HART Communicator Windows Tablet (COM-1) User Manual

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Quick Start Guide

The following steps will allow you to quickly begin using your HART Communicator (COM-1). This quick start guide is for experienced HART users, full instructions are provided later in this manual for non-experienced users.

Step 1: Turn on the HART Communicator

Press and hold for 4 seconds the power button (top left corner of the tablet). The tablet will boot up Windows.

Step 2: For wired HART devices (skip this step for HART-IP and *Wireless*HART devices)

a) Connect the Bluetooth HART Modem to the HART device/network

For communication with wired (4-20mA based) HART devices you must have a suitable load resistance, or a 250Ω Shunt/Loop resistor (supplied) must be placed in series with the device. Using the clips of the HART Modem connect either: across the loop load resistor (A – B), or across the HART transmitter terminals (C – D). See the relevant Figure 1a, 1b or 1c below.

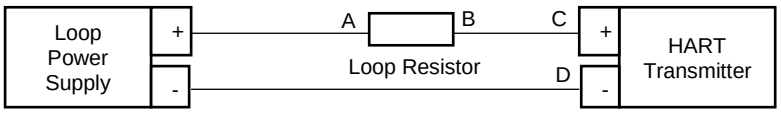


Figure 1a. Loop Powered HART Transmitter Connection

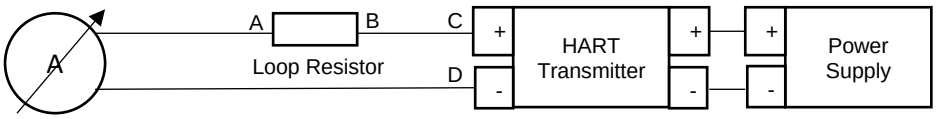


Figure 1b. 4-Wire HART Transmitter Connection

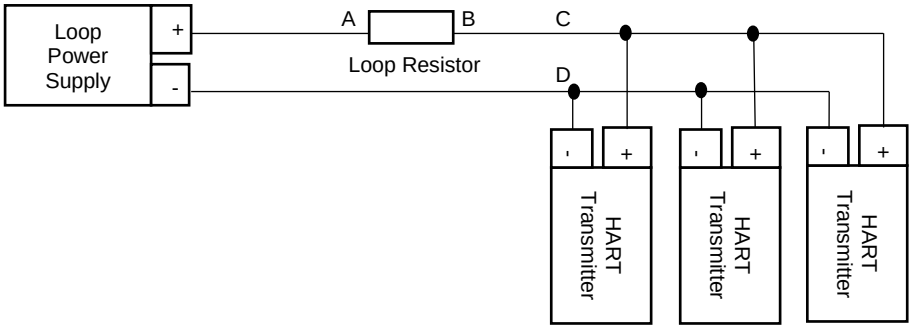


Figure 1c. Multi-drop HART Transmitter Connection

b) Turn on the Bluetooth HART Modem (BT-BAT-ER) to your PC

Press the Yellow "Power" button, the "Power" LED will illuminate.

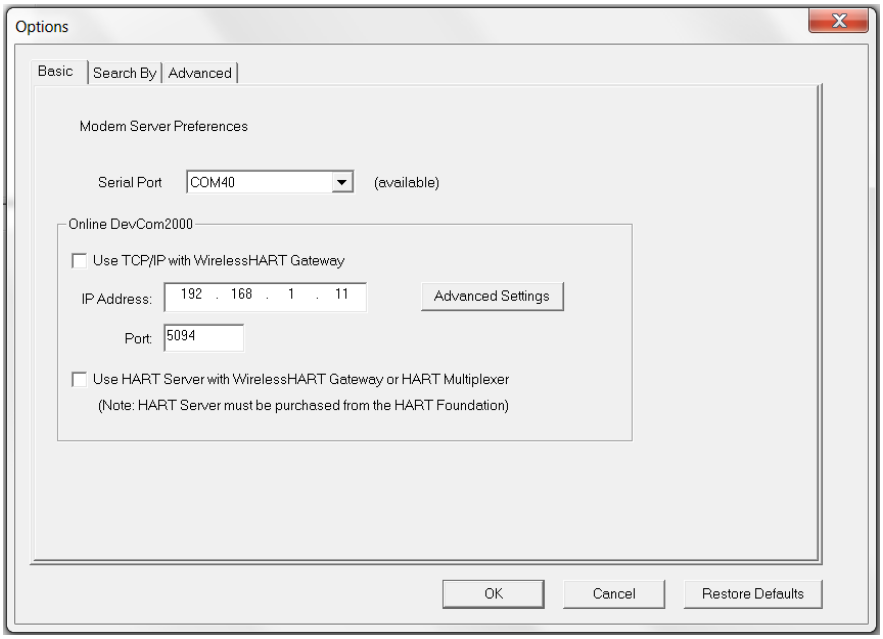
Step 3: Open the HART Communicator software "DevCom2000"

On the HART Communicator Windows Tablet touchscreen, single tap on the HART Communicator Icon "DevCom2000" as pictured below. Windows will then ask you if you want to allow this program to run, say yes.

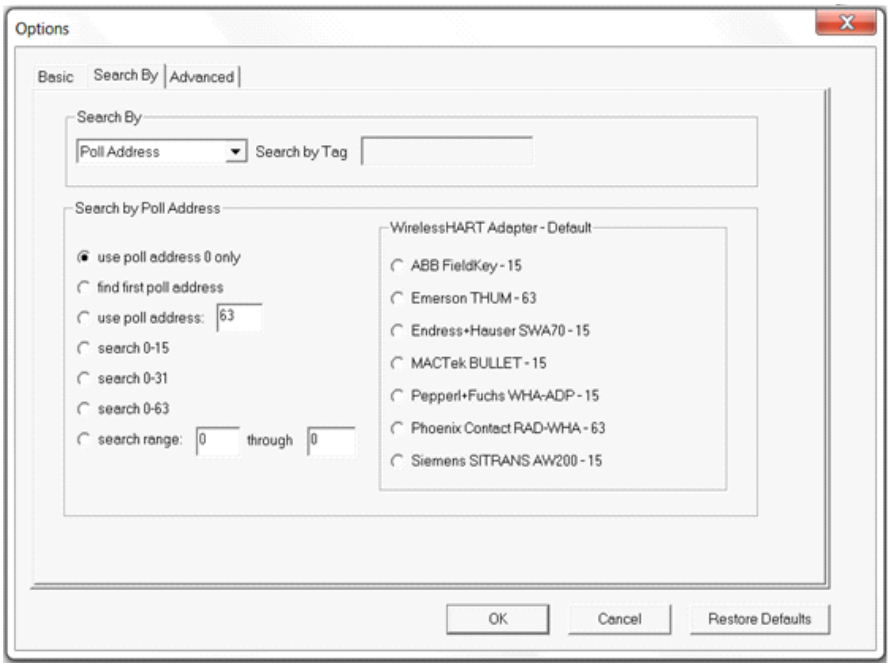
Step 4: Discovering connected HART Device(s)

a) For wired (4-20mA) HART devices connected via the Bluetooth HART Modem

When the HART Communicator software (DevCom2000) is opened, by default, it will automatically check for HART devices of address 0 connected to the Bluetooth HART Modem, if found it will display the "Explorer" window (go to Step5). If you have previously told it to connect to HART-IP / *Wireless*HART devices, or if you want to check for devices other than address 0, you will need to change the option within the HART Communicator software (DevCom2000). Go to "**Options → Basic**" and make sure "Use TCP/IP…" checkbox isn't selected, see screenshot below.

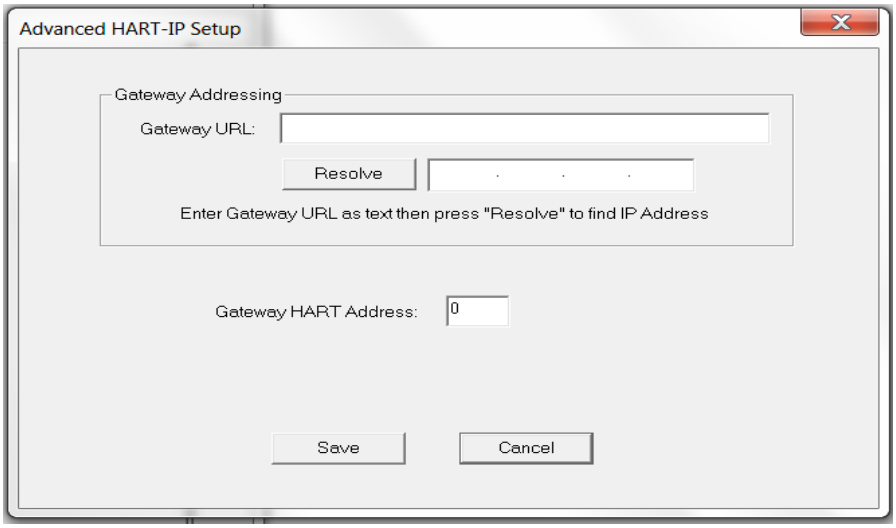


Then click on the "Search By" Tab and select the desired option (see screenshot below) and then press OK.



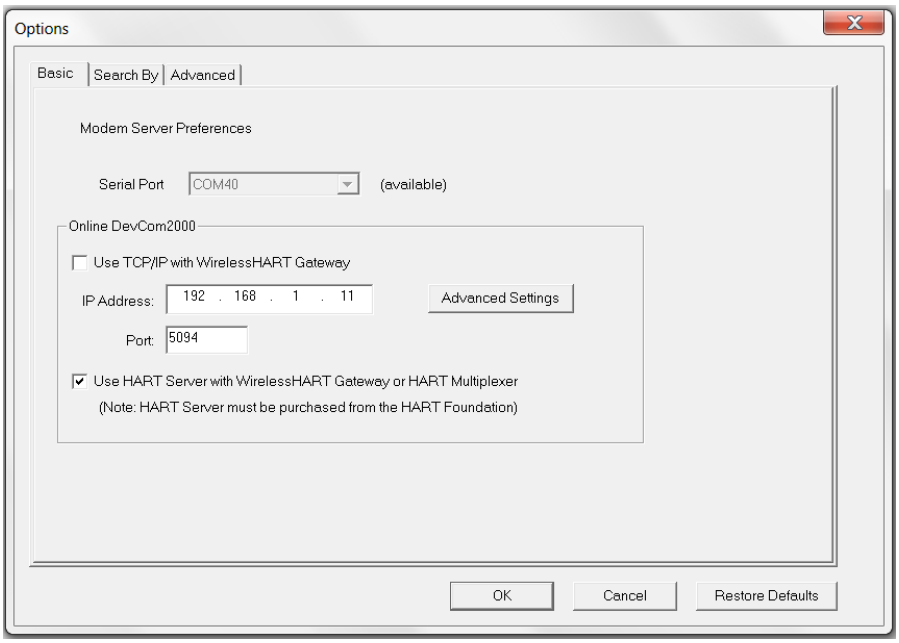
b) For HART-IP or *Wireless*HART devices

First you must configure the Tablets WiFi connection and connect to your networks Access Point (AP). Now we must configure the HART Communicator software (DevCom2000) to connect to a HART-IP / *Wireless*HART device instead of the default wired 4-20mA based HART device connected to the Bluetooth HART Modem. From the HART Communicator software (DevCom2000) menu select "**Options → Basic**" and tick the option "Use TCP/IP…" and set the IP address and port number (it is typically 5094) of the HART-IP device (Remote I/O, Multiplexer, *Wireless*HART Gateway), see screenshots above. If your WirelessHART gateway does not use the default address of 0, or if you only know its URL, click the "Advanced" tab. You can now enter the URL and/or change the Gateway HART address, see the screenshot below. Press "Save" and then "OK".



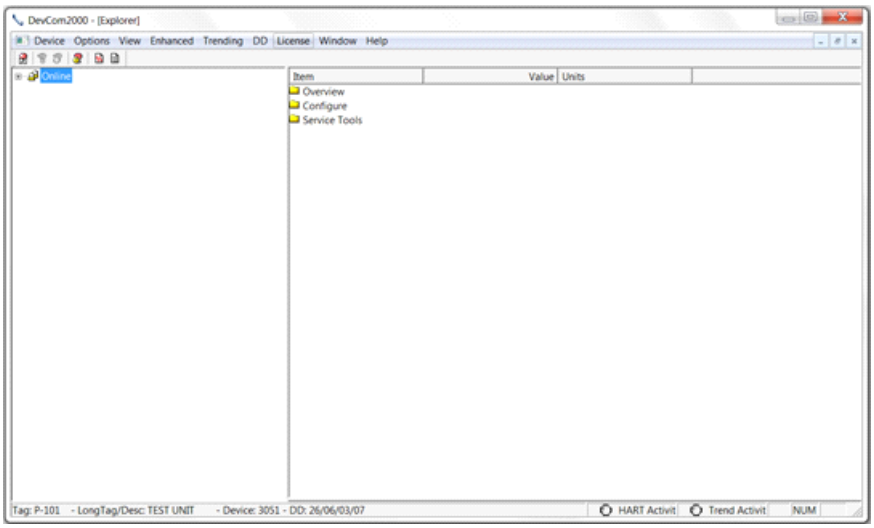
c) For HART Server

If you are using HART Server, from the HART Communicator software (DevCom2000) menu select "**Options → Basic**" and tick the option "Use HART Server with….", see screenshot below, press OK. You must then restart the DevCom2000 software for the change to be effective.



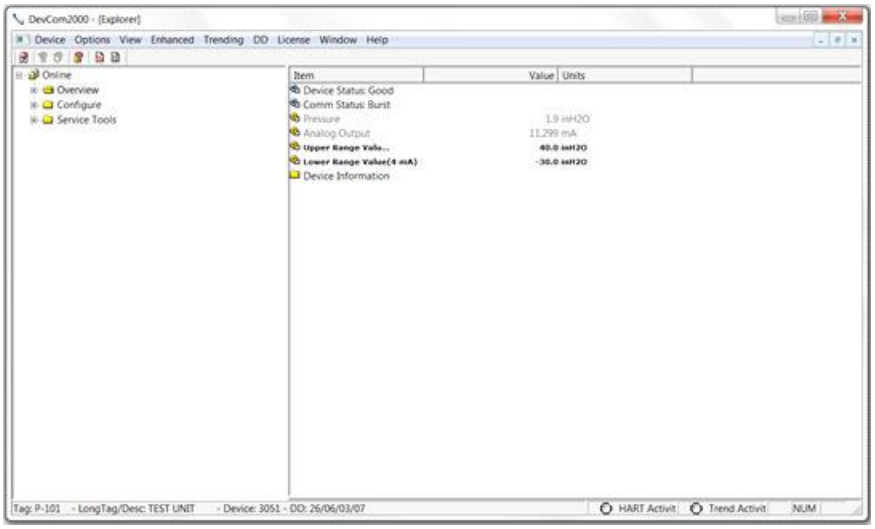
Step 5: Reviewing / configuring HART devices

You are now able to browse/configure/audit/etc the discovered HART device(s) as detailed in this user manual. In summary, DevCom2000 will open the “Explorer” window when it discovers a connected HART device, see the screenshot below.



The organization of the data in this explorer-style window is dictated by the device DD. The left hand tree-pane of this window shows the logical groups of field device data. These are called "Menus". The right hand data-pane shows the data, any sub-groups and any standard operating procedures found on a given menu.

You can browse through the field device data by expanding (click "+" symbol) or collapsing (click the "-" symbol) the menus in the tree-pane. You can also double-click the folder symbol when seen on the data-pane, e.g. in the screenshot below we have selected the “Overview” sub-group.



Step 6: Modifying the HART Device's Configuration

The “Explorer” window allows access to all of the data exactly as described by the product's manufacturer’s DD. When you find elements of the field device's configuration you want to change, simply double-click and edit the data. Once you have changed the configuration to suit your needs, press the Send icon to commit the data and transfer it to the field device.

Step 7: Performing Maintenance and Testing the HART Device

Many devices perform Methods or Standard Operating Procedures (SOPs) that may need to be performed to ensure the device is in peak condition. These Methods may include calibrating the loop current, trimming the transducer values or performing some diagnostic test on the field device. Methods appear in the data-pane just like data does. click on the Method and it will start running in a separate window. The Method will guide you through the process ensuring the procedure is completely and consistently performed. When the Method is complete the window will disappear.

Step 8: Exit

When you are through working on the field device simply exit DevCom2000. Once the program exits, you can then turn off the Bluetooth HART Modem, and turn off the HART Communicator Windows Tablet by shutting down Windows 10 in the normal way.

This is the end of the quick start guide, the rest of this manual describes in detail the use of the HART Communicator Software and Bluetooth HART Modem. If you have any questions please do contact HART Expert Ltd, advice and support is free.

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1 INTRODUCTION

This HART Communicator Windows Tablet (COM-1) allows access to and management of HART devices. This manual provides the information about the Hardware setup, communication with HART devices, and functions of our HART Communicator software (DevCom2000).

DevCom2000 uses Device Description files (DDs) to access data stored in the memory of the HART field device. DevCom2000 is unique in that it uses the DD of the connected device to determine what information to display, what variables are available for edit, and what procedures to follow for calibration, setup, and maintenance.

These DDs are developed by device manufacturers for their products and, in turn, distributed by the HART® Communication Foundation (HCF) worldwide. The latest DDs are included with COM-1 and you are automatically sent new DD releases for the first year. At any time (e.g. after the automatic updates have ceased) you can download new DD files from the HCF website (www.hartcomm.org).

1.1 Acronyms and Definitions

Acronym	Definition
DD	Device Description file, this contains the device information
DDL	Device Description Language
HCF	HART Communication Foundation
DevCom2000	HART Device Communicator Software used by our HART Communicator (COM-1)

1.2 Conventions Used in This Manual

Following formatting conventions are used in this guide:

Convention	Description
Words in **bold** type	Field names including buttons in the display, or important phrases
→Arrow	Windows pull down menus and their options are separated by → For example, click **Device** → **New Device** to connect to a new device
`Courier font`	Information that you type, parts of the code quoted for explanations or as examples
UPPERCASE	Acronyms
UPPERCASE within angle brackets	Command keys For example, press <ENTER>

1.3 Document Organization

HART Communicator COM-1 user manual is organized into the following sections:

Section 1	Describes the scope and objective of the HART Communicator user manual along with the organization of the remaining part of the manual
Section 2	Provides an overview of the HART Communicator software (DevCom2000) application and its architecture

Section 3	Provides the steps to start the HART Communicator software (DevCom2000) application and connecting to field devices
Section 4	This section explains different aspects of the HART Communicator software (DevCom2000) application and its functionalities

1.4 Getting Help

If you need help or encounter problems when using the HART Communicator or this guide, please contact HART Expert Ltd. See Appendix B for contact information. Please provide the following information.

Create a text description of the problem. If possible, provide the text in event sequence, which will enable the duplication of the problem. Provide information about the system. This information must include:

- DevCom2000 version and License ID (visible under the menu options "**About**" and "**License**")
- Device information: make, model, and device revision
- Point of contact: complete mailing address, telephone number, and e-mail address,
- The date and time of the problem occurrence

2 OVERVIEW OF HART COMMUNICATOR (COM-1)

Field devices such as flow, pressure, level, temperature transmitters, and valve positioners provide the physical connection to the process. These devices allow the control system to monitor and manipulate process conditions. HART devices maintain a real-time database of process, configuration, identification, and diagnostic information. This information can be accessed using the HART Field Communications Protocol.

HART devices are capable of providing functions and features far beyond the basic task of providing a process input or accepting a control output to manipulate process conditions. Many HART compatible device manufactures create a DD (Device Description) describing all of these functions and features specific to that device. The DD also provides information essential to the successful configuration and calibration of the device.

HART Communicator (COM-1) uses these DD's to access the data stored in a device, providing full configuration and setup support for all registered HART DD's.

HART Communicator (COM-1) accesses and presents field device data based solely on its DD. No other files, information or custom drivers are required to view and modify field device parameters. Using the device's DD, HART Communicator (COM-1) can perform various tests to verify the proper operation of the HART device.

Currently there are three recognised categories of HART devices:

1) The original 4-20mA wired HART device
2) HART-IP devices (i.e. Remote I/Os and Multiplexers)
3) *Wireless*HART devices

HART Communicator COM-1 supports all three technologies allowing you to configure HART devices whether they are connected via HART Modem, HART-IP device, or *Wireless*HART Gateway.

3 USING HART Communicator COM-1

3.1 Charging the HART Communicator COM-1 and the Bluetooth HART Modem

Note: the HART Communicator has a “Barrel” connector, whereas the Bluetooth HART modem has a “Mini-USB” connector. Hence the supplied USB leads have different connectors on them as shown below.

Using the supplied 4 port USB wall charger, the HART Communicator and Bluetooth HART modem can either be charged separately, or together as shown below.

3.1.1 Recharging the HART Communicator

The HART Communicator Windows Tablet can be recharged at any time, whilst turned on or turned off. If turned off the charging progress is indicated by the Windows Operating system in the bottom right hand corner of the display. If the tablet is turned off (shutdown) it will show the current charging status when the charge lead is first plugged in.

3.1.2 Recharging the Bluetooth HART Modem

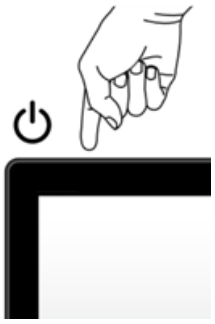
The Bluetooth HART Modem can be recharged at any time, whilst turned on, or turned off. While actively charging the “Charge On” LED will illuminate, when completely charged the LED will turn off. When the battery is almost full the “Charge On” LED may blink. If the “Charge Error” LED illuminates, disconnect the Bluetooth HART Modem and allow it to cool down. The normal cause for “Charge Error” is an excessively hot battery. If when you connect the modem the “Charge On” LED blinks once and then stays off, the battery is already fully charged.

Rechargeable Lithium Ion batteries are very reliable so long as they are not abused. They maintain charge very well, after 1 year of storage they typically have 75% of the charge remaining. Hence you can use and recharge them without worries associated with many other battery technologies, e.g. Lithium Ion batteries do not suffer from battery memory. As an engineer you may be interested in how to optimise battery life/performance, if so all the normal recommendations for lithium batteries (Li-Ion, Li-Po) apply:

1) Do not expose to flames or excessive heat (>85 deg.c)
2) Do not charge by any method other than that described above
3) Lithium Batteries do not have a “memory” therefore they can be partially used and partially charged at any time, in fact they prefer partial charge/discharge. Unlike NiCad batteries, you do not need to fully discharge and then fully charge Lithium based rechargeables. Lithium batteries have a longer life if you only partially discharge them.
4) Do not leave Lithium batteries permanently plugged in on a trickle or standby charge. Once they are charged disconnect them from the power source.
5) Store away from heat sources. A cool room (10 – 20 deg.c) is ideal, but do not store Lithium batteries at fridge or freezer temperatures!
6) Do not leave lithium batteries fully discharged for long periods of time (weeks/months). If they are fully discharged they should be recharged as soon as possible.

3.2 Starting the HART Communicator COM-1

Press and hold for 4 seconds the power button (top left corner of the tablet).



If the tablet was previously shut down it will boot up Windows. If the tablet was previously asleep it will immediately reawaken. If the Tablet does not respond the battery may be too low.

3.3 Connecting to HART devices

3.3.1 For wired HART devices (skip this step for HART-IP and *Wireless*HART devices)

a) Connect the Bluetooth HART Modem to the HART device/network

For communication with wired (4-20mA based) HART devices you must have a suitable load resistance, or a 250Ω Shunt/Loop resistor (supplied) must be placed in series with the device. Using the clips of the HART Modem connect either: across the loop load resistor (A – B), or across the HART transmitter terminals (C – D). See the relevant Figure 1a, 1b or 1c below.

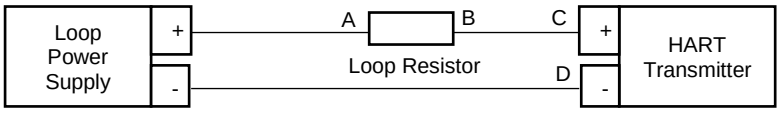


Figure 1a. Loop Powered HART Transmitter Connection

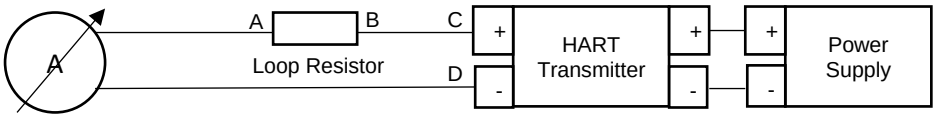


Figure 1b. 4-Wire HART Transmitter Connection

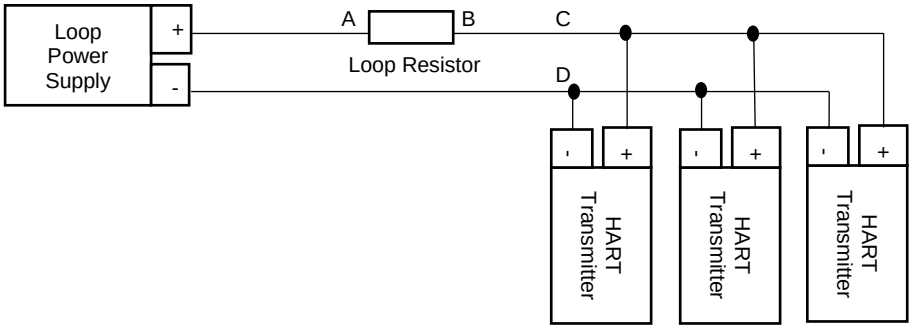


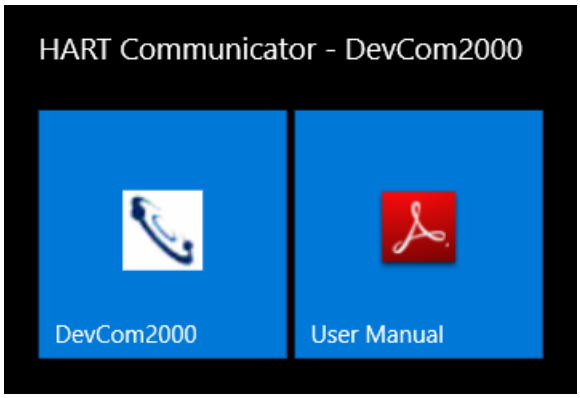
Figure 1c. Multi-drop HART Transmitter Connection

b) Turn on the Bluetooth HART Modem (BT-BAT-ER) to your PC

Press the Yellow "Power" button, the "Power" LED will illuminate.

3.4 Open the HART Communicator software "DevCom2000"

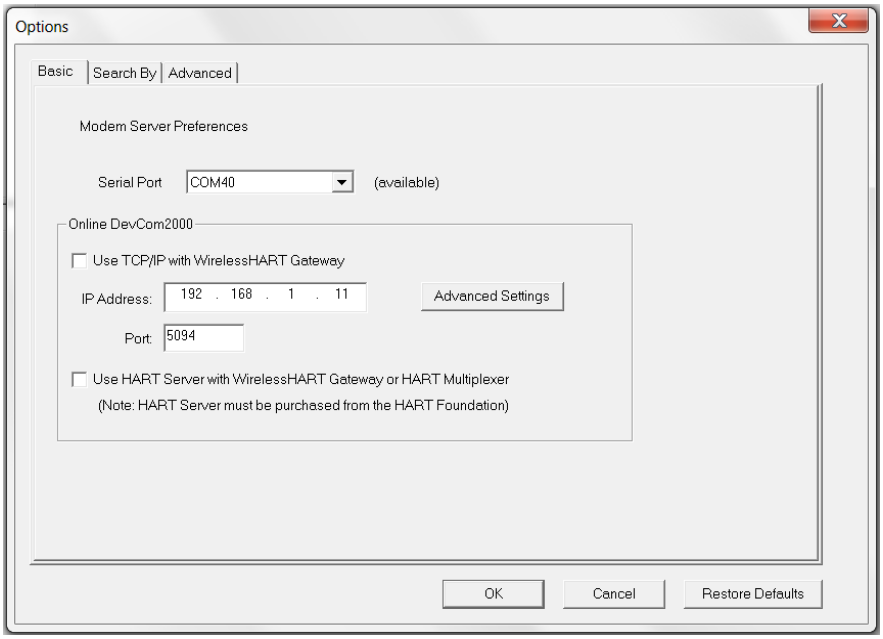
On the HART Communicator Windows Tablet touchscreen, single tap on the HART Communicator Icon "DevCom2000" as pictured below. Windows will then ask you if you want to allow this program to run, say yes.



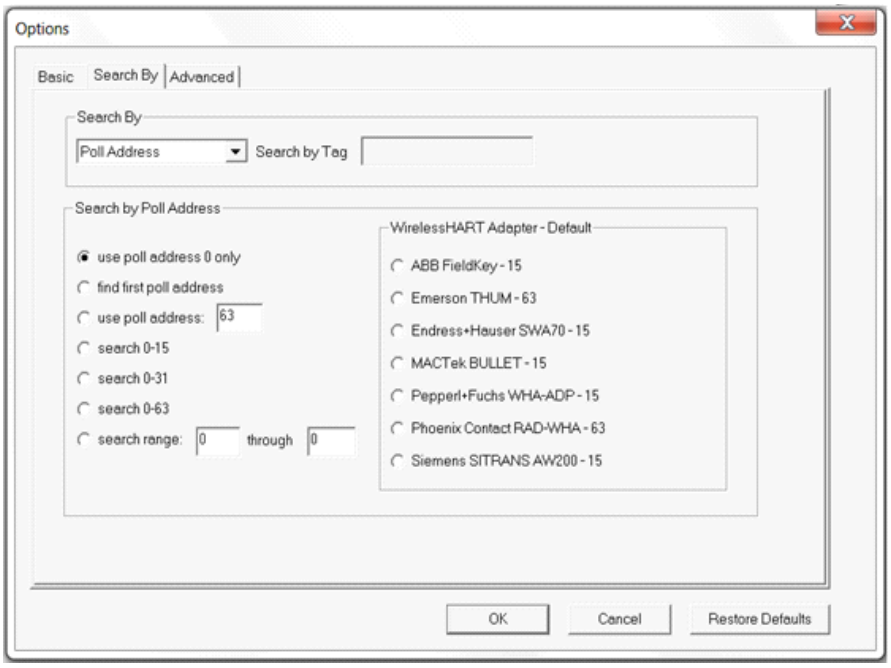
3.5: Discovering connected HART Device(s)

a) For wired (4-20mA) HART devices connected via the Bluetooth HART Modem

When the HART Communicator software (DevCom2000) is opened, by default, it will automatically check for HART devices of address 0 connected to the Bluetooth HART Modem, if found it will display the "Explorer" window (go to Step5). If you have previously told it to connect to HART-IP / *Wireless*HART devices, or if you want to check for devices other than address 0, you will need to change the option within the HART Communicator software (DevCom2000). Go to "**Options → Basic**" and make sure "Use TCP/IP…" checkbox isn't selected, see screenshot below.

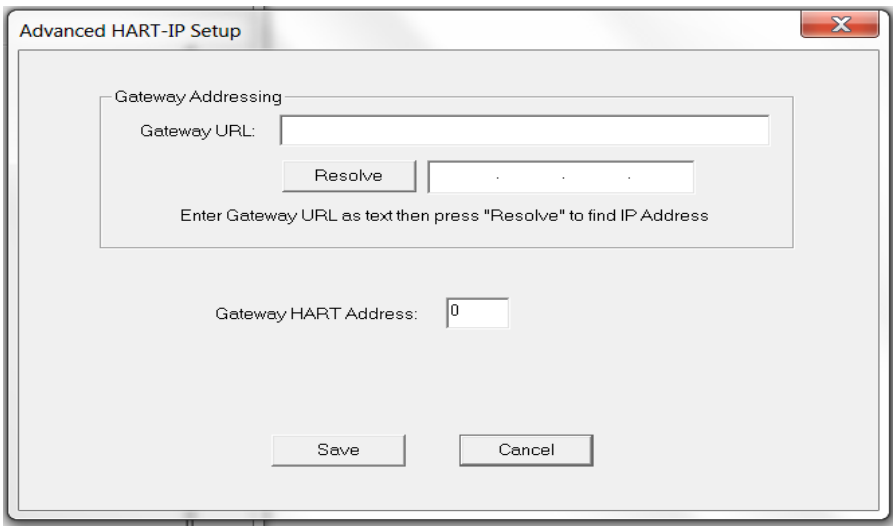


Then click on the "Search By" Tab and select the desired option (see screenshot below) and then press OK.



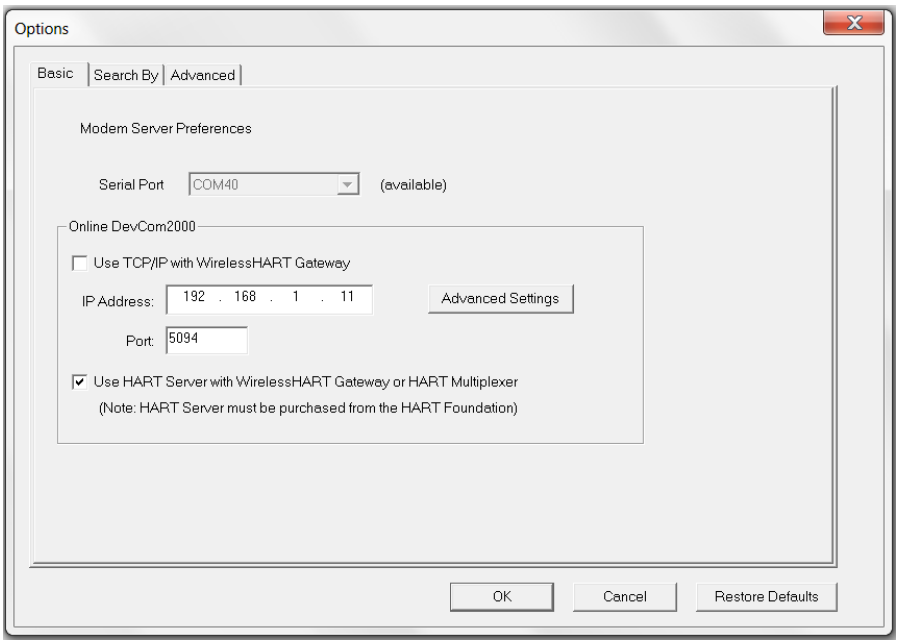
b) For HART-IP or *Wireless*HART devices

First you must configure the Tablets WiFi connection and connect to your networks Access Point (AP). Now we must configure the HART Communicator software (DevCom2000) to connect to a HART-IP / *Wireless*HART device instead of the default wired 4-20mA based HART device connected to the Bluetooth HART Modem. From the HART Communicator software (DevCom2000) menu select "**Options → Basic**" and tick the option "Use TCP/IP…" and set the IP address and port number (it is typically 5094) of the HART-IP device (Remote I/O, Multiplexer, *Wireless*HART Gateway), see screenshots above. If your WirelessHART gateway does not use the default address of 0, or if you only know its URL, click the "Advanced" tab. You can now enter the URL and/or change the Gateway HART address, see the screenshot below. Press "Save" and then "OK".



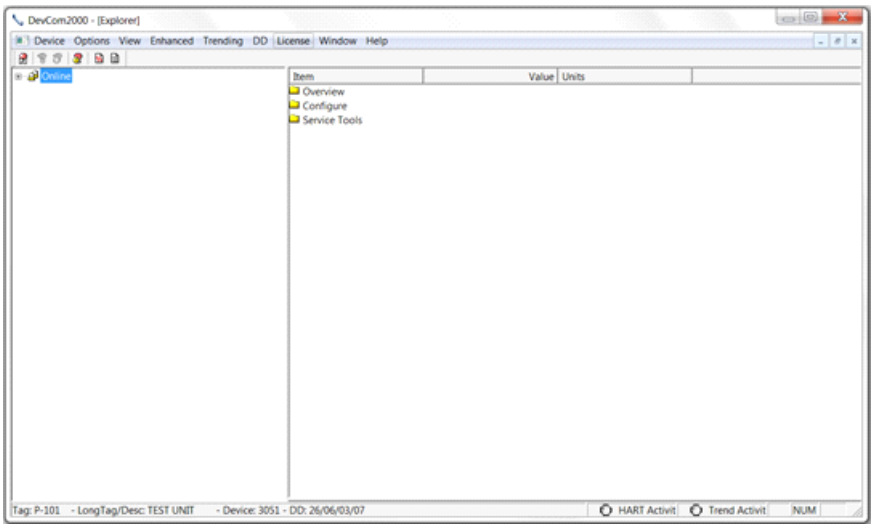
c) For HART Server

If you are using HART Server, from the HART Communicator software (DevCom2000) menu select "**Options → Basic**" and tick the option "Use HART Server with….", see screenshot below, press OK. You must then restart the DevCom2000 software for the change to be effective.



3.6 DevCom2000 Explorer Window

When DevCom2000 is connected to a HART device the browser window appears with online (i.e. root menu) selected, as shown below.



The left pane of the window shows the menu structure and the right pane of the window displays corresponding parameters of the menu selected. The DevCom2000 screens shown in this document are only an example of what you may see when connected to your field device. What you see is actually controlled by the devices DD file and the device. Hence, the menus, data, status and configurations displayed are specified by the field device's manufacturer when they release the devices DD file.

3.7 Getting Familiarised with DevCom2000 Explorer

3.7.1 Using the Menus

DevCom2000 Explorer provides visual representation and structure of the application window.

Menu	Explanation
Device Menu New Device Ctrl+N Document Device Download / View Exit	The **Device Menu** offers the following sub-menu options: **New Device** - Connect to a new device or reconnect to the same device. **Document Device** – Brings up the Document Device dialog box. **Download / View** – Brings up the Download dialog box which provides Configuration File features. **Exit** - Exit DevCom2000.
Options Menu Basic Search Advanced	The **Options Menu** offers the followings sub-menu options: **Basic-** Select what COM port the device is connected to and use *Wireless*HART gateway. **Search**- Search by Poll Address, Long or Short Tag. **Advanced-** Select HART Master, Language, and DD Startup
View Menu ✔ Toolbar ✔ Status Bar Communication Log Device Condition Event-Status Log	The **View Menu** offers the following sub-menu options: **Toolbar -** Hide or show the Tool Bar. **Status Bar -** Hide or show the Status Bar. **Communication Log –** Open the Communication Log window. **Device Condition** – View detailed device status. **Event-Status Log** – View log of events and status changes

Menu	Explanation
Example of an **available** Enhanced Menu Enhanced View Below (if available) Start Device Diagnostics Process Variables Example of an **unavailable** Enhanced Menu Enhanced View Below (if available)	The **Enhanced Menu** offers enhanced device menus. Some devices do not have enhanced menus, this is controlled by the device manufacturer and is specified in the devices DD file. If a device does not have an enhanced menu, this menu will only say "Enhanced View Below (if available)". To the left are two examples, first a device with enhanced menus, second a device without enhanced menus.
Trending Menu Define Trend View Current Trend View Past Trends Stop Current Trend	The **Trending Menu** offers the following sub-menu options: **Define Trend** – Brings up the Define Trend dialog box where a trend is started. **View Current Trend –** Brings up a real time graph of values currently being trended. **View Past Trends –** Brings up the View Trend dialog which contains past trend files. Selected trend files can then be graphed. **Stop Current Trend** – Stops the current log in process.
DD Menu Add DD Available DDs	The **DD Menu** offers the following sub-menu options: **Add DD** – Brings up the dialog that adds a DD to the library. Also used to give labels to non-standard library DDs. **Available DDs** – Brings up a browser of all the DDs installed in the library.
DTM Menu Launch FDT Frame	The **DTM Menu** offers the following sub-menu options: **Launch FDT Frame**– launches the FDT Frame program.
Help Menu DevCom2000 Help Com Troubleshooter Device Help About DevCom2000	The **Help Menu** offers the following sub-menu options: **DevCom2000 Help** – Brings up Help information for the DevCom2000 application. **Com Troubleshooter** – Brings up the DevCom2000 Com Troubleshooter. **Device Help** – Brings up help information for the connected device (if available). **About DevCom2000** – Shows copyright information, support information, and application Version Number.

3.7.2 Using the Toolbar

When you start the application, by default, the toolbar buttons appears on the main window. If it fails to display, click **View → Toolbar** option from the menu bar to bring up the toolbar.

Following are the buttons available in the DevCom2000 application toolbar to perform the necessary tasks:

Button	Description	Corresponding Menu Option
	Connect to a new device	**Device → New Device**
	Send parameter changes to the device	
	Cancel parameter changes	

	View more status on Device and Communication (Command 48 status)	**View → Device Condition**
	View Communication log	**View → Communication log**
	View Event log	**View → Event-Status log**
	Launch FDT Frame (Future)	**DTM → Launch FDT Frame**

3.7.3 Familiarising with Icons

DevCom2000 application uses different icons to represent different elements of the application. The following table lists the icons and their meanings:

Icon	Meaning
	Indicates a menu or submenu in the navigation tree
	Indicates a currently selected menu or submenu in the navigation tree
	Online menu icon. The actual DD menu comes under this.
	Indicates a “Variable” item
	Indicates a “Method” (Standard Operating Procedure) item
	Indicates an “Edit Display” item

4 FUNCTIONS AND BASIC OPERATIONS

4.1 Overview

DevCom2000 allows the user to monitor and configure HART devices. Each device is associated with the DD when the device information is present. A DD may contain any of the following parameters/elements:

Variable

A variable is defined as the data contained in the device (e.g. Device Firmware Version). There are two types of variables:

- Editable Variable – It allows the operator to modify the value and download it to the device.
- Non-Editable Variable – It is a read-only data from the device.

Edit Display

This option is used to view a group of parameters. You can also modify a single parameter from this group, based on which other parameters of the device get altered.

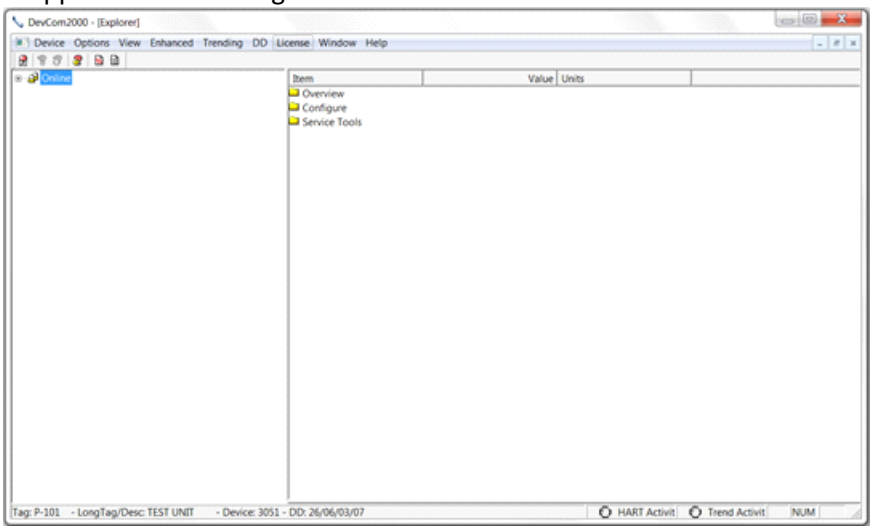
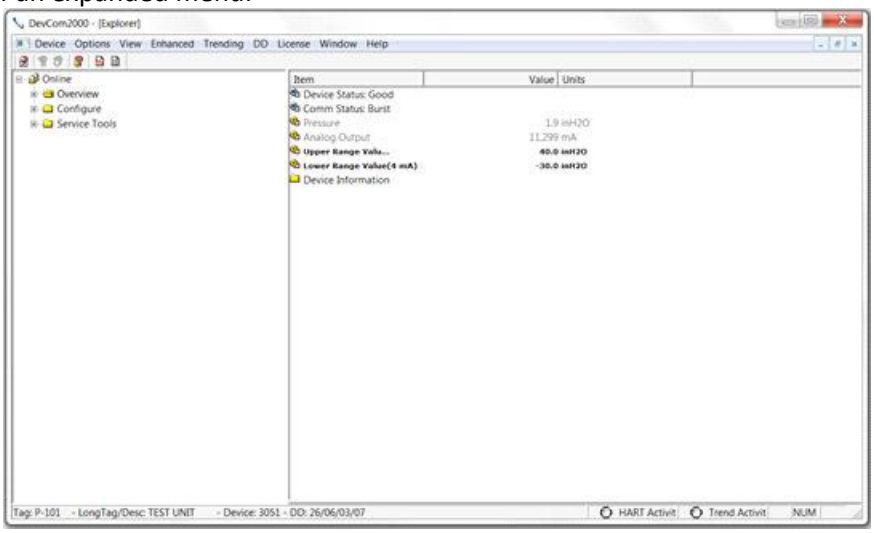
For example, if the Engineering Unit of the device is modified, the corresponding Low Limits and High Limits change as per the Engineering Unit set.

Method / Standard Operating Procedure (SOP)

This option helps to perform various tests on the device for instance, Self Test and Loop Test. A Method or SOP is a series of steps that are executed in a sequence results in the completion of some device related tasks. When a method gets invoked, it gives various warning messages and options to the user, by which the user can thoroughly test the device. If a test is aborted by operator command at any stage of the sequence, the method invokes additional steps to bring the device back to its original state before the test was commenced.

4.2 Viewing Device Configuration (typical, actual view may change based on DD)

To view the configuration of the device that is connected to DevCom2000, perform the following steps:

Step	Action
1	Ensure that the application is running and communications have been established:  The left pane of the window shows the menu structure and the right pane of the window displays corresponding parameters of the menu selected. The menus that are displayed are defined in the DD file of the particular device. If no DD is available for the device DevCom2000 will select the standard DD. This should provide limited functionality for the device. NOTE: If a parameter is updated that is not supported by the device you will receive an error.
2	Expand the menu by clicking the "+" sign and double-click to view the device parameters. Below is an example of an expanded menu: 
3	Repeat Step 2 to expand sub-menus if required and then select the desired menu / sub-menu to view the associated parameters / device information.

4.3 Configuring Device Information

4.3.1 Overview

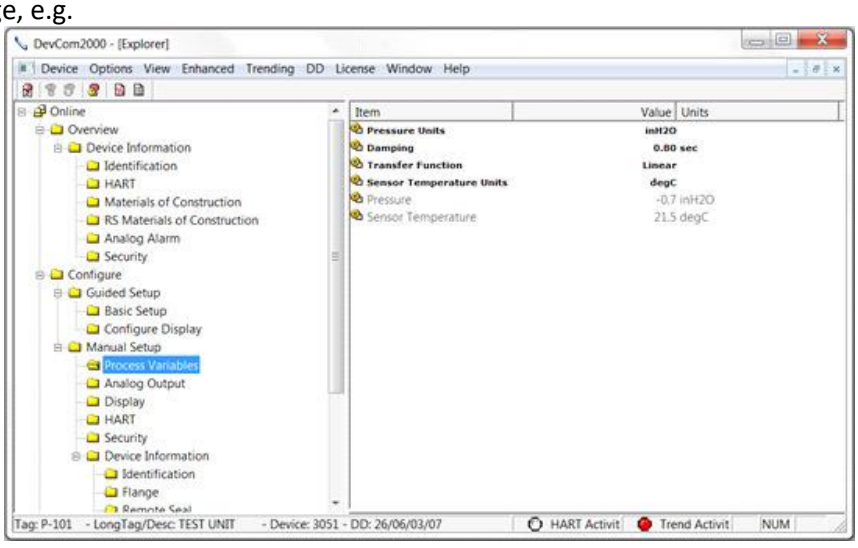
DevCom2000 allows you to view and configure the field device parameters based on the Device Description (DD) file. However, the device vendor defines most of the parameters at the factory. These parameters become read only for the users and the user cannot modify the values. The related variables are grouped under various menus of different levels as defined by the device vendor in the DD file. Expand or collapse the tree view using the "+" or "-"sign to access the device configuration parameters.

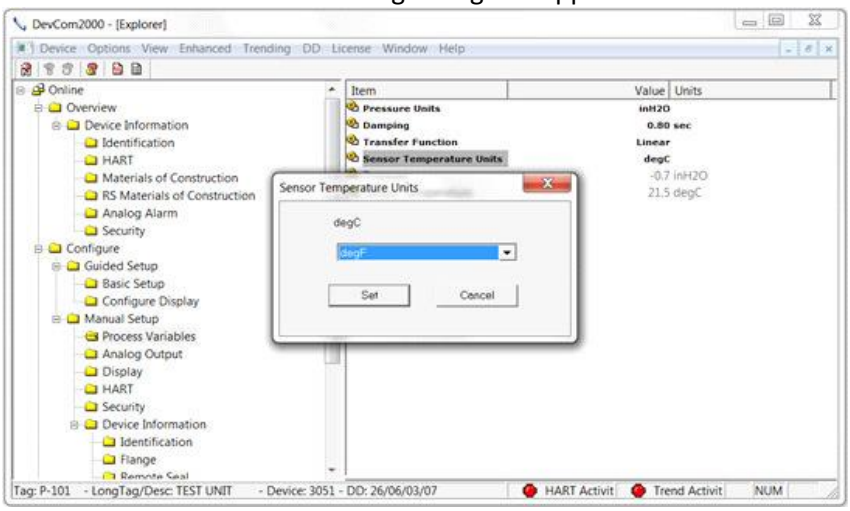
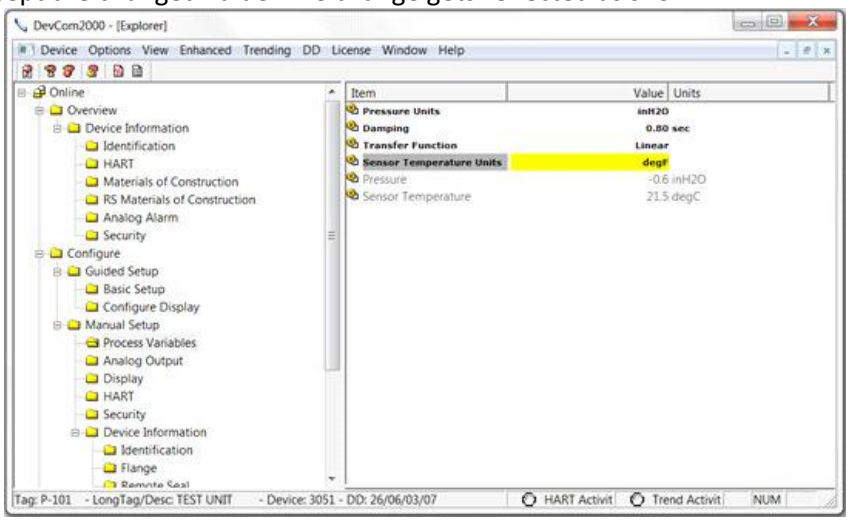
The following table describes the details about the device configuration:

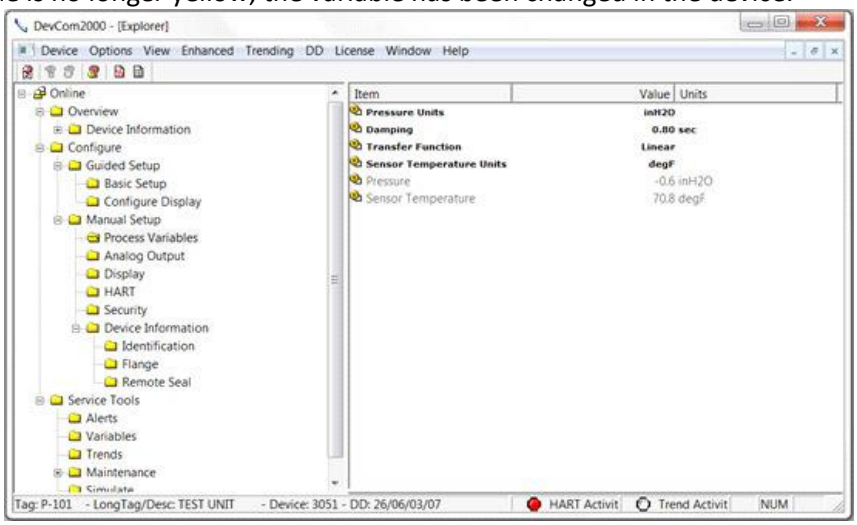
Step	Action
1	Follow the steps in section “6.2 Viewing device configuration” to view the device parameter(s) you want to change, e.g.
2	There are three types of variables: dynamic, read/write and read only. The parameters that are grayed out indicate that these are dynamic variables (variables that get updated online by the device) or read only variables. The status of device parameters are represented as follows: **Bold Font = Modifiable Values** Normal Font = Menu Item Gray Font = Dynamic or Read Only Variables
3	From here you can select the parameter and configure the values, as required. However, there are several types of parameter and the topics in the following sections explain how to configure the different device parameter types.

4.3.2 Variable

To edit the parameter variables of the connected device, perform the following steps:

Step	Action
1	Follow the steps in section “6.2 Viewing device configuration” to view the device parameter(s) you want to change, e.g. 

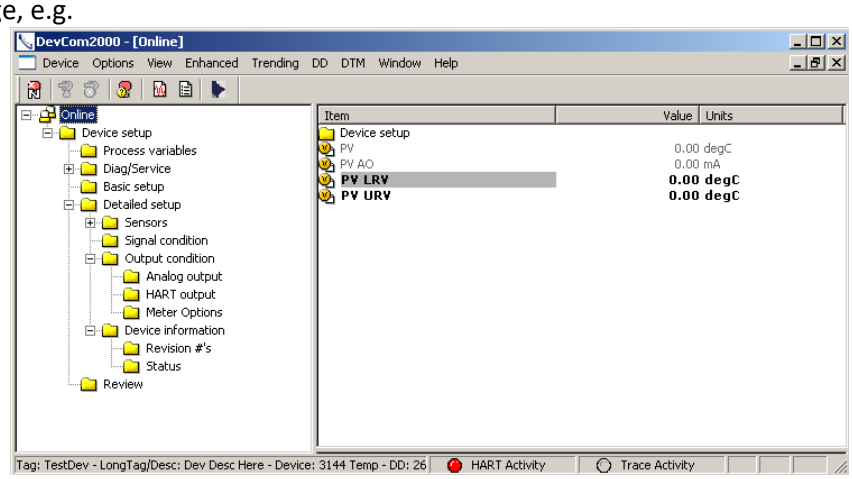
Step	Action
2	Double-click the variable to edit it. The following dialog box appears on the screen: 
3	Make the changes to the parameter value, as required.
4	Click **Set** to accept the changed value. The change gets reflected as shown: 
5	Click on the **Send** icon to commit the changes to the device.

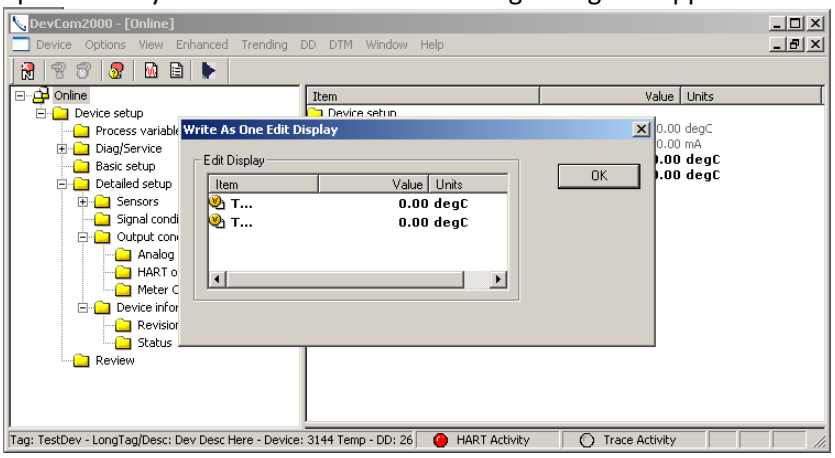
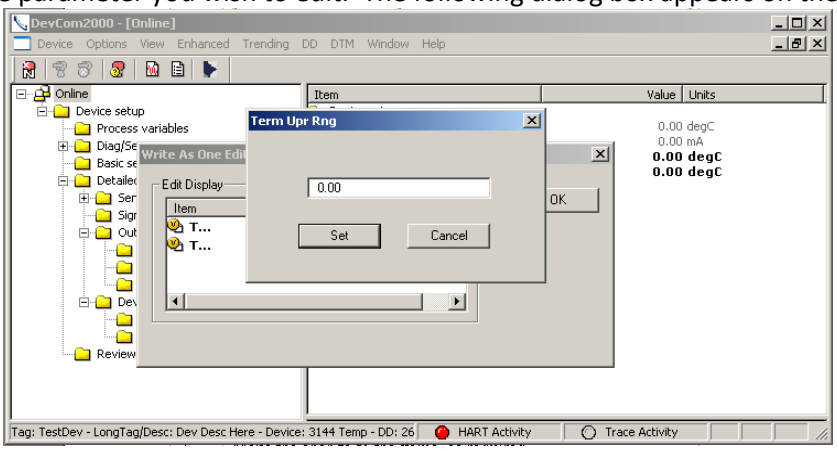
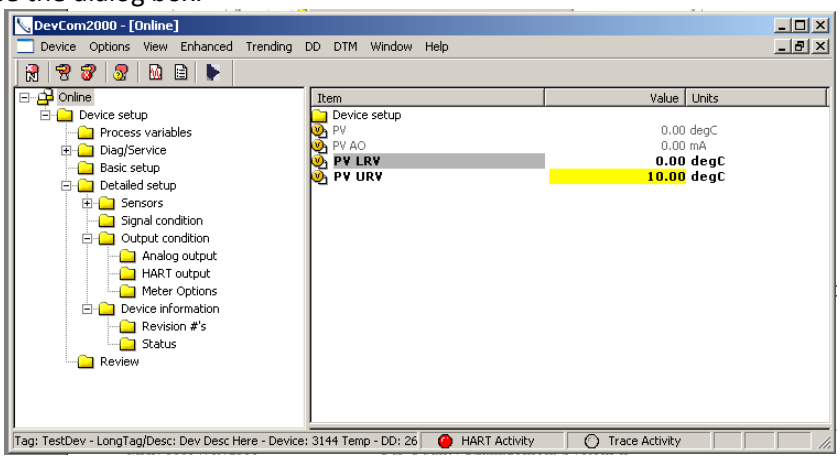
Step	Action
6	When the value is no longer yellow, the variable has been changed in the device.  The Send and Cancel Icon will now be grey as well. This indicates that there are no new changes to be sent to the device.

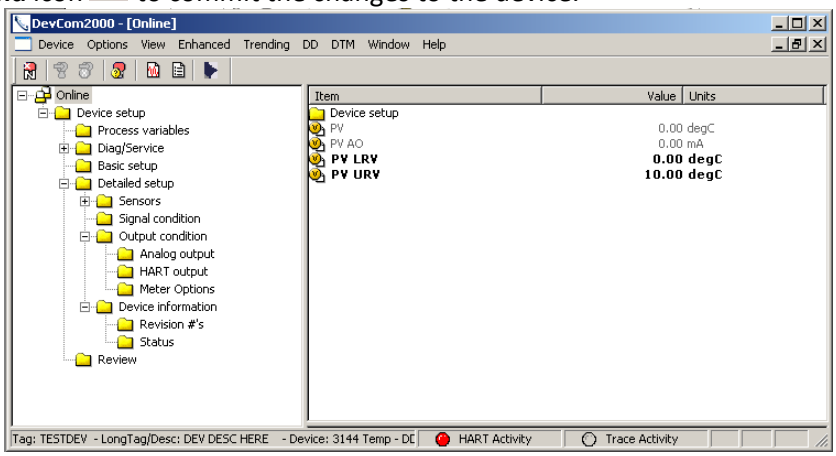
4.3.3 Edit Display

The Edit Display is a variation on the Variable edit. An additional window helps the user view a group of parameters based on the DD. You can also modify a single parameter from this group. Parameters linked to the edited field will be updated automatically.

To view and configure these variables, perform the following steps:

Step	Action
1	Follow the steps in section “6.2 Viewing device configuration” to view the device parameter(s) you want to change, e.g. 

Step	Action
2	Double click the parameter you wish to edit. The following dialog box appears on the screen: 
3	Double click the parameter you wish to edit. The following dialog box appears on the screen: 
4	Make the change to the value, as required.
5	Click **Set** to accept the changes. Or press **Cancel** to cancel the changes.
6	Click **OK** to close the dialog box.  Again the yellow means the parameter is changed and ready to be sent to the device.

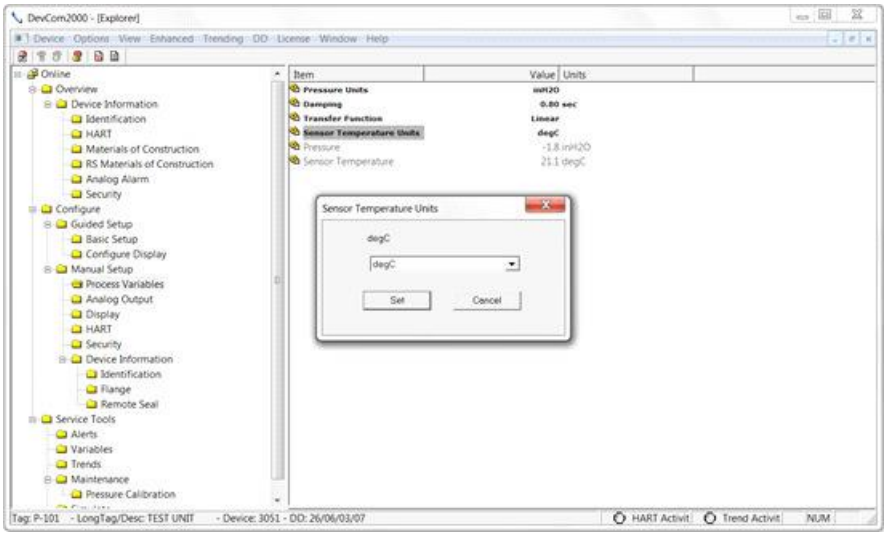
Step	Action
7	Click on the **Send** icon to commit the changes to the device.  After being sent the change is reflected in the device info.

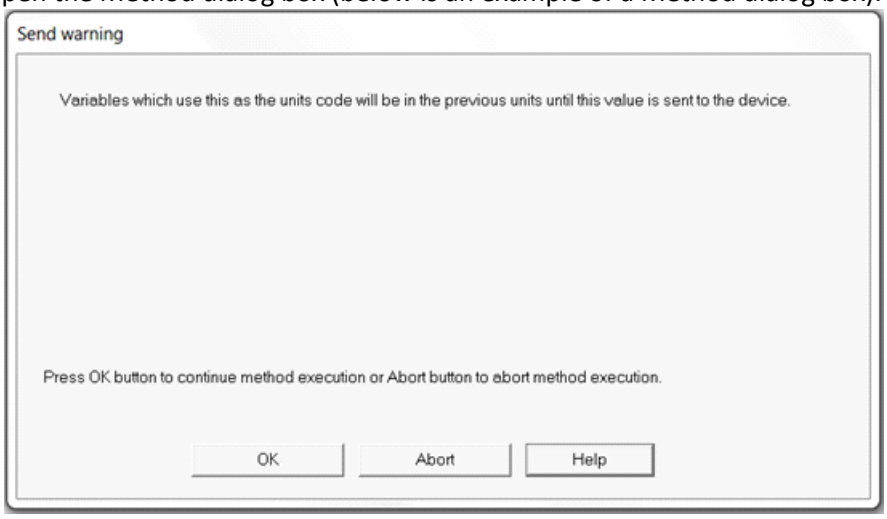
4.3.4 Executing Methods or Standard Operating Procedures

Methods are defined in the DD file for the device that DevCom2000 is connected to. You can select the Method and execute it for calibrating the device, trouble shooting, etc. Method execution leads you through a number of steps, like in a wizard.

A Few examples of methods include:

- Setting high and low range calibration points
- Calibration of the device
- Run the advanced diagnostic test procedure
- Execute tests to gather information on device operation. To execute a Method, perform the following steps:

Step	Action
1	Follow the steps in section “6.2 Viewing device configuration” to view the device parameter(s) you want to change, select the parameter where the method is present and double-click to open it. 

Step	Action
2	Click **Set** to open the Method dialog box (below is an example of a Method dialog box): 
3	Click either: • **OK** to move to the next dialog in the Method sequence. • **Abort** to cancel the Method execution. • **Help** to get specific help for that step of the Method. This Help information is provided by the device DD.

4.4 Calibrating HART Field Devices

Calibration of field devices and loop test are achieved by executing the Methods or Standard Operating Procedures that are specific to device. Methods are defined based on the test parameters specific to the device, providing information for the calibration of that device.

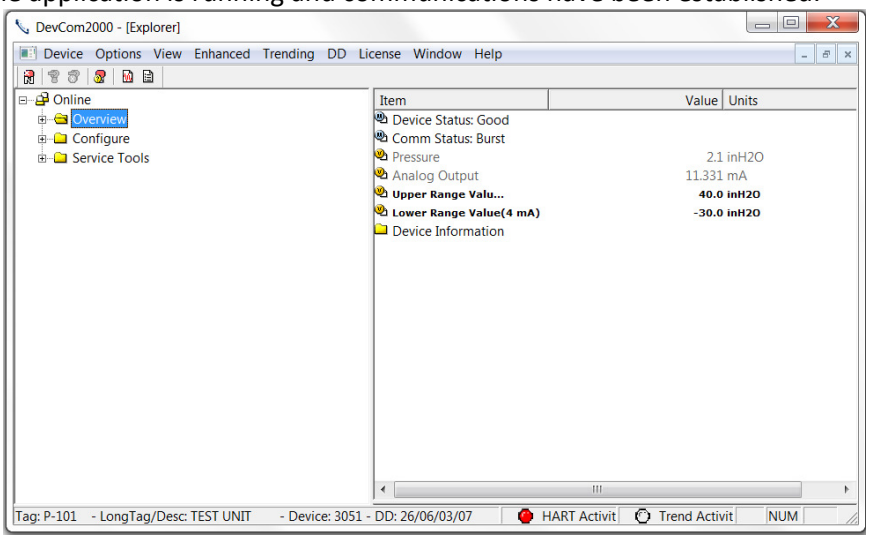
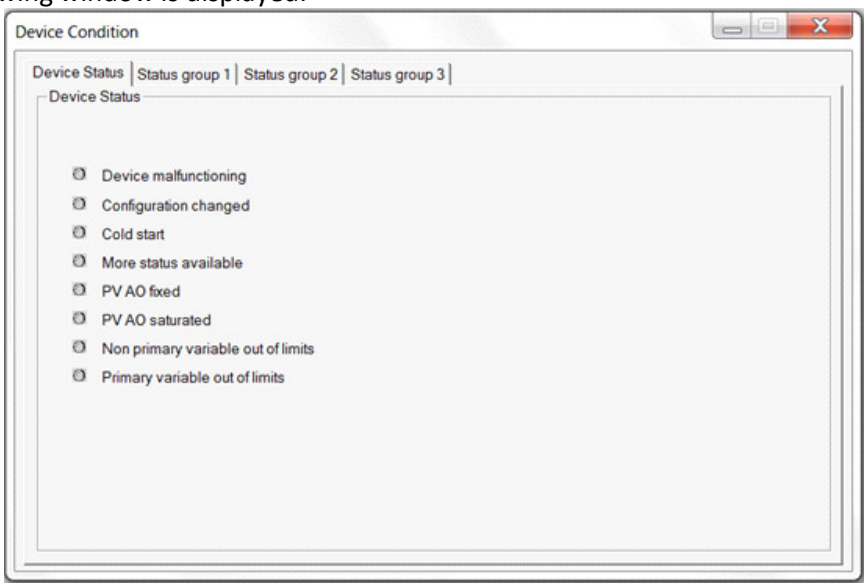
See the previous section for Method execution.

4.5 Viewing the Device Status

DevCom2000 provides the user with the ability to monitor the device specific status of the device and the communication network.

When there is error communicating with the device, it is recognized and indicated to the user. The user can view more details of such errors, using the **View → Device** Condition from the main window.

To view the device and communication status, perform the following steps:

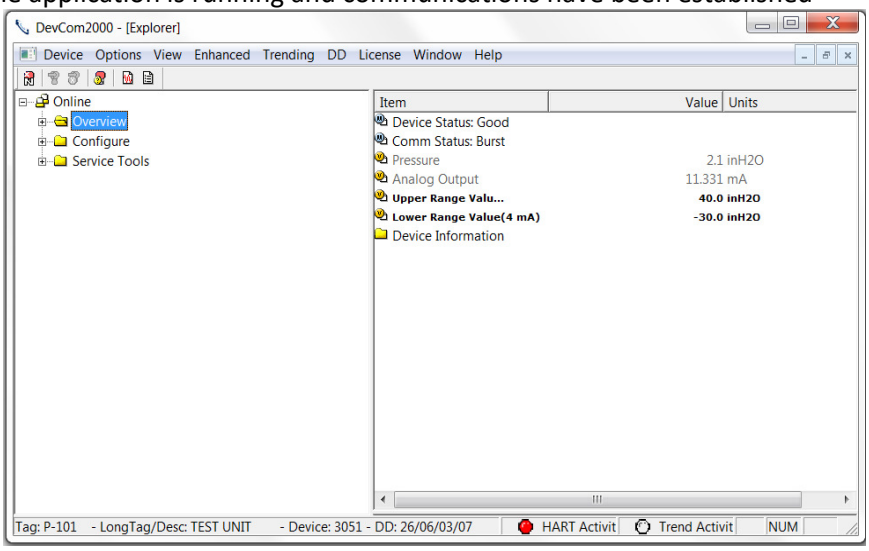
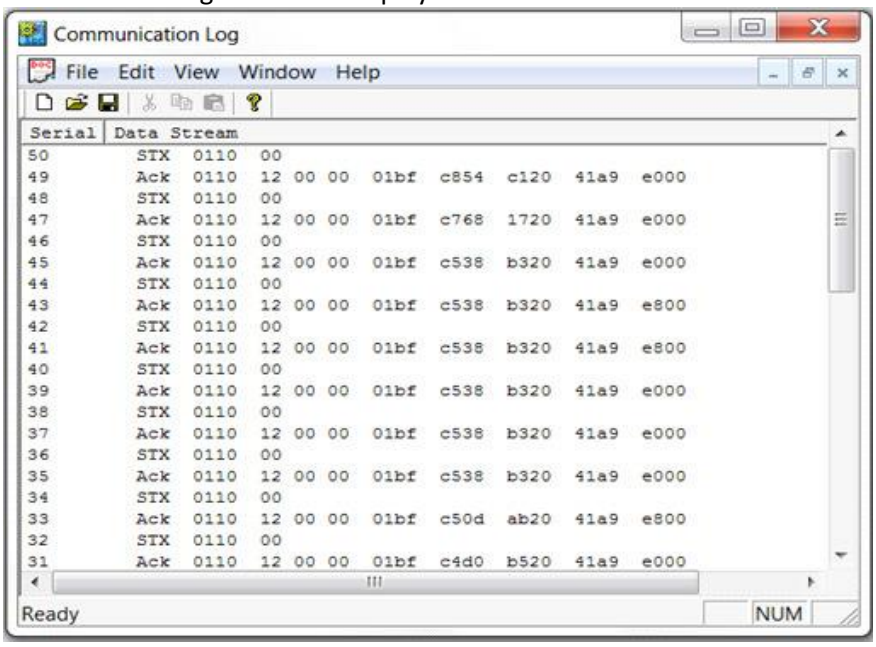
Step	Action
1	Ensure that the application is running and communications have been established: 
2	Select **View → Device Condition** from the main window or choose the status icon from the toolbar. Following window is displayed:  The Device Status tab option shows the status of the device and the communication network. The individual status is indicated by green and red LEDs.
4	Additional tabs may be available depending on the DD.
5	Click **X** to close the Status window.

4.6 Viewing the Communication Log

DevCom2000 allows the user to view the actual communications between DevCom2000 and the device. You can view send commands and received responses.

If your computer is running an anti-virus program such as McAfee, you may get a message about a program wanting to access the internet when you open the Communication Log. This is normal. DevCom2000 uses TCP/IP to communicate with the Communication Log program.

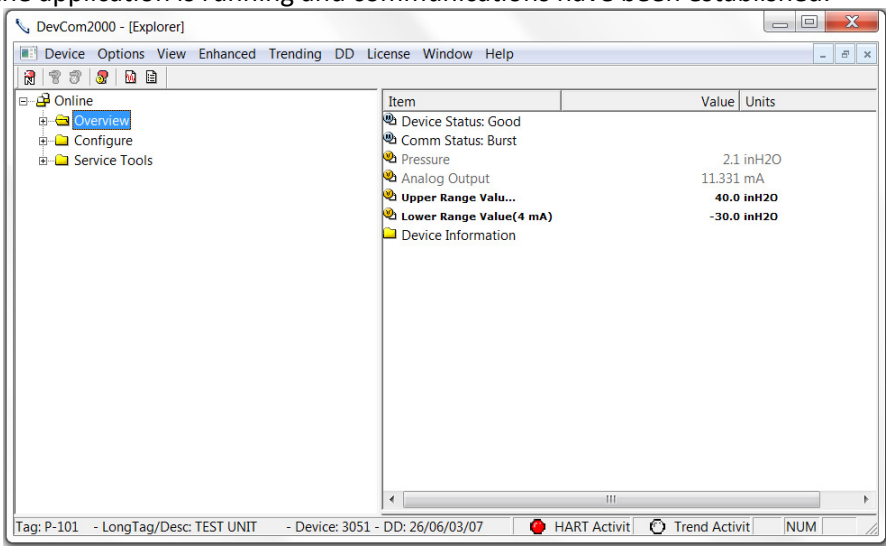
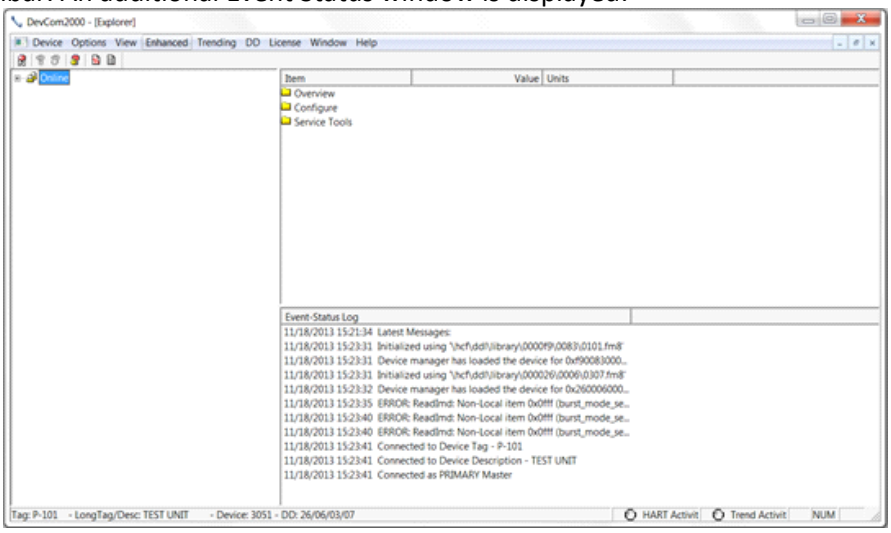
If no data appears in the Communication Log, this may be due to an anti-virus program. Close the Log window and re-launch.
To view the communication log, perform the following steps:

Step	Action
1	Ensure that the application is running and communications have been established 
2	Select **View → Communication Log** from the main window or choose the communications log icon from the toolbar. The following window is displayed:  Note: The communications log lists actual HART commands and the responses from the unit. A good understanding of the HART protocol is required to interpret this data.
3	Select **File → Exit** to get back to the main window. Or, close the Communication Log window by clicking on the **X**.

4.7 Viewing the Event-Status Log

DevCom2000 allows the user to view the error conditions of the device and the communication network.

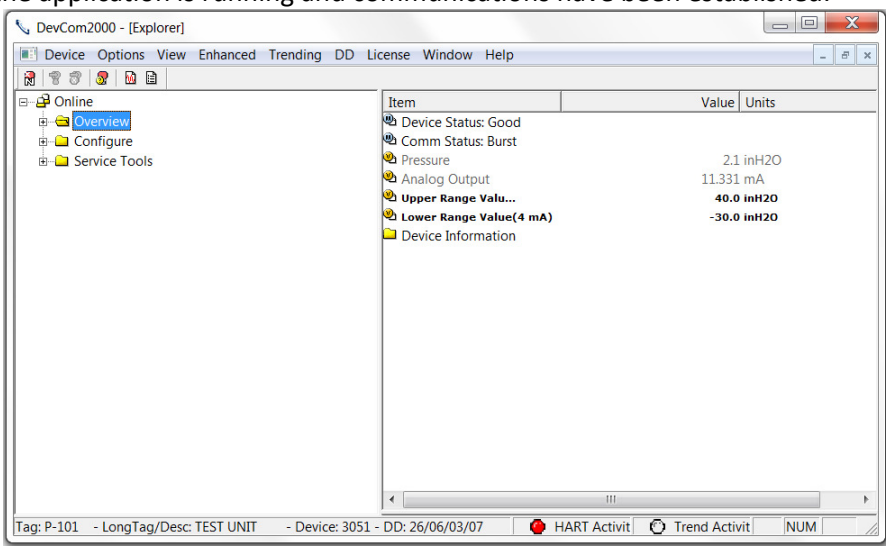
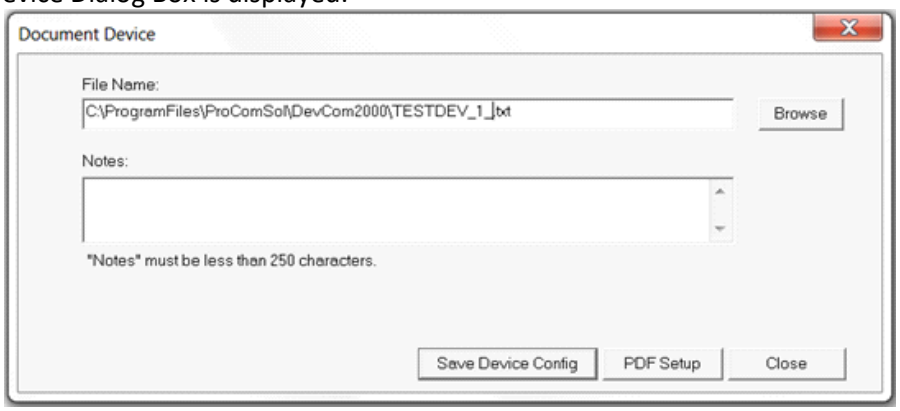
To view the Event-Status Log, perform the following steps:

Step	Action
1	Ensure that the application is running and communications have been established: 
2	Select **View → Event-Status Log** from the main window or choose the Event-Status log icon from the toolbar. An additional Event Status window is displayed: 
3	To close, go to **View → Event-Status Log** menu option or click on the icon to go back to the original window.

4.8 Saving Device Configuration to Disk

HART Device configurations can be saved to disk as a text file to document the device. Fields are delimited with a comma so that the data can be imported into configuration management software packages. A PDF version of the configuration is also created.

To save device configurations to disk, perform the following steps:

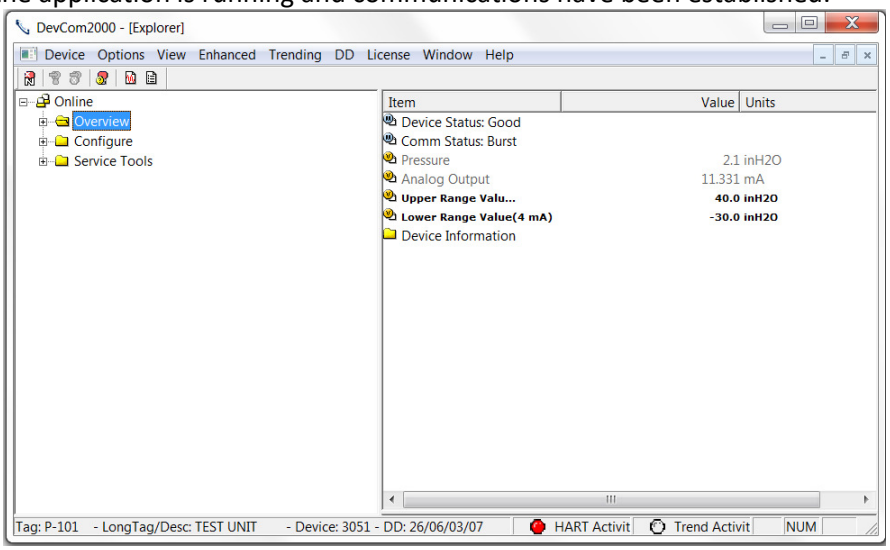
Step	Action
1	Ensure that the application is running and communications have been established: 
2	Select **Device → Document Device** from the main window. The Document Device Dialog Box is displayed: 
3	The default directory is based on Windows User Accounts. The default file name is Tag Device ID. The directory and filename can be changed by the user. Use the "Browse" button to change directories and/or filenames also.
4	Enter a Note in the Notes: field if desired. Maximum of 250 characters.
5	Press the "Save Device Config" button to save device configuration.

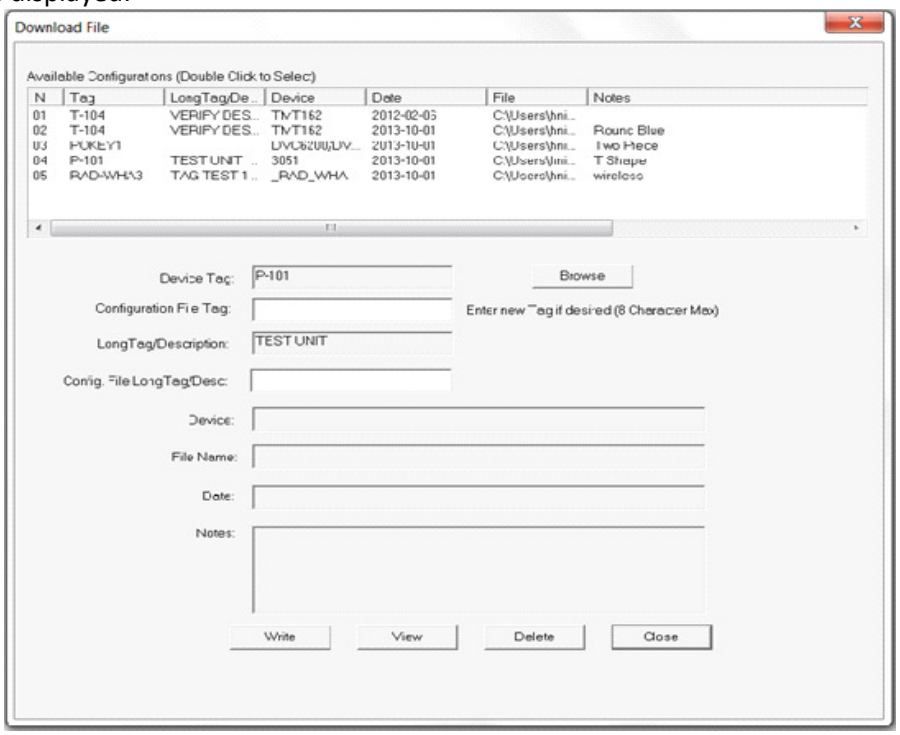
Step	Action
6	If the filename has already been used, the following Dialog Box is displayed when Save Device Config is pressed: • **Append**: Adds the number shown to the end of the file name • **Overwrite**: Deletes and writes over the existing file • **Cancel**: Returns to the previous menu

4.9 Download Configuration to Device

Saved configuration files can be downloaded back to devices. This is useful for "Cloning" a device, either for replacement or plant setup.

To save device configurations to disk, perform the following steps:

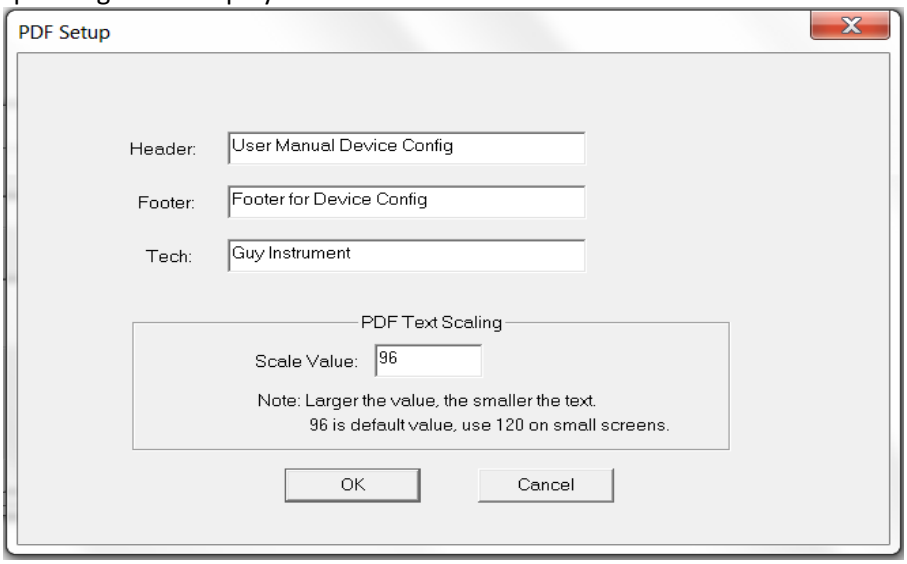
Step	Action
1	Ensure that the application is running and communications have been established: 

Step	Action
2	Select **Device → Download** from the main window. The Download Dialog Box is displayed: 
3	The available configurations are displayed. You can sort on each column by clicking it. To get details about a configuration, select the desired configuration and double click it. The details will be displayed below.
4	You can change the desired Tag by editing the Configuration File Tag box. You can change the desired Description by editing the Config. File LongTag/Desc box.
5	Press the "Write" button to write device configuration. The device must be the same type as the configuration file. If they are different, the write operation will be aborted.
6	You can view the PDF file for the configuration file by double clicking on the desired configuration and pressing "View".
7	You can delete configurations by double clicking on the desired configuration and pressing "Delete".

4.10 Customizing PDF File Output

HART Device configurations can also be saved to disk as PDF Files to document the device. The header, footer, and technician name can be entered to customize the PDF file to make it into a configuration report.

To customize the PDF output, perform the following steps:

Step	Action
1	 Press the "PDF Setup" button on Document Device Dialog Box:
2	The PDF Setup Dialog box is displayed: 
3	Enter data as needed and press OK. The data is saved for future configuration saves.

Step	Action
4	Below is a sample PDF file.

User Manual Device Config

DevCom2000, Rev 4.6, Device Configuration File

File: C:\Program Files\ProComSol\DevCom2000\TESTDEV _1-1.pdf
Tag: TESTDEV
LongTag/Desc: DEV DESC HERE
Device ID: 1
DD: 26/19/01/08
Date (yyyy-mm-dd): 2011-02-17
Time (hr-mn-sc): 03:58:57 PM
Tech: Guy Instrument
Notes: this is a saved device config

Label	Value	Units
Xfer fnctn	Linear	
AO	0.00	mA
AO alrm typ	Hi	
Unit	ohm	
Term temp unit	degR	
% rnge	0.00	
Term temp	0.00	degC
Term Upr Rng	10.00	degC
Term Lor Rng	0.00	degC
Term temp USL	0.00	degC
Term temp LSL	0.00	degC
Term temp damp	0.00	s
Diff min span	0.00	
Snsr1	0.00	ohm
Snsr1 snsr s/n	1	
Snsr1 Upr Rng	0.00	ohm
Snsr1 Lor Rng	0.00	ohm
Snsr1 USL	0.00	ohm
Snsr1 LSL	0.00	ohm
Snsr1 damp	0.00	s
Snsr1 Min Span	0.00	ohm
Snsr 1 Type	Ohms	
Snsr 1 Conn	2 Wire	
Meter typ	Eng unit	
Meter decimal pt	Floating decimal pt	
Meter bar graph	Bar graph off	
50/60 Hz filter	60 Hz	
Snsr 1 Cal Mode	Factory Trim	

Footer for Dev Config *Page 1 of 3*

4.11 License File Transfers

The license file can be transferred easily to other computers. The process is a “Check-In/Check-Out” process. When a license is on the computer, it is considered “Checked-Out”. When the license is on the license server, it is considered “Checked-In”. When the license is “Checked-in”, it can be “Checked-Out” by other users. This enables the license to be shared by many users.

4.11.1 Check-In

To Check-In the license from the current computer to the License Server, perform the following steps:

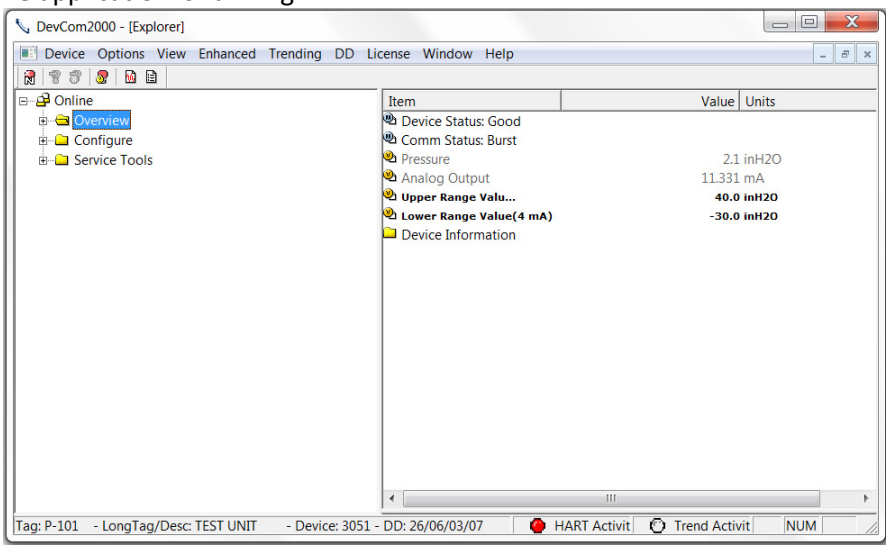
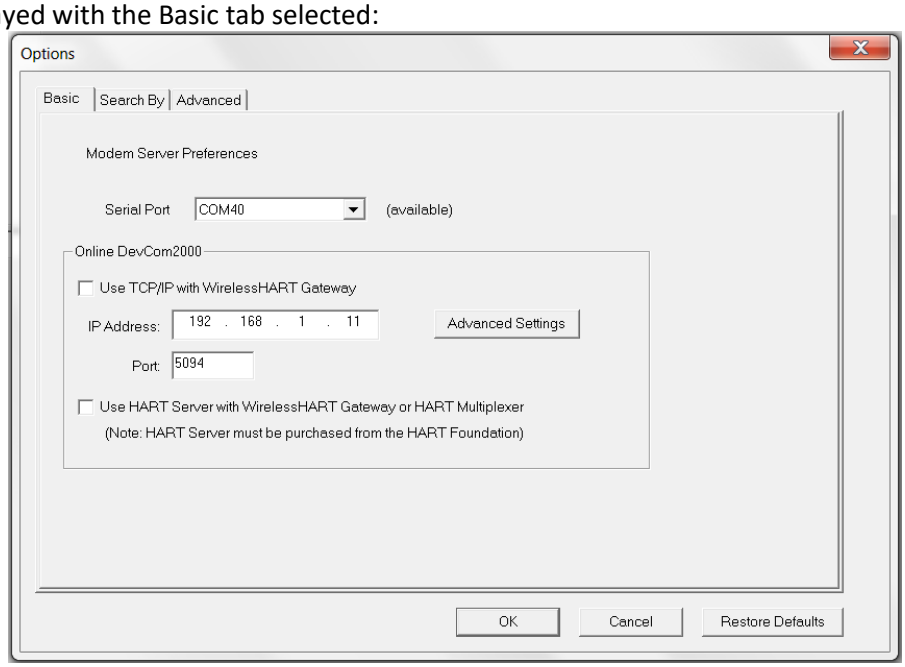
Step	Action
1	Verify your PC is connected to the Internet.
2	Select “Check-In” from the “License” Menu. If the current computer is not licensed, an error message will appear. If licensed, the program will contact the License Server via the internet. It will check-in the license using the License ID and Password used in Activation. The current computer will then become un-activated.

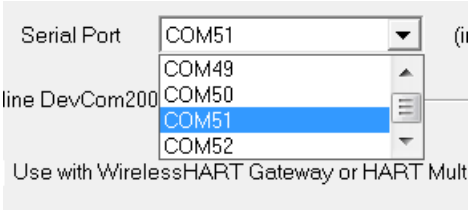
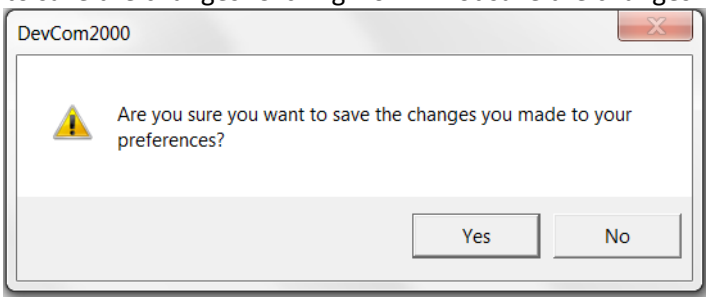
4.12 Options Menu

4.12.1 Options → Basic

4.12.1.1 Changing the COM port

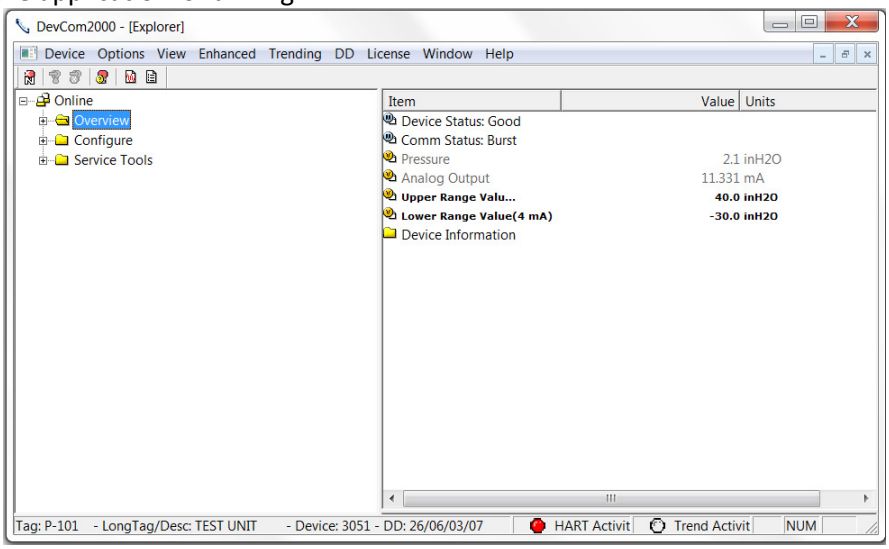
The **Basic** menu is used to set the COM port to the correct one that the device is connected to. To change the COM port, perform the following steps:

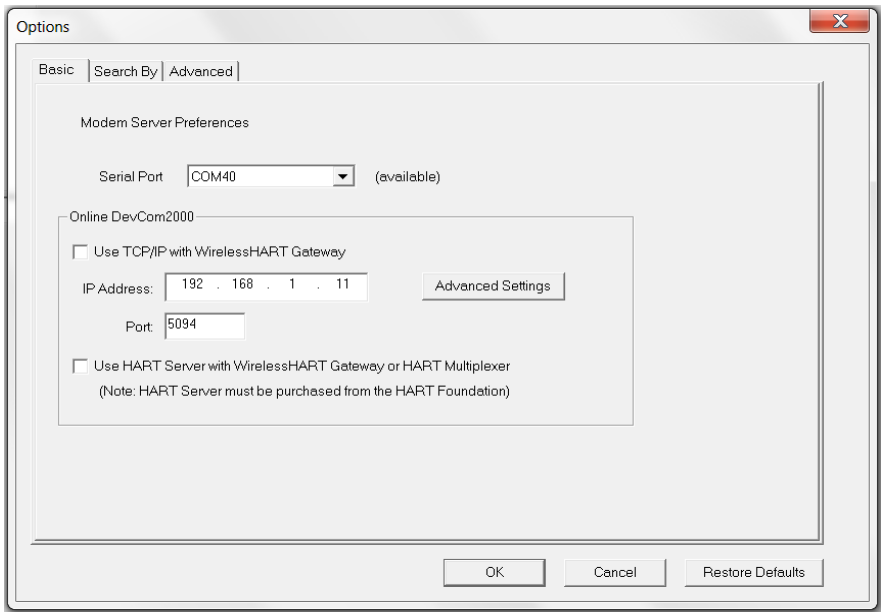
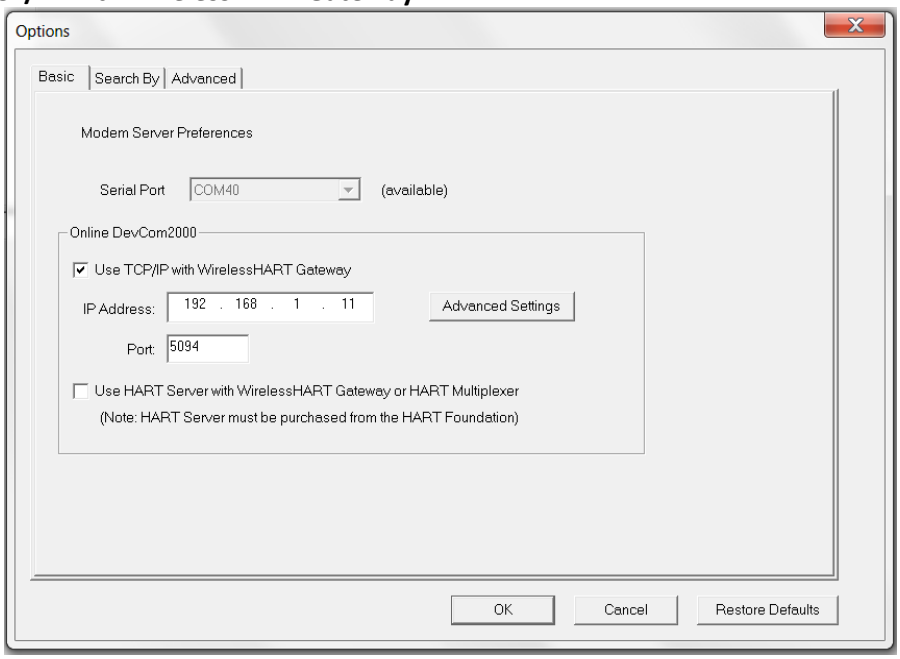
Step	Action
1	Ensure that the application is running. 
2	Select **Options → Basic** from the main window. The Options Dialog Box is displayed with the Basic tab selected: 

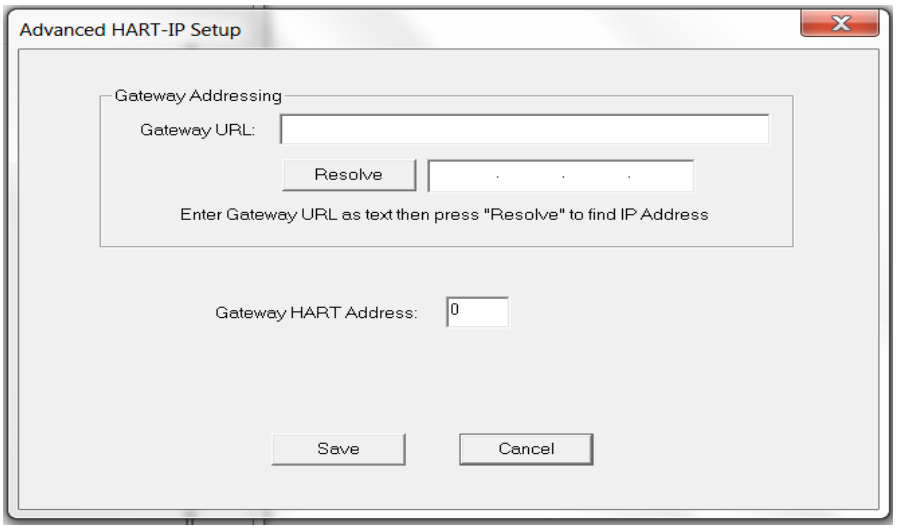
Step	Action
3	To change serial ports, Click on the drop down box: 
4	Once the desired COM port is selected click OK to save the changed settings.
5	Click Yes if you want to save the changes. Clicking No will not save the changes. 
6	Select New Device from the Main screen to connect using the new COM port.

4.12.1.2 Use HART-IP with a *Wireless*HART Gateway

The **Basic** menu is where DevCom2000 can be set to use HART-IP to communicate with a *Wireless*HART Gateway. To communicate using HART-IP with *Wireless*HART Gateway, perform the following steps:

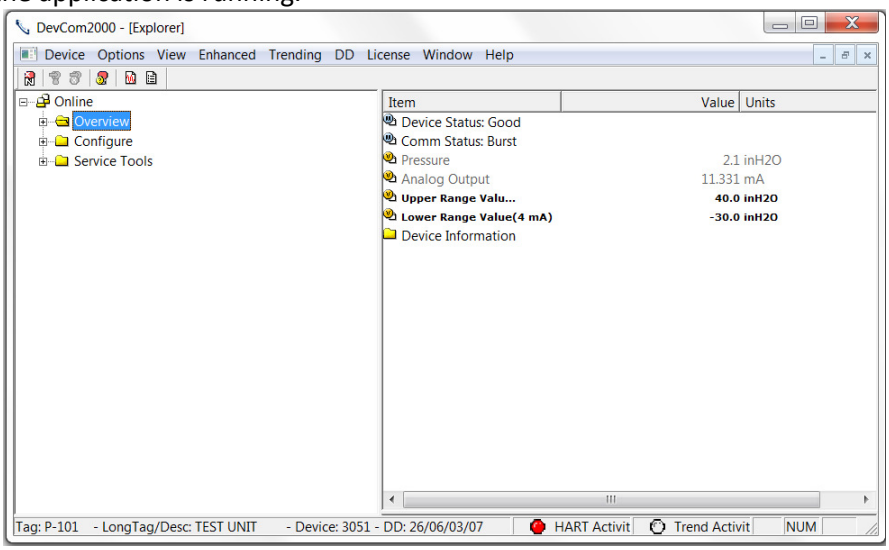
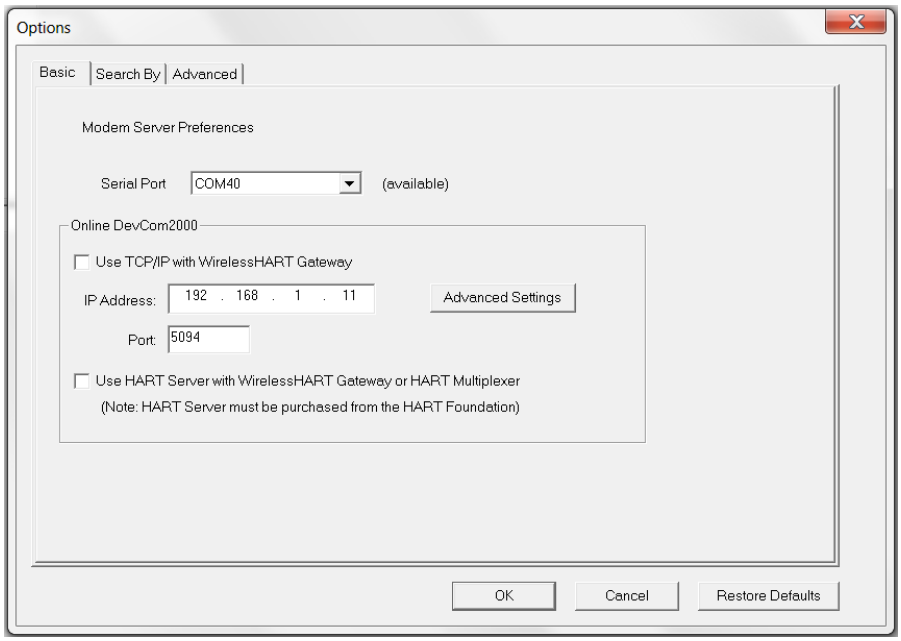
Step	Action
1	Ensure that the application is running. 

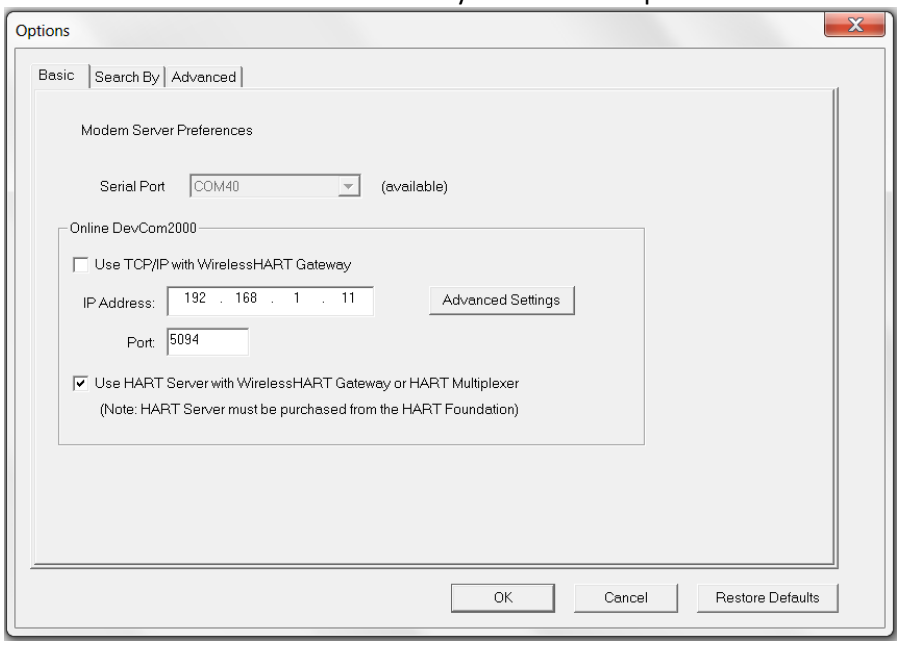
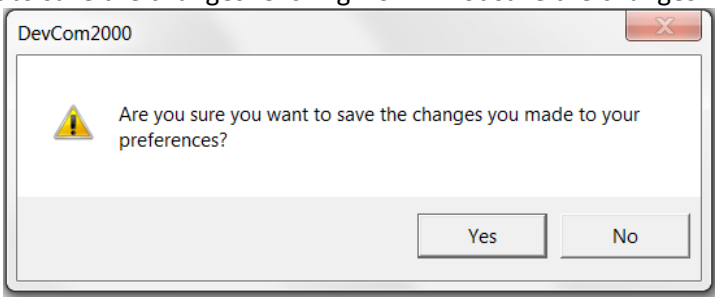
Step	Action
2	Select **Options → Basic** from the main window. The Options Dialog Box is displayed with the Basic tab selected: 
3	Click "**Use TCP/IP with *Wireless*HART Gateway**"  The Serial Port option will now be grayed out. Un-checking will make Serial Port selectable again.
4	Enter the IP Address of the *Wireless*HART Gateway in the IP Address Field. Also enter the Port assigned to HART-IP in the Gateway. It is typically 5094.

Step	Action
5	For more advanced settings related to HART-IP, click the “Advanced” button. The following dialog box appears:  **Communicating to a *Wireless*HART Gateway via its URL:** **Gateway URL** Enter a URL text address in the URL field and click the “Resolve” button to convert it into an IP Address. The IP Address will populate the IP Address box if a successful conversion occurs. **Gateway HART Address** Some *Wireless*HART Gateways do not use the default address of 0. For these Gateways you must enter the correct Gateway Address in this field.

4.12.1.3 Using HART Server

The **Basic** menu is used to set DevCom2000 to communicate with a *Wireless*HART gateway or HART multiplexer. This requires an external program called HART Server. Although DevCom2000 can use HART Server for *Wireless*HART communications, it is recommended that HART-IP be used. To communicate with a *Wireless*HART Gateway or a HART multiplexer, perform the following steps:

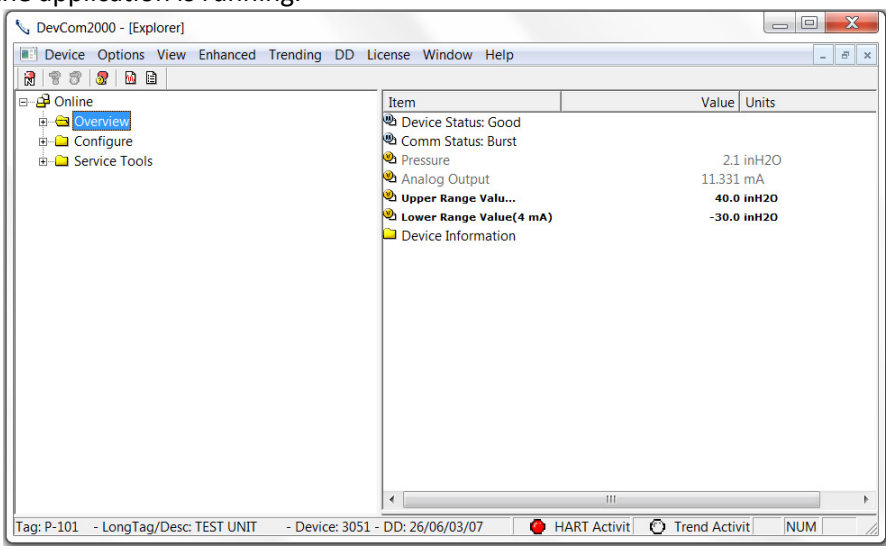
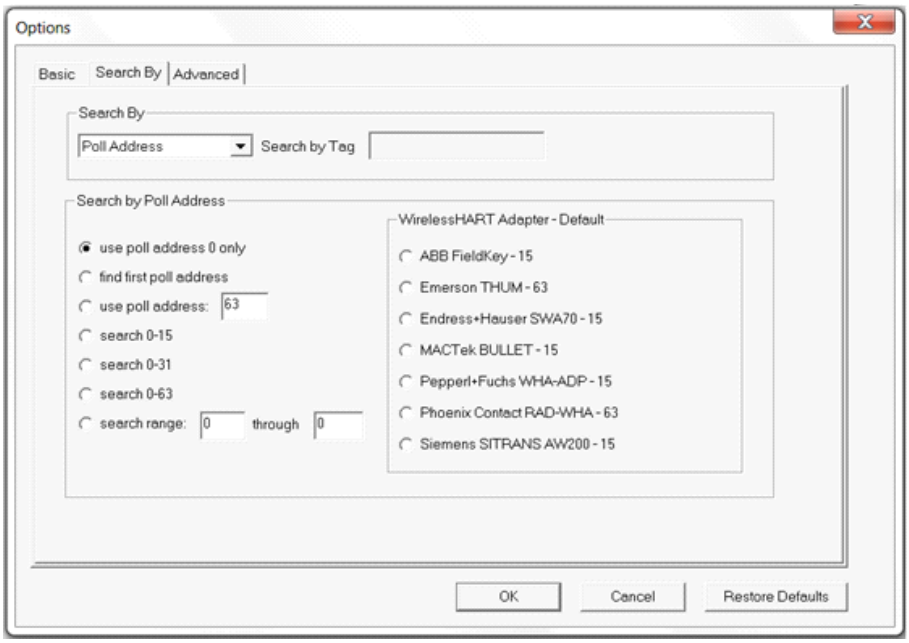
Step	Action
1	Ensure that the application is running. 
2	Select **Options → Basic** from the main window. The Options Dialog Box is displayed with the Basic tab selected: 

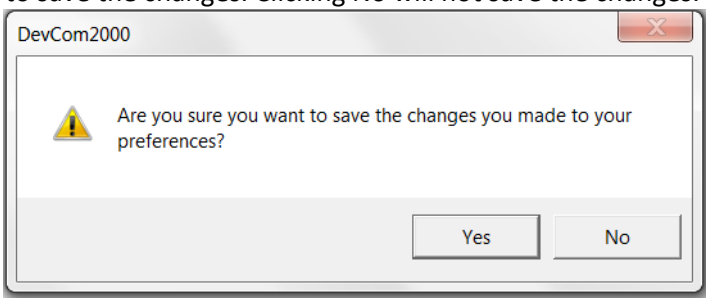
Step	Action
3	Click "Use HART server with *Wireless*HART Gateway or HART Multiplexer" 
4	The Serial Port option will now be grayed out. Un-checking will make Serial Port selectable again. Click OK to save the changed settings.
5	Click Yes if you want to save the changes. Clicking No will not save the changes. 
6	Restart DevCom2000 for the changes to take place.

4.12.3 Options → Search

4.12.3.1 Poll Address

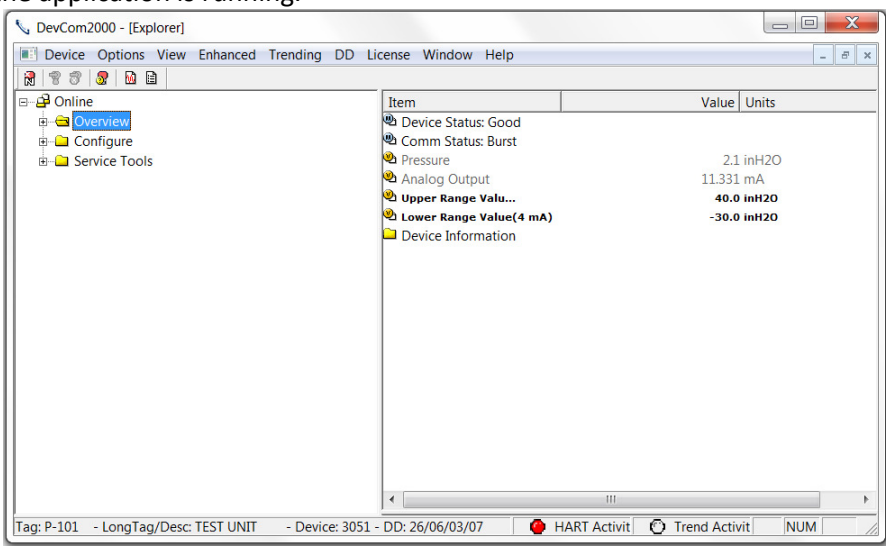
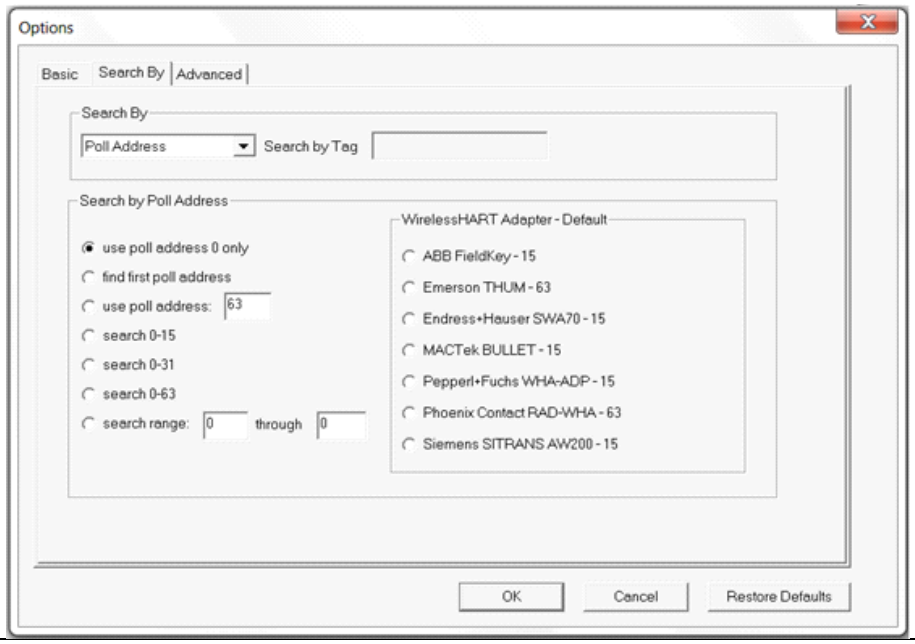
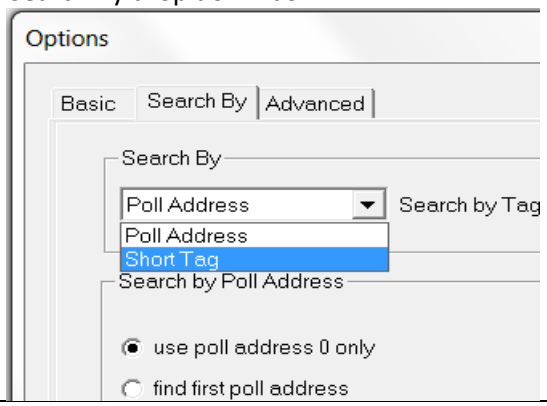
The **Search** menu is used to change how DevCom2000 searches for a Device. The first option is to search by Poll Address. This searches for a specific poll address or set of addresses. To search for a device using Poll Address perform these steps:

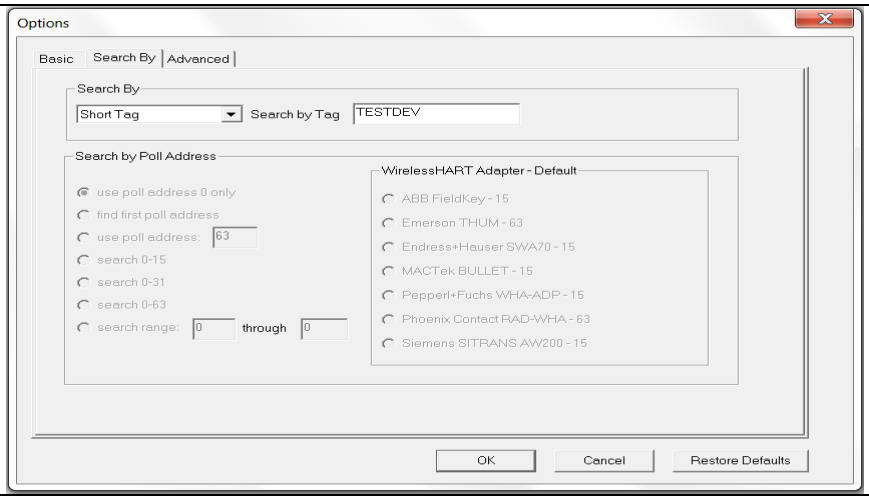
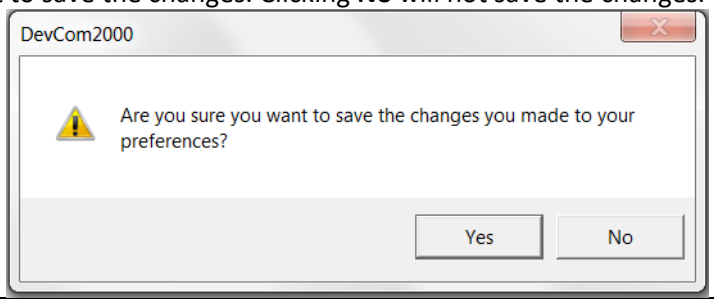
Step	Action
1	Ensure that the application is running. 
2	Select **Options → Search** from the main window. The Options Dialog Box is displayed with the Search By tab selected: 

Step	Action
3	Select one of options for Poll address: • "use poll address 0 only" only searches at poll address 0 before not finding a device. This is the default setting. • "find first poll address" searches poll addresses until it finds the first device it comes across. • "use poll address:__" If the poll address is know this options searches at a specific address (i.e. 5). • "search 0-15" searches poll addresses 0 through 15. • "search 0-31" searches poll addresses 0 through 31. • "search 0-63" searches poll addresses 0 through 63 • "search range__ through__" searches between a user identified range of poll addresses. If using a *Wireless*HART adapter you can also click to select the devices default address, e.g.: • "MACTek Bullet – 15" searches poll address 15. • "Emerson THUM - 63" searches poll address 63. • Etc.
4	The Search by Tag option is grayed out when searching by poll address is selected. Select a search by poll address option and Click OK to save the changed settings.
5	Click Yes if you want to save the changes. Clicking No will not save the changes. 
6	Reconnect to a new device.

4.12.3.2 Short Tag

The **Search** menu can also be used to search by a specific Tag name or Description. To search for a device based on a Tag name or a Description, perform the following steps:

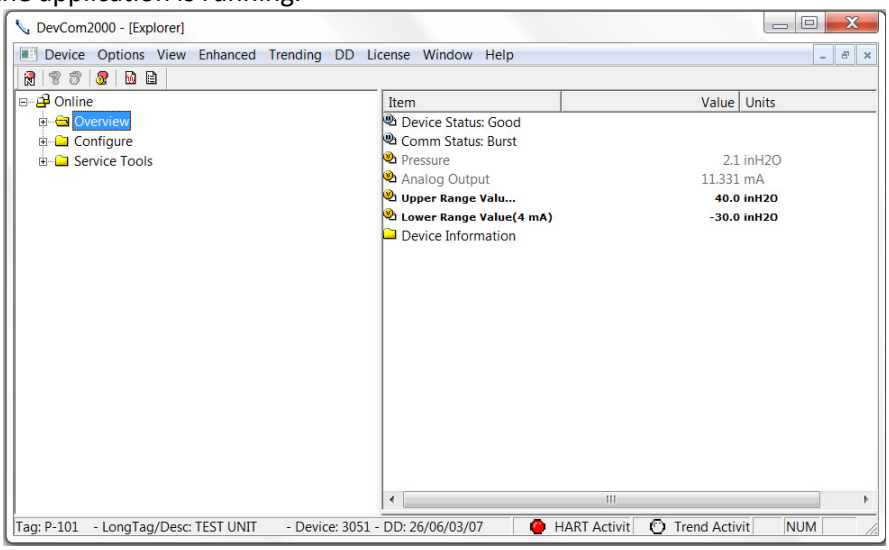
Step	Action
1	Ensure that the application is running. 
2	Select **Options → Search** from the main window. The Options Dialog Box is displayed with the Search By tab selected: 
3	Select "Short Tag" from the Search By drop down box. 
4	The poll address options will now be grayed out. Enter the tag to be searched for in the "Search by Tag" edit box.

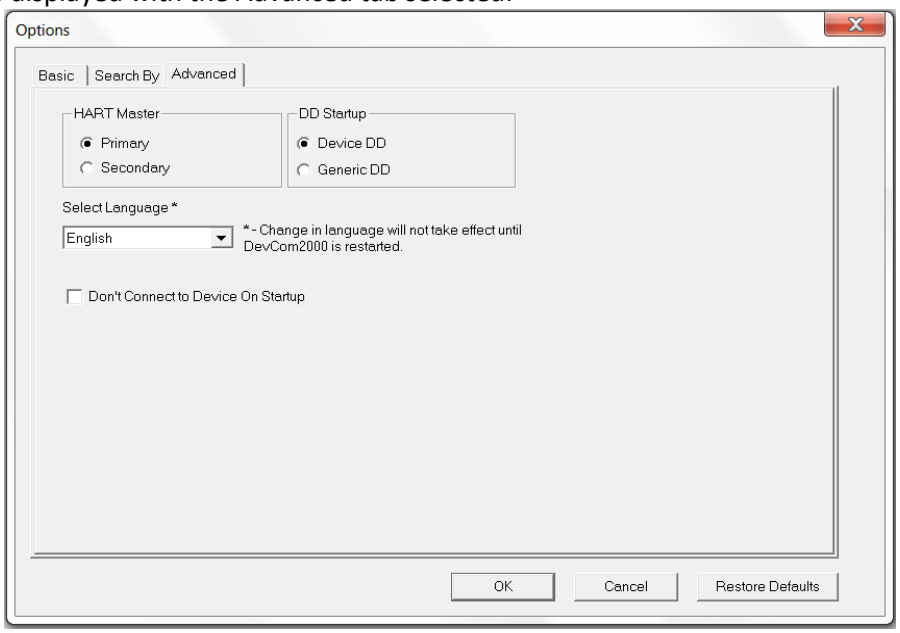
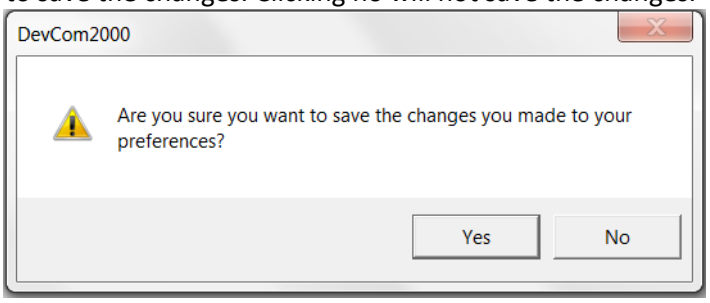
Step	Action
	
5	Click **OK** to save the changed settings.
6	Click **Yes** if you want to save the changes. Clicking **No** will not save the changes. 
7	Reconnect to a new device.

4.12.4 Options → Advanced

4.12.4.1 HART Master

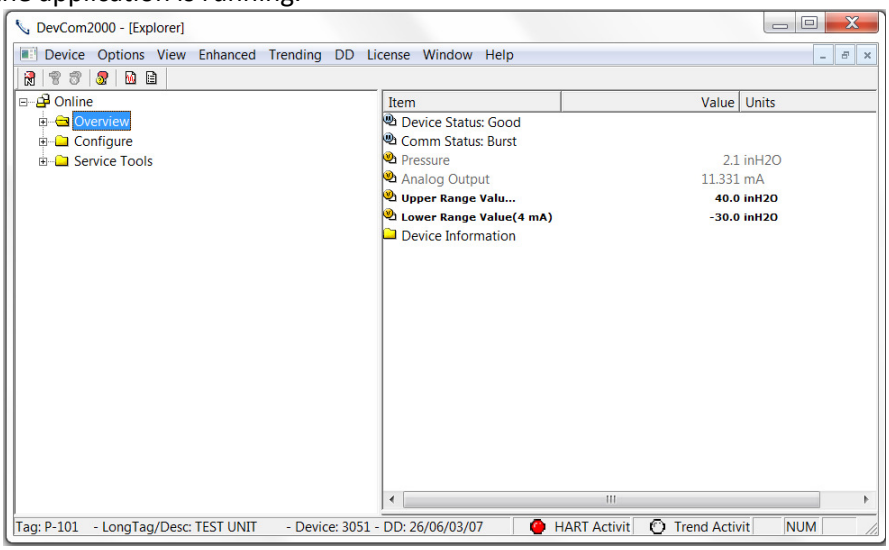
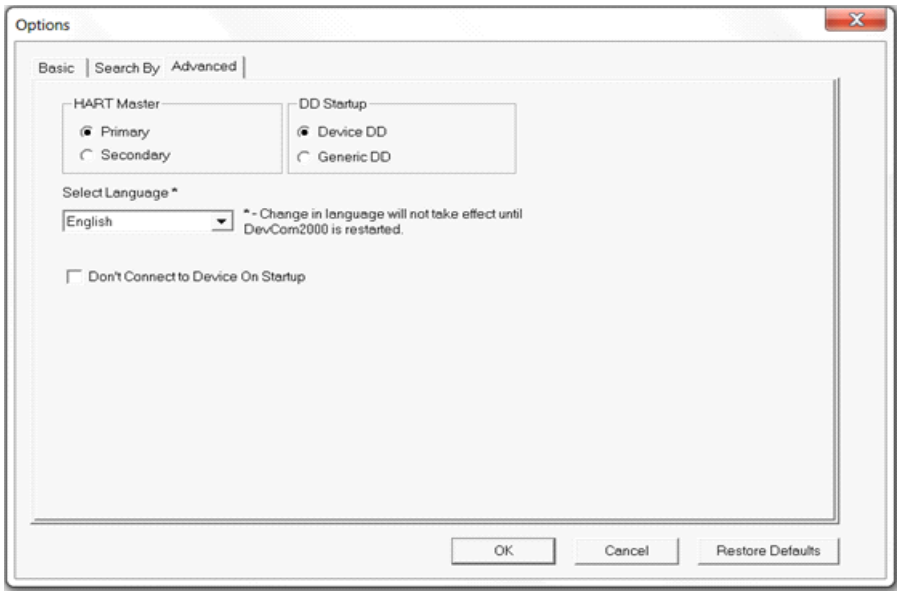
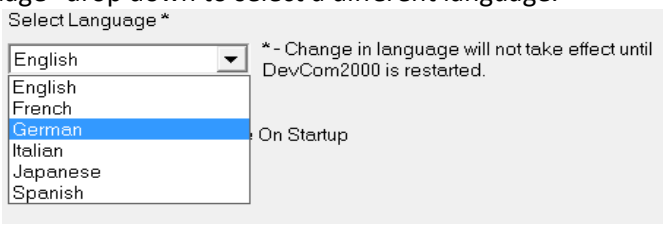
The **Advanced** menu is used to change DevCom2000 settings. DevCom2000 can be a Primary or Secondary HART Master. To change the HART Master setting, perform the following steps:

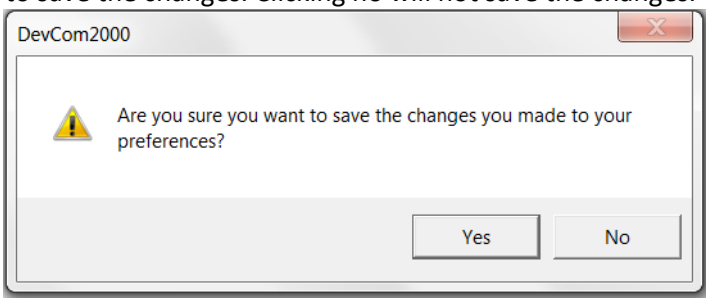
Step	Action
1	Ensure that the application is running. 

Step	Action
2	Select **Options → Advanced** from the main window. The Options Dialog Box is displayed with the Advanced tab selected: 
3	Under the section "HART Master" select either "Primary" or "Secondary".
4	Click OK to save the changed settings.
5	Click Yes if you want to save the changes. Clicking no will not save the changes. 
6	Restart DevCom2000 for the changes to take place.

4.12.4.2 Language

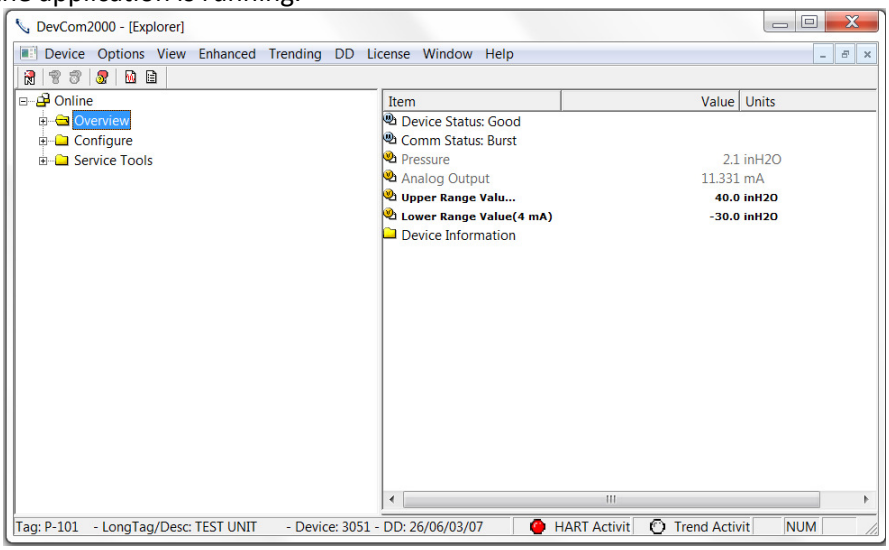
Certain DD's can be used in different languages. English is the default setting but some support other languages. Note that main program frame will always be English. Only the DD based items – menus, variables, etc. will change language. And will only change if the DD supports that language. In order to change the Language setting, perform the following steps:

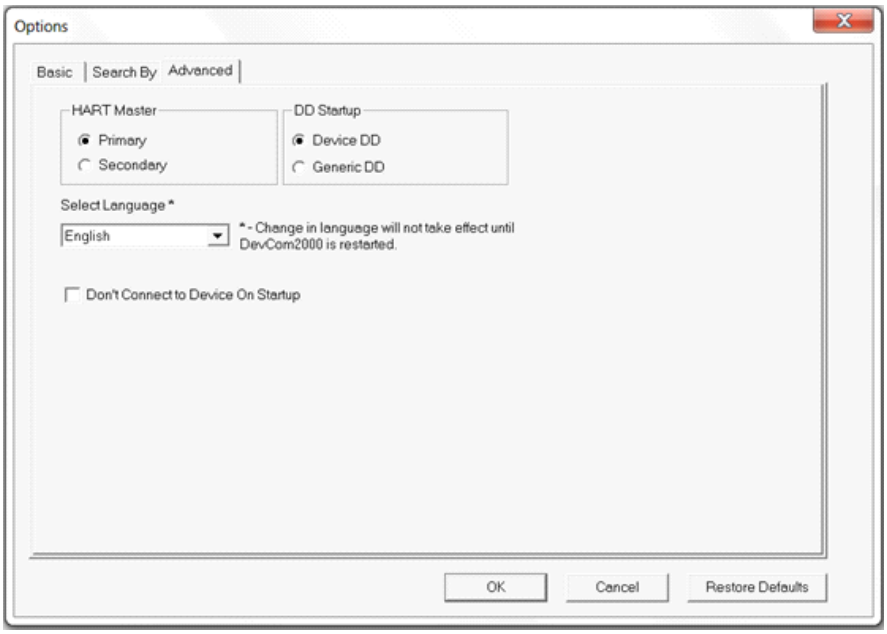
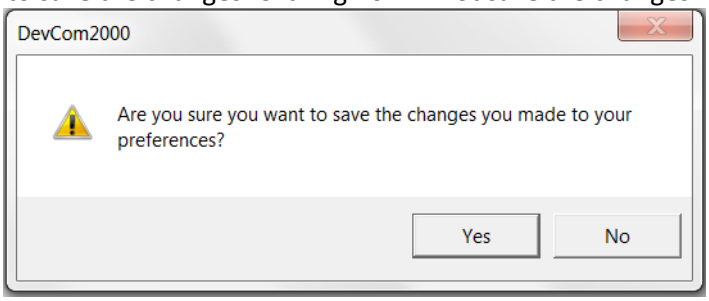
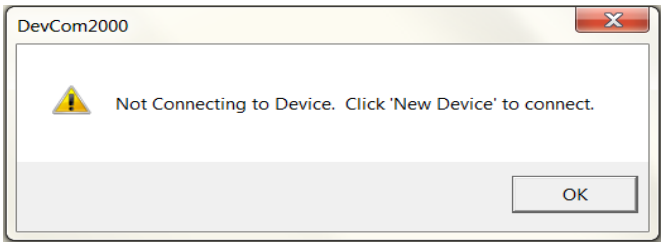
Step	Action
1	Ensure that the application is running. 
2	Select **Options → Advanced** from the main window. The Options Dialog Box is displayed with the Advanced tab selected: 
3	Click the "Select Language" drop down to select a different language. 
4	Select a language to translate the DD into. Click Okay to save the changed settings.

Step	Action
5	Click Yes if you want to save the changes. Clicking no will not save the changes. 
6	Restart DevCom2000 for the changes to take place. If the language is supported the DD will be translated. If not, the DD with default to English.

4.12.4.3 DD Startup

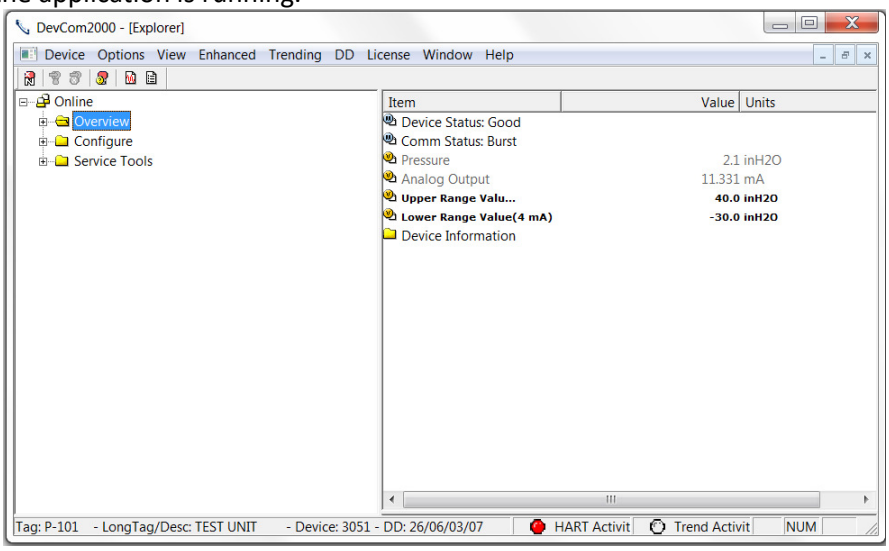
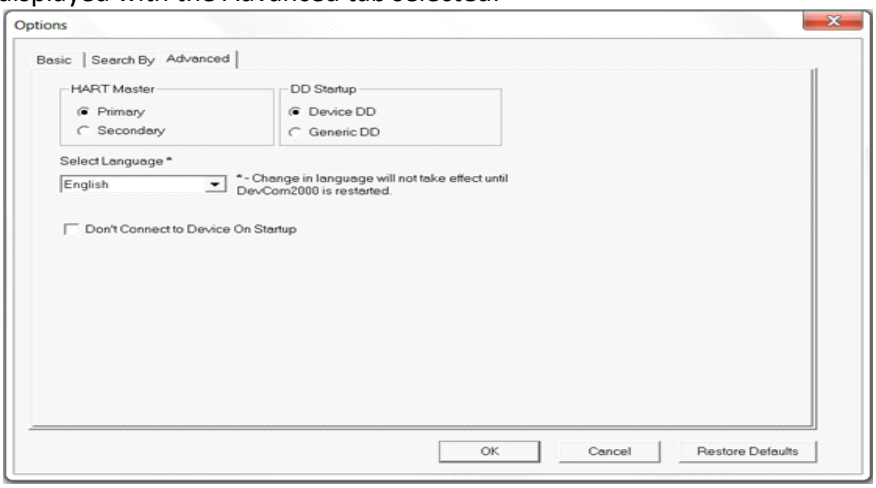
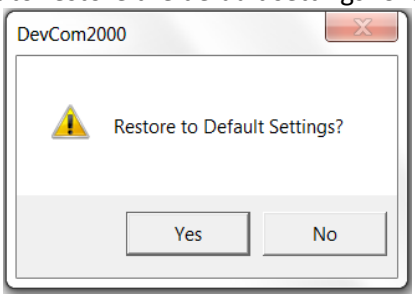
During normal startup of DevCom2000, the device is found and then the DD is loaded. If the DD cannot be found then a generic DD is loaded. Advanced has settings that can change what DD DevCom2000 loads with loading a device. To load a generic DD at start up or to not load a DD at all perform the following steps:

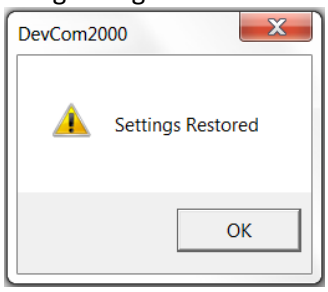
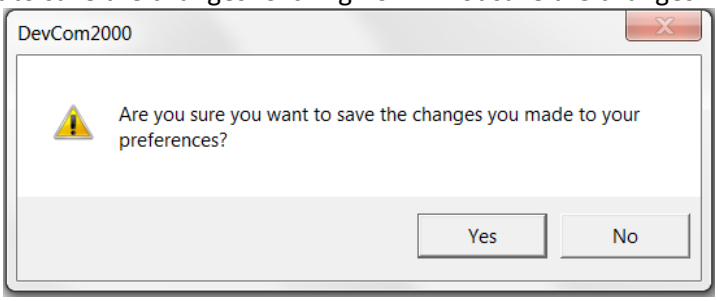
Step	Action
1	Ensure that the application is running. 

Step	Action
2	Select **Options → Advanced** from the main window. The Options Dialog Box is displayed with the Advanced tab selected: 
3	Click either "Device DD" or "Generic DD" depending on which DD is to be loaded when connecting to a device.
4	Check the "Don't Connect to Device On Startup" to start DevCom2000 without connecting to a device. Clicking "New Device" will connect to a device after this start up.
5	Click **OK** to save the changed settings.
6	Click **Yes** if you want to save the changes. Clicking no will not save the changes. 
7	Restart DevCom2000 for the changes to take place.
8	If "Don't Connect to Device On Startup" is checked the following message will be displayed on start up: 

4.12.4.4 Default Settings

The "Default" button on the **Advanced** tab **Options** resets all the advanced options to their default settings. To return the settings to their default settings perform the following steps:

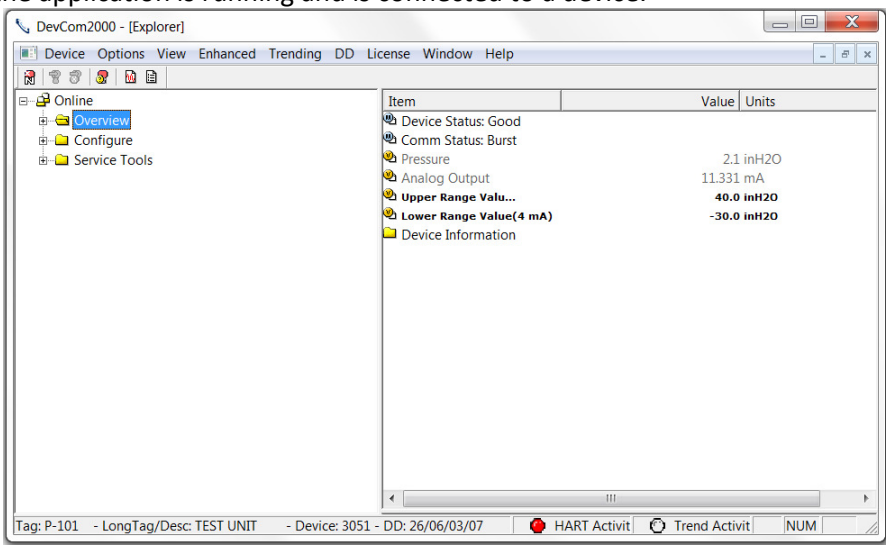
Step	Action
1	Ensure that the application is running. 
2	Select **Options → Advanced** from the main window. The Options Dialog Box is displayed with the Advanced tab selected: 
3	Click the "Restore Defaults" button.
4	DevCom2000 will ask if you want to restore the default settings. Click "Yes" 

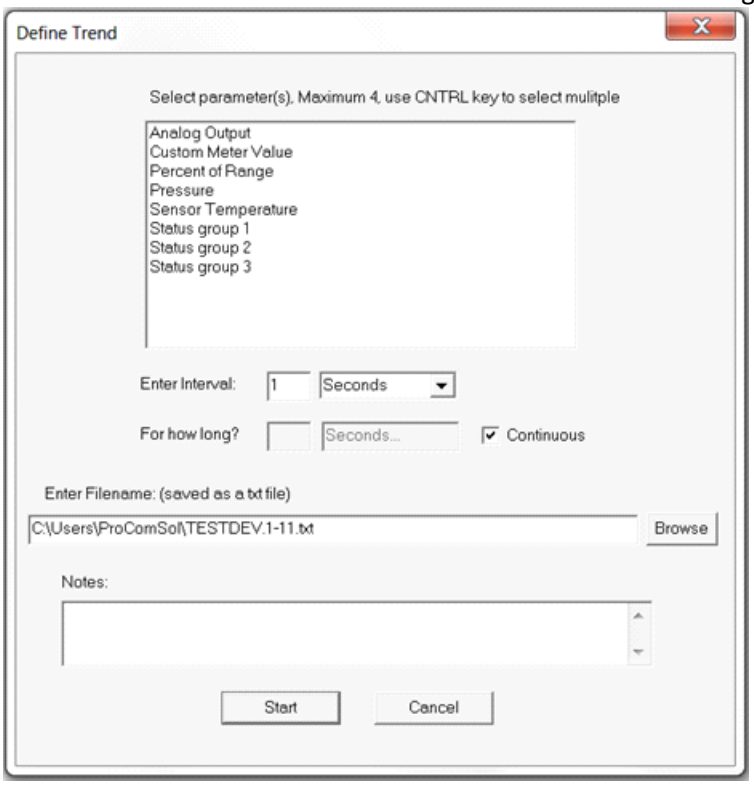
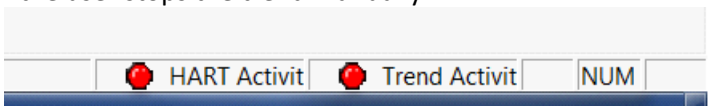
Step	Action
5	If the restore was successful the following dialog box will be shown: 
6	Click **OK** to save the changed settings.
7	Click **Yes** if you want to save the changes. Clicking no will not save the changes. 
8	Restart DevCom2000 for the changes to take place.

4.13 Trending

4.13.1 Define Trend

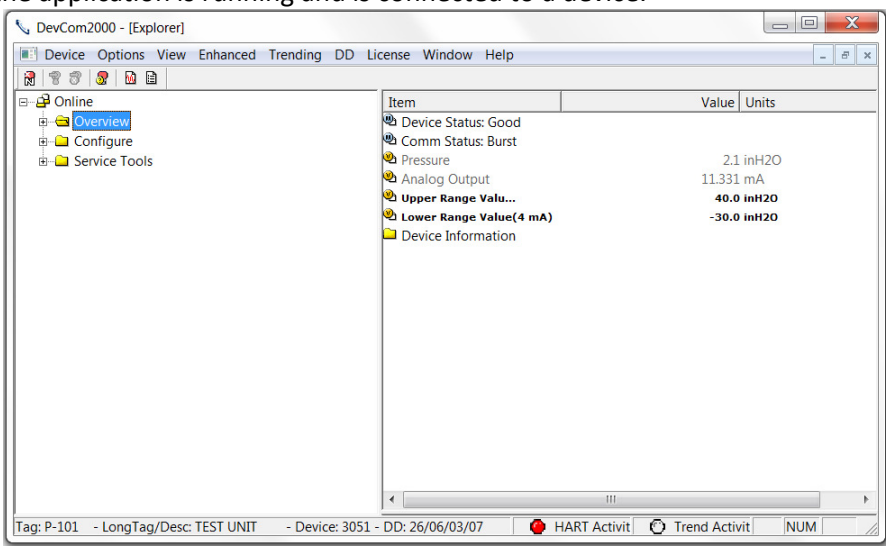
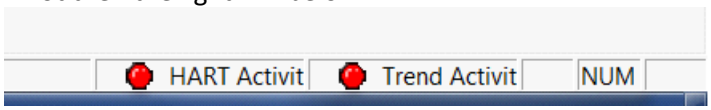
The **Trending** menu is used to track dynamic device parameters over a specified period of time. Once a parameter is tracked, it can be graphed and compared against other parameters tracked on the same time period. Before a parameter can be graphed, a trend must first be created. To create a trend, perform the following steps:

Step	Action
1	Ensure that the application is running and is connected to a device. 

Step	Action
2	Select **Trending → Define Trend** from the main window. The **Define Trend** Dialog Box is displayed: 
3	Select the information for the log file: • **Select Parameter(s)** – Select up to four parameters to log at a time. Press the CNTRL key to select multiple parameters. • **Enter Interval** - Input a number and select an interval from the drop down box, i.e. Seconds, Minutes, Hours, Days. • **For How Long?** – Input duration for how long to log the parameter(s). This part will be grayed out if the "Continuous" check box is selected. Unselect it for a finite duration. • **Enter Filename** – The default directory is based on Windows User Accounts however a log file can be saved anywhere. • **Notes** – The section can only be 250 characters long.
4	Click the "Start" button to start logging.
5	The logging will then be started. At the lower right hand corner of DevCom2000 the "Trend Activity" light will come on. This indicates that there is logging going on. You cannot start another log until this one is finished or the user stops the trend manually. 

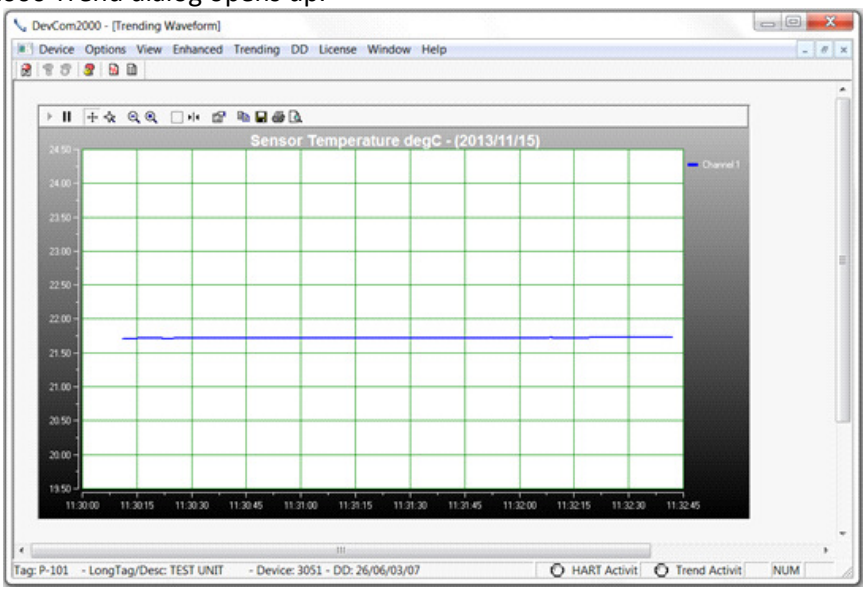
4.13.2 View Current Trend

When a trend is created DevCom2000 creates a window that shows the graph of the current trend. To view this trend, perform the following steps:

Step	Action
1	Ensure that the application is running and is connected to a device. 
2	Ensure that a trend is in progress. The “Trend Activity” light at the bottom of the screen is on if a trend is in progress. If not then the light will be off. 
3	Select **Trending → View** Current Trend from the main window.

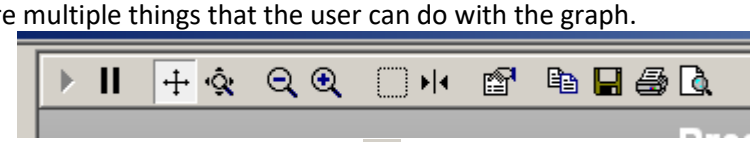
4

The DevCom2000 Trend dialog opens up.



The user can manipulate the graph as desired. "Tracking" is the term used to describe how the graph control follows the data, changing the axis in real time so that all of the data is shown. Below are the specific parts of the graph:

Tool Bar: There are multiple things that the user can do with the graph.



Resume All Tracking: The "Resume All" button - - is grayed out while tracking. If either axis is changed or the "Pause" button is pressed, this will be come green - - Pressing "Resume All Tracking" will resume the tracking on the graph.

Pause All Tracking: The "Pause" button - - pauses the graph in its current state. Data is still added, however the current X-axis and Y-axis spans no longer change. Pressing the "Resume" button will continue tracking.

Scroll Axis: This is the default way to scroll both the X and Y-axis. The "Scroll Axis" button - - allows the user to scroll in both directions on the graph.

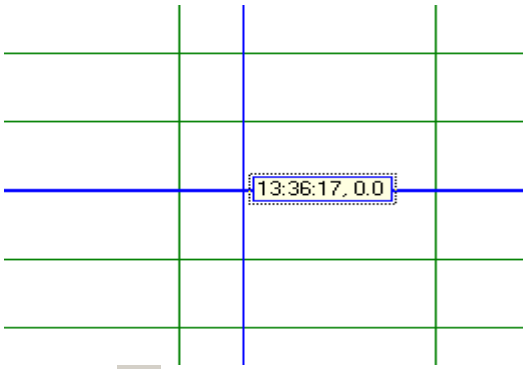
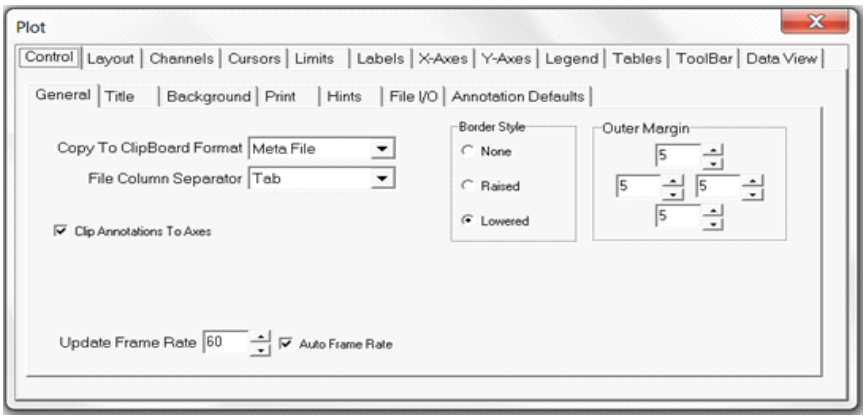
Zoom Axis: The "Zoom Axis" button - - allows the user to shrink or enlarge the scale of either axis. By moving up or down, left or right, the span of each axis is changed.

Zoom Out All Axis: The "Zoom Out All Axis" button - - zooms out both the X-axis and Y-axis at the same time giving the user a broader look at the graph.

Zoom In All Axis: The "Zoom In All Axis" button - - zooms in both the X-axis and Y-axis at the same time giving the user view over a smaller time period.

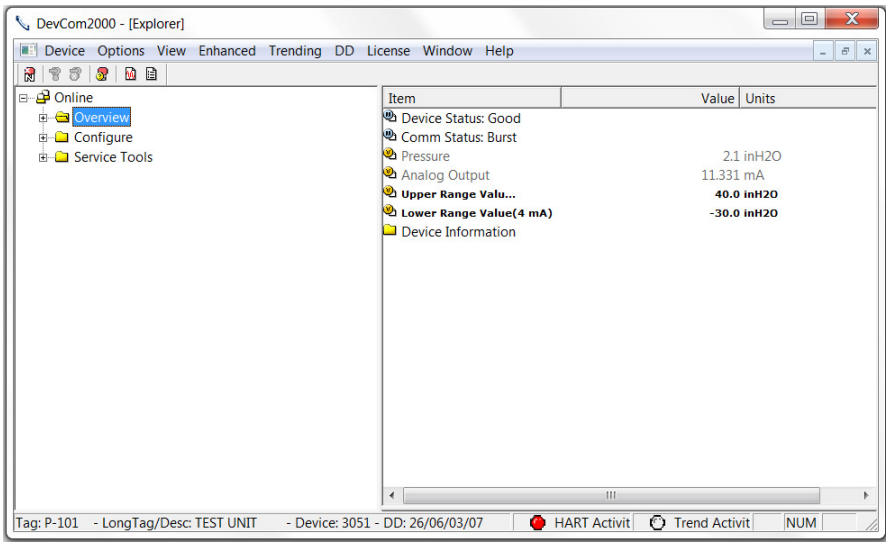
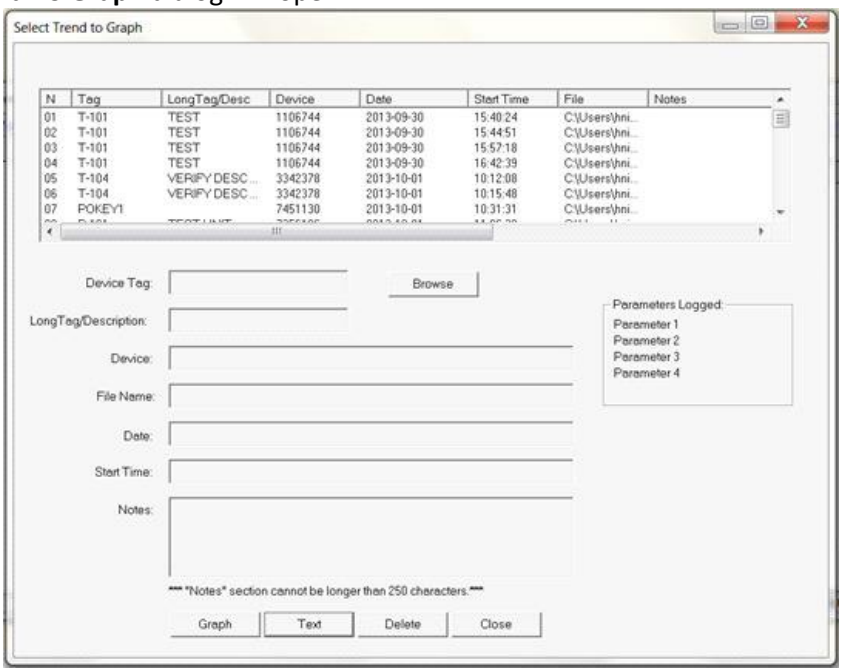
Zoom Box: The "Zoom Box" button - - changes the cursor allowing the user to select a specific area of the graph to zoom in on for a more detailed look.

Cursor: The "Cursor" button - - adds a cursor to the screen that gives the coordinates of the graph at a certain time. Clicking and moving the cursor can give the coordinates of any point on the graph. See below for an example of using the "Cursor" tool:

Step	Action
	 **Properties**: The "Properties" button - - brings up the "Properties" dialog box which gives the user the ability to customize the graph as desired. Below is an example of one of the "Properties" tabs:  **Copy To Clipboard**: The "Copy To Clipboard" button - - copies the graph to the clipboard to allow the graph to be pasted into documents like a report. **Save**: The "Save" button - - saves the graph as a "*.bmp". **Print**: The "Print" button - - prints the graph. **Preview**: The "Preview" button - - gives a print preview of the graph. **Title**: The title gives the name of the parameter being trended, the units that the parameter is being measured in, and the date(s) of the graph, e.g. (Parameter) (Units) - (Date yyyy/mm/dd) **Pressure inH2O - (2011/03/14)** **Axis**: The Y-axis is the units of the parameter. The X-axis is the time in HH:MM:SS format. **Redraw**: This section is disabled for **View Current Trend**.

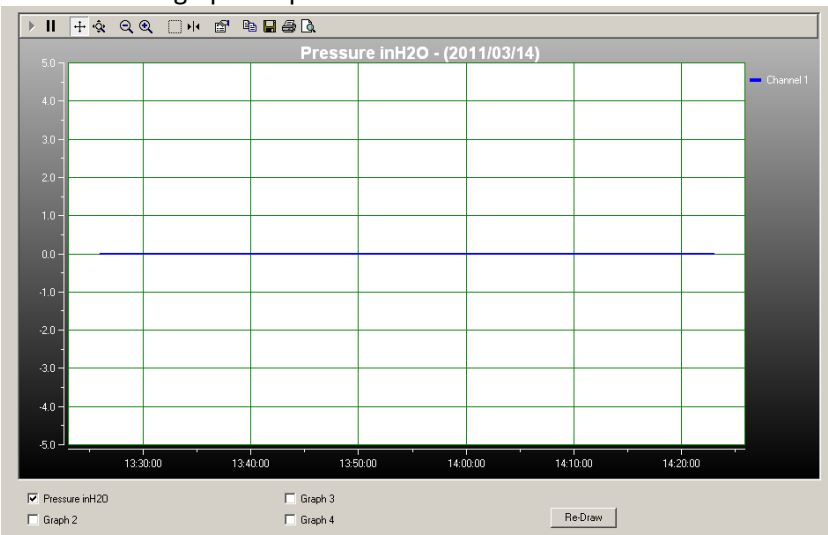
4.13.3 View Past Trends

DevCom2000 keeps a list of trends that have been done in the past. These trends are saved so that they can be viewed at a later date. To select a trend to be viewed perform the following steps:

Step	Action
1	Ensure that the application is running, you do not have to be connected to a device to use View Past Trends. 
2	Select **Trending → View Past Trends** from the main window.
3	The **Select Trend To Graph** dialog will open.  This dialog box is very similar to the “Download/View” dialog box. **Data**: Opens the text file where the data has been saved. **Delete**: Deletes a previous trend from the database. **Close**: Closes the dialog box. **Trend**: Opens the saved Trend and displays it graphically. Select a trend to graph and click “Trend”.

4

The **DevCom2000 Trend** dialog opens up when "Trend" is selected.



The user can manipulate the graph as desired. "Tracking" is the term used to describe how the graph control follows the data, changing the axis in real time so that all of the data is shown. Below are the specific parts of the graph:

Tool Bar: There are multiple things that the user can do with the graph.

Resume All Tracking: The "Resume All" button - - is grayed out while tracking. If either axis is changed or the "Pause" button is pressed, this will be come green - - Pressing "Resume All Tracking" will resume the tracking on the graph.

Pause All Tracking: The "Pause" button - - pauses the graph in its current state. Data is still added, however the current X-axis and Y-axis spans no longer change. Pressing the "Resume" button will continue tracking.

Scroll Axis: This is the default way to scroll both the X and Y-axis. The "Scroll Axis" button - - allows the user to scroll in both directions on the graph.

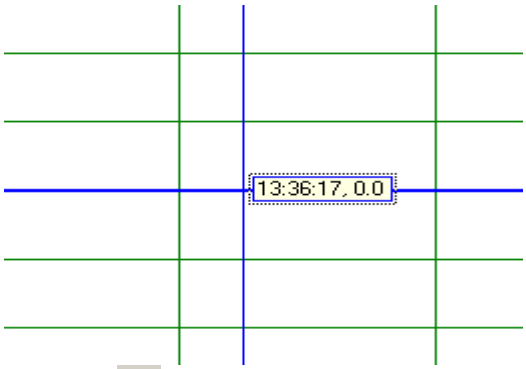
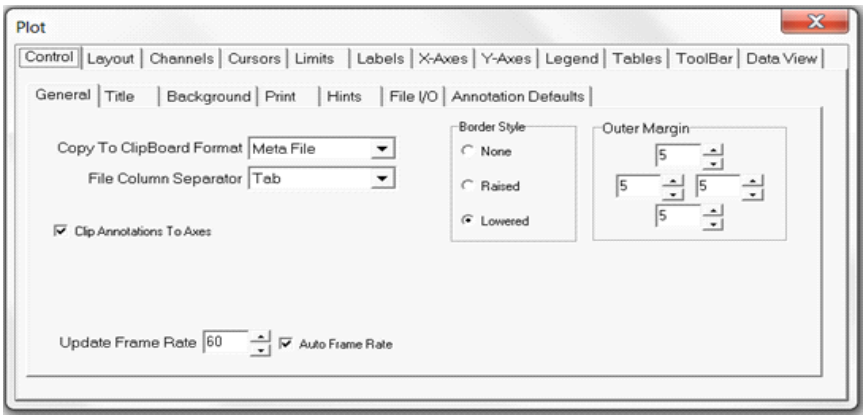
Zoom Axis: The "Zoom Axis" button - - allows the user to shrink or enlarge the scale of either axis. By moving up or down, left or right, the span of each axis is changed.

Zoom Out All Axis: The "Zoom Out All Axis" button - - zooms out both the X-axis and Y-axis at the same time giving the user a broader look at the graph.

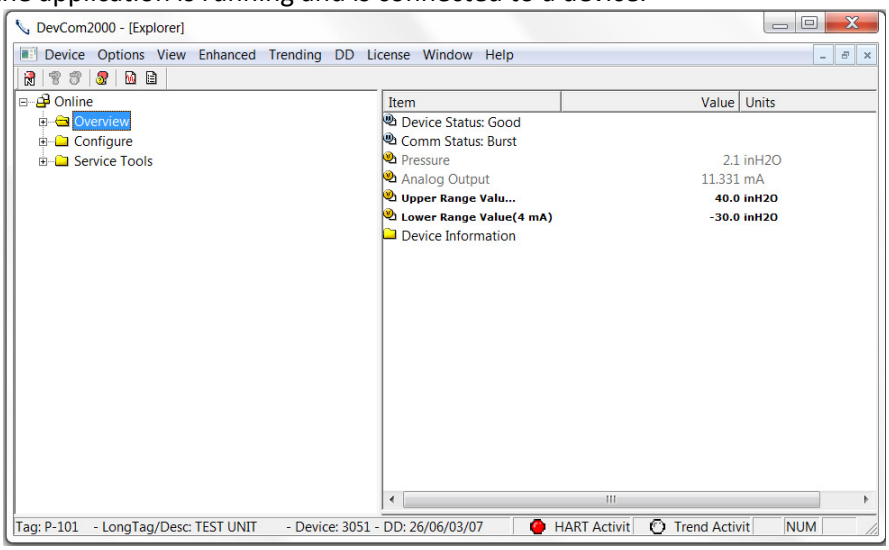
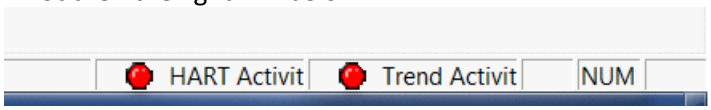
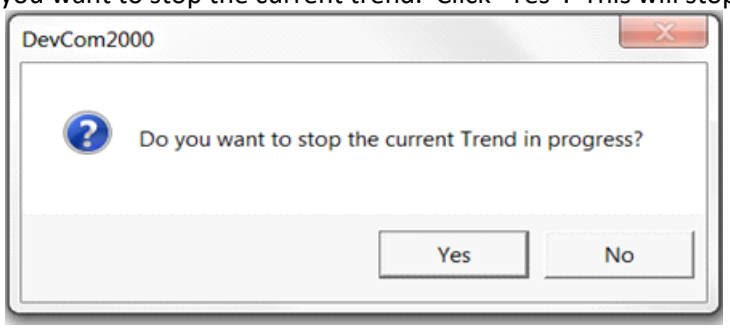
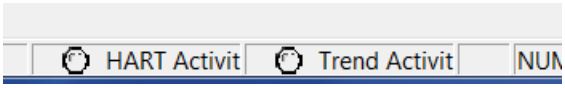
Zoom In All Axis: The "Zoom In All Axis" button - - zooms in both the X-axis and Y-axis at the same time giving the user view over a smaller time period.

Zoom Box: The "Zoom Box" button - - changes the cursor allowing the user to select a specific area of the graph to zoom in on for a more detailed look.

Cursor: The "Cursor" button - - adds a cursor to the screen that gives the coordinates of the graph at a certain time. Clicking and moving the cursor can give the coordinates of any point on the graph. See below for an example of using the "Cursor" tool:

Step	Action
	 **Properties**: The "Properties" button - - brings up the "Properties" dialog box which gives the user the ability to customize the graph as desired. Below is an example of one of the "Properties" tabs:  **Copy To Clipboard**: The "Copy To Clipboard" button - - copies the graph to the clipboard to allow the graph to be pasted into documents like a report. **Save**: The "Save" button - - saves the graph as a "*.bmp". **Print**: The "Print" button - - prints the graph. **Preview**: The "Preview" button - - gives a print preview of the graph. **Title**: The title gives the name of the parameter being trended, the units that the parameter is being measured in, and the date(s) of the graph, e.g. (Parameter) (Units) - (Date yyyy/mm/dd) **Pressure inH2O - (2011/03/14)** **Axis**: The Y-axis is the units of the parameter. The X-axis is the time in HH:MM:SS format. **Redraw**: Up to four parameters can be trended at the same time. By clicking the check box for a parameter u can show one or four at the same time for easy comparison over a period of time. ☑ Pressure inH2O ☐ Graph 3 ☐ Graph 2 ☐ Graph 4 Click "Redraw" and the parameters checked will be shown.

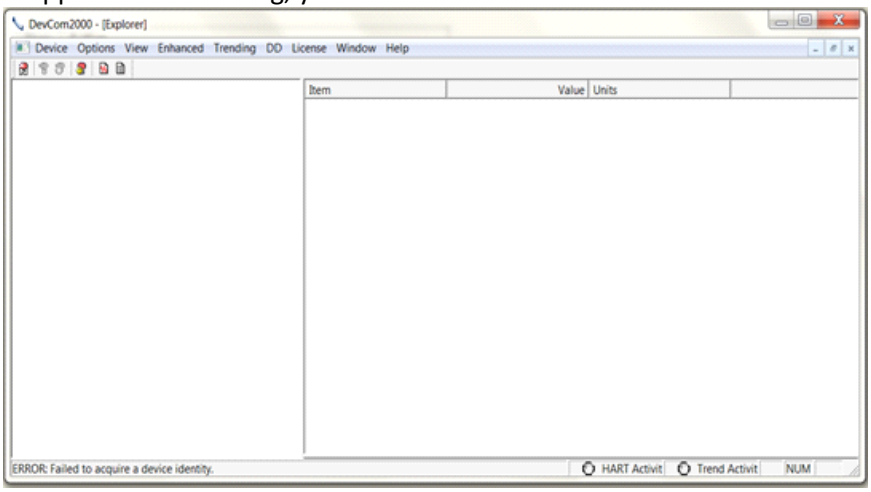
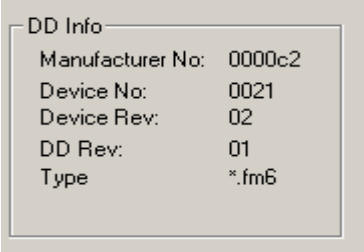
4.13.4 Stop Current Trend

Step	Action
1	Ensure that the application is running and is connected to a device. 
2	Ensure that a trend is in progress. The "Trend Activity" light at the bottom of the screen is on if a trend is in progress. If not then the light will be off. 
3	Select **Trending → Stop Current Trend** from the main window.
4	You will be asked if you want to stop the current trend. Click "Yes". This will stop the current trend. 
5	The "Trend Activity" light will now be off. 

4.14 DD Functions

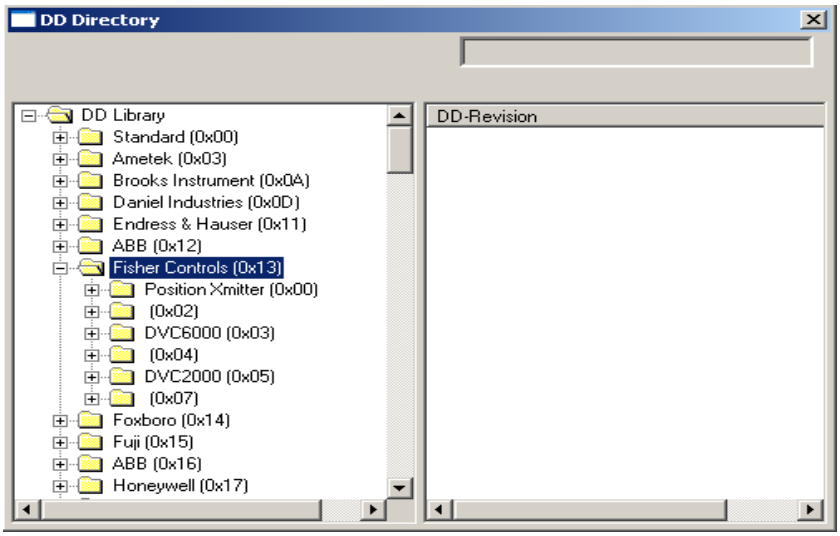
4.14.1 Adding a DD

DevCom2000 allows the user to add a DD to the library when necessary. Each DD must be in its appropriate destination for DevCom2000 to find the DD. The format is: "C:\HCF\DDL\Library\xxxxxx\yyyy\" where "xxxxxx" represents the manufacturer ID and "yyyy" represents the device ID. The user does not need to add the directory structure, DevCom2000 does that automatically. To add a DD perform the following steps:

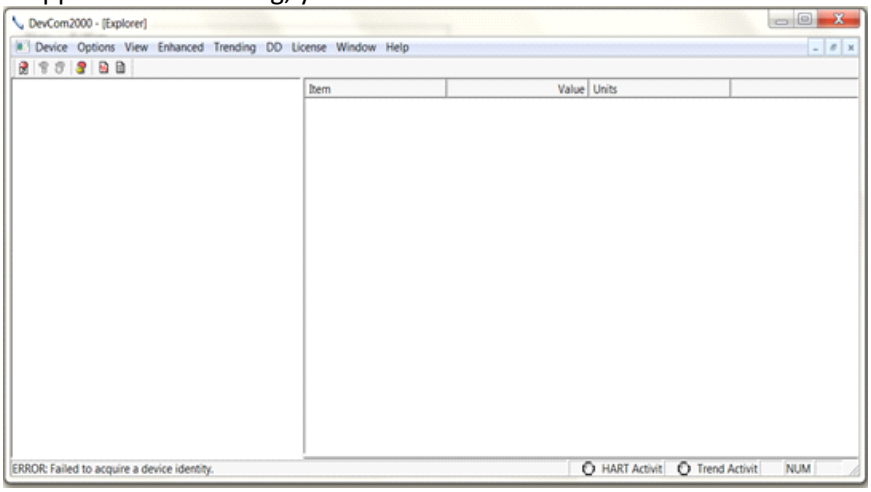
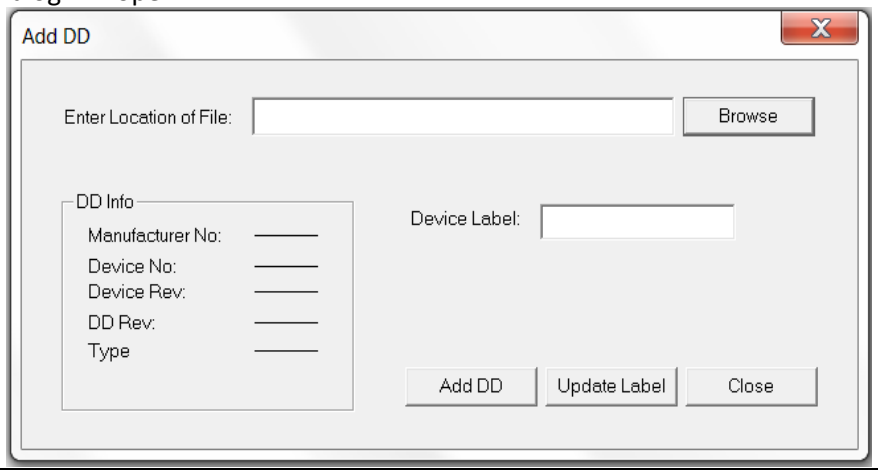
Step	Action
1	Ensure that the application is running, you do not have to be connected to a device to use **Add DD**. 
2	Select **DD → Add DD** from the main window.
3	The Add DD dialog will open.
4	Click “Browse” and go to the location of the DD that is to be added.
5	The “DD Info” section will be populated. Confirm that it is the correct DD. Below is an example of 0000c2/0021/0201.fm6: 
6	Input a “Label” for the DD if necessary. If not Click “Add DD” to add the DD to the library.

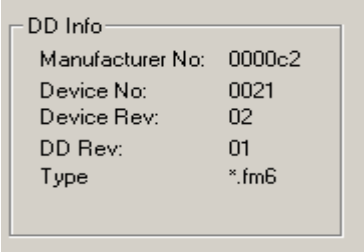
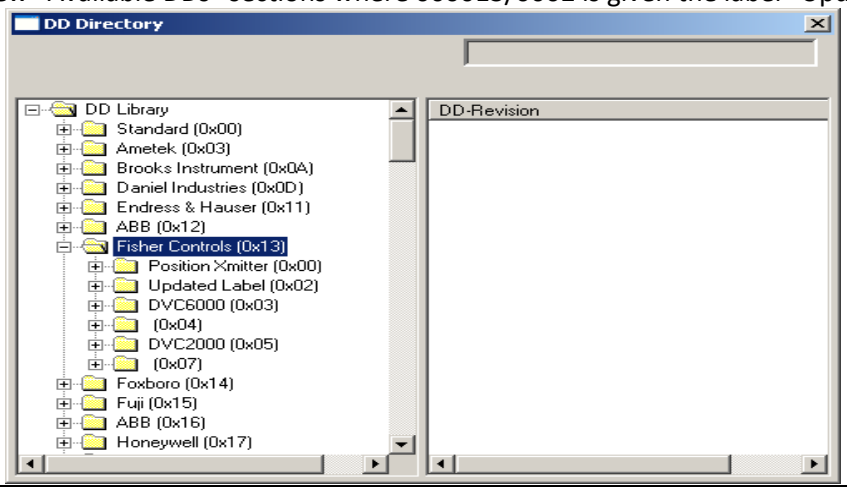
4.14.2 Updating a DD Label

DevCom2000 allows the user to add a Label for a DD if there is not one already defined. Below is an example:



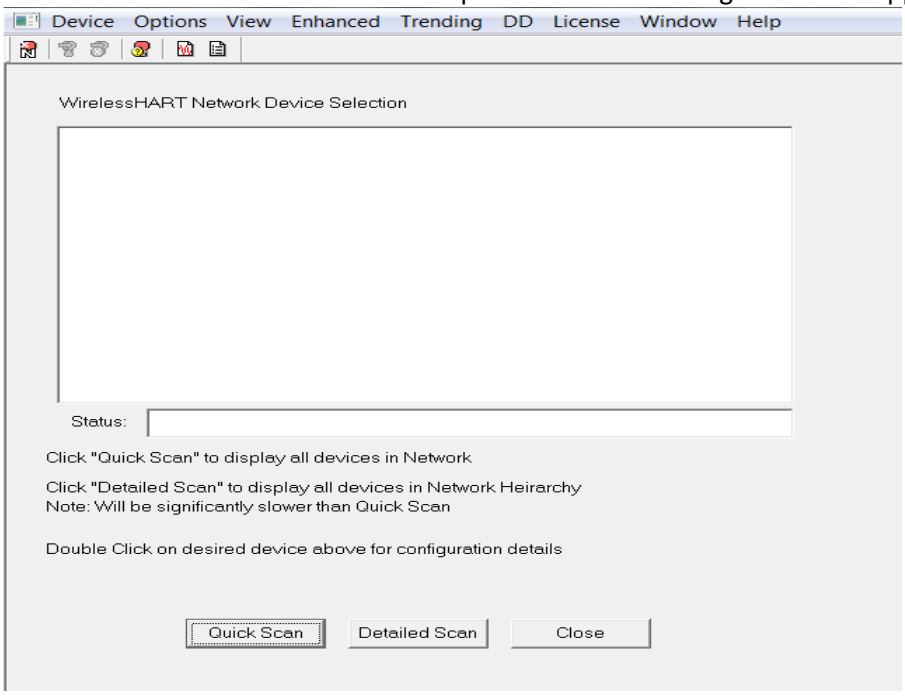
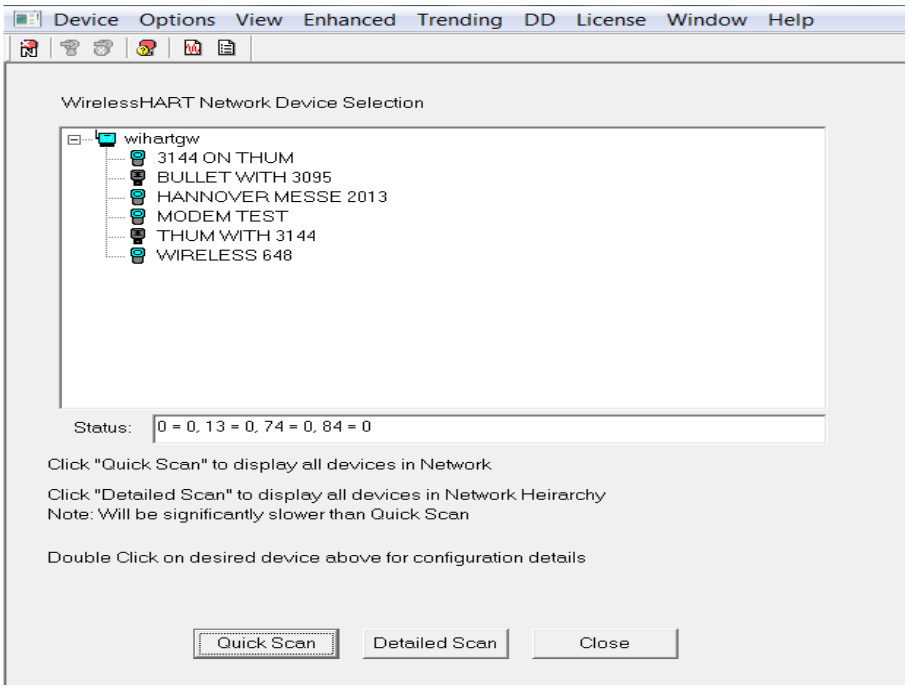
The manufacturer ID of Fisher Controls is 000013. Device IDs 0002, 0004, and 0007 all do not have a label. This is when updating a DD label is useful. To update the label perform the following steps:

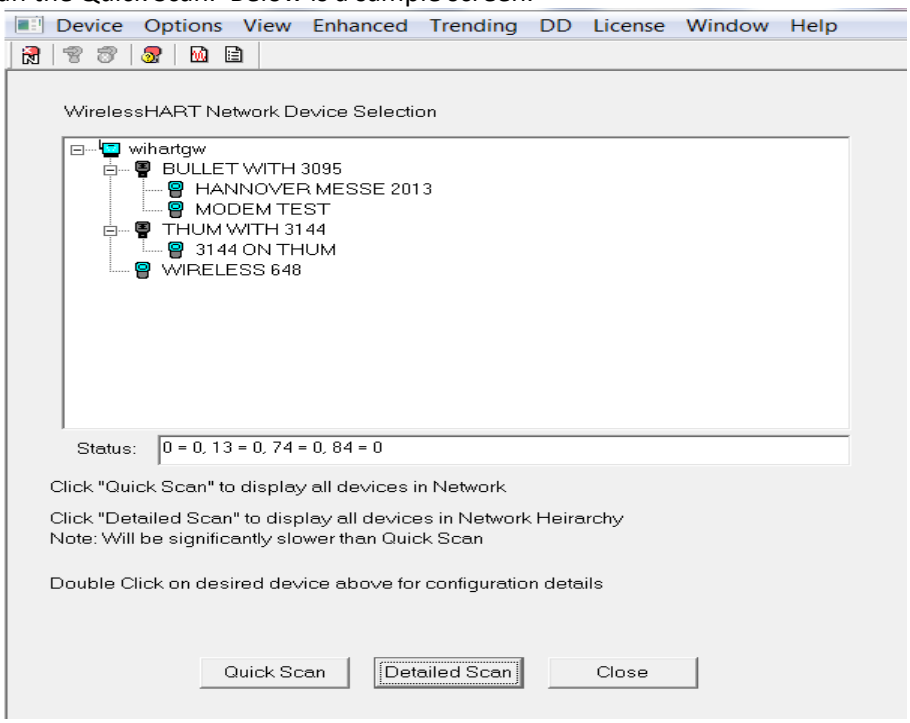
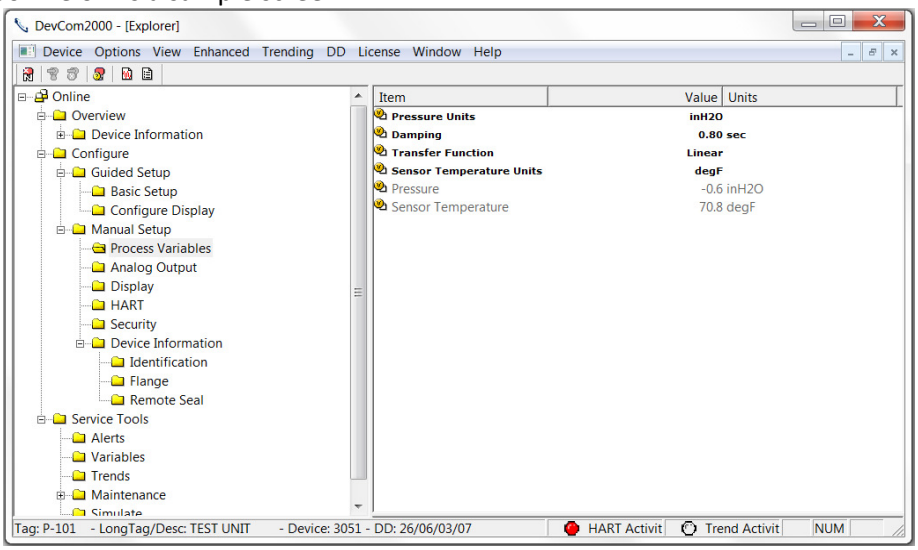
Step	Action
1	Ensure that the application is running, you do not have to be connected to a device to use **Add DD**. 
2	Select **DD → Add DD** from the main window.
3	The Add DD dialog will open. 
4	Click “Browse” and go to the location of the DD that is to have the label updated.

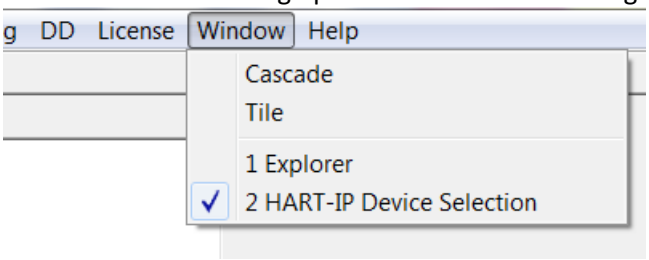
Step	Action
5	The “DD Info” section will be populated. Confirm that it is the correct DD. Below is an example of 0000c2/0021/0201.fm6: 
6	Input a “Label” for the DD if necessary. Click “Update Label” to update the label.
7	Below is the new “Available DDs” sections where 000013/0002 is given the label “Updated Label”: 

4.15 HART-IP Communication

Step	Action
1	Ensure that settings for HART-IP have been made in the Options->Basic menu. Note that a HART Modem is NOT required, only Ethernet access to the *Wireless*HART Gateway.

Step	Action
2	Click on “New Device” icon to start the connection process. The following screen will appear. 
3	Click on “Quick Scan” to provide a simple list of all the devices on the *Wireless*HART network. Below is a sample screen: 

Step	Action
4	Click on "Detailed Scan" to display all the devices as a hierarchy. This will show what transmitters are connected to each *Wireless*HART adapter. Note that this listing takes significantly longer to generate than the Quick Scan. Below is a sample screen.  For both types of list displays, the following icons are used: **HART-IP Icons** = Gateway = Adapter, *Wireless*HART = Transmitter
5	Once a device list has been created, double click on the desired device to configure/review using DevCom2000. Below is a sample screen: 

Step	Action
6	To switch to a different device on the *Wireless*HART network: **Select Window** on the MENU bar, then click on **HART-IP Device Selection** to bring up the **Device Menu Tree** again. 

Specifications (COM-1 Software):

HART Modem	Not required if using HART-IP or *Wireless*HART®. COM-1 is supplied with a USB HART Modem (HM-USB-ISO). However, it can be used with USB HART Modems or Bluetooth HART Modems from any manufacturer.

Device Descriptions (DD's)

DD Library	Includes HART Communication Foundation's latest release
Generic DD	Included
Number of devices	>1382 (call for latest information if details required)
DD Updates	Quarterly updates are sent to you automatically for 1 year. Thereafter updates are manually available free of charge from www.hartcomm.org

Functions

Monitor PV
Monitor Multi-variables
Monitor Device Status
View and Edit Variables
Save complete device configuration to text file and PDF file
Write saved configurations to devices
Sample Execute Methods:

Trims
Calibrations
Loop Tests
Zero and Span

Specifications (Bluetooth HART Modem HM-BT-BAT-ER):

Enclosure & Cables

Material	High strength ABS Plastic
Dimensions	50mm x 70mm x 20mm
Total Unit Weight	170 g
HART Cable Length	1.2 m
HART Cable Connectors	Mini-Grabber

HART

Interface	Capacitive coupling
Output	600 mVpp
Leakage	< 10 uA
Connections	Across loop resistor or HART field device
Specifications	HART 4, HART 5, HART 6, HART 7, Physical Layer Spec HCF_SPEC-54

Computer/Tablet/Smart-Phone

Operating System	Windows, Pocket PC, MAC, Linux, Android, plus any others that support Bluetooth Serial Ports
Bluetooth	Bluetooth v2 compatible
Class	Class 1 (up to 83.8 meters), or Class 2 (up to 10 meters)*

* To be able to achieve the full Bluetooth range (83m) your PC/Laptop/Tablet/Smartphone must also be Class 1. If it is a Class 2 Bluetooth device (up to 10m) you could upgrade it to Class 1 by either replacing its internal Bluetooth module or using an external Class 1 Bluetooth USB dongle.

Battery

Type	Rechargeable Li-Ion
Life	19 hours continuous use (perfect conditions), 14 hours typical

Environmental

Operating Temperature	0 deg.C to 50 deg.C
Storage Temperature	-40 deg.C to 85 deg.C
Humidity	0% to 99% (non-condensing)

Compliances

CE Certification	EN 61326 (EMC), Directive 2011/65/EU (RoHS)

Appendix A

Troubleshooting Guide

For most error messages, there is a selection for "Com Troubleshooter". This program will guide you through the steps to solve your communication problems. Below is a quick summary:

Problem: Will not communicate

Hardware Check:
Verify the following
1. COM port number set in the HART Communicator application is the HM-BT-BAT-ER COM port number noted in Step 5
2. Loop power supply is on
3. Loop resistance is between 250 ohms and 1Kohms
4. Loop current is within HART limits
5. If multi drop configuration, all transmitters in loop have unique addresses
6. HM-BT-BAT-ER connections are across loop resistor or across transmitter terminals (step 7)
7. Battery is charged
8. Modem power switch is on and "Power" LED is illuminated
9. Perform the "Discovery" procedure again and verify a connection can be made
10. If using the Linksys USBBT100, verify the Linksys Bluetooth driver is installed and not the Windows Bluetooth driver. There is a known issue with the Linksys install and Windows XP SP2. Go to www.linksys.com and search for "USBBT100" for details

Software Check:
Sometimes a Windows application does not end cleanly and the communication process is left running in an unknown state. When this happens, please restart the HART Communicator using the Windows power option "Restart".

Problem: Get the message "Error opening COMx"

Verify the following Installation
1. The Bluetooth HART Modem is charged and turned on
2. Via the Windows operating system ensure Bluetooth is enabled and turned on
3. Via the Windows Bluetooth menu ensure the Bluetooth HART Modem is listed as connected. If you have several Bluetooth HART Modems in the same area the Windows discovery process needs to be repeated. The modems will appear as "HART Modem (1)", "HART Modem (2)", etc. Where the number indicates the order in which the modems established a connection to your device. It may require trial and error to determine which modem is connected to the desired HART network.
4. Note the COM Port number given to the Bluetooth HART Modem by clicking on the "HART Modem" when it is shown as "Connected" in Bluetooth devices. This will show the services Windows has allocated to the Bluetooth HART Modem. You should see the Serial Port number (or COM Port number) assigned to the "HART Modem". The service may be listed as "AMP-SPP". If your device has assigned two COM Port numbers to "HART Modem", the one listed as "Outgoing Port" is the number you need to note.
5. Within DevCom2000 check the used COM port number is the same as that noted for the Bluetooth HART modem by choosing Options → Basic on the DevCom2000 menu.

Problem: No data in the Communication Log

Verify that the "HART Activity" LED indicator on the bottom of the DevCom2000 screen is flashing red. If not, open a menu that has dynamic data that is being refreshed like PV or AO.

Problem: Active Windows not shown in Windows drop down list

Try the following:

1. Select Window->Cascade or Window->Tile.
2. All Windows will now be shown

Problem: When using HART Server for *Wireless*HART the device selection screen doesn't appear

Try the following:

1. Start Windows Explorer.
2. Go to directory "C:\Program Files\ProComSol\Common"
3. Run "RegisterSELECT.bat" as an Administrator

Appendix B

Contact Information for HART Expert Ltd

HART Expert Ltd
125 Greenways,
Gloucester,
Gloucestershire,
GL4 3SA
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