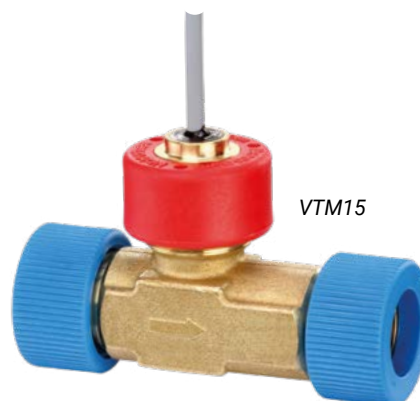


Turbine flow sensors // Turbotron // VTH15, VTM15

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Highlights – VTH15

- Cost optimized version

Highlights – VTM15

- For medium temperature up to 120 °C

Technical data

Type	VTH15			VTM15
Material pipe section	Plastic PPO	Brass	Stainless steel	Brass
Flow range	2...40 l/min			2...20 l/min
Accuracy	±0.4 l/min			±0.8 l/min
Repeatability	±0.1 l/min			
Signal output	From 0.3 l/min			
Medium temperature	0...85 °C (non-freezing)			0...120 °C (non-freezing)
Pressure rating	PN 10			
Nominal diameter	DN 15			
Process connection	G¾ male thread with union nuts and gaskets			
Sensor	Hall effect sensor			
Output signal				
→ Pulse rate / K-factor	855 pulses/l			915 pulses/l
→ Resolution	1.2 ml/pulse			1.1 ml/pulse
→ Signal shape	Square wave signal NPN open collector			Square wave signal NPN open collector
→ Signal current	Max. 10 mA			Max. 10 mA
Electrical connection	1.5 m PVC cable, shielded ($T_{max} = 70\text{ °C}$) or 4 pin plug connector M12 x 1			1.5 m PVC cable, shielded ($T_{max} = 80\text{ °C}$)
Power supply	4.5...24 VDC			
Degree of protection EN 60529	IP54			
Max. particle size in the medium	0.5 mm			

Turbine flow sensors // Turbotron // VTP15, VTI15



VTP15



VTI15



Highlights – VTP15

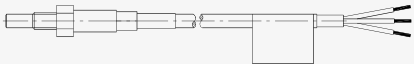
- Pressure rating up to 300 bar
- For medium temperature up to 150 °C

Highlights – VTI15

- Magnet-free rotor, for high measurement accuracy and high resolution

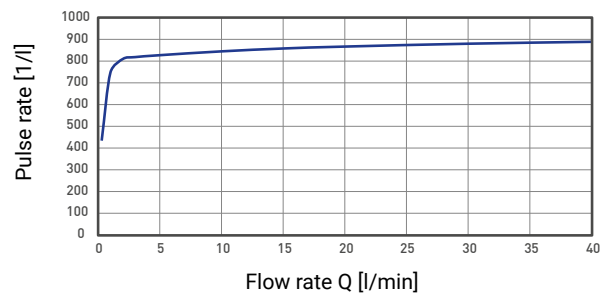
Technical data				
Type	VTP15		VTI15	
Material pipe section	Brass	Stainless steel	Plastic PPO	Brass
Flow range	2...40 l/min			
Accuracy	±0.8 l/min of range at 2...20 l/min		±0.2 l/min	
Repeatability	±0.1 l/min		±0.05 l/min	
Signal output	From 0.3 l/min			
Medium temperature	0...150 °C (non-freezing)		0...85 °C (non-freezing)	
Pressure rating	P _{max} = 300 bar		PN 10	
Nominal diameter	DN 15			
Process connection	G¾ male thread incl. union nuts	G¾ male thread or G¾ female thread	G¾ male thread with union nuts and gaskets	
Sensor	Hall effect sensor		Inductive proximity switch	
Output signal				
→ Pulse rate / K-factor	915 pulses/l		1795 pulses/l	
→ Resolution	1.1 ml/pulse		0.6 ml/pulse	
→ Signal shape	Square wave signal NPN open collector		Square wave signal PNP or NPN open collector	
→ Signal current	Max. 10 mA		Max. 50 mA	
Electrical connection	1.5 m silicone cable, shielded (T _{max} = 150 °C)		2 m PVC cable, shielded (T _{max} = 70 °C) or 4 pin plug connector M12 x 1	
Power supply	4.5...24 VDC		10...30 VDC	
Degree of protection EN 60529	IP54			
Max. particle size in the medium	0.5 mm			

Options

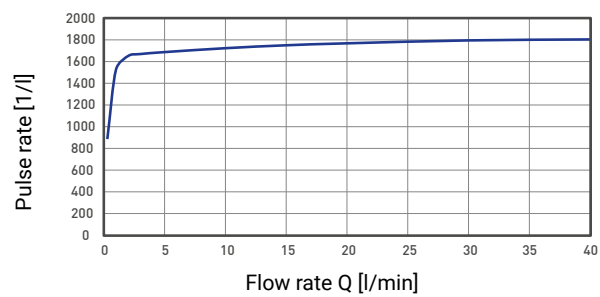
Options		VTH	VTM	VTP	VTI
See order code					
Integrated temperature sensor with plug connection M8 → Pt100, class B, 3-wire → Pt1000, class B, 3-wire Immersion tube → Brass → Stainless steel		✓			✓
Integrated temperature sensor with fixed cable (T_{max} = 80 °C) → Pt100, class B, 3-wire → Pt1000, class B, 2-wire Immersion tube → Brass → Stainless steel		✓	✓		✓
Screen filter in the inlet, hat shape mesh size 0.5 mm T_{max} = 60 °C (continuous operation) T_{max} = 85 °C (max. 1 h)		✓			✓
Turbine flow transmitter, analogue output 4...20 mA (T_{max} = 80 °C)	see options Turbotron	✓			
Turbine flow switch, switching output (contact) (T_{max} = 80 °C)	see options Turbotron	✓			
On request					
Optional seal materials → FKM → EPDM		✓			✓
Integrated temperature sensor with fixed cable → NTC → PTC		✓			✓

Characteristic curve // Typical pressure drop

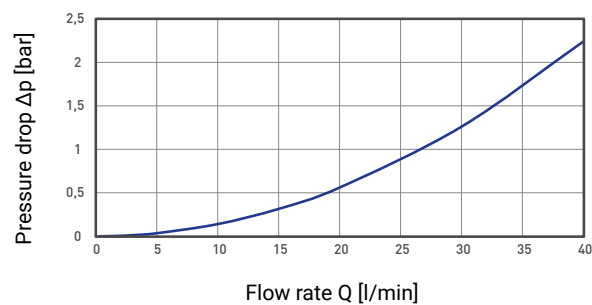
Characteristic curve VTH



Characteristic curve VTI

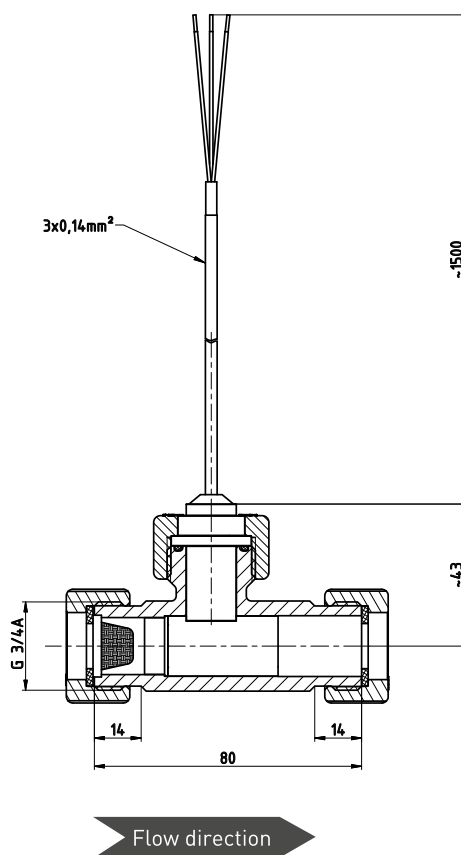


Typical pressure drop VTH / VTM / VTP / VTI



Technical drawing

VTH15 / VTI15



Materials

Materials in contact with fluid								
	VTH15 plastic PPO	VTH15 brass	VTH15 stainless steel	VTM15 brass	VTP15 brass	VTP15 stainless steel	VTI15 plastic PPO	VTI15 brass
Pipe section	PPE+PS Noryl™ 30 % glass fibre reinforced	Brass	Stainless steel 1.4571	Brass		Stainless steel 1.4571	PPE+PS Noryl™ 30 % glass fibre reinforced	Brass
Sensor housing	PPE+PS Noryl™ 30 % glass fibre reinforced		Stainless steel 1.4571	Brass		Stainless steel 1.4571	PPE+PS Noryl™ 30 % glass fibre reinforced	
Turbine system / rotor	PEI ULTEM™			PEEK Victrex™			PEI ULTEM™	
O-ring / gasket	NBR			FKM			NBR	
Bearing system / shaft	Shaft Arcap AP1D with hard metal pins in sapphire bearings							
Bearings support	Arcap AP1D							
Rotor assembly	Hard ferrite magnet						Stainless steel pins	
Temperature sensor (optional)	Brass or stainless steel 1.4571			Brass			Brass or stainless steel 1.4571	
Screen filter	POM / Stainless steel						POM / Stainless steel	

Article numbers // VTH15 / VT115

Order code										
Type										
VTH15 / VTI15					VT1541					
Material of pipe section										
Noryl PPO					K5					
Brass					MS					
Stainless steel (only VTH15)					VA					
Version, output signal										
VTI15, PNP						IP				
VTI15, NPN						IN				
VTH15, NPN						HN				
Electrical connection										
Cable							P			
4 pin plug connector M12 x 1							S			
Supplementary temperature sensor										
None		None							0A4	
Pt100	3 pin plug connector M8, 3-wire		brass					BA4		
			stainless steel					CA4		
	Fixed cable, 3-wire		brass					2A4		
		stainless steel					9A4			
Pt1000	3 pin plug connector M8, 3-wire		brass					DA4		
			stainless steel					EA4		
	Fixed cable, 2-wire		brass					7A4		
		stainless steel					AA4			
Options*										
Filter										
Screen filter									H	
None									0	
Electronics (only for VTH15 with 4 pin plug connector M12 x 1)										
Including transducer 4...20 mA										
→ Corresponds 0...5 l/min									A	
→ Corresponds 0...10 l/min									B	
→ Corresponds 0...20 l/min									C	
→ Corresponds 0...40 l/min									D	
Switching output VE									6	
Switching output VE with pulse output									7	
Example order number					VT1541	K5	HN	S	CA4 H A	

* If you do not require any of the options, digits of the order code do not apply.

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Type		Order number						
VTH15	Material of pipe section: PPO Noryl	VT1541	K5	HN	P	0A4		
	Output signal: NPN							
	Electrical connection: Cable, without supplementary temperature sensor							
	Screen filter, transducer 4...20 mA corresponds 0...5 l/min							

Article numbers // VTM15 / VTP15

Order code		
Type		
VTM15	VT1531MSMNP	
Supplementary temperature sensor		
None		0A4
Pt100		2A4
Pt1000		7A4
Example order number	VT1531MSMNP	0A4

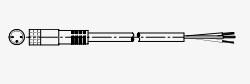
Order code		
Type		
VTP15	VT1541	
Material of pipe section, process connection		
Brass, G $\frac{3}{4}$ male		MSDNP0A4
Stainless steel, G $\frac{3}{4}$ male		VADNP0A4
Stainless steel, G $\frac{3}{4}$ female		VADNP0I4
Example order number	VT1541	MSDNP04A

Article numbers // Connection adapters

Order code				
Series	Connection adapters*			Order number
VT15		Hose barb Ø 10 mm, PA 6.6	T _{max} = 20 °C, PN 10 T _{max} = 60 °C, PN 2.5	VT1317
		Hose barb Ø 12 mm, PP		XVT1069
		Hose barb Ø 15 mm, PP		VT1338
		Hose barb Ø 19 mm, HDPE		VT1323
		Hose barb, angleshape Ø 13 mm, HDPE	T _{max} = 60 °C, PN 10	VT1318
		Hose barb, Ø 13 mm, Brass	T _{max} = 80 °C, PN 10	XVT1005
		Bonding socket, Ø 22 mm, PVC, for pipes outer diameter 16 mm	T _{max} = 20 °C, PN 10 T _{max} = 60 °C, PN 2,5	VT1316
		Welding adapter Ø 20 mm, PP	T _{max} = 20 °C, PN 6 T _{max} = 60 °C, PN 2,5	VT1319
		Screw coupling G¾-ISO 228 male, Brass	T _{max} = 110 °C, PN 16	VT1320
		Screw coupling G½-ISO 228 male, Brass		VT1324
		Screw coupling G¾-ISO 228 female, brass galvanized		VT1321
		Screw coupling G½-ISO 228 female, Brass		VT1325
		Clamping ring coupling, brass for copper tube Ø 18 mm for copper tube Ø 22 mm		VT1326 VT1327
		Soldering coupling, brass for copper tube Ø 15 mm for copper tube Ø 18 mm	T _{max} = 90 °C, PN 16	VT1328 VT1329

* The use of connection adapters may result in deviations in accuracy. Supplied piecewise

Article numbers // Connection cables

Order code				
Series	Connection cables		Length	Order number
VT15		Connection cable for turbine flow sensor with cable socket M12 x 1 moulded lead, 4-pin, shielded, sheathing material PUR (T _{max} = 70 °C) UL-approval	3 m 5 m 10 m	XVT2053 XVT2009 XVT2070
		4 pin cable socket M12 x 1 angle type unassembled		VT1331
		Connection cable for temperature sensor with cable socket M8 moulded lead, 3 pin, sheathing material PUR (T _{max} = 90 °C) UL-approval	2 m 5 m 10 m	XVT2190 XVT2191 XVT2192