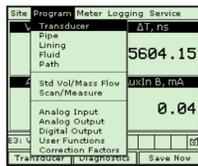


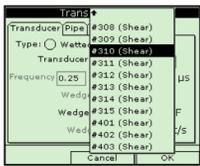
## Programming Transducer, Pipe and Fluid Parameters

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 on right).



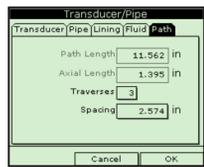
2. Work through the transducer options selecting the appropriate options from the drop down menus, or manually type in the correct selection (if a box is greyed out you do not need to enter a selection for this parameter). *Wedge temperature is typically half way between the pipe and air temperatures.*



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.

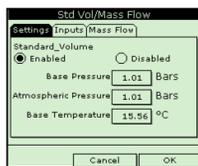


5. Once complete press [F3] to confirm your choices and return to the main screen.

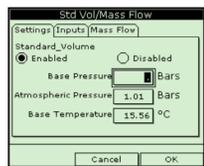
## Entering the Standard Volume / Mass Flow Parameters

The Standard Volume/Mass Flow option enables the user to correct standard volumetric units for temperature and pressure. It also allows you to enable or disable mass flow.

1. Scroll to the Program Menu and press [ENTER].
2. Scroll down to the Std Vol / Mass Flow button and press [ENTER].
3. The first parameter allows you to enable or disable the Standard Volume option.

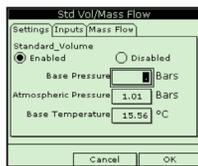


4. Use the arrow keys to scroll to correct radio button.
5. Press [ENTER] to confirm your selection.



**Note:** If you select "Disabled" you cannot select any other prompts in this window.

6. The next option asks you to enter the base pressure. Press [ENTER] to open the text box and use the numeric keys to type this. Press [ENTER] to confirm the entry.
7. The next option asks for the atmospheric pressure. Press [ENTER] to open the text box and use the numeric keys to type this. Press [ENTER] to confirm the selection.
8. The final prompt in this window asks for the base temperature. Press [ENTER] to open the text box and use the numeric keys to type this. Press [ENTER] to confirm the selection.



Press the up arrow key to return to the Standard Volume prompt, and then back to the Settings tab.

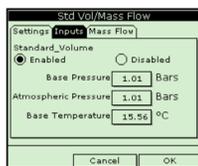
To confirm the entries and return to operate mode, press [F3] (OK).

## Entering Inputs in the Standard Volume Option

1. To enter standard volume inputs, return to the settings tab at the top of the Standard Volume window.
2. Scroll across to the Inputs tab and press [ENTER] to open the Inputs window.
3. Scroll down to the first prompt which asks if the pressure is fixed or active. Scroll to the appropriate option and press [ENTER] to confirm the selection.

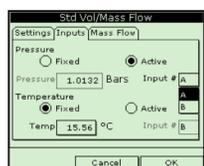
**Note:** Only select Active if you have live pressure and temperature readings being fed into the meter.

4. If you have selected a fixed pressure, you will be asked to enter the base pressure. Press [ENTER] to open the text box and the numeric keys to enter the pressure value. Press [ENTER] to confirm the entry.



5. The next prompt will appear whether you have selected an active or fixed pressure value. The desired input needs to be entered. Scroll from the Pressure text box to the Input menu and press [ENTER] to open the drop down menu. Scroll to input A or B and press [ENTER] to confirm the selection.

6. The next prompt asks if the temperature is fixed or active. Scroll to the correct option and press [ENTER] to confirm the selection.



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 transducers apart by.



## 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 PT878GC 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.

Make sure the transducers are spaced properly.

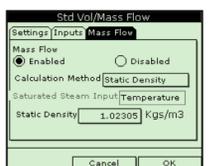
Error messages - error code messages are displayed when the PT878 is displaying measurements. For meanings of error messages and a full list of solutions, please refer to the Diagnosis and Troubleshooting section of the GE Panametrics Operation and Installation Guide.

- 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 too low it is a flowcell or electrical problem. If too high it is electronic failure. Possibly change to correlate mode under *signal setup*.
- 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 access 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 measurement on 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.

7. If you have selected a fixed temperature, you will be asked to enter the temperature value. Press [ENTER] to open the text box and use the numeric keys to enter the temperature value. Press [ENTER] to confirm the entry.



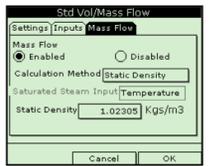
8. The next prompt will appear whether you have selected an active or fixed temperature value. The desired input needs to be entered. Scroll from the Temperature text box to the Input menu and press [ENTER] to open the drop down menu. Scroll to input A or B and press [ENTER] to confirm the selection.

**Note:** If you have switched both active inputs to #A (or to #B), the PT878GC automatically switches one input to the other letter. This change ensures that only one analog input is assigned to one measurement type.

**Note:** If you select "Disabled", you cannot select any other prompt in this window.

## Entering Mass Flow Parameters

1. To enter mass flow parameters in the Standard Volume / Mass Flow option, scroll across to the Mass Flow tab and press [ENTER] to open the window.
2. The first prompt asks if you want to enable or disable the Mass Flow option. Scroll to the appropriate option and press [ENTER] to confirm the selection.



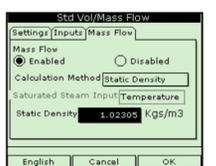
3. If you have selected "Enable" Mass Flow the following prompt will appear asking for the calculated method. Three options are available: static density, saturated steam and steam. Press [ENTER] to open the drop-down menu. Scroll to the appropriate method for your application and press [ENTER] to confirm the entry.

- If you select Saturated Steam: The prompt asks for the Saturated Steam input. Press [ENTER] to open the text box, enter the appropriate value, and press [ENTER] to confirm the entry.

- If you select Static Density: The prompt asks for the Static Density value. Press [ENTER] to open the text box, enter the appropriate value, and press [ENTER] to confirm the entry.

Pressing the up key returns the meter to the Mass Flow prompt, and then to the Mass Flow tab.

To confirm the entries and return to Operate mode, press [F3] (OK).



## Useful Tips and Hints

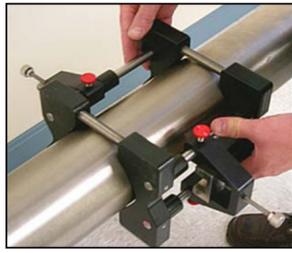
- Cable ends are protected by a metal sheath. To remove from the PT878 - pull the sheath back.
- The [ENTER] key allows you to enter and confirm a parameter, enter a menu and enter a drop down menu.
- The red end of the cable needs to be placed on the upstream transducer and the blue end on the downstream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

## Installing the Clamping Fixtures and Transducers

Please note that a complete installation involves the clamping fixtures, transducers and dampening material. If you are using dampening material please refer to the installing dampening material section.

### Installing the Clamping Fixture

1. The clamping fixture is installed in two halves. The first half of the fixture is installed with the four rods, needs to be positioned on the horizontal plane on the pipe at the 3 o'clock position.
2. The second half of the fixture should be positioned over the threaded rods in the 9 o'clock position.

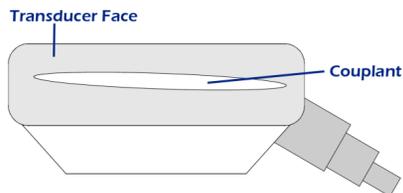


**Note:** Each half of the fixture has a measuring scale. Ensure that the scales are on the same side of the fixture with zero at the same origin.

3. The four nuts should now be installed onto the rods with the convex side of the nut facing the fixture. Hand tighten the nuts.

### Installing the Transducers

1. Apply a thin line of couplant along the entire length of each transducer face.



2. The first mounting block should be set at a convenient number on the scale such as 1in or 1cm. Install the first transducer in the mounting block with the BNC connector pointing away from the center of the V block fixture. Tighten the thumbscrew onto the slider until the transducer is tight against the pipe surface.



3. Set the second mounting block to the calculated spacing plus the initial scale number selected for the first mounting block.

4. Install the second transducer in the same way.

## Installing the Dampening Material

1. Once the clamps have been installed, use a marker pen to mark the inside edges of the brackets on the pipe.
2. Remove the clamping fixtures and transducers from the pipe.
3. Thoroughly dry the pipe using a towel or rag.
4. Cut an equal length to the circumference, of dampening material and peel off the paper backer.
5. Wrap around the pipe following the lines already marked on the pipe which represent the inside edge of the clamping fixture.



6. The clamping fixture now needs to be reinstalled and the transducers mounted ensuring the spacing is set correctly.

7. Using a marker pen, draw around the transducer outline.



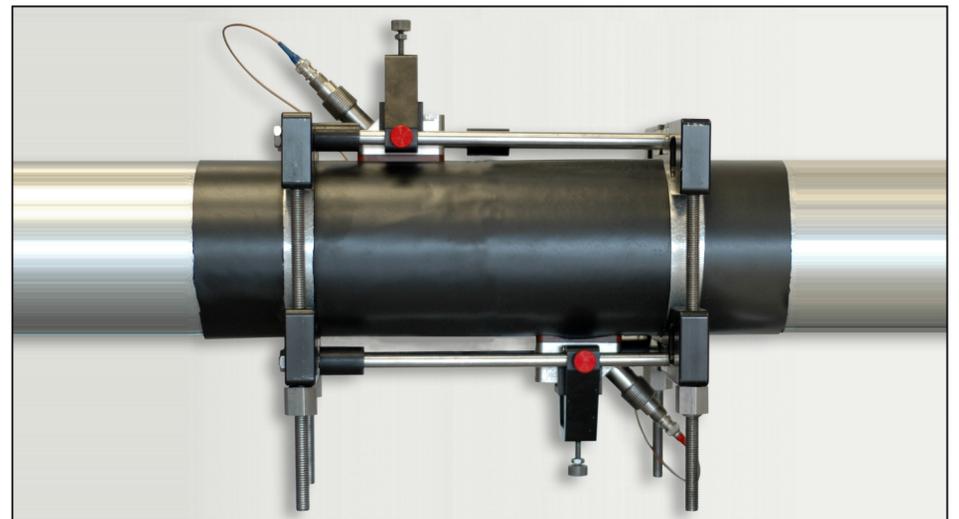
8. Once again remove the transducers and clamping fixture. Use a knife to cut out the transducer shape and peel the dampening material from the pipe.

9. Clean the cut out area of the pipe to remove any excess residue.

10. Reinstall the clamping fixture and transducers.

11. Cut another length of dampening material, equal to the circumference. Cut this into two pieces, each 4.5 in wide.

12. Wrap one strip on each side of the clamping fixture.



## Setting Up A New Log

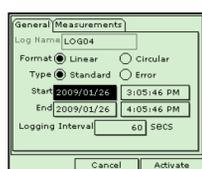
1. To create a new log you first need to enter the logging menu. To do this press the [MENU] button and scroll across to Logging Menu. Press [ENTER], scroll down to new log and press [ENTER] again.

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 PT878GC 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.

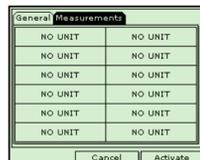
5. Next you need to choose between a standard or error log and confirm with Enter.



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.

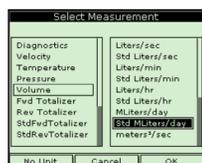
8. The final prompt asks you to enter the logging interval. Use the numeric keys to enter the desired interval in seconds and then press [ENTER] to confirm the entry.



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]. The PT878 will search for IR devices.

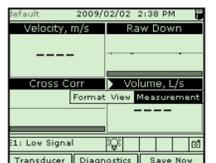
8. When the PT878GC finds an IR device, a message will appear to indicate that the file is being uploaded. The computer will ask if you want to accept the data.

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



## 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].



## Saving Site Data

1. Once all of the parameters have been entered and confirmed the PT878GC will give you the opportunity 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].

4. 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.

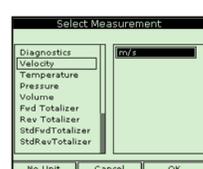


## Changing the Measured Parameters

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.

