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Technical Application Note

TransPort® PT900 | Portable ultrasonic flow meter for liquids
Application Note | Energy Measurement

The TransPort PT900 is the latest generation of portable clamp-on flow meters from Panametrics line of ultrasonic meters. It capitalizes on the ruggedness and superior performance of its predecessor, the TransPort PT878, but delivers a whole new level of intuitive and user-friendly capability based on today's technology.

The Transport PT900 has the option for an energy measurement based on the temperature at a supply point, the temperature at a return point, and the flow of fluid through the system. This feature is specifically located in the PROGRAM OPTIONS section in the PROGRAM menu.

This application note summarizes how to use the energy flow functionality in the TransPort PT900.

1. Install PT900 application onto an iOS or Android tablet or phone as per chapter 3.3 in the PT900 manual.
2. Pair tablet or phone to the TransPort PT900 per chapter 3.4 in the PT900 manual.
3. Configure the units of measurement (including enthalpy, energy, and power) as per chapter 4.1 in the PT900 manual.
4. Configure Channel 1 for the energy measurement as per chapter 4.2 in the PT900 manual.
   (Note: For an energy flow measurement, the TransPort PT900 is only a single channel meter and typically channel 1 can be used. For this application note, it is assumed channel 1 will be selected).

5. Program Channel 1 for Pipe, Fluid, Transducers, and Placement as per chapter 4 in the PT900 manual.
6. Program *Program Options* and *Energy* as per chapter 4.7.1 in the PT900 manual.
   a. Move the ENERGY SWITCH to On.
   b. In the ENERGY CHANNEL section, open the drop-down list and select Channel 1.
   c. In the ENERGY SYSTEM section, move the switch to either Heating or Cooling, based on your system type.
   d. In the FLOW LOCATION section, move the switch to either Supply or Return, based on your desired and optimal flow measurement point. If you choose Supply, RETURN TEMPERATURE section will be displayed and if you choose Return, SUPPLY TEMPERATURE section will be displayed. The temperature programming at the FLOW LOCATION is programmed as per section 4.4 in the PT900 manual.

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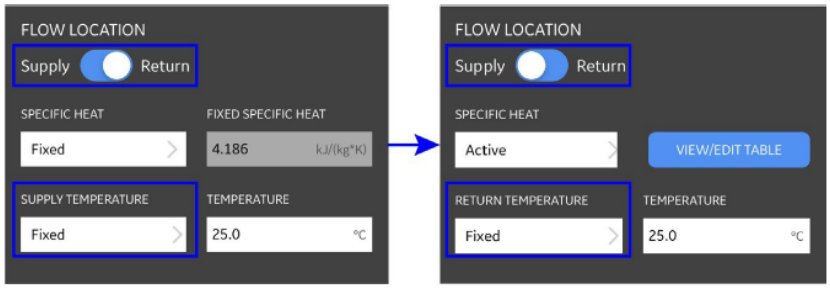
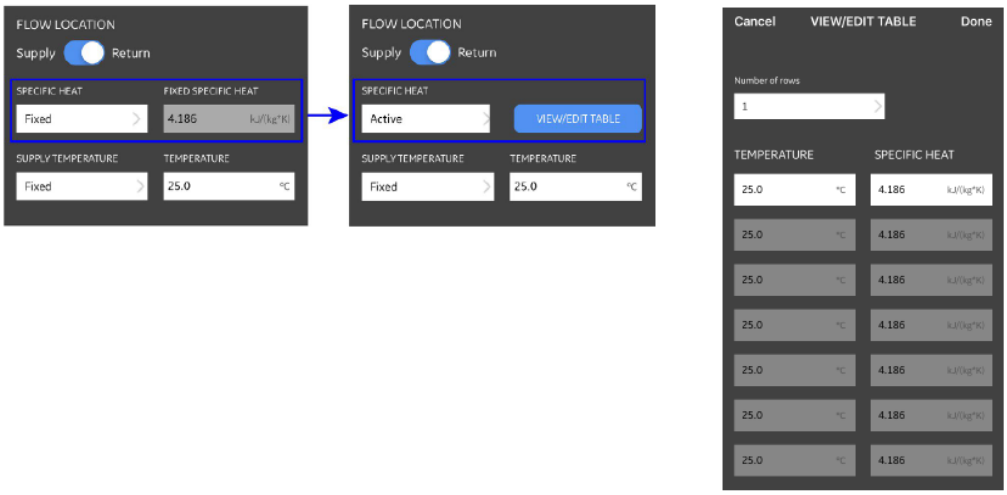
i. In the SUPPLY TEMPERATURE section, open the drop-down list and select Fixed or Analog Input 1 or Analog Input 2 as the type of supply for your system. If you choose Fixed, you will need to enter the desired value in the TEMPERATURE section.
ii. In the RETURN TEMPERATURE section, open the drop-down list and select Fixed or Analog Input 1 or Analog Input 2 as the type of supply for your system. If you choose Fixed, you will need to enter the desired value in the TEMPERATURE section.



e. In the SPECIFIC HEAT section, open the drop-down list and select Fixed or Active as the type of supply for your system. If you choose Fixed, you will need to enter the desired value in the FIXED SPECIFIC HEAT section. If you choose Active, you will be able to enter up to six Temperature/SPECIFIC HEAT data points for your system in a table on clicking VIEW/EDIT TABLE as shown below.



7. Program *Program Options* and *INPUTS* as per chapter 4.7.2 in the PT900 manual.
   a. The INPUTS tab enables the user to specify the parameters for the energy supply temperature, the energy return temperature, and the fixed temperature, based on your previous programming choices in the ENERGY tab.
   b. If either the SUPPLY TEMPERATURE or the RETURN TEMPERATURE has been set to ACTIVE INPUT A or B in the ENERGY tab, this will be the default value shown in the FUNCTION box. Enter the correct ZERO and SPAN values in the appropriate boxes.
   c. If neither the SUPPLY TEMPERATURE nor the RETURN TEMPERATURE has been set to ACTIVE INPUT A or B in the ENERGY tab, Off is the default value shown in the FUNCTION box. No further action is required unless the user chooses to change the default entry via the drop-down list. Only then would ZERO and SPAN values be required.

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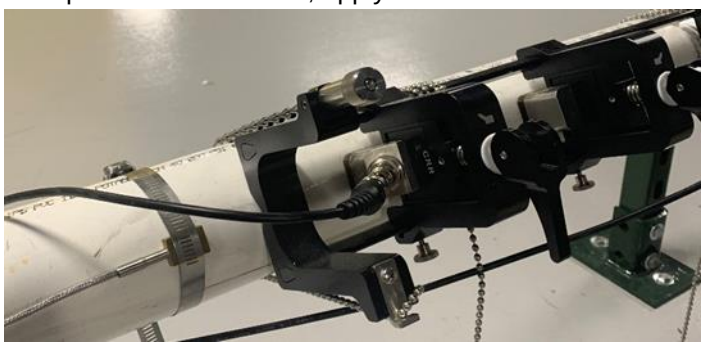
8. Program *Program Options* and *Outputs* as required if using per chapter 4.7.3 in the PT900 manual.
9. Set up display as required per chapter 5 in the PT900 user manual.
10. Install clamping fixture and ultrasonic transducers as per chapter 2.5 in the PT900 manual.
11. Install the RTDs onto the supply and return piping using the strapping system provided with the PT900 energy kit.
    a. Install RTD onto the pipe with thermal couplant between the RTD and the pipe.
    b. Apply strapping around the RTD to mount securely to the pipe.
    c. For optimal measurement, apply insulation over the RTD and strapping (not shown in picture below).



12. Set up display measurements as per chapter 5 of the PT900 manual.
13. For datalogging, set as per chapter 6 in the PT900 user manual.
    Note: For an energy flow data, general channel must be used to capture data. Most users log both channel 1 and general channel at the same time.
14. Review any type of error codes or troubleshooting as per chapter 8 of the PT900 manual.

For any questions, please contact a Panametrics technical specialist for advice. Visit us at: https://www.bakerhughes.com/panametrics/panametrics-services/contact-information for a list of technical support phone numbers specific to your global location or complete the Contact Us form with reason for contact as Technical Support and Area of Interest as flowmeter by Panametrics.