MRP20-T2

LCD RESETTABLE COUNTER FLOWMETERS

Designed and built primarily for use on Concrete Transit Mixers

DATASHEET

NEW FEATURES

- 4 digit large LCD resettable or non-reset totalizer (20mm high digits)
- Total displayed in Litres.
- Easier Access for re-calibration and user friendly 1 point re-calibration function –self-calc for a new K- factor.
- Optional External re-calibrate via Portable Device with RFID and EWM calibration software.
- Pulse Output is Disabled when lid is closed (code -PNL), or Live even when lid is closed (code –P).
- Option for continuous Live LCD (code -NS)

OPTIONS:

- **Pulse Output** – 1 pulse or 10 pulses per litre passive pulse output via IP67 plug set
- Litres display with **1 decimal place** for finer volume displayed

- **External Reset input** for PLC or mechanical switch
- **Wake-Reset function** – turns on the display before resetting the total

STANDARD FEATURES:

- Custom designed and built primarily for use on Concrete Transit Mixers.
- Unaffected by water hammer, compressed air, mild frozen or light recycled water.
- Robust Gunmetal housing for the harshest environments.
- Durable alloy paddlewheel rotor.
- Sealed IP65 digital display compartment.
- Hinged cover protects LCD from sunlight.
- Access for re-calibration.
- No damage to meter if run outside its flow range.
- No filters needed prior to meter.
- ± 2% accuracy flow curve, with calibration certificate issued

The **MRP20-T2 resetable counter** is designed and manufactured by ManuFlo for use on mobile concrete transit truck mixers (agitators). Constructed of the toughest materials, the MRP20-T2 can withstand the abuses experienced in the premix concrete industry. The gun-metal pipe flow-tube has 20mm (¾") BSP male threaded ends.

The MRP20-T2 flowmeter is suitable for general medium to high flow range water flow measurement applications. With the MRP20-T2 being internally Lithium battery powered, it is ideal in situations where no external power supply is accessible, making it a totally portable flowmeter. A pulse output is optionally available for logging and totalising applications.

The self-contained LCD counter, registers flow in total Litres. The main body components are the flow tube casing and the electronic display head. The electronic counter board mounted inside the robust metal housing of the display head is visible through the tempered glass window and is sealed by a metal Lock Ring, The only moving part is an alloy rotor which turns as liquid flows past it. The high impact 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 and closing the lid resets the digits. The internal lithium battery has a typical life of 9+ years. NOTE: A sleep mode function turns the display off after 5 minutes of no use. The display is re-awakened either by flow occurring or by closing and re-opening the lid.

SPECIFICATIONS	
Flow Range	12 to 120 Litres/minute
Accuracy	± 2% accuracy (10:1 flow curve)
Display Readout	Counter: 4 digits in Litres (L)
Power Source	3.6v Lithium battery (9+ year typical life)
Display capsule rating	IP65 water and flame resistant
Max. operating temperature	50 °C
Max. operating pressure	2000 kPa
Dimensions (mm)	270 L x 110 H x 85 W
Weight (max)	1.7 kg

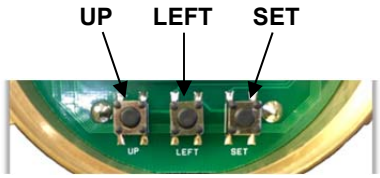
ORDERING INFORMATION	
Order Code	**Description**
MRP20-T2	20 mm Didital LCD "Litres" resettable counter flowmeter up to 50ºC Gunmetal flowtube with ¾" BSP(male) threaded both ends.
-D1	Display total in LITRES to 0.1
-P	Pulse output option (1 Litre/1 pulse), with M12 IP67 plug set, 5mtr cable 100 Hz maximum, 5 ms fixed pulsewidth.
-P1.1	Pulse output option (0.1 Litre/1 pulse), with M12 IP67 plug set, 5mtr cable

Due to continuous product improvement, specifications are subject to change without notice

MATERIALS	
Meter flow tube	Gunmetal
Meter display capsule	Cast gunmetal
Sealing lock ring	Cast gunmetal
Gasket	Nylon
Window	Tempered glass
Under glass O-ring	Neoprene
Paddlewheel / Rotor	Marine alloy with Delron bushes
Axle	Tungsten Carbide
Lid, pin & magnet	ABS, Stainless Steel and Ferrite

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

Shown with optional IP67 Pulse Output plug set



Internal view of calibration buttons

INSTALLATION

1. To maintain the stated ±2% accuracy, a straight pipe section of 100mm length should be maintained on both the inlet and outlet flow sides, with an Internal Diameter (I.D.) of between 19-22 mm.
2. MRP20-T2 flowmeters **are factory calibrated for either vertical (upwards) or horizontal mounting (this must be specified when ordering).** If mounting contrary to the factory set calibration, you may need to access the internal electronic circuit board to change calibration setting (via 3 internally located pushbuttons). See the 'Re-Calibration' section below.
3. Body flowtube ends are 20mm (¾") BSP (male) thread.
   On each side of the flowtube housing, there are wing mounts with 1/4" drill holes for mounting to a bracket.
4. The flowmeter must measure in a full line of liquid. Valves can be fitted before or after the flowmeter.
5. Close lid after use to prevent the LCD possibly fading due to prolonged exposure from direct sunlight.

MAINTENANCE

1. If flowmeter ceases to count, the rotor may be blocked, so:
   - remove from the flow line, then insert a long implement to free up rotor; or
   - Grasp the readout head and turn anti-clockwise, until it clears the threaded stem section. Examine, and if required clear debris from rotor. Spin the rotor and the display should count. Re-insert head and screw in clockwise to original position. If used with reclaimed water, over time a calcium buildup may deposit on the rotor, in which case flush in 1:4 HCL-acid:water to clear. To access the rotor, remove the shaft. A full complement of spare parts is available.
2. to access the electronic display board to change calibration or replace battery: with a pair of multi-grips, grasp the metal Lock Ring, turn it anti-clockwise to unscrew it. Lift off Lock Ring, then with screwdriver lift off glass window (don't lose the seal gaskets).
   - Three calibration buttons are now in view for re-calibration.
   - To access the 3.6V lithium battery (on underside), unscrew the two screws that secure the PCB, then remove the PCB.

   When finished, reassemble by re-securing the PCB, re-inserting the glass and seal gaskets, screw Lock Ring back in clockwise and, as a precaution, seal under the lock ring with silicon.

RE-CALIBRATION

Via three internal pushbuttons **(**marked **UP, LEFT and SET)**

- Note: The calibration (K-factor) characteristics can vary up to 5% between horizontal or vertical upward runs.
- Run liquid through the MRP20 into a calibrated vessel or load cell, until at least 50 Litres is displayed on the MRP20. For accuracy, keep flowrate continuous and above minimum flowrange for the pipe size.
- Compare the actual amount collected against what is displayed on the MRPU6. If the amount collected matches the amount displayed within ±2%, then no adjustment to calibration is necessary.
- **Formula:** *Percentage error = (Amount displayed - Amount collected) / Amount displayed x 100*
- If the percentage error is more than ±2%, please follow **smart 1 point calibration** procedure.
- **To access buttons**, open the hinged lid cover, and with a pair of multi-grips, grasp the metal locking ring and turn it anti-clock wise until it clears the threaded section. Remove the locking ring, and then remove the glass window.

Adjusting the Calibration Value using the internal Calibration push buttons UP, LEFT and SET

(Internal Push Buttons **UP, LEFT** and **SET)**

Adjusting the Calibration Value using Smart 1 Point Calibration (User friendly, No calculations needed)

Step 1. **Press UP button** for approximately 5 seconds

LCD display in 1 point calibration mode.

Step 2. **Start flow** (Run liquid through the MRT20)

- Calibration will automatically start upon flow detection.
- **Display must register at least 100 counts or more before stopping the flow**.

Example: Display = 104 (counts)

Step 3. **Stop flow**

- After flow is completely stopped, wait for approximately 10 seconds.
- The display will update to allow entry of collected amount of liquid in litres.

LCD display, 10 seconds after flow completely stops.

Step 4. **Enter volume collected** in Litres.

- Press **LEFT** button to select desired digit to be change.
- Press **UP** button to change the value of selected digit.
- Press **SET** to lock in the changed value.

Step 4. (Continuation)

Example: Volume = 20.0 Litres

Step 5. **Press SET** to display Gear Rate value.

Example: Gear Rate: 5.9 Counts per Litre

Example: Main display in L/M and Litres (L)

Note:
Gear Rate value will be displayed for approximately 5 seconds then the display will automatically exits calibration mode and returns to counting mode (Main Display). This indicates that the meter has been successfully re-calibrated.

Step 6. **Verify** that the meter has been properly re-calibrated.

- Do one or more test run and verify if the 4d LCD displayed amount is now within ±2% error.
- If satisfied, properly mount the viewing window and 4 screws back to its original state.
- Otherwise, repeat Steps 1 to 6

Note: ***Standard re-calibration procedure is still applicable.***
If Standard re-calibration procedure is preferred, please see previous MRP20 User's Manual.