



PERMAFLOW®

Fixed, clamp-on, ultrasonic transit time
flow and heat meter

Made in the UK.

INTRODUCING THE PERMAFLOW®

The **Permaflow®** is a fixed, clamp-on, ultrasonic transit time flow and heat meter that is non-invasive for measuring the flow rates of liquids containing less than 10% of gas/solid contents. It is mains powered, designed for 24/7 monitoring and is accurate to +/- 0.5% of measured value under ideal conditions.

It has a built-in signal oscilloscope for sensor positioning and diagnostics to achieve maximum accuracy with the measurement while providing visibility of the potential issues with the installation for troubleshooting purposes

Measure your liquid flow rates non-invasively and calculate heat quantity **all in one tool.**

Type – fixed ultrasonic clamp-on transit time flow and heat meter

Part Number – 3578010-FLOW



APPLICATIONS

The adaptable **Permaflow®** can be used in many industries such as:



**Commercial
Building Heat
Metering**



**Water &
Wastewater**



**Fuel
Monitoring**

HIGHLIGHTED FEATURES

Versatile

Capable of working on pipes DN15 – DN 2500; virtually any clean liquids; on a wide range of pipe materials. Capable of measuring flow velocities between 0.01m/s – 25m/s.

Data logging

Connect to PC using both built-in USB and RS232, all measurements can be logged in its 16 MB built-in memory

Robust

Sensors rated IP66. Sensor temperature range -20°C to +150°C. 24/7 flow rate, heat monitoring and customisable alert options are available

Accurate

Accurate to +/- 0.5% under ideal conditions. Resolution of 0.25mm/s. Repeatability of 0.15% of measured value.

Low cost

No installation costs such as drilling into pipes, therefore no downtime to the pipe network is present. Only one individual is required to operate the instrument



WHY MEASURE FLOW RATES AND HEAT QUANTITY?



Make sure you do not exceed safe tolerances

To keep pipes within safe tolerances, the pressure in a pipe system must be closely monitored to ensure it does not exceed safe tolerances. Critically high pressures can lead to pipe failure, damage to property, and risk to personnel.



Keep pipes, pumps, and related equipment in good condition

The durability and safe functioning of pipes, pumps, and related equipment are also affected by pressure.

WHATS IN THE BOX?



- Permaflow® Main Unit (RS232 and USB communications included)
- Mains Power Supply
- Pair of Jubilee Clips for your pipe sizes
- USB Cable: For direct download or export of logged data
- Measuring Tape
- Ultrasonic Couplant
- User Manual
- Installation Manual
- Calibration Certificate

BENEFIT FROM WARRANTY AND SUPPORT

- Main Unit: 3 years
- Sensors: 1 year
- Lifetime customer support

OPTIONAL PLUG-IN MODULES

- **PT100 Thermometer Input – 4-wire type (one input)**
 - You will need two plug-in modules if you wish to monitor both supply and return temperatures for heat metering applications for example (thermometer not included)
- **4 – 20 mA Current Input (one input)**
 - To connect other types of probes such as PT100 alternatives, pressure and density probes etc
- **4 – 20 mA Current Output**
 - To provide signal output from Permaflow® via 4 – 20 mA
- **Digital Input (one input)**
 - As an alternative to 4 – 20 mA Current Input
- **Modbus RTU**
 - To allow communications via MODBUS RTU
- **Relay (NO and NC) Output**
 - To provide signal output from Permaflow® via NO and NC outputs
- **OPTO Output**
 - An alternative to other outputs available
- **Open Collector Output**
 - An alternative to other outputs available

OPTIONAL ACCESSORIES

- **Standard Transducer (Model No. DM10) – set of 2**
 - For pipes DN15 – DN700 / 1/2 inch – 28 inches
- **Large Transducer (Model No. DS10) – set of 2**
 - For pipes DN25 – DN2500 / 1 inch – 98 inches
- **Sensor Upgrade available with the Permaflow® complete package**
 - Standard Transducer (Model No. DM10) to Large Transducer (Model No. DS10)
- **ISO 17025 Calibration Certificate available with the Permaflow® complete package**
 - 5-point flow calibration at ISO 17025 certified laboratory in the UK
- **PT100 Thermometer (4-wire type)**
 - High quality PT100 platinum resistance thermometer with screened Teflon lead
 - 1m cable length as standard
 - Probe length 150mm, 3mm diameter
 - Operating Temperature: -50°C to +250°C
- **Robust Carrying Case**
 - For convenience in transporting the unit and its accessories

PERMAFLOW® IN ACTION



See the PERMAFLOW® in action!

“Permaflow® Menu Walkthrough - Fixed, wall-mounted clamp on ultrasonic flow meter” on YouTube

<https://youtu.be/fvQvr7Z0id0?si=2c4VdvQh15fmYpxr>



See the PERMAFLOW® Datalogging!

“Demonstration - Permaflow® Fixed Ultrasonic Flow Meter - How to Log Measurement Values to a Computer” on YouTube

<https://youtu.be/UK8gEMia3M0?si=22yW0qVIMsD92ZkY>

WHAT IS IT COMPATIBLE WITH?

Fluid Types	Pipe Materials
Water	Carbon Steel
Sea Water	Stainless 304
Kerosene	Stainless 316
Petrol	Cast Iron
Fuel Oil	Ductile Iron
Crude Oil	Copper
Freon R134a	PVC
Freon R22	Lead
Diesel Oil	Nylon
Castor Oil	PE
F-76 Fuel Oil	Aluminium
NOVEC 1230	Asbestos
Glycol/water	Fibre Glass
Alcohol	Other (SoS provided by user on app)

TECHNICAL DATA

DIMENSIONS	160mm (L) x 82mm (W) x 30mm (D)
WEIGHT	300g
PIPE DIAMETER RANGE	Standard Sensor (Model No. DM10): DN15 – DN 700 (1/2” – 28”) Large Sensor (Model No. DS10): DN25 – DN2500 (1” – 98”) Works on a large variety of pipe materials (built-in database over 12+ materials)
LIQUID TYPES	Most clean liquids with gas/solids less than 10% volume (built-in database over 19+ liquids)
ACCURACY	+/- 0.5% of measured value under ideal conditions
FLOW VELOCITY	0.01m/s – 25 m/s
RESOLUTION	0.25 mm/s
REPEATABILITY	0.15% of measured value
TURN DOWN RATIO	1/100
MEASUREMENT RATE	1 Hz as standard
MEASUREMENT UNITS	Flow Velocity (m/s), Volumetric Flow Rate, Mass Flow Rate, Energy Flow Rate / Heat Quantity, Volume, Mass, Energy – also suitable for heat metering applications
DISPLAY	Full 240 x 160 pixel graphics with backlight
ADDITIONAL FEATURES	Signal oscilloscope for sensor positing and diagnostics
DATALOGGING AND COMMUNICATION	16 MB datalogger included as standard – all measurement values can be logged Serial Communications RS232 and USB included as standard, can be used for device control (command line interface) and datalogger download via PC 4 – 20 mA, Digital, Modbus, Relay, OPTO, Open Collector Output available as optional plug-in modules
OPERATING TEMPERATURE	Main Unit: -10°C to +65°C Sensors: -20°C to +150° C
POWER SUPPLY	2V – 36V DC configurations at 10W, DC PSU supplied as standard (suitable for mains AC power 100V – 240V)
SENSOR DIMENTIONS	Standard Model No. DM10: 40mm (L) x 20mm (W) x 25mm (D) Large Model No. DS10: 60mm (L) x 30mm (W) x 35mm (D)
SENSOR MATERIAL	Housing: Stainless Steel Front Face: PEEK (Polyetheretherketone)
CABLE LENGTH	3.0m as standard (additional lengths available upon request)
CERTIFICATIONS	CE, Coltraco is ISO 9001:2015 and ISO 14001 approved

OUR RANGE OF ULTRASONIC FLOW METERS



PRODUCT FEATURES	PORTASONIC® PLUS (HANDHELD INSTRUMENT)	PERMAFLOW® (FIXED SYSTEM)	PORTASONIC® PRO (ELECTRONIC TABLET)
Accurate to 0.5%	✓	✓	✓
Volumetric Flow Rate	✓ (various units - l/h, m3/h, etc.)	✓ (various units - l/h, m3/h, etc.)	✓ (various units - l/h, m3/h, etc.)
Mass Flow Rate	✓ (various units - kg/h, kg/m, etc.)	✓ (various units - kg/h, kg/m, etc.)	✓ (various units - kg/h, kg/m, etc.)
Energy (Heat) Flow Rate	✓ (various units - kWh, BTU, etc.)	✓ (various units - kWh, BTU, etc.)	✓ (various units - kWh, BTU, etc.)
Fluid Types (customisable) <i>Database of 14+ customisable fluid types (water, fuel oils and diesel oils, refrigerants and many more)</i>	✓	✓	✓
Pipe Material (customisable) <i>Database of 12+ customisable pipe materials (carbon steel, stainless steel, aluminium, PVC and many more)</i>	✓	✓	✓
Wall Thickness Gauging	✓	✗	✗
Calculate Pressure	✗	✗	✓
Temperature Compensation	✓ (with manual temperature input)	✓ (automatic input, using PT100)	✓ (with manual temperature input)
Totaliser Capability	✓	✓	✓
Record and Report	✓	✓ (internal and USB)	✓
Battery Operated	✓	✗	✓
Datalogging	✓	✓	✓

OUR THROUGH-LIFE COMMITMENT TO YOU

We look after our customers throughout the lifetime of your equipment.

Every main unit is supplied with **3 years warranty** and **1 year warranty on its sensors and accessories**.

We are proud to offer free lifetime technical support and online training is available on request with a range of solutions designed to meet your calibration requirements:



Onshore Calibration

This can be done in our UK laboratory or in one of our 11 ODA Service Centres present globally

We also support 1-1 exchanges with a pre-calibrated unit to reduce processing time

We also offer a unit collection service for customers who are not used to sending equipment out of their respective countries.

ABOUT COLTRACO ULTRASONICS

Coltraco is ISO 9001:2015 and ISO 14001 approved

"To see the sounds that others cannot hear"

Our organisation comprises:

- Our **Company**
- Our **Laboratory**, co-located with the Centre for Advanced Instrumentation at Durham University
- Our **Research Organisations**, the Durham Institute of Research, Development & Invention (DIRDI)
- Our **Centre for Underwater Acoustic Analysis** (CUAA)

"To measure the hitherto unmeasurable"

Engaged in Research, Design, Development, Manufacture, Integration & Sustainment of high-exporting advanced technology systems, products and services.

We monitor and measure an array of specialised environments to deliver the Safesite™ on land and the Safeship™ at sea.

BY BEING SCIENCE-LED:



We identify and nurture brilliant minds, creating a unique research environment at Durham University, which is a globally outstanding centre of teaching and research excellence.



In our research at DIRDI, we undertake fundamental research into the physical laws of the universe, alongside applied research in Physics, Mathematics, Engineering and Computer Science in acoustics, electromagnetism and information engineering.



It is this research and manufacturing excellence, and our enduring commitment to the sustainment of our technologies in the field, that makes Coltraco Ultrasonics the partner of choice for customers and distributors in 120 countries.



We deliver genuine value for our customers through our scientific and institutional values, and the global quality of our commercial and technical services.

Safeship™

Today our instruments are aboard 17% of the world's 60,000 ships, preventing ships' catastrophic failure, by monitoring watertight integrity on the one hand, and the safe contents of fire extinguishing gases such as CO₂, on the other. These are the basic principles by which we became a Safeship™ company in the maritime sector.

Safesite™

Our instruments serve over 20 market sectors, to ensure that safety-critical systems, such as gaseous fire suppression systems, sprinkler systems, process control equipment, and ventilation systems in high-value assets always work effectively. In the Built Environment, we provide the ability to locate and measure airflow so that buildings are energy efficient and healthy for occupants and for our planet.

Contact and support

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British manufacturer of ultrasonic technologies, exporting to 120 countries and twice winners of The Queen's Award 2019 and 2022.

