

# SERIES 800 FLOW METER

## Type 804 EM Electromagnetic Insertion Flow Meter

Teledyne Valeport Water's Type 804 EM is a fully waterproof, electromagnetic insertion flow meter that offers industry standard performance coupled with robust build quality and reliability, all backed up with Teledyne's exceptional customer service and support mechanisms.

The Type 804 flow meter will measure bi-directional flow rates as low as  $0.02 \text{ m/s}^{-1}$  ( $0.07 \text{ f/s}$ ) and up to  $5 \text{ m/s}^{-1}$  ( $16 \text{ f/s}$ ) with accuracies of better than  $0.002 \text{ m/s}^{-1}$  ( $0.006 \text{ f/s}$ ) possible. Add a real-time temperature measurement and flexible interfacing protocols, here is a tool that can help manage your water distribution networks.

A highly cost effective solution due to reliability, ease of installation and recovery, with no interruption to supply, for pipe diameters from 100 mm to 2000 mm (4 in to 80 in).

The 804 is powered by an internal battery

- The flexibility to interface to all data loggers, telemetry or SCADA systems through fully documented and open data protocols
  - Pulse
  - RS485 | Modbus RTU



### Key Features:

- High accuracy at low velocities
- Bi-directional flow measurement
- Low power
- Digital signal processing
- Direct data output
  - open protocols
- Internal self check in accordance with OIML R49, type P
- Integrated temperature
- Pressure monitoring port (max 20 bar, 290 psi)

### Operations:

- Flow monitoring:
  - night flow
  - meter testing
- DMA & zoning surveys
- Leak detection
- Metering:
  - reservoirs | treatment and pumping stations
- Expert mode for data diagnostics
- Hot tap installation
  - with a safety chain
- Permanent installation
- Temporary deployment



## DATA SHEET

### Product Details



FLOW METER



ELECTROMAGNETIC  
INDUCTION



UTILITY SOFTWARE  
CONFIGURE

### CERTIFICATION



## Sensor: Technical Specifications

The Type 804 EM measures the flow of water based on Faraday's law of induction to generate a voltage proportional to the flow speed of the water.

## Operational Performance

### Bi-Directional Flow

<b>Range</b>	Minimum	0.02 m/s <sup>-1</sup>	0.065 f/s <sup>-1</sup>
	Maximum	5.0 m/s <sup>-1</sup>	16 f/s <sup>-1</sup>
<b>Accuracy</b>	in steady, fully developed flow:		
	< 0.1 m/s <sup>-1</sup>	±0.002 m/s <sup>-1</sup>	
	< .33 f/s <sup>-1</sup>	±0.0065 f/s <sup>-1</sup>	
	> 0.1 m/s <sup>-1</sup>	±2%	
	> .33 /fs <sup>-1</sup>	±2%	
<i>minimum conductivity of 20 µs/cm required</i>			
<b>Temperature</b>	Operational	0 °C to 50 °C	32 °F to 122 °F
	Storage	-20 °C to 60 °C	-4 °F to 140 °F
	Accuracy	±0.5° unit	

## Operational Characteristics

<b>Temperature Resolution</b>	<b>Electronics</b>	-20 °C to +60 °C	-4 °F to 140 °F
	Sensor element	-20 °C to +60 °C	-4 °F to 140 °F
	Accuracy	±0.5° unit	
<b>Pressure Internal to Pipe</b>	Maximum	20 bar	300 psi
<i>safety chain to be fitted</i>			
<b>Humidity</b>	Potted electronics for all environments		
<b>IP68   NEMA 6</b>	10 meters (33 ft) for 72 hrs with connector mated		
<b>Units - User Selectable Options:</b>			

mm | Meter | Foot  
Second | Minute | Hour | Day  
Liter | Megaliter | Meter<sup>3</sup> | Kilometer<sup>3</sup>  
Ft<sup>3</sup> | Kilo Ft<sup>3</sup>  
Imp Gallon | Kilo Imp Gallon | Mega Imp Gallon  
US Gallon | Kilo US Gallon | Mega US Gallon  
Centigrade | Fahrenheit

## Power

<b>Battery</b>	Internal: Lithium primary cell (19.0 Ah x 2)
<b>Consumption</b>	0.7 mA—typical scenario

## Calibration

The Type 804 is calibrated in a purpose built facility against multiple flow speeds to a traceable standard.

## Software

Valeport Configure, a Windows software App is available here for instrument set up.

## Physical Characteristics

<b>Materials</b>	All materials in contact with the water are approved by WRAS: Stainless Steel - 316   Brass   Nickel plated Brass   PVC   PVDF   Nitrile Rubber - 4470		
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### Dimensions (mm)—Type 804 EM

<b>Resolution</b>	Insertion Length	300   500 mm	12   20 in
	Sensor Diameter	22 mm	.866 in
	Stem Diameter	19 mm	.748 in
	Electronics Module	diameter: 106 mm	4.17 in
		height: 80 mm	3.15 in

**Pipe Connection** 1" NPT

**Weight** <3 kg

## Communications

The Type 804 EM has both serial and analogue output capability. Setup is over serial COMs only—RS485 a PC App—Valeport Configure is supplied, licence free

<b>Analogue</b>	2 pulse outputs—isolated, four options:		
	flow		direction
	+ve flow		-ve flow
	+ve flow		temperature
	dose output +ve		dose output -ve
<i>up to a maximum of 50Hz</i>			

### Digital

**RS485 Modbus RTU** 4800 up to 38400 | 8N1 or 8E1

<b>Data Available</b>	Point Velocity   Average Velocity   Flow <i>(Noise estimate available)</i>
	Totalisers: Positive   Negative   Net
	Temperature
	Battery capacity

## Ordering

### Contact Teledyne ISCO

Type 804 EM Insertion Flow Meter External Power (12 to 28 Vdc)

604480005	300 mm (12 in) insertion depth
604480010	500 mm (20 in) insertion depth

604480055	Type 804   PC interface cable
604480060	Type 804 System Interface cable (4m)

