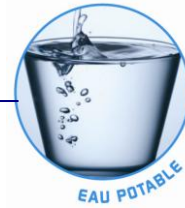


Integrated measuring systems
for the whole water cycle



Transit time Ultrasonic Pipe Flowmeter
ChronoFLO



HYDREKA
www.hydreka.fr

Presentation

HYDREKA's range of Transit Time Ultrasonic Flowmeters use advanced complete coded signal digital correlation processing techniques to achieve stable measurements even in difficult conditions (drinking water and effluents). The same core processing electronics are used in a number of different configurations to suit a wide range of applications. These configurations include Portable and Permanent control units, and transducers with mounting arrangements for a wide range of pipe sizes. Flow tube cells for in-line installations for very low flows and dosing control applications are also available.



Key Features

- Drinking water and effluents
- Ease of installation
- Same unit on a wide range of pipe sizes
- Non invasive measurement
 - No pressure loss
 - No risk of leakage
 - No disruption of plant operation
 - Hygienic integrity
 - No fluid contact
- No need for zero adjustment
- Advanced DSP coded signal correlation provides highly stable transit timing measurements, even in difficult conditions
- Real time directly measured speed of sound compensation reduces flow error from fluid variations with temperature and pressure
- Built in wall thickness facility standard [requires optional wall thickness transducer]
- Internal logging
- External inputs for thermal energy and external flowmeter logging applications
- External outputs for process control
- Graphics LCD display

Technical Specifications

Measurements					
Flow	Measuring principle	Complete coded signal correlation measuring transit time difference			
	Range	Bi-directional up to 25 m/sec			
	Processor electronics resolution	Typically 0.01×10^{-9} seconds. For water and different pipe bores this equates to:			
		Pipe bore mm	<u>50</u>	<u>200</u>	<u>1000</u>
		Velocity mm/sec	0.3	0.075	0.015
		Flow litre/sec	0.0006	0.0025	0.0115
	Overall Resolution	Defined as still water noise time difference, typically $< 0.2 \times 10^{-9}$ seconds peak to peak. For water and different pipe bores this equates to:			
		Pipe bore mm	<u>50</u>	<u>200</u>	<u>1000</u>
		Velocity mm/sec	6	1.5	0.3
		Flow litre/sec	0.012	0.05	0.23

		Time difference for zero flow with internally smooth pipes typically better than 1×10^{-9} seconds. For water and different pipe bores this equates to: Pipe bore mm <u>50</u> <u>200</u> <u>1000</u> Velocity mm/sec 30 15 1.5 Flow litre/sec 0.06 0.24 1.2 If greater accuracy is required, the zero bias can be eliminated by a zero flow check on installation
	Repeatability	Without moving sensors, typically $\pm 0.15\%$ of reading
	Accuracy	For fully developed and symmetrical flow: ± 1 to 2% of reading + zero bias, without process calibration $\pm 0.5\%$ of reading + zero bias, with process calibration
Speed of Sound	Measuring principle	Complete coded signal correlation measuring mean transit time during normal operation
	Range	800 to 2000 m/sec
	Accuracy	< 0.25% read value
	Resolution	2 mm/sec
Wall thickness (gauge)	Measuring principle	Complete coded signal correlation measuring reflection time. Uses separate [optional] wall thickness transducer
	Range	Metallic pipe : 2 - 60 mm ; Plastic pipe : 2-30 mm
	Accuracy	< 0.1 mm
	Resolution	0.05 mm
Temperature	Measuring principle	External input from 4-20mA temperature sensors
	Range	-40 to +200 °C
	Accuracy	1% of reading
	Resolution	0.1 °C
Fluids	Types	Sonically conductive
	Sediment/air levels	<20% but volumetric fluid flow will not be accurate with entrained sediment/air
Pipe	Outside diameter range	15 - 75 mm. Transducers 4 MHz on fixture with chain fixings (optional) 50 - 2000 mm. Transducers 1 MHz on fixture with chain fixings (standard) Straps or magnetic clamps (optional)
	Wall thickness range	No limits
	Material	Metals, glass and sonically conductive homogeneous polymers/plastics
	Lining	Bitumen, glass, epoxy paint and most concrete liners. Excluding loose liners.

Operational

Languages		Selectable: English, French, German, Spanish, Portuguese, Italian
Units		Selectable: feet, metres, ml, litres, m ³ , ft ³ , pints, gallons, US gallons, seconds, minutes, hours, days. Plus user defined units and time. Input units in metric or imperial.
Power supply	Internal batteries	NiMH {6 x D} rechargeable, 7 Ah (nominal)
	Battery life [nominal]	10 hours continuous operation (LCD on, backlight on) 400 hours continuous operation (LCD off, backlight off) Sleep mode with burst sampling at 5 minutes interval, extends life up to 2 months
	External DC	12v @ 60mA (backlight off) 12v @ 600mA (backlight on)
	External AC	External AC/DC adaptor. 100 to 240 v. 50/60Hz. IP40. 30 watts
	Recharge time	Fast Charge (meter off): 12 hours Trickle charge (meter on): 18-24 hours
External control		RS232 [8 data, 1 stop bit, none] baud rates up to 115200 or half duplex [2 wires] RS485. Both fitted but cannot both be used at the same time.
	Transit Time/ Sound Speed	2 sensors, single channel
Inputs	Wall thickness	External, optional wall thickness sensor for use when setting up. Plugs into one of the sensor connections.
	Temperature	2 off 4-20mA isolated inputs
	Frequency/pulse count	2 off 0 – 10 kHz inputs for open collector [or contact closure] outputs from external device.
Outputs	Digital data	RS232 [8 data, 1 stop bit, none] baud rates up to 115200 or half duplex [2 wires] RS485. Both fitted but cannot both be used at the same time.
	Analogue	1 output which can be set as current or voltage. Selectable output ranges 4-20mA, 0-20mA, 0-24mA or 0.5v, isolated. Choice of output under software control so can be set to any parameter measured by flowmeter, range, scale and window.
	Totaliser [pulse]	2 x Opto-isolated open collector outputs. Software set to be either 1 for positive and 1 for negative flow, or set to 1 for flow and 1 for direction. 2500V isolation, 5 kHz max. Max DC voltage 18v.

Site information		17 separate sites. Data rate, start/stop times, RTC setting
Settings		4Hz standard update rate, with user set moving average [1 to 999 seconds]. Logging interval user set form 1 to 9999 seconds and average over period is logged.
Display	Type and pixels	240 * 128 graphic LCD
	Backlight and Contrast	On/Off for LED backlight and contrast level control
	Data points	Alpha-numeric and Graphics display output, graphs and logging traces
Logging		Universal multi-point datalogger. 196439 data points – e.g. flow and Date/time = 78575 records.
PC software		Hydreka WinFluid and Win 95/98/2000/NT/XP/7
Keypad		16 keys. ON/OFF on Keypad
Password Protection		3 levels: Master [Hydreka only], Owner [Change all settings], User [Change settings as defined by owner]
External Connections		Mil-spec connectors are used throughout 1. C1 sensor upstream 2. C1 sensor downstream 3. Analogue I/O (4-20mA) (cable with Mil specs connector optional) 4. Digital I/O (RS232 or RS485) (c Hydreka WinFluid able with Mil specs connector optional) 5. Open collector inputs/outputs (cable with Mil specs connector optional) 6. DC charging

Physical

Operating temperature range		Transducer	-40 to +120 °C [200°C pipe with ambient air temperature]
		Cable	-20 to +80 °C
		Control Unit	-10 to +50 °C
Storage temperature range		Transducer	-40 to +120 °C
		Cable	-20 to +80 °C
		Control Unit	-20 to +80 °C
Waterproofing		Transducers and cables	IP68
		Control unit	IP67
Transducer cable lengths		Standard	2.9 m
		Optional	30 m
Transducer mounting		Rail mounting with chains for diameters up to 2000 mm. Straps/chains for larger pipes with alternative magnetic blocks for ferrous metal pipes.	
Dimensions		Control unit	270 x 250 x 125 mm
		Transducers	75 x 30 x 45 mm
Weight		Control unit	2.5 kg
		Transducers	0.1 kg each
Materials		Control unit	ABS
		Transducers	PEEK and Acetal, with aluminum/stainless steel mounting blocks/rails.

Products available to rent or buy. Please contact us for more information.

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