Positive Displacement Flowmeters

SRZ series Helical screw positive displacement flowmeters

Two highly accurate cycloid-shaped screw spindles mesh and rotate inside a cylindrical housing with two overlapping holes in the form of a figure of eight, which forms the measuring chamber. The medium flows in axial direction and rotates the spindles, it is forced along the measuring chamber bores by the profile of the spindles. This happens without pulsation and with minimum leakage.

A pickup will inductively detect the speed of the spindle pair through the housing via a pole wheel with a high number of gears. The speed of the spindles is absolutely proportional to the volume flow over a very wide range.

Technical Information	
Linearity	± 0,5% of actual flow value (from 30 mm²/s onwards) ± 0,25% of actual flow value (from 100 mm²/s onwards)
Repeatability	± 0,1%
Operating Pressure	PN 16/40 up to PN 400
Temperature	up to +150°C fluid temperature (higher on request)
Viscosity	30 up 1,000,000 mm²/s
Materials	housing stainless steel as per DIN 1.4305 (SS303) special: 1.4404 (SS316L)
Helicals	stainless steel as per DIN 1.4122 (SS303) special: 1.4460 (SS329)

- Viscosities up to 1 Million cSt
- Pressure rating up to 400 Bar
- Flow rates up to 400 L/Min
- ATEX EEx design

Signal pick up options

- VTE*/P: carrier-frequency amplifier with single pickup, for fluids up to +150°C
- VTE*/P Ex: carrier-frequency amplifier with single pickup, for fluids up to +150°C. ATEX certified.
- VTM: local display unit with integral frequency-and analogue output, for fluids up to +150°C
- TD*: carrier-frequency amplifier with twin pickup, for fluids up to +80°C
- VTQ: quadruple carrier-frequency pickup an amplifier with integral divider, for fluids up to +80°C
- FOP: fibre-optical amplifier for electrostatic environment, fluids up to +60°C
- IF*/VIEG: inductive pickup and amplifier for fluids up to +180°C
- IF*/VIEG Ex: inductive pickup and amplifier for fluids up to +180°C. ATEX certified.
- HE, HD: hall effect amplifier for fluids up to +80°C

* Replaced with code letter for short or long pickup depending on meter size and fluid temperature.

Options & Ordering Information

Type	Measuring range ltr/min	K-factor pulses/ltr	Frequency range in Hz
SRZ 10	0.01 - 4	16,500	3 - 1,000
SRZ 20	0.04 - 16	9,000	6 - 1,250
SRZ 40	0.40 - 40	3,500	20 - 1,740
SRZ 100	1.00 - 100	850	8 - 1,750
SRZ 400	4.00 - 400	214	14 - 1,800

Please note different pulse rates and frequency ranges for high temperature versions: SRZ 10: 11,200 pulses/ltr. and 2 up to 760 Hz, SRZ 40: 1,750 pulses/ltr. and 11 up to 1,167 Hz

Ordering examples

SRZ40KL.VTE/P	SRZ helical gear flow meter 0.4 to 40 L/min. Ball bearings (KL) with carrier-frequency amplifier with single pickup, for fluids up to +150°C
SRZ100ST.VTM	SRZ helical gear flow meter 1 to 100 L/min. Hard metal bearings (ST) with local display unit with integral frequency-and analogue output, for fluids up to +150°C

Abu Dhabi, UAE, Tel: +971 2 6796902, Fax: +971 2 6796903
Website: www.petroces.com, Email: info@petroces.com

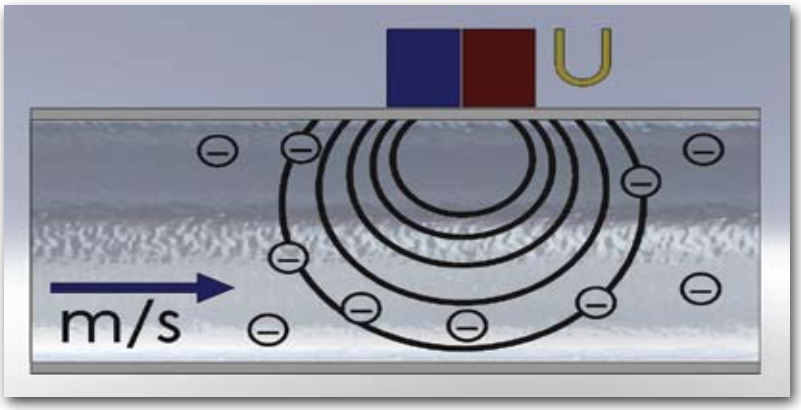
Magnetic Inductive flowmeters - principle of operation

Principle of operation

Magnetic inductive flowmeters use Faraday's principles to infer the velocity of a liquid passing through them. In effect the liquid becomes a moving conductor in a magnetic field the resultant emf (voltage) is proportional to the velocity of the liquid flow rate. For the liquid to be a conductor it must be conductive in nature, this type of flowmeter cannot be used for non-conductive fluids such as oils.

In-line magnetic inductive flowmeters use a non-conductive or lined section of pipe with electrodes in the side walls to sense the emf generated, the inductive coils are placed outside the pipe leaving nothing to restrict the flow. Insertion designs are also available which prove very cost effective for applications where absolute accuracy is not required.

These flowmeters have no moving parts and offer very little in the way of pressure loss. With a range of non-conductive liners and electrodes materials these device offer the ability to measure a wide range of liquids from water, through acids and bases to slurries and with their output being independent of viscosity even thick media can be measured without any need for correction.



Principle of Magnetic Inductive flow measurement

Media application guide

Water ✓ Chemicals ✓ Hygienic ✓

Magnetic Inductive Flowmeters

PE102 series PVDF low flow magnetic inductive flowmeter

The PE102 magmeter is designed for low-flow chemical injection or difficult-to-meter applications with pulsating metering pumps in 3/4" down to 1/4" pipe or tube. The housing is made of sturdy splash proof HDPE plastic.

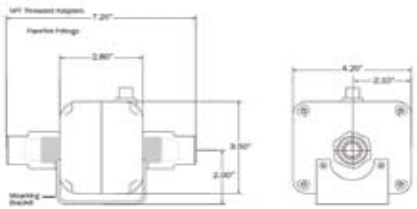
With no moving parts, the PE102 can handle fluids containing particulate matter without clogging or jamming, keeping maintenance at a minimum. With no metallic parts (100% PVDF body and PVDF carbon fibre filled electrodes), the meter is corrosion resistant and compatible with a wide range of chemicals. Accuracy is maintained with conductive fluids (>20 microSiemens) of varying viscosities and densities.

- No moving parts
- Chemically resistant non-metalic construction
- 100:1 turn-down
- Pulse or analogue output

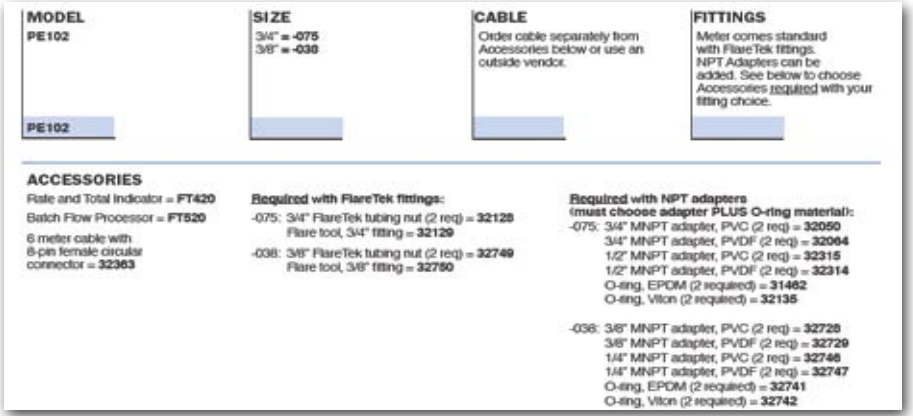
Technical Information

Pipe size	3/4", 1/2", 3/8", 1/4"**
Fitting	FlareTek fittings standard in 3/4" or 3/8" flowbody; NPT threaded adapters also available
Body	PVDF
Electrodes	PVDF carbon fiber-filled
Ground	PVDF carbon fiber-filled
Housing	HDPE with glass fiber
Fittings (FlareTek)	PVDF
Adapters (NPT)	PVC or PVDF
O-Rings (for NPT)	EPDM or Viton
Ambient temp range	-18˚ to 54˚C
Fluid temp range	0˚ to 93˚C
Max Pressure	10 Bar
-075 Model flow range	76 LPM Max 0.76LPM cut off
-038 Model flow range	11LPM Max. 0.11LPM cut off
-075 Model accuracy	+/- 1% of reading across rated range
-038 Model accuracy	+/- 1% of reading across rated range
Output Signal	
-075	Optocoupled current sinking or current sourcing pulse output: 30 Vdc, 5mA max 4-20 mA current loop: 7Vdc plus load voltage drop min; 50 Vdc max PE102-075: 500 pulses/litre (1892 pulses/gallon)
-038	PE102-038: 1000 pulses/litre (3785 pulses/gallon).
Power	10-15 Vdc, 150 mA (linear power supply recommended)
Conductivity	>20 microSiemens
Empty Pipe Detection	Hardware/software, conductivity-based
Environmental	NEMA 4X standard; IP 66 Splashproof standard

Dimensional Information



Options & Ordering Information



MODEL
PE102

PE102

SIZE
3/4" = -075
3/8" = -038

CABLE
Order cable separately from Accessories below or use an outside vendor.

FITTINGS
Meter comes standard with FlareTek fittings. NPT Adapters can be added. See below to choose Accessories required with your fitting choice.

ACCESSORIES

Rate and Total Indicator = **FT420**
Batch Flow Processor = **FT520**
6 meter cable with 8-pin female circular connector = **32363**

Required with FlareTek fittings:
-075: 3/4" FlareTek tubing nut (2 req) = **32128**
Flare tool, 3/4" fitting = **32129**
-038: 3/8" FlareTek tubing nut (2 req) = **32749**
Flare tool, 3/8" fitting = **32750**

Required with NPT adapters (must choose adapter PLUS O-ring material):
-075: 3/4" MNPT adapter, PVC (2 req) = **32050**
3/4" MNPT adapter, PVDF (2 req) = **32064**
1/2" MNPT adapter, PVC (2 req) = **32315**
1/2" MNPT adapter, PVDF (2 req) = **32314**
O-ring, EPDM (2 required) = **31462**
O-ring, Viton (2 required) = **32135**

-038: 3/8" MNPT adapter, PVC (2 req) = **32728**
3/8" MNPT adapter, PVDF (2 req) = **32729**
1/4" MNPT adapter, PVC (2 req) = **32746**
1/4" MNPT adapter, PVDF (2 req) = **32747**
O-ring, EPDM (2 required) = **32741**
O-ring, Viton (2 required) = **32742**

Magnetic Inductive Flowmeters

WMP series polypropylene magnetic inductive flowmeter

The WMP is a full-bore, plastic-bodied electromagnetic flow meter designed for flow and usage monitoring applications in 1 and 2 inch pipe. The polypropylene flow tube offers corrosion resistance to a wide range of chemicals. Its light weight and easy to install or remove from the pipe for inspection.

With no moving parts, the magmeter permits unobstructed flow, minimising flow disturbances and hence, straight pipe requirements. The WMP-Series can be used in piping configurations where there is little space between the meter and an elbow or valve. The WMP-Series, like other magmeters, are resistant to wear from sand and debris found in ground or surface water. Since there are no bearings or propeller to wear out, downtime and maintenance and repair costs are kept to a minimum. Because there are no mechanical parts in the flow stream, the meter tolerates high flows without damage.

- Battery powered option
- Durable Polypropylene body
- Ideal for irrigation applications
- Display of flow rate and total

Technical Information

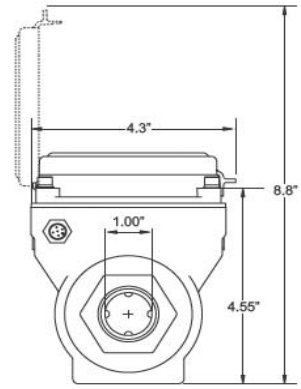
Pipe size	1 or 2 inch full port	
Fittings	1 inch NPTF, 2 inch flange clamps with optional 2 inch NPTF fitting kit	
Body	Glass-filled polypropylene	
Electrodes	316 stainless steel	
Electronics Housing	Diecast aluminium, powder-coated	
Display Cover	Polyethylene	
Pressure	10.3 bar working pressure @ 21˚ C	
Accuracy	+/- 1% of reading across rated range	
	+/- 1% of reading across rated range	
Minimum Flow	1 inch model: 0.145 liters per second 2 inch model: 0.38 liters per second	
Maximum Flow	1 inch model: 110 gallons per minute (6.94 liters per second) 2 inch model: 300 gallons per minute (18.9 liters per second)	
Digits	6 (Flow Rate)	8 (Totaliser)
Units	Gallons/Minute, Cubic Feet/Second, Cubic Feet/Minute, Liters/Second Liters/Minute, Cubic Meters/Minute	Acre-Feet, Acre-Inch, Gallons, Gallons x 1000, Cubic Feet, Liters, Megaliters, Cubic Meters
Security	Cross-drilled screws and tamper-evident seal (optional)	
WMP101	10-30 Vdc @ 60 mA max (15 mA average) NOTE: Using an unregulated power supply >18 Vdc may damage the meter due to AC line input voltage fluctuation	
WMP104	6 each AA alkaline cells, replaceable. Estimated life is 1-year with meter in typical use, or 3-years dry. 2 each C lithium batteries, replaceable. Estimated life is 3-years with meter in typical use, or 10-years dry	
Pulse Output Signal (WMP101 Only) Pulse Rate	Current sinking pulse, opto isolated, 24 Vdc at 10 mA max 1 gal/pulse out, or 1 liter/pulse out, depending on unit selection. Pulse width of 10ms	
High Frequency Output (WMP101 Only)	Optional, 30 PPG, pulse width 1.1 ms, min - max frequency, 3 - 150 hz	
Empty Pipe Detection	Hardware/software, conductivity-based	
Conductivity	>20 micro Siemens	
Environmental	NEMA 4X standard; -40˚ to 176˚ F (-40˚ to 80˚ C) storage	
Electrical Connection (WMP101 Only)	5 pin male circular connector, mates to industry standard cable	

Magnetic Inductive Flowmeters

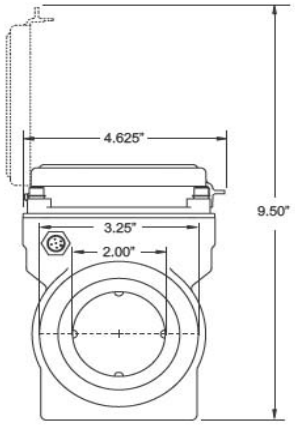
WMP series polypropylene magnetic inductive flowmeter

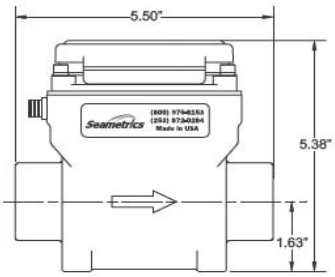
Dimensional Information

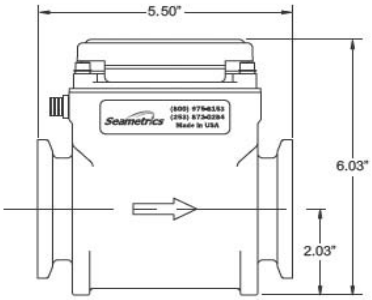
1" units



2" units







Options & Ordering Information

MODEL

External Power = **WMP101**

Battery Power = **WMP104**

SIZE

1" = **-100**

2" = **-200**

OPTIONS

Tamper-evident seal, screws, and wire = **-32**

Extended Battery Life = **-133**

High frequency output = **-HF**

UNITS

RATE	ORDER	TOTAL	ORDER
Gal/Min	= **GPM**	Gal	= **G**
Liters/Sec	= **LPS**	Gal x 1000	= **GT**
Liter/Min	= **LPM**	Cubic Feet	= **CF**
Cu Ft/Sec	= **CFS**	Acre Inch	= **AI**
Cu Ft/Min	= **CFM**	Acre Feet	= **AF**
Cu Met/Min	= **CMM**	Liter	= **L**
		Mega Liters	= **ML**
		Cubic Meters	= **CM**

Consult factory for additional units.

ACCESSORIES

20 foot (6m) cable for WMP101 = **32482**

Seametrics WMP Fitting Kit = **31980**
(for 2 inch model)
- 2 FNPT threaded adapters
- 2 flange clamps
- 2 EPDM gaskets

Remote 4-20 mA (analog) signal = **AO55W (-HF Option Required)**

Remote Rate and Total Indicator = **FT420W (-HF Option Required)**

Remote Data Logger = **DL76W**

Magnetic Inductive Flowmeters

EX80 series insertion style magnetic inductive flowmeter

EX80-Series insertion electromagnetic flowmeters are designed for use with conductive liquids in 1 to 12” pipe. A choice of materials (stainless steel, brass, and PVC) allows the meter to adapt to a range of temperature, pressure, and corrosive environments.

The EX80 is highly suitable for difficult applications with changing viscosities and pulsating flows, such as air-driven diaphragm pumps. With no moving parts, these meters can be used in “dirty” applications where debris would foul a mechanical meter. Like all magmeters, when used in chemical injection applications, these meters should be installed upstream of the chemical line (or far enough downstream to allow complete mixing of fluids before the meter).

EX80 series - Brass

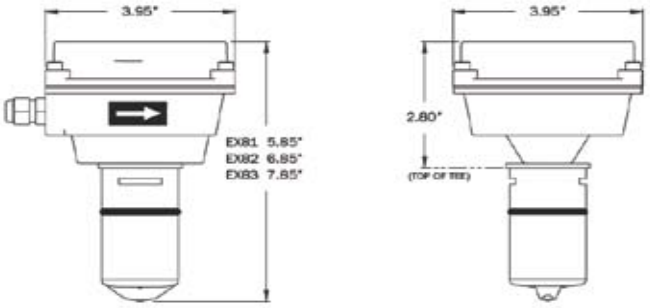
EX80 series - PVC

EX80 series - Stainless Steel

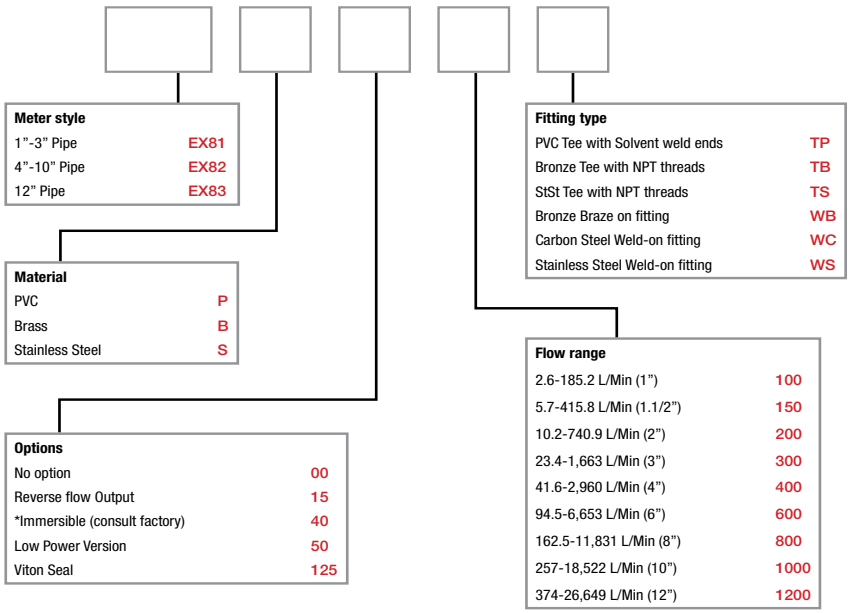
Technical Information

Pipe size	1" to 12"
Mechanical	316 SS/Brass/PVC
Electrodes	Hastelloy
Housing	Cast powder-coated aluminium
Electrode Cap	PVDF (Kynar)
O-Ring	EPDM standard (Viton optional)
Full Power	12 - 25 Vdc, 250 mA
Low Power	12 - 25 Vdc, 40 mA average with 250 mA peaks
Flow Rate	0.08 - 6.09 m/sec
Ambient Temp	-17˚ to 72˚ C
Fluid Temp: Brass/SS	0˚ to 93˚ C
Fluid Temp: PVC	0˚ to 55˚ C @ 0 psi
Brass/SS msx pressure	13.8 bar
PVC max pressure	10 bar @ 75˚ F
Minimum Conductivity	20 micro Siemens/cm
Calibration Accuracy	+/- 1% of full scale
Output	Square wave pulse, opto isolated, 550 Hz @ 20 ft/sec
Empty Pipe Detection	Software, defaults to zero flow
Regulatory	CE Mark (Stainless Steel, Brass and Standard Power Only)

Dimensional Information



Options & Ordering Information



- No moving parts
- Insertion design for pipe sizes up to 12”
- 75:1 turn down 0.08-6 m/s
- PVC, Brass and Stainless Steel designs

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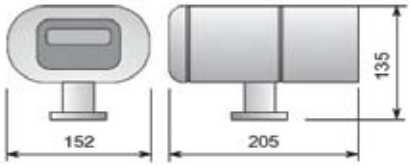
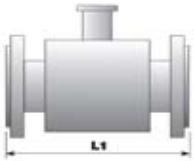
Website: www.petroces.com, Email: info@petroces.com

Magnetic Inductive Flowmeters

FN20 series industrial magnetic inductive flowmeters

- Rugged Industrial design
- No moving parts
- Sizes up to 48”
- 5 Liner and electrode choices





The FLONET FN20 inductive flow meter has been designed to measure volume flow rates of electrically conductive liquids in closed piping systems. Measurements can be done in both flow directions, with high measurement accuracy over a wide range of flow rates (0.1 to 10 m/s). The minimum required conductivity of the measured medium is 5 µS/cm.

Technical Information

Nominal diameter DN	DN 6 to DN 1200
Nominal pressure PN bar	6, 10, 16, 25 or 40 (related to DN)
min. conductivity of measured liquid	20µS/cm, on agreement with the manufacturer down to 5µS/cm
Electrode material	Stainless steel 1.4571, Hastelloy-C4, platinum, tantalum
Ambient temperature	-5°C to 55°C
Sensor lining	Soft or hard rubber, Teflon
Design version	Compact or with remote electronic unit
Piping connection	Flanges or water
max. temperature of measured liquid	Up to 150°C, depending on sensor lining
Measuring accuracy	±0.2% for 10 to 100% qs ±0.5% for 5 to 100% qs
Measuring range	0.1 to 10m/s
Indication of empty piping	from DN 50 upwards
Displayed units	l, m3, US gal, US bbl
Outputs (insulated)	current (0) 4 to 20mA, frequency 0 to 1,000Hz, pulse 0.001 to 1,000 litres per pulse, communication line USB, RS 485
Power supply	24/115/230V ±10%, 50 to 60Hz (AC), 24V ±10% (DC)
Protection class	IP 67 (IP 68)

Pressure Ratings (by size) & Dimensional Information

PN (bar)	40		16					10					6			
DN	20	25-40	50-80	100	125	150	200	250	300	350	400-600	700	800	900	1,000	1,200
L1	200	200	200	250	250	300	350	450	500	550	600	700	800	900	1,000	1,200

Options & Ordering Information

Housing Design

Compact design	FN201.4
Remote design	FN201.5

Flow range/pipe size

max 1 M3/HR (DN6)	01
Max 1.8 M3/HR (DN8)	02
Max 2.8 M3/HR (DN10)	03
Max 6.5 M3/HR (DN15)	04
Max 12 M3/HR (DN20)	05
Max 18 M3/HR (DN25)	06
Max 30 M3/HR (DN32)	07
Max 45 M3/HR (DN40)	08
Max 72 M3/HR (DN50)	09
Max 120 M3/HR (DN65)	10
Max 180 M3/HR (DN80)	11
Max 280 M3/HR (DN100)	12
Max 430 M3/HR (DN125)	13
Max 650 M3/HR (DN150)	14
Max 1,150 M3/HR (DN200)	15
Max 1,180 M3/HR (DN250)	16
Max 2,520 M3/HR (DN300)	17
Max 40,000 M3/HR (>DN300)	XX

Flange style

EN 1092-1	1
ANSI 16.5	2

Body & Flange material

Carbon Steel (Epoxy coated)	1
Stainless Steel	2

Electrode Material

Stainless Steel (1.4571)	1
Hastelloy C-276	2
Platinum – Gold Platinum	3
Tantalum	4
Titanium (Gr.2 ASTM B348-03)	5

Lining Material

Hard Rubber (0-80oC)	1
Soft Rubber (0-80oC)	2
Special Rubber (for potable water)	3
PTFE (-20 to +150oC)	4
E-CTFE (-20 to +130oC)	5

Power supply

230 Vac 50/60 Hz	1
115 Vac 50/60 Hz	2
24 Vac 50/60 Hz	3
24 Vac/dc	4

Flange rating

PN6/150 LB	1
PN10/150 LB	2
PN16/150 LB	3
PN25/300 LB	4
PN40/600 LB	5

Grounding

Sensor to pipe	1
Grounding rings	2
Grounding Electrode	3

Ingress Protection

Standard IP67	1
IP68 (for remote housing)	2

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Website: www.petroces.com, Email: info@petroces.com