



# High Precision Turbine Wheel Flowmeter

for liquids



measuring  
•  
monitoring  
•  
analysing

PEL



Model: PEL... LMX



Model: PEL... S34

- Measuring ranges:  
0.004-0.06 ... 0.1-28 l/min water
- Measuring accuracy:  
±2% of reading
- $p_{\max}$ : 345 bar;  $t_{\max}$ : 135 °C
- Viscosity range: low viscosity,  
max. 10 mm<sup>2</sup>/s
- Connection: R $\frac{1}{4}$ , R  $\frac{1}{2}$
- Material: stainless steel,  
aluminium
- Output: pulses

S4



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### Description

The sensor principle based on a Pelton water wheel is remarkable for its high reliability – proven over more than ten years of service. This flowmeter is to be found in applications in a variety of plants, where they are mainly used for measuring of negligible volumetric flow rates of media such as fuels, distilled water, or hot greases. The sensors satisfy almost all industrial requirements with temperature limits of 135 °C and nominal pressures up to 345 bar (higher pressures upon request). Only V4A Supra stainless steel (material no. 1.4571) is used for metallic parts. Swiss precision sapphire bearings ensure long service life and reliability.

### Model PEL-L ... for low flow rates

- Linearity:  $\pm 2\%$  of reading
- Repeatability:  $< \pm 0.2\%$  at 90% of range
- Accuracy:  $\pm 2\%$  of actual reading for 10-100% of range  
 $\pm 0.5\%$  FSD for 0-10% of range
- Measuring range: 100:1 up to 280:1

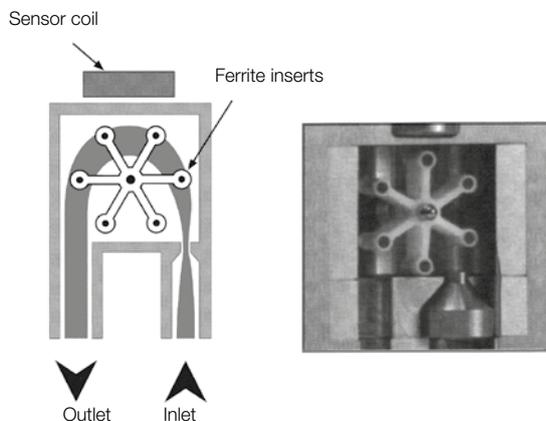
### Function Principle

The model PEL flowmeter works on the turbine wheel principle. The heart of this device is a Pelton turbine supported by sapphire bearings. The Pelton turbine is an impeller with ferrite inserts embedded in the blade tips. When this turbine is brought into rotary motion, the motion is recorded by a coil mounted nearby; the resulting electrical impulses are passed to a control unit for further processing.

### Technical Details

#### Standard pulse output (Code F)

- Power supply: 8-28 V<sub>DC</sub>
- Signal: NPN



Model KOBOLD PEL-L flowmeters measure the entire volumetric flow that passes through the instrument. A nozzle guides the flow to the impeller. The resulting turbine rotation is proportional to the flow rate.

A small sensing coil signals the approach of the ferrite inserts contained in the impeller. An output signal with constant current is then produced by the electronics.

Other critical media such as toluene and vinyl chloride can be measured in hazardous environments. Sensors made of less expensive materials are used for less sophisticated conditions.

Model	Version	
	...LMX...	...S34...
PEL-L00L...		
PEL-L000...		
PEL-L001...		
PEL-L005...		
PEL-L024...		
PEL-L045...		
PEL-L090...		
PEL-L220...		
Process connection	R ½ male thread	R ¼ female thread
Housing	VA	VA
Electronic housing	VA/Alu	VA/Alu
Turbine ring	VA	VA
Rotating vane	PFA	PFA
Rotating vane bearings	Sapphire	Sapphire
Rotating vane axle	VA/Sapphire	VA/Sapphire
O-ring	PTFE	FPM
p <sub>max</sub>	100 bar (L000 & L001:30 bar)	345 bar
t <sub>max</sub>	100 °C	135 °C

Flow rate range	Pressure drop
0.004 ... 0.060 l/min	0.18 bar @ 0.03 l/min; 0.7 bar @ 0.06 l/min
0.006 ... 0.100 l/min	0.18 bar @ 0.05 l/min; 0.7 bar @ 0.10 l/min
0.01 ... 0.25 l/min	0.33 bar @ 0.125 l/min; 1.3 bar @ 0.25 l/min
0.02 ... 1.3 l/min	0.18 bar @ 0.65 l/min; 0.74 bar @ 1.3 l/min
0.03 ... 4.3 l/min	0.3 bar @ 2 l/min; 1.2 bar @ 4.3 l/min
0.04 ... 6.3 l/min	0.23 bar @ 3 l/min; 1.3 bar @ 6.3 l/min
0.08 ... 15 l/min	0.25 bar @ 9 l/min; 0.7 bar @ 15 l/min
0.1 ... 28 l/min	0.24 bar @ 10 l/min; 1.8 bar @ 28 l/min

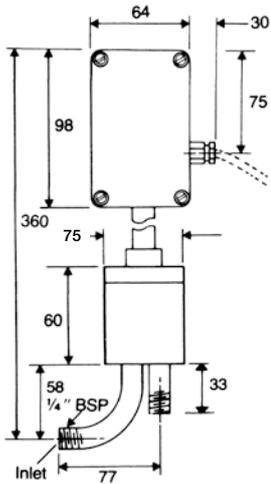
**Order Details** (example: PEL-L000 GN1 F)

Measuring range* [l/min]	Model	Version/material	Evaluating electronics
0.004-0.06	PEL-L00L	...LMX... ....S34...	...F = standard pulse output
0.006-0.1	PEL-L000		
0.01-0.25	PEL-L001		
0.02-1.3	PEL-L005		
0.03-4.3	PEL-L024		
0.04-6.3	PEL-L045		
0.08-15	PEL-L090		
0.1-28	PEL-L220		



Dimensions [mm]

PEL-L...S34



PEL-L	...00L up to ...090	...220
A	14 mm	17 mm
B	8 mm	11 mm

PEL-L...LMX

