MM MiniMag – Electromagnetic Flowmeter

15, 20 & 25mm

FEATURES

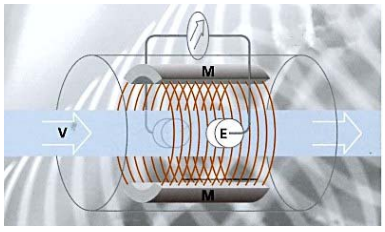
- **Very compact and light weight design, in sizes:**
  15mm connection (8mm bore)
  20mm connection (12mm bore)
  25mm connection (15mm bore)
- **Flowrange @ ±2% accuracy: to 25/50/100 Litres/minute**
- **Repeatability of rate: <0.2%**
- **Measures liquids of conductivity > 20µS/cm**
- **Process range to 70°C**
- **Display shows non-resetable Total (Litres)**
  or Flowrate (Litres/min).
- **NPN Pulse Output**
- **4-20mA output, endpoints programmable**
  in 0.1 Litres/min increments.
- **Robust construction for industrial use to IP67.**
- **Stainless Steel Body, PEEK liner, SS316 electrodes**
  with integrated grounding electrodes.
- **Fast and easy installation or removal**
  with BSP male threaded end connections.
- **No moving parts. Virtually maintenance free.**
- **Suitable with a wide range of conductive liquids.**
  Accuracy unaffected by varying viscosity or specific gravity.
- **19–30 VDC powered (standard), optionally with**
  12–24 VDC power converters, or
  240vac to 24VDC power converters.

INTRODUCTION

The MiniMag is a low-cost Electromagnetic Flowmeter, suitable for flowrate and totaliser metering and batching. Liquids with an electrical conductivity of at least 20µS/cm can be measured. The converter/processor is inbuilt on the flowmeter sensor primary. These two elements form a very compact package.

With no moving parts and an obstruction-free bore, this type of flowmeter is ideal for measuring a wide range of liquids up to a temperature of 70 °C, with minimal head losses and virtually no ongoing maintenance. MiniMag is ideal for measurement of admixtures, and providing flowrate or total display for shotcreting and process batching/monitoring applications. The MiniMag can be used in conjunction with a remote ManuFlo FRT-303 Indicator or Batch Controller, or can be connected to PLCs via 4-20mA or pulse output.

The operation of electromagnetic flow meters is based on Faraday's Law of Induction. A voltage is induced in a conductor as it moves through a magnetic field. This principle is applied in the MiniMag design. The voltage induced in the flowing liquid is measured at two electrodes, and is proportional to the average flow velocity. The microprocessor then scales this signal voltage to read in digital units.



TECHNICAL DATA

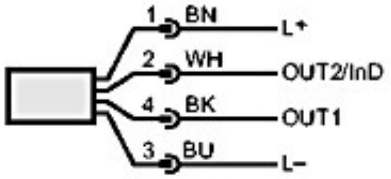
Accuracy	± 2% of range
Repeatability	± 0.2% of rate
Protection class	IP67
Liquid Temp.	-10 °C to 70 °C
Ambient Temp.	-25 °C to 50 °C
Min. Liquid Conductivity	20µS/cm
Liquid Viscosity	< 70mm/s at 40°C
Process Pressure	16 bar (drop 180mbar @25 Litres/min)
Housing & Electrodes	Stainless Steel 316 (EDPM seal)
Liner Material	PEEK (polyetheretherketone)
Supply power	19-30 VDC, < 200mA consumption Optional converter packs: 12 VDC to 24 VDC; or 240 vac to 24 VDC.
Pulse Output	NPN open collector. Pulse width standard 0.05 to 2 seconds.
Current Output	4 to 20 mA; load ≤ 500 Ohm. Measuring range scalable.
Display	4-digit LED, shows: • non-resetable Total in Litres; or • Flowrate in Litres/min; resolution to 0.05 Litres/min.
Response time	< 0.150 sec
Damping time	0.0 to 5.0 sec (for pulsating flows), factory programable.

Order Code:		MM15	MM20	MM25
Connection size		15 mm	20 mm	25 mm
Bore size		8 mm	12 mm	15 mm
Thread	**G BSP male**	½"	¾"	1"
Flowrange	**Litres/min**	0.1 - 25	0.2 - 50	0.2 - 100
Pulse output	**Pulses/Litre**	20	10	10

ELECTRICAL CONNECTIONS

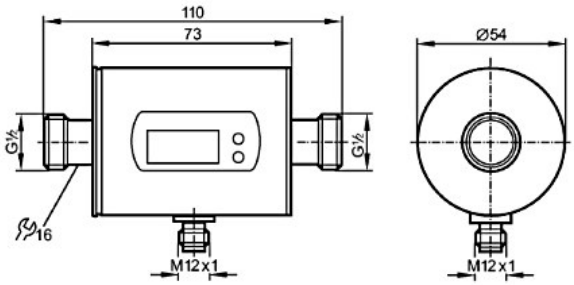
Via M12 4-pin screwed socket and plug connector. 5-metre bare lead.

Pin designations:
Power Connection : Positive — Pin 1 Brown(BN) = +
: Negative — Pin 3 Blue (BU) = --
Pulse output NPN optocoupler — Pin 4 Pulse (BK) = P
Current output 4 – 20 mA — Pin 2 mA (WH) = I



INSTALLATION

- The flowmeter should not be installed in the vicinity of strong electromagnetic fields.
- It is essential that the flowmeter tube be always completely filled with liquid. Partial filling results in measurement errors.
- Must have at least 5x diameter of straight pipe before (upstream of) flowmeter, and 2x diameter of straight pipe after (downstream of) flowmeter. The pipe bore diameter must be the same as the flowmeter itself.
- Valves or other shutoff devices should be installed downstream from the flowmeter.
- Can be installed in horizonal or vertical orientation.
- When installed in a horizontal pipeline, the imaginary line between the two electrodes should be horizontal if at all possible to prevent air bubbles from affecting the flow signal which is measured at the electrodes.



Due to continuous product improvement, specifications may change without notice.

ManuFlo TM
Flow Measurement & Control Products
a division of:
MANU ELECTRONICS PTY LTD
1011/1

41 Carter Road, Brookvale
Sydney NSW 2100 Australia
Ph: + 61 2 938 1425, 9905 4324
Fax: + 61 2 9938 5852
Web: www.manuelectronics.com.au