

**FEATURES:**

- Flow direction detection, Forward/Reverse.
- Selectable number of pulses per litre, 1000ppl is standard
- Vibration resistant
- 4 – 30 V DC wide input voltage range
- New lower profile body & chamber
- Measures Admixtures (Specific Gravity  $\leq 1.4$ )
- Nutating disc measuring chamber.
- Small impurities can pass chamber without jamming
- Low hydraulic thrust minimises wear.
- Precision 1 pulse per 1 millilitre output.
- $\pm 1.5\%$  accuracy curve,  $\pm 0.2\%$  repeatability of rate.
- Accuracy is largely unaffected by varying viscosities & S.G.
- Conforms to AS3565-1988, designed to meet AS3901.  
Approvals : C700-AWWA,SDWA-NSF372

**New ASA  
Pulse head  
enclosure**

Serial Number Stamped  
Note: "E" internal EDPM seal fitted.

The MES20-N compact body magnetically-coupled positive displacement pulse output flowmeter, with its nutating disc measurement principle flow chamber, provides a high resolution pulseout, making it suitable for an extensive range of precision batching and flowrate monitoring applications, operating over a wide flow range.

The original MES20 was introduced in 1995 and is used throughout the world. It is the primary choice for most construction chemical suppliers throughout Australasia and other parts of the world for measuring and dispensing liquid admixture chemicals.

The new MES20-N is now available with a lighter weight body and dynamic flow measuring chamber.

The nutating (wobble) disc positive displacement measurement flow chamber employed in the MES20-N, makes the meter operate with only minimal headlosses and can pass small impurities without jamming. Measurement with a wide range of varying viscosity and specific gravity liquid water based admixtures is possible with negligible calibration variations. The optimum operating flow rate is at nominal (Nom.) flow, expect at least 20+ years operating life of the chamber with standard admixture liquids.

The electronic pulsehead is a fully self contained unit, which attaches to the main meter body with a bayonet turn and lock fitting mechanism. Although the MES20-N was designed primarily for economical precision measurement of concrete admixtures, it is also used for a wide range of other water based liquid measurement applications.

The newest MES flowmeter model (*Digital Smart Pulse*) –DSP & -DSP-OC, uses magnetic sensors and a microcontroller unit to process and sample the signals which provides the latest technology pulse output that is virtually vibration free. In addition this new design, is able to optionally determine the direction of the flow, through three separate, live output channels.

Different factor values of pulses per litre can be selected on the output as well, to make it suitable for an extended range of applications.

To make this design completely interchangeable with previous models, the default output mode is set at bi-directional pulse (Pulse output regardless of the direction of flow) and 1000 pulses per litre.

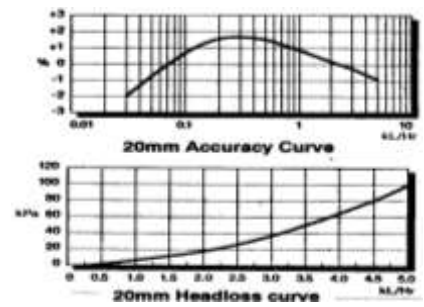
While different number of pulses or output modes can be selected at the time of purchase.

## Flow Direction sensing:

The new digital pulse head has the ability to determine the direction of the flow. To make the new design completely interchangeable with the previous models, 3 separate live pulse output channels are available on this model:

1. Bi-directional pulse output:  
Generates pulses on the output regardless of the direction of the flow. (Forward and Reverse -this is the default configuration).
2. Separate Dual Pulse for Forward & Reverse flow pulse outputs:  
Generates a individual pulse train on the output for forward flow And for Reverse flows.

## Flow Characteristics



## DIMENSIONS

Meter Size – 20mm		MES20	MES20-N
Length of threaded end meter	L	191	191
Height – overall of meter	H1	160	150
Height – underface to centreline	H2	35	35
Height – underface to top body	H3	68	55
Overall Width	W	92	92

## CONNECTION

20mm (3/4") BSP-male threaded ends (USA 5/8").



## SPECIFICATIONS for Size: 20mm

Pulse head model IP63 rated with cap.		Ratings
Digital	Output rate (Pulses Per Litre)	<b>1000 PPL (is standard).</b> (3 wire connection) Available options: 1, 10, 20, 50, 100, 250, 500 & 1000 PPL
	Supply voltage / current consumption	+ 4 – 30V DC / 2.2mA (MAX) (DSP - Digital Smart pulse)
	Maximum switching capacity	+ 30V DC, 500mA
Transistor (Superseded)	Output rate (Pulses Per Litre)	Fixed 1000 pulses per litre. (1 pulse per 1 millilitre)
	Supply voltage / current consumption	+ 5 – 25V DC / 5 – 25mA proportional to input voltage.
	Maximum switching capacity	+ 25V DC, 500mA
Contact Closure	Output rate (Pulses Per Litre)	60.6 pulses per litre (2 wire connection, internal 470Ω)
	Supply voltage / current consumption	No power supply needed. Switches +0-30VDC to 400mA
Connection via IP67 PG9 cable gland entry		3 wire screw down terminals (use shielded signal cable)
Accuracy (min – max range)		± 1.5% (repeatability ± 0.2% or better of rate)
Start Flow @ 5%		0.6 Litres per minute
Minimum Flowrate @ -1.5%		1.5 Litres per minute
Nominal Flowrate @ 0%		45 Litres per minute
Maximum Flowrate @ +1.5%		54 Litres per minute (Admix s.g. 1.4) 70 Litres per minute (Admix s.g. 1.1) 80 Litres per minute (Admix s.g. 1.0)
Maximum Working Pressure		1160 kPa (Headloss at nominal flowrate 25 kPa)
Maximum fluid temperature		50 °C
Weight		1.3 kg

## INSTALLATION:

MES20-N

- Meter body end threads are male 20mm 3/4" BSP. **Arrow on meter body indicates direction of flow.**
- Install meter undercover, the pulsehead now rated IP63 when hood cap is secured. NOTE: use only shielded cable for all wiring
- Consider an accessible area for any future service. Flowmeters may generally be installed in any plane without affecting accuracy (but not upside down, as mag-drive assembly may be eventually obstructed).
- Older Transistor Meter model may emit some stray pulses in high vibration areas, so avoid high vibration areas, or install dampeners, or use the DSP digital smart pulsehead version which are immune to vibration.
- Flush out pipes thoroughly before connecting flowmeter. Ensure arrow on meter body coincides with forward direction of flow.
- Although meter passes small impurities, a filter box or strainer (800 micron cartridge filter recommended) may be fitted prior to flowmeter, especially if fluid contains granules or many impurities.
- Any flow restriction or regulation valve should be fitted preferably before the flowmeter. Quick-closing valves should be fitted before the meter if used for higher-end flowrates (thus avoiding sudden pressures on the flowmeter chamber) provided that the plumbing configuration allows the pipe to remain full where the flowmeter is located.
- Once installed, flowmeter must be full of liquid at all times.
- IMPORTANT: AS LAST STEP OF INSTALLATION, A CALIBRATION CHECK OF FLOWMETER MUST BE PERFORMED.**

## MATERIAL SPECIFICATIONS:

- Pulsehead - ASA-UV.
- Meter body - Gun metal AS1565 C83810.
- Strainer - Polyolefin.
- Wobble Disc/Shutter - Graphite Compound
- Measuring chamber - Nepton/SS316/barium ferrite.
- Chamber gasket - NBR rubber
- Base sealer cap gasket - NBR rubber or
- Base sealer cap gasket - EDPM
- Base plate - PVC or Synthetic Polymer
- Base body hex screw - Stainless steel 316

NOTE: A full complement of spare parts is available.



1. Digital DSP pulsehead

4. Wobble Disc / Shutter / Roller (internals of Measuring Chamber)



arrow on meter body indicates direction of flow

2. Meter Body (Compact lower profile)

## PULSE OUTPUT SPECIFICATIONS

- Standard NPN/PNP Digital Pulse = 1 ml/1pulse**  
+4-30VDC -the internal circuit will drive upto 500mA.  
For PNP input (12-24VDC) fit a 1.5 to 1.8K resistor (Value dedends on devices input impedance).  
**Re-transmission distance upto 1000 metres.**

To connect, remove the moulded cap, followed by the housing lid (2 screws). Pass the cable through the gland entry and connect to the terminal connector strip. Screw down on bare wire, properly tighten gland and reseal housing with cap cover.

**To avoid signal interference, use shielded cable only.**



MES20-DSP-OC or MES20-DSP Identifier label located on lid

5. Measuring Chamber Complete 3. Strainer



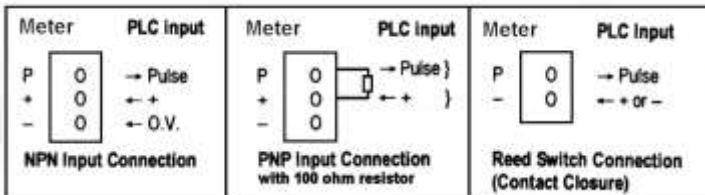
- Contact closure 60.6 pulses/ Litre**

Current limiting resistor & debounce capacitor fitted.

FOR 24 to 240 VAC PULSE OUTPUT SWITCHING USE **UIC/A2** Or **UIC/D** for 5-24VDC FULLY SCALABLE & VARIABLE DIVIDED PULSE INTERFACE CARD (refer datasheet).



7. Base sealer gasket (White) 8. Base Plate  
7E. EDPM base seal (Blk) 9. Base body



Order Code:	Description
MES20-N	Digital pulse: 1000 pulses/Litre
-DSP-OC	For ManuFlo equipment
-DSP	Other devices (internal pull-up res.)
MES20-N-R	Contact closure 60.0 pulses/Litre
-E	EDPM base gasket seal option
-T	Teflon coated body

## MAINTENANCE

If flow becomes excessively restricted, or meter is out of calibration, or pulsehead stops pulsing, then:

- Where fitted, push in the locking pin. Hold the pulsehead, turn it anticlockwise, pull up and remove. **CAUTION: Do not press on, or impact, the copper base of the pulsehead.** Use a magnet (or UMT8 ManuFlo tester) and rotate at the copper base of the pulsehead -this should generate some pulses. If not, check wiring cable connector and external cabling. If still no pulses, replace the pulsehead. If pulsehead does pulse, then problem may be in flow chamber, so proceed to step 2. (Note: Older transistor/optical pulseheads can be shaken to generate pulses).
- To access the measuring chamber, first rotate or remove meter body to access the base screws. Unscrew the 4 x hex bolts in the base, remove base plate and base seal ring. Using long nose pliers, pry and pull out white strainer screen thus unlocking measuring chamber assembly. Remove chamber and inspect.
- If required, clean chamber parts in warm water with detergent or diluted acid/water 1:5 ratio. Make sure internal chamber wobble disc roller pin is in place and shutter plate is refitted. Re-assemble meter by reinserting measuring chamber +square gasket; secure in position with strainer. Blow into the chamber port to see it turns freely. Place base gasket in position. Refit Base Plate, torque secure screws and calibration test meter.
- After use with chemicals, if MES20-N is removed from pipeline, be sure to flush out working chamber with water.
- To avoid moisture ingress to electronics, always make sure all cable entry glands are secure, cables are looped downwards and the meter is under cover. **IMPORTANT: AFTER ANY SERVICE, A CALIBRATION CHECK OF THE FLOWMETER MUST BE PERFORMED.**

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