## Programming Transducer, Pipe and Fluid Parameters

Before the PT878 can begin taking measurements the user needs to enter the transducer, pipe and fluid parameters by following these steps:

1. Press the [MENU] key and scroll across to the Program Menu tab using the arrow keys. Press [ENTER] to enter the menu, and then [ENTER] again to enter the Transducer Menu (see pic below).
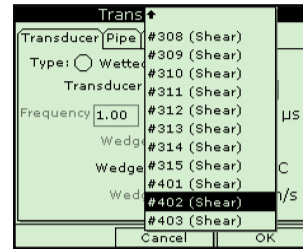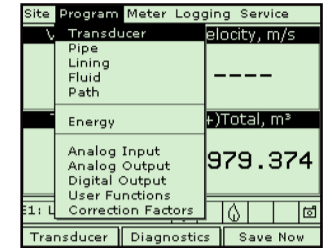
2. Work through the transducer options selecting the appropriate options from the drop down menus, or manually type in the correct selection (if a box is greyed out you do not need to enter a selection for this parameter). *Wedge temperature is typically half way between the pipe and air temperatures.*
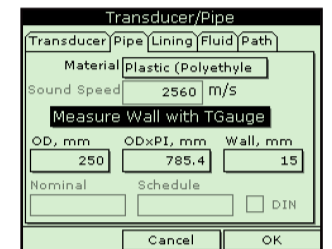
3. Once you have completed the transducer tab, scroll to the top of the page and press the right arrow to highlight the Pipe Menu tab. Press [ENTER] to open the Pipe Menu. Work through the options as in step 2.
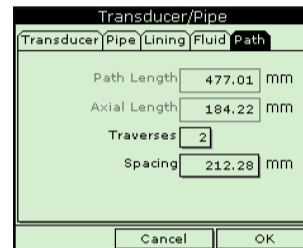
4. Repeat step 3 on the three remaining tabs, Fluid, Lining and Path (*two traverses are typical for ease of installation and accuracy - More information in section 2*)

5. Once complete press [F3] to confirm your choices and return to the main screen.
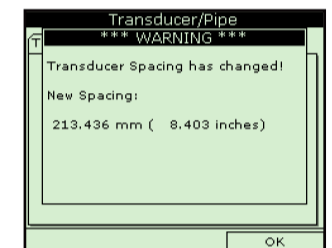
6. The meter should display the following warning message: "WARNING: TRANSDUCER SPACING HAS CHANGED". This is the space by which you will need to set the liquid transducers apart.

Useful Tips and Hints

- Cable ends are protected by a metal sheath. To remove from the PT878 - pull the sheath back.
- The [ENTER] key allows you to enter and confirm a parameter, enter a menu and enter a drop down menu.
- The red end of the cable needs to be placed on the upstream transducer and the blue end on the downstream transducer.

Liquid Transducer Installation

The first step of transducer installation is to choose how many traverses you need to use to suit the application.

- Typically for all pipe diameters between heen 1 – 20" you should first try the 2 traverse method (transducers mounted on the same side of the pipe). This method is easiest to set up and gives the greatest accuracy.

- You may need to try a single traverse method (transducers are mounted diagonally from each other) if the inside of the pipe has a poor inside surface or the fluid is highly attenuating, as you may not be able to achieve a reliable signal. If the pipe diameters are greater than 20" you may need to use the single traverse method.

Preperation of the Pipe

- The location for the transducers should have at least 10 diameters of straight pipe upstream and 5 diameters downstream of the measurement point.

- The pipe needs to be clean and free of debris. Remove any paint or superficial corrosion, preferably back to bare metal / plastic.

Mounting Small Pipe Transducers

The small pipe transducers are mounted on a rail. The two transducers should be set with distance 'S' between them (the spacing obtained when the parameters have been programmed into the meter - see the diagram below) using the ruler they are mounted to. A small amount of couplant should be placed on each transducer. The rail now needs to be mounted on the side of the pipe with the upstream and downstream transducers in the right directions. The velcro straps should be wrapped around the pipe and fastened ensuring you do not dislodge the couplant. The cable ends should now be plugged into the PT878 in the appropriate ports.

Single Traverse Installations

For single traverse installations, refer to the liquid transducer guide.

Using the UCF for a Double Traverse Installation

For double traverse installations use the universal clamping fixture with the two narrow blocks. The ruler attached to one of the blocks will help to set the transducer spacing. The blocks will be used to hold the transducers in place when the UCF is chained to the pipe.

1) Once you have obtained the transducer spacing (S) from programming the parameters, use the ruler to set the blocks with distance S between them. You should use the edge of the block or the pressure bolts as a reference point (See picture below).
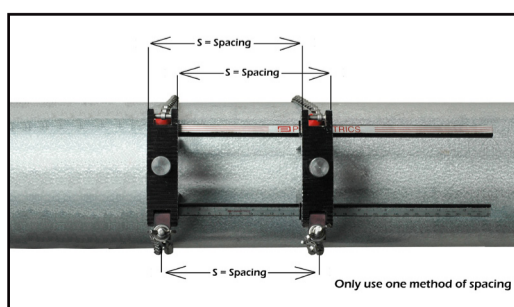
2) The UCF needs to be positioned on the horizontal plane of the pipe, making sure the chains on the blocks are on the same side of the pipe and opposite the ruler. (See picture below)
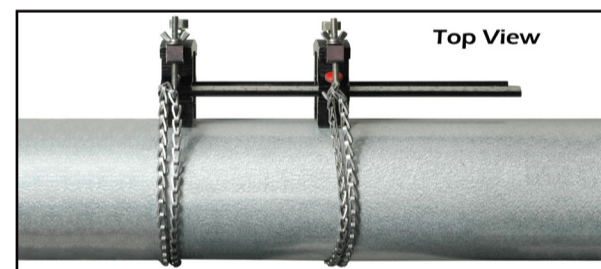

3) Wrap the chains around the pipe, then fasten with the J screw hook on the block. Tighten the chain using the screw hook untill the clamping fixtures are attached snugly to the side of the pipe.
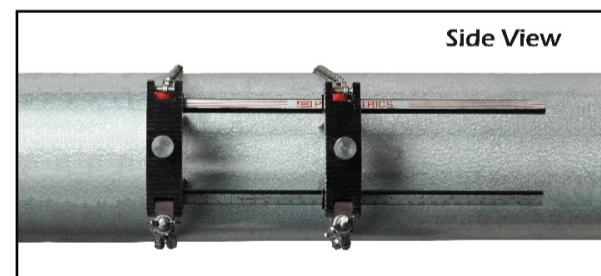
Mounting the Transducers

1) You may wish to attach the cables to the transducers before mounting. The red end should be attached to the upstream transducer and the blue end should be attached to the downstream transducer.

2) To mount the transducer apply a thin bead of couplant along the middle of its face.

3) Mount the first transducer in the appropriate upstream or downstream block with the cable connection away from the center of the installation. Secure the transducer in place by tightening the pressure bolt so that it fits into the dimple of the transducer.

4) Mount the other transducer in the same way.

5) Connect the other ends of the cable into the appropriate connector on the PT878. Please refer to the diagram on the back of the flowmeter
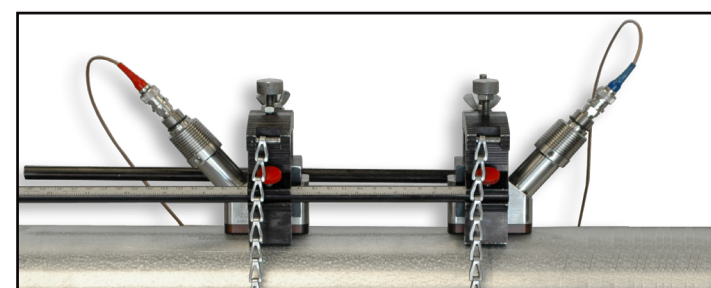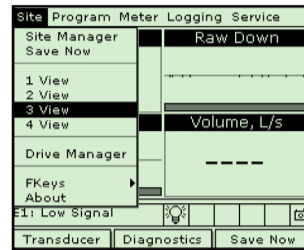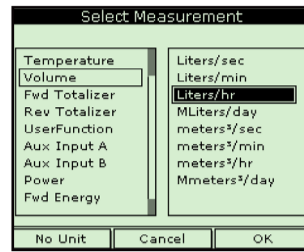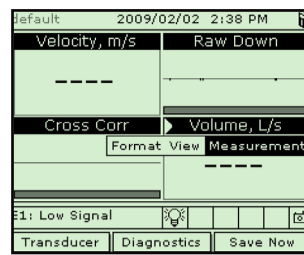
Changing the Displayed Parameters

To change the amount of measured parameters / views on the main screen. First press [MENU] and scroll down the Site menu to the required view. Once it is highlighted press [ENTER]. The main screen will now change to the chosen amount of views. For next stage, hide menu by pressing [MENU].

To Change the Measured Parameters

1. Use the arrow keys to scroll to the parameter view you wish to change. Press [ENTER] when you have this highlighted.

2. Scroll across to the Measurement tab and press [ENTER].

3. Scroll to the measurement you want to be displayed and press [SELECT]. The cursor will jump across to the unit list.

4. Scroll to the required unit and press [SELECT].

5. Confirm your chosen selection by pressing [F3] (OK).

6. The PT878 will now return to the main screen and will display the new chosen parameter.

Error Messages and Testing the Cables and Transducers

A way of testing that the cables and transducers are working is to connect them all up to the PT878 and put the transducer to your ear. Listen out for a frequent buzzing sound. If you do not hear this there is a problem with either the cables or transducers. With the small pipe transducers it is not normally possible to hear these buzzing sounds. It does not mean that there is a problem with them.

Make sure the transducers are spaced properly.

Error messages - error code messages are displayed when the PT878 is displaying measurements. For meanings of error messages and a full list of solutions, please refer to the Diagnosis and Troubleshooting section of the GE Panametrics Operation and Installation Guide.

E0 - Error message is displayed briefly after another error message. No action is needed in this case.

E1 - The meter has a poor ultrasonic signal strength. This could be down to broken cables, broken transducers, flowcell problems or electronic failure.

E2 - Soundspeed error. This could be caused by incorrect programming and spacing of the transducers.

E3 - Velocity range error. Caused by incorrect programming, incorrect spacing of transducers or poor flow conditions.

E4 - Signal quality problem.If to low it is a flowcell or electrical problem. If too high it is electronic failure.

E5- Amplitude error. There are excessive bubbles or particles in the fluid.

Keypad Description

- The PT878 keypad has 25 function keys. The functions for each of the keys are as follows:

- 3 function keys ([F1], [F2], [F3]) - Enable you to select the special functions which appear at the bottom of the screen.

- 12 numeric keys (including [-] and [.]) - Enable you to enter numeric data.

- 4 arrow keys - Enable you to move through the menu options.

- [?] Help key - Enables you to acces online help

- [MENU] Menu key - Enables you to access the Main Menu

- [ENTER] - Enables you to enter a particular menu, and enters selected values into the PT878 memory.

- [SEL] - Enables you to move between data measurementson the screen.

- [ESC] - Enables you to exit menus or menu options at any time; cancels a numeric entry.

- Red Key - Turns the power On or OFF, and toggles the backlight On or Off.

Saving Site Data

1. Once all of the parameters have been entered and confirmed the PT878 will give you the oppurtunity to save the setting to a site file.

2. To save the data to the site open the Site Menu by pressing [MENU] and [ENTER].

3. Use the arrow keys to scroll down to the save now option and press [ENTER].

3. A window will appear. Press [F2] to cancel saving the site or [F3] to confirm saving the site.

Note - To save the parameters under another site name, refer to chapter 4 in the user manual.
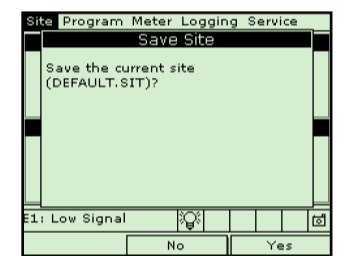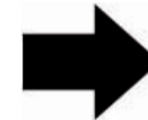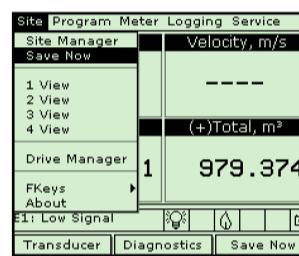
Setting Up A New Log

1. To create a new log you first need to enter the logging menu. To do this press the [MENU] button and scroll across to Logging Menu. Press [ENTER], scroll down to new log and press [ENTER] again.

2. The create new log screen appears. Use the arrow keys and enter to create the log name. [F1] to delete a character and [F3] to confirm the entry.

3. The PT878 will ask for log formatting and measurements.

4. You will be asked to choose between a linear or circular format for the log. Select using the arrow keys then press enter.

5. Next you need to choose between a standard or error log and confirm with Enter.

6. The next prompt asks for the starting time and date. You can use the numeric keys or the arrow keys to change a highlighted number to the desired one. Press [ENTER] to confirm the entry. (The flowmeter will automatically default to a 1 hour log at 60 second intervals)

7. Follow the same procedure to enter the end date and time.

8. The final prompt asks you to enter the logging interval. Use the numeric keys to enter the desired interval in seconds and then press [ENTER] to confirm the entry.

9. You now need to set the measurements to be recorded. Scroll up to the General tab and across to the 'Measurements' tab. Press [ENTER] to go to this tab.

10. Press [ENTER] on the first measurement to open the Measurements tab.

11. Scroll to the desired output category and press [SELECT] to move to the list of units. Choose the appropriate unit and press [F3] to confirm your selection.

12. Repeat this with up to 12 parameters.

13. When you have finished, press [F3] (Activate) to confirm the entries and start the log.

NOTE: Select a linear log if you would like the meter to stop logging once the memory is full or select a circular log if you wish to overwrite old data readings once the memory is full.
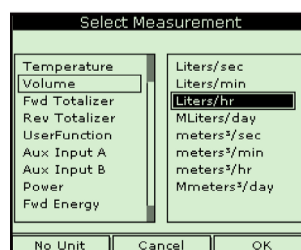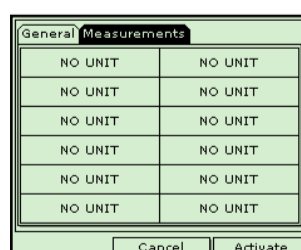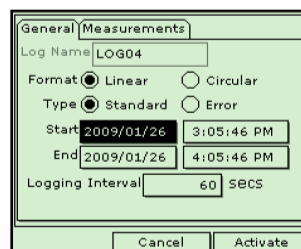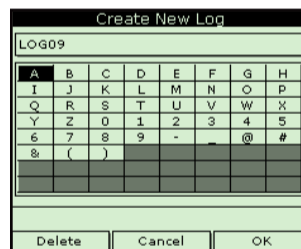
Transferring Log Files to PC

1. Check that the communications option has been set to the IrDA protocol.

2. Check that there is a clear path between the IR port on the PT878 and the IR sensor connected to the PC. If clear the PT878 and PC will automatically connect

3. Press the [MENU] button and scroll across to the Logging tab and press [ENTER].

4. Press [ENTER] again to enter the Log Manager.

5. Use the arrow keys to highlight the log you wish to transfer in the left hand panel.

6. Press [MENU] to jump to the File tab and press [ENTER].

7. Scroll to Transfer and press [ENTER].

8. The PT878 will search for IR devices.

9. When the PT878 finds an IR device, a message will appear to indicate that the file is being uploaded. The computer will ask if you want to accept the data.

10. The file can then be opened on the PC using the PanaLog Viewer and can then be exported to Microsoft Export format.