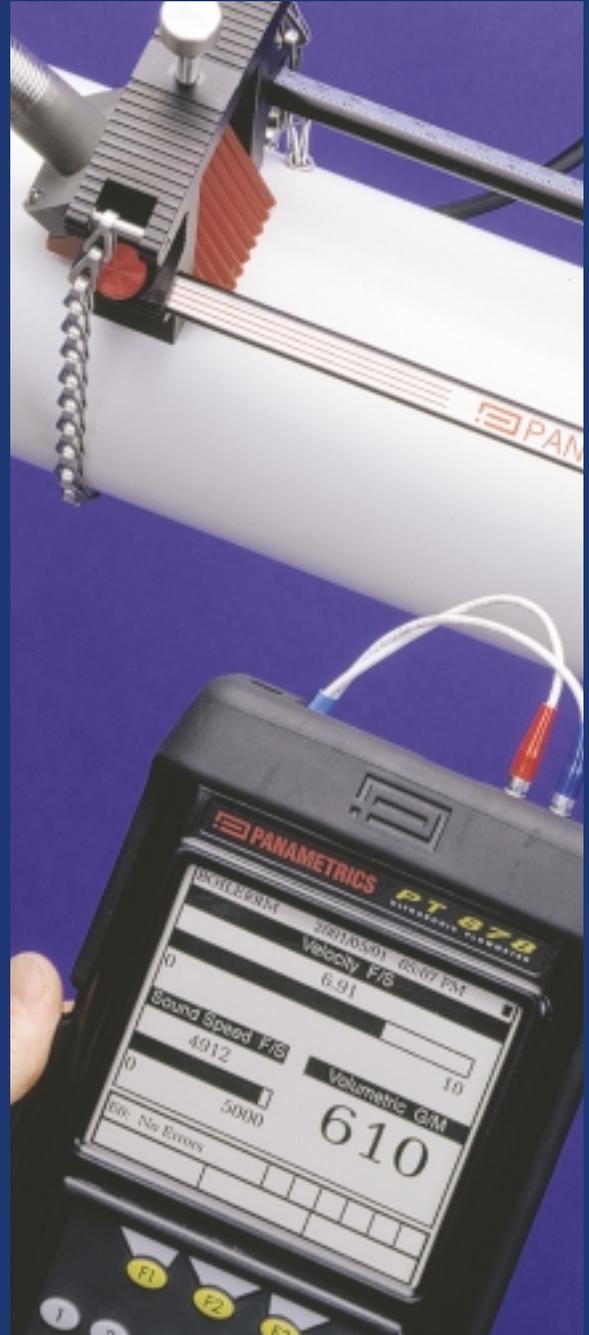


 PANAMETRICS



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**TRANSPORT® PT878  
PORTABLE LIQUID  
FLOWMETER**

# The TransPort Flowmeter, The Ultimate

## **PORTABLE FLOW METERING AT ITS BEST.**

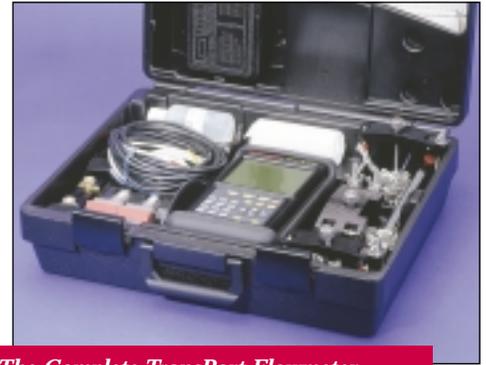
The Panametrics TransPort PT878 Flowmeter is a highly versatile, self-contained, portable transit-time system with options and accessories to meet all your liquid flow measurement needs. The microprocessor-based electronics use state-of-the-art surface mount technology to pack a lot of power into this hand-held instrument. Its compact size (9.4 x 5.5 x 1.5 in./ 238 x 138 x 38 mm), light weight

(3 lb/1.36 kg), rechargeable battery pack and universal power supply charger make it the ideal go-anywhere flowmeter.

## **PATENTED CORRELATION TRANSIT-TIME™ DIGITAL SIGNAL PROCESSING ALLOWS HIGHER ACCURACY IN TWO-PHASE & PERFECTLY CLEAN LIQUIDS.**

The PT878's patented digital signal-processing (DSP) technique greatly increases its signal-to-noise ratio for accurate, drift-free flow measurement in two-phase liquids containing entrained solids, liquid droplets or gas bubbles. The TransPort flowmeter operates in these and other difficult applications where conventional transit-time flowmeters fail.

The TransPort flowmeter also accurately measures flow rate in perfectly clean liquids containing no "scatterers," where Doppler-type flowmeters cannot work. The TransPort flowmeter is suited for all standard transit-time applications, plus many that would prevent other transit-time flowmeters from working.



**The Complete TransPort Flowmeter System Fits in a Compact Carrying Case.**

## **New Reynolds Number Algorithm Improves Clamp-On Accuracy**

A year 2000 NIST examination of transit-time ultrasonic flowmeters from a cross-section of manufacturers reported accuracies in the range of 2% to 3% of reading. The report also showed that Panametrics was the only manufacturer that met its published accuracy specification.

NIST computer simulations of flow profile indicated that accuracies could be improved through further research into the compensation algorithms used by the meters. In response, Panametrics has done exactly that.

The PT878 incorporates new, advanced Reynolds number correction algorithms that provide a better than 1% improvement in accuracy. This improvement takes into account the roughness of the inside surface of the pipe and gives more accurate results in turbulent flow. The default roughness factor covers almost all commercial pipe and allows the improved accuracy specification of  $\pm 1\%$  of reading.



**Nonintrusive Clamp-On Transducers Mean No Leaks, Corrosion or Contamination.**

## **QUICK & EASY TO USE.**

It's possible to make your first flow measurement within minutes of opening the box. The TransPort flowmeter is that easy to use. Simply input the site parameters, clamp the transducers onto the pipe, adjust the spacing, and you're underway. No ancillary equipment is needed, and there's no need to break into the pipeline.

## **FLOW TRANSDUCERS & CLAMPING FIXTURES.**

Using clamp-on transducers, the TransPort flowmeter measures flow rate through metal, plastic, or even concrete-lined pipes, without penetrating the pipe wall. From ultrapure water to corrosive and toxic liquids, the TransPort flowmeter assures non-contaminating, leak-free measurement with drift-free accuracy. The TransPort flowmeter has no moving parts to wear or orifices to clog. It can't be fouled, and it never needs regular maintenance.

A wide variety of transducers are available with different operating frequencies, materials of construction, operating temperatures, and sizes to meet the requirements of rugged industrial environments.

To hold clamp-on transducers in contact with the pipe, a variety of clamping fixtures are available to accommodate different pipe and transducer sizes. These fixtures use a variety of attachment methods including chain, metal strap, VELCRO® strap, and magnetic fixtures as required.

## **SUBMERSIBLE, RUGGED ELECTRONICS HOUSING.**

Your investment in this flowmeter is protected from the day-to-day rigors of industrial usage. The PT878 is equipped with a rubber boot that provides protection against vibration and shock. The completely

# ate In Portability—From Panametrics.



*The PT878 Large LCD Presents Data in Both Alphanumeric and Graphic Forms.*

liquid sound speed and pipe wall thickness directly with the meter. An experienced user can make scores of different measurements in a single day. The TransPort flowmeter is ideal for all kinds of flow survey work.

## ***AN ALPHANUMERIC & GRAPHIC LIQUID CRYSTAL DISPLAY COMPLETES THE PICTURE.***

A large, multifunction LCD presents measured data in both alphanumeric and graphic forms. In addition, it helps make programming easy by presenting a software menu that walks you through data entry and function selection.

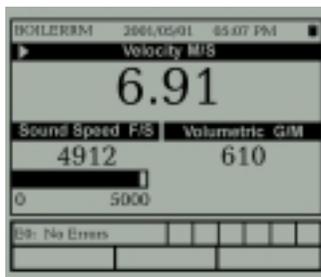
Standard alphanumeric functions include flow velocity, volumetric or energy flow rates and totalized flow in either English (U.S.) or metric units.



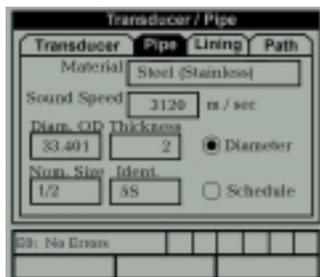
*Panametrics Can Supply an Infrared-to-Serial-Port Adapter for Your PC to Use with the PT878's Built-In Infrared Port.*

sealed housing and ports meet IP67 requirements, which means it will withstand submersion in up to 1 m of water for limited periods of time. Accidentally drop the unit in water and it will continue to function safely.

***ADVANCED SOFTWARE.*** The flowmeter's software is menu driven. On-line help functions include pipe dimensions and sound speed data for various liquids and pipe materials. When needed, you can measure



*Large split screen shows 1 to 4 parameters at a time, plus battery status, time and error status.*



*Tab programming windows make setup a snap.*



*20 sets of site parameters (depending on log memory usage) can typically be stored by user-created file name.*



*Bidirectional real-time graphic display can show live flow measurements or diagnostic wave forms.*

***PT878 . . .  
Out Performs All Other Portable Ultrasonic Flowmeters.***



**Dual RTD Transmitter and RTDs.**

In graphic mode, the LCD shows both real-time and logged data. The result is a chart recording right on the display; very useful for reviewing data and observing trends while on site.

**INFRARED PORT.** The PT878 contains an infrared port for communication with your PC. If your laptop or desktop PC does not have infrared capability, Panametrics can supply an adapter that can be plugged into your PC's serial port.

**OPTIONAL ENERGY MEASUREMENT.** The TransPort flowmeter combines proven ultrasonic flow measurement with precise RTD temperature measurement to determine the energy flow rate in liquid heating and cooling systems.

Every TransPort flowmeter comes equipped with a built-in power supply for loop-powered RTD temperature sensors, as well as all necessary circuitry and software to make energy flow rate measurements. Panametrics offers a variety of optional clamp-on and wetted RTD temperature sensors.

**OPTIONAL PIPE-WALL THICKNESS GAGE TRANSDUCER.** Pipe-wall thickness is a critical parameter used by the TransPort flowmeter for clamp-on flow measurements. Since you often don't know your pipe-wall thickness, Panametrics offers a thickness gage option that allows accurate wall thickness measurement from outside the pipe.



**PT878 Thickness Gage Transducer.**



**PT878 and Accessories (Counterclockwise from PT878 Electronics Unit): AC Charger, LEMO-BNC Transducer Interconnection Cable, Input/Output Cable, Infrared-to-Serial-Port Adapter, Small Pipe Transducers, Thickness Gage, C-PT Transducers and Universal Clamping Fixture, Infrared Thermal Printer, Printer AC Power Supply, and Printer Battery Charger.**

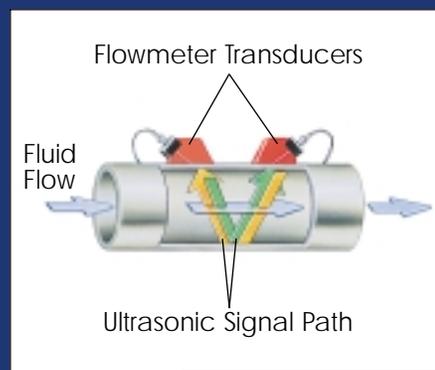
## The TransPort Flowmeter Uses The Transit-Time Flow Measurement Technique.

In this method, two transducers serve as both ultrasonic signal generators and receivers. When mounted on a pipe, they are in acoustic communication with each other, meaning the second transducer can receive ultrasonic signals transmitted by the first transducer and vice versa.

In operation, each transducer functions as a transmitter generating a certain number of acoustic pulses, then as a receiver for an identical number of pulses.

The time interval between transmission and reception of the ultrasonic signals is measured in both directions. When the liquid in the pipe is not flowing, the transit-time downstream equals the transit-time upstream. When the liquid is flowing, the transit-time downstream is less than the transit-time upstream.

The difference between the downstream and upstream transit-times is proportional to the velocity of the flowing liquid and its sign indicates the direction of flow.



**Transit-Time Flow Measurement Technique.**

# In Portability - From Panametrics.



*PanaView software links your TransPort flowmeter to your PC.*

## **OPTIONAL INFRARED THERMAL PRINTER & ACCESSORIES.**

When you need a permanent record of your work, live measurements, logged data, and site parameters can be sent to a variety of printers by beaming data directly from the PT878's infrared port. Panametrics can supply a compact, lightweight, hand-held, infrared thermal printer. This printer is powered by a lithium-ion battery.



*Infrared thermal printer.*

## **OPTIONAL PANAVIEW™ INSTRUMENT INTERFACE SOFTWARE**

PanaView software is a custom package developed by Panametrics to link your TransPort flowmeter to your PC. The pop-up menus make it easy to upload/

download site or calibration data for verification or storage. Logged data may be viewed or graphed on your PC monitor and stored in PC memory. You can also export data to spreadsheets, word processors, database management, or other software packages for graphing, reporting, or for further analysis.

## **BUILT TO BE ECONOMICAL & TO STAY ECONOMICAL.**

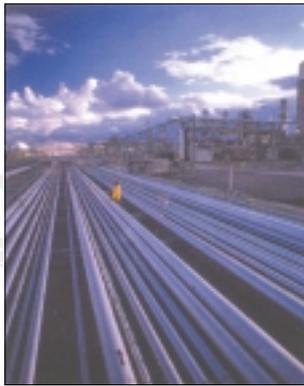
To be of real value, a portable flowmeter must be as economical to own and operate as it is capable in the field. Using the latest micro-circuit and manufacturing technologies, the TransPort flowmeter is built to stay in service for many years. Completely solid state, the device never wears out or needs servicing, which means no downtime and no maintenance costs.

This flowmeter's state-of-the-art design is more economical to produce, and we pass the savings on to you. The TransPort flowmeter is affordable and will continue to save money by streamlining your measurement process and trimming labor costs.

## **The PT878 Electronics.**

Some of the PT878 flowmeter's advanced electronic features and capabilities include:

- ❖ Improved clamp-on accuracy
  - New, advanced Reynolds number correction algorithms
  - Accuracy of  $\pm 1\%$  of reading.
- ❖ Easily see the data you want to see, how you want to see it.
  - Large liquid crystal display.
    - Electroluminescent backlight.
    - Split screen shows 1 to 4 parameters.
  - Multiple language support.
- ❖ Designed for rugged, go-anywhere industrial work.
  - Submersible package, rated IP67.
  - Rubber boot with built-in stand protects and secures electronics.
- ❖ Easily log over 100,000 data points and download into your PC without messy cables.
  - Infrared communication.
  - Panametrics PanaView™ Instrument Interface Software.
- ❖ Easy set-up and operation.
  - Adjustable hand strap for easy carrying.
  - Drop-down menus and soft keys make programming a snap.
- ❖ FLASH memory.
  - Update the PT878's software program via the infrared com port without changing any EPROMs.



## INDUSTRIES:

**AEROSPACE**

**AGRICULTURE**

**ENERGY MANAGEMENT:**

- Hot Water • Chilled Water

**FOOD & BEVERAGE**

**MANUFACTURING**

**MEDICAL**

**PETROCHEMICAL:**

- Refining • Chemical Processing
- Process Control

**PHARMACEUTICAL**

**POWER:**

- Fossil Fuel • Nuclear • Hydroelectric

**PULP & PAPER**

**SEMICONDUCTOR MANUFACTURING:**

- Ultrapure Liquids • De-ionized Water

**SEWAGE TREATMENT**

**WATER & WASTEWATER MANAGEMENT**

## TYPICAL APPLICATIONS:

**ACIDS**

**CORROSIVE, EROSIVE & TOXIC LIQUIDS**

**CRYOGENICS:**

- Argon • LPG • Nitrogen

**PETROLEUM PRODUCTS:**

- Benzene • Crude Oil • Ethylene • Fuels
- Heating, Lubricating Oil • Propane
- Solvents • Xylene

**POTABLE WATER**

## USES:

- Balancing Systems • Batching • Billing/Accounting • Check Metering
- Cooling • Efficiency Studies • Flow Surveys • Heating • Large Pipes
- Leak/Rupture Detection • Pollution Control • Process Control
- Small Pipes

# PANAMETRICS

## MAIN OFFICES:

ISO 9001  
CERTIFIED



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