

Magnetic inductive flow sensors // VMI induQ®



VMI02



VMI20

US version available

Note: The US versions are separate products. The units are not converted, but pre-configured at the factory for the respective variants.



Highlights

- Robust metal housing for high temperature and pressure
- Maintenance-free - no moving parts
- Frequency or analogue and frequency output
- Delivery including works calibration certificate

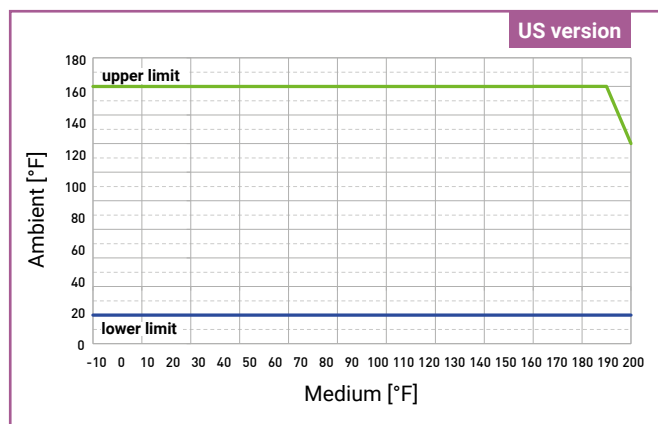
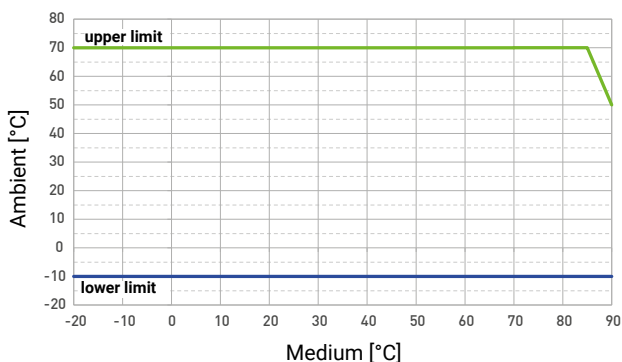
Type	VMI02	VMI07	VMI10	VMI20
Characteristics				
Nominal diameter	DN 2	DN 7	DN 10	DN 20
Nominal pipe size	1/8"	1/4"	3/8"	3/4"
Process connection	G1/4-ISO 228 male	G1/2-ISO 228 male	G1/2-ISO 228 male or G3/4-ISO 228 male	G 1-ISO 228 male
Process connection	1/4" NPT male	1/2" NPT male	1/2" NPT male or 3/4" NPT male	1" NPT male
Inner diameter [mm]	2	4 x 10	10	20
Inner diameter [inch]	0.08	0.4 x 0.16	0.4	0.79
Flow range [l/min]	0.0083...1 or 0.05...2	0.1...30	0.2...60	5...250
Flow range [US gpm]	0.0022...0.26 or 0.0133...0.53	0.027...8	0.053...16	1.3...66
Accuracy*	0...50 % of range: ±1 % of range 50...100 % of range: ±2 % of range	± (0.7 % of reading + 0.3 % of range)		±(1.5 % of reading + 0.3 % of range)
Repeatability*	1 %			
Response time	<500 ms			
Medium	Water and other conductive liquids			
min. conductivity of medium	50 µS/cm			
Medium temperature	-20...90 °C			
Medium temperature	-4...194 °F			
Ambient temperature	Min. -10 °C, max. see figure temperature limits			
Ambient temperature	Min. 14 °F, max. see figure temperature limits			

* Test conditions: Water 23 °C / 73 °F at 150 ±100 µS/cm; standard pulse rate

Technical data

Type	VMI02	VMI07	VMI10	VMI20
Characteristics				
Pressure rating	PN 16			
Pressure rating	Max. 232 psi			
Flow indication	LED green, flow proportional flashing			
Degree of protection EN 60529	IP65 and IP67 (with attached cable socket)			
Electrical data				
Electrical connection	Plug connector M12 x 1			
Power supply	12...24 VDC ($\pm 10\%$)			24 VDC ($\pm 10\%$)
Current consumption	≤ 150 mA			
Approval				
For VMI02/07/10	EU RO Mutual Recognition Type Approval Certificate (covers: ABS, BV, CCS, CRS, DNV, IRS, KR, LR, ClassNK, PRS, RINA, RS)			

Temperature limits



Output signals

Three different versions available:

- Frequency output (1)
- Analogue output 4...20 mA and frequency output (2)
- Analogue output 0...10 V and frequency output (3)

Frequency output 1	VMI02	VMI07	VMI10	VMI20
Pulse rate [pulses/l]*	10,000 optional: 1...20,000	1,000 optional 1...2,000	500 optional 1...1,000	100 optional 1...200
Pulse rate [pulses/gallon]*	20,000 optional: 1...40,000	2,000 optional: 1...7,500	1,000 optional: 4...3700	250 optional: 4...750
Resolution [ml/pulse]*	0.1	1.0	2.0	10
Resolution [gallons/pulse]*	0.00005	0.0005	0.001	0.004
Signal shape	Square wave signal, pulse duty ratio 50:50, Push-Pull			
Signal current	≤ 100 mA, current limited			

Analogue output 4...20 mA 2	VMI02	VMI07	VMI10	VMI20
Scaling [l/min]**	0...1 or 0...2	0...30	0...60	0...200 or 0...250
Scaling [US gpm]**	0...0.26 or 0...0.53	0...8	0...16	0...50 or 0...66
Max. Load	250 Ω against GND			

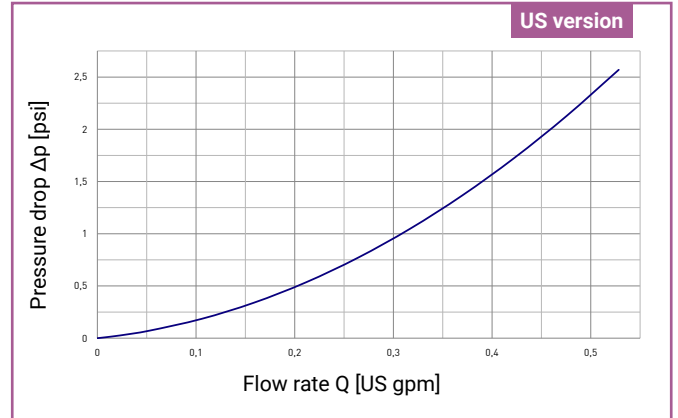
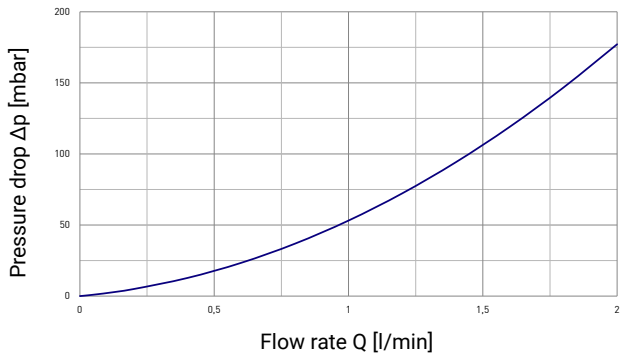
Analogue output 0...10 V 3	VMI02	VMI07	VMI10	VMI20
Scaling [l/min]**	0...1 or 0...2	0...30	0...60	0...200 or 0...250
Scaling [US gpm]**	0...0.26 or 0...0.53	0...8	0...16	0...50 or 0...66

* Factory configurable

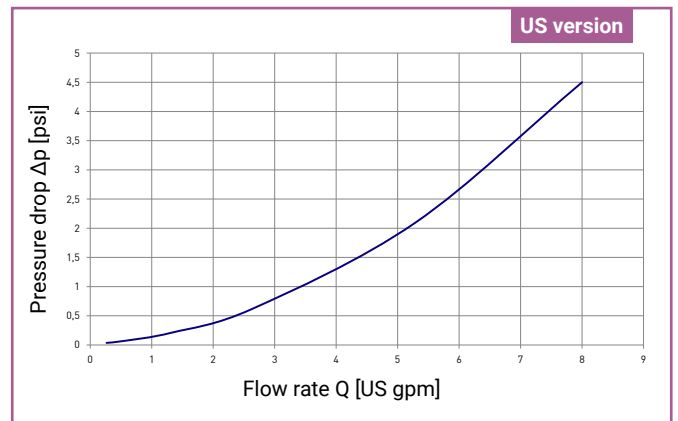
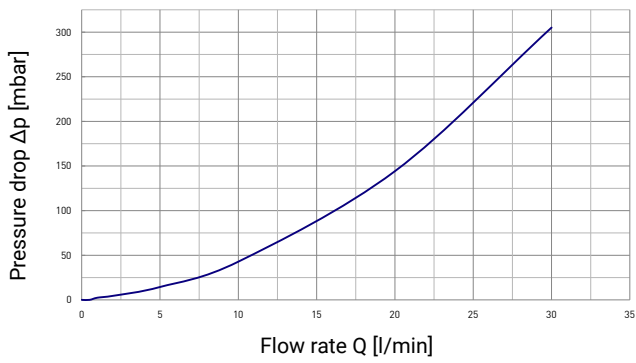
** Other ranges available on request

Typical pressure drop

Typical pressure drop VMI02

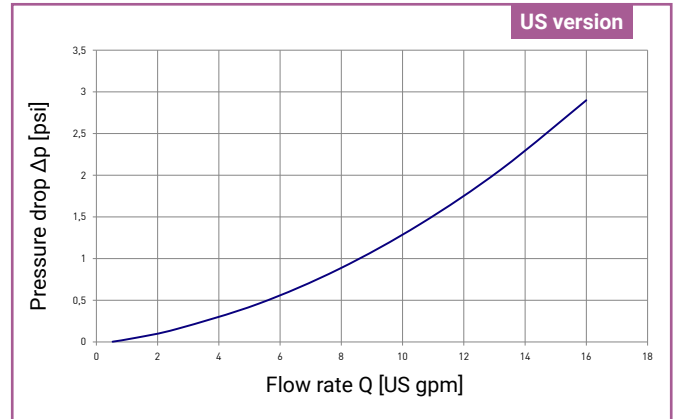
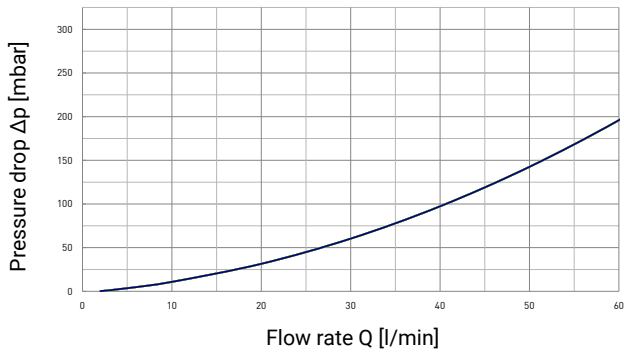


Typical pressure drop VMI07

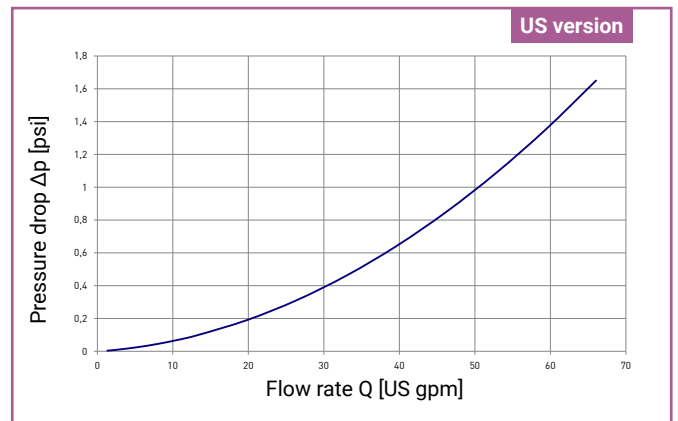
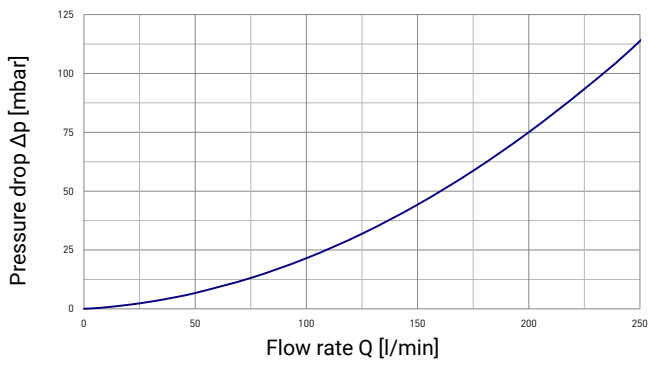


Typical pressure drop

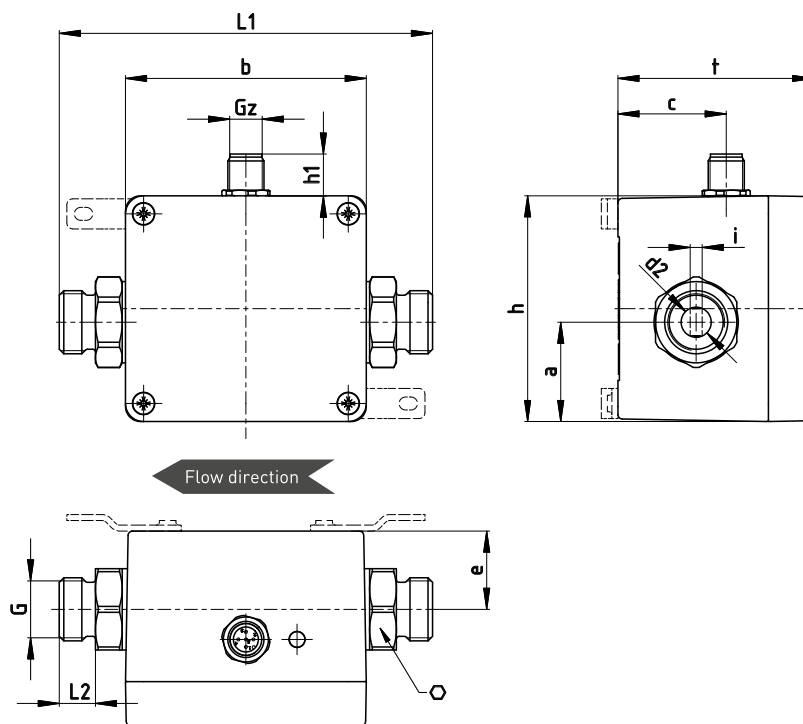
Typical pressure drop VMI10



Typical pressure drop VMI20



Technical drawings // Dimensions // Materials



Dimensions (mm)

VMI	L1 ±0.5	L2 ±0.5	G	⊘	d2	i	b	h	t	a	c	e	Gz	h1
02	120	12	G ¼ A	17	∅ 3	1.9	80	75	65	34	36	26	M12x1	14
07	124	12	G ½ A	27	∅ 10	4	80	75	65	33	36	26	M12x1	14
10	124	12	G ½ A	27	∅ 10	—	80	75	65	33	36	26	M12x1	14
10	124	12	G ¾ A	27	∅ 10	—	80	75	65	33	36	26	M12x1	14
20	140	18	G 1 A	36	∅ 20	—	80	75	65	35.5	36	29	M12x1	14

Dimensions (inch)

VMI	L1 ±0.5	L2 ±0.5	G	⊘	d2	i	b	h	t	a	c	e	Gz	h1
02	5	0.61	¼ - 14 NPT	—	∅ 0.12	0.07	3.15	2.95	2.56	1.3	1.42	1.02	M12x1	0.55
07	5.04	0.55	½ - 14 NPT	—	∅ 0.4	0.16	3.15	2.95	2.56	1.3	1.42	1.02	M12x1	0.55
10	5.04	0.55	½ - 14 NPT	—	∅ 0.4	—	3.15	2.95	2.56	1.3	1.42	1.02	M12x1	0.55
10	5.04	0.55	¾ - 14 NPT	—	∅ 0.4	—	3.15	2.95	2.56	1.3	1.42	1.02	M12x1	0.55
20	6.10	0.98	1 - 11.5 NPT	—	∅ 0.79	—	3.15	2.95	2.56	1.4	1.42	1.14	M12x1	0.55

Materials

Not in contact with fluid

Housing

Casted aluminium

In contact with fluid

Electrodes

Stainless steel 1.4571

Process connections

Stainless steel 1.4571

Measuring pipe

PEEK-GF30

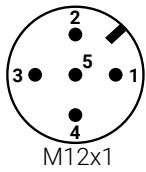
O-rings

EPDM / FKM optional

Wirings

Pinout

The pinout differs according to the chosen configuration of the device.



Possible pinout:

Pin 1: $+U_B$

Pin 2: d. n. c. (do not connect) / Analogue U/I

Pin 3: **GND**

Pin 4: Frequency

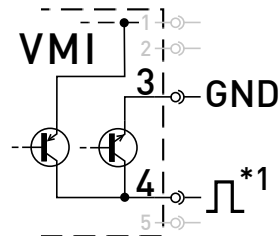
Pin 5: n. c. (not connected)

Connect the connecting cable according to your version and the pinout on the type plate.

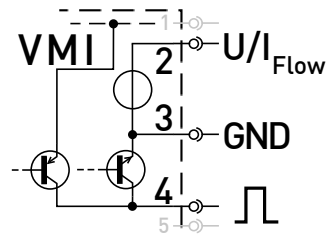
Supply voltage



VMI with frequency output Push-Pull



Use of frequency and analogue output Push-Pull



*1: Push-Pull switching outputs of several VMI may not be connected in parallel.

Article numbers

Order code						
Type						
VMI		VMI				
Nominal diameter / Process connection						
DN 02 / G $\frac{1}{4}$ male thread						
Output signals	corresponds to flow rate					
Frequency signal	0.0083...1 l/min	02A			0YGX100	
	0.05...2 l/min	02A			0YGX101	
Frequency signal and analogue signal 4...20 mA	0...1 l/min	02A			0YGI100	
	0...2 l/min	02A			0YGI101	
Frequency signal and analogue signal 0...10 V	0...1 l/min	02A			0YGU100	
	0...2 l/min	02A			0YGU101	
DN 07 / G $\frac{1}{2}$ male thread						
Output signals	corresponds to flow rate					
Frequency signal	0.1...30 l/min	07A			0YGX100	
Frequency signal and analogue signal 4...20 mA	0...30 l/min	07A			0YGI100	
Frequency signal and analogue signal 0...10 V	0...30 l/min	07A			0YGU100	
DN 10 / G $\frac{1}{2}$ male thread						
Output signals	corresponds to flow rate					
Frequency signal	0.2...60 l/min	10A			0YGX100	
Frequency signal and analogue signal 4...20 mA	0...60 l/min	10A			0YGI100	
Frequency signal and analogue signal 0...10 V	0...60 l/min	10A			0YGU100	
DN 10 / G $\frac{3}{4}$ male thread						
Output signals	corresponds to flow rate					
Frequency signal	0.2...60 l/min	10E			0YGX100	
Frequency signal and analogue signal 4...20 mA	0...60 l/min	10E			0YGI100	
Frequency signal and analogue signal 0...10 V	0...60 l/min	10E			0YGU100	
DN 20 / G1 male thread						
Output signals	corresponds to flow rate					
Frequency signal	5...250 l/min	20A			0YGX000	
Frequency signal and analogue signal 4...20 mA	0...200 l/min	20A			0YGI005	
	0...250 l/min	20A			0YGI000	
Frequency signal and analogue signal 0...10 V	0...200 l/min	20A			0YGU005	
	0...250 l/min	20A			0YGU000	
Mounting straps						
Without (standard)			SS			
With mounting straps			LS			
Material O-rings						
EPDM (Standard)				0		
FKM (Option)				1		
Example order number		VMI	02A	SS	0	0YGX000

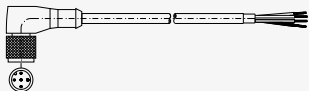

Article numbers

Order code					
Type					
VMI			VMI		
Nominal diameter / Process connection					
DN 02 / ¼" NPT male					
Output signals		corresponds to flow rate			
Frequency signal		0.0022...0.26 US gpm	02B		0YGX200
		0.0133...0.53 US gpm	02B		0YGX201
Frequency signal and analogue signal 4...20 mA		0...0.26 US gpm	02B		0YGI200
		0...0.53 US gpm	02B		0YGI201
Frequency signal and analogue signal 0...10 V		0...0.26 US gpm	02B		0YGU200
		0...0.53 US gpm	02B		0YGU201
DN 07 / ½" NPT male					
Output signals		corresponds to flow rate			
Frequency signal		0.027...8 US gpm	07B		0YGX200
Frequency signal and analogue signal 4...20 mA		0...8 US gpm	07B		0YGI200
Frequency signal and analogue signal 0...10 V		0...8 US gpm	07B		0YGU200
DN 10 / ½" NPT male					
Output signals		corresponds to flow rate			
Frequency signal		0.053...16 US gpm	10B		0YGX200
Frequency signal and analogue signal 4...20 mA		0...16 US gpm	10B		0YGI200
Frequency signal and analogue signal 0...10 V		0...16 US gpm	10B		0YGU200
DN 10 / ¾" NPT male					
Output signals		corresponds to flow rate			
Frequency signal		0.053...16 US gpm	10F		0YGX200
Frequency signal and analogue signal 4...20 mA		0...16 US gpm	10F		0YGI200
Frequency signal and analogue signal 0...10 V		0...16 US gpm	10F		0YGU200
DN 20 / 1" NPT male					
Output signals		corresponds to flow rate			
Frequency signal		1.3...66 US gpm	20B		0YGX002
Frequency signal and analogue signal 4...20 mA		0...50 US gpm	20B		0YGI007
		0...66 US gpm	20B		0YGI002
Frequency signal and analogue signal 0...10 V		0...50 US gpm	20B		0YGU007
		0...66 US gpm	20B		0YGU002
Mounting straps					
Without (standard)				SS	
With mounting straps				LS	
Material O-rings					
EPDM (Standard)					0
FKM (Option)					1
Example order number	VMI	02B	SS	0	0YGX200

Accessories



Connection cable

Order code				
Accessories		Length [m]	Length [ft]	Order number
	Connection cable with 5 pin cable socket M12 x 1, angle type moulded lead, sheathing material PUR, shielded, (Tmax = 80 °C / 176 °F), UL-approval	3 m	10	XVT2053
		5 m	16	XVT2009
		10 m	33	XVT2070
	5 pin cable socket M12 x 1 angle type, unassembled			VT1331