



Flow:watch
Micronics Flow
and Heat Meter
Product Catalogue



HANLEY CONTROLS

CLONMEL

www.hccl.ie



**Through Measurement
Comes Control**

Micronics

MICRONICS

About Us

Choose Micronics for all your flow monitoring - We are the people with the service and products for you.

Micronics Ltd commenced trading in 1985 and was set up to design and market "Clamp-On" ultrasonic liquid flowmeters for industry and commerce.

Since its inception Micronics have sold clamp-on meters in more than 80 countries, concentrating mainly on portable "Time of Flight" meters, some of which are marketed under the registered trade name of Portaflow™.



Visit micronicsflowmeters.com available in English, French, Spanish and German.

From the introduction of the first portable instrument the company now markets a range of different products incorporating "Time of Flight" and "Doppler" technology. The range includes portable instruments and fixed meters based on the use of non-invasive ultrasonic sound transmission to detect liquid flow velocity within closed pipes or open channels. There are also Energy options for the clamp-on, fixed and portable meters.

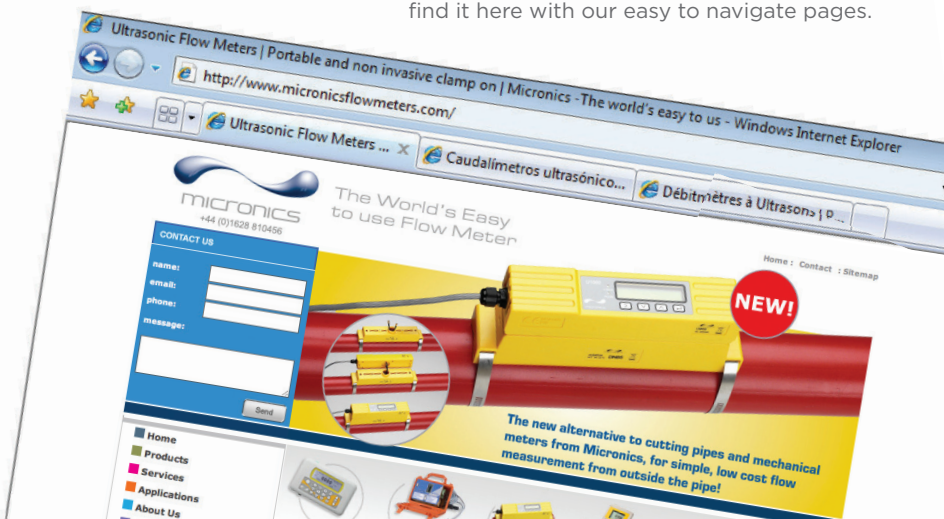
In addition Micronics offer flow measurement solutions, combining the Micronics product range with Flow Analysis software and expert staff to conduct flow surveys.

From our offices and manufacturing facilities to the west of London in High Wycombe, we supply and support a broad customer base both in the UK and abroad. Our large network of distributors provide the same high level of Micronics service wherever you may find yourself around the world.

Visit our website:

www.micronicsflowmeters.com

where you can find all the information about our products and services. Keep up to date with our latest product and exhibition news - if you are looking for a particular application case study or some engineering data, you will find it here with our easy to navigate pages.



Micronics Clamp-on Flow Meters provide cost effective solution to improve energy monitoring and efficiency in large Bedfordshire hospital.

In the current climate of NHS cuts it is more important than ever for a Trust to use every means to save resources without direct effects on patients. Similarly, with the prevailing focus on reducing energy consumption because of climate change, it is vital to keep a close eye on energy usage and make efficiency savings wherever possible. One way of fulfilling both these ambitions is to keep stringent controls on the use of heat and domestic hot water consumption.

Managers at an acute, district general hospital, which provides healthcare services to over 270,000 people in north and mid Bedfordshire, wanted to understand their consumption of hot water which would in turn allow them to identify the requirements for replacing their equipment with the most energy efficient solution.

They called in ETA Energy Systems Ltd, Bedford-based consultants, designers and suppliers of specialised energy equipment and systems who work with the Carbon Trust to reduce energy usage. ETA specialise in determining that pumps, flow-rates and balancing valves are correctly set.

Peter Richardson, ETA's MD commented, "During our assessment of the Hospital's needs, we established full weekly hot water consumption profiles allowing equipment to be accurately selected and specified for the replacement project. Having considered various measurement alternatives two Micronics PF330 meters were selected due to the ease of installation and the maintenance and service benefits delivered by this non-contact technology."

The specialist Micronics product, used for clean liquid monitoring, with its integral logger and software and non-invasive

CASE STUDY ETA Energy Systems

measurement represented significant savings on installation costs and less disruption than when installing an alternative in-line meter.

The Micronics clamp-on flowmeter for liquids is portable and easy to use and offers continuity and long term reliability. It is robustly constructed and provides a quick and reliable means of measuring flow accurately.



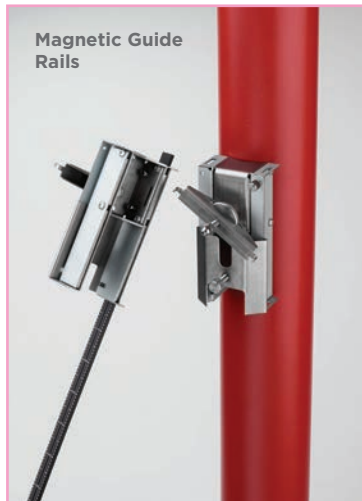
In this example, the meters have been installed at a number of locations for a trial period in order to determine the appropriate size of the new equipment and to make sure that it is the most efficient possible for the task. Staff will be able to monitor flow rates and calculate energy and therefore cost and carbon footprint implications.

Micronics were selected as the supplier due to their extensive experience with clamp-on, ultrasonic, flow measurement technology and their competitive pricing in comparison to similar technology solutions or alternatives which would have required considerable construction work. This example demonstrates that the opportunity for replication and contribution to good energy management in similar schemes across the UK is extensive.

PORTABLES PF330 / PF220

- For measuring liquid flows
- To suit pipes DN 13mm - 5000mm
- 200,000 point logger and software
- Non invasive sensing
- Portable and easy to use

- Flow Range - 0.1m/sec to 10m/sec bi-directional
- Display - 240 x 64 pixels graphic display
- Programming via 16 key control panel
- Battery or mains operation
- Rechargeable battery
- Battery Life - 20 hours from fully charged, depending on load
- Power - 110 - 240VAC +/-10% supply via PSU
- 10 user selectable languages including English, German, French, Spanish and Russian.
- Accuracy $\pm 0.5\%$ to $\pm 3\%$ depending on pipe size for flow rate $>0.2\text{m/s}$
- CE approved



Complementary products



Portaflow 330

Carry Case: The PF330 is supplied in a hard wearing IP67 carry case.

'A' Transducers: 13mm OD to 115mm OD pipes.

'B' Transducers: 50mm OD to 2000mm OD pipes.

'D' Transducers: 1500mm OD to 5000mm OD pipes.

Transducer Operating Temp: 'A' & 'B' -20°C to +135°C. 'D' -20°C to +80°C.

Optional: Hi-Temp Transducers -20°C to +200°C.

Optional: IP68 Transducers.

Outputs: Isolated 0/4 -20mA; RS 232/USB; Pulse output - programmable pulse width from 2ms - 500ms or frequency.

Data Logging: 200,000 data points. Up to 20 named recording blocks. Data displayed locally in text or graph format. Real time or stored. Can be downloaded via RS232 or USB port to Windows based PC. Flow rate and totals can be logged.



Portaflow 220

Carry Case: Polypropylene case, with foam insert and double wall for extra strength.

PF220A with 'A' Transducers: 13mm OD to 115mm OD pipes.

OR

PF220B with 'B' Transducers: 50mm OD to 1000mm OD pipes.

Transducer Operating Temp: 'A' & 'B' -20°C to +135°C.

Optional: IP68 Transducers.

Outputs: Isolated 0/4 -20mA; Pulse output - programmable width from 2ms-500ms or frequency.

PORTABLE PF440IP

- For measuring liquid flow
- Waterproof
- Suitable for rugged external applications
- Extended battery life
- Sleep mode for external use
- One set of transducers

- Pipe range 50mm-2000mm
- User friendly
- Sleep mode for extended logging
- 4-20mA output

The rugged new addition to the portable range of clamp-on flow meters from Micronics, for simple, accurate flow measurement from outside the pipe!

New!

The Portaflow range brings simplicity to the non-invasive measurement of liquid flow. PF440IP offers the user quick and accurate flow measurement with its easy to follow menu and simple set up. Results can be achieved within minutes of opening the case!

Compact, rugged and reliable with an IP67 case and IP68 rated transducers, the PF440IP has been designed to provide sustained performance in hostile industrial environments including demanding external flow and submerged transducer applications for sustained periods of up to 4 months with 1 hour interval logging.

Portaflow 440IP

Carry Case: The PF440IP is supplied in a hard wearing IP67 carry case.

Transducers: 50mm OD to 2000mm OD pipe, IP68 rated.

Flow Velocity Range: 0.1m/s to 10m/s. Bi-directional subject to pipe size.

Accuracy: +/- 0.5% to 3% dependent on flow and pipe size.

Turndown Ratio: 200:1

Transducer Operating Temp: -20°C to +135°C.

Outputs: Isolated 0/4 -20mA; USB; Pulse output, frequency pulse.

Data Logging: 200,000 data points. Up to 20 named recording blocks. Data displayed locally in text or graph format. Real time or stored. Can be downloaded via USB port to Windows based PC.

Battery Life: >150hrs with continuous measurement and can be programmed to take intermittent readings at intervals of up to 1 hour enabling the meter to operate on its internal batteries for up to 4 months on a continuous basis.

Industries:

- Water
- Building Services
- Energy Management
- Power Generation
- Chemical
- Pharmaceutical
- Petrochemical
- Food

Application/use:

- HVAC and energy system audits
- Check system meters
- Pump verification
- Boiler testing
- Leak detection
- Filter sizing
- Ultrapure water measurement
- Heavy fuel oil metering
- Condensate measurement
- Balancing systems
- Fire system testing
- Hydraulic system testing

Recommend for:

- Potable water
- River water
- Cooling water
- Demineralised water
- Water/glycol solutions
- Hydraulic oil
- Diesel and fuel oils
- Chemicals
- Petroleum products



SOFTWARE

PortaGraph / Doppler

- Quickly download your valuable data
- Simple setup and easy to use

Transit Time Software - Portagraph

- For use with PF330 and U4000
- For Windows
- Quickly graph downloaded data and export to Excel



Complementary products

- U4000
- PF330

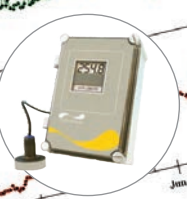
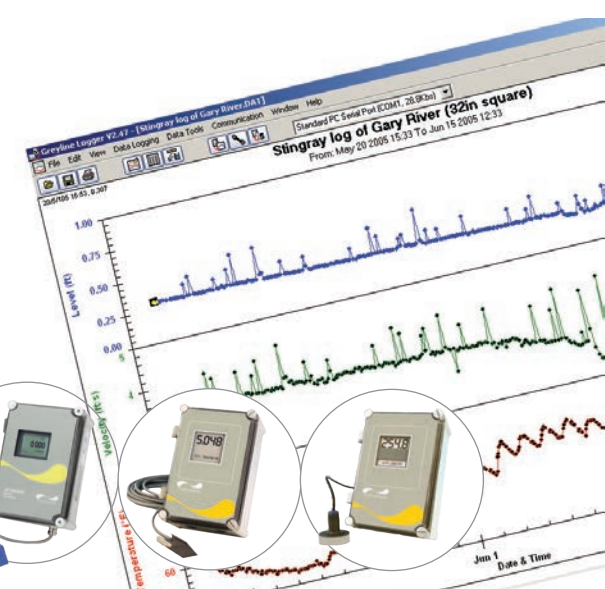
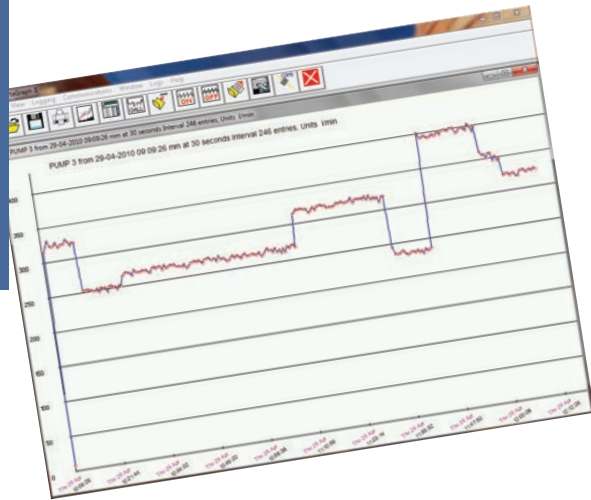
Doppler - Logger Software

- For use with Doppler instruments
- Dial in function when modems are connected to instruments
- Quickly graph the downloaded data and export to Excel
- For Windows



Complementary products

- PF D550
- UF D5000
- PF LV550
- UF AV5000
- UF OC5000



Portable Heater Meter

- Compatible with any flow meter with a pulse output
- Quick and easy setup
- Use with external datalogger for temporary energy monitoring
- Kwh Total, instant energy, volume and temperature readings



Complementary products

- Portable Flow meters
- Pulse 101 data logger

Portable Heat Meter

Sensor Probes: 4 wire PT100 clamp-on 150mm probes.

Temperature Range: 0°C to +180°C.

Power: Battery powered.

Option: External datalogger.

Replaceable Battery Life: Approximately 6 years.

Units: Selectable, volume, Delta T, Hot and Cold temperature, Kwh Total, Instant energy.

Output: Pulse per Kwh, Pulse per m³.

Programming: No programming required- set and forget.

PORTABLE HEAT METER

- Heat Meter for use with U3000, U4000, PF330 and PF220
- Use with external datalogger for recording long-term energy measurements
- Non invasive sensing
- Portable and easy to use



Complementary products

Add enhanced application knowledge and maximise in-service life

Pulse 101 Data Logger

- Interfaces to pulse output flow meters and contact closures
- Up to 100Hz input
- Real time operation
- Miniature size
- Data downloaded via IFC200 software (supplied separately)



Thermocouple Recorder TC101A

- Accepts a variety of Thermocouple types
- Internal cold junction reference
- Real time operation
- Miniature size
- Data downloaded via IFC200 software (supplied separately)



Process 101 Current Recorder

- Suitable for 4-20mA recording
- -20 to +100mA range
- Programmable engineering units
- Real time operation
- Data downloaded via IFC200 software (supplied separately)



Thickness Gauge 8812

- Allows accurate wall thickness entry for best results with clamp-on flow meters
- Quick and easy setup and calibration



Sensor Covers

- Durable Nylon/PVC
- Draw string and Velcro fixing method for ease of mounting



The U3000 / U4000 stands for continuity and long term reliability. This clamp-on flowmeter for liquids with its robust industrial construction provides a quick, reliable and easy means of measuring flow accurately - whatever the industry. Adding the optional energy calculator turns the U3000 / U4000 into a heat meter.

Ultraflo 3000 / 4000

Enclosure: Wall mountable. ABS housing with clear front panel and IP65 protection. Separate signal and power cable entry glands.

User Controls: Large 240 x 64 graphics LCD allows easy to read multi-line menus. Multi-function 15-key keypad permits intuitive option selections.

Accuracy: $\pm 0.5\%$ to $\pm 3\%$ depending on pipe size for flow rate $> 0.2\text{m/s}$.

Repeatability: $\pm 0.5\%$ of measured value or $\pm 0.02\text{m/s}$ whichever is greater.

Outputs:

1. Isolated 4-20mA current output, max current 26mA into 620ohm max load.
2. Pulse output - Programmable Pulse Width from 2ms - 500ms, or frequency pulse.
3. Two programmable user alarms for high/low threshold triggering.

Power Input: 86V - 264VAC, 50/60Hz (standard), 24V AC or DC (optional).

'A' Transducers: 13mm OD to 115mm OD pipes.

'B' Transducers: 50mm OD to 2000mm OD pipes.

'D' Transducers: 1500mm OD to 5000mm OD pipes.

Transducer Operating Temp: 'A' & 'B' -20°C to +135°C. 'D' -20°C to +80°C.

Optional: Hi-Temp Transducers -20°C to +200°C.

Optional: IP68 Transducers

Environmental: Operating temperature range -20°C to +50°C. Storage temperature range -25°C to +75°C, Humidity 90% RH at 50°C max.

Industries:

- Chemicals
- Petrochemicals
- Power plants
- Water
- Oil & Gas
- Semi-conductor
- Food & Beverages
- Pharmaceuticals

Highlights:

- Minimised uncertainty
- Optimised reliability
- Minimal maintenance
- Efficient regreasing
- Easy sensor mounting
- All in one system

PERMANENT U3000/U4000

- For measuring liquid flows
- Non invasive sensors
- Simple to use
- Wall mountable

- User friendly Quickstart operating mode
- Bi-directional accurate measurement over wide fluid velocity range, 0.1m/s to 10m/s
- Automatic compensation for velocity profile effects of water
- Secure operation - menus password protected
- 10 user selectable languages including English, German, French, Spanish and Russian.



PERMANENT U1000

- Metered liquid flow rate and volume
- Easy to install
- Clamp-on sensors
- Lower installed cost than in-line meters

Industries

- Building Services
- Energy Management
- Water Treatment
- Chemical
- Pharmaceutical
- Petrochemical
- Food

Recommended for:

- Hot water < 85°C
- Chilled water
- Potable water
- Demineralised water

The alternative to cutting pipes and mechanical meters from Micronics, for simple, low cost flow measurement from outside the pipe!

Ultraflo 1000

The U1000 is an ultrasonic permanent/fixed clamp-on flow metering solution for measuring flow rate – with a volume pulse output and optional 4-20mA flow rate signal, which can be used as a stand alone meter or as an integral part of an aM&T or BEM's system.

Simple to install – clamp-on to the pipe, connect power and enter the pipe diameter, no specialist skills or tools required! A cost effective alternative to traditional in-line meter installation, plus dry servicing, providing minimum downtime and maximum availability!

Compact, rugged and reliable, the U1000 has been designed to provide sustained performance in industrial environments.

Application/use:

- Hot water metering and flow measurement
- Flow measurement for heat metering
- Chilled water metering and flow measurement
- Flow measurement for chilled water energy metering
- Potable water metering and flow measurement
- Process water metering and flow measurement
- Ultrapure water measurement

Accuracy: +/-3% of flow reading for >0.3m/s.
Flow Velocity Range: 0.1 to 10m/s.
Pipe Range: 25mm OD - 115mm OD.
Water Temp Range: 0°C to 85°C.
Flow Rate Output: Optional 4-20mA.
Volume Output: Pulse or Frequency Outputs preset to default condition based on Pipe Nominal Bore.
External Power supply: 12V-24V +/- 10% AC/DC at 7 watts.
Electronics enclosure: IP54.
Input/Output Cable: 5m x 6 core for power in and data out.



The U6000 stands for continuity and long term reliability. Flow measurement can be done anywhere and start-up is immediate.

This clamp-on flowmeter for liquids with its robust industrial construction and regreasing concept provides a revolutionary solution for easy handling.

The U6000 is manufactured according to the European Directive 94/9 EC (ATEX 100a).

These flowmeters are approved for installation and use in hazardous classified locations of Zone 1 and 2 by the PTB and are in accordance with the European Standards of the EN 500xx and the EN 60079-7 standard.



Industries:

- Chemicals
- Petrochemicals
- Power plants
- Water
- Oil & Gas
- Semi-conductor
- Food & Beverages
- Pharmaceuticals

Highlights:

- Minimised uncertainty
- Optimised reliability
- Minimal maintenance
- Efficient regreasing
- Easy sensor mounting
- Installation wizard
- All in one system

Ultraflo 6000

Enclosure: Die-cast aluminium with polyurethane coating. Stainless steel option.

Max. deviation (under reference conditions): $< \pm 1\%$ of M.V. for DN 50 mm / 2", $v > 0.5$ m/s / 1.5 ft/s. $< \pm 3\%$ of M.V. for DN < 50 mm / 2", $v > 0.5$ m/s / 1.5 ft/s.

Measuring range: 0...20 m/s / 0...66 ft/s.

Process Temp: -40...120°C / -40...284°F. High temp option -50...200°C / -58...392°F.

Communication: Current, pulse & status output. HART® communication, control input.

IP rating: IP66/IP67

Mounting area: 10 diameters inlet, 5 diameters outlet

Repeatability: $< \pm 0.2\%$

Protection ATEX: EEx - zone 1/2 compliant, FM - Class I DIV 1/2, CSA - Class I DIV 1/2. Intrinsically safe Ex-I.

Pipe size: (DN15...DN6000 / ½"...160") depending on flow sensor.

Power supply: Standard 100...230 VAC (-15/+10%), 50/60 Hz/ Option: 24 VAC/DC

Human machine interface: Infra red touchscreen setup.

Languages: English, French, German.

Solid content: less than 5%.

Gas content: less than 2%.

PERMANENT U6000

- For "clean" liquid monitoring
- To suit pipes DN 15mm-6000mm
- Non invasive sensing
- EEx, FM and CSA approvals
- Setup wizard

- Flexible ultrasonic flowmeter solution
- Robust industrial clamp-on construction
- Flow direction (forward or reverse)
- Totalisation of volume flow
- Reliability of flow measurement, Quality of acoustic signal
- CE approved
- Continuous measurement of actual volume flow rate, flow velocity, velocity of sound, damping of acoustic signal, signal to noise ratio
- Immediate start-up
- Reliable measurement
- All in one concept
- EEx - zone 1/2



HEAT METER

CalecST

- Calculates energy use
- Temperature sensors are clamp-on or inserted
- Used in conjunction with a flow meter

Using the CalecST Heat Meter in conjunction with a clamp-on Ultrasonic Flowmeter is a cost effective solution to improve energy measurement and management.

CalecST Heat Meter

- Allows accurate energy calculations - used in conjunction with a flow meter
- Quick and easy setup



CalecST Heat Meter

- Sensor probes:** 4 wire PT100 clamp-on 150mm.
- Power:** Mains 240VAC/24VDC/Battery (6 year life).
- Options:** MBUS central hub with GSM/Ethernet for up to 240 CalecSTs.
- Output options:** Pulse / Pulse with Mbus / 4-20mA / LON/Modbus.
- Units:** Selectable, volume, Delta T, Hot and Cold temperature, Kwh Total, Instant energy.
- Programming:** No programming required- set and forget.

Minocal WR3

- Compatible with any flow meter with a pulse output.
- Quick and easy set up.
- Use with external datalogger for temporary energy monitoring.
- MID approved.
- Long battery life.
- MWh, kWh, GJ, MJ temperature and flow readings.

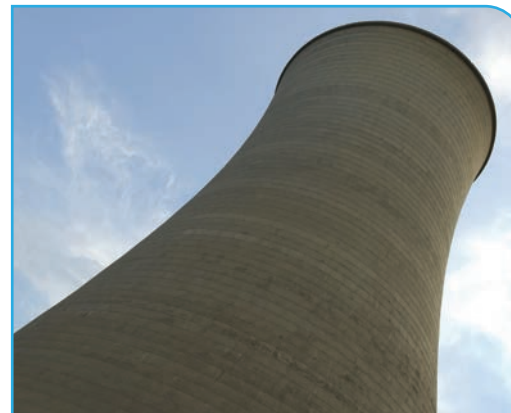


Environmental Treatment Concepts use Micronics Clamp-On Flow & Heat Measurement in Sustainable Water Treatment projects.

Demonstrating the benefits including improvements in the potential performance and energy savings from the retrofit installation of Sustainable Water Treatment to existing building services is a major factor in the take-up and case for investment. And being able to demonstrate what's flowing where, not flowing or even flowing backwards can go a long way to establishing confidence with potential customers that your company knows what it's doing!

Surveying existing large-scale heating and HWS installations to establish a basis for installing improvements can be a daunting task and Environmental Treatment Concepts (ETC) www.electronicdescaler.com have found that the PF330 portable clamp-on flow and heat-meter from Micronics www.micronicsflowmeters.com is an ideal tool for the job.

Established in 1989 ETC has helped many commercial and industrial clients save thousands of pounds with their Effective Physical Water Treatment. Water that is naturally hard, as in 70% of the UK contains dissolved calcium and other minerals and their effect on pipe work and water systems can be disastrous including reducing heat exchanger energy efficiency by up-to 40% due to lime scale build-up.



CASE STUDY

Environmental Treatment Concepts

The Micronics products are used to demonstrate how bad the performance is before installation and the improvements in efficiency following installation with LTHW pipe sizes ranging from circa 2 to 18 inches. The ETC products prevent new and reduce existing lime scale, water flow rate is a key factor in the process and the PF330 provides the essential information for assessment and timeframes for improvement.

Having considered various suppliers ETC selected the Micronics - PF330 - Time of Flight - portable flow instrument plus heat-meter data-logger. Portable Clamp-On Ultrasonic flow measurement has clear advantages for survey work and Micronics were selected as the supplier due to a combination of their long-term experience with non-invasive, Clamp-On technology, product performance and pre-order assistance.

ETC Technical Services Manager - Simon Elliot says "The PF330 has proved to be a great tool to undertake plant surveys including identification of circulation shortfalls, even pumps going backwards. It provides a real insight into what's going on, like having X-ray vision. And it's also a valuable tool for demonstrating how well our installations work to improve performance and reduce energy consumption. The Micronics website and pre-order support was good and the products are simple to use. We've got a lot of Public sector - MOD and Hospital installations with very old pipe work where we've been pleased with the product performance and the ongoing service support has been there when we've needed it."



Complementary products

Permanent flow meters: U3000

PORTABLE PF D550

- For "dirty" liquid monitoring
- To suit pipes DN 13mm-4500mm
- On board data logger and software
- Non invasive sensing
- Portable and easy to use

- Clamp-on Ultrasonic Transducer
- Handheld Meter with large backlit LCD Display and Totalizer
- Internal Battery and/or AC Powered
- Built-in 5-key Calibrator
- 300,000 point Data Logger
- USB Output and Windows software
- 4-20mA Output
- Rugged, watertight Carry Case



PF D550 Portable Doppler Flow Meter

Suitable for most contaminated fluid flows

- Single clamp-on transducer
- Fast, simple operation
- Rugged, waterproof
- On board data logger
- Free analysis software

Pipe Range: 13mm to 4500mm.

Transducer Temperature Range: -40°C to 150°C.

Power: 100 - 240VAC, +/- 10%.

Internal Rechargeable Battery: 18 hours from full charge.

Programming: via 5 key input controller.

Display: flow rate, total.

Data Logger: 300,000 point capacity time and date stamped.

Sensitivity: fully adjustable.

Damping: fully adjustable.

Outputs: Opto isolated 0/4 -20mA; USB.



PF LV550 Portable Level-Velocity Logger

Suitable for any open channel or partially full pipe.

- Compact, rugged, water tight, dustproof
- Up to 4 years logging from Alkaline "D" cells
- Free onboard Windows compatibility analysis software
- Large capacity memory store
- Fast download via RS232 port

Electronics Housing: 208x166x86mm, polycarbonate, 4.5kg.

Operating Temp. Range: -20°C to +60°C.

Set-Up: Via Windows compatible on-board software.

Display: LCD Bar Graph selectable Displays: Memory, battery, temp, velocity, level.

Logger Interval: 10secs (15 days) to 20mins (4 years).

Data Capacity: 130,000 Data points.

Output: RS232 @ 28,800 baud.

Power: 4 Alkaline "D" cells.

Velocity Range: 0.03m/sec to 3m/sec.

Level Range: Minimum Head 25.4mm, Maximum Head 4.5 metres.

Sensor Operating Temp Range: -15°C to +65°C (5°F to +150°F).



PORTABLE PF LV550

- For part filled pipe and open channel monitoring
- Built in display
- Long term data-logging capability
- Portable and Easy to use
- Streamlined sensor for invasive measurement

- Ultrasonic - Measures Level and Velocity
- No Flume or Weir required
- Powered by standard Alkaline D-cell Batteries
- 130,000 point Data Logger
- Powerful Windows software
- RS232 Output
- LCD bar graph display

CASE STUDY

Servitech International Limited

Packaging potatoes may seem like a straightforward industry but there are significant challenges including monitoring the flow rate of effluent from sites. This is particularly difficult in locations where there is no mains power available. Such was the case for one of the UK's leading suppliers who have packing and processing sites located around the main potato growing areas in the Scottish borders. They needed a system that could stand alone and would provide a logged reading for their local trade effluent officer to check as and when necessary. Effluent leaves the site via a pipe with an internal diameter of 150mm and this pipe often runs with a very shallow depth of effluent. *The pipe empties into a brick channel which is open to the atmosphere, so any gauging structure that was installed in this channel could give false high readings as it would not only be measuring the site's effluent, but also surface water and rain water, it was therefore imperative that the flow measurement took place in the actual effluent pipe.*

Steve Laddle, Sales Director of Bedford-based Servitech International was called in to recommend a solution. Servitech is a privately owned, independent company that provides maintenance, support, repair, supply and installation services for all water, wastewater and process instrumentation including all analytical and physical measurements and covering all different manufacturers' equipment. The independent company specializes in tailor made solutions for all manner of applications, and is able to offer a complete turnkey installation service, from excavation and groundwork's through to specifying the instruments, installing and commissioning, and finally maintaining them once they are in operation.

Servitech selected the Micronics PF LV550 portable area/velocity logger with mounting bands, which offered ease of installation

Servitech utilises Micronics - PF LV550 - Portable Area/Velocity meter to monitor effluent from potato packaging plant.

and set up and is highly flexible as it is battery powered.

The company had used Micronics products in the past when it was necessary to hire portable flow meters for verification of fixed site systems, such as magflow meters. They have found Micronics staff to be knowledgeable and helpful and were therefore comfortable that they would be able to help with this particularly awkward application. As they were not the end user they needed to have complete trust that any suppliers would not approach the customer directly.

Steve and his client were both delighted that they chose Micronics for this job.

"The PF LV550 was delivered to our offices in Bedford and was programmed for the installation via a laptop with an RS232 port. Our installation engineer then travelled to the Scottish Borders and using the mounting band was able to install and commission the system with minimum fuss. As the site was 300 miles and a 6 hour drive away, it was important that the system was absolutely right for the application and had a degree of flexibility in the event of any problems. The PF LV550 system made this possible, along with the support provided by Micronics when the engineer was familiarising himself with the system before attending site. The portable nature of the system has saved the customer a considerable amount of money in terms of cabling costs, and the flexibility of the sensor has meant that no bespoke gauging structure was required."

Servitech would definitely recommend the use of Micronics products in general and the PF LV550 in particular. The customer was very happy with the service provided and the resulting installation and data that PF LV550 provides. And they would certainly use the PF LV550 in any similar applications that present themselves.

UF D5000 Doppler Flow Meter

Suitable for most contaminated fluid flows

- Watertight enclosure
- RFI rejection filters
- Signal strength indicator
- New Bi-directional flow monitoring

Pipe Range: >13mm up to 4.5m.

Power Input: 100-240VAC, 50/60Hz, Option 9-32VDC 5 watts max.

Flow Rate Range: 0.03m/s to 12m/s

Accuracy: +/-2% of full scale. Requires solids or bubbles of minimum size 100 microns, minimum concentration 75ppm.

Repeatability: +/-0.1%.

Linearity: +/-0.5% of full scale.

Display: Enhanced multi function white backlit matrix display, relay states, operating mode, calibration menu.

Output: Isolated 0/4 -20mA (1000ohm load max.) 2-5amp rated SPDT relays, programmable flow alarms and/or proportional pulse. Adjustable sensitivity and damping.

Electronics Operating Temp: -23°C to +60°C.

Sensor Operating Temp: -40°C to 150°C.

Options: Intrinsic safety barriers, high temp to 150°C, ISE insertion option. Sensor designed to withstand accidental submersion. Enclosure heater controlled to maintain temp up to -40°C. Additional control relays.

Data logger: 2 million points download via USB with Windows software.

PERMANENT UF D5000

- For "dirty" liquid monitoring
- To suit pipes DN 13mm-4500mm
- Non invasive sensing
- Easy to use

- Non-Contacting Ultrasonic Sensor
- Large, Backlit LCD Display
- 12-Digit Totalizer
- Reverse Flow Measurement
- Isolated 4-20mA (1000ohm)
- 2 Programmable Control Relays
- Automatic Sensitivity Adjustment
- Built-in 5-Key Calibrator
- Optional 2 million point Data Logger with USB output to Flash memory



PERMANENT UF AV5000

- For part filled pipe and open channel monitoring
- 2 million point logger option and software
- Streamlined sensor for invasive measurement
- Easy to use

- For Open channels and Pipes no Flume or Weir required
- Ultrasonic - Measures Velocity + Level to Calculate Flow
- Measures Forward and Reverse Flow
- 3 Isolated 4-20mA Output (Flow, Level and Velocity)
- Totalizer and 2 Control Relays
- Simple 5-key Calibration Password Protected
- Optional Intrinsically Safe Sensor
- Optional built-in 2-million point Data Logger and Software with USB output to Flash Drives



Enclosure: Watertight and dustproof (IP66).
Power input: 50/60HZ, 5.28 watts, 100-240VAC or 9-32VDC optional.
Outputs: 3x Isolated 4-20mA into 1000ohm load. Programmable for Flow, Level or Velocity.
Relays: 2x form 'C' dry contacts rated 5 amp SPDT Programmable for Flow Proportional pulse (sampler/totaliser) flow and/or level alarm.

Velocity Range: 0.03 to 6.2m/sec.
Level Range: Minimum Head 25mm to Maximum Head 4.5m.
Accuracy Level: 0.25% of Range.
Velocity: +/-2% of Reading.
Linearity and Repeatability: +/-0.1%.

UF AV5000 Area-Velocity Flow Meter

Suitable for any open channel or partially full pipe.

- Monitor flows through partially full pipes or open channels
- Eliminates the need for flumes or weirs
- Automatic temperature compensation
- Barriers for IS operation
- 2 million point data logger optional
- Logger software included. Runs on Windows

UF OC5000 Open Channel Flow Monitor

Suitable for most Flume or Weir

- Simple 5-Key calibration
- Password protected
- USB outputs to flash drive
- 2 million point logger
- Windows software
- On Screen flow reports

Enclosure: Polycarbonate (IP66). Shatterproof clear Front Panel.

Power: 100-240VAC 50/60HZ & 4 watts max.

Option: 9-32VDC.

Outputs: 4-20mA isolated into 1000ohm load. 2x control Relays Form "C" dry contacts rated 5amps SPDT. Programmable level alarm, pump, control pump alternation failsafe/echo-loss, air temperature alarm.

Sensor Specification: Maximum range 4.5m.

Dead Band: Programmable, Minimum 200mm.

Beam Angel: -8°.

Operating Frequency: 92KHz.

Operating Temperature: -40°C to 65°C automatic temperature compensation.

Use with Flumes, Weirs, V notches.



PERMANENT UF OC5000

- For open channel monitoring
- Versatile choice of channel types
- Easy to use

- Non-Contacting Ultrasonic Sensor
- Accurate and Verifiable
- Built-in 2-million point Data Logger and Windows Software
- USB Outputs to Flash Memory Sticks
- Isolated 4-20mA/0-5V Output
- 2 Programmable Control Relays
- Simple 5-key Calibration with Language Selection

CASE STUDY

Trant Construction

Micronics Clamp-on Flow Switches provide cost effective solution to eliminate algae growth problem on flow monitoring of wash-water flow at Wessex Water.

There was a problem at Wessex Water, a regional water and sewage treatment company in the southwest of England. The flow sensors being used for confirmation of wash-water flow to plant and equipment were found to be growing algae. The thermal dispersion flow switch and the wash-water in the systems used either final effluent from the plant or partially treated water from some other point in the treatment process. The water content plus the increase in temperature on the probe was producing a food-rich and warm place for the propagation of algae. This affected the thermal dispersion from the probe to the point where the probes no longer detected flow. Removal from the pipeline would traditionally involve the isolation and draining of the wash-water lines.

Trant Construction, who undertake Civil Mechanical and Electrical projects for major UK and overseas water companies were called in. They identified that a non-intrusive, cost-effective and simple to operate sensor that would not be subject to fouling was required. Various alternatives were considered until Dave Rich of Trant Construction discovered the Micronics DFS-II Doppler Flow Switch and agreed with the client to trial one unit for pipelines ranging from 32mm to 300mm, dependant on the velocity of flow through the pipe-work.

The DFS-II is designed for "dirty" liquids. The sensing is non-invasive, working by injecting high frequency sound through the pipe wall into the flowing liquid. Acoustic pulses are continuously reflected back to the sensor and the DFS-II measures a frequency shift to

calculate flow velocity. It controls flow without any drop in pressure, no sensor fouling and minimal maintenance. Installation takes just a few minutes because there is no need to cut into pipes resulting in a major saving in time and plant outage.

The trial was successful and Wessex Water are now using the Micronics flow switches for most applications, including not only wash-water but pump discharge monitoring where some non-return valves had proved to be unreliable.

Dave Rich is pleased with his choice. "I would definitely recommend the use of the DFS-II. The objective in this particular project was to eliminate algae in a cost-effective, timely manner. Micronics DFS-II fulfilled this objective as well as offering considerable other benefits."

UF DS200

Suitable for pump protection or to activate flow/no flow alarms

- Single clamp-on transducer
- Fast, simple operation
- Ideal for pump protection



Pipe Range: 15mm to 4500mm.
Enclosure: IP66 polycarbonate.
Relay: 5 amp DPDT.
Set points: On/Off adjustment 0.1 to 3 m/sec.
Relay Time Delay: 0-60 seconds.

Indication: LED flow rate bargraph and relay state.
Power input: 100-240VAC 50/60HZ.
Electronics Operating Temperature: -23° to 60°C.
Transducer Operating Temperature: -40° to 150°C.

PERMANENT UF DS200

- Control flow of liquids from outside a pipe
- Suitable for pipes DN 15mm – 4500mm
- Non invasive sensing

- Insensitive to pressure, specific gravity and conductivity
- Includes a 5 amp DPDT control relay with adjustable On/Off set points and time delay
- LED flow rate bargraph and an LED indicator for relay status
- Clamp-on Ultrasonic Transducer

INLINE ENERGY METERS

CF-ECHO II

- No moving parts - Ultrasonic technology
- To suit pipes DN 15mm-50mm
- Mains or battery

CF ECHO II

Applications

Heating and Combined, return and supply positioning, horizontal or vertical.

Benefits

Accurate measurement of high and low flows.
Easy reading.
Pre-equipped for communication.
Standards Compliance.
Class 2.0 acc. EN 1434.
Env. Class C acc. EN 1434.
OIML R75 Class 4.
PTB Class C.
SP Test s-2.
PED compliant.

Pipe Connections: G^{3/4} A or G1A.

Pipe Sizes: DN15 and DN20.

Nominal Flow Range Qp: -0.6m³/h to 2.5m³/h dependant on size.

Maximum Flow Range: 1.5m³/h to 3.75m³/h dependant on size.

Minimum Flow Range: 6l/h to 25l/h dependant on size.

Nominal Pressure: PN16.

Temperature Range: -20°C...90°C.

Outputs: Optional Output Connections with pulse or M-bus output and option to connect up to 4 external water meters.

Power Supply: 3.6V Lithium Battery (10 Years Typical).

Temperature Sensors: PT100 2 wire with 1.2m coiled cable.

Ultrasonic Compact Heat Meter

- High metrology
- Advanced functions
- Pre-equipped for communication
- Ease of installation
- Easy reading
- Ultrasonic technology - no moving parts



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Integral-V MaXX Compact Heat Meter

- Flow range - 6 l/h up to 3.75m³/h
- Pipe range - DN15 up to DN20
- Optional Output Connections for M-bus and pulse
- Class C Flowmeter acc. EN 1434-1



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Hot & Cold Water Meters

- Flow range - 30 l/h up to 3000m³/h
- Pipe range - DN15 up to DN200
- For Cold (30°C) or Hot (90°C) water
- Screwed or Flanged pipe connections dependant on size
- Hermetically Sealed Counter
- For horizontal installation
- Pulse output for connection to pulse counter, heat calculator or BMS System

Pipe Sizes: DN15 and DN200.

Nominal Flow Range Qn: 1.5m³/h to 1500m³/h dependant on size.

Maximum Flow Range: 3m³/h to 3000m³/h dependant on size.

Minimum Flow Range: 30l/h to 45m³/h dependant on size.

Nominal Pressure: PN16.

Temperature Range: 30°C - Cold, 90°C - hot.

Body: Epoxy Powder Coated.

Dial: Large, easy to read, hermetically sealed.

Approvals: WRAS approved product.

US BR473 Ultrasonic Flowmeter

- Flow range - 250l/h up to 120m³/h
- Pipe range - DN65 up to DN100
- Selectable pulse values
- Horizontal or vertical mounting
- Use with heat calculator or stand-alone with Pulsbox power supply
- MID 2004/22/Ec module B + D
- Class 2.0 cc. EN1434

Pipe Connections: Flanged connections

Pipe Sizes: DN15 and DN200.

Nominal Flow Range Qp: 25m³/h to 60³/h dependant on size.

Maximum Flow Range: 50³/h to 120³/h dependant on size.

Minimum Flow Range: 250l/h to 600l/h dependant on size.

Nominal Pressure: PN25.

Temperature Range: -5°C...150°C.

Outputs: Open collector pulse output, max. Voltage 30 Vdc, polarity dependant.

Power Supply: -3.0...5.5 Vdc powered by heat calculator or Pulsbox.

INLINE WATER METERS

- Pipe Sizes 15-200mm
- Hot + Cold Water



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CASE STUDY

PA Energy

PA Energy use Micronics Ultrasonic, Clamp-On Flow & Heat Meters to monitor and improve water and energy saving projects.

Monitoring the performance of water and energy saving initiatives is essential to demonstrate the benefits, ensuring that systems operate to specification and are tuned for maximum savings to deliver fast pay-back on investments. And London based PA Energy who specialise in the supply, installation and ongoing monitoring of turnkey sub-metering systems have used Micronics ultrasonic, clamp-on flow and heat metering products to good effect on a wide range of water and or energy saving projects.

The projects have included rainwater harvesting, fuel cell and solar/thermal installations on commercial buildings in the London area and the simple clamp-on, non-invasive solutions from Micronics have offered significant advantages over the traditional alternative of in-line meters and their requirement for system drain-down, pipe cutting, re-filling systems and the associated costs, which are all avoided by the use of a clamp-on solution.

For the rainwater harvesting project a claim for a reduction in the sewage charge is being developed by using a Micronics U3000 to demonstrate how much rainwater is being dumped to sewage by metering the amount of water being pumped into a grey water tank in comparison to the boosted cooling water entering the tank. Another application was measuring the LTHW heat flow from a fuel cell calorifier again with a U3000 to demonstrate the performance of the fuel cell process. And yet another was monitoring the heat transfer/performance from a solar/thermal panel by measuring the water /glycol mix and differential flow and return temperature

with a heat calculator to calculate heat transfer to the buffer vessel heat exchanger to demonstrate the performance of the solar/thermal system i.e. that it was performing to specification.

PA Energy selected clamp-on ultrasonic flow meters for the clear advantages of being low cost, non disruptive and simple to install in comparison to in-line meters and Micronics were selected as the supplier due to a combination of their long-term experience with non-invasive, clamp-on technology, product performance and pre-order assistance.

PA's Managing Director - Percy Albuquerque says "The Micronics clamp-on flow meters have proved to be an effective component in providing accurate water flow and heat measurement data for our web based aM&T plus data analysis services. The product performance has been good, even on partially filled pipes and on the rare occasions that we have had application problems the Micronics support has been good."

The potential for similar use is significant and PA's experience is an example of how clamp-on, ultrasonic technology can be successfully implemented to gather information and demonstrate the performance of water and energy saving installations.



Not sure? Then Hire, we'll even offer to credit the cost of your first week's hire if you buy.

Micronics has a wealth of experience hiring many types of equipment, especially our own. Remember that when you hire Micronics equipment, you are dealing with the manufacturer with all the benefits that brings.

We have a large stock of hire equipment on the shelf and ready to go at any time.

Do you need an equipment expert on site? We can provide that too, ask for our Engineer on site service when you arrange your hire.

All units will arrive inspected by our service department and charged up for immediate use.

Maintenance Agreements -

Micronics can offer maintenance plans to keep your equipment in top shape and within calibration, talk to us about your needs and we will tailor a plan for you.

Installation/Commissioning -

We are able to offer the complete package, from your initial enquiry right through to after sales long term maintenance programmes.



SERVICES AND HIRE



Our team of engineers can offer excellent advice from preliminary surveys right through to equipment selection and Installation and Commissioning.

By selecting Micronics you can be assured of receiving the quickest and best service on the market.

Training - At Micronics we understand that sharing knowledge leads to better value from test equipment.

Contact us for programmes that best suits your enterprise.

Engineer on site - Our engineers have a lot of experience using our equipment, you choose the time and date and we'll be there.

Calibration - Keeping an instruments' calibration up to date makes sense, we can offer yearly maintenance programmes to make this simple.

The wholes solution -

Micronics have been supplying solutions for their customers for many years, we can help you too. Tell us what you need and we will have a package that fits.

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Micronics Limited reserve the right to alter any specification without notification.



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