

1.0 Introduction

The *TransPort® PT878* portable ultrasonic flowmeter allows the user to update firmware, communicate with a PC running the *GE PanaView™* graphical user interface software and transfer files via a built-in *USB Interface*. This guide provides instructions for performing these actions.

The PT878 USB design uses an *RS232 to USB converter*, which converts the USB data to standard serial port data. The RS232 communications protocol is used, which allows the meter to operate with both the GE PanaView graphical user interface software as well as commercially available terminal emulation programs such as *HyperTerminal* (see *Section 4.0 on page 6*). The PT878 communications parameters, such as *baud rate* (300 to 38400 baud), can be set via the PT878 keypad.



Important: *All PC and PT878 communications parameters must match for successful data transfer.*

The PT878 always ships with the latest *firmware version* installed. However, as new firmware versions become available, your PT878 firmware is easily updated via its USB interface (see *Section 6.0 on page 16*).

The *USB connector* installed in the PT878 is **IP67** rated and is *leak-resistant*, even if the instrument is exposed to water for a short period of time.



Caution! Be sure to use caution when connecting a *USB cable* to the PT878, if the meter's USB connector has been exposed to water.

The following topics are covered in this document:

- Section 1.0 Introduction page 1
- Section 2.0 USB Setup page 2
- Section 3.0 PanaView Setup page 4
- Section 4.0 Terminal Emulation Program page 6
- Section 5.0 Transfer Files Between the PT878 and a PC page 6
- Section 6.0 Firmware Update page 16



2.0 USB Setup

The initial step for communicating with the PT878 through its USB interface is to make sure that the PC operating system recognizes the USB device in the PT878. This is done by connecting the PT878 to the PC with a USB cable and verifying that the PC operating system loads the correct drivers for the PT878 USB interface device.

2.1 USB Cable

The recommended *USB cable* for use between the PT878 and a PC is a *USB A male to mini USB B male* cable, such as GE p/n 238-407-LF or equivalent.

2.2 USB Drivers

To set up the USB drivers in Microsoft Windows®, complete the following steps:

1. Power on PT878.
2. Plug the mini B USB male connector into the PT878 USB port.
3. Plug the USB A male connector into any USB port on the PC.
4. Verify that Windows automatically loads the driver for the FTDI chip in the PT878.

Note: *Windows may take a few minutes to update the driver. Please wait for Windows to complete the update and to verify completion of the driver installation*

5. Open the **Control Panel>>Device Manager** window and then select **Ports** (see *Figure 1* below). Verify that the PT878 USB port is installed.

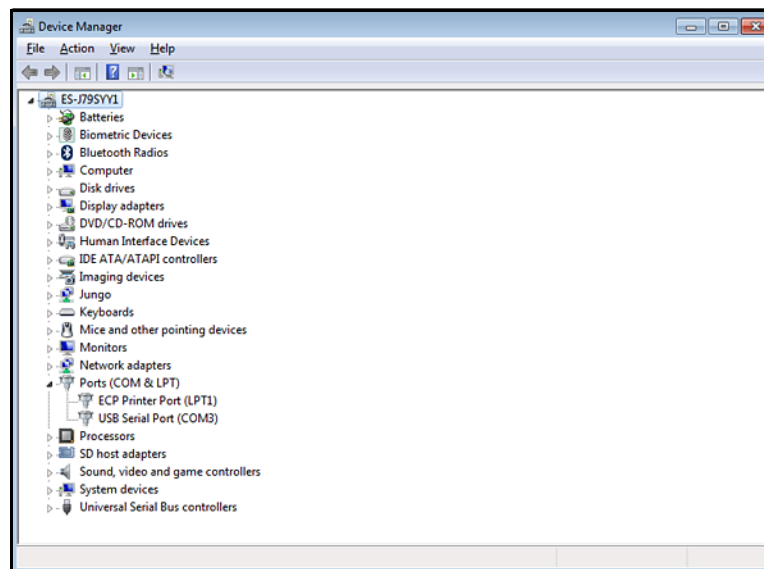


Figure 1: Device Manager Window

Note: *If the USB port is not automatically installed, the driver may be installed manually from the FTDI website. Install Virtual Comm Port (VCP) drivers for the FT230XS UART from <http://www.ftdichip.com>. If the driver does not load properly on Windows 7, refer to FTDI Application Note AN_119.*

Note: *For operation with the GE PanaView software, set the Com Port between COM1 and COM 15.*

2.2 USB Drivers (cont.)

6. Open the USB serial port settings window (see *Figure 2* below) and match those listed in the **PT878\Meter\Communications** window at the **PT878 User Interface**. Note that the COM port settings may vary with the PC configuration.

Note: *For operation with the GE PanaView software, set the Com Port between COM1 and COM 15.*

The USB driver setup is now complete.

Note: *The USB driver should recognize the flowmeter each time the PT878 is reconnected to the PC, but the COM port number may change depending on the PC configuration.*

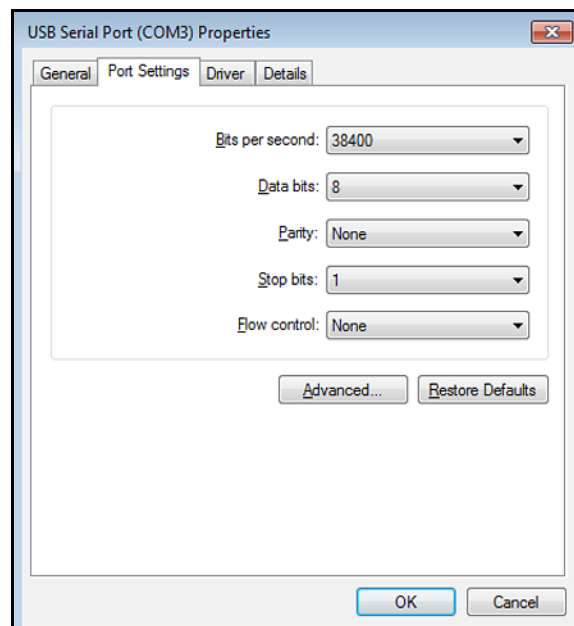


Figure 2: USB Serial Port Properties

3.0 PanaView Setup

The PanaView setup procedure for PT878 USB communications is the same as for any other Comm port setup. All functionality available when using PanaView with the PT878 via infrared communications is also available with USB communications. This includes programming, data logging, graphing and signals display.

To set up USB communications in PanaView, complete the following steps:

1. Launch PanaView and select *File\New Meter Browser*.
2. Expand the network and right click on the *Computer* icon, which is located just below the *Network* icon in the *Explorer* window.
3. Select *New Communications Port* to open a window similar to *Figure 3* below.

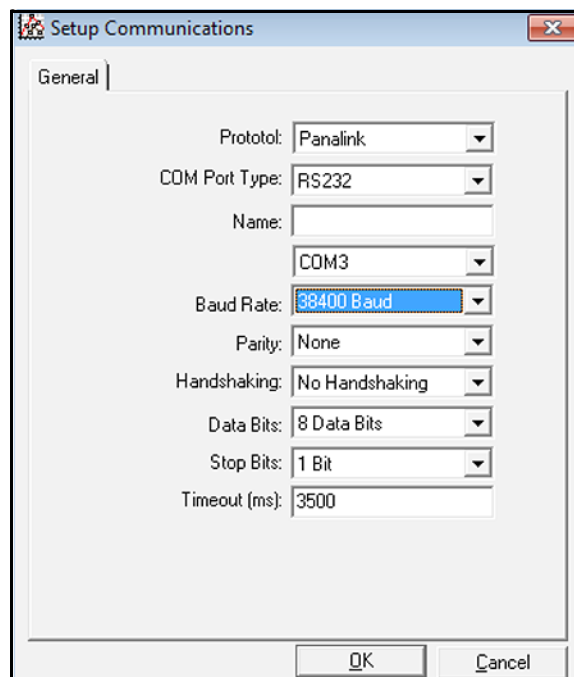


Figure 3: Setup Communications

4. Program each *Com Port parameter* to match the corresponding PT878 parameters. The *Protocol* and *Com Port Type* should remain as *Panalink* and *RS232*, respectively. Make sure the *Com port number* matches the PT878 USB Com port, as discussed in “*USB Setup*” on page 2.

3.0 PanaView Setup (cont.)

- Right click on *Com Port* icon and select *New Meter*. On first screen of the *Add New Meter* wizard select “*I don't know the node ID of the meter I am adding to the network*” and click **OK**. On the second screen select “*It is the only meter connected to the communications port*” and **OK**. If the meter is found, a screen similar to *Figure 4* below will open. Click **OK**.

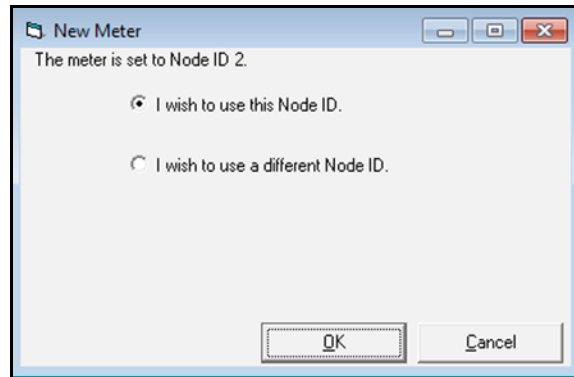


Figure 4: The New Meter Node ID

- Enter the *Name* and *Serial Number* and click **OK** on the next screen (see *Figure 5* below) to add the PT878 as a new meter. PanaView will automatically upload the required system parameters into its database. The PanaView setup is now complete.

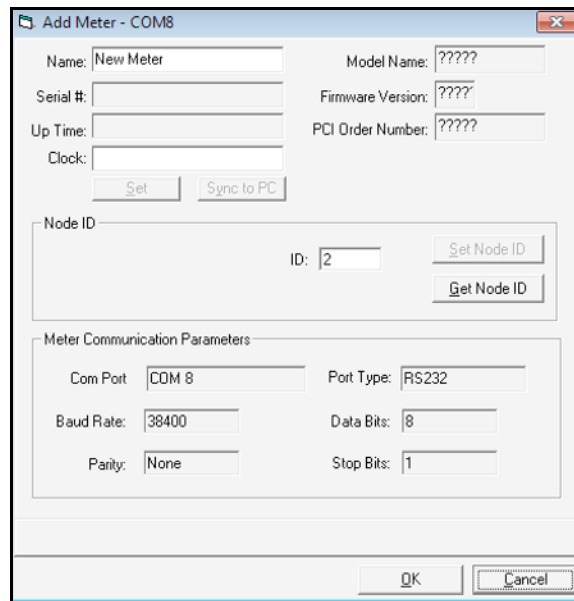


Figure 5: Add Meter Name and Serial Number

4.0 Terminal Emulation Program

There are several *terminal emulation programs* available which allow a PC to communicate directly with the PT878, providing a suitable alternative when PanaView is unavailable. The steps required to setup the terminal emulation program are included in detail for each data transfer section in this document.

Examples of commonly used terminal emulation programs are listed below.

4.1 HyperTerminal

The two files needed for this program are **hypertrm.dll** and **hypertrm.exe**. Simply copy those files into any directory on your Microsoft Windows® 7 or Windows® 8 PC and the terminal emulation program will work.

4.2 HyperTerminal Private Edition

HyperTerminal Private Edition is a commercial terminal emulation program that you can use to communicate with serial COM ports, dial-up modems, and TCP/IP networks.

4.3 TeraTerm

TeraTerm is an open-source terminal emulator and SSH module that supports IPv6, SSH1, SSH2, Telnet, serial ports, and common file transfer protocols (XModem, Kermit, ZMODEM, B-PLUS, etc).

4.4 Putty

Putty is a free Telnet and SSH implementation for Microsoft Windows®. It also is an xterm terminal emulator.

5.0 Transfer Files Between the PT878 and a PC

5.1 Log Files

Log files contain diagnostic and measurement data as programmed by the user. The log file is typically programmed in the PT878 *log manager*, but it can also be programmed using *PanaView*.

Log files are only required to be transferred from the PT878 to a PC. This can be accomplished via either PanaView or HyperTerminal, as text or as binary data.

5.1.1 Transfer Log Files Using PanaView

To transfer a log file from the PT878 to a PC using *PanaView*, complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. View the available logs from the PT878 in the *Meter Logs* section of the *PanaView Explorer* window. For example, see **LOG01.log** in *Figure 6* below

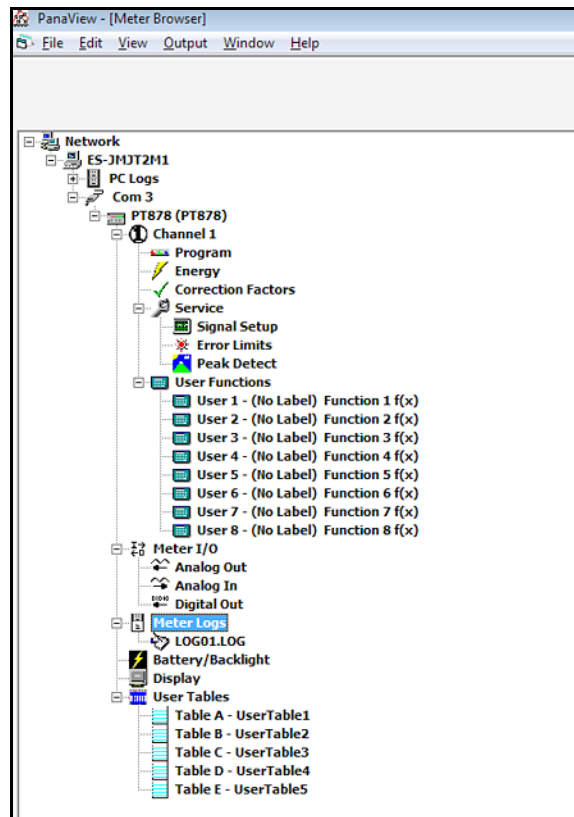


Figure 6: PanaView (Meter Browser)

3. Double click the log file and the data will be pulled into PanaView, where it can be accessed in the *Meter Log* screen. The data can then be displayed as a *Graph* and saved as a *PC log file*. If desired, the PC log file can also be exported as a **CSV** file so it can be opened with Microsoft Excel®.
 - a To *graph* the data, click the *Graph* icon at the bottom of the *Meter Log* screen.
 - b To *export* the data as a **CSV** file, go to the *File* menu on the *Meter Log* screen and select *Export*. Then, browse to the selected file location and type in the desired filename. The saved Log.txt file can now be opened in Microsoft Excel®.

5.1.2 Transfer Log Files as Text using HyperTerminal

To transfer a log file as *text* from the PT878 to a PC using *HyperTerminal*, complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. Start *HyperTerminal* and set up the communication link to match the Com port and RS232 settings of the PT878 (see *Figure 7* below).

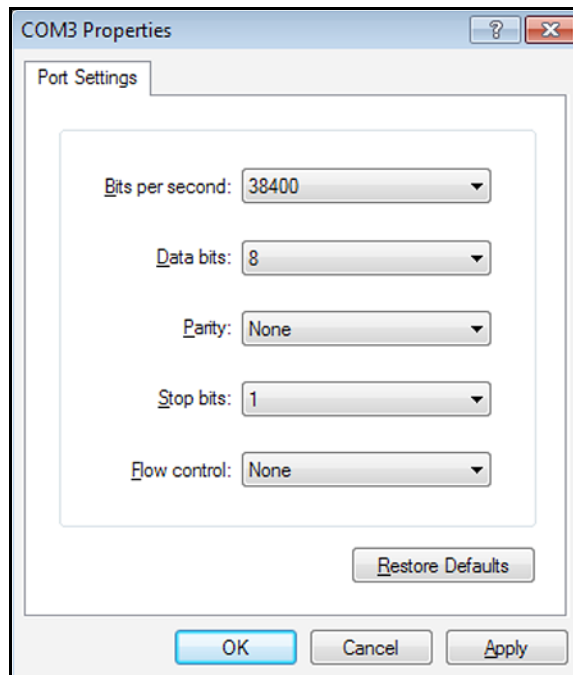


Figure 7: COM Properties

3. From the PT878 select Logging\Log manager and select the Log file you want to send to the PC.
4. From Log manager select File\Transfer as Text. This should print out the Log file as text to HyperTerminal.
5. To save the log file as text, from HyperTerminal proceed as follows:
 - a Select the *Transfer\Capture Text* option.
 - b Select the location and filename of the log file. Then, click **Start**.
 - c Transfer the log file as text from the PT878 and then select the *Transfer\Capture Text\End* option from HyperTerminal.

The log file transfer as text is now complete.

5.1.3 Transfer Log Files as Binary Data Using HyperTerminal

To transfer a log file as *binary data* from the PT878 to a PC using *HyperTerminal*, complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. Start *HyperTerminal* and set up the communication link to match the Com port and RS232 settings of the PT878 (see *Figure 8* below).

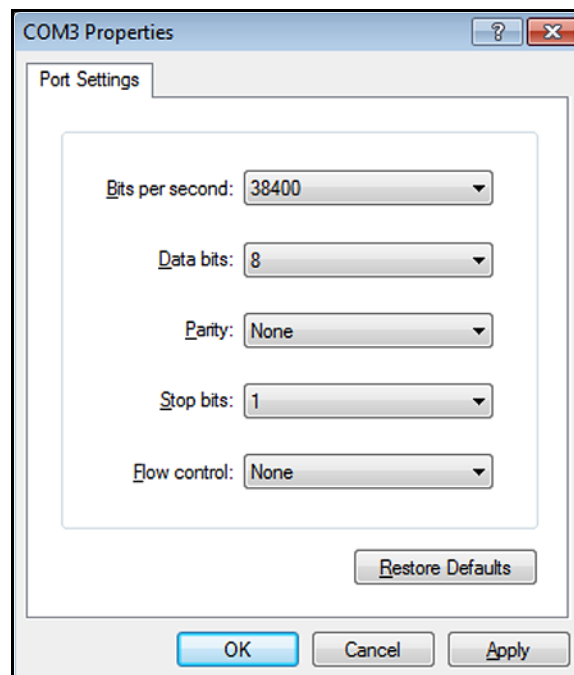


Figure 8: COM Properties

3. From the PT878 select Logging\Log manager and select the Log file you want to send to the PC.
4. From Log manager select File\Transfer as Text. This should print out the Log file as text to HyperTerminal.
5. To save the log file as binary data, from HyperTerminal proceed as follows:
 - a Select the *Transfer\Receive File* option.
 - b Select the location of the log file and select *XModem* as the receiving protocol.
 - c Click *Receive* and enter the desired filename, using a **.log** extension.
6. From the PT878 *Site Manager* select the *File\Transfer* option. This will allow the PT878 to send the log file to the PC using the secure XModem protocol. File transfer is complete when the XModem *Receive* dialog box closes.

Note: *The file is transferred in GE Panametrics format and it must be opened using the GE PanalogViewer software.*

5.2 Site Files

Site files contain configuration parameters for the PT878. These parameters can be changed one at a time and saved in the meter's memory via either PanaView or the PT878 keypad. Site files can be transferred as text to the PC and transferred as files between the PC and the PT878 meter.

5.2.1 Transfer a Site File as Text using HyperTerminal

To transfer a PT878 site file to a PC as text using HyperTerminal, complete the following steps:

1. Connect the PT878 USB port to any USB port on the PC.
2. Start **HyperTerminal** and set up the communication link to match the PT878 Com port settings (see *Figure 9* below).

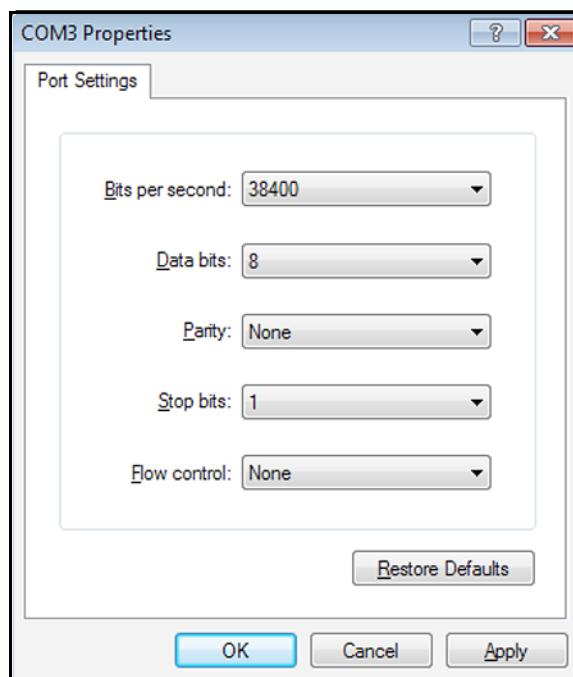


Figure 9: COM Properties

3. From the PT878 select *Site\Site manager* and select the site file you want to transfer to the PC
4. From *Site manager*, select *Site\Transfer as Text*. This will send the site file to HyperTerminal as text.

To save the site file as text in HyperTerminal, complete the following steps:

1. Select the *Transfer\Capture Text* option.
2. Select the desired location for the file and enter the desired filename, using a **.txt** extension. Then, click **Start**.
3. Transfer the site file as text from the PT878 and then select the *Transfer\Capture Text\End* option in HyperTerminal. The site file transfer is now complete.

5.2.2 Transfer a Site File as a File from the PT878 to a PC

Note: *This process transfers a site file in binary form, which is the standard format for storage in the PT878 memory and for use with the Panaview software. The binary file cannot be opened with simple text editor.*

To transfer a PT878 site file to a PC as a file, complete the following steps:

1. Connect the PT878 USB port to any USB port on the PC.
2. Start HyperTerminal and set up the communication link (see *Figure 10* below) to match the PT878 Com port settings.

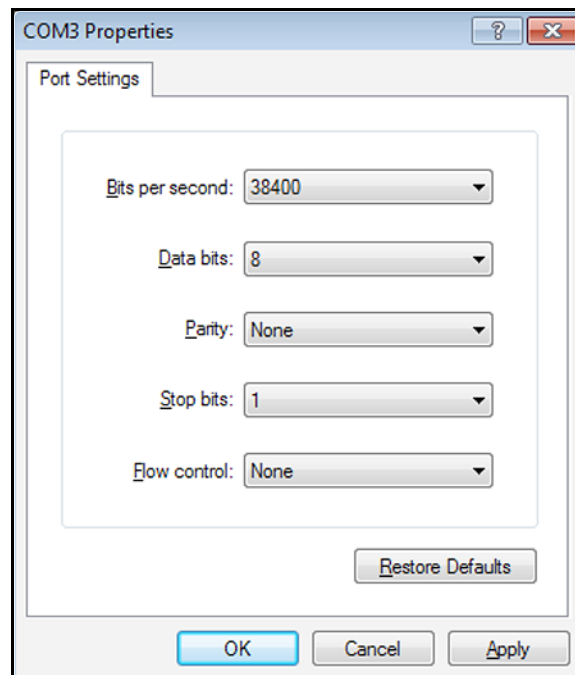


Figure 10: COM Properties

3. From the PT878 select *Site\Site Manager* and then select the site file you want to transfer to the PC.

To save the site file as a file using HyperTerminal, complete the following steps:

1. Select the *Transfer\Receive File* option.
2. Select the desired location for the file and select the XModem receiving protocol.
3. Click the *Receive* option and enter the desired *Filename*, using a **.sit** extension.
4. From the PT878 *Site Manager*, select the *Site\Transfer* option. This will send the PT878 site file to a PC using the secure XModem protocol. The file transfer is complete when the XModem *Receive* dialog box closes.

5.2.3 Transfer a Site File as a File from a PC to the PT878

Note: *This process transfers a site file in binary form, which is the standard format for storage in the PT878 memory. A text file, as described in Section 5.2.1 on page 10, cannot be transferred back into the PT878. You must use the binary format described in Section 5.2.2 on page 11.*

To transfer a site file from a PC to the PT878 as a file, complete the following steps:

1. Connect the PT878 USB port to any USB port on the PC.
2. Start **HyperTerminal** and set up the communication link (see *Figure 11* below) to match the PT878 Com port settings.

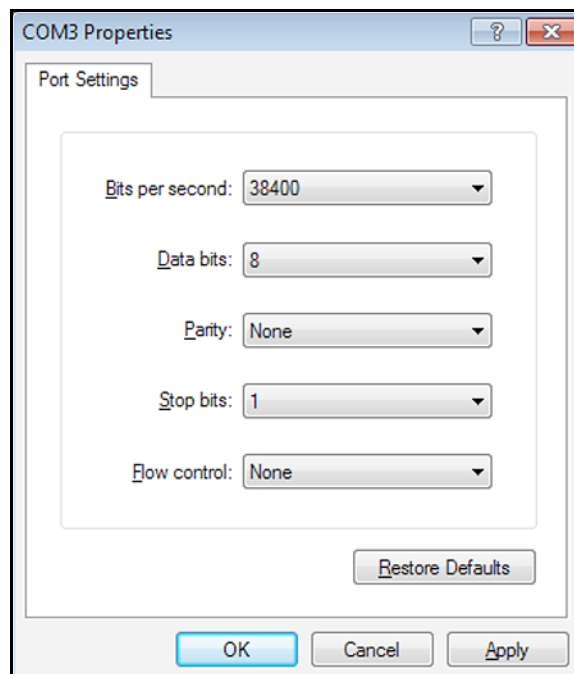


Figure 11: COM Properties

3. From the PT878 select *Site\Site Manager* and then select *Site\Transfer* from the PC. Type in the name of the site file, using a *.sit* extension, and click **OK**.

From HyperTerminal, complete the following steps:

1. Select the *Transfer\Send File* option.
2. Select the desired location for the file and select the XModem protocol.
3. Click **Send**. The file transfer is complete when the XModem *Receive* dialog box closes. The file is now listed in the PT878 *Site Manager*.

5.3 Reports

Reports are found in the PT878 *Service\Reports* menu. The reports are used in troubleshooting as well as for data backup, and they may be transferred from the PT878 to a PC using *HyperTerminal*. Reports include:

- Drive contents
- Current site data
- Global settings
- User functions
- User tables
- Menu commands

To transfer a report as *text* from the PT878 to a PC using *HyperTerminal*, complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. Start *HyperTerminal* and set up the communication link to match the Com port and RS232 settings of the PT878 (see *Figure 12* below).

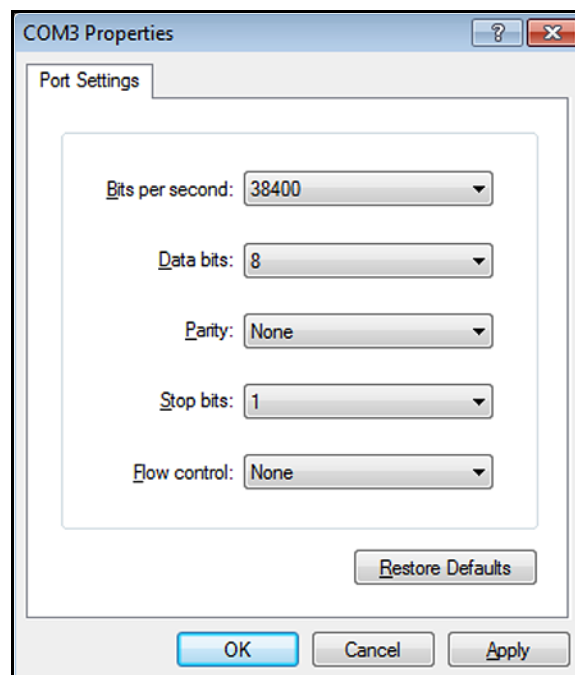


Figure 12: COM Properties

3. From the PT878 select the *Service\Reports* option. Then, choose the *Report file* you want to send to the PC and select *Transfer*.
4. To save the *Report* as text, from *HyperTerminal* proceed as follows:
 - a. Select the *Transfer\Capture Text* option.
 - b. Select the desired location and filename for the *Report file*. Then, click **Start**.
 - c. Select *Transfer Report* from the PT878 and then select *Transfer\Capture Text\End* from *HyperTerminal*. The Report transfer is now complete

5.4 Wave Snapshot

The *Wave Snapshot* function creates data files in the PT878 that correspond to raw and correlated data. This data is useful to review meter performance in certain applications. Wavesnapshot is generated at the PT878 UI by pressing the *Service\Test\Wavesnapshot* option. The filename is typically WAVExx.met, where xx is a sequential number.

To transfer a Wave Snapshot file from the PT878 to a PC using *HyperTerminal*, complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. Start *HyperTerminal* and set up the communication link to match the Com port and RS232 settings of the PT878 (see *Figure 13* below).

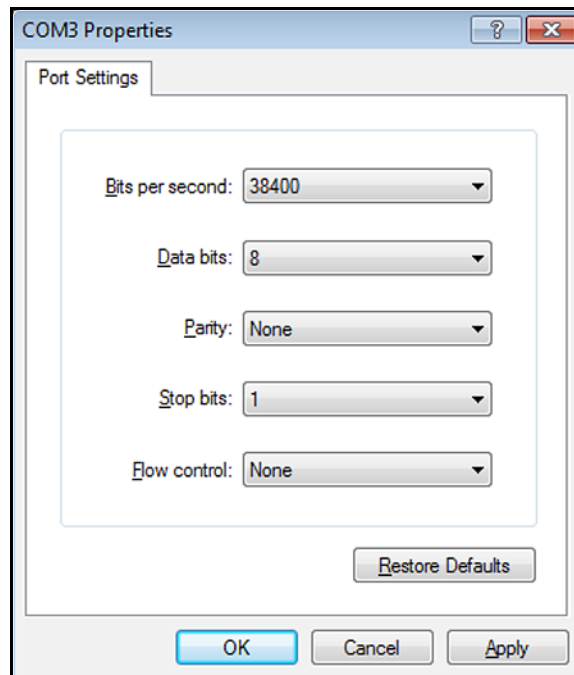


Figure 13: COM Properties

3. From the PT878 select the *Site\Drive Manager* option and then select the *WAVExx.met* file you want to send to the PC.
4. To send the *Wave Snapshot* file, from *HyperTerminal* proceed as follows:
 - a. Select the *Transfer\Receive File* option.
 - b. Select the desired location for the file and select the *XModem* receiving protocol.
 - c. Click *Receive* and enter the desired filename, using the **.met** extension.
5. From the PT878 *Site Manager* select the *File\Transfer* option. This allows the PT878 to send the file to the PC using the secure XModem protocol. File transfer is complete when the XModem *Receive* dialog box closes.

Note: *The file is transferred in GE Panametrics format and it must be opened using the DOS ConvertWave.exe program provided by GE.*

5.5 Screen Snapshot

The *Snapshot* function enables you to take a screen capture of the current PT878 display screen in bitmap format (.bmp). The resulting file may then be transferred to a PC running the Microsoft Windows® operating system.

To take a “*snapshot*” of the screen, complete the following steps:

1. From the *Meter* menu, scroll to the *Snapshot* option and press [ENTER]. A camera icon appears at the far right of the status tray, indicating that you have activated the *Snapshot* option.
2. Another menu opens with the options *Off* and *To File*. Scroll to the desired option and press [ENTER].
3. To capture a screen, press the [.] (**decimal**) button in the lower left corner of the keypad twice. The PT878 provides a message during the “*Screen Dump*” to indicate the progress of the screen capture.

To transfer a *Screen Snapshot* file from the PT878 to a PC, use *HyperTerminal* to complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. Start *HyperTerminal* and set up the communication link to match the Com port and RS232 settings of the PT878 (see *Figure 14* below).

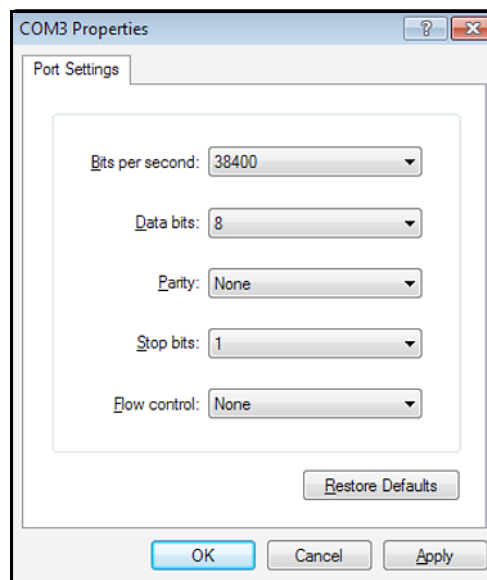


Figure 14: COM Properties

3. From the PT878, select the *Site\Drive Manager* option and then select the *SCRNXX.bmp* file you want to send to the PC.
4. To send the *Screen Snapshot* file, from *HyperTerminal* proceed as follows:
 - a Select the *Transfer\Receive File* option.
 - b Select the desired location for the file and select the *XModem* receiving protocol.
 - c Click *Receive* and enter the desired filename, using the .bmp extension.
5. From the PT878 *Site Manager* select the *File\Transfer* option. This allows the PT878 to send the file to the PC using the secure *XModem* protocol. File transfer is complete when the *XModem Receive* dialog box closes.

6.0 Firmware Update

The PT878 firmware update process uses a terminal emulation program, as described in *Section 4.0 on page 6*.

To update the PT878 firmware using its USB interface, complete the following steps:

1. Connect the PT878 to the PC, as discussed in *Section 3.0 on page 4*.
2. Start *HyperTerminal* and set up the communication link to match the Com port and RS232 settings of the PT878 (see *Figure 15* below).

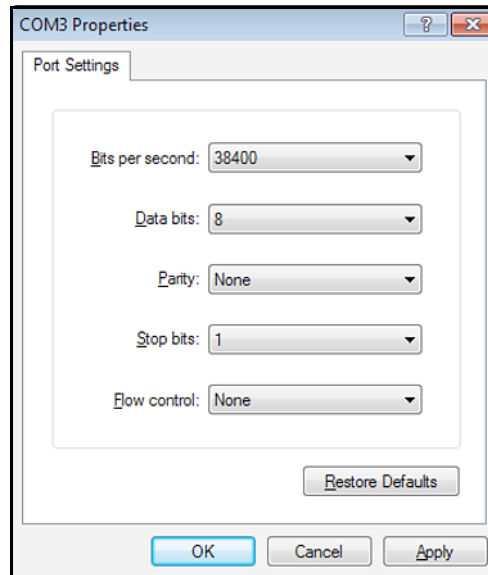


Figure 15: COM Properties

3. Power up the *PT878* and press "0". Then, press **Yes** to "reload Flash".
4. In *HyperTerminal*, select the *Transfer\Send File* option and select the *XModem* protocol. Browse for the desired firmware file and select **Send** (see *Figure 16* below).

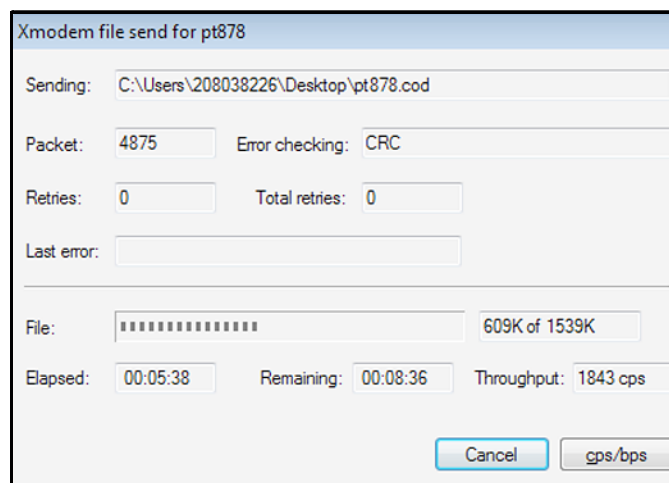


Figure 16: PT878 XModem File Send

5. After the firmware upload is complete, the PT878 will automatically reboot and perform a CRC check.