

# Integrated measuring systems for the whole water cycle



Electromagnetic Insertion Probe  
with optional Display Unit

## HydrINS 2®



Display  
logger GPRS



HydrINS 2®



Velocity as low as  
2 cm/s (0.066 ft/sec)

Accuracy +/- 2 mm/s (0.006 ft/sec)

Ease of installation with no  
interruption to supply

Long battery life up to  
10 years

IP 68

Self checking of operation in  
accordance with OIML R49 Type P  
(Permanent) requirements



# HYDREKA

[www.hydreka.com](http://www.hydreka.com)

## Application

The HydrINS 2® flowmeter, developed by Hydreka, is an easily deployed and cost effective flow meter providing highly accurate bi-directional flow measurement for water distribution and raw water pipelines.

The highly versatile unit is widely used throughout the world and available in various lengths, equally well deployed for permanent or portable applications.

### HydrINS 2® can be used throughout the water distribution network:

- Metering at reservoirs, treatment works
- Pumping stations, water pipes
- Zoning and DMA
- Night flow monitoring and meter testing.

## Principle

In accordance with Faradays law, a voltage is induced in a conductor that is moved through a magnetic field. In the electromagnetic principle of measurement, the flowing and electrically conductive fluid represents the moving conductor. The induced voltage is then proportional to the flow velocity and is fed to the amplifier by a pair of electrodes on the sensor. The methodology is to place the sensor on the centre line of the pipeline, or at the 1/8 diameter, depending on the particular installation. Moving the sensor enables velocity profiling to be carried out to verify the flow profile.

## Description:

The HydrINS 2® insertion flowmeter consists of:

- A highly accurate **electromagnetic sensor**: The unit uses stainless steel electrodes to enhance measurement accuracy and avoid drift. The mechanical conception is designed to ensure maximum resistance and protection to the sensor which is mechanically isolated from the stem end.
- On board **micro-controller inside** the probe's head:

HydrINS 2® uses advanced processing techniques which enable a wide variety of sampling regimes to be set to suit a wide variety of applications. The electronics carries out self checking of signal in accordance with OIML R49 Type P (Permanent) requirements. 2 versions: self contained with or without display (Over 10 years of battery life depending on options) or powered version via its display. Large measurement range (from 2 cm/s to 5 m/s - 0.066 ft/sec to 16.40 ft/sec) and its accuracy of +/- 2% enables precise minimum night flow monitoring (MNF).

Every unit comes with re-inforced stem with an anti-ejection chain, locking nut and insertion point clamp to ensure correct and safe installation in pressurised water networks.

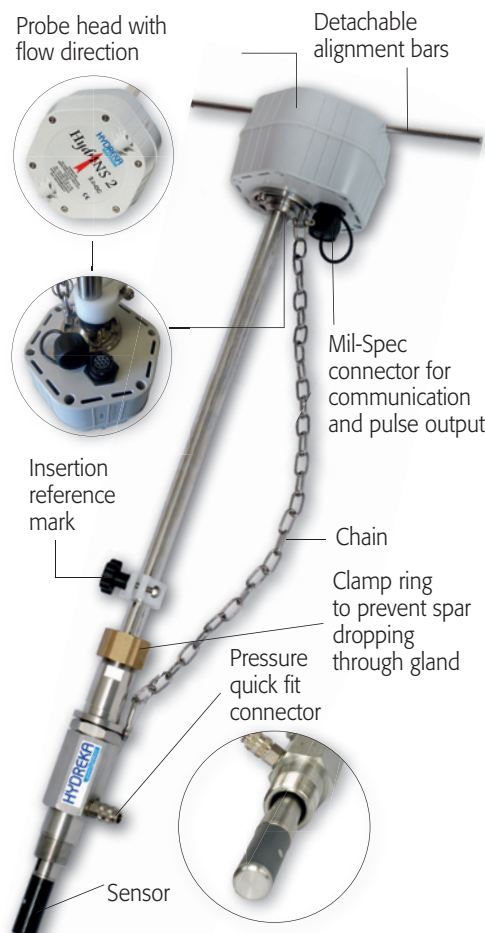
Communication via watertight military specification connector.

The HydrINS 2® can be supplied with a large LCD display unit giving instant readouts of all measurements.

It is powered by long life lithium batteries (up to 10 years), or alternatively via external DC power. It has alarm and pulse outputs with two 4-20 mA outputs (option). It also exists as a telemetry unit including data logger and quad-band modem for data transfer via SMS or GPRS.



Display



## Installation

The HydrINS 2® is a robust, watertight and compact flowmeter. The integral transmitter enables multiple telemetry options or simple totalizer.

Available in different lengths to suit pipe diameter from 100 mm to over 2000 mm (0.32 ft to over 6.56 ft).

It is equally well deployed for permanent or portable applications inserted through standard under pressure taping with no interruption to supply (1" NPT - optional).

The flowmeter HydrINS® is used by inserting the electromagnetic sensor at the centre line or 1/8. The insertion stem length is validated by a preliminary measurement of the pipe Internal diameter by using the diameter gauge.

Push fit connector at the tip of the probe enables pressure measurement.



Diameter gauge

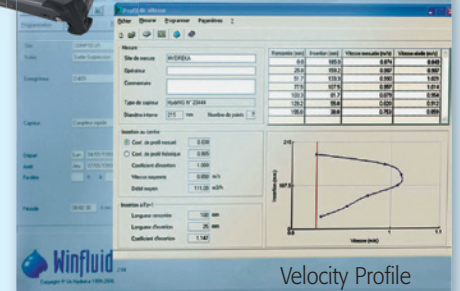
## Software

The Winfluid software enables the programming, data retrieval and data processing of the HydrINS 2® and any logger connected to.

Hydreka has developed, since many years, expertise on flow measurements and in particular on velocity profile for flow analysis.



Tablet



Velocity Profile





## Deployment Modes



## Key Benefits



### Operational




- Bidirectional flow measurement with same accuracy in both directions
- "Hot tap" installation with no interruption to supply
- Easily deployed, moved and calibrated
- Self checking of operation
- Long battery life, 4 to 10 years, depending on options
- Versatile - can be deployed over a large range of pipe diameters from 100 mm to over 2000 mm (0.32 ft to over 6.56 ft)
- High quality digital signal processing gives accurate measurement of low velocities (to 2 cm/s at  $\pm 2$  mm/s - 0.066 ft/sec at  $\pm 0.006$  ft/sec)
- Optional display unit deployed up to 200 m (656.16 ft) away giving flow and alarm readings
- Robust and watertight (IP68) with easy maintenance and calibration to ensure long term accuracy
- Velocity profiling to validate accuracy of measurement point and many measurement options.

### Economical

- Highly cost effective flowmeter
- Ease of installation compared to traditional electromagnetic magmeter or mechanical flowmeter
- Keeps unaccounted for water under control to optimize revenue water
- Water meter check campaign to decrease billing issue due to over/undercounting
- Durability and trust in the equipment you can easily install or remove for calibration.

## Technical specifications

 <p>HydrINS 2®</p>  <p>Gauge</p>	Measurement range	Bidirectional from 0.02 m/s to 5 m/s (0.06 ft/sec to 16.40 ft/sec), limited only by the stability of the probe in the flow. Fluid conductivity needs to be minimum of 20 µs/cm.
	Accuracy	± 2% if V ≥ 10 cm/s and ±2 mm/s (0.33 ft/sec and ± 0.006 ft/sec) of reading value for V < 10 cm/s (0.33 ft/sec).
	Units	Selectable: mm, meters, feet, litres, Megalitres, m³, ft³, ImpGal, USGal, MegaImpGal, MegaUSGal, seconds, minutes, hours, days.
	Power	9-29 VDC. Internal lithium batteries giving up to 4 years of battery life for 1 measurement/minute. 10 years possible as an option.
	Sensor Information	Calibration, serial N°, date of calibration, files historical.
	Calibration	Factory calibration against traceable standards.
	Self checking	Internal checking in accordance with OIML R49 Type P (Permanent) requirements.
	Internal logging	Negative Totalizer / Positive Totalizer / Net Totalizer.
	Outputs	RS 232 Programmable point velocity, average velocity, instantaneous flow, totalized volume, signal quality. 2 pulse outputs, isolated open collector. Can be 1 channel positive flow and 1 channel negative flow or 1 channel flow and 1 direction. Maximum frequency 50 Hz.
	Connector	IP68/NEMA 6 Watertight 10 way mil spec connector.
	Software	Winfluid.
	Temperature Range	Electronics -20°C to +60°C (-4°F to 140° F). Insertion element: non frozen water up to +60 °C (140°F).
	Max Pressure	20 bars (290 PSI). Integral to BSP quick fit pressure connector.
	Ingress Rating	IP 68/ NEMA6 with connectors secured.
	Installation	Connection on a 1 inch hot tap BSP (25 mm) (1" NPT: option). Safety chain.
	Insertion lengths	300 mm (11.81"), 500 mm (19.69"), 700 mm (27.56") and 1000 mm (39.37").
	Dimensions	Sensor diameter 22 mm (0.87"), stem diameter 19 mm (0.75"), head diameter 106 x 80 mm (4.17" x 3.15").
	Weight	<3.5 kg (<7.7 lb).
	Construction	Insertion components: Stainless Steel 316. PVC WRAS approved n°0307509 / ACS approved n°13ACCLY528. Nitrile joints WRAS approved N° 0470NBRFD. External components: Stainless Steel 316. Bronze C2121- Probe head: Strengthened ABS.
	Warranty	36 months.
	Certification	Calibrated to reference meters to COFRAC procedures and traceability.
	Gauge	Internal pipe measuring gauges available. 1" diameter in either 880/1040 or 1250 mm lengths, 1.5" diameter in 1250 mm length or 2" diameter in 1250 mm length.

 <p>Display A</p>	Outputs	RS 232. 2 pulse outputs.	<p><b>LCD:</b> 2 lines of 16 characters with backlight. Magnetic switch to control displaying of velocity, flow, positive totalizer, negative totalizer, net totalizer, alarms.</p> <p><b>Alarms:</b> 2 dry contacts software programmable via RS232. No water, sensor fault, low battery, low or high flow, power failure.</p> <p><b>Cable:</b> 5 m (16.40 ft) display to flowmeter supplied as standard, up to 200 m (656.16 ft) on demand.</p> <p><b>Communications:</b> Flowmeter and display programming by RS232. Firmware upgradable by RS232. Winfluid interfaced. Optional Bluetooth available.</p> <p><b>Ingress Rating:</b> IP 68/ NEMA6 with connectors secured.</p> <p><b>Dimensions:</b> 154 mm / 248 mm / 56 mm (6.06" / 9.76" / 2.20").</p> <p><b>Weight:</b> 1 kg (2.2lb).</p> <p><b>Warranty:</b> 36 Months.</p>
	Power Supply	Internal lithium batteries of 3,6 V - 38Ah.	
		4 to 10 years battery life depending on setup options.	
		External batteries (option) or 20-28VDC power supply.	
 <p>Display C</p>	Outputs	RS232. 2 x 4-20 mA actives outputs and 4 pulse outputs.	
	Power Supply	Continuous voltage: 20-28 VDC, Reverse polarity protection.	
 <p>Display logger</p>	Outputs	2 pulse outputs: forward/reward or flow/direction. RS 232 outputs. Optional Bluetooth available.	
	Power Supply	Lithium batteries of 3, 6 V - 57Ah, 5 years internal battery life supplied as standard with a measurement every 15 minutes and 1 sms/day, up to 10 years depending on setup options.	
	Communication	Data sent via SMS or GPRS.	

Products available for sales and rental. Please contact us for more information.

**HYDREKA**  
www.hydreka.com

**Head office:** 34, Route de Saint Romain - 69450 - St Cyr au Mont d'Or (France)  
**Limonest site:** 1, rue des Vergers - Bat 2A - 69760 Limonest (France)

Tel. +33 (0)4 72 53 11 53 - Fax +33 (0)4 78 83 44 37  
E-mail: hydreka@hydreka.fr

A HALMA COMPANY