


Figure 69: Click Open Configuration File

2. On the **Open** screen, select the .es3 configuration file to upload to the unit.
3. When the file name displays in the **File name** field, click **Open**.

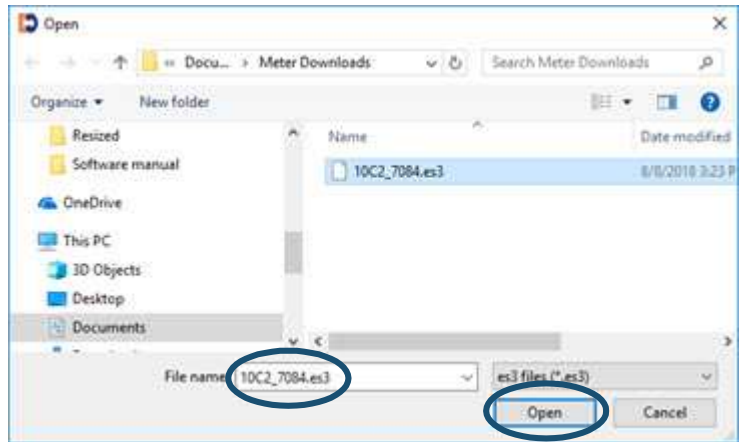


Figure 70: Select configuration file to upload

In the Quick Configuration Summary on the **Configuration** screen, parameters highlighted in yellow have values changed in the software but the changes have not been uploaded to the unit.



Figure 71: View changes to be made

- On the **Configuration** screen, click **Upload to unit**.

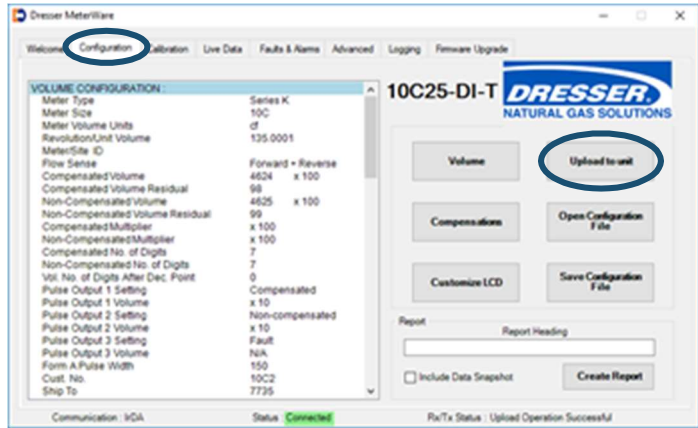


Figure 72: Click Upload to unit

- On the password screen, enter the password. The default password is the number zero (0).
- Click **OK** to upload the settings. Clicking **Cancel** does not save the changes.

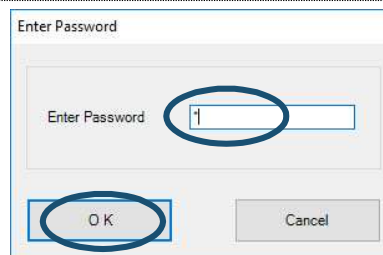


Figure 73: Enter Password

- Click **OK** if a confirmation screen displays that the upload is successful.

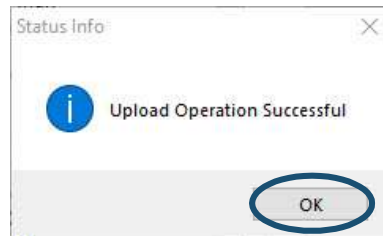


Figure 74: Upload successful status

3.16 Configuration Reports

The Dresser MeterWare software can create a report of the parameter values displayed in the Quick Configuration Summary on the **Configuration** screen (refer to Section 3.1) to record the unit’s configuration. The Configuration Report is useful for keeping a record of a unit’s configuration that can be referenced without accessing the unit’s LCD or the MeterWare software screens.

This Configuration Report can be viewed on your computer screen and can also be saved and printed for future reference.

3.16.1 Create a Configuration Report

1. On the **Configuration** screen, make selections in the **Report** settings:
 - a. (Optional) In the **Report Heading** field, enter a descriptive heading to display in the report.
 - b. (Optional) Select the **Include Data Snapshot** checkbox to also include Live Data screen data in the report.
 - c. Click **Create Report** to generate the report.

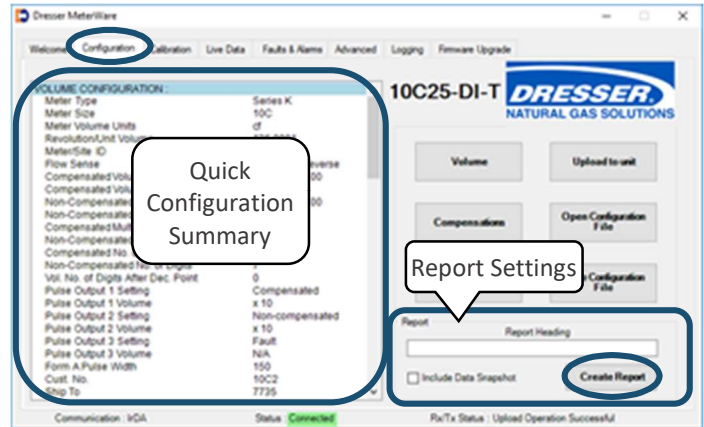


Figure 75: Create Configuration Report

A **Meter Configuration Report** screen displays all the data listed on the unit's Quick Configuration Summary.

2. On the **Meter Configuration Report** screen, choose to:
 - Click **Save Report** to save the report to a specified location and file name. (The file is saved in .html format and can be viewed as a web page.)
 - Click **Print** to print the report.
 - Click **Close** to close the report screen.

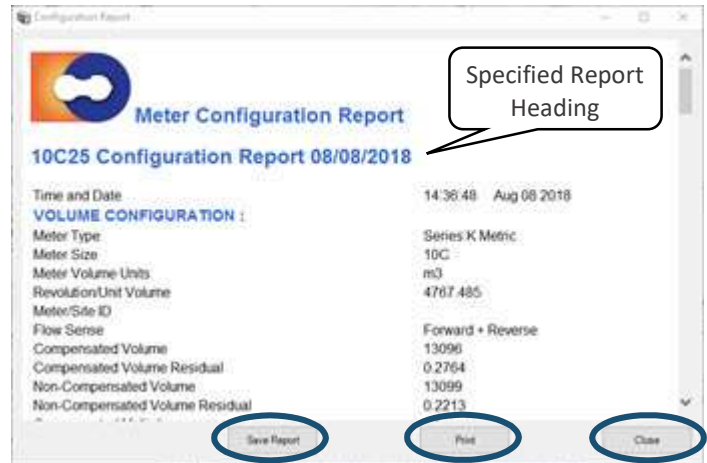


Figure 76: Sample Meter Configuration Report

3.17 Upgrade the Firmware

Firmware is special software stored in the memory of the unit. Upgrade the unit's current firmware revision by connecting the unit to the computer with the IrDA cable and establishing a connection (refer to Section 2.4).

CAUTION

To prevent interruption, the IrDA cable assembly must be held firmly in place while upgrading firmware revision levels. If the upgrade process is interrupted, the firmware in the unit will be corrupted, and the unit must be returned to the Factory for reprogramming.

1. On the **Firmware Upgrade** screen, click **Select File**.

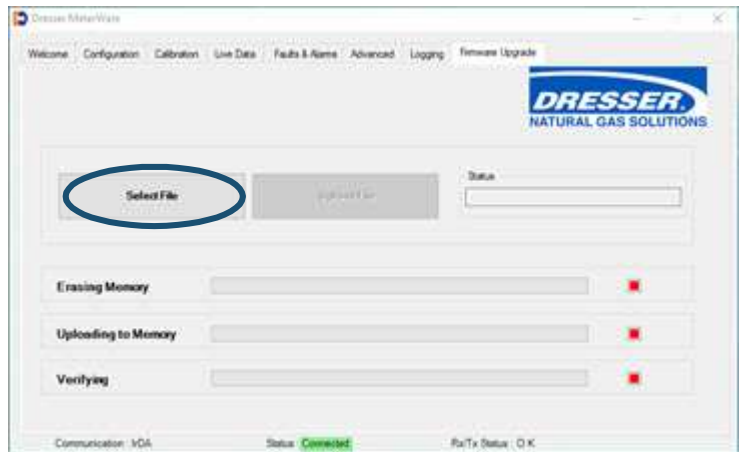


Figure 77: Select File on the Firmware Upgrade screen

2. On the **Open** screen, select the appropriate .hex firmware upgrade file to upload to the unit.
3. When the file name displays in the **File name** field, click **Open**.

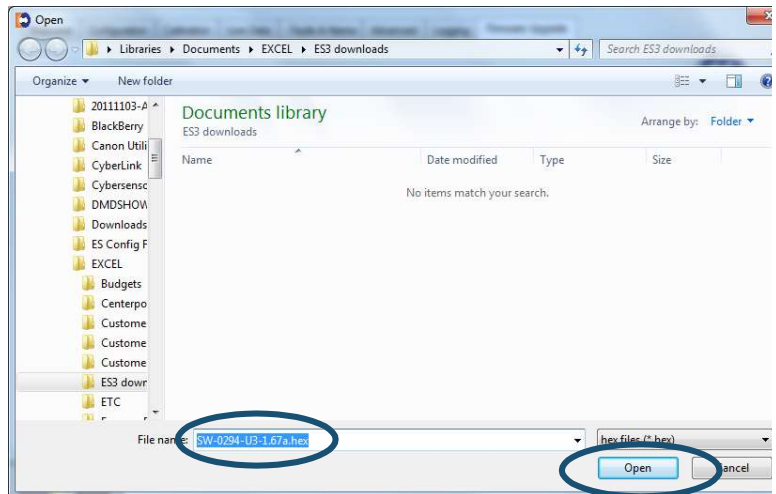


Figure 78: Select the .hex firmware file to upload

4. On the **Enter Password** screen, enter the advanced password. The default password is the number zero (0).
5. Click **OK** to begin the firmware upgrade process.
Clicking **Cancel** ends the process.

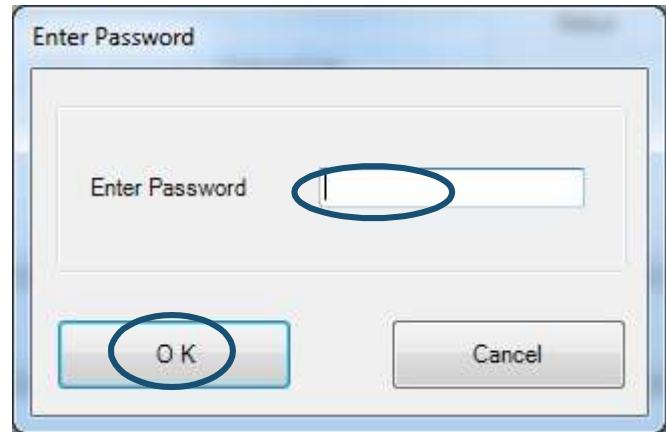


Figure 79: Enter advanced password

On the **Firmware Upgrade** screen, the **Status** box displays **In Progress** to indicate the upgrade process status.

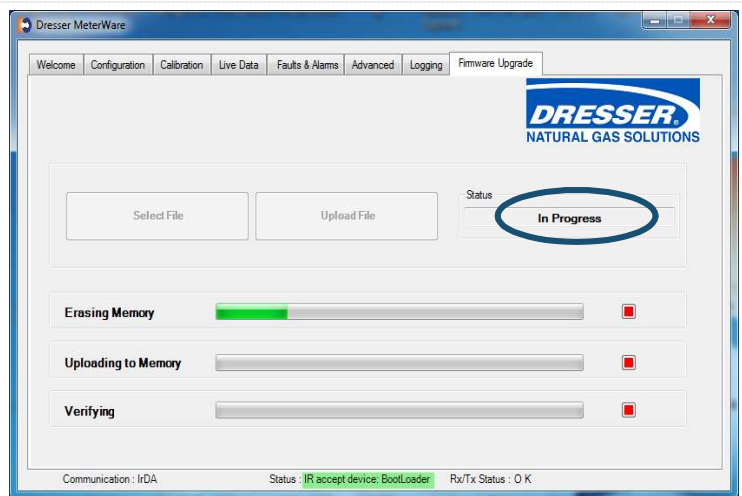


Figure 80: In Progress status indicator

The software searches for the BootLoader on the unit, which is necessary to upgrade the firmware.

When the BootLoader is detected, the **Status** text at the bottom of the screen changes from **Searching** to **Device in range** highlighted in yellow.

When the BootLoader is located, the **Status** text is highlighted in green.

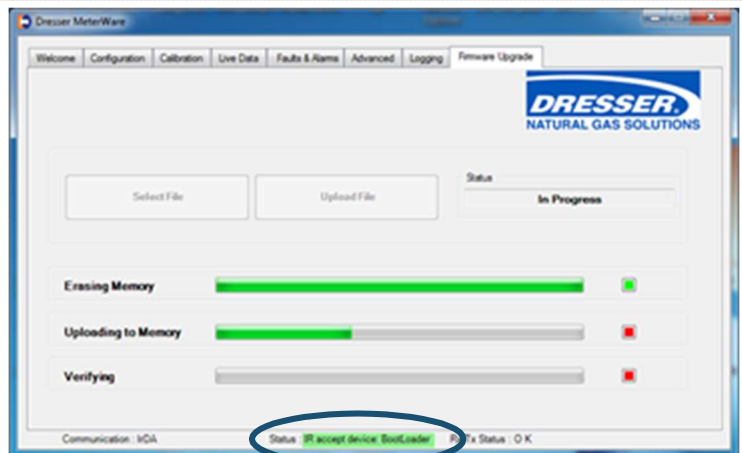


Figure 81: BootLoader range indicator

When the firmware upgrade process begins, three (3) status bars display. These status bars indicate the progress of each of the three (3) steps in the process as they are completed:

- **Erasing Memory** erases the current firmware in the unit.
- **Uploading to Memory** uploads the new firmware into memory.
- **Verifying** confirms the new firmware has been properly uploaded.

As each step completes, the square to the right of that step changes from red to green.

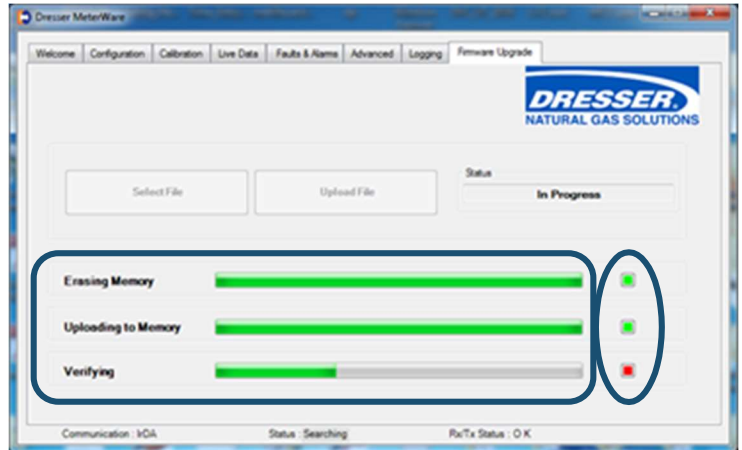


Figure 82: Firmware upgrade process progression

When the firmware upgrade is complete, all three (3) squares are green and the **Status** box displays **Firmware updated successfully**.

6. Optional but recommended: Disconnect and reconnect from the unit by clicking **Disconnect** and then **Connect** on the **Welcome** screen.

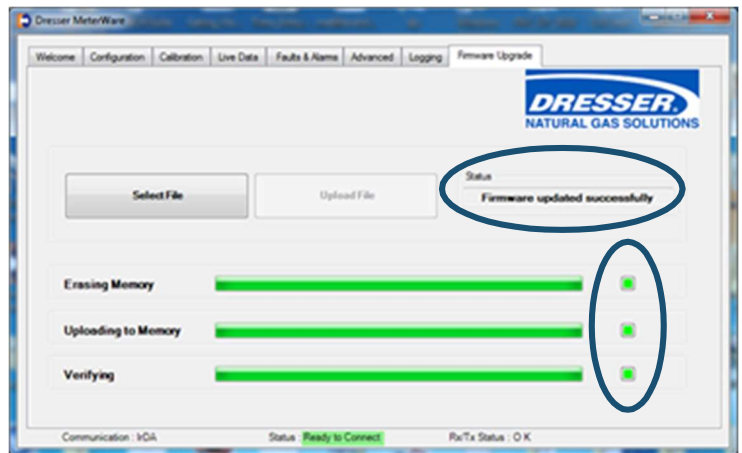


Figure 83: Firmware upgrade complete

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