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HPCOM

HART Pocket Communicator

Smallest, lightest, and smartest carry on HART communicator available today.

Description

The HPCOM is a reliable HART hand held configurator for field devices. It simplifies configuration or data analysis in the field. The HPCOM has communication compatibility with all HART field instruments. The HPCOM is used at process control plants for commissioning, diagnosis, data monitoring and configuration changes of HART instruments.

Features

• Hand held configuration and monitoring for HART field instruments at the field or control room.

• HART interface plugged with robust connector.

• Software driver for over 350 existing HART instruments.

• New driver can be developed upon customer specification or DDL source file.

• Lithium Ion rechargeable battery.

• Large memory storage for software .

• Easy to upgrade or add new device driver.

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1. General Overview

General Principles

The HPCOM is composed of three main components plus accessories. These parts consist of the Palm handheld, the HPCOM HART interface hardware, and the HPCOM Palm applications.

The HPCOM is ready to go right out of the box. The Palm has been preinstalled with the HPCOM HART configuration software and is ready to communicate with HART devices. The user needs only to attach the HPCOM HART interface to the Palm, connect the pinch connectors to the HART network and launch the HPCOM application.

Hardware Overview

The HPCOM HART interface is designed to connect to the Palm multi connector located on the bottom of the Palm handheld, allowing communication between the Palm and the HART network.

The included pinch connectors easily connect to any HART network for instant communication. The HPCOM is ideal for plant or factory because of its economic energy consumption and portable design.

Software Overview

The HPCOM software includes 4 preloaded applications: HPCOM, HPCGraph, HPCLogger and HPC301.

HPCOM
The main application of the HPCOM, allows communication, monitoring and configuration of HART devices. The HPCOM software is based upon manufacturer device description files (DDL) and thus allows access to all menus and parameters as designed by the manufacturer.

HPCGraph
This graphing application allows device variables to be trended over time in an easy to view graphical format. Device parameters can be simultaneously graphed in various colors for easy identification.

HPCLogger
This software application allows the logging of device variable values over rate. A wide range of variables can be logged automatically at a user selectable sample time, or manually one by one. These logs can be saved and transferred to a PC for further analysis.

HPC301
The HPC301 software is the predecessor of the HPCOM software. It allows the configuration and monitoring of HART devices but is not DDL derived. This application has been included as an alternative to using the DDL based menu and parameter structures of HPCOM for those whom have grown accustomed to the HPC301 layout for devices such as the Smar line of transmitters.

2. Setup & Installation

Hardware Overview

Fig. 1. - HPCOM Box Contents

Before setting up your HPCOM, please verify that all box

contents are included. The HPCOM box contents can be seen above in Figure 1.

1. Palm PDA - The included Palm is pre loaded with the HPCOM software. The battery of the Palm may require charging. Please read the Palm documentation before using.

2. HPCOM Interface - The HPCOM hardware interface attaches to the bottom of the Palm and connects to the HART network. See the following section on how to correctly use this interface.

3. Product Documentation & Software - Contains the documentation and software. Note: The HPCOM software is already preloaded onto the Palm PDA.

4. Power Supply - Connect it to the Hot sync cable interface to recharge the Palm.

5. Palm USB Hotsync Cable - Connects the Palm to your PC to Hotsync via USB.

Hardware Setup & Usage

Before using the HPCOM fully charge the Palm.

Connecting/Disconnecting the HPCOM Interface:
Insert the HPCOM Interface into the multiconnector of the Palm handheld as shown in Figure 2 below, pushing the HPCOM Interface connector into the multiconnector slot until locked in.

Connect the pinch connectors to the HART line. Communication requires a minimum load of 250 Ohms on the HART line. The Palm is now ready to communicate. Tap the HPCOM icon on the Palm screen to load the software and begin communicating.

To disconnect the HPCOM Interface, pull the interface away from the Palm handheld firmly, avoiding any twisting or sideways force.
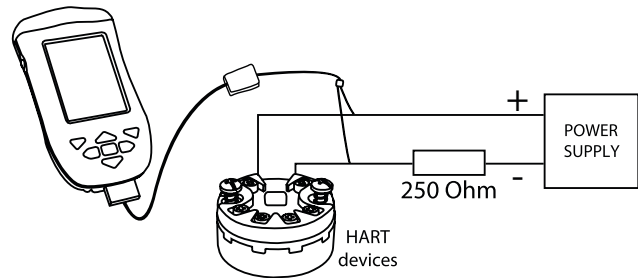

Fig. 2. - Connection to the HART network

Charging the Palm handheld via the HPCOM Interface:
The Palm handheld can be charged with the HPCOM Interface still connected. To charge the Pam with the HPCOM interface connected. The Palm handheld will indicate it is being charged. The HPCOM hardware and software can be used as normal while the Palm is charging.

Note: The HPCOM Interface is powered from the Palm battery and requires no additional power supply to function.

Software Setup & Installation

It is recommended to install the Palm software onto your PC in order to enable Hotsyncing and to backup the files contained on your Palm. This will ensure that the HPCOM along with your Palm settings will be recoverable if your Palm lose its memory. In this case a simple Hotsync will restore these files and settings automatically.

The installation of the Meazura and Palm software can be completed by inserting the Springfield Research Product CD into the CD-ROM drive of your PC and selecting the **"MEZ1000 Setup"**.

Reinstalling the HPCOM software with Hotsync backup from PC:
If you have installed the Palm software onto your PC and completed at least one Hotsync, PC will contain a backup of the HPCOM software and any other Palm data since your last Hotsync. In this case all you must do is connect the Palm to your PC and Hotsync.

Reinstalling the HPCOM software without Hotsync backup from PC:

If you have not installed the Palm software onto your PC and completed at least one hotsync, will need to install both the Palm software and the HPCOM onto your PC. Installation of the Meazura and Palm software can be completed by inserting the Springfield Research Product CD into the CD-ROM drive of your PC and selecting the **"MEZ1000 Setup"** .

A copy of the HPCOM software is contained on the included Springfield Research Product CD. When a complete reinstallation is necessary, this CD can be used to reinstall all the HPCOM applications onto the Palm handheld. Simply insert the CD into the CD-ROM drive of your PC and follow the on screen instructions to install the desired applications. Please note: the Palm software must already be installed on your PC in order to successfully reinstall any HPCOM software.

3. Using the HPCOM Software

Opening the HPCOM

The HPCOM applications, HPCOM, HPCGraph, HPCLogger and HPC301 can be found under the HART category. Select "HART" from the dropdown list located at the upper right corner of the Palm screen. This will display the various HPCOM applications as shown in Figure 3. Opening any of the HPCOM applications is as simple as selecting it on the screen.

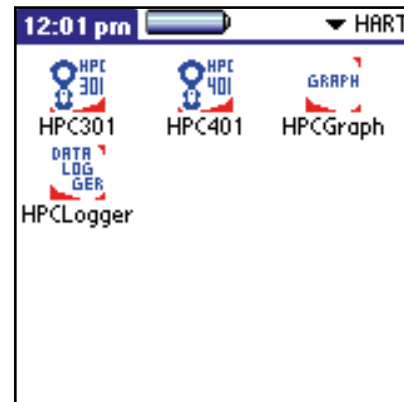The following sections will discuss the general usage of each of these programs.

Fig. 3. - HPCOM

HPCOM

Allows the user to poll for devices on the HART network, communicate with them and configure their various parameters. Based upon Device Description files (DDL). All the menus, variables and methods are supported as defined by the manufacturer DDL.

The HPCOM is already loaded with support for devices from a range of manufacturers. In addition, new device drivers can soon be downloaded from the Springfield Research website and added into HPCOM. For more information on adding or requesting new device drivers, see the device drivers section.

After selecting HPCOM from the HART category of the applications screen, an "About HPCOM" screen will appear. This screen identifies the Version number of the software you are running along with important copyright information. To continue the main application, select "OK", or select "Cancel" to return to the application selection screen.

Registering the HPCOM
The HPCOM comes registered from the factory. Unregistered software will require to fill out the included HPCOM registration form and agree to the terms and conditions of the agreement. This form should be faxed or emailed to Springfield Research Corp. You will receive your registration code shortly via email or fax.

Enter the registration code received at the registration code prompt. A successful code will notify the user and the registration screen will no longer appear at the startup of HPCOM.
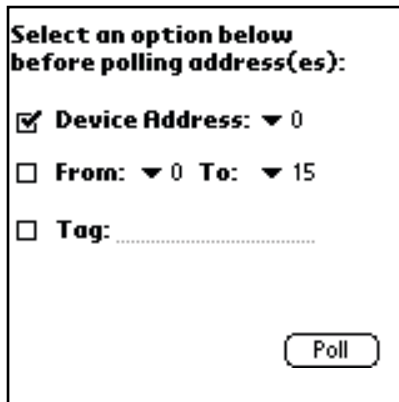

Fig. 4. - Polling Screen

Fig. 5. - Live List Screen

Polling for Devices
The polling screen is automatically opened at the start of HPCOM. As seen in Figure 4, the polling screen allows the user to choose a polling by device address, address range (0-15) or by tag. After HPCOM polls the network, all found devices will be listed. To open a particular device, simply select it from the list.

Polling for a Single Device
To poll for a single online device by address:

1. Select the checkbox next to the "Device Address" option.
2. Choose the address of the device by selecting it from the drop down menu located next to "Device Address".
3. Select the "Poll" button.

Polling for Multiple Devices
To poll for multiple online devices within an address range:

1. Select the checkbox next to the "From/To" option.
2. Choose the start and end search addresses from the corresponding drop down menus located next to the "From" and "To" options respectively.
3. Select the "Poll" button.

Polling by Tag
To poll for an online device by tag:

1. Select the checkbox next to the "Tag" option.
2. Enter the tag of the device you are looking for in the field located next to "Tag".
3. Select the "Poll" button.

Navigating Device Parameters
Once a device is selected, the main menu of the device will be opened.

The main menu of most devices will lead to various submenus, parameters and methods. Menus and Methods are represented by buttons. Selecting a menu button will open the corresponding submenu. Selecting a method button will execute the corresponding action.

Editable fields are available for changing various parameters of the device. Editable variables will include either a text field denoted by a dotted underline or a drop down list denoted by an arrow. Examples of this can be seen in the figure below. These variables can be edited by the user and sent to the device by selecting the "Send" button at the bottom of the screen.

At the bottom of every submenu there is three buttons: "Send", "Back", and "Done". The Send button will send any changes you have made to the editable fields of the current menu to the device. Once the send is complete, the values have been successfully sent to the device. The Back button will return you to the previous menu. The Done button will return you to the main menu of the device.
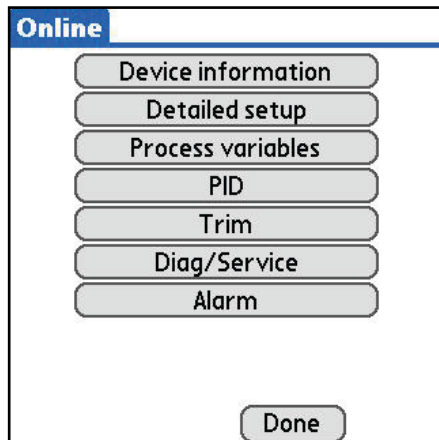
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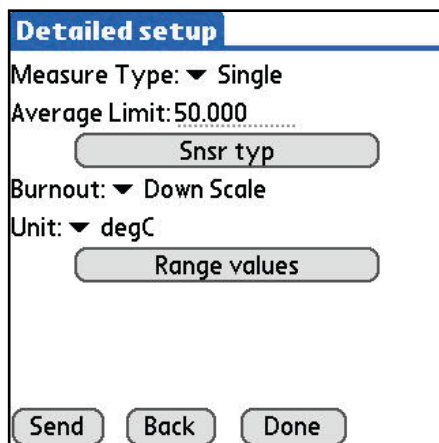*Fig. 6. - Typical Device Main Menu*

Fig. 7. - Various Editable Fields

Device Drivers

The HPCOM software is based on the Device Description Language (DDL). This language was created to offer a standardized method of detailing all the variables, commands and parameters of a specific device as well as to describe the basic menu structure and layout that the end user should see when communicating with a manufacturers device. Device description files are created by the device manufacturer and allow the device parameters and menus to be displayed and structured as the manufacturer intended. The HPCOM software builds on these DDL's to offer compatibility with a range of HART devices directly from your Palm PDA.

HPCOM is preloaded with all supported devices at the time of purchase. The various device parameters, menus

and methods can then be accessed as designed by the manufacturer.

Uninstalled or Unsupported Devices

When an uninstalled or unsupported device is found by HPCOM, the software will display a device driver number. Devices may be requested to be added by sending this device driver number along with your full contact information to sales@springres.com. Devices for which the device driver is not installed may still be accessed in generic mode via the HPC301 software. Check the HPCOM Device Driver Library located at www.springres.com for the most up to date device drivers.

To add a device driver to HPCOM:

1. Download the device driver file "mmddrr.prc" from the www.springres.com HPCOM device driver library (or email) and save it to a location on your computer.

2. Double click the *.prc file to have it added to your Palm Hotsync list.

Note: The Palm desktop software must be installed on the computer.

3. Connect your Palm to your computer to Hotsync.

4. The new device driver is now downloaded to your Palm and available for use in HPCOM.

> The HPCOM Device Driver files follow a naming convention of "mmddrr.prc" where: mm = HART Manufacturer Code
> dd = Device Code rr = Hardware Revision Code

HPCLogger

The HPCLogger application enables the user to log variables over time automatically or manually and store these variables for later trending or processing. The stored logs can be easily transferred to your PC.
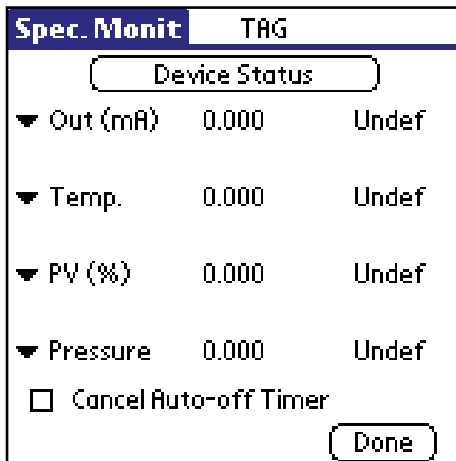
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Fig. 8. - Specific Monitor Screen

NOTE:
Only devices which support command 33 of the HART specification will support custom selection of logging variables. Devices which do not support this command will only log the default variables as described above and will not have access to the Specific Monitor screen.

Starting HPCLogger
To start HPCLogger, follow the steps below:

1. Select the HPCLogger icon from the Palm application menu. This will open the application and bring you to the polling screen.
2. The polling screen is common to all HPCOM applications. Simply select the address, address range or tag of the device(s) you wish to poll for and select "Poll"
3. After execution of the Poll, the list of devices found will be displayed.

Selecting Logged Variables
By default, the device variables that will be logged are the PV (primary device variable), PV%, Out (mA), and SV (secondary device variable). If the device supports command 33 of the HART specification, you alternatively have the option to log different variables.

After you have started HPCLogger and polled for devices (see section 3.3.1) follow these steps to select nondefault variables:

1. Select a device from the Live List.
2. Select the desired 4 variables to log from the 4 drop down menus on the Specific Monitor screen (Figure 8).
3. Select "Done".

Selecting Logged Variables
To start logging:
1. From the Live List screen, enter the desired sample time in minutes (Figure 9) .
The default value is 1.
2. Select the "Start Logging" button to go to the logging screen (Figure 10).
3. From the logging screen you may select to automatically log or manually log the selected variables. Automatic logging will log the variables at the interval entered on the Live List screen, while manual logging requires the user to select each time the variables should be logged.

To automatically log:
4. Select the "Auto Log" button.
5. Select the "Done" button when finished.

To manually log:
4. Select the "Manual Log" button.
5. Select the "Log Now" button repeatedly as desired (Figure 11). 6. Select "Done" when finished.
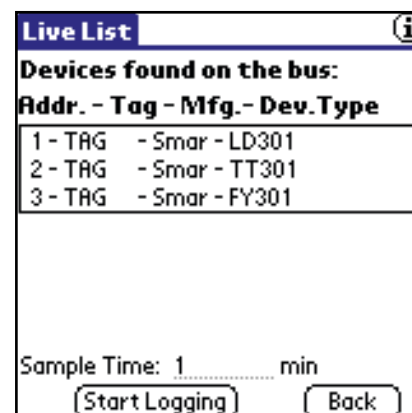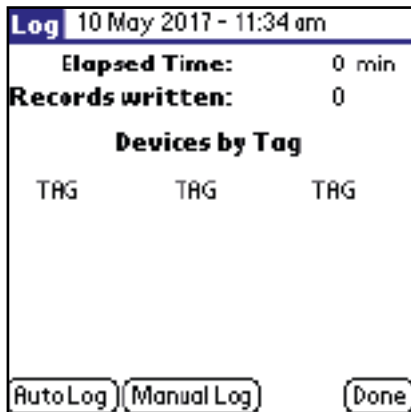

Fig. 9. - Live List Screen

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Fig. 10. - Logging Screen

Fig. 11. - Manual Logging

Transferring Logs to a PC
To transfer logs to a PC, follow these steps:

1. Install the Springfield Conduit software into your PC with the Palm Desktop software.
The Conduit software can be downloaded the product CD from www.springres.com.
2. Execute a Hotsync between your Palm and your PC.
3. The newly created data files will be located in the <palm folder>\<user name>\Datalogger directory of the PC.The naming convention for these log files are dMMDDXXXXXX.txt where: MM is the devices manufacturer code in hexadecimal format (for example, 3e for Smar)
DD is the devices type code in hexadecimal format (for example, 01 for the LD301)
XXXXXX is the devices serial number in hexadecimal format.
4. Open the text file

HPCGraph

The HPCGraph application allows the graphical trending of up to 4 variables simultaneously from any HART device. Graphs can be customized and saved for offline viewing.

Starting HPCGraph
To start HPCGraph, follow the steps below:

1. Select the HPCGraph icon from the Palm application menu.
2. The polling screen is common to all HPCOM applications. Select the address, address range or tag of the device's) you wish to poll and select "Poll".
3. After execution of the Poll, the list of devices found on the bus will be displayed.

Selecting Variables to Graph
The default variables that will be graphed are the Current, PV (primary variable), SV (secondary variable), and TV (tertiary variable). If the device supports command 33 of the HART specification, the option to alternatively log different variables is available

After you have started HPCLogger and polled for devices follow these steps to select which variables will be graphed:

1. Select a device from the Live List.
2. Select the check boxes next to the variables you wish to graph. The color underneath each check box corresponds to the line color of the graph (Figure 12). If the device supports command 33 of the HART specification, variables other than the default may be graphed by selecting the "Spec Monit" button. From the specific monitor screen, 4 variables may be selected from the 4 drop down lists. Check the boxes for the variables you wish to graph (Figure 13).
3. Select the "Graph" button when are selected thevariables.

NOTE:

Only devices which support command 33 of the HART specification will support custom selection of graphing variables. Devices which do not support this command will only log the default variables as described above and will not have access to the Specific Monitor screen.
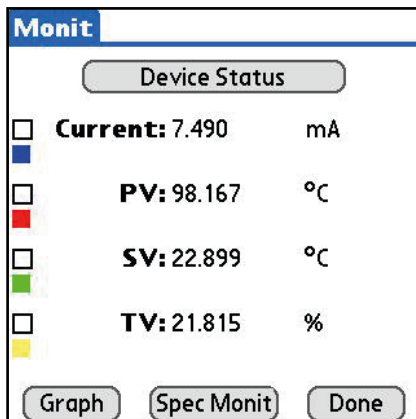

Fig. 12. - Variable Selection

NOTE:
At any time during the variable selection, the "Device Status" button may be selected to view the current device status information.
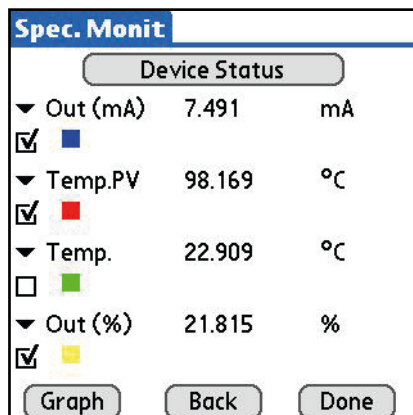

Fig. 13. - Specific Monitor

Using Graphs

Once the graphing variables have been chosen and the "Graph" button has been selected, the graphing will proceed. An example of the graphing screen can be seen in Figure 14 along with descriptions of its various fields.
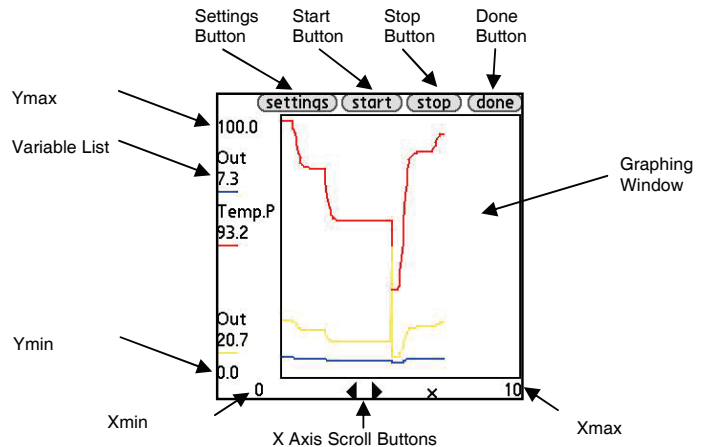

Fig. 14. - Graphing Screen

Variable List - Located on the left side column, the variable list provides information for each of the 4 graphed variables. The variable name, current value and line color is shown for each variable. Graph Window - This is the area where the 4 variables will be graphed. Each color corresponds to the appropriate variable in the Variable List.

Ymax,Ymin,Xmax,Xmin - The X & Y scale for the Graph Window is based upon the minimum and maximum values as shown by Ymax, Ymin, Xmax and Xmin respectively. To change the scale of the graph, select the "Settings" button.

Settings Button - This button opens the setting screen where the scale of the graph can be changed (Figure 15).The values for the vertical scale (Ymax,Ymin) and the horizontal scale (Xmax, Xmin) can be edited by entering a new value into the corresponding fields. Once select "Done" to return to the graph screen. The graph will reflect the scale that was entered.

Start Button - This button will start the graphing of the selected variables. Stop Button - This button will stop the graphing of the selected variables.

Done Button - To stop the graphing and exit the graphing screen, select this button. The graphed data will automatically be saved to the palm.

X Axis Scroll Buttons - These two arrow shaped buttons will scroll the X axis in the corresponding direction. This is useful for graphs a large amount of trending data.
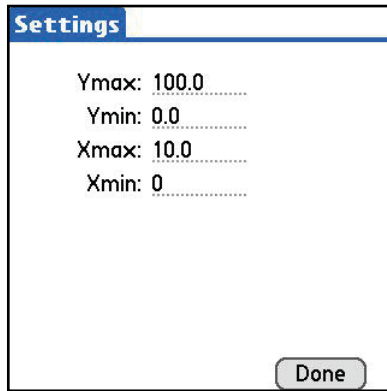

Fig. 15. - Settings Screen

Offline Graphing

The graphing data is automatically stored to the Palm for review.

"Offline" graphs can be accessed from the polling screen. Follow these steps to open and view an offline graph:

1. From the main polling screen of HPCGraph, select the "Offline Graphics" button.

2. A list of all currently available offline graphs will be displayed (Figure 16). Select a file and it will be loaded (Figure 17). The offline graph files follow the following naming convention: dMMDDXXXXXXgf where:

MM is the devices manufacturer code in hexadecimal format (for example, 3e for Smar)

DD is the devices type code in hexadecimal format (for example, 01 for the LD301)

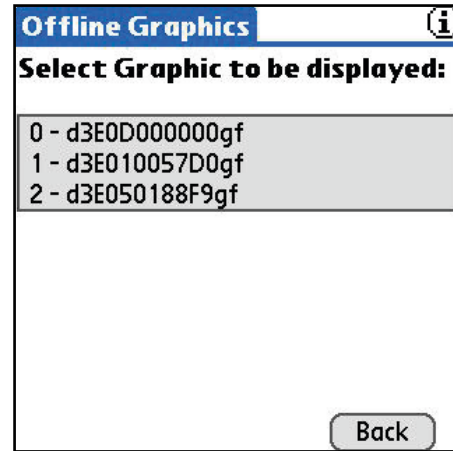XXXXXX is the devices serial number in hexadecimal format.

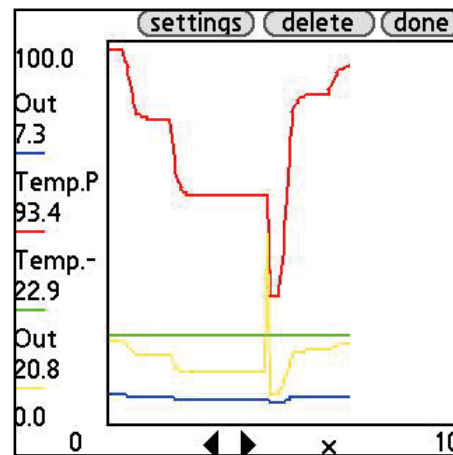*Fig. 16. - Offline Graphics File Selection*

Fig. 17. - Offline Graphics

HPC301

The HPC301 software can be used to access devices in generic mode which do not currently have a loaded Device Driver in HPCOM. The usage of HPC301 is similar to HPCOM. Simply poll for devices from the polling screen and navigate the device parameters. HPC301 can access any HART device in generic mode as well as fully support a collection of specific HART devices including the full line of Smar HART devices. For more information on the operation of the HPC301, contact Springfield Research Corp.

4. Troubleshooting

Problem	Possible Cause	Possible Solution
No Communication or Intermittent Communication	Excessive noise or ripple. Low level signal.	Place the HPCOM Interface leads across the resistor and check if communication is working. Verify fieldwiring shield is grounded at one end only. Normally, the shield is grounded at the power supply side only.
	Excessive noise or ripple. Low level signal.	Add an additional 250-ohm resistor in series to the current loop.
	Interface is not connected.	Refer to the Hardware Setup & Usage section of this manual.
	Field device is not powered or polarity is reversed or insufficient loop current and voltage at the field device terminal.	Verify power supply and field device.
	The Palm battery has been discharged past the normal range.	Recharge the Palm battery.
	More than one device using the same address.	Poll for device by TAG name rather than address. Disconnect one device, change the connected device address and reconnect the first device.
	Field device configured in multidrop mode. It is using an address other than zero.	Execute polling address operation scanning from address 1 to 15.
Palm no longer contains HPCOM software	Palm lost internal memory and reset. Battery fully drained.	If you have Hotsynced with your PC, Hotsync to restore the HPCOM software. If you have never Hotsynced your Palm, use the included Product CD to reinstall by selecting the "MEZ100 Setup".

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