Flow sensors VMI induQ®

US version available

VMI02

US version available

VMI20

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

Your advantages

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

Type	VMI02	VMI07	VMI10	VMI20
Characteristics				
Nominal diameter	DN 2	DN 7	DN 10	DN 20
Nominal pipe size	⅛"	¼"	⅜"	¾"
Process connection	G¼-ISO 228 male	G½-ISO 228 male	G½-ISO 228 male or G¾ -ISO 228 male	G 1-ISO 228 male
Process connection	¼" NPT male	1½" NPT male	½" NPT male or ¾" 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

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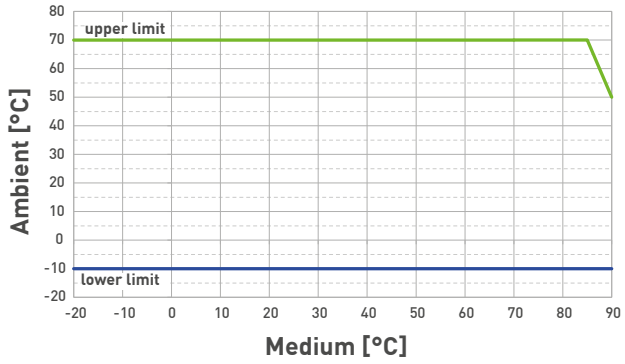
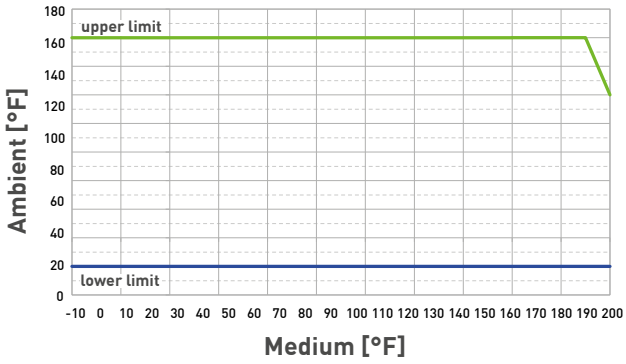
Type	VMI02	VMI07	VMI10	VMI20
Characteristics				
Pressure rating	PN 16			
Pressure rating	Max. 232 psi			
Flow indication	LED green, flow proportional flashing			
Degree of protection EN 60529	IP65 and IP67 (with attached cable socket)			
Electrical data				
Electrical connection	Plug connector M12 x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

Temperature limits



US version



Three different versions available:

- Frequency output (❶)
- Analogue output 4...20 mA and frequency output (❷)
- Analogue output 0...10 V and frequency output (❸)

Frequency output ❶	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 ❷	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. Burden	250 Ω against GND			

Analogue output 0...10 V ❸	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

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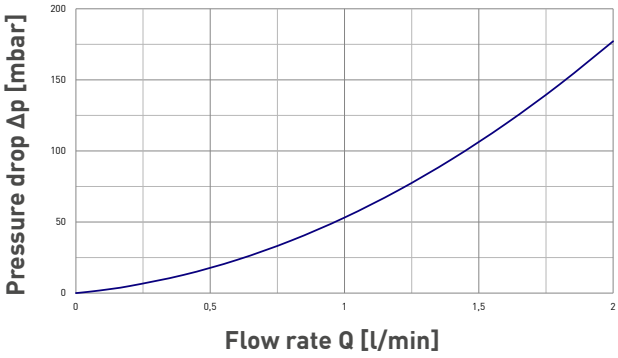
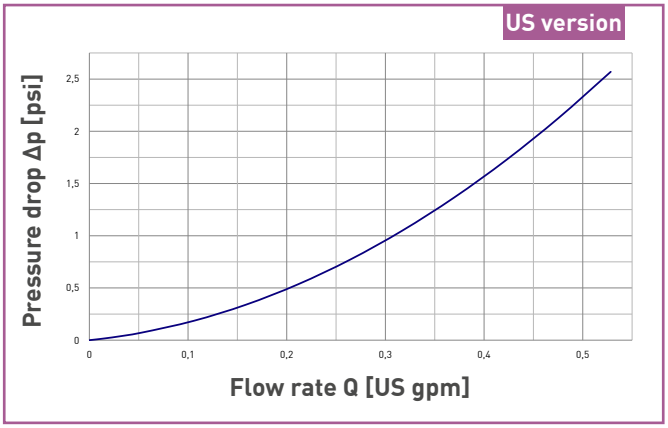
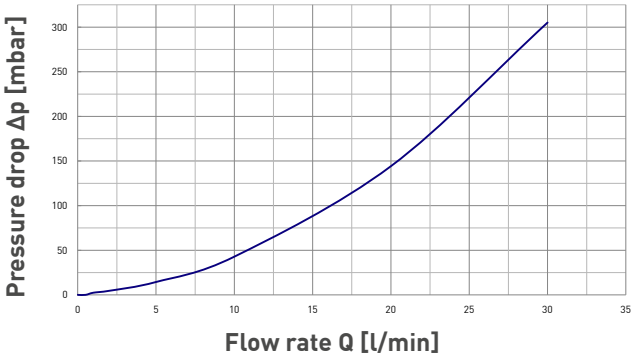
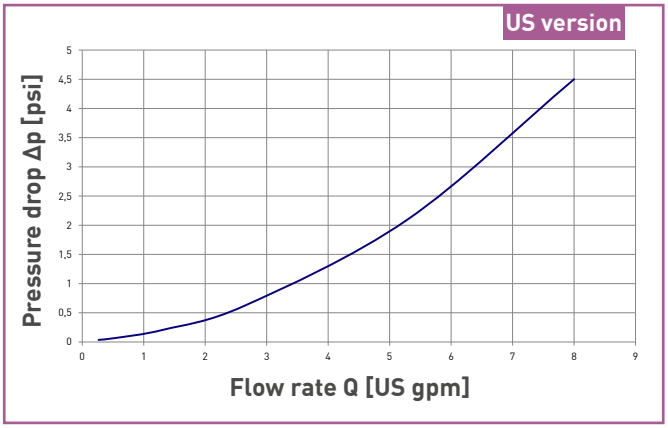
Typical pressure drop VMI02



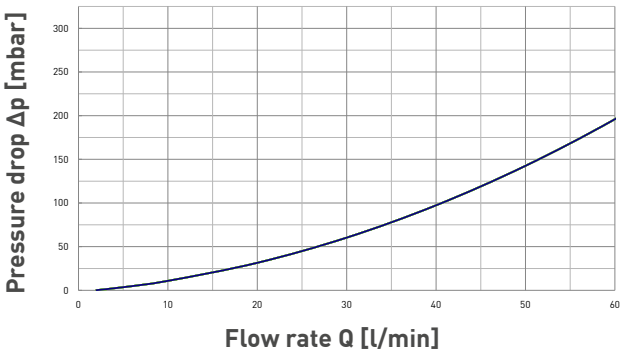


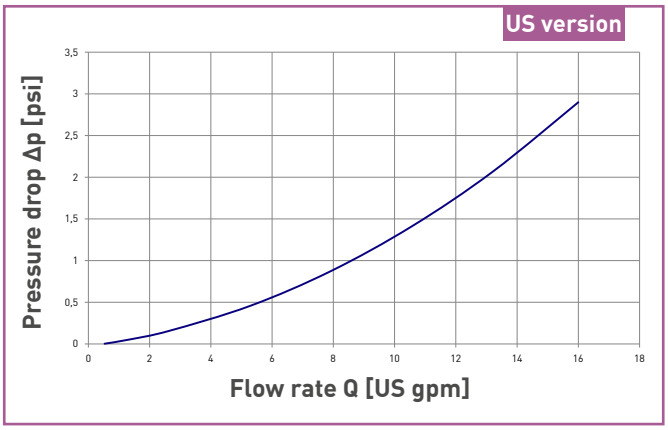
Typical pressure drop VMI07



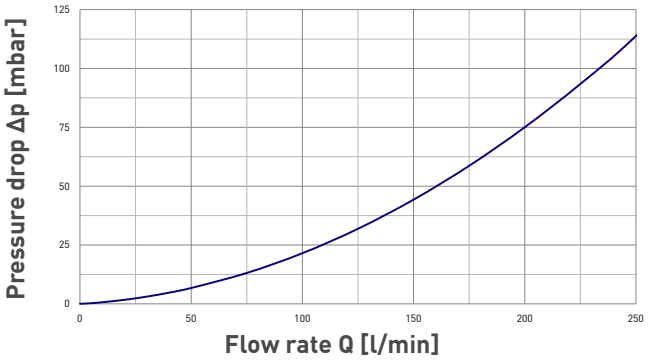


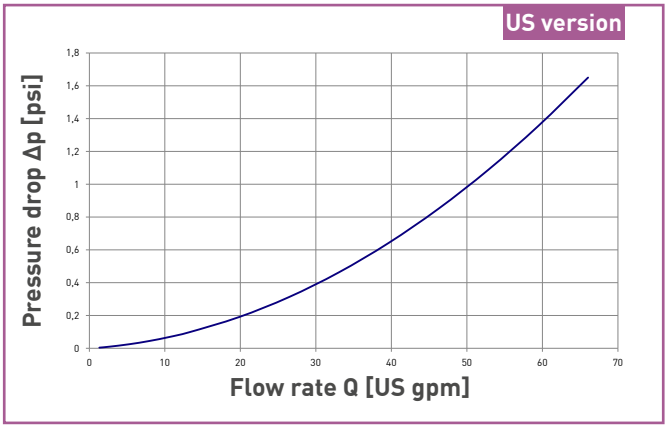
Typical pressure drop VMI10





Typical pressure drop VMI20





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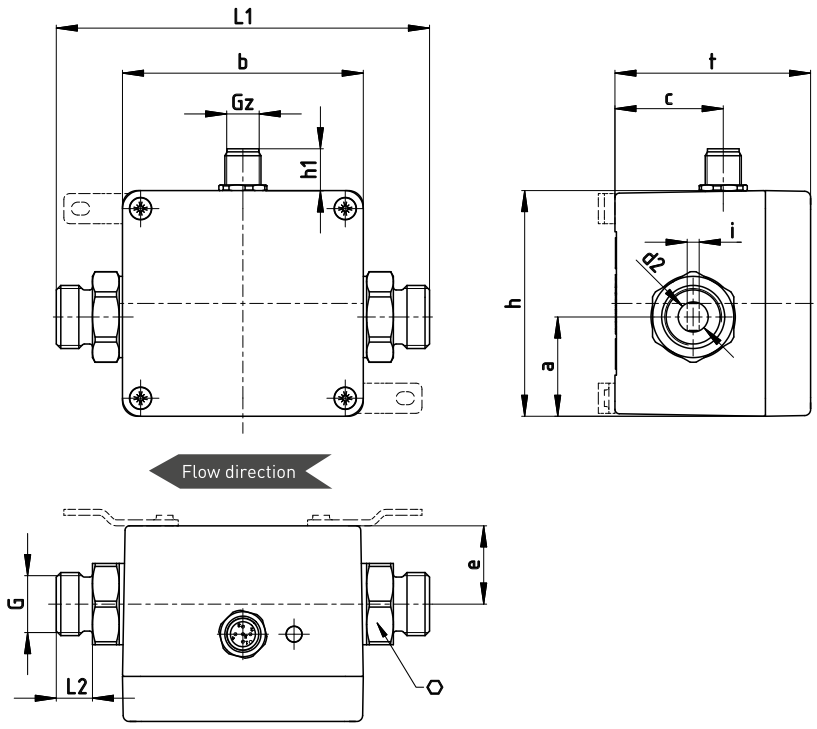
Dimensions (mm)



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	Ø 3	1.9	80	75	65	34	36	26	M12x1	14
07	124	12	G ½ A	27	Ø 10	4	80	75	65	33	36	26	M12x1	14
10	124	12	G ½ A	27	Ø 10	—	80	75	65	33	36	26	M12x1	14
10	124	12	G ¾ A	27	Ø 10	—	80	75	65	33	36	26	M12x1	14
20	140	18	G 1 A	36	Ø 20	—	80	75	65	35.5	36	29	M12x1	14

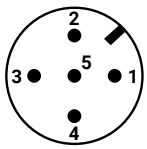
Dimensions (inch)														
VMI	**L1 ±0.5**	**L2 ±0.5**	**G**	⬡	**d2**	**i**	**b**	**h**	**t**	**a**	**c**	**e**	**Gz**	**h1**
02	5	0.61	¼ - 14 NPT	—	Ø 0.12	0.07	3.15	2.95	2.56	1.3	1.42	1.02	M12x1	0.55
07	5.04	0.55	½ - 14 NPT	—	Ø 0.4	0.16	3.15	2.95	2.56	1.3	1.42	1.02	M12x1	0.55
10	5.04	0.55	½ - 14 NPT	—	Ø 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	—	Ø 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	—	Ø 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.

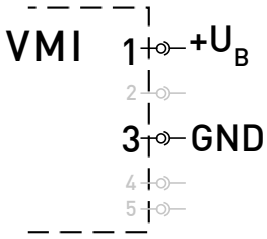


M12x1

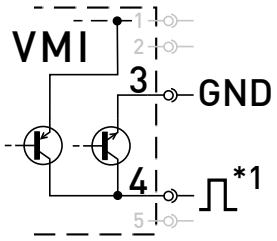
Possible pinout:
Pin 1: +UB
Pin 2: d. n. c. (do not connect) / Analogue U/I
Pin 3: GND
Pin 4: Frequency
Pin 5: n. c. (not connected)

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

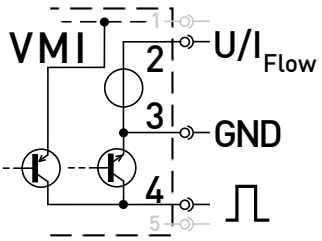
Supply voltage



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.

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Order code					
Type					
VMI	VMI				
Nominal diameter / Process connection					
DN 02 / G¼ 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 / G½ 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 / G½ 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 / G¾ 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**

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**

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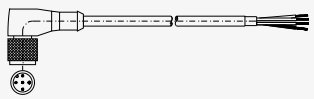
Accessories

Connection cable

Order code				
Accessories		**Length [m]**	**Length [ft]**	**Order number**
	Connection cable with 4-pin cable socket M12 x 1, angle type moulded lead, sheathing material PUR, shielded, (Tmax = 80 °C / 176 °F), UL-approval	3 m 5 m 10 m	10 16 33	XVT2053 XVT2009 XVT2070
	4 pin cable socket M12 x 1 angle type, unassembled			VT1331