

ConFIGXP™

User's Manual

Contents

- Overview2**
- Installation3**
- Operating Instructions.3**
- Settings4**
 - Gauge Identity.4**
 - Peak button options4**
 - Zero Button options6**
 - Enable Vacuum Mode6**
 - Units button options6**
 - Calibration Options8**
 - As Received / As Left Report9**
 - Password Protection9**
 - Loading and Saving Configurations9**
 - Reset to Factory Defaults10**
 - Language Selection10**
- Firmware Revision Dependencies10**
- Service and Support11**
- Disclaimer of Warranty11**

Overview

ConfigXP provides an easy way to customize your gauge (DTG, XP2 or XP2i). With only a serial cable (P/N: 2400, or equivalent*), a computer running Windows, and the **ConfigXP** program you can:

- View and print an as receive versus as left change report (**NEW!**)
- Load and save custom configurations (**NEW!**)
- Return the gauge to factory configuration (**NEW!**)
- Select pressure units (e.g., disable inches Hg, if you never use this scale)
- Adjust (calibrate) the gauge
- Identify firmware version

***Note:** DTGs require an RS-232 interface adapter kit (P/N: 2746).

Depending on the model and firmware version you may be able to:

- Password protect the gauge to prevent unauthorized changes (**NEW!**)
- Disable (or enable) the Peak button
- Select your preferred H₂O water density: 4°C, 60°F, 68°F/20°C
- Define a special pressure unit (e.g., display pressure as torque)
- Store a message or identification number
- Limit or expand the zero adjustment range
- Program a TARE value
- Enable and adjust display damping (averaging)
- Display rate of pressure change
- Disable the ability to adjust (calibrate) the gauge from the keypad

Straight pass-through RS-232 cable required. DO NOT USE a null-modem cable.

Features not available on your gauge will be grayed out in **ConfigXP**.

CAUTION: Changing the settings of your gauge using this program can cause the unit to display inaccurate readings or behave differently than the factory defaults. Only personnel qualified to make changes should do so.

Installation

ConFigXP is distributed as a self-extracting Setup application. Launch **ConFigXPSetup.exe** and follow the on-screen prompts. If the program was provided on CD, run the **SETUP.EXE** from the **ConFigXP** folder and follow the on-screen prompts.

Operating Instructions

The first time you start **ConFigXP**, you must select the communications port to be used. Click on the drop down box under the **Connect** button and choose **Auto** to have **ConFigXP** automatically detect your gauge, or select an appropriate COM port for your computer.

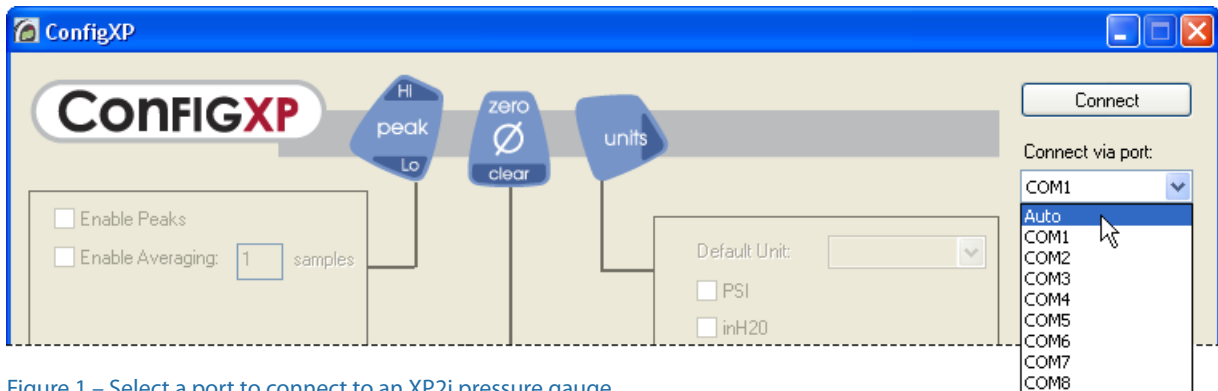


Figure 1 – Select a port to connect to an XP2i pressure gauge.

Click **Connect** to establish connection to your gauge. If an error is displayed, check cables and verify that the gauge is operating. If you continue to have problems, verify that you can send basic commands, such as “?VER” over the serial connection using a program such as HyperTerminal to connect to the unit.

If the connection is successful **ConFigXP** displays information retrieved from the gauge, such as the serial and model number, etc., and the current configuration of the gauge. Make any changes desired then click **Update Gauge** to commit those changes to the gauge.

Changes take effect immediately, except on some older gauges.

If you have more than one gauge to be customized, click the **Disconnect** button, connect the serial cable to the next gauge to be customized and then click the **Connect** button. If no further changes are necessary, click the **Close** button to exit **ConFigXP**.

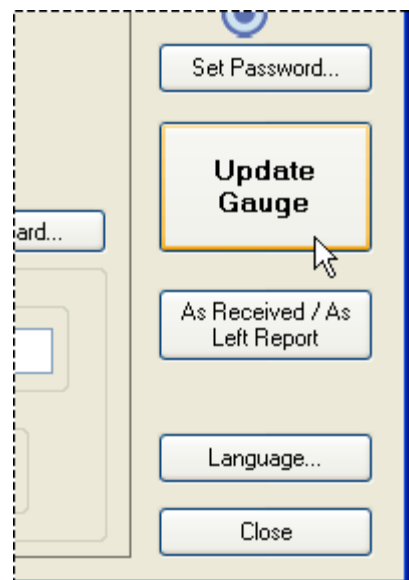


Figure 2 – The Update Gauge button commits your configuration changes.

Settings

Settings are arranged in groups;

Gauge Identity

The only user setting is the “message store” – all other information is programmed by the factory.

- **S/N:** The serial number as reported by the gauge.
- **Model:** Model of the gauge (not available on older models).
- **Range:** The pressure range of the gauge, reported in PSI regardless of the default unit.
- **Firmware Version:** The firmware version of the gauge.
- **Datalogger Enabled:** Indicates if the gauge is enabled for data logger mode (see Data-LoggerXP).
- **Password Protected:** Indicates if the password protection has been enabled for the gauge.
- **Message Store:** A location for storing information such as an asset number, tag or identification number, owner information or any combination of text up to a maximum of 12 characters.

Gauge Identity	
S/N: 546968	Model: AX700BARXP2I-DD
Range: 10152.6 PSI	Firmware version: R0113
Datalogger Enabled: No	Password Protected: No
Message store:	Lab 1

Figure 3 – Store information specific to an individual gauge in the Message store text box.

Peak button options



- **Enable Peaks:** When unchecked this prevents the display of peak hi or peak low. This does not affect averaging, if available.
- **Enable Averaging:** When unchecked this prevents the display of average pressures. The edit field next to this check box controls the number of samples to be used to calculate an average pressure reading. This number can be between 1 and 10. Not available on all models.
- **Enable Rate:** When unchecked this prevents the display of pressure rate. The edit field next to this check box controls the number of calculations used to produce an average rate. This number can be between 3 and 10. Not available on all models.
- **Force second line always on:** When checked, the second line of a XP2i-DD cannot be turned off. Not available on all -DD models.



CONFIGXP

Hi
peak
Lo

- Enable Peaks
- Enable Averaging: samples
- Enable Rate: samples
- Force second line always on
- Enable differential pressure mode
- Enable PSVtest mode

Figure 4 – Use the Peak button options to control how peaks and averaging are displayed.

- **Enable Differential Mode:** Only available on -DD models, differential mode allows the XP2i-DD gauge (the master) to be connected to a second XP2i or XP2i-DD gauge (the slave) and display the pressure difference between the two gauges. A standard RS232 cable (p/n 2400) and null modem adapter (p/n 3456) or a NULL modem cable are required to directly connect the gauges. Once enabled, use the PEAK button on the master gauge until the  and  icons are displayed simultaneously. The XP2i-DD gauge must be running firmware version R0111 or later, and the XP2i gauge must be running firmware version R0010 or later for this feature to work. Use XP2iUpdate (available on the Crystal Engineering web site) to upgrade to the latest firmware. An application note detailing the operation of differential mode is available from the Crystal Engineering web site, and includes instructions on how to connect and setup both gauges.
- **Enable PSVtest Mode:** PSVtest mode is designed for PSV and PRV (“Pressure Safety Valve” and “Pressure Relief Valve”, respectively) as well as for Rupture Disc (also known as “Burst Disc”) testing. It increases the measurement rate of the XP2i gauge to approximately seven times per second and replaces the Peak Lo logic with a method of *automatically* recording the closing pressure of the valve after it opens.

The flashing  icon indicates that the PSVtest mode is enabled. A special feature of PSVtest is that Peak Low  is automatically reset to the Peak Hi value whenever a new Peak Hi value is recorded. Once pressure stops increasing, as when a PSV opens (and the pressure drops below the recorded maximum pressure) Peak Lo records the new minimum pressure values, capturing the closing pressure of a PSV.

After the valve has closed, pressing the Peak button cycles the display to show the opening pressure (Peak Hi) and the closing pressure (Peak Lo) of the valve.

Additional important information about PSVtest:

- 1 Peak Hi must be on the screen and flashing to utilize the 7 readings per second feature.
- 2 Temperature compensation is not updated during the PSVtest mode.
- 3 Pressing the zero button in PSVtest mode causes the XP2i to update the temperature compensation reference temperature.
- 4 When not indicating Peak Hi, the XP2i is continually temperature compensated, but Peak Hi and Lo are recorded at the normal rate of 3 readings per second.
- 5 This mode is not recommended for long term measurements or where temperature of the gas or fluid may change significantly during the test.
- 6 The gauge must be running firmware version R0012 or later (for XP2i gauges) or R0113 or later (for XP2i-DD gauges) for this function to be available.
Use XP2iUpdate (free, on www.xp2i.com) to upgrade any gauge to the latest firmware.

An application note detailing the operation of the PSVtest mode is available on www.xp2i.com, and includes examples on how to use the gauge in relief valve and burst disk testing.

Zero Button options

- Zero Limit:** By default, all gauges come preprogrammed with a 200 PSI maximum zero limit. This means that you can apply pressure (up to 200 PSI) to the gauge, press the zero button, and the gauge will read zero. In some situations it may be desirable to increase or decrease the maximum pressure that the gauge could be set to read zero pressure. It's also possible to disable the ZERO button entirely by setting a Zero Limit of negative (-)15 PSI.
- Enable TARE:** Enabling the TARE mode allows the second line to display a tare value (instead of just forcing the display to read zero at an elevated pressure). Applies to dual line display (-DD) models only. Not available on all -DD models.

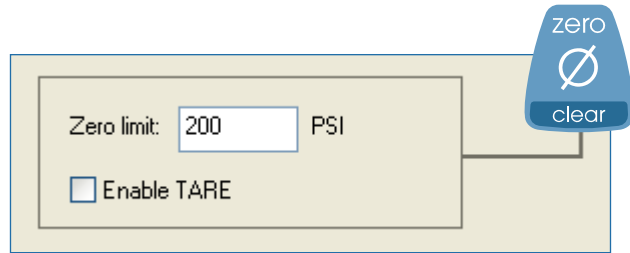


Figure 5 – Use the Zero button options to adjust the pressure the gauge reads as zero.

Enable Vacuum Mode

Only available on DP gauges, this sets the gauge into Vacuum Mode. When working with vacuum, the vacuum pressure should be applied to the – (vacuum) port of the DP gauge. However, when applying vacuum to the – port, it creates a positive differential pressure, and therefore will display a positive pressure on the gauge. By enabling Vacuum Mode, the reading on the gauge will properly display a negative pressure value when applying vacuum.

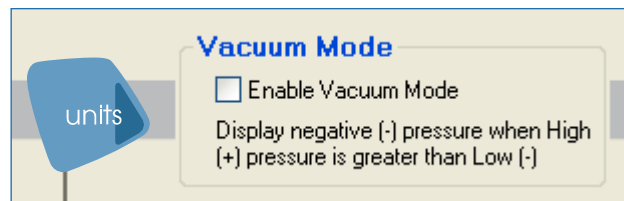


Figure 6 – Enable Vacuum Mode.

Units button options

Select the pressure units you need, and turn off the pressure units you never use (at least one unit must be selected).

- Default Unit:** The pressure unit displayed after a reset, and the unit used when in datalogging mode. (Reset occurs when the batteries are changed, when an !RST command is sent to the gauge over the serial port or, on older units, when the calibration settings are changed.)

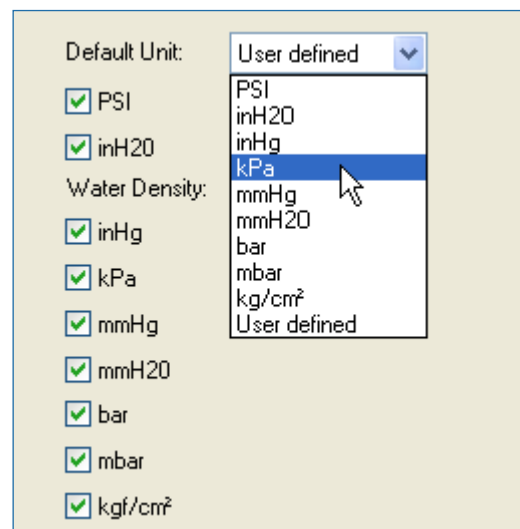


Figure 7 – Use the Unit button options to control which units the pressure gauge will display.

- **Water Density:** Select 4°C, 60°F, 20°C/68°F. Affects inches of water, only.

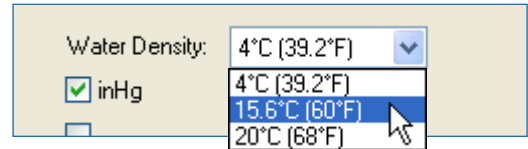


Figure 8 – Water Density.

- **User Defined Units:** This section allows you to create a custom pressure unit. When you select this unit on the gauge, all pressure icons (like “PSI”, or “kPa”) will be off. The display will equal the User Factor multiplied by the measured PSI plus the User Offset. “Resolution” selects the number of decimal places on the display. **ConfigXP** automatically limits the maximum number

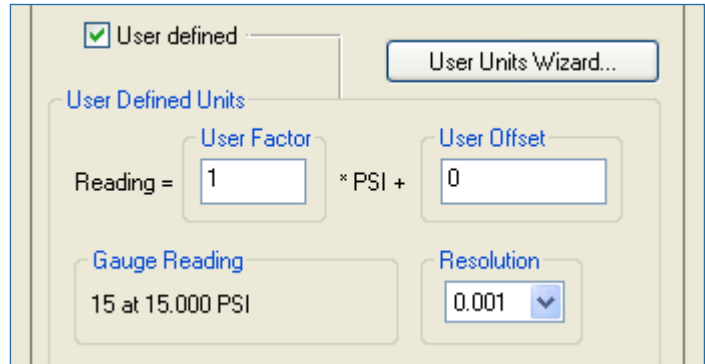


Figure 9 – User Defined Units.

of decimal places depending on the pressure range of the gauge, so that only valid numbers can be displayed on the gauge.

- **Using the User Units Wizard:** The User Units Wizard operates in two modes: Linear Fit or Tank Level. Both modes calculate an optimum User Factor and User Offset.

The Linear Fit tab allows you to quickly calculate the best User Factor and User Offset by entering actual measurements and the corresponding desired reading for each measurement. In each row, enter the displayed pressure in the first column and the reading you want the gauge to display in the “Desired Indication” column. The User Factor and User Offset will be recalculated after each point entered, and the “Gauge Reading” column shows what the gauge will actually display using the calculated User Factor and User Offset. The “Delta” column indicates how much error there is between the Desired Indication and the Gauge Reading.

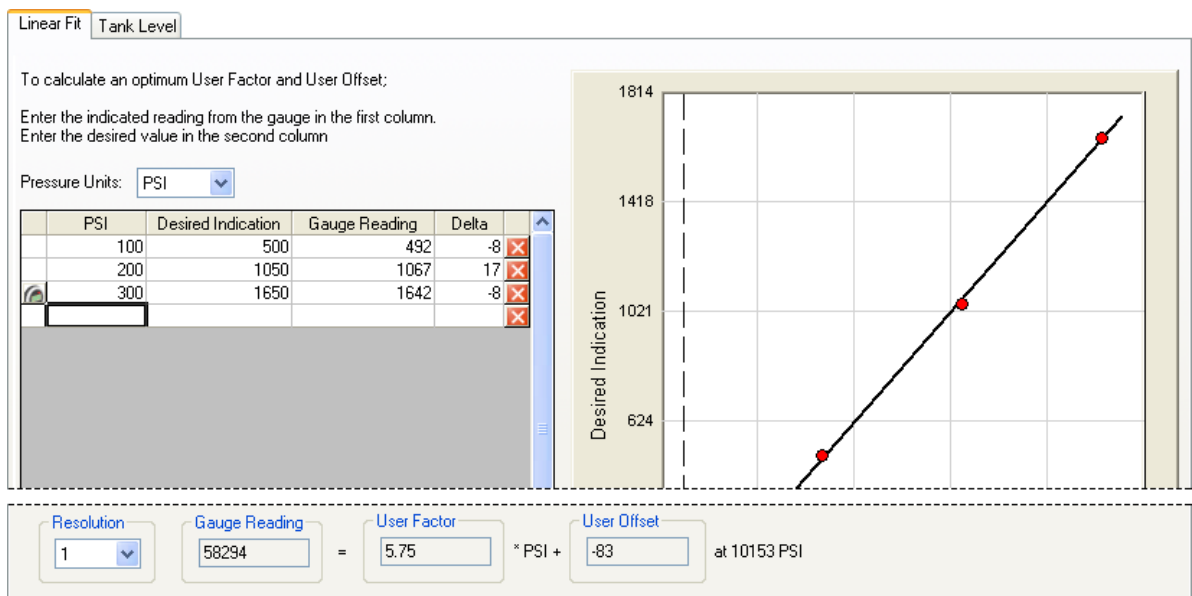


Figure 10 – The Linear Fit tab.

The Tank Level tab allows you to setup the gauge as a height or percent of capacity indicator for a tank or reservoir by entering in a few basic measurements. The tank level assumes the fluid density is constant, and that the fluid is incompressible. You will need the following information:

Figure 11 – The Tank Level tab.

- 1 Desired units to be displayed on gauge (feet, meters, % of capacity, etc.). If % of capacity is chosen, you will also need the height of the tank.
- 2 The vertical distance from the gauge to the bottom of the tank, and if the gauge is above or below the bottom of the tank.
- 3 Media density, in kg/m^3 , lbs/ft^3 , or slugs/ft^3 .
- 4 The local gravity. If local gravity is unknown, you can calculate local gravity if the latitude and elevation is known, or use the standard gravity value of 9.80665.

The User Factor and User Offset will be calculated from these parameters.

The User Offset and User Unit Wizard is only available for gauges running firmware version R0013 or later (for XP2i gauges) or R0113 or later (for XP2i-DD gauges). Use XP2iUpdate (free, on www.xp2i.com) to upgrade any gauge to the latest firmware.

Calibration Options

- **Userspan:** Usually set to 1 at the factory, and used to adjust the gauge for component aging. All readings are multiplied by this number. For instance, if the readings are low by 0.1%, set this number to 1.001 to correct the readings (1.001 is equivalent to 100.1%).
- **Disable keypad userspan:** Checking this box prevents calibration adjustments using the keypad, only. This does not affect the ability to change the userspan value with **ConFigXP**.

Figure 12 – Calibration options help to ensure that your gauge continues to provide accurate readings.

- **Zero value adjust:** Allows long term zero drift of absolute gauges to be calibrated out. Zero value adjust is added to the displayed pressure. Available to absolute gauges only.

As Received / As Left Report

The As Received / As Left Report is a summary of the gauge configuration before and after any changes made using **ConfigXP**. The As Received state is the condition of the gauge after the initial connect. The As Left state includes all changes since the initial connect, including any changes not yet written to the gauge.

Figure 13 – As Received /As Left reports can be viewed on screen, saved, and then printed if desired.

As Received / As Left Report for 546968	
As Received Conditions	As Left Conditions
Features:	Features:
Peak Enabled	Peak Enabled
Zero limit:200	Zero limit:200
User Factor:1	User Factor:1
User Offset:0	User Offset:0
User Resolution:1	User Resolution:1
Userspan Enabled	Userspan Enabled
TARE Disabled	TARE Disabled
2nd Line Forced On (Disabled)	2nd Line Forced On (Disabled)
Rate Enabled	Rate Enabled
Rate window size:6	Rate window size:6
Differential mode enabled.	Differential mode enabled
PSVtest mode disabled	PSVtest mode disabled
Averaging Disabled	Averaging Disabled
Average window size:10	Average window size:10
Userspan: 0.99940	Userspan: 0.99940
Units: PSI	Units: PSI

Password Protection

The password protection feature of the gauge allows you to prevent unauthorized changes to the gauge configuration by setting a four digit password. Once the password is set you will not be able to make any changes to the gauge through **ConfigXP** without the password. In addition, any functions within the gauge itself that can be accessed by the keypad or serial interface, such as water reference select or userspan adjustment, will be disabled. Any serial interface command that attempts to change a protected feature will return a "X,0" message indicating that feature cannot be changed. Passwords can only be set or removed using **ConfigXP**.

In the event you lose the password, you will need to contact the factory for an unlock code, which will remove the password protection.

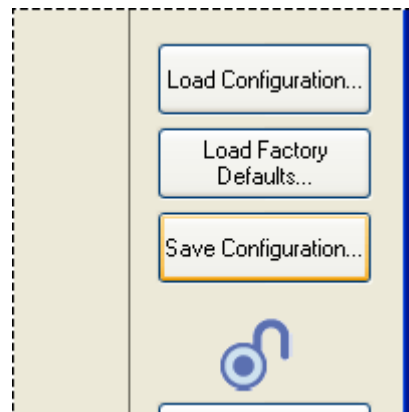


Figure 14 – Prevent unauthorized changes to a gauge with Password Protection.

Loading and Saving Configurations

Using the Load and Save Configuration buttons allows you to create custom setups of the gauge, such as enabling a limited set of engineering units or enabling other features in the gauge, and store that configuration for later use. Applications might include using a saved configuration to setup multiple gauges identically, or having different configurations for the same gauge to customize it for different applications. Configurations do not include the password or userspan value.

Figure 15 – Use the buttons on the upper-right side of the dialog box to save custom gauge setups or reset a gauge to its factory defaults.



Reset to Factory Defaults

The Load Factory Defaults button will return the gauge to the configuration as shipped from the factory. As part of the reset function, the password will be removed from the gauge, but the user-span value will be unaffected.

Language Selection

ConfigXP supports alternate languages for the user interface. Some languages are available directly from the Crystal Engineering web site, while others can be obtained directly from your local Crystal Engineering distributor.

To choose an alternate language, click the **Language** button to open the Select Language dialog box. You must use the version of **ConfigXP** included with the language file. If you upgrade **ConfigXP** using the English version, it is very likely that the language file will no longer work and the program will start in English.

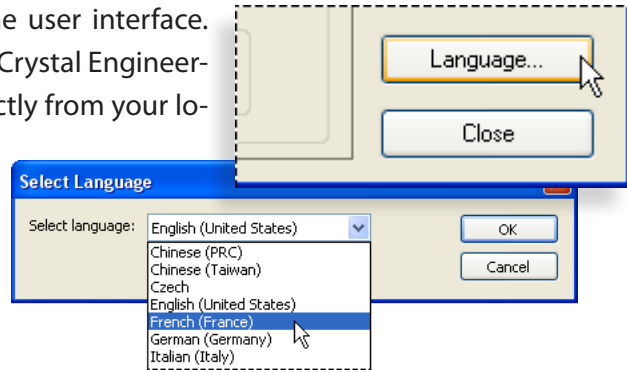


Figure 16 – Click the Language button to choose from a number of ConfigXP user interface languages.

Firmware Revision Dependencies

Some older versions of the firmware do not fully support all of the features provided in **ConfigXP**.

A known issue exists with disabling units which may cause the unit to only operate in PSI mode even if that unit is not selected. To prevent this problem, simply select PSI or kgf/cm² as one of the units and the gauge should work properly.

Service and Support

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Disclaimer of Warranty

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