Octave water meters

Arad

The Arad Octave is a revolutionary, accurate and reliable ultrasonic water meter based on the dual beam technology. The Octave has excellent hydraulic characteristics and advanced possibilities. Multiple output adapters are available for the Octave: double pulse (open collector, transistor), SSR pulse, analogue 4-20mA, ModBUS, SSR pulse + analogue 4mA.

APPLICATION

Drinking water supply, irrigation and drainage systems and industrial applications

CHARACTERISTICS

- No moving parts, hence very low clogging vulnerability
- Factory default pulse settings
- Long-term stability and reliability.
- Battery with 10+ year service life expectation
- Solid mechanical design - (IP 68)
- Very precise measurement at low flow rates
- Possibility of bidirectional measurement
- Clear display including flow direction, flow rate, volume and leak detection
- Large and programmable LCD
- Programmable outputs

Measuring principle

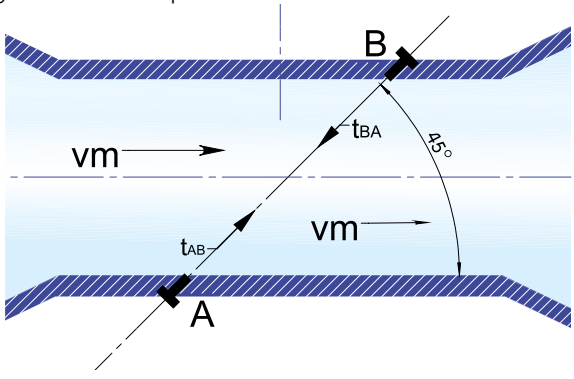
The flow rate through the water meter is determined by means of ultrasonic technology: the sound wave moving in the direction of the water flow moves faster than the sound wave moving opposite the water flow.
The transition time AB and transition time BA are measured continuously by means of the dual beam sensors in the water meter. The difference in time between these two transition times is a proportional relationship of the flow velocity of the water through the water meter. The flow rate is then the result of multiplying the flow velocity by the cross-sectional area of the measuring tube.

Note: Because the Octave is designed for measuring liquids with the same density and viscosity as water, this meter is not suitable for measuring liquids with a different density and viscosity.

TECHNICAL DATA

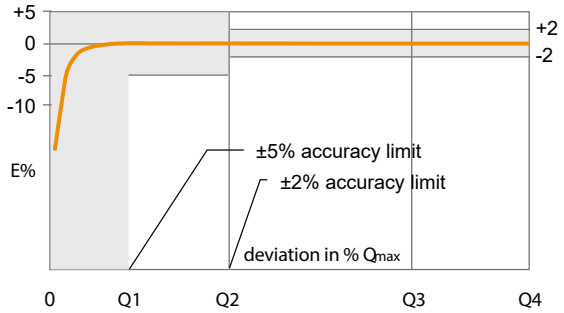
Measuring accuracy	: +/- 2% between Q2 and Q4
	: +/- 5% between Q1 and Q2
Connection	: DN50-DN200 (2”-8”)* - flange connections
Minimum pressure	: 0,7 bar
Maximum pressure	: 16 bar
Maximum capacity	: 500 m³/h
Temperature range	: 0.1 °C to 50 °C
Head loss	: see chart
Material	: Cast iron - epoxy- coated Zinc coated (2" / 3" / 4")
Protection class	: IP68
Battery	: Lithium battery (irreplaceable)
Certification	: MID, CE, ISO 4064 (2005), AWWA C 750, WRAS, NSF
Display	: Multi-line 12-digit LCD
Volume measurement	: 1. Net (forward flow direction counterflow direction)
	: 2. Forward flow direction
	: 3. Flow direction & reverse flow direction
Output configuration	: forward pulse (standard) 4-20 mA (programmable) reverse pulse (bidirectional)
Adapter (optional)	: double digital pulse - open collector
	: SSR double digital pulse
	: 4-20 mA (analogue)
	: SSR + 4-20 mA (analogue)
	: ModBUS

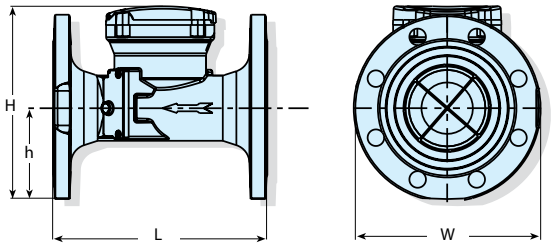
* Larger sizes on request



Performance and accuracy (according to MID2004/22/EC - ISO 4064: 2005)

Nominal passage	mm inch	DN50 2”	DN80 3”	DN100 4”	DN150 6”	DN200 8”
Minimum capacity Q1	m³/h	0,080	0,125	0,200	0,500	0,800
Transitional capacity Q2	m³/h	0,125	0,200	0,320	0,800	1,280
Nominal capacity Q3	m³/h	40	63	100	250	400
Maximum capacity Q4	m³/h	50	80	125	313	500
Minimal starting flow	m³/h	0,025	0,025	0,025	0,200	0,200

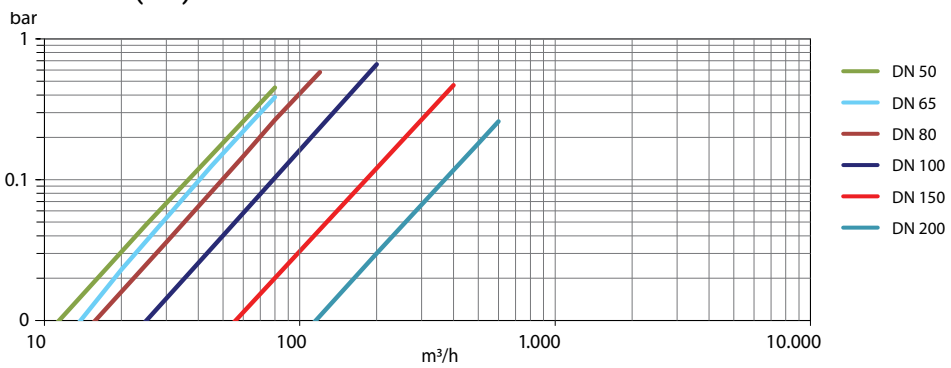




Technical drawing and specifications

Nominal passage	mm inch	DN50 2”	DN80 3”	DN100 4”	DN150 6”	DN200 8”
L - Length	mm	200	225	250	300	350
B - Width	mm	165	200	220	285	340
H - Height	mm	194	210	223	282	332
h - Height	mm	40	90	103	140	165
Absolute passage	mm	38	47	61	91	131
Weight	kg	9	13	15	32	45
Pitch	mm	125	160	180	240	295
Bolt dimensions	mm	M16x70	M16x80	M16x80	M16x100	M20x120
No. of bolts	mm	2x4	2x8	2x8	2x8	2x12

Head loss (bar)

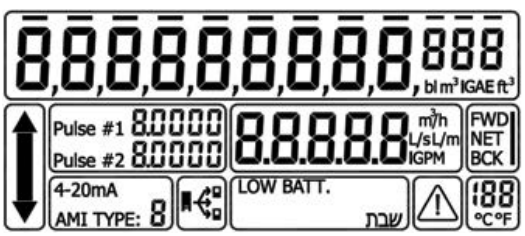


Pulse settings (factory default*)

Diameter	Pulse #1	Pulse #2
DN50 2”	1P/10L	1P/1L
DN80 3”	1P/100L	1P/10L
DN100 4”	1P/100L	1P/10L
DN150 6”	1P/100L	1P/10L
DN200 8”	1P/1000L	1P/100L

*Factory default setting: forward flow

Display segments (version >4.0)



- Flow direction
- Flow rate
- Counting mode
- Communication mode
- LOW BATT. — Battery voltage
- System error
- Watertemperature
- Output mode
- Volume units
- Pulse resolution

Flange dimensions

Size (mm)	Pitch size (mm)	Flange adapter size (mm)	Flange size (mm)	Bolt sizes (mm)	No. of bolts (pcs)
2”	120.5 / 124	63	63	M16 x 70	2 x 4
3”	160	90	90	M16 x 80	2 x 8
4””	180	110	110	M16 x 80	2 x 8
6”	240	160	160	M16 x 100	2 x 8
8”	295	200 / 225*	225*	M16 x 120	2 x 8

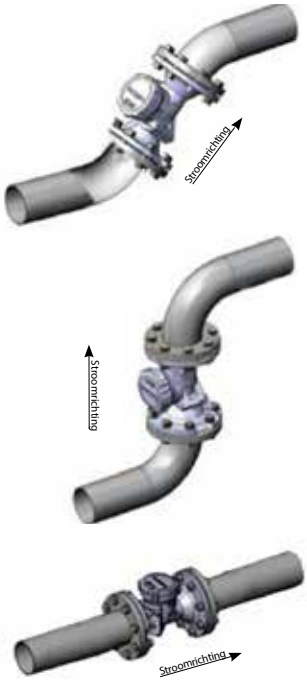
*Special flanges are available for the 8” Octave

INSTALLATION & MAINTENANCE

Installation

- The meter should be completely filled with water at all times.
- Due to air and vacuum formation, we recommend not mounting the Octave in suction lines.
- Allow 2x diameter interspace as standard (e.g. at elbows, T-pieces, valves) upstream and downstream of the Octave water meter. In case of a pump connection, 10x diameter interspace is recommended upstream of the water meter.
- A special turned-out flange 225 mm is available for the installation of 8” Octaves (77300-000350), which fits on a VDL flange adapter DN200-225 mm (77300-103552) in combination with. a rubber ring for flange adapter 225 mm (77300-104735).
- Consult the installation manual of the Octave at all times.
- Netafim can program the water meter with the required settings, on request.
- The protective earthing and equipotential connections should be such that electromagnetic from devices other than the Octave cannot influence the signal.
- The meter is best mounted in the following positions (with display facing up):

Correct mounting positions (in order of preference)



Battery

Octave battery service life is estimated on 10+ years. Unfortunately the lithium battery in Octave cannot be replaced. The IP68 protection vacuum will be compromised. MSDS available on request.

Density and viscosity

Octave is designed for the flow measurement of fluids with more or less the same density and viscosity as normal water at 20°C. Any other deviating fluids cannot be measured with Octave.

Mechanical cleaning

When Octave is not displaying any flow in normal operation circumstances:

1. Check the type of clogging.
2. Sand, dirt and plant remains may be removed with warm water and a soft brush.
3. Calcium, iron, etc. may not be mechanically removed in order not to damage the inner coating. Please follow below steps in chemical cleaning.

Chemical cleaning

For chemical cleaning. proceed as follows:

1. Unscrew the flange bolts and detach the output module from Octave (with a 4 mm hex key).
2. Remove Octave from the piping system.
3. Place the Octave straight-up on rubber sealing on flat surface so one of either sides is closed.
4. Fill-up Octave to the edge with acetic acid (max. 7% concentrated). 1 litre should be sufficient.
5. Let the solution soak for 12 hours
6. After 12 hours wash off any remains with warm water, use a soft brush for the sensor openings.
7. Check the Octave for proper operation. Place the Octave straight-up on a towel on a flat surface and keep filling the Octave from above with water. A gentle but sufficient flow can be generated in order to establish a flow measurement.
8. After cleaning, reinstall the Octave into the piping system, de-aerate, connect the output module (if available) and put the water meter into operation.