CrystalControl User's Manual

Crystal pressure

AMETEK®
TEST & CALIBRATION INSTRUMENTS

Contents

Introduction

CrystalControl™ is a software program used to customize, update, and calibrate the nVision Reference Recorder and the HPC40 Series Pressure Calibrator. As the features differ depending on the device it is connected to, this manual contains separate sections for each product.

To use CrystalControl with an nVision Reference Recorder, refer to the

To use CrystalControl with an HPC40 Series Pressure Calibrator, refer to the

CrystalControl can be used with both the nVision Reference Recorder (left) or the HPC40 Series Pressure Calibrator (right)

nVision

OVERVIEW

CrystalControl provides an easy way to customize your nVision Reference Recorder or Lab Reference while also providing a way to store and archive your recorded data runs. With only a serial cable (P/N: 3951, or equivalent USB A to mini USB B), a computer running Microsoft® Windows®[1], and the CrystalControl program you can:

- Enable / disable pressure units
- Control and configure recordings
- Password protect the recorder to prevent unauthorized changes
- Identify firmware version
- Define a custom message or startup screen
- Disable or reorder your display screens
- Adjust automatic and backlight shutoff settings
- Calibrate the modules and enter new Calibrated On and Calibration Due dates
- PM Modules: Select your preferred H2O water density: 4°C, 60°F, 68°F/20°C
- PM Modules: Limit or expand the zero adjustment range
- BARO Module: Enable or disable
- RTD100 Modules: Select RTD TCRs and lead types
- MA20: Setup and Calibrate Switch Test mode
- Export your data to Microsoft Excel files for reporting and graphing (.xls/.csv/.pdf/signed .pdf)
- Gives you the tools to ensure that your nVision is functioning with the latest feature enhancements and factory updates

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

[1] Microsoft Windows Vista SP2 (32/64-bit), Windows 7 SP1 (32/64-bit), Windows 8 (32/64-bit), or Windows 8.1 (32/64-bit). Minimum screen resolution for this application is 1024 x 640.

INSTALLATION

Install CrystalControl from the product CD or from the Crystal Engineering website at **crystalengineering.net.**
Launch CrystalControlSetup.exe and follow the on-screen prompts.

OPERATING INSTRUCTIONS

CrystalControl will automatically detect your nVision Reference Recorder when connected. If no nVision is found check cables and verify that the recorder is turned on. Click Find Gauge to reestablish communications.

Click *Select Gauge*.
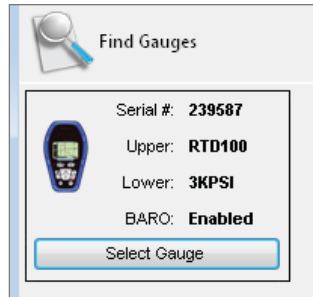
NAVIGATING IN CRYSTALCONTROL

CrystalControl is organized into three major functions: configuration settings (Config), data viewing and archiving (DataViewer), and Tools to set your data storage locations and product update strategies.

- **Config** Configure or change settings to the nVision platform, and the Upper, Lower, and BARO modules. Each appropriate platform or module can be selected for modification from the left-hand tabs. Click *Update Gauge* to implement your selections to the recorder.

- **DataViewer** Allows quick viewing of live recording or previously recorded data runs. Additional features such as zooming, changing units, and exporting or archiving to .xls/.csv/.pdf file formats are also available.
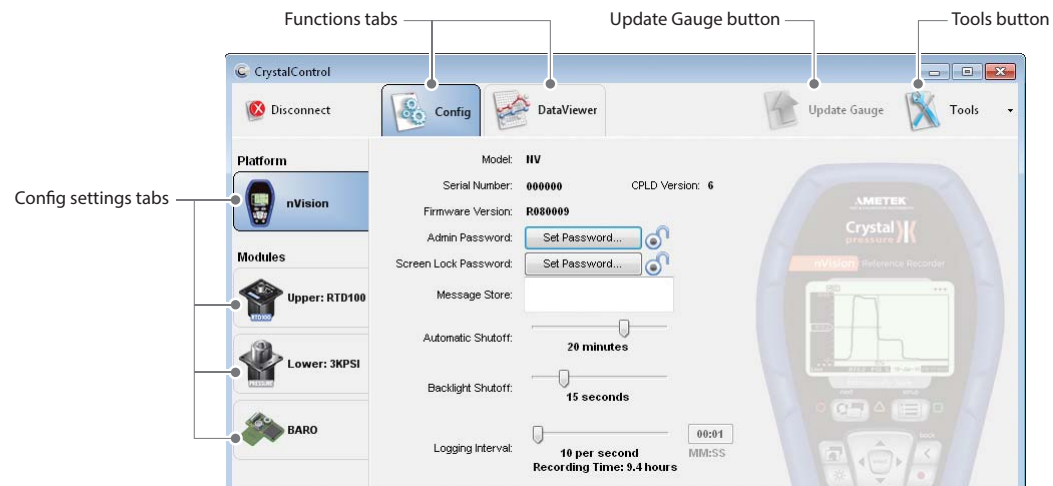
Navigate through CrystalControl with the function tabs.

CONFIG FUNCTION

Configuration settings are arranged in groups such as Platform (nVision) and Modules (Upper, Lower, and BARO). To modify the desired group, simply select the appropriate settings tab on the left.

nVision Chassis

The only information programmed by the factory is the Model, Serial Number, and Firmware Version; all other information may be modified by CrystalControl.

- **Model:** Model of the nVision chassis. Read only.

- **Serial Number:** The serial number as reported by the nVision chassis. Read only.

- **Firmware Version:** The firmware version and whether updates are available for your nVision chassis. Read only, but may update through Tools.

- **Admin Password:** This feature allows you to prevent unauthorized changes to the configuration by setting a four digit password. Once the password is set you will not be able to make any changes to the recorder through CrystalControl without the password.

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

- **Screen Lock Password:** The screen lock, or "keypad lockout" password protection feature allows you to prevent unauthorized user operation by setting a four digit password. The Screen Lock password locks the following functions only: Power off, Next unit, Zero, Clear Peaks, and Start/Stop Recording. Passwords can only be set or removed using CrystalControl. Once enabled, the lock icon will appear closed in CrystalControl. The Lock Chassis option is available through the **(Setup)** button - Settings item on the nVision chassis. When locked, the lock icon will be shown on the display and will require the user to enter the password using the **(▲)** , **(▼)** , **(▶)** , and **(◀)** arrows and the **(select)** button on the QWERTY keyboard.

- **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 32 characters. The Show Message Store At Startup check box enables the display of a custom startup screen when the unit is turned on. The startup sequence stops on this screen and will not continue until the user presses the select button. Example: Assign a differential pressure (DP) range and accuracy to an nVision with two pressure sensors so as to configure the device as a dedicated DP gauge.

- **Automatic Shutoff:** Allows various time settings to shut off the nVision to preserve battery life. When recording this is the time before the power saving screen is displayed.

- **Backlight Shutoff:** Adjust backlight illumination times to preserve battery life.

- **Logging Interval:** Longer data recording rates increase battery life and reduce the number of points acquired for long test runs. Custom interval rates up to 1 hour per reading can also be configured. Recording time displays the memory storage limits of the nVision. If operating in extended recording modes it may be possible to deplete the batteries during a recording run. Operate the nVision with USB power if longer recording durations are required.

- **Enabled Screens:** Customize your nVision to meet your exact display needs. Enable or Disable screens, rearrange the order they will appear, select your Home screen, or restore defaults. The Home screen will have a Home button icon in the lower right corner for your selection in the screen editor.

- **Show Screen Number:** Allows disabling of the screen number that flashes briefly when changing screens.

- **Enable Run Tags:** Enter the run tag using the on screen keyboard with up to 22 characters. The Run Tag you enter will display in DataViewer and your downloaded data.

- **Predefined Run Tags:** Designate up to five 22 character Run Tags to name each run. The Run Tags you choose will display in DataViewer and your downloaded data.

Modules: Common to all modules

Several of the features are common between all available modules. The only information programmed by the factory is the Model, Serial Number, and Firmware Version; all other information may be modified by CrystalControl.

- **Model:** Model of the nVision module. Read only.

- **Serial Number:** The serial number as reported by the nVision module. Read only.

- **Firmware Version:** The firmware version and whether updates are available for the nVision module.Read only, but may update through Tools.

- **Calibrated On:** Modify the Calibrated On date. Factory set to align with the included Certificate of Calibration.

- **Calibration Due:** Modify the Calibration Due date with the Edit Calibration Data button. Factory set to one year from Calibrated On date. Your quality system may require more or less frequent calibration, or your experience with the nVision, or operating environment may suggest longer or shorter intervals.

- **Userspan:** Usually set to 1 at the factory, and used to adjust the calibration for component aging. All readings are multiplied by this number. For instance, if the readings are low by 0.01%, set this number to 1.0001 to correct the readings (1.0001 is equivalent to 100.01%).

 Note: MA20 and BARO also have Offset adjustment in addition to Userspan.

CAUTION: Changing the userspan value changes the calibration of the module. Changes in userspan values should only be made by qualified personnel and equipment.

- **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 32 characters.

- **Enabled Units:** Select the units you need, or turn off the units you never use (at least one unit must be selected).

Modules: Pressure Module

The following features are unique to the Pressure Modules (PM):

- **Zero Limit:** By default, all pressure modules come pre-programmed with a 20 PSI maximum zero limit. This means that you can apply pressure (up to 20 PSI) to the recorder, press the zero button, and the recorder will read zero. In some situations it may be desirable to increase or decrease the maximum pressure that the recorder could be set to read zero pressure.

! WARNING: **This recorder can display zero pressure when connected to a source of pressure! Do not rely on the display indication before disconnecting— it may not be indicating true pressure. Never disconnect pressure instrumentation without first relieving system pressure!**

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

- **User Defined Unit:** This section allows you to create a custom unit. For example display directly in torque, force, or other pressure units like ft of seawater. You can also define an existing pressure unit with more or less digits of resolution. The display will equal the *User Factor* multiplied by the measured PSI plus the *User Offset*. An 11 character field is provided to name the custom unit of measure. *Resolution* selects the number of decimal places on the display. *Gauge Reading* helps you verify your factor by calculating the expected reading at full scale pressure.
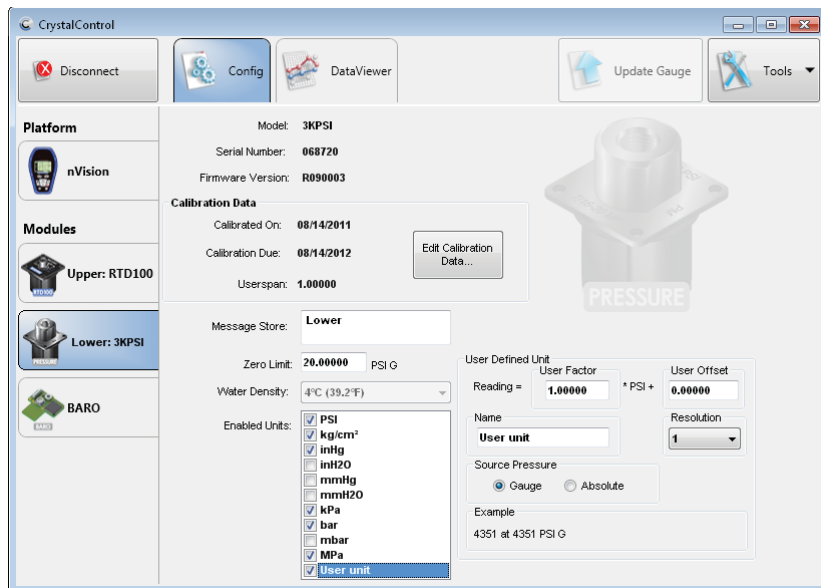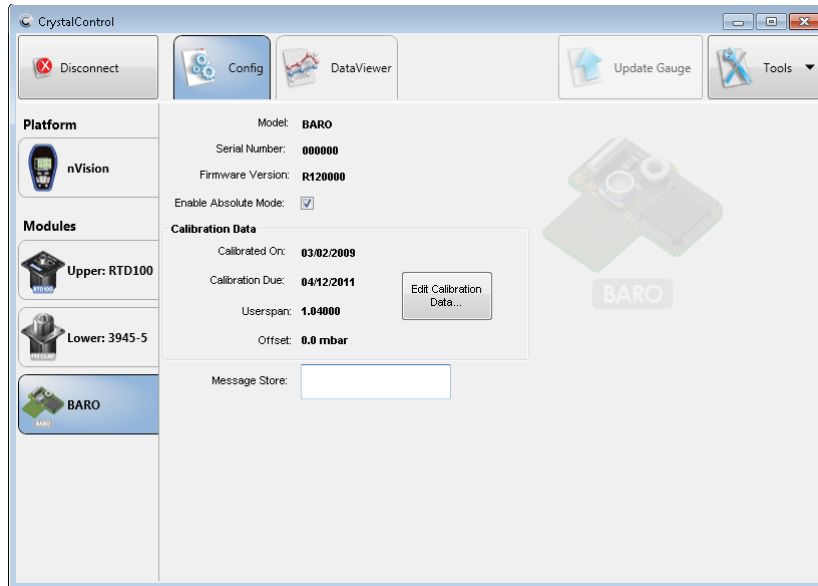

Typical view of PM Module features in CrystalControl.

Module: BARO

The BARO module requires CPLD version 6 or greater to operate properly. If you have CPLD 5 or earlier the nVision must come to the factory for updating. This information may be found on the nVision Config tab.

- **Enable Absolute Mode:** You may choose to disable your installed BARO module to save battery power or to prevent the user from accessing the absolute pressure mode. If the User Unit is created using absolute readings, then the BARO must be enabled for the User Unit to be functional.

- **Edit Calibration Data Button:** This section includes a Calibration Wizard to help calculate the optimum offset and userspan values.

Typical view of BARO Module features in CrystalControl.

Modules: Current, Voltage, & Switch Test (MA20)

Note: The MA20 module requires CrystalControl 1.2 or greater, and Chassis firmware R080005 or greater to operate properly. The MA20 Module Instructions (P/N 4339) provide further details if required.

The following features are unique to the Current, Voltage, & Switch Test Modules (MA20):

- **mA:** In addition to the Userspan, this module allows for an offset value to be entered

- **VDC:** In addition to the Userspan, this module allows for an offset value to be entered.

! CAUTION: Changing the Userspan or offset value changes the calibration of the module. Changes in userspan or offset values should only be made by qualified personnel and equipment.

- **Setup Wizard:** Select this button to Setup the Switch Test mode. The wizard will test the open and closed switch states to ensure accurate readings in the field.

Note: You may use the included nVision Test Leads during the setup process.
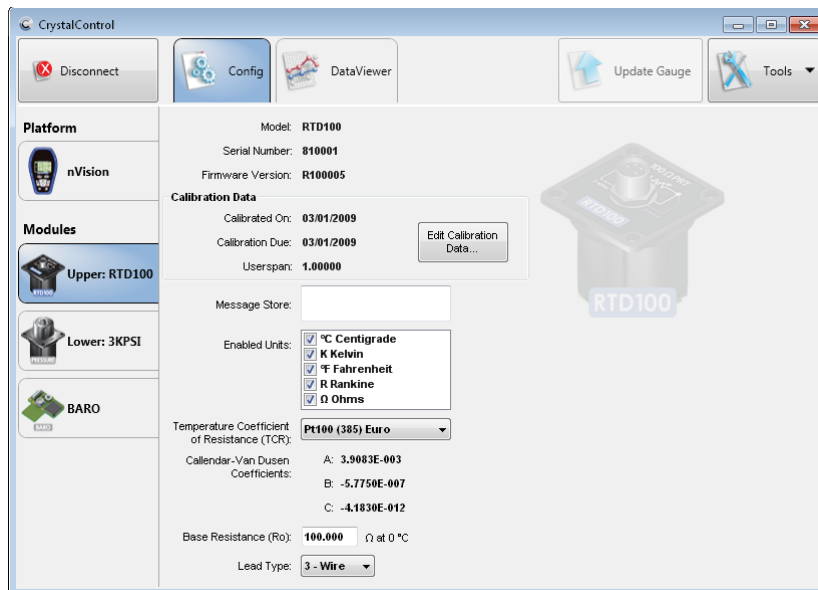

Typical view of MA20 Module features in CrystalControl.

Modules: Temperature Module (RTD100)

The following features are unique to the Temperature Modules (RTD100):

- **Temperature Coefficient of Resistance (TCR):** Select your appropriate platinum RTD Temperature Coefficient of Resistance (TCR) from the pull down menu. When selected, the pre-populated Callendar-Van Dusen Coefficients will appear. See the nVision Operation Manual for further details on RTDs and the RTD100 module.

- **Base Resistance (Ro):** Adjust your RTD resistance at 0°C. Factory default is 100Ω.

- **Lead Type:** Adjust your RTD sensor wiring between 2-, 3-, or 4-wire methods.

Typical view of RTD100 Module features in CrystalControl.
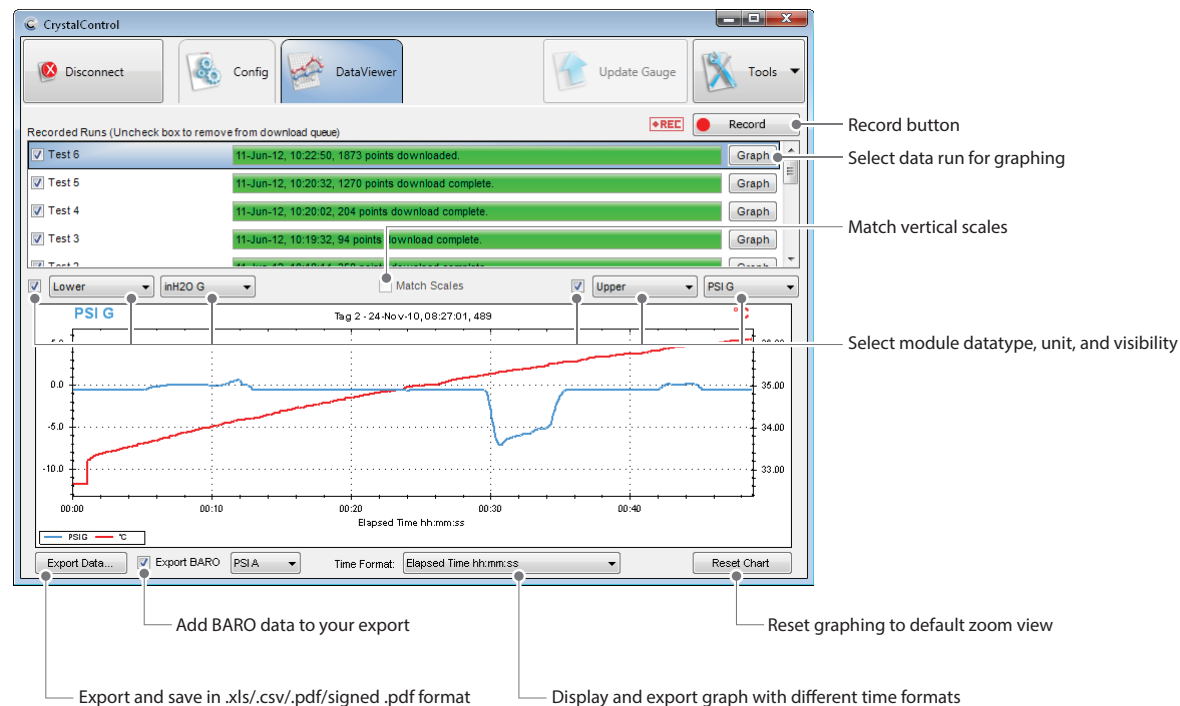
DATAVIEWER: VIEW AND SAVE RECORDED DATA
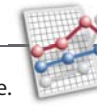
DataViewer allows you to quickly view live or recorded data runs on your PC. Quickly zoom, change units, or export to .xls/.csv/.pdf file format in this mode.

Graphing Screen Features

Click on the *Graph button* to display recorded data in the graphing screen. Bypass downloading stored data runs by un-checking the corresponding run box.

- **Record:** Start a recording on the connected nVision.

- **Show Point Values:** Determine specific reading and time data by hovering the cursor over appropriate data point.

- **Zoom:** It is possible to zoom in on data by dragging with the left mouse button. Drag to the appropriate size and release.

- **Match Scales:** Match the vertical scales on the graph for easier comparison of data.

- **Reset Chart:** Reset to original graph view.

- **Right Click:** Copy, Save Image As, Page Setup, Print, Show Point Values, Reset Chart.

- **Export Data:** To download and save data from the nVision, simply click the *Export Data button.* See Data Management for further detail.

- **Time Format:** Change elapsed or date/time formats.

Record button

Select data run for graphing

Match vertical scales

Select module datatype, unit, and visibility

Add BARO data to your export

Reset graphing to default zoom view

Export and save in .xls/.csv/.pdf/signed .pdf format

Display and export graph with different time formats

Interact with recorded data in the DataViewer screen.

DATA MANAGEMENT

In order to provide for a flexible reporting solution, CrystalControl is capable of directly interfacing with Microsoft® Excel to paste recorded run data for archiving, reporting, graphing, and analysis. CrystalControl Excel templates must be in Excel 2003 (.xlt) format, and exported Excel files will be in Excel 2003 (.xls) format. This section assumes some familiarity with Excel.

Exporting Data

One of CrystalControl's greatest strengths is the ability to create a multitude of .xls/.csv files using an Excel template. This allows the data file to be fully customized, including the use of graphics and foreign languages. CrystalControl creates data files by filling an Excel template with the appropriate stored data, replacing tags that identify the fields that are to be filled. Specifically, CrystalControl does search-and-replace operations in the template worksheet named "Data". Refer to Excel Template Tags for a list of tags that can be included in the data files.

CrystalControl uses the template file specified in the Settings. You can edit this setting by going to Tools menu, selecting Settings, and choose the Export Data Settings tab. You can either Browse to a new template you have created, or edit the existing template by using Windows to browse to the currently selected file. By default, CrystalControl uses a template file titled "nVisionDataView" that is located in the Public or Shared Documents folder (Windows Vista or 7: Public Documents\Crystal Engineering\CrystalControl\Templates), (Windows XP: Shared Documents\Crystal Engineering\CrystalControl\Templates).

Due to the limitations of Excel 2003 it is only possible to graph a total of 32,000 rows of data into any one graph. If your downloaded run is greater than 32,000 data points, subsequent data will be moved to a newly created sheet(s) in the same file where you may create a new graph. Comma Separated Value (.csv) data will all be exported to one file regardless of the number data points. The PDF and Signed PDF options will graph all logged data points and include the .xls and .csv files as attachments.

Excel Template Tags

Following is a list of Excel template tags used by CrystalControl to create .xls/.csv data files using search-and-replace operations. Tags are always included within square brackets (e.g., [tag]) and they can occur anywhere within a template worksheet.

Lower Module Information

Tag Name	Description
[LowerModuleModel]	Lower Module Model
[LowerModuleSerialNumber]	Lower Module Serial Number
[LowerModuleFirmwareVersion]	Lower Module Firmware Version
[LowerModuleCalDue]	Lower Module Calibration Due
[LowerModuleUserspan]	Lower Module Userspan
[LowerModuleOffset]	Lower Module Offset
[LowerModuleMessageStore]	Lower Module Message Store
[LowerModuleUnits]	Lower Module Units
[LowerModuleUserFactor]	Lower Module User Factor
[LowerModuleUserOffset]	Lower Module User Offset
[LowerModuleUserResolution]	Lower Module User Resolution

Upper Module Information

Tag Name	Description
[UpperModuleModel]	Upper Module Model
[UpperModuleSerialNumber]	Upper Module Serial Number
[UpperModuleFirmwareVersion]	Upper Module Firmware Version
[UpperModuleCalDue]	Upper Module Calibration Due
[UpperModuleUserspan]	Upper Module Userspan
[UpperModuleOffset]	Upper Module Offset
[UpperModuleMessageStore]	Upper Module Message Store
[UpperModuleUnits]	Upper Module Units
[UpperModuleUserFactor]	Upper Module User Factor
[UpperModuleUserOffset]	Upper Module User Offset
[UpperModuleUserResolution]	Upper Module User Resolution

Platform or Chassis Information

Tag Name	Description
[ChassisModel]	Chassis Model
[ChassisSerialNumber]	Chassis Serial Number
[ChassisFirmwareVersion]	Chassis Firmware Version
[ChassisMessageStore]	Chassis Message Store
[LoggingInterval]	Logging Interval

BARO Module Information

Tag Name	Description
[BAROModuleSerialNumber]	Serial number of BARO
[BAROModuleModel]	Always equals "BARO" if BARO present and exported
[BAROModuleMessageStore]	Message store of BARO
[BAROModuleUnits]	Enabled Units for BARO
[BAROModuleCalDue]	Calibration due date for BARO
[BAROModuleFirmwareVersion]	Firmware version of BARO
[BAROExportUnits]	BARO Export of Units
[BAROModuleUserspan]	BARO Module Userspan
[BAROModuleOffset]	BARO Module Offset

Data Start Point

Tag Name	Description
[DataStart]	Start Point of Data

Recording Run Information

Tag Name	Description
[RunStartTime]	Run Start Time
[RunDuration]	Run Duration
[Run]	Run Index

Left Scale Information

Tag Name	Description
[LeftScaleDatatype]	LeftScale Datatype
[LeftScaleUnits]	LeftScale Units
[LeftScaleTare]	LeftScale Tare
[LeftScaleAverage]	LeftScale Average
[LeftScaleUserFactor]	LeftScale User Factor
[LeftScaleUserOffset]	LeftScale User Offset
[LeftScaleUserResolution]	LeftScale User Resolution
[LeftScaleSerialNumber]	LeftScale Serial Number*

Right Scale Information

Tag Name	Description
[RightScaleDatatype]	RightScale Datatype
[RightScaleUnits]	RightScale Units
[RightScaleTare]	RightScale Tare
[RightScaleAverage]	RightScale Average
[RightScaleUserFactor]	RightScale User Factor
[RightScaleUserOffset]	RightScale User Offset
[RightScaleUserResolution]	RightScale User Resolution
[RightScaleSerialNumber]	RightScale Serial Number*

* If you select Differential in the CrystalControl Dataviewer and export the data, then the serial number shown in the selected location is displayed as: [LowerModuleSerialNumber] / [UpperModuleSerialNumber]

TOOLS

Click on the Tools button to:

- **Settings:** Manage your updates, determine excel template location, .xls/.csv/.pdf/signed .pdf file export location, and default time format for the DataViewer graph.

- **Firmware Update:** Update firmware for chassis or modules. Check to select the desired update before selecting Update Gauge.

- **Check for Updates:** CrystalControl Web Update service searches for the latest firmware updates available from the factory.
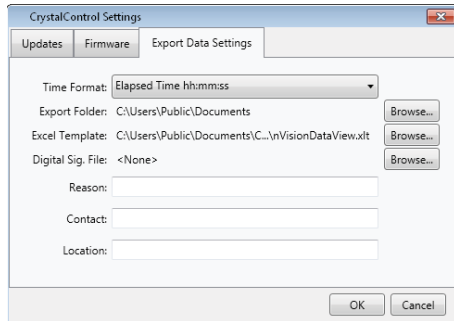
Settings

▶ **Updates:**

- Select how you want your updates handled.

- Allow reverting of older firmware versions: Sometimes it is advantageous to revert to older firmware versions. Click this feature to enable.

- Manually add firmware: Add firmware to the management system if stored in some other location. This may be required if web access is not available and firmware is emailed to you for use.
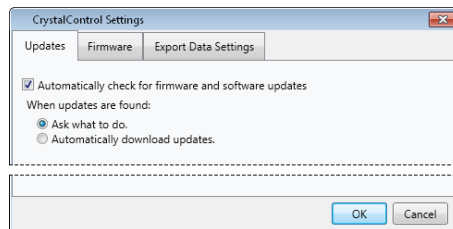
▶ **Export Data Settings:**

- **Time Format:** Define your default view for DataViewer. Note that you can always override the default setting in DataViewer by using the pull down menu.

- **Export Folder:** Define a new location for your exported data file (.xls/.csv/.pdf/signed .pdf) by using the Browse function.

- **Excel Template:** Define a new location for your Excel Template by using the Browse function.

- **Digital Sig. File:** Define the location of your digital signature file to be used to generate a tamper proof, Signed PDF. Additional fields are for reason, contact, and location information.
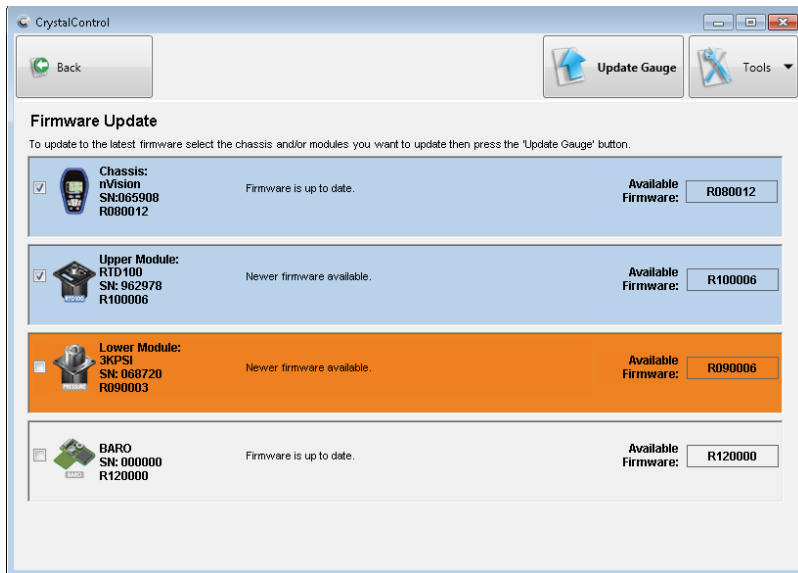

Firmware Update

CrystalControl allows you to update your chassis and module firmware independently with the latest released versions, or revert to older versions if enabled in the Settings menu. Firmware will be loaded only on those items with checked boxes when Update Gauge is selected. The Available Firmware box indicates the loaded version number including older versions if allowed in Settings and selected in the pull down menu. Note that the updating process may require you to erase all runs in the memory before updating firmware.

❗ **WARNING:** **Do not disconnect the USB cable during updating.**
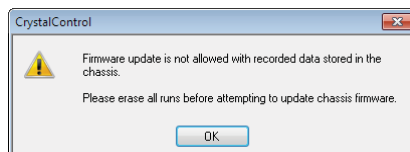
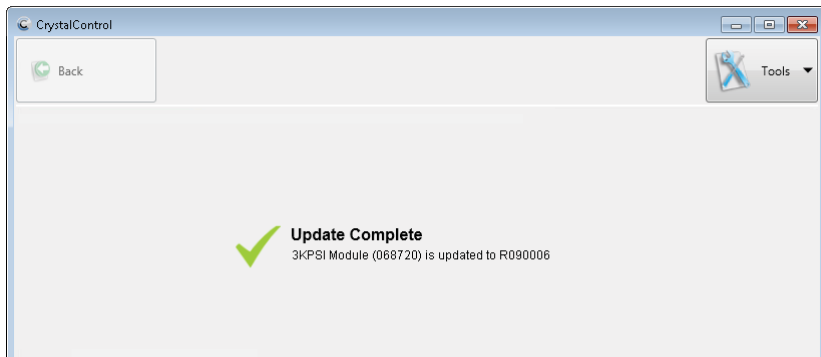Firmware Update 'Erase All Runs' warning screen.

Firmware Update screen prior to updating.

Firmware Update screen during updating process.

When the updating is complete and successful a confirmation message will appear indicating you may proceed.

HPC40 Series

OVERVIEW

CrystalControl provides an easy way to customize your HPC40 Series Pressure Calibrator. With only a serial cable (P/N: 3951) or equivalent USB A to mini USB B, a computer running Microsoft® Windows®[1], and the CrystalControl program you can:

- Enable / disable pressure units
- Identify firmware version
- Define a custom message
- Adjust automatic shutoff settings
- Calibrate and enter new Calibrated On and Calibration Due dates
- Define a custom engineering unit
- Gives you the tools to ensure that your HPC40 is functioning with the latest feature enhancements and factory updates

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

[1] Microsoft Windows Vista SP2 (32/64-bit), Windows 7 SP1 (32/64-bit), Windows 8 (32/64-bit), or Windows 8.1 (32/64-bit). Minimum screen resolution for this application is 1024 x 640.

INSTALLATION

Install CrystalControl from the product CD or from the Crystal Engineering website at **crystalengineering.net.**
Launch CrystalControlSetup.exe and follow the on-screen prompts.

OPERATING INSTRUCTIONS

CrystalControl will automatically detect your HPC40 Series Calibrator when connected. If no HPC40 is found check cables and verify that the calibrator is turned on. Click Find Gauge to reestablish communications.

Click *Select Gauge*.
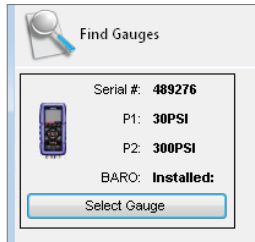
NAVIGATING IN CRYSTALCONTROL

CrystalControl is organized as follows

- **Platform** Configure settings and view details on the HPC40 Series.
- **Sensors** Configure the settings and view details of the various sensors in the HPC40 Series.
- **Update Gauge Button** Press to update your calibrator with the desired changes.
- **Tools** Change settings and update firmware.

Platform tab

Sensors tabs

Update Gauge and Tools buttons

Navigate through CrystalControl with the function tabs.

PLATFORM SETTINGS

The only information programmed by the factory is the Model and Serial Number, and Firmware Version. Other information may be modified by CrystalControl.

- **Model:** Model of the HPC40 Series. Read only.

- **Serial Number:** The serial number as reported by the HPC40 Series. Read only.

- **Firmware Version:** The firmware version and whether updates are available for your HPC40 Series. Read only, but may update through Tools.

- **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 64 characters. The message is stored in the HPC40 Series, and will be displayed in CrystalControl.

- **Automatic Shutoff:** Allows various time settings to shut off the HPC40 Series to preserve battery life.

SENSORS SETTINGS

Pressure Sensor Settings

The only information programmed by the factory is the Model and Serial Number. All other information may be modified by CrystalControl.

- **Model:** Model of the HPC40 Series pressure sensor. Read only.

- **Serial Number:** The serial number as reported by the HPC40 Series pressure sensor. Read only.

- **Calibrated On:** Modify the Calibrated On date. Factory set to align with the included Certificate of Calibration.

- **Calibration Due:** Modify the Calibration Due date with the Edit Calibration Data button. Factory set to one year from Calibrated On date. Your quality system may require more or less frequent calibration, or your experience with the HPC40, or operating environment may suggest longer or shorter intervals.

- **Userspan:** Usually set to 1 at the factory, and used to adjust the calibration for component aging. All readings are multiplied by this number. For instance, if the readings are low by 0.01%, set this number to 1.0001 to correct the readings (1.0001 is equivalent to 100.01%).

! **CAUTION:** Changing the userspan value changes the calibration of the sensor. Changes in userspan values should only be made by qualified personnel and equipment.

- **Enabled Units:** Select the units you need, or turn off the units you never use (at least one unit must be selected). In addition to standard units, you can also create a custom engineering unit, including the factor, offset, and resolution.

BARO, Voltage, RTD, Current Measure, and Current Source Settings

- **Serial Number:** The serial number as reported by the HPC40 Series sensors. Read only.

- **Calibrated On:** Modify the Calibrated On date. Factory set to align with the included Certificate of Calibration.

- **Calibration Due:** Modify the Calibration Due date with the Edit Calibration Data button. Factory set to one year from Calibrated On date. Your quality system may require more or less frequent calibration, or your experience with the HPC40 Series, or operating environment may suggest longer or shorter intervals.

TOOLS

Click on the Tools button to:

- **Settings:** Manage your firmware update settings.

- **Firmware Update:** Update HPC40 Series firmware. Check to select the desired update before selecting Update Gauge.

- **Check for Updates:** CrystalControl Web Update service searches for the latest firmware updates available from the factory.

Settings

▶ **Updates:**

- Select how you want your updates handled.

- Allow reverting of older firmware versions: Sometimes it is advantageous to revert to older firmware versions. Click this feature to enable.

- Manually add firmware: Add firmware to the management system if stored in some other location. This may be required if web access is not available and firmware is emailed to you for use.
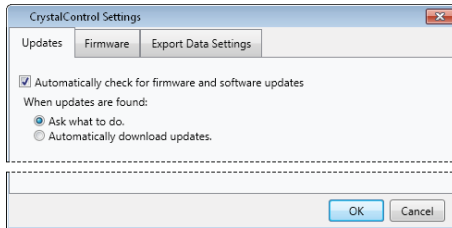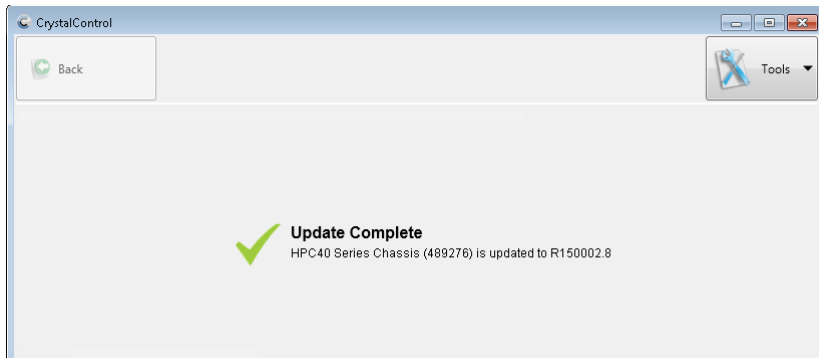
Firmware Update

CrystalControl allows you to update your firmware independently with the latest released versions, or revert to older versions if enabled in the Settings menu. The Available Firmware box indicates the loaded version number including older versions if allowed in Settings and selected in the pull down menu.

❗ WARNING: Do not disconnect the USB cable during updating.
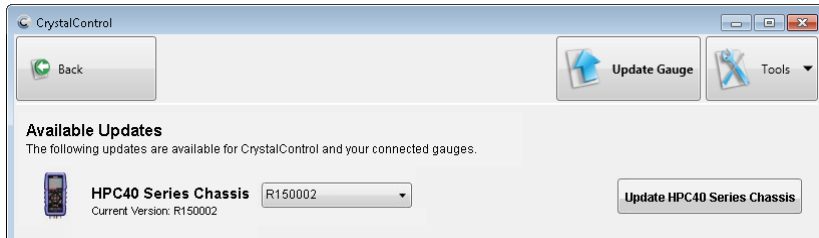
Firmware Update screen

When the updating is complete and successful a confirmation message will appear indicating you may proceed.

Check for Updates…

CrystalControl also has the ability to look out on the web for firmware updates both automatically and manually. This automatic survey will happen every time you open CrystalControl if the 'Automatically check for firmware and software updates' button is checked. However if you want to manually survey at any time you may use the 'Check for Updates' to achieve the same result.

CONTACT US

USA
Crystal Engineering • California*
Tel +1 (800) 444 1850
Fax +1 (805) 595 5466
crystal@ametek.com

Mansfield & Green • Florida
Tel +1 (800) 527 9999
cal.info@ametek.com

United Kingdom
Tel +44 (0)1243 833 302
jofra@ametek.co.uk

France
Tel +33 (0)1 30 68 89 40
general.lloyd-instruments@ametek.fr

Germany
Tel +49 (0)2159 9136 510
info.mct-de@ametek.de

Denmark
Tel +45 4816 8000
jofra@ametek.com

India
Tel +91 22 2836 4750
jofra@ametek.com

Singapore
Tel +65 6484 2388
jofra@ametek.com

China
Shanghai
Tel +86 21 5868 5111

Beijing
Tel +86 10 8526 2111

Guangzhou
Tel +86 20 8363 4768
jofra.sales@ametek.com.cn

*ISO 17025 accredited calibration lab, (A2LA #2601.01).

If calling, have ready the model number, serial number, date of purchase, and reason for return. You will receive instructions for returning the device to us.

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