1 YEAR
WARRANTY

OMEGA®

# User's Guide

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# DPU90-CT

## PC COMM / Sensor Configuration Tool

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## Contents



## 1. Description

The DPU90-CT PC COMM / Sensor Configuration Tool is a USB to Digital convertor and Microsoft® Windows® compatible software program used for interfacing with Omega DPU91 Transmitters and blind sensors via a computer.

The DPU90-CT tool and software allows:

- Set application parameters (Engineering units, 4 to 20 mA span, etc.)
- Save the setting configuration data to a computer file.
- Upload a previously stored configuration data file into the Omega product.
- Monitor the product's data and performance and log the data to a file.
- Reset the product settings to factory default condition.

Certain parameters (such as calibration) cannot be changed because access to an external sensor is required.



## 2. Safety Information

| | |
|---|---|
|  | **Warning / Caution / Danger**<br>Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death. |
|  | **Electrostatic Discharge (ESD) / Electrocution Danger**<br>Alerts user to risk of potential damage to product by ESD, and/or risk of potential of injury or death via electrocution. |
|  | **NOTE / Technical Notes**<br>Highlights additional information or detailed procedure. |

## 3. Specifications

**Compatibility**

Omega Products ..... PHTX/PHEH-275, FMG-3000, FMG-550, and DPU91 Transmitter

Operating System ..... Windows XP, Windows Vista, Windows 7 (32 and 64 bit), Windows 8 and 8.1

**General**

Enclosure ..... ABS
Red Indicator ..... POWER ON
Blue Indicator ..... DATA COMMUNICATION
Input connections ..... 3-terminal connectors, max. 14 AWG

**Electrical**

Communication rate ..... Maximum 19.2 kbs
Input power ..... Supplied by USB interface
Output power ..... 5 VDC ± 5%
Power consumption ..... 5 V @ 15 mA
Maximum current source ..... 50 mA
Maximum cable ..... 300 m (1000 ft)

**Environmental**

Storage Temperature ..... -20 °C to 100 °C (-4 °F to 212 °F)
Relative Humidity ..... 0 to 90% non-condensing
Operating Temperature ..... -15 °C to 55 °C (5 °F to 131 °F) (module only)

**Shipping Weight** ..... 0.220 kg (0.48 lb)

## 4. Required Equipment

- Follow instructions carefully to avoid personal injury.
- DPU90-CT Tool: one USB to Digital converter
- 1 m DPU91 programming cable with terminal plug
- USB to USB extention cable
- Software installation CD
- PC / laptop with free USB port
- 24 VDC Isolated power source (Required to program 4 to 20 mA sensors, FMG-3000 and FMG-550 only)

## 5. Application Specific Information

PHTX/PHEH-275:
- Engineering Units, 4 to 20 mA span

FMG-3000 & FMG-550:
- Engineering Units, K-Factor, Pipe ID, Timebase, Averaging, Sensitivity, Noise Rejection, Low Flow Cut-Off, 4 to 20 mA span

DPU91:
- Instrument Type: (Flow, pH, ORP, Cond/Resist, Salinity, Batch)
- Sensor type specific settings

## 6. Install Software

**Caution**

Managed systems and network systems may have security measures enabled that block the installation of this program.

See the network administrator or IT (Information Technology) staff if the software cannot be installed.

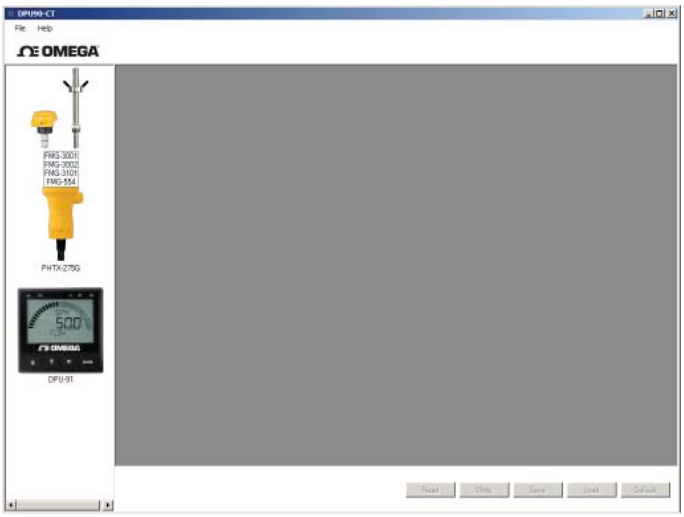
1. Insert the CD ROM into the computer's CD/DVD drive.
   - If Autorun is enabled on the computer, the installation wizard will start.
   - If Autorun is disabled on the computer, use Windows Explorer to browse the contents of the CD and double-click on the setup.exe file.
2. Follow the prompts in the installation wizard to complete installing the software.

## 7. Run Software

1. On the PC, click **Start** and select **Program Files**.
2. Click on the **Omega** folder.
3. Click on the **DPU90-CT** folder.
4. Click on the **DPU90-CT Tool icon**.
5. The DPU90-CT software screen shown here should be on the computer display.

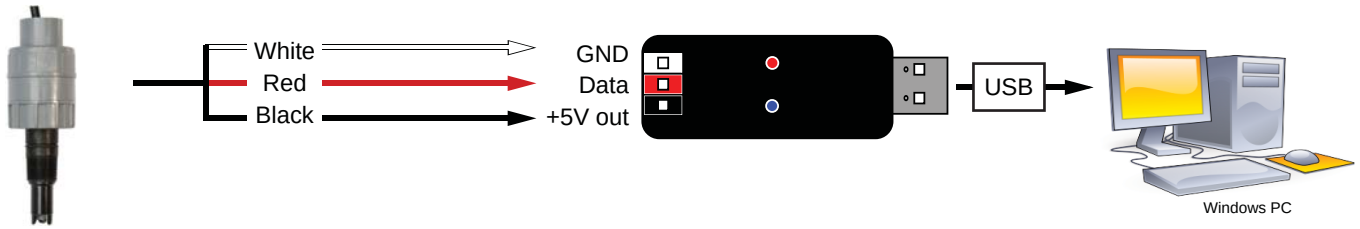
**NOTE:** Each time the DPU90-CT software is launched, it automatically checks for and applies updates.

**Software version** is displayed by clicking on the **Help** menu, then clicking on **About**.

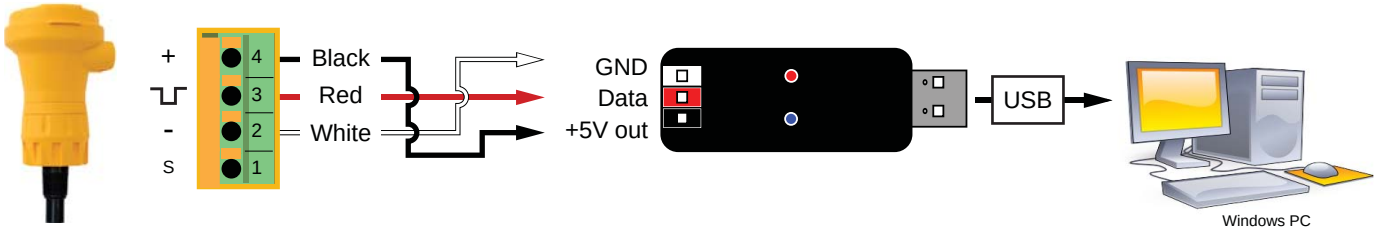


## 8. PHTX-275 & PHEH-275 Wiring

### Omega PHTX/PHEH-275 Submersible pH Sensor

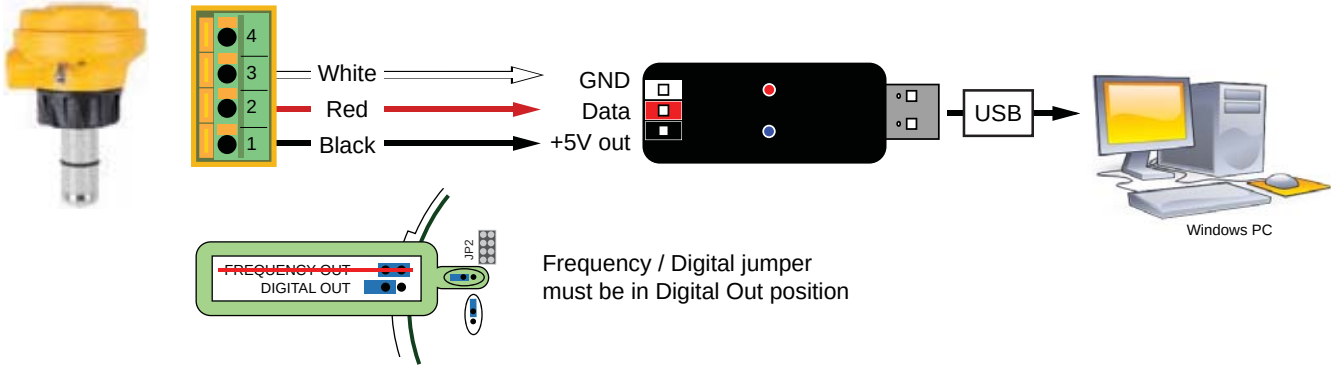



### Omega PHTX/PHEH-275 In-Line pH/ORP Sensor



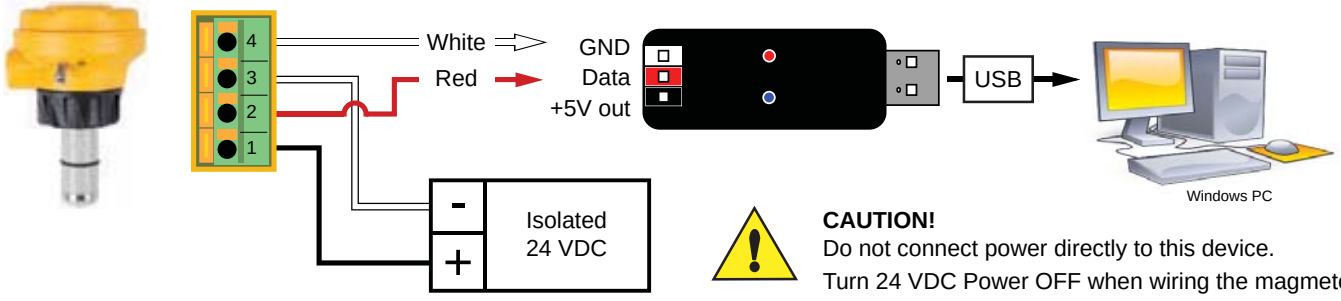

## 9. FMG-3000 Magmeter Wiring

### Frequency or Digital Output




Frequency / Digital jumper must be in Digital Out position

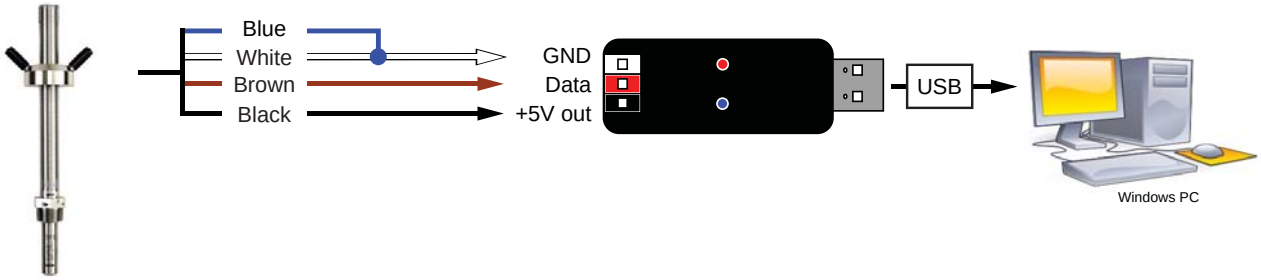
### 4 to 20 mA Output



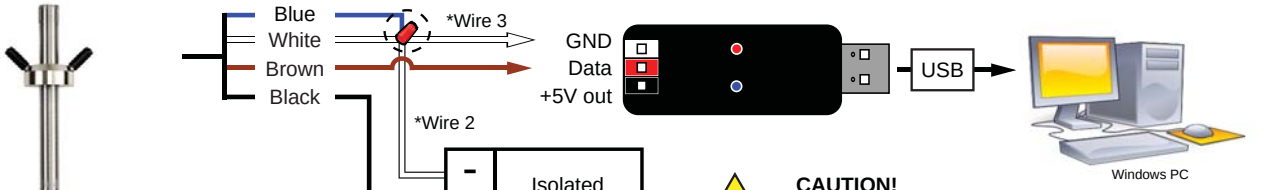

**CAUTION!**
Do not connect power directly to this device.
Turn 24 VDC Power OFF when wiring the magmeter.

## 10. FMG-550 Magmeter Wiring

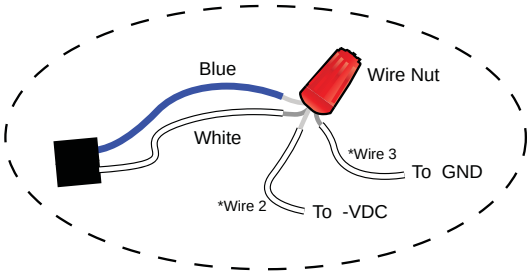
### Frequency or Digital Output




### 4 to 20 mA Output




**CAUTION!**
Do not connect power directly to this device.
Turn 24 VDC Power OFF when wiring the magmeter.




*Additional wire required

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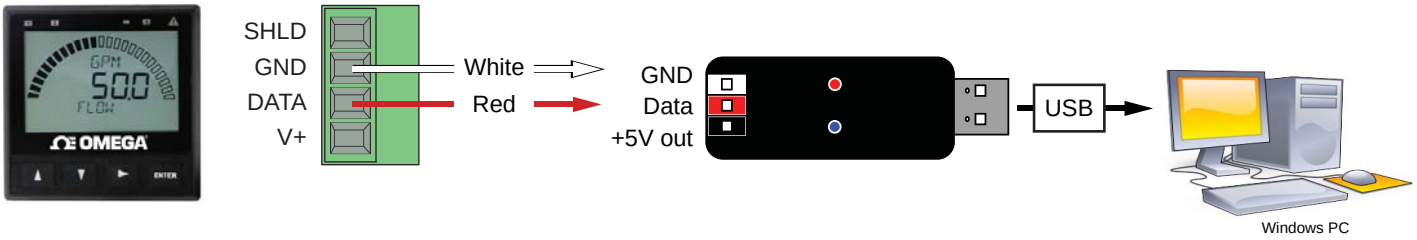
## 11. DPU91 Wiring

**Disconnect power on the DPU91 prior to proceeding.**

If the DPU91 is using the DPU90-C Direct Conductivity/Resistivity Module, the module must be removed from the DPU91. Refer to the DPU91 Optional Modules Instruction Sheet for instructions.

**IMPORTANT:**
The DPU90-CT does not supply power to the DPU91. An external DC power source is required (12 to 24 VDC Regulated)

1. Disconnect power on the DPU91.
2. Unplug the sensor connector from the Digital/Frequency input jack on the DPU91 and connect the DPU90-CT Tool in its place.
3. Reconnect power to the DPU91.



## 12. General Software Operation

On all screens **Read, Write, Save, Load,** and **Default** buttons can be found in the lower right corner.


**Read** Loads the data from the connected device (sensor or transmitter) and updates the software's display.
**NOTE**: This will overwrite any changes made in the DPU90-CT software since the last **Write**.

**Write** Applies the data entered in the DPU90-CT software to the connected device. Once you have entered the desired setting changes in the software screens, press **Write** to load your new settings onto the connected device.

**Save** Stores the entire DPU90-CT settings configuration, as currently displayed in the application, to a specified location on your computer. (You will be asked to select a file location and provide a file name)

**Load** Opens a previously saved settings configuration file. See **Save** function above.
**NOTE:** The file must be a DPU90-CT settings configuration file. The software will verify whether the user-selected file is the correct type.

**Default** Resets all data on all application screens to a factory default condition. A confirmation dialog box will be presented with a warning explaining all un-saved configuration information will be erased. After resetting the software to a factory default condition, click **Write** to reset the connected device to a factory default condition.
**NOTE:** Default will not change the input or instrument type.

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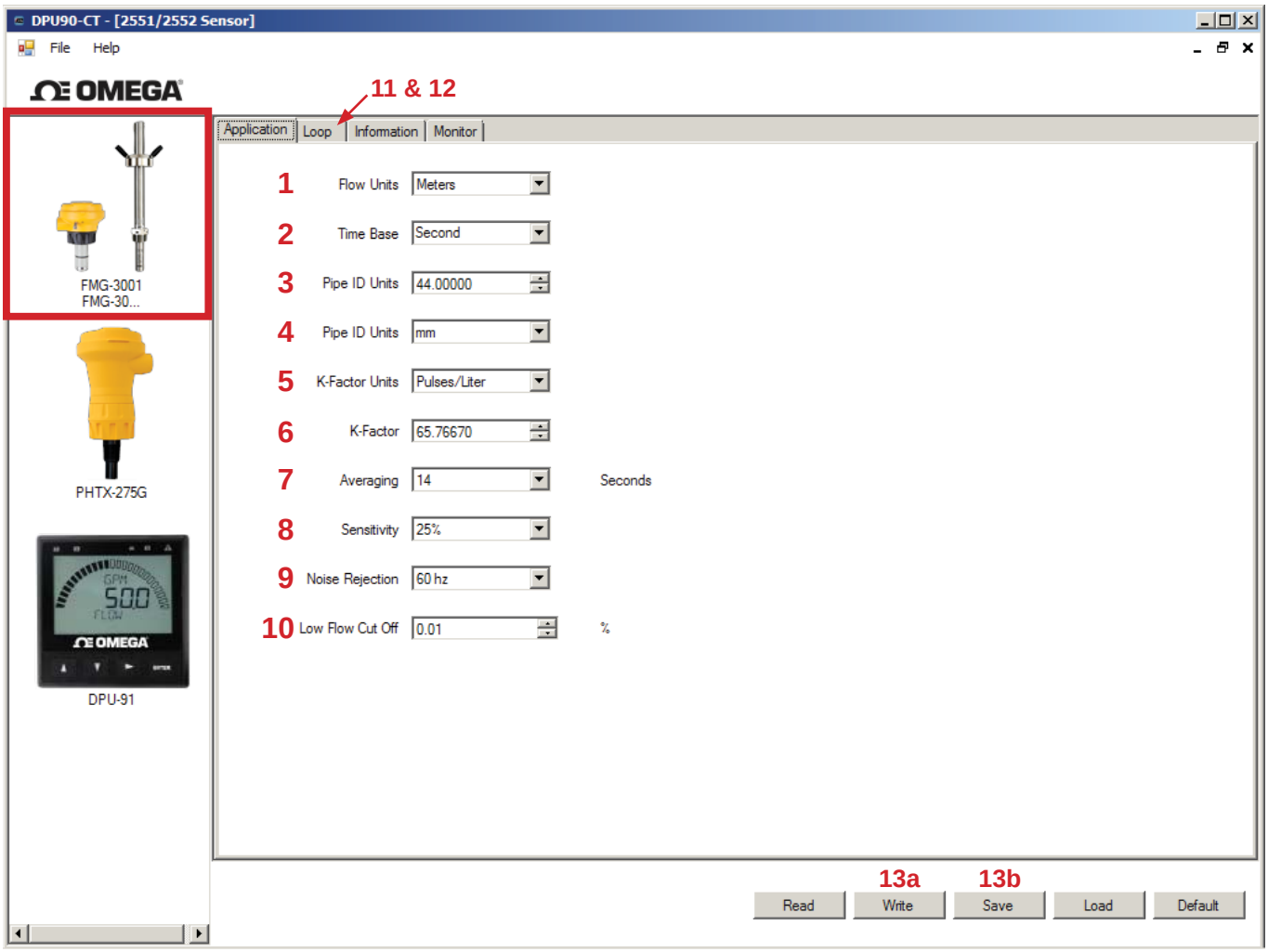
## 13. PHTX-275 & PHEH-275 Operation

| **Application** settings: | | | **PHTX/PHEH-275** |
|---|---|---|---|
| **1** | Engineering units | | pH or ORP |
| | **Loop** Output settings: | | |
| **2** | 4 mA Set Point | Min | 0 pH (-1000 mV) |
| | | Max | 14 pH (2000 mV) |
| **3** | 20 mA Set Point | Min | 0 pH (-1000 mV) |
| | | Max | 14 pH (2000 mV) |
| | **Write** or **Save** settings: | | |
| **4a** or **4b** | Click "Write" to copy these settings to the product. | | |
| | Click "Save" to save these settings to a local computer file for later use. | | |
| **5** | To use a saved file (from 4b):<br>1. Click "Load"<br>2. Navigate to the saved file<br>3. Select "Open"<br>4. Click "Write"<br>5. Click "Read" to confirm | | |

## 14. FMG-3000 & FMG-550 Operation

| **Application** settings: | | **Factory** | **FMG-3000 & FMG-550** |
|---|---|---|---|
| **1** | Flow Units | m | m, ft, $m^3$, L, $ft^3$, US Gal, Imp. Gal, Acre in. |
| **2** | Time Base | sec | Sec, Min, Hour, Day |
| **3** | Pipe ID (Inside Diameter) | 44.0 | 0 - 5000 |
| **4** | Pipe ID Units | mm | mm, in. |
| **5** | K-Factor Units | Pulses / Liter | Pulses / Liter, Pulses / Gallon |
| **6** | K-Factor | 65.76670 | 0.000100 - 999999.1<br>See Magmeter manuals for appropriate value. |
| **7** | Averaging (in seconds) | 14 | 1/10, ¼, ½, 1, 1½, 3, 7, 14, 25, 50, 100 |
| **8** | Sensitivity (%) | 25 | 100, 50, 30, 25, 20, 15, 10, 8, 5, 2 |
| **9** | Noise Rejection (Hz) | 60 | 50 or 60 |
| **10** | Low Flow Cut Off (% of full scale) | 0 | 0 to 20% Full Scale |
| **Loop** Output settings: | | | |
| **11** | 4 mA Set Point (Flow Units / Time Base) | 0.00000 | 0.00000 - 999999.00000 |
| **12** | 20 mA Set Point (Flow Units / Time Base) | 5.00000 | |
| **Write** or **Save** settings: | | | |
| **13a** or **13b** | Click “Write” to copy these settings to the product. | | |
| | Click “Save” to save these settings to a local computer file for later use. | | |
| **14** | To use a saved file (from 13b):<br>1. Click “Load”<br>2. Navigate to the saved file<br>3. Select “Open”<br>4. Click “Write”<br>5. Click “Read” to confirm | | |

## 14. FMG-3000 & FMG-550 Operation




**Notes:**

| | |
|---|---|
| **Averaging** | Set the time the Magmeter will use as the averaging period.<br>Example: With averaging at 14 seconds, each display is an average of the previous 14 seconds input. Use higher averaging times to smooth the display and current output where the flow in the pipe is erratic. |
| **Sensitivity** | Set the percentage of change in the flow rate required to allow the Magmeter to override AVERAGING and jump to a new flow rate immediately (FMG-3000 max. range is 10 m/s).<br>See Magmeter manuals for an explanation of Averaging and Sensitivity. |
| **Noise Rejection** | Select 50 Hz or 60 Hz according to local AC power specifications. |
| **Low Flow Cut Off** | Set the flow rate where all Magmeter outputs will be forced to zero.<br>When the flow rate drops below this value, the frequency output will be 0 Hz and the current output will be 4 mA. |

## 15. DPU91 Operation

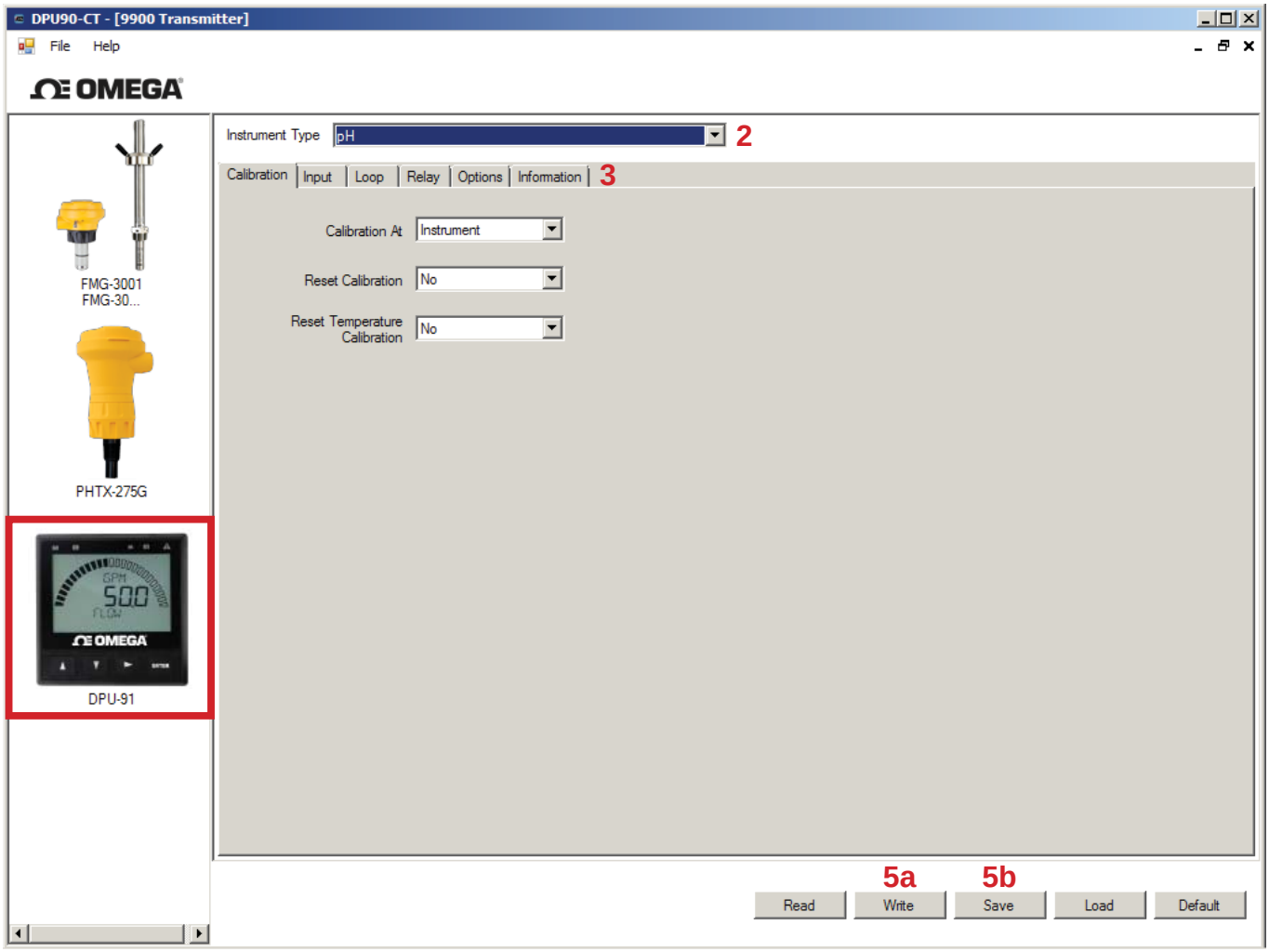
| | |
|---|---|
| Initiating Communication with the DPU91: | |
| **1a** | **Factory Configured DPU91 (new or reset):**<br>1. If the display reads "PUSH Enter SELECT SENSOR" the DPU91 is ready for communication.<br>2. Proceed to step 2 below. |
| **1b** | **Previously configured DPU91:**<br>1. Press and hold **ENTER** for 3 seconds. The display will change to the MENU mode.<br>2. Press ▲ once. The OPTION menu will flash. Press **ENTER**<br>3. The CONTRAST setting will be displayed.<br>Press ▲ twice (Gen II, III, IV) or press ▲ once (Gen I) to display REMOTE SETUP.<br>4. Press ► to edit REMOTE SETUP. If required, enter the security code.<br>5. Press ▲ to change the flashing NO to YES. Press **ENTER** to confirm change.<br>6. REMOTE SETUP should be flashing, indicating the DPU91 is ready for communication with the DPU90-CT Tool. |

| | | |
|---|---|---|
| Set Instrument Type: | | |
| **2** | Select sensor type to be wired to the DPU91 from the drop-down menu at the top of the screen. | Flow, pH, ORP, Conductivity, Salinity, Batch |

| | |
|---|---|
| **Application** settings: | |
| **3** | Select the **Input**, **Calibration**, **Loop**, **Relay**, **Options**, or **Info** tabs to choose the desired menu for the selected sensor. |
| **4** | Refer to the DPU91 manual for details pertaining to specific settings for each sensor type and menu item. |
| **Write** or **Save** settings: | |
| **5a** or **5b** | Click “Write” to copy these settings to the product. |
| | Click “Save” to save these settings to a local computer file for later use. |
| **6** | To use a saved file (from 5b):<br>1. Click “Load”<br>2. Navigate to the saved file<br>3. Select “Open”<br>4. Click “Write”<br>5. Click “Read” to confirm |

| | |
|---|---|
| When configuration is complete: | |
| **7** | Disconnect power from the DPU91. |
| **8** | Disconnect the DPU90-CT Tool from the DPU91. |
| **9** | Reconnect the sensor or reinstall the Direct Conductivity/Resistivity Module. |
| **10** | Reconnect Power to the DPU91. |

## 15. DPU91 Operation




**(General Software Operation, page 7)**

| To configure an additional DPU91 Transmitter with the same settings: | |
|---|---|
| **11** | Click "Save" to save these settings to a local computer file. |
| **12** | Wire another DPU91 as shown on page 6. |
| **13** | Initiate communication with the DPU91 via step 1a or 1b above. |
| **14** | Load the saved settings via step 6 at left. |

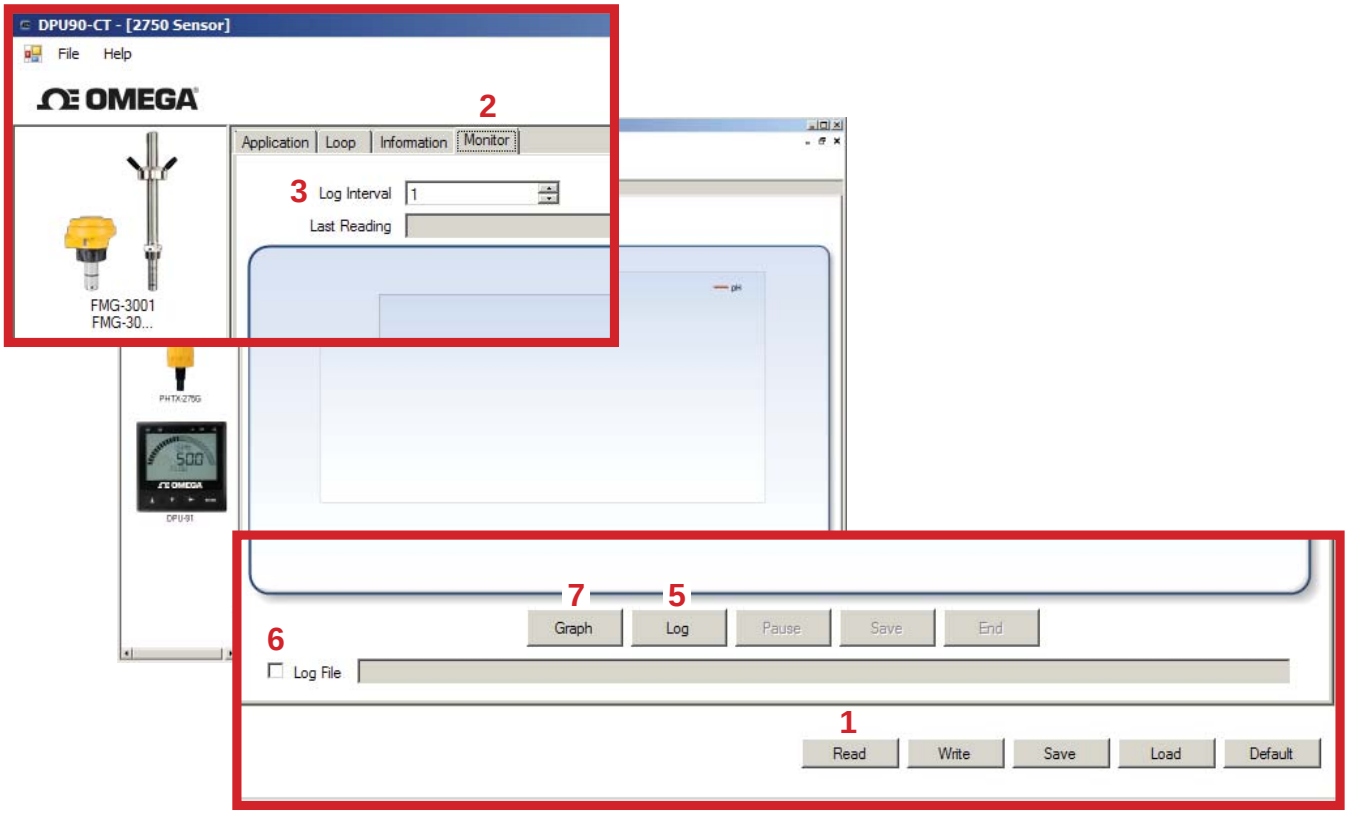
## 16. Datalogger Operation

The DPU90-CT can serve as a field data logger to download sensor data directly into a *.csv (Comma Separated Value) file.

**NOTE:** The DPU90-CT does NOT have internal memory to store data. It must be connected to a computer to use the datalogger function.

**IMPORTANT:** The DPU-91 Transmitter does not support the datalogger feature.

1. Select the sensor type and click on **Read**.
2. Click the **Monitor** tab to open the datalog setup window.
3. Enter the Logging Interval. This value represents the time between log records.
   The minimum interval is 1 second, and the maximum interval is 86400 seconds (24 hours).
   **Example: If the Log Interval is set to 60 seconds, the DPU90-CT will record the sensor data once every minute.**
4. The DPU90-CT saves data files in *.csv format. The maximum number of records allowed for this type of file is 65535 records. **If the logging interval is 60 seconds = 1092 hours of continuous recorded data.**
5. Click **Log** and enter the file name for the DPU90-CT to store the recorded data and click Save.
6. Click **Log File** check box to enable logging. If you do not wish to save the data, skip to step 7.
7. Click **Graph** to start monitoring the sensor.



## 17. Notes

## 18. Ordering Information

| Mfr. Part No. | Description |
|---|---|
| DPU90-CT | PC COMM / Sensor Configuration Tool |

# WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

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