

# MRPU5 - LCD RESETABLE COUNTER FLOWMETERS

(Screwed Insertion Paddlewheel)

## FEATURES

- 5 digit LCD resetable display Totaliser with pulse output option.
- Ideal in pipe diameters from 20 to 150 mm with simple installation pipe fitting/adapters.
- Suitable for measurement of liquids up to 50°C, with velocity range 0.6 to 8.0 metres/sec.
- $\pm 1\%$  accuracy (0.7- 7m/s),  $\pm 2.5\%$  accuracy (0.6-8m/s).
- Robust housing for harsh environments with durable alloy paddlewheel rotor.
- Sealed glass IP65 digital display compartment and lid protects LCD from sunlight. Easy access for re-calibration.
- Used in Irrigation, Transit mixers, Slumpstands and many other applications.



The MRPU5 resetable counter flowmeter is designed and manufactured in Australia. The MRPU5's round display head has a 1" BSP male threaded stem section which allows the display head to be fitted to most 1" BSP female entries. Usually, the MRPU5s are pre-fitted with a ManuFlo pipe adapter fitting. Adapters are available for a range of pipe sizes from 20 to 150 mm diameters, and the adapter range includes Galvanized Iron tees, Class18 Cat19 PVC high pressure tees, and saddle-clamp agricultural poly-pipe fittings. (For concrete truck agitators, the similar MRP20 flowmeter range is available with Gunmetal or cast Aluminium 20mm flowtubes).

The MRPU5 is suitable for a wide range of medium to high flow range liquid flow measurement applications. Being internally battery powered, the unit is ideal in situations where no external power supply is accessible, making them totally portable resetable totaliser flowmeters.

The flowmeter's only moving part (a virtually indestructible alloy rotor which turns as liquid flows past it) allows registration in Litres, KiloLitres or MegaLitres up to 1 decimal place on the 5 digit Liquid Crystal resetable display counter. The main body component, consisting of 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 MRPU5 is rugged for harsh environments. The impact resistant ABS lid protects the LCD and glass from prolonged sun exposure, contaminants and breakage.

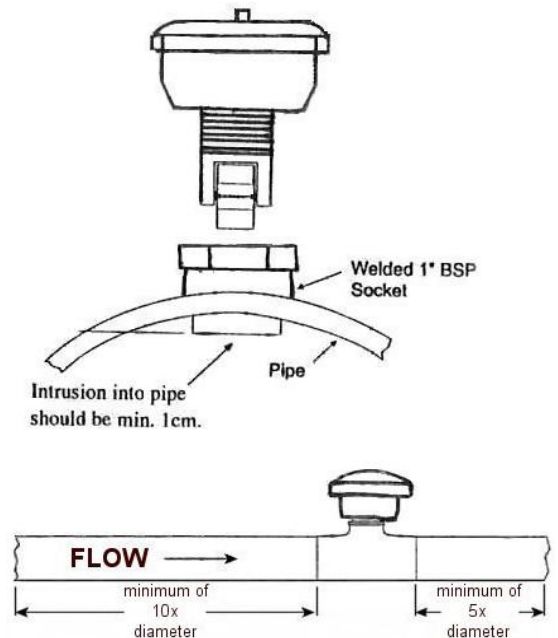
To operate, lift the hinged lid. This action automatically turns on power, and the Liquid Crystal display is zeroed ready for measurement. Liquid flow causes counting on the display. Closing the lid resets the digits, and turns off battery power. The internal lithium battery has a life of 5-10 years. NOTE: A sleep mode function turns the display off after minutes of no use. The display is re-awakened either by flow occurring or by closing and re-opening the lid.

## SPECIFICATIONS

<b>Flowrange and Accuracy</b>	$\pm 2.5\%$ (0.6 - 8.0 m/sec velocity) $\pm 1.5\%$ (0.7 - 7.0 m/sec velocity, 10:1 flow curve)
<b>Display readout</b>	<ul style="list-style-type: none"><li>• 5 digit LCD (12mm high) in Litres, KiloLitres or MegaLitres</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 battery life)
<b>Display Capsule Rating</b>	IP65
<b>Max. Operating Temperature</b>	50 °C
<b>Max. Pressure</b>	2000 kPa, with Galvanised Iron and Gunmetal pipe fittings
<b>Pulse Output</b>	via optional IP67 plug set. Open Collector transistor, 5-25VDC

## INSTALLATION GUIDE

- To maintain the stated accuracy curve, lengths of **straight pipe section** (i.e. without any bends, taps or valves), of the same diameter as the pipe adapter fitting, must be in place for a minimum 10x pipe diameters on the incoming (upstream) side, and 5x diameters on the exit (downstream) side, of the flowmeter.
- MRPU5 flowmeters are factory **calibrated to either vertical up, vertical down, or horizontal pipe-run/flow positions (must specify when ordering)**.
- A range of pipe adapters 20-315mm are available. Optionally, if mounting into your own fittings, make sure MRPU5 rotor is inline with flow direction. MRPU5s can also be mounted onto pipes by tapping a 1" BSP (female) thread into the pipe, then simply screw the MRPU5 into position and calibrate accordingly. The MRPU5 paddlewheel must protrude at least one centimeter past the Internal Diameter of the pipe. Usually MRPU5s are factory fitted to, and calibrated with, the chosen pipe adapter fitting.
- The flowmeter must measure in a **full pipe flow of liquid**.
- Close lid after use**, to prevent LCD fading from prolonged exposure to direct sunlight, and to maximize battery life.



## PRODUCT ORDERING CODE FORMAT

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

**MRPU5- pipe adapter - No. of decimal places (0 or 1) - units\* - H/V\*\* - options (if any)**

e.g. MRPU5-GAL50M-0-L-H = MRPU5, Gal. 50mm pipe adapter, no decimal place, Litres display, Horizontal run

### MRPU5 PIPE ADAPTER FITTINGS The range includes:

Order Code	size(mm)	Adapter Type
GAL25M	25	Galvanised Iron, threaded entries BSP(f). <b>NOTE: 25mm is supplied with pipe sections already fitted.</b>
GAL32M	32	
GAL40M	40	
GAL50M	50	
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	

**Large range of other fittings available. Refer to our catalogue for more.**

\* units: L = Litres,  
KL = KiloLitres,  
M = Megalitres)

### FUNCTION OPTIONS

-DR	disable reset
-P	IP67-rated pulse output plug-set (1 pulse per increment displayed)

### SPARE PARTS

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

**IMPORTANT: the display head is factory programmed according to the pipesize, and the display head and pipe adapter are calibrated together and operate as one unit. DO NOT remove the display head and place it on a different sized pipe adapter, because the display will then not read correctly for the new pipesize.**

### PIPESIZE vs FLOW RANGE GUIDE at various accuracies

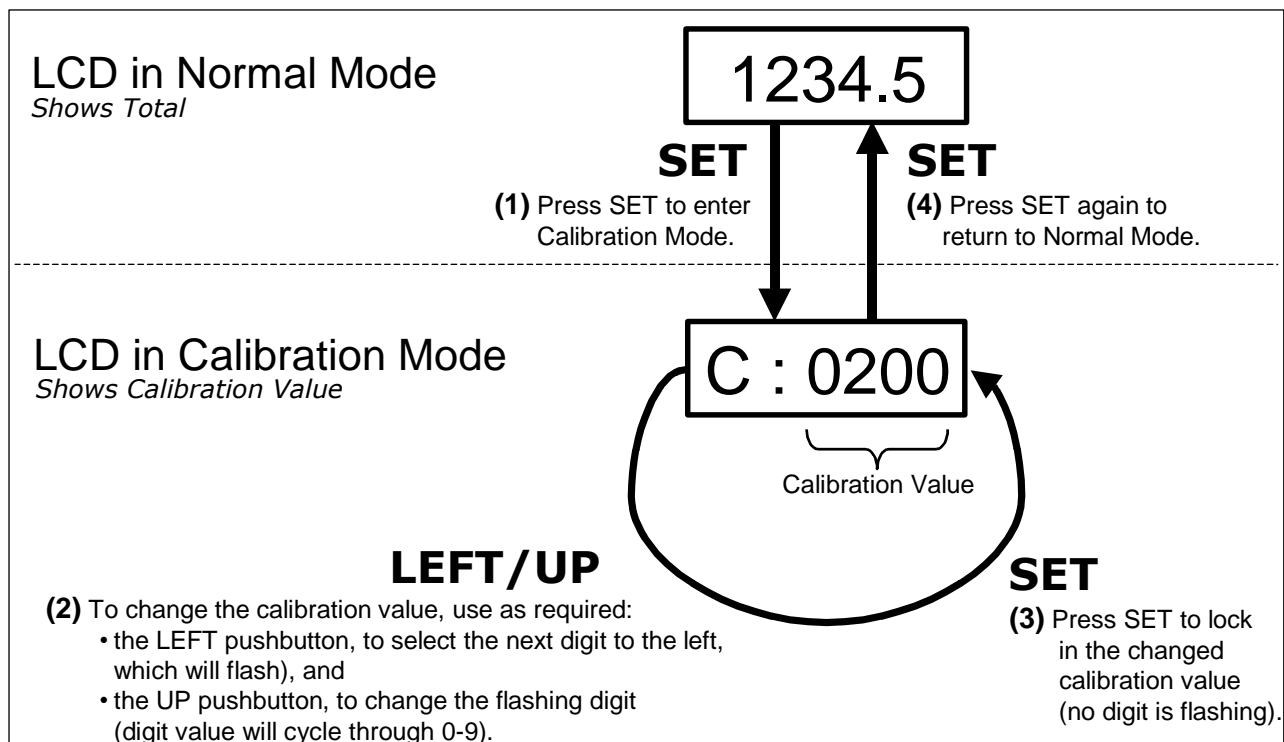
Pipe Size (mm)	Flowrange (Litres/minute)			
	Min		Max	
	@ ±2.5%	@ ±1%	@ ±1%	@ ±2.5%
25	20	22	200	235
32	30	34	340	385
40	46	52	520	600
50	71	82	820	940
65	120	140	1400	1590
80	182	210	2100	2410
100	285	330	3300	3760
150	640	742	7420	8480

### MATERIAL SPECIFICATIONS

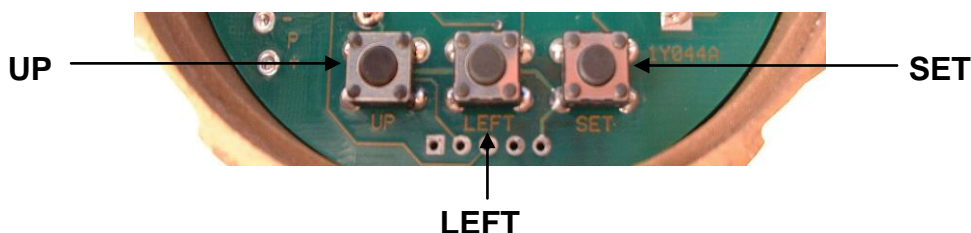
MRP housing and sealing ring	Cast gunmetal
Window	Tempered glass
Gasket	PVC
O-Ring	Neoprene
Rotor	Marine Alloy saf2205 and Delron bushes
Axle	Tungsten Carbide
Lid	ABS, ferrite magnet

## RE-CALIBRATION

- Note: The calibration (K-factor) characteristics can vary up to 6% between horizontal or vertical runs.
- **Recalibration of an MRP5 is performed via three internal pushbuttons** (marked SET, LEFT and UP) mounted on the PCB. **To access the PCB**, open the hinged lid cover, and 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 remove the glass window.
- Now run liquid through the MRP5 into a calibrated vessel or load cell, until at least 50 Litres is displayed on the MRP5. For accuracy, keep flowrate continuous and above minimum flowrange for the pipesize.
- Compare the actual amount collected against what is displayed on the MRP5. If the amount collected matches the amount displayed within 2%, then no adjustment to calibration is necessary.
- If the amount collected is say only 45 Litres, yet the display shows 50 litres, this is 5 litres under or 10% (i.e.  $5/50 \times 100\%$ ). So, increase the set calibration value by 10%  
e.g. if set to 100, new value is  $100 + 10\% = 100 + 10 = 110$ .
- If the amount collected is more than that displayed, then the inverse applies e.g. if the amount collected is say 55 Litres, yet the display shows 50 litres, this is 5 litres over or 10% (i.e.  $5/50 \times 100\%$ ). So, decrease the set calibration value by 10% e.g. if set to 100, new value is  $100 - 10\% = 100 - 10 = 90$ .
- To change the calibration value, follow the sequence shown in the diagram below.
  - Calibration Mode is entered by pressing the SET pushbutton and the Calibration Value is then shown. Write down the displayed Calibration Value to remember it.
  - As required, use the LEFT button to select a digit to be changed (selected digit will flash), and use the UP button to change the value of the selected (flashing) digit.
  - When all required digits have been changed, pressing SET will lock in the new Calibration Value.
  - Pressing SET again will exit Calibration Mode.



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

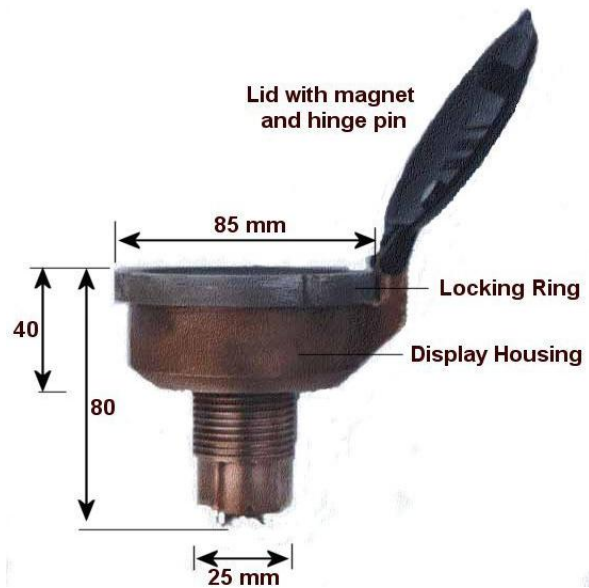


## MAINTENANCE

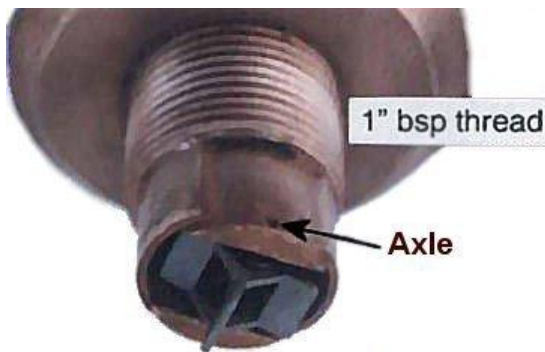
- If the LCD display is blank, the MRPU5 may be in dormant mode because it is not receiving input pulses from its attached flowmeter. The LCD is reawakened once flow restarts, or by closing and re-opening the lid.
- If the flowmeter ceases to count, the paddlewheel may be blocked:
  - Grasp the readout 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 MRPU5 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 MRPU5 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 MRPU5 to ManuFlo for servicing.



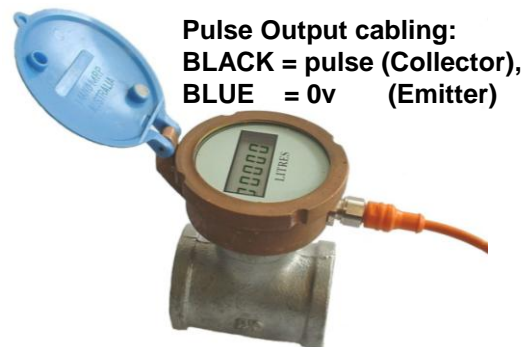
Internal view - PCB and 3 calibration pushbuttons



Side view, with dimensions



Paddlewheel



With optional IP67-rated Pulse Output plug set.

**ManuFlo**™

Flow Measurement Products

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