

# MRPU5-F - LCD FLOWRATE INDICATION FLOWMETER

(Screwed Insertion Paddlewheel)

## FEATURES

- 5 digit LCD Flowrate display.
- Suitable for flowrate reading applications where no external power is accessible.
- Ideal for pipe diameters from 20 to 150 mm, with simple installation via pipe fittings/adapters.
- Suitable for measurement of liquids up to 50°C, with flow velocity ranges of 0.6 to 8.0 metres/second.
- $\pm 3\%$  accuracy (1 - 7 m/s),  $\pm 5\%$  accuracy (0.6 - 8m/s).
- Robust housing for harsh environments with durable alloy paddlewheel rotor.
- Sealed glass IP65 digital display compartment.
- Lid protects LCD from sunlight.
- Easy access for re-calibration.



MRPU5-F

shown with GAL40M pipe adapter

The MRPU5-F flowrate LCD display indicator flowmeter is designed and manufactured in Australia. The unit can be mounted in pipe sizes from 20 to 150 mm diameter. The MRPU5-F is provided pre-fitted with a pipe adapter fitting to suit the application pipe size. Fittings are available as Class18 Cat19 PVC high pressure tees, Galvanized Iron tees, cast Aluminium or Gunmetal (20mm only), or saddle clamp agricultural poly-pipe fittings (see table in this data sheet).

The MRPU5-F is suitable for a wide range of medium-to-high flow range liquid flow measurement applications where flowrate indication is the only requirement. Being internally battery powered, the unit is ideal in situations where no external power supply is accessible, making it a totally versatile flowmeter.

The flowmeter's only moving part (a virtually indestructible alloy rotor which turns as liquid flows past it) allows registration in either Litres/second, Litres/minute or KiloLitres/hour, with up to 1 decimal place on the 5 digit Liquid Crystal Display. The main body component, holding the electronic counter board, is housed in a robust Gunmetal housing. The LCD display is visible through the glass window and sealed by a metal locking ring. The impact resistant ABS lid protects the glass and LCD from breakage, contaminants, and prolonged exposure to sunlight. The MRPU5-F is rugged for harsh environments.

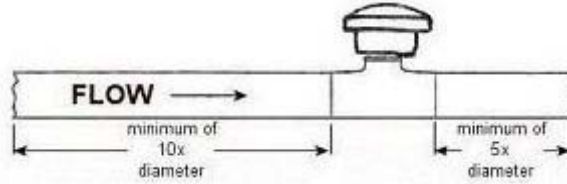
To operate, lift the hinged lid. This action automatically turns on power, and the Liquid Crystal Display is ready for measurement. When liquid flows, the display indicates the current flowrate of the liquid passing through the meter. Closing the lid turns off battery power. The internal lithium battery has a life of 5-10 years. NOTE: If the lid is left open, a sleep mode function turns the display off after 15 minutes if there is no flow. The display is re-awakened either by flow occurring, or by closing and re-opening the lid.

## SPECIFICATIONS

|                                   |  |
|-----------------------------------|--|
| <b>Flowrange and Accuracy</b>     | $\pm 5\%$ (0.6 - 8 metres/sec velocity)<br>$\pm 3\%$ ( 1 - 7 metres/sec velocity, 10:1 flow curve)   |
| <b>Display readout</b>            | <ul style="list-style-type: none"><li>• 5 digit LCD (12mm high) in Litres per second or per minute.</li><li>• up to 1 decimal place.</li></ul> |
| <b>Calibration</b>                | via 3 internal pushbuttons   |
| <b>Power Source</b>               | 3.7v Lithium battery (5 - 10 year life)  |
| <b>Display Capsule Rating</b>     | IP65   |
| <b>Max. Operating Temperature</b> | 50 °C  |
| <b>Max. Pressure</b>              | 2000 kPa with Galvanised Iron or Gunmetal pipe fittings  |

## INSTALLATION GUIDE

- To maintain the stated accuracy curve, a length of **straight pipe section** (of same diameter as adapter fitting) must be in place for a minimum **10x pipe diameters on the incoming side**, and **5x diameters on the exit side**, of the flowmeter.



- MRPU5-F flowmeters are factory **calibrated to either vertical or horizontal pipe run positions (this must be specified when ordering)**.
- If mounting in pipe diameters contrary to factory set calibration, you may need to access the internal PCB pushbuttons to **change calibration settings**. See 'Re-Calibration'.
- A range of pipe adapters** is available, from 20 -150mm with 1" BSP (f) entries. MRPU5-F's are factory fitted with the chosen pipe adapter fitting.
- The flowmeter must measure in a **full pipe of liquid**.
- Close lid after use**, to prevent LCD fading from prolonged exposure to direct sunlight.

### PRODUCT ORDERING CODE FORMAT

( \*\* must specify Horizontal or Vertical pipe run )

**MRPU5-F- pipe adapter - No. of decimal places (0 or 1) - units\* - H/V\*\* - options (if any)**  
 e.g. MRPU5-F-GAL50M-0-LM-H = Gal. 50mm pipe adapter, no decimal place, Litres/minute display, Horizontal run

#### MRPU5-F PIPE ADAPTER FITTINGS

| Order Code | size(mm) | Adapter Type   |
|------------|----------|--|
| GAL25M     | 25       | Galvanised Iron, threaded entries BSP(f).<br>NOTE: 25mm is supplied with pipe sections already fitted. |
| GAL32M     | 32       |  |
| GAL40M     | 40       |  |
| GAL50M     | 50       |  |
| BRA25M     | 25       |  |
| SS25M      | 25       | 1" (f) threaded adapter - Stainless Steel  |
| PVC25M     | 25       | PVC Class 18, Cat 19 glue-in (f) socket connections for PVC pipe sections.                             |
| PVC32M     | 32       |  |
| PVC40M     | 40       |  |
| PVC50M     | 50       |  |
| PVC80SCM   | 80       | High pressure Saddle Clamp adapters for PVC pipe sections to 1400Kpa.                                  |
| PVC100SCM  | 100      |  |
| PVC150SCM  | 150      |  |
| SC50M      | 50       | Poly-pipe agricultural Saddle Clamps.  |
| SC63M      | 63       |  |
| SC75M      | 75       |  |
| SC90M      | 90       |  |
| SC110M     | 110      |  |

\* **units:** **LS** = Litres/Second  
**LM** = Litres/Minute  
**KH** = Kilolitres/Hour

**OPTIONS**  
**-P** Pulse output, 1 pulse/L

#### SPARE PARTS

| Code | Description                    |
|------|--------------------------------|
| LM   | Lid and magnet                 |
| PW-N | Paddlewheel (rotor) and bushes |
| PWAH | Axle, Tungsten Carbide         |
| LB   | 3.7v Lithium battery           |
| SCP  | Plug 1" sealer                 |

#### PIPE vs FLOW RANGE GUIDE for optimum performance

| Pipe Size (mm) | Flowrange (Litres/min) |      |
|----------------|------------------------|------|
|                | Min                    | Max  |
| 20             | 10                     | 150  |
| 25             | 15                     | 235  |
| 32             | 25                     | 385  |
| 40             | 40                     | 600  |
| 50             | 60                     | 940  |
| 65             | 100                    | 1590 |
| 80             | 155                    | 2410 |
| 100            | 240                    | 3760 |
| 150            | 535                    | 8480 |

#### MATERIAL SPECIFICATIONS

|                              |  |
|------------------------------|--|
| MRP housing and sealing ring | Cast gunmetal                          |
| Window                       | Tempered glass                         |
| Gasket                       | PVC                                    |
| O-Ring                       | Neoprene                               |
| Rotor                        | Marine Alloy saf2205 and Delron bushes |
| Axle                         | Tungsten Carbide                       |
| Lid                          | ABS, ferrite magnet                    |

## RE-CALIBRATION

- When ordering, **specify the intended pipe run: either horizontal, or vertical position.**

The calibration (K-factor) characteristics can vary up to 6% from horizontal to vertical runs.

- To check calibration, fill a container of known volume (for accuracy, keep flowrate constant and above the minimum flowrange for the pipe diameter). You need to record: \* the volume of the container; \* the flowrate displayed by the meter whilst the container is filling; and \* the time taken to fill the container.
- The actual flowrate is the container volume divided by the time to fill the container  
e.g. (50 L) / (1 min) = 50 L/min
- If the actual flowrate corresponds to the displayed flowrate within 3%, then no adjustment to calibration is necessary. Otherwise, the Calibration Value can be adjusted to fine tune the displayed Flowrate:
  - to decrease the Flowrate displayed on the LCD, increase the Calibration Value.
  - to increase the Flowrate displayed on the LCD, decrease the Calibration Value.

### Example:

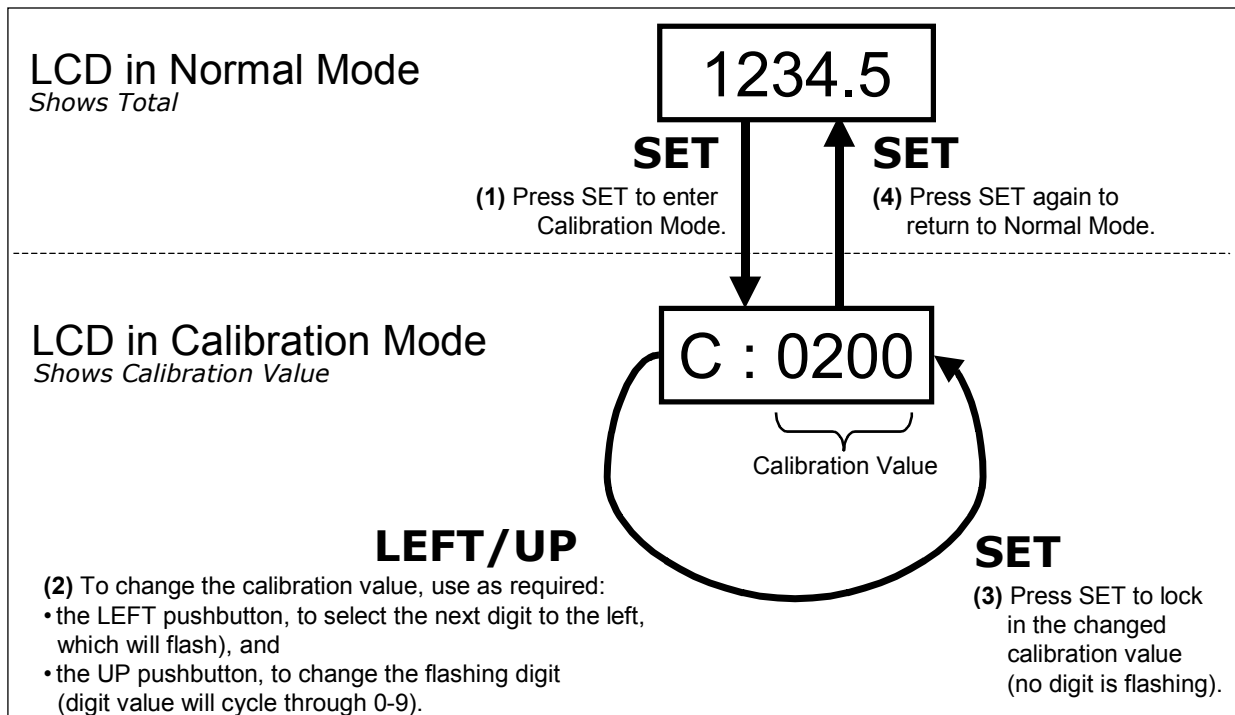
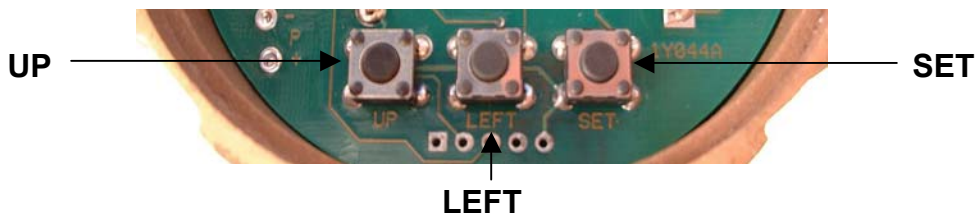
- MRPU5-F indicated a flowrate of 55 Litres/minute,
- you filled a 50 Litre container in 1 minute (so actual flowrate was 50 Litres/minute)
- the MRPU5-F Calibration Value is 200.

The Flowrate displayed is 10% higher than the actual flowrate.

So, to lower the displayed Flowrate by 10% so as to match actual flowrate, the

Calibration Value must be increased by 10% (i.e. increased by 10% x 200 = 20) to new value of '220'.

- **Changing the Calibration Value is performed via three pushbuttons** (marked UP, LEFT and SET) mounted on the internal PCB. **To access the PCB**, open the hinged lid cover, then with a pair of multi-grips, grasp the metal locking ring and turn it anti-clock wise until the four lock tabs align with the four matching slots on the metal PCB housing. Remove the locking ring, and then the glass window, to access the buttons.



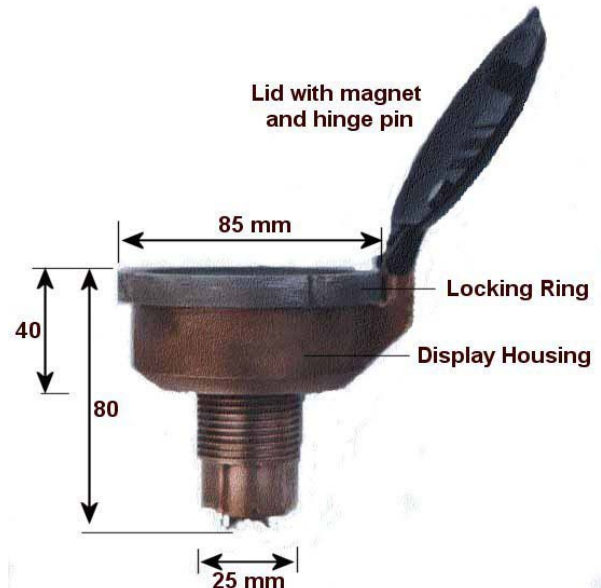
**Adjusting the Calibration Value using the internal Calibration pushbuttons SET, LEFT and UP.**

## MAINTENANCE

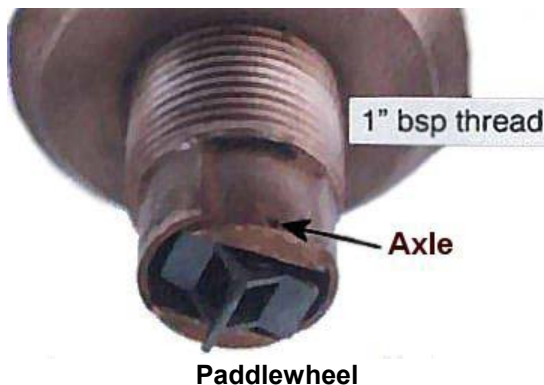
- If the LCD display is blank, the **MRPU5-F** may be in dormant mode because it is not receiving **input pulses from the paddlewheel flowmeter**. The LCD will be reawakened once flow restarts, or can be re-awakened by closing and re-opening the lid.
- If the flowmeter ceases to **indicate flowrate**, the paddlewheel may be blocked:
  - Grasp the readout head and turn it anti-clockwise, until it clears the threaded section.
  - Examine and, if required, clear debris from rotor.
  - If used with reclaimed water, then over time a calcium buildup may deposit on the rotor, so immerse the rotor in diluted acid to clear.
  - Re-insert the readout head and screw-in clockwise to its original position.
- If the MRP5-F counts when there is no flow, a nearby 50Hz AC field is probably causing false counts. Move the flowmeter away from the 50Hz field, or move the source of the field if practical.
- To access the internal electronic display board to replace the Lithium battery:
  - refer to "Re-calibration" section for instructions to open the MRP5-F to access the PCB.
  - Two screws secure the PCB. Unscrew them and remove the PCB to access the battery on underside.
  - Replace battery with an equivalent unit.
  - Re-insert the PCB and glass.
  - secure the lock ring, and seal under lock ring with silicon as a precaution against liquid ingress.
- When not in use, keep the lid closed. If prolonged direct exposure to sunlight causes the LCD to become faint or discoloured, return the MRP5-F to Manu Electronics for servicing.



Internal view - PCB and 3 calibration push buttons.



Side view and dimensions (without pipe adapter).



Paddlewheel



With GAL40M adapter.

Pulse Output cabling:  
**BLACK** = pulse (Collector),  
**BLUE** = 0v (Emitter)



With pulse o/p option.

**ManuFlo**®™

Flow Measurement Products

ABN: 47-002-946-303

Email: [sales@manuelectronics.com.au](mailto:sales@manuelectronics.com.au)

Web: [www.manuelectronics.com.au](http://www.manuelectronics.com.au)

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a division of

**MANU ELECTRONICS PTY LTD**

41 Carter Road Brookvale

Sydney NSW 2100 Australia

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Ph: + 61 2 9938-1425, 9905-4324

Fax: + 61 2 9938-5852