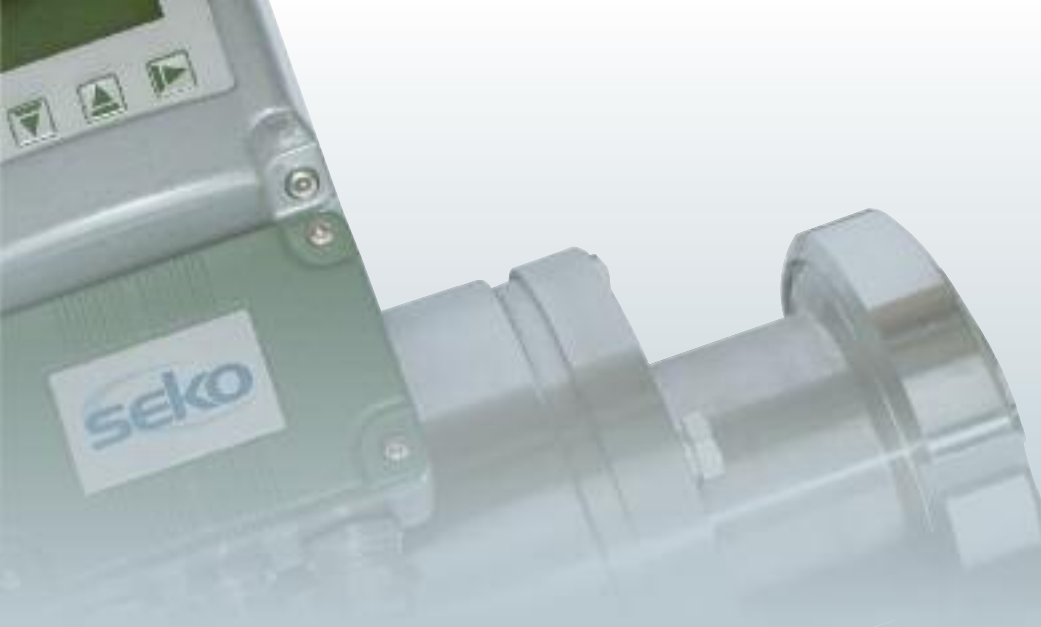


Flow Level and Pressure

elettromagnetico, ultrasonico, radar e trasmettitore sensore



Electromagnetic Flowmeter

S103N



Ambient Conditions	Ambient Temperature	-25°C ÷ +55°C
	Relative Humidity	5% ÷ 100%
	Ambient Pressure	86 ÷ 106 bar
Operating Conditions	Fluid Conductivity	>5µS/cm
	Pressure	4.0MPa (DN15÷DN150)
		1.6MPa (DN100÷DN450)
		1.0MPa (DN200÷DN1000)
		0.6MPa (DN1200÷DN1600)
	Process Temperature	Remote version < 80°C (rubber coating) < 150°C (180°C peak with PTFE coating)
Compact version < 70°C		
Power supply	85±265Vac; 24Vac or 24Vcc	
Consumption	Less Than 20W	

Specifications

Sensor	
DN pipe	15, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600
Velocity Range	0m/s ÷ 10m/s
Pipe Material	Stainless Steel AISI321
Coating Type	Rubber, PTFE
Electrode Material	Stainless Steel AISI316Ti, Hastelloy B, Hastelloy C, Titanium, Tantalum
Flange Material	UNI 2223 in Carbon Steel; AISI316
Protection Degree	Compact IP67 ; Remote IP67 / IP68 (only pipe for remote versions)

Trasmitter <small>Microprocessor-controlled transmitter. There are two versions: remote and compact.</small>	
Special features	<ul style="list-style-type: none"> The magnetic field excitation is a programmable rectangular wave with low frequency. It increases the stability of flow measurement and has low consumption. It uses a 16-bit microprocessor, fast processing and high accuracy Switching power supply is suitable for the wide changing range of voltage, EMC according to CE requirements. Dual direction measurement function. It can display forward direction flow-rate and reverse direction flow-rate. Three inside counters can respectively display forward direction volume, reverse direction volume and the different volume of both directions. Optionally it is possible to communicate via RS485 using MODBUS protocol. HART (by 4÷20mA). Multifunction intelligent transmitter has self-test and self-diagnosis function. EEPROM can save the setting and the counters when power off.
Accuracy	±0,5% of the measured value (optional ±0,2%, ±0,3%)
Repeatability	0,17% of the measured value for accuracy , ±0,5% (0,07% for accuracy ±0,2% ; 0,1% for accuracy ±0,3%)
Analog Output	Current output: 4÷20mA Load resistance: 0÷750ohm for 4÷20mA Basic error: measured value plus basic error ±10µA
Frequency or Pulse Output	Frequency can be set between 1÷5000Hz. for forward direction and reverse direction The pulses can be up to 15000 per second. For forward and reverse direction. The pulse width is up to 25ms.
Alarm Outputs	Two alarms are the open collector transistor output with galvanic isolation. External power supply should be less than 30V, and maximum current for the collector is 250mA when it works.
Display	Display with five characters for flow-rate and ten characters for volume.
Serial Output (optional)	RS485 opto isolated
Damping	2÷100s (90%) speed of adjustment measure instantaneous
Flow Cut -Off	Adjustable 0,0÷ 9,9% . The value for flow cut off is stated as a percentage that relates to the upper range value of the flow-rate.
Isolation	The isolating voltage is more than 500V between analog output, pulse (frequency output), alarm and ground

Electromagnetic Flowmeter

S103P



Ambient Conditions	Ambient Temperature	-20°C ÷ +75°C
	Relative Humidity	0%÷100 RH to 65°C non condensing
	Ambient Pressure	86÷106 bar
Operating Conditions	Fluid Conductivity	>5µS/cm
	Pressure	4.0MPa (DN10÷DN80)
		1.6MPa (DN100÷DN150)
		1.0MPa (DN200÷DN1000)
	Process Temperature	Remote version < 80°C (rubber coating)
		Compact version - 20 ÷ + 70°C
Power supply	85÷265Vac; 24Vac or 24Vcc	
Consumption	tipico 6W, max 8W	

Specifications

Sensor	
DN pipe	10,15, 25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000
Velocity Range	0÷10m/s
Pipe Material	Stainless Steel AISI321
Coating Type	Rubber, PTFE
Electrode Material	Stainless Steel AISI316Ti, Hastelloy B, Hastelloy C, Titanium, Tantalum
Flange Material	UNI 2223 in Carbon Steel; AISI316
Protection Degree	Compact IP67 ; Remote IP67 / IP68 (only pipe for remote versions)

Trasmitter Microprocessor-controlled transmitter. There are two versions: remote and compact.

Special features	<ul style="list-style-type: none"> • The magnetic field excitation is a programmable rectangular wave with low frequency. It increases the stability of flow measurement and has low consumption. • It uses a 16-bit microprocessor, fast processing and high accuracy • Switching power supply is suitable for the wide changing range of voltage, EMC according to CE requirements. • Dual direction measurement function. It can display forward direction flowrate and reverse direction flow-rate. • Three inside counters can respectively display forward direction volume, reverse direction volume and the different volume of both directions. • Optionally it is possible to communicate via RS485 using MODBUS protocol. • Multifunction intelligent transmitter has self-test and self-diagnosis function. • EEPROM can save the setting and the counters when power off.
Accuracy	±0,5% of the measured value for velocity of 0.5÷10m/s
Repeatability	0,1% of the measured value for accuracy
Analog Output	Current output: 4÷20mA; 0÷750ohm
Frequency or Pulse Output	Frequency can be set between 1 ÷ 5000Hz for forward and reverse direction The pulse width can be set for the output state H or L
Alarm Outputs	-
Display	Display with four characters for flow-rate and eight characters for volume. Displaying range for forward and reverse.
Serial Output (optional)	RS485 opto isolated with MODBUS protocol (optional)
Damping	Adjustable 0,1 ÷ 99 seconds
Flow Cut -Off	Adjustable 0.0 ÷ 9.9%. Below the set point the value of instantaneous flow and outputs are forced to zero.

Electromagnetic Flowmeter

S103S



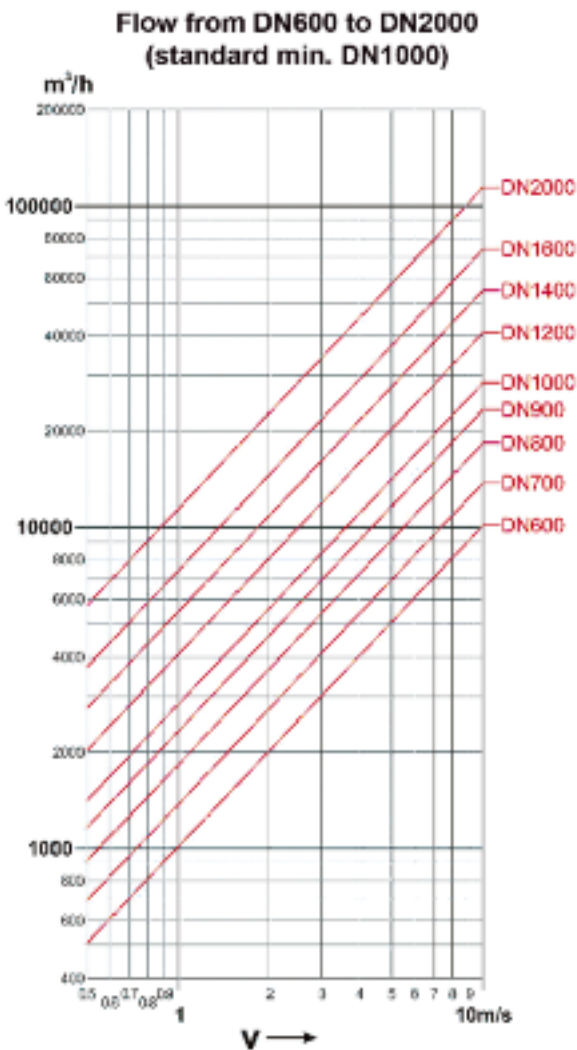
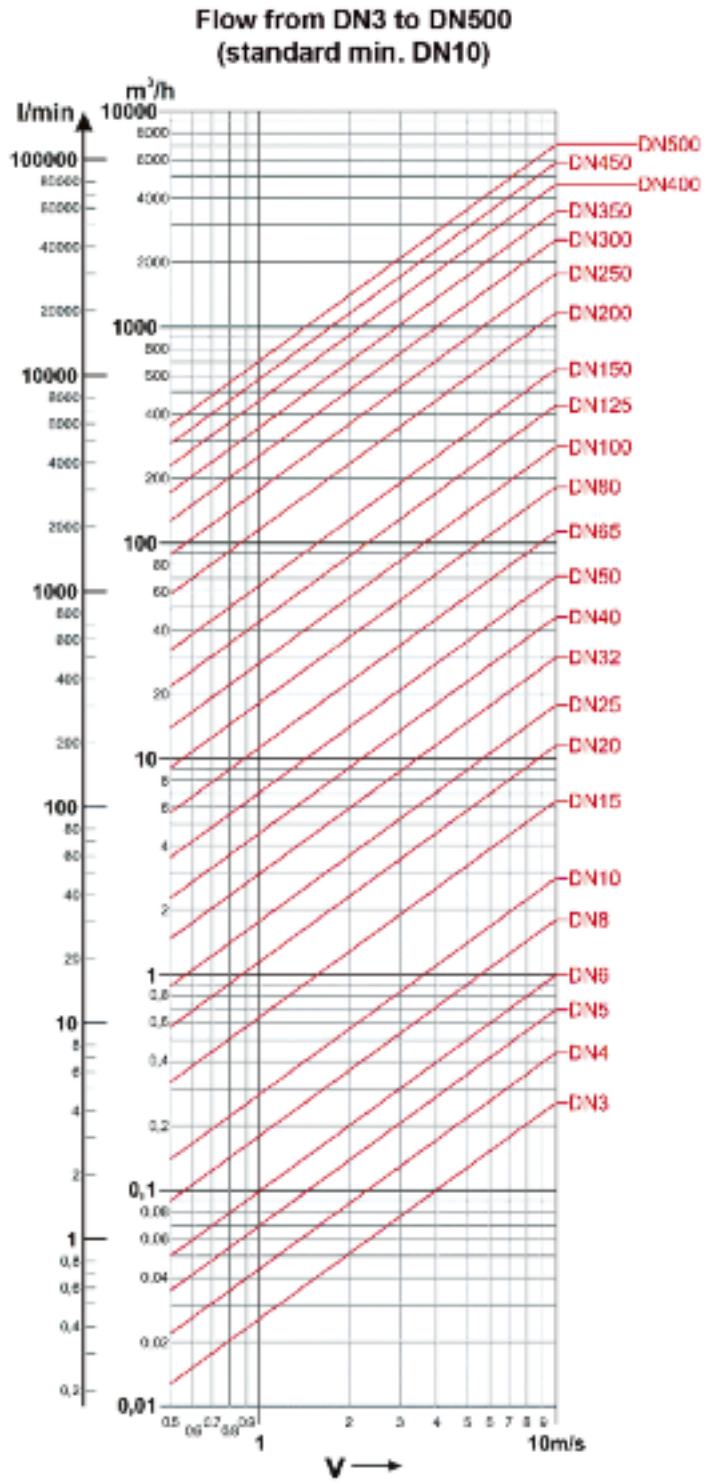
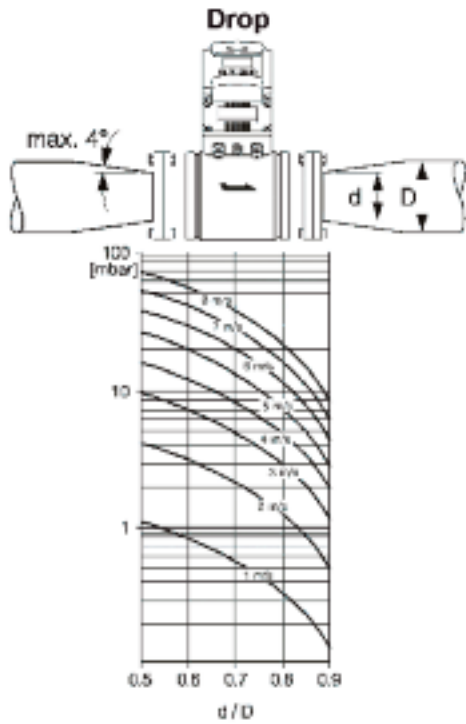
Ambient Conditions	Ambient Temperature	-40°C ÷ +75°C	
	Relative Humidity	0%÷100 RH to 65°C non condensing	
	Ambient Pressure	86÷106 bar	
Operating Conditions	Fluid Conductivity	>5µS/cm	
	Pressure	1.6MPa (DN10÷DN150)	
	Process Temperature	Remote version:	< 120°C (PTFE coating)
		Compact version:	- 40 ÷ + 75°C
	Power supply	90250Vac; 24Vac o 18÷36Vcc	
Consumption	Typical 10W		

Specifications

Sensor	
DN pipe	10,15, 25, 32, 40, 50, 65, 80, 100, 125, 150
Velocity Range	0,2÷10m/s
Pipe Material	Stainless Steel AISI321
Coating Type	PTFE /PFA
Electrode Material	Stainless Steel AISI316Ti, Hastelloy B, Hastelloy C, Titanium, Tantalum
Flange Material	Swivel DIN 11851/ DIN CLAMP in AISI
Protection Degree	Compact IP67 ; Remote IP67 / IP68 (only pipe for remote versions)

Trasmitter <small>Microprocessor-controlled transmitter . There are two versions: remote and compact.</small>	
Special features	<ul style="list-style-type: none"> • The magnetic field excitation is a programmable rectangular wave with low frequency. It increases the stability of flow measurement and has low consumption. • It uses a 16-bit microprocessor, fast processing and high accuracy • Switching power supply is suitable for the wide changing range of voltage, EMC according to CE requirements. • Dual direction measurement function. It can display forward direction flowrate and reverse direction flow-rate. • Three inside counters can respectively display forward direction volume, reverse direction volume and the different volume of both directions. • Optionally it is possible to communicate via RS485 using MODBUS protocol. HART (by 4÷20mA). • Multifunction intelligent transmitter has self-test and self-diagnosis function. • EEPROM can save the setting and the counters when power off.
Accuracy	±0.5% of the measured value for velocity 0.5÷10m/s
Repeatability	0,1% of the measured value for accuracy
Analog Output	Current output: 4÷20mA; 0÷1000ohm
Frequency or Pulse Output	Frequency can be set between 1 ÷ 10.000Hz for forward and reverse direction The pulse width can be set for the output state H or L
Alarm Outputs	-
Display	Display with four characters for flow-rate and eight characters for volume. Displaying range for forward and reverse.
Serial Output (optional)	RS485 with MODBUS, PROFIBUS protocol
Damping	Adjustable 0,1 ÷ 99 secondi
Flow Cut -Off	Adjustable 0.0 ÷ 9.9%. Below the set point the value of instantaneous flow and outputs are forced to zero.
Isolation	-

Abacus for the optimal selection of the measuring tube

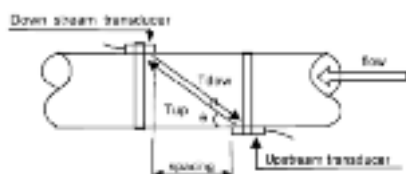


Ultrasonic flowmeter measurement "Transit Time"

S100F

The S-100F is composed by a digital converter and two clamp-on or insertion ultrasonic transducers. It is designed to measure the fluid velocity of a liquid inside a closed conduit. The transducers are a non-contacting, clamp-on type, which provide benefits of non-fouling operation and easy installation.

The DSP digital technology (Digital Signal Processing) ensure a low sensibility of the instrument against potential transient factors. The size of the pipe may vary from 20 to 4000 mm (using different transducers), while the liquid can be: ultra-pure drinking water, chemicals, waste water, cooling water, river water. Since the transducers are applied externally to the tube, not in contact with the liquid and have no moving parts, the transmitter will not be damaged by wear, by fouling or pressure. All configuration user-entered values are saved in EE PROM, which is password protected to prevent accidental changes. The transmitter is equipped with a clock to store the measure detection date and time, operated by battery. In case of power failure will be necessary to re-set the (time) lost. In the case of incorrect setting of the totalizer, the other functions are not compromised.



Ultrasonic transducers with protection IP68 available in:

- Clamp-on
 - S1 type suitable for pipes from 15 to 100mm up to 70 °C
 - SH type suitable for pipes from 15 a 100mm up to 150°C
 - M1 type suitable for pipes from 50 a 700mm up to 70°C
 - MH type suitable for pipes from 50 a 700mm up to 150°C
 - L1 type suitable for pipes from 300 a 4000mm up to 70°C
- Insert
 - L1 type suitable for Stainless Steel pipes up to 150°C
 - L2 type suitable for concrete pipes l up to 150°C

Specifications

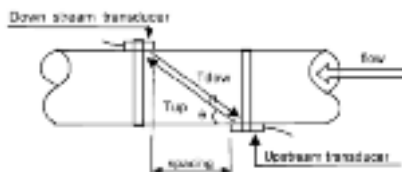
Measurement pipe	from DN 20 to 4000mm
Pipe material	Steel, Stainless Steel, cast iron, copper, PVC, aluminium, fiberglass (Cement with insertion transducers)
Unite (User selectable)	Meters, cubic meters, liters, feet, cubic feet, U.S. gallons, Imperial gallons, oil barrels, U.S. oil barrels imperial oil barrels U.S million gallons.
Totalizer	Total 7digits, for differential, direct and reverse flow
Fluid Type	Virtually all fluids that transmit sound waves
Velocity Range	±32m/s
Linearity	0,5% - Repeatability: 0,2% - Total Accuracy: ± 1%
Response Time	Programmable from 1 to 999s
Display	2x2016 alphanumeric characters
Keypad	4 membrane keys
Data Shown	Instant flowrate, total flow, other
Totalizers internal volume	7 digit totalizer; direct and reverse flow 7 digit totalizer
Security	Setting and changing password protected
Internal Data logger	Automatic memory : total flow of the last 64 days, 64 months, 5 years
Input	Up to 5 4÷20mA inputs
Output	Selectable 4÷20m or 0÷20mA
Programmable frequency output	10÷9999HZ
Output relay	Pule or Alarm totalizer
Communication Interface	RS-232C (Opzional RS485) Protocol available upon request
Operating temperature	-30÷80°C
Max. Humidity	85% RH non condensing (40°C) Process Temperature Sensor: 0÷150°C
Humidity Sensor	98% RH non condensing (40°C)
Power supply	230Vac / 24Vdc
Casing	Aluminum – Wall mounting
Dimensions / Weight	251 x 192 x 80mm / 3,1Kg

Transit time portable ultrasonic flowmeter

S100H

The S-100H is composed by a digital converter and two clamp-on ultrasonic transducers. It is designed to measure the fluid velocity of a liquid inside a closed conduit. The transducers are a non-contacting, clamp-on type, which provide benefits of non-fouling operation and easy installation.

The DSP digital technology (Digital Signal Processing) ensure a low sensibility of the instrument against potential transient factors. The size of the pipe may vary from 20 to 4000 mm (using different transducers), while the liquid can be: ultra-pure drinking water, chemicals, waste water, cooling water, river water. Since the transducers are applied externally to the tube, not in contact with the liquid and have no moving parts, the transmitter will not be damaged by wear, by fouling or pressure. All configuration user-entered values are saved in EE PROM, which is password protected to prevent accidental changes. The transmitter is equipped with a clock to store the measure detection date and time, operated by battery. In case of power failure will be necessary to re-set the (time) lost. In the case of incorrect setting of the totalizer, the other functions are not compromised.



Ultrasonic transducers with protection IP68 available :

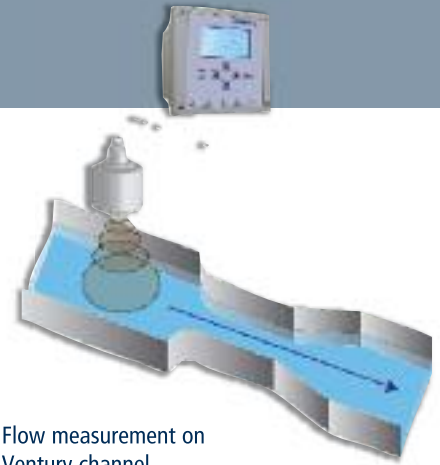
- Clamp-on M1 type suitable for pipes from 50 to 700mm
L1 3 type suitable for pipes from 00 to 4000mm
 - Clamp-on mounted on metric rail S1F type suitable for pipes from 15 to 100mm
M1F type suitable for pipes from 50 to 700mm
 - Clamp-on for high temperature S1H type suitable for pipes from 15 to 100mm
M1H type suitable for pipes from 50 to 700mm
- Connection cable length 2 x 5 meters, up to 2 x 50 meters

Specifications

Measurement pipe	from DN 20 to 4000mm
Pipe material	Steel, Stainless Steel, cast iron, copper, PVC, aluminium, fiberglass (Cement with insertion transducers)
Unite (User selectable)	Meters, cubic meters, liters, feet, cubic feet, U.S. gallons, Imperial gallons, oil barrels, U.S. oil barrels imperial oil barrels U.S million gallons.
Totalizer	Total 7digits, for differential, direct and reverse flow
Fluid Type	Virtually all fluids that transmit sound waves
Velocity Range	±32m/s
Linearity	0,5% - Repeatability: 0,2% - Total Accuracy: ± 1%
Response Time	Programmable from 1 to 999s
Display	4 digits , 16 alphanumeric characters. Displays flow rate, totalizer, operating mode
Keypad	16+2 membrane keys
Data Shown	Instant flowrate, total flow, other
Totalizers internal volume	7 digit totalizer; direct and reverse flow 7 digit totalizer
Security	Setting and changing password protected
Internal Data logger	Storage capacity of 2000 records
Communication Interface	RS-232C Protocol available on request
Casing	ABS
Power supply	External power supply 100±253Vac or 3 AAA Ni-mH integrated rechargeable batterie that last about 10 hours fully charged
Rechargeable Batteries	autonomy>10h
Dimensions / Weight	460 x 400 x 110 mm / 4,5 kg

Flow measurement with Ultrasonic sensor

4004



Flow measurement on Ventury channel

Specifications

Measure	
Measuring range	Flow: 0 ÷ 9999 mc/h - Level: 0.30 ÷ 5.00 mt. - Temperature: 0 ÷ 100 °C
Precision	±0.2% F.S.
Measure unit	Flow: mc/h, lt/sec - Level: mt, cm, mm - Temperature: °C
Types of devices / representatives for calculating flow PMD (primary measuring device)	RECTANG (rectangular weir) / TRAPEZ (weir Cipolletti) / VENTURI (Venturi weir) / PARSHALL (Parshall flume) / L LEOPOLD (Leopold Lagco flume) / STRAM. V (V notch) / OTHER (Exponent freely programmable) / Table with 20 points for free programming
No. 2 totalizers	1 x Absolute 9-digit non resettable saved on Flash EEPROM 1 x Partial 9-digit resettable

Hardware	
Display	Graphic DISPLAY LCD STN 128x64 back lighted. Simultaneous display of: level/flow and temperature measurement, digital output status. Analogues output values. Recording status and malfunctioning. Pump hours of functioning. Last 6 alarms event Keyboard (4 digit) for programming.
Controls	6 Keys
Data logger	Internal Flash 4 Mbyte
Serial Output	n.1 RS485 Isolated MODBUS RTU
Analog Outputs	n.2 Isolated and programmable - 1°Output: Flow / Temperature - 2°Output: Flow / Temperature / Level
Relay Outputs	n.5 per Set-point/ totaliser repeat - n.1 x Alarm (max load .1A a 230Vac resistive)
Digital Inputs	n.5 Programmable
Power supply	90÷260Vac/dc 50-60Hz – (Optional 24Vac/dc) - Isolated Transf. 4KW
Power consumption	< 12W
Dimensions / Weight	Dimensions: (L x H x P) 230x185x120mm / Weight: 1 Kg

S425/5 Ultrasonic level sensor with Measuring range of 0,3...5m

- ▶ Material: PP
- ▶ Process connection: 1" G.M.
- ▶ Mechanical protection: IP68
- ▶ Electrical connection : 3mt. shielded cable
- ▶ Working temperature: - 30 a + 80°C
- ▶ Pressure: from 0,5 to 1,5bar (absolute)
- ▶ Electrical supply: 24Vdc
- ▶ Absorbed power: 1 W
- ▶ Maximum measuring distance: 5m
- ▶ Measuring dead zone: 0,3m
- ▶ Interface: RS485 (opt. 4...20mA)
- ▶ Temperature compensation: from -30 to +80°C
- ▶ Accuracy: +/- 0.5% absolute anytime not better than +/- 1 mm
- ▶ Resolution: 0.2 mm
- ▶ Visualization: Red LED x power-on yellow LED x eco signal
- ▶ Dimension mm. (Ø x H): 90 x 137 included connector for cable



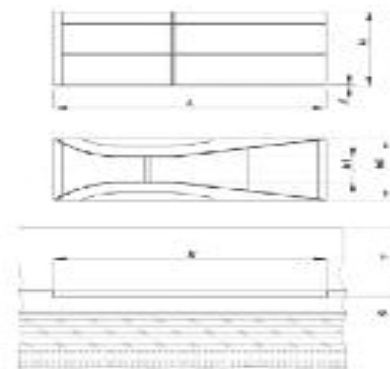
Specifications

MEASUREMENT RECORDING		Flow rate	Total Volume
Recording steps		1/2/5/10/15/20/30/60 min	5/10/30 min. 1/2/6/12/24 h.
Type		f.i.f.o. or filling	f.i.f.o. or filling
Showing		Graphic: minimum ,maximun and average period value plus Zoom function	Tabular
Analog Outputs		Flow rate	Total Volume
Size		Flow / Temperature	Flow / Level / Temperature
Typology		Limit Programming: Lower / Upper	
Range		0.00 ÷ 20.00 mA / 4.00 ÷ 20.00 mA	
Maximun Load		500 Ohm	
Alarm Output NAMUR std		2.4 mA (with Range 4/20mA)	
No.5 Relay Outputs			
Function - Selectable		Set-point	Pulse
Programming		ON-OFF with hysteresis	Scaler: 1,10,100mc/h Duration: 250,500,1000,2000 msec
Alarm			
Alarm		Alarm thresholds Echo Loss	
Programming		Time Out (echo loss time): 00:00 ÷ 24:00 h	
Operating Conditions			
Operating Temperature, Storage and Transport		0÷50°C -25÷65°C	
Humidity		10-95% non condensating	
Protection Degree		Close panel IP65 EN60529 - with Clear Open lid IP54	
EMI / RFI		CEI-EN55011 – 05/99	

VENTURI CHANNEL

Venturi polypropylene channel for flow measurement in open channels are. designed to be installed in existing rectangular channels. There are different measures according to the scale min / max (see table 1).

Channels model BS600/BS800/BS1000 must be connected with the rectangular channel as show in Fig .. 2 , size indicated by L1, taking care to respect the measures as reported in table 2.



Flow values min. and max.		
Flow Model	Qmin	Qmax
BS-150	1m ³ /h 0,28l/s	50m ³ /h 13,8l/s
BS-200	2m ³ /h 0,55l/s	55m ³ /h 17,27l/s
BS-300	3m ³ /h 0,83l/s	150m ³ /h 41,6l/s
BS-400	10m ³ /h 2,7l/s	310m ³ /h 86,1l/s
BS-500	20m ³ /h 5,5l/s	500m ³ /h 138,8l/s
BS-600	25m ³ /h 7,15l/s	850m ³ /h 236l/s
BS-800	50m ³ /h 13,8l/s	1400m ³ /h 389l/s
BS-1000	60m ³ /h 16,6l/s	2250m ³ /h 625l/s

◀ Tab. 1

▼ Tab. 2

Overall dimensions (mm) and installation for Venturi Channels

Flow Model	L	L1	H	E	b0	b1	X	Y	S
BS-150	670		270	5	130	60	483	280	7
BS-200	630		240	5	200	30	645	250	7
BS-300	682		300	5	300	120	958	370	8
BS-400	1277		480	5	400	180	1281	490	10
BS-500	1507		600	5	500	200	1617	610	10
BS-600	1500	410	720	10	600	240	1520	740	14
BS-800	2000	550	900	10	800	320	2030	920	14
BS-1000	2500	604	1000	15	1000	400	2550	1020	19

Ultrasonic and piezometric level measurement

4004

Level meter/Differential level control with 5 pumps



Ultrasonic and piezometric level measurement



Specifications

Level Range	Keyboard selectable 0.30 ÷ 5.00/0.40 ÷ 8.00/ 0.70 ÷ 12.00m in relation to the connected probe - Resolution ± 0.01 m - Precision: ± 0.2% FS
Temperature Range	-25 ÷ +75.0 °C – Resolution::1°C - Precision:1% F.S.
Tastiera di programmazione	6 keys
Graphic Display	Graphic DISPLAY LCD STN 128x64 back lighted. Simultaneous display of: level/flow and temperature measurement, digital output status. Analogues output values.
Internal Data logger	(flash 4 Mbit) with the possibility to display graphical and tabular trend of the measures with indication of the minimum, maximum and average period.
No.5 SET POINT	independent pump control, with programming of the working field (hysteresis) and logic operation between single, rotation and timed.
Alarm Digital Output	for minimum / maximum and malfunctions.
No. 5 Digital Input	Control Operation / pump malfunction.
Primary Analog Output	Level 1 , temperature. Programmable limits within the the probe measuring range
Secondary Analog Output	Level 1, Temperature, Level 2 or differential. Programmable limits within the probe measuring range.
Hardware Specifications	Graphic DISPLAY LCD STN 128x64 back lighted Nr. 2 analog outputs 0/4÷20mA 500Ω galvanically separated Nr. 5 Set Point - Relay (max load. 1A a 230Vac resistive) Nr. 1 Alarm - Relay (max. load 1A a 230Vac resistive) Nr. 1 serial output RS 485 MODBUS protocol Nr. 5 digital inputs - 24V dc/ac
Power	90÷260Vac/dc 50-60Hz – (Optional 24Vac/dc) - Transformer Isolation 4KV
Power Consumption	<12W
Enclosure	ABS wall mounting - IP 65. - Dimensions: (L x H x P) 230x185x120mm / Weight: 1 Kg

S425 ULTRASONIC LEVEL SENSOR

S425/5 Ultrasonic level sensor with Measuring range of 0,3...5m

- ▶ Precision: +/- 0.5% V.L. (measured distance) or +/- 1 mm
- ▶ Resolution: 0.2 mm
- ▶ Transmission angle: 7°
- ▶ Temperature Compensation: PT100 from -30 to +80°C
- ▶ View: red LED x power-on, yellow LED x echo
- ▶ Power: 24Vdc (from ACP 4004)
- ▶ Power consumption: 1 W
- ▶ Communication port: RS485
- ▶ Operating Temperature: - 30 a + 80°C
- ▶ Pressure: from 0,5 to 1,5bar (absolute)
- ▶ Housing material: PP
- ▶ Dimensions: mm. 90x109 (0 x l)
- ▶ Mechanical installation: 1" G.M.
- ▶ Protection Degree / Electrical connection: IP 68 with outgoing cable 4 pin 3m IP 65 with screw connector + 5m cable with connector



S425/ 8 Ultrasonic level sensor with Measuring range of 0,4...8m

- ▶ Precision: +/- 0.5% V.L. (measured distance) or +/- 1 mm
- ▶ Resolution: 0.2 mm
- ▶ Transmission angle: 7°
- ▶ Temperature Compensation: PT100 from -30 to +80°C
- ▶ View: red LED x power-on, yellow LED x echo
- ▶ Power: 24Vdc (from ACP 4004)
- ▶ Power consumption: 1 W
- ▶ Communication port: RS485
- ▶ Operating Temperature: - 30 a + 80°C
- ▶ Pressure: from 0,5 to 1,5bar (absolute)
- ▶ Housing material: PP
- ▶ Dimensions: mm. 90x109 (0 x l)
- ▶ Mechanical installation: 1" G.M.
- ▶ Protection Degree / Electrical connection: IP 68 with outgoing cable 4 pin 3m IP 65 with screw connector + 5m cable with connector

S425/12 Ultrasonic level sensor with Measuring range of 0,7...12m

- ▶ Precision: +/- 0.5% V.L. (measured distance) or +/- 1 mm
- ▶ Resolution: 0.2 mm
- ▶ Transmission angle: 7°
- ▶ Temperature Compensation: PT100 from -30 to +80°C
- ▶ View: red LED x power-on, yellow LED x echo
- ▶ Power: 24Vdc (from ACP 4004)
- ▶ Power consumption: 1 W
- ▶ Communication port: RS485
- ▶ Operating Temperature: - 30 a + 80°C
- ▶ Pressure: from 0,5 to 1,5bar (absolute)
- ▶ Housing material: PP
- ▶ Dimensions: mm. 120x109 (0 x l)
- ▶ Mechanical installation: 1" G.M.
- ▶ Protection Degree / Electrical connection: IP 68 with outgoing cable 4 pin 3m IP 65 with screw connector + 5m cable with connector

P-L PIEZOMETRIC TRANSDUCER

- ▶ Standard range from 0 to 6m (others on request - up to 100m)
- ▶ Non-linearity, hysteresis and repeatability $\pm 0.5\%$ FS (Others on request)
- ▶ Power 24Vcc
- ▶ Signal output 4 \div 20mA (two-wire technique)
- ▶ Liquid Temperature - 20.+70 °C.
- ▶ Dimension 0mm 26
- ▶ Body: AISI 316L
- ▶ Diaphragm: AISI 316L
- ▶ Complete with 10m submersible shielded cable, atmospheric pressure compensation (others on request)



Ultrasonic level measurement

METER

The measurement technology used by the level transmitter METER is based on a short ultrasonic pulse. The ultrasonic wave propagates to the surface of the product to be measured, bouncing on the surface and back towards the sensor. The time interval between the sending and receiving wave is called the flight time and is proportional to the measured distance, therefore the level.



Available Versions:



- ▶ 4 wires, 2 relays, MODBUS, range 5m
- ▶ 2 wires, range 5m
- ▶ 2 wires HART, range 5m
- ▶ 2 wires HART, range 5m, ATEX ~4 wires, 2 relays, range 5m
- ▶ 2 wires, range 8m
- ▶ 2 wires, HART, range 8m, ATEX
- ▶ 4 wires, 2 relé, range 8m
- ▶ 4 wires, 2 relé, MODBUS, range 8m

Programming by a removable module (keypad / display). After programming, is possible to extract the module (keyboard / display), leaving the level transmitter working without display on board.

Specifications

Body Probe Material	PP
Housing Material	PBT
Mechanical Installation	2" GAS M with flanges in PP DN50 o DN80 on request
Protection Degree	IP65
Electrical connection	Pressure terminal blocks
Operating Temperature	-30°C ÷ +70°C ; -+80°C non continuos
Pressure	da 0,5 a 1,5 bar (absolute)
Power	24Vdc
Power consumption	0.6W (2 wires) 1.5W (4 wires)
Analog output	4 ÷ 20mA max 750 ohms
Relays output	N.2 - 2A 230Vac (normally open)
Digital communication	HART
Max. Operating Range	0.25 - 5m / 0.4 - 8m (Distances expressed are valid for measures on perfectly reflective surface, otherwise the maximum measurable distance is degraded.)
Blocking distance	0.25m for 5 m of field 0.4m for 8 m of field
Temperature compensation	PT100 from -30 to +80 °C
Accuracy	0,5% (of measured distance) or no less of ±2mm
Resolution	1 mm
Calibration	4 keys or HART
Thermal stabilization	10 minutes typical
Display	Removable 4 keys keyboard/Display and matrix LCD

S106

Specifications	S106/5	S106/10-15
		
Housing Material	PP	PBT
Body Probe Material	PP	PP
Mechanical Installation	2" G.M	With wishbone bracket 2 1/2" fixed flange DN150 PN6
Protection Degree	IP66 or IP68	IP65
Max. Measuring Range	5 m (7 m higher range) (Distances expressed are valid for measures on perfectly reflective surface, otherwise the maximum measurable distance is degraded.)	S106/10 10 m S106/15 15m
Blocking Distance	0.25m 0.4m with higher range	S106/10 0.6 m S106/15 0.7 m
Precision	+/- 0.5% but not better than +/- 1mm	+/-1% (of measured distance)
Resolution	0.2 mm	3 mm
Calibraton	Using 2 Keys or RS485	Using 2 Keys or RS485
Operating Temperature	-30 ÷ +70°C; +80°C discontinous	-30 to +60°C
Temperature Compensation	PT100 from -30 to +80°C	PT100 from -30 to +60°C
Pressure	from 0,5 to 1,5bar (absolute)	from 0,7 to 1,3 bar (absolute)
Electrical connection	Internal removable connector (IP66ver.) Outgoing cable (IP68 ver.)	Internal removable connectors
Power	24Vdc or 24/115/ 230Vac	24Vdc or 24 /48/115/230Vac
Power consumption	2,0 W	6 W
Analog output	4÷20mA max load 750 ohm	4÷20mA max load 750 ohm
Serial communication	RS485	RS485
Relays output	n°2 contacts NO 2A 230Vac	n°2 contacts NO 2A 230Vac

Microwave radar level measurement

RPL

RPL transmitters are used for continuous, non-contact level measurement. The radar pulses emitted by the antenna are reflected by the product surface and received back by the antenna. The time gap between the emission and the return of the pulse is named "fly time". The fly time is proportional to the product surface distance and its processing by the electronic components inside the RPL allows the level measurement. Through the matrix display it is possible to input all necessary data for the level measurement and to show and recognize false echo signals. The software is suitable to configure and gauge the HART protocol, by means of PC and COMWAY converter.

RPL51	RPL52	RPL53	RPL54
			
Radar Level Transmitter Threaded mount	Radar level transmitter flange mount	Radar level transmitter flange mount and emission cone	Radar level transmitter flange mount and emission cone

RPL55	RPL56	RPL58
		
Radar Level Transmitter Threaded mount	Radar Level Transmitter Threaded mount and emission cone	Radar Level Transmitter Threaded mount and emission cone

Features

- ▶ Continuous, non-contact level measurement for solids, liquids, pulps and slurries
- ▶ Measurement not affected by product physical variation, temperature changes, powders or vapours.
- ▶ Easy on-site configuration via menu-driven matrix display (plug-in)
- ▶ Easy on-site calibration without product handling. Empty and full distance setting via matrix display
- ▶ Two-wire technology
- ▶ Visu Level measurement and echo signal curve visualisation on matrix display

Models	RPL51	RPL52	RPL53	RPL54	RPL55	RPL56	RPL58
Type	Radar Level Transmitter Threaded mount	Radar level transmitter flange mount	Radar level transmitter flange mount and emission cone	Radar level transmitter flange mount and emission cone	Level Transmitter Threaded mount	Radar Level Transmitter Threaded mount and emission cone	Radar Level Transmitter Threaded mount and emission cone
Applications	Very aggressive liquids with not onerous process conditions	Very aggressive liquids with known temperatures and pressures limits	For Storage or process applications in harsh conditions		Very aggressive liquids with not onerous process conditions	Level measurement where limits of pressure and temperature in the process are not extreme conditions	Level measurement in tanks where process conditions are extreme
Range	30m			70m	10m	30m	70m
Accuracy	± 10mm			± 20mm	± 5mm	± 3mm	± 15mm
Process connection	G1 ½ A PVDF 1 ½ NPT PVDF	Flange AISI 316L DN50 PN16 DN80 PN16 DN100 PN16 DN150 PN16	Flange AISI 316L DN50 PN16 DN80 PN16 DN100 PN16 DN150 PN16 DN200 PN16 DN250 PN16	Flange AISI 316L DN150 PN16 DN200 PN16 DN250 PN16	G 1" ½ A	G 1" ½ A 1" ½ NPT	Flange AISI 316L G 1" ½ A 1" ½ NPT
Antenna Material	PP PTFE	PTFE	AISI 316L PTFE	AISI 316L PTFE	PTFE	AISI 316L PTFE	AISI 316L PTFE
Temperature	-40...+120 °C -40...+150 °C	-40...+150 °C	-40... +200 °C		-40...+130 °C	-40...+200 °C	
Pressure	-1... 3 bar	-1...16 bar	-1...40 bar		-1... 3 bar	-1...40 bar	-1...16 bar
Frequency Range	6GHz				26GHz		
Signal output	2/4 wires - 4÷20mA - HART						
Casing	PBT						
Protection Degree	IP65						

Microwave radar level measurement

RWL

The high frequency pulses, emitted by the transmitter, travel along the detecting component (steel rope, probe or rod). They are reflected by the product surface, recorded by the electronic unit and converted in level data. The measurement technique "GODA", combined with the management system, allows the RWL unit to be used with very severe process conditions such as high temperature, high pressure, low dielectric constant, etc.



Features

- ▶ Continuous powder level measurement for solids and liquids
- ▶ Measurement not affected by temperature changes, powder or vapours
- ▶ Measure range for rope version: up to 30m
- ▶ Measure range for rod version: up to 6m
- ▶ Measure range for coax probe: up to 6m. Process temperature: from a - 40 to +150°C
- ▶ Process pressure: from -1 to 40 bar
- ▶ Easy on-site configuration via menu-driven matrix display
- ▶ Easy on-site calibration without product handling. Empty and full distance setting via matrix display
- ▶ Two-wire and four-wire technology
- ▶ Analogic output 4÷20mA
- ▶ HART protocol (optional)
- ▶ Level measurement and echo signal curve visualisation on matrix display
- ▶ Storage and recognition system for false echo signals
- ▶ CENELEC EExia IIC T6 certifications "ATEX" (PENDING)

Models	RWL51	RWL52	RWL53	RWL54
Type	Ø4 / 6mm (Rope) Ø10mm (Rod)	10mm (Rod)	Ø28mm (Coaxial)	Rope Ø4mm / 6mm Rod Ø10mm
Applications	Level measurement for solids and liquids		Level measurement for liquids with low dielectric constant	Level measurement for liquids with high-temperature and pressure process
Range	30m	6m		Rope 30m Rod 6m
Accuracy	± 10mm			
Process connection (AISI 316L)	1 1/2" G 1 1/2" NPT 2" G	DN50 PN16 DN80 PN16 DN100 PN16 DN150 PN16	1 1/2" G 2" G	1 1/2" G 1 1/2" NPT 2" G
Antenna Material	AISI 316L / PTFE			
Temperature Range	-40 ÷ +150 °C			-40 ÷ +200 °C
Process Pressure	-1 ÷ 40 bar			
Case and blind lid	PBT			
Transparent lid	Polycarbonate			
Gasket/seals	Viton (-30 ÷ +130°C) Kalrez (-40 ÷ +150°C)			
Protection Degree	IP65			

Capacitive - continuous measurement

Continuous Level Measurement

CLT4	CLT5	CLT7	CLT8
 <p>Capacitance rod probe for level measurement</p> <ul style="list-style-type: none"> ▶ Continuous level measurement, general purpose, suited for level measurement in conductive and not conductive liquids ▶ Ø10mm rod capacitance probe ▶ Upper-part of the tank installation max. 3m ▶ IP65 protection 	 <p>Capacitance double rod probe for level measurement</p> <ul style="list-style-type: none"> ▶ Continuous level measurement, general purpose, suited for level measurement in conductive and not conductive liquids ▶ Ø10mm double rod capacitance sensor ▶ Installation in the top of metallic and non-metallic tanks max. 3m ▶ IP65 protection 	 <p>Capacitance rope probe for level measurement in granulate and bulk solid</p> <ul style="list-style-type: none"> ▶ Rope capacitance probe, continuous level measurement, general purpose, suited for level measurement in granulate and bulk solid, ▶ Upper-part of the tank installation. ▶ IP65 protection 	 <p>Capacitance rope probe for food and farma-chemical ind. level measurement</p> <ul style="list-style-type: none"> ▶ Rope probe for continuous level measurement. ▶ Suitable for level measurement in conductive liquids, paste. ▶ Upper-part of the tank installation. ▶ IP65 protection

Capacitive level on/off control

CLS2	CLS4	CLS7	CLS8	CLS9
 <p>Capacitance rod probe for level control</p> <ul style="list-style-type: none"> ▶ General purpose capacitance ON-OFF rod probe ▶ Upper-part or side of the tank installation. ▶ Electrode type: Ø15mm; L. 250mm ▶ Electrode material: AISI316; carbon steel ▶ IP65 protection. 	 <p>Capacitance rod probe for level control</p> <ul style="list-style-type: none"> ▶ Ø10mm rod capacitance probe, level control, general purpose, suited for level control in conductive and not conductive liquids ▶ Upper-part or side of the tank installation ▶ IP65 protection 	 <p>Isolated rope probe for level measurement in granulate</p> <ul style="list-style-type: none"> ▶ Rope capacitance probe, level control, general purpose, suited for level control in granulate and bulk solid ▶ Upper-part or side of the tank installation. ▶ IP65 protection. ▶ Certifiable ATEX Zone 22 (TL41 e TC30 only), on request 	 <p>Capacitance rope probe for food and farma-chemical ind. level control</p> <ul style="list-style-type: none"> ▶ Rope probe for on/off level control. ▶ Suitable for level control in conductive liquids, paste. ▶ Installation in the top of metallic tanks. ▶ IP65 protection. 	 <p>Capacitance rod probe for acids and other chemical agent level control</p> <ul style="list-style-type: none"> ▶ Capacitive level ON/OFF control ▶ Rope electrode capacitance sensor for application in plastiktanks with into aggressive chemical products: acids and other. ▶ IP65 protection.

Pressure measurement

Pressure transmitters for applications in water treatment and food industry

P-8



P-8 series miniature pressure transmitters can be accurately adjusted and calibrated for its "Zero" and full scale output. The pressure sensors in P-8 series miniature pressure transmitters are all welded stainless steel body with built-in pressure sensing die and isolated membrane. The body is filled with silicon oil.

P-8J



The sensor uses micro-melt technology, introduced into aviation application science and technology; the micro processing silicon varistor strain gauge melts on the steel diaphragm by high temperature glass. The pressure cavity use stainless steel single unit integration structure to guarantee better seal performance. The characteristics of product is no O-ring, no welded, no silicon oil or other organic and structural durability .

Pressure transmitters for applications in industrial processes

P-AK



P-AK is an intelligent pressure transmitter, which has a long term stability and accuracy due to its automatic measure compensation system, related to working temperature modification. It can be used in different applications: steel, pharmaceutical, food industries. The insulating diaphragm transmits the process pressure to the sensing membrane placed in the middle of the sensor, which is bended proportionally to the applied pressure. The bending is converted into an analogic 4÷20mA signal. There are 3 different sensor types:

- Ceramic sensors (C) - Silicon sensors (A) - Metal ceramic sensors (C1)

P-K1
with HART
protocol



With pressure transmitters P-K1 is possible to change the value of full scale using the buttons on board. The absence of a separating liquid between membrane and the pressure sensor, ("Dry-Pressure" technology) allows superior performance for overpressure, small thermal drift, high stability and accuracy. Different possible configurations, like the connection to the processed material, ensure that the pressure transmitter P-K1 qualify in most industries application (oil, chemical, energy, metallurgical, pharmaceutical and food) including different operating conditions.

Hydrostatic level transmitter

P-L



The absence of a separating liquid between membrane and the pressure sensor, ("Dry-Pressure" technology) allows superior performance for overpressure, small thermal drift, high stability and accuracy. Different possible configurations, like the connection to the processed material, ensure that the pressure transmitter P-I qualify in most industries application (oil, chemical, energy, metallurgical, pharmaceutical and food) including different operating conditions.

These characteristics make it the ideal tool in an automatic process to measure hydrostatic levels

Differential pressure transmitters for flow measurements

P-BA



Transmitters (P-B Transmitter for short) are more stable in performance with the automatic temperature compensation function. Compact construction, small and light, conformable with HART protocol, the WP-B transmitter are widely used in petrochemical, iron and steel, power plant, chemical, light industry and other industries The process pressure is transmitted through the isolating diaphragm and the oil fill to the sensing diaphragm, placed in the middle of the sensor. In the same way the reference pressure is transmitted to the opposite side of the sensing diaphragm, which is bended proportionally to the applied pressure. The bending of the sensing diaphragm produces a capacity difference between the condensers, which are composed by the same sensing diaphragm and by two capacitor metal plates. The capacity difference produced by the sensor, guided by a stable oscillator, is converted into a 2-wire analogic 4÷20mA signal .Two-way communication HART available.

Models		P-8	P-9	P-K1	P-L	P-AK	P-BA
Type		Miniature pressure transmitters	Miniature pressure transmitters	"General Purpose" Transmitters with view	Hydrostatic Pressure Transmitters	HART Pressure Transmitters	Differential pressure flowmeter
Range					0 ÷ 10 bar (0 ÷ 100m) Others on request	Min. 0±0.01...0.06 bar Max. 0÷40...200 bar Absolute/relative/referred	
Relative Pressure	Min. Max.	0 ÷ 0.04 bar 0 ÷ 600 bar	0 ÷ 10 bar 0 ÷ 60 bar	0 ÷ 0.04 bar 0 ÷ 600 bar	-	-	-
Absolute Pressure	Min. Max.	0 ÷ 0.2 bar 0 ÷ 60 bar	-	0 ÷ 0.2 bar 0 ÷ 4 bar	-	-	-
Negative Related Pressure	Min. Max.	-0.02 ÷ +0.02 bar -1 ÷ +20 bar	-	-0.02 ÷ +0.02 bar -1 ÷ +20 bar	-	-	-
Differential Pressure		-	-	-	-	-	P-BADP Min. 0÷0.01...0.06 bar Max. 0÷16...68 bar P-BADR Min. 0÷0.001...0.16 bar
Accuracy		±0.1%FS	±0.5%FS	±0.1%FS	±0.1%FS	0.1/0.2/0.5/0.075 Sensor depending	±0,075%FS
Stability (12 months)		±0.1%FS	±0.25%FS	> ±0.1%FS	> ±0.1%FS	-	-
Overload Capacity		1.5 times F.S	2 times F.S	1.5 times F.S	1.5 times F.S	-	-
Power		12,5÷36Vdc (2 wires)	12,5÷30Vdc (2 wires)	12,5÷36Vdc (2 wires)	18÷36Vdc (2 wires)	12÷45Vdc	12÷45Vdc
Output		4÷20mA	4÷20mA	4÷20mA	4÷20mA	4÷20mA	4÷20mA
Noise Level		-	<2mv RMS	-	-	-	-
Bandwidth		-	DC a 1 KHz (-3db)	-	-	-	-
Operating Temperature		-10° ÷ +80°C	-40° ÷ +85°C	20° ÷ +80°C	-20° ÷ +70°C	-	-
Communication Protocol		-		-	-	HART	HART
Zero & Span Calibration		Zero +/- 5% F.S. +/- 20%	-	Zero +/- 5% F.S. +/- 20%	-	by keys	by keys
Data View		Opt. Display LCD	-	Opt. Display LCD	-	Opt. Display LCD Alphanumeric display display backlit	Alphanumeric display
Memory		-		-	-	EEPROM	EEPROM
Protection Degree		IP65	connector Version P65 Outgoing cable Version IP67	IP65	Security probe immersed (wet side) probe immersed + outgoing cable P68	IP67	IP67
Certification		-	-	-	-	-	ATEX II 2 G Exd II C T6

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For more information
www.seko.com

BRAZIL

● Seko do Brasil Comercio de Sistemas de Dosagem Limitada

03170-050 São Paulo (SP)
Phone: +55 11 2606 9878
Fax: +55 11 2606 9878
sekobrasil@sekobrasil.com.br
www.sekobrasil.com.br

CHINA

● Seko China Ltd

072750 Hebei
Phone: +86 312 552 0904
Fax: +86 312 552 0901
china@seko.com
www.sekochina.com

DENMARK

● Seko Denmark

DK-4930 Maribo
Phone: +45 5475 7545
Fax: +45 5474 7545
info@seko.com

FRANCE

● Seko Lefranc-Bosi S.A.

77435 - Marne La Vallée Cedex 2
Phone: +33 1 6005 9060
Fax: +33 1 6480 4104
lefrancbosi@lefrancbosi.com
service.commercial@seko.fr
www.lefrancbosi.com

GERMANY

● Seko Deutschland GmbH

55252 Mainz - Kastel
Phone: +49 6134 2858 10
Fax: +49 6134 2858 29
info@seko-messtechnik.de
www.seko-germany.com

ITALY

● Seko Spa

Via Salaria Km. 92,200
02010 S.Rufina - Rieti
Phone: +39 0746 605801
Fax: +39 0746 607072
sales@seko.com

● Seko Spa

[Process & Systems]

Via Di Vittorio, 25 - 20068
Peschiera Borromeo - Milano
Phone: +39 02 97372411
Fax: +39 02 55301744
info.psd@seko.com
info@seko.com

ROMANIA

● Seko Sieta S.r.l.

400393 Cluj-Napoca
Phone: +40 264 415 251
Fax: +40 264 415 622
info.dpro@seko.com

RUSSIA

● OOO Seko

129347 - Moscow
Phone: +74 99 182 52 36
Fax: +74 99 182 52 36
sekorussia@seko.com
www.sekorussia.ru

SINGAPORE

● Seko Dosing Systems

Asia Pacific Pte Ltd

608838 Singapore
Phone: +65 6515 6996
Fax: +65 6515 5079
asiapacific@seko.com

SOUTH AFRICA

● Seko Southern Africa (PTY) Ltd

Kyasand - Johannesburg - Gauteng
Phone: +27 11 704 6589
Fax: +27 11 704 6588
sales@sekosa.co.za

SPAIN

● Seko Ibérica Sistemas de Dosificación S.A.

08960 San Jaust Desvern -
Barcelona
Phone: +34 93 4802 570
Fax: +34 93 4802 571
sekoiberica@sekoiberica.com

SWEDEN

● Seko Sweden

26123 Landskrona
Phone: +46 418 448 482
Fax: +46 418 448 483
info@seko.com

TURKEY

● Seko Endüstriyel Pompalar ve Proses Sistemleri San. ve Tic. Ltd. Şti.

Kartal Istanbul
Phone: +90 216 353 2542
Fax: +90 216 353 1450
info@seko.com.tr

UNITED KINGDOM

● Seko UK - Chemical Controls Ltd

Harlow, Essex - CM19 5JH
Phone: +44 1279 423550
Fax: +44 1279 423993
seko.uk@seko.com
www.sekouk.com

USA

● Seko Dosing Systems Corporation USA

Tullytown - PA 19007 (USA)
Phone: +1 215 945 01 25
Fax: +1 215 945 09 37
sales@sekousa.com
www.sekousa.com

