# VMI induQ®

US version available

## VMI02

US version available

## VMI07

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

| Your advantages | |
|---|---|
| **Series** | **VMI** |
| | • Robust metal housing for high temperature and pressure<br>• Maintenance-free - no moving parts<br>• Frequency or analogue and frequency output<br>• Delivery inlcuding works calibration certificate |

| Type | VMI02 | VMI07 | VMI10 |
|---|---|---|---|
| **Characteristics** | | | |
| **Nominal diameter** | DN 2 | DN 7 | DN 10 |
| Nominal pipe size | 1/8" | 1/4" | 3/8" |
| **Process connection** | G¼-ISO 228 male | G½-ISO 228 male | G½-ISO 228 male or<br>G¾ -ISO 228 male |
| Process connection | ¼" NPT male | 1½" NPT male | ½" NPT male or<br>¾" NPT male |
| **Inner diameter [mm]** | 2 | 4 x 10 | 10 |
| Inner diameter [inch] | 0.08 | 0.4 x 0.16 | 0.4 |
| **Flow range [l/min]** | 0.0083...1 or 0.05...2 | 0.1...30 | 0.2...60 |
| Flow range [US gpm] | 0.0022...0.26 or 0.0133...0.53 | 0.027...8 | 0.053...16 |
| **Accuracy*** | ±2 % of range | ± (0.7 of reading + 0.3 of range) | |
| **Repeatability*** | 1 % | | |
| **Response time** | <500 ms | | |
| **Medium /<br>min. conductivity of medium** | Water and other conductive liquids /<br>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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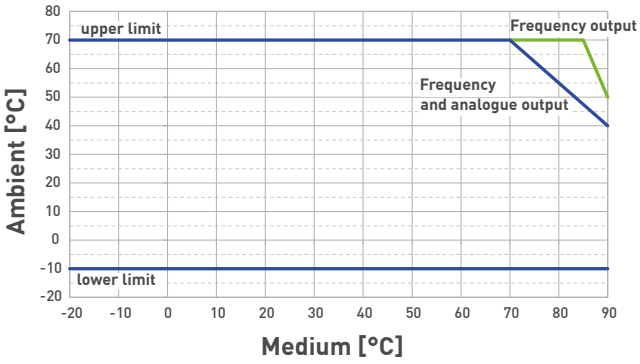
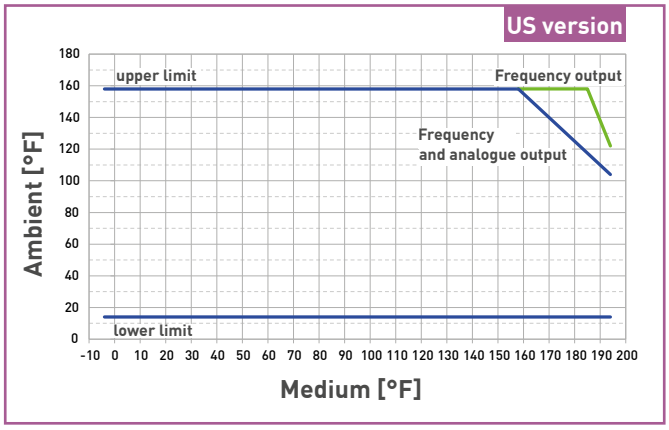
| Type | VMI02 | VMI07 | VMI10 |
|---|---|---|---|
| **Characteristics** | | | |
| **Pressure rating** | PN 16 | | |
| Pressure rating | Max. 232 psi | | |
| **Flow indication** | LED green, flow proportional flashing | | |
| **Degree of protection EN 60529** | IP65 and IP67 (with attached cable socket) | | |
| **Electrical data** | | | |
| **Electrical connection** | Plug connector M12 x 1 | | |
| **Power supply** | 12...24 VDC (±10 %) | | |
| **Current consumption** | ≤ 150 mA | | |
| **Approval** | | | |
| Pending: EU RO Mutual Recognition Type Approval Certificate (covers: ABS, BV, CCS, CRS, DNV GL, IRS, KR, LR, ClassNK, PRS, RINA, RS) | | | |

**Temperature limits**



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 |
|---|---|---|---|
| **Pulse rate [pulses/l]*** | 10,000<br>optional: 1...20,000 | 1,000<br>optional 1...2,000 | 500<br>optional 1...1,000 |
| Pulse rate [pulses/gallon] | 20,000<br>optional: 1...40,000 | 2,000<br>optional: 1...7,500 | 1,000<br>optional: 4...3700 |
| **Resolution [ml/pulse]*** | 0.1 | 1.0 | 2.0 |
| Resolution [gallons/pulse]* | 0.00005 | 0.0005 | 0.001 |
| **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 |
|---|---|---|---|
| **Scaling [l/min]**** | 0...1 or 0...2 | 0...30 | 0...60 |
| Scaling [US gpm]** | 0...0.26 or 0...0.53 | 0...8 | 0...16 |
| **Max. Burden** | 250 Ω against GND | | |

| Analogue output 0...10 V ❸ | VMI02 | VMI07 | VMI10 |
|---|---|---|---|
| **Scaling [l/min]**** | 0...1 or 0...2 | 0...30 | 0...60 |
| Scaling [US gpm]** | 0...0.26 or 0...0.53 | 0...8 | 0...16 |

* Factory configurable
** Other ranges available on request



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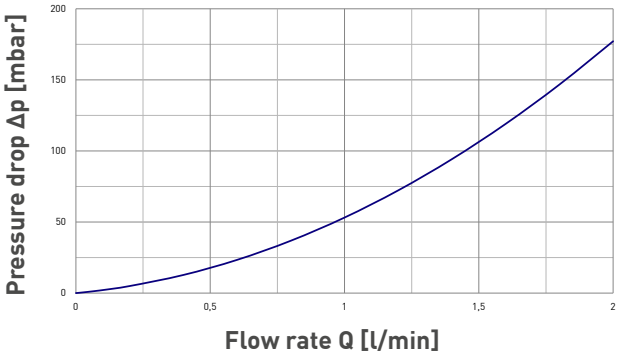
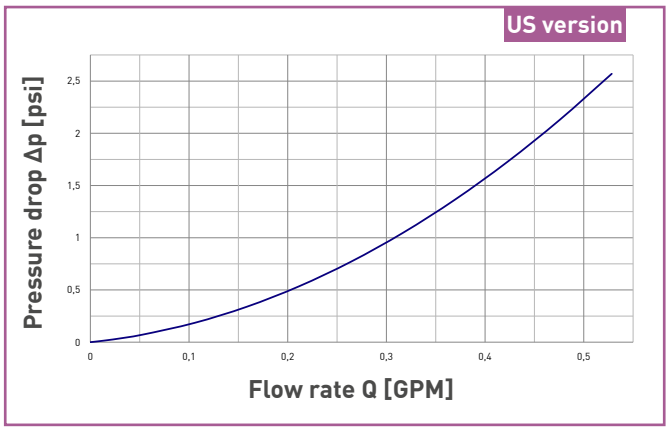
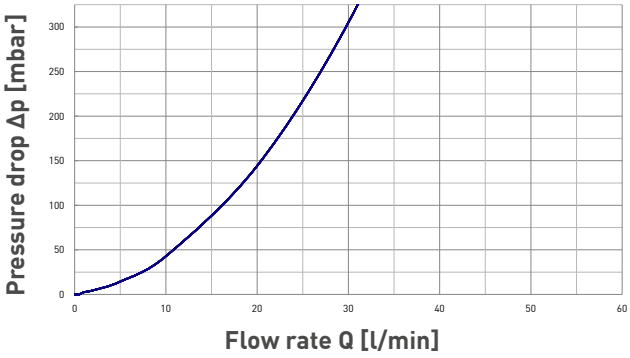
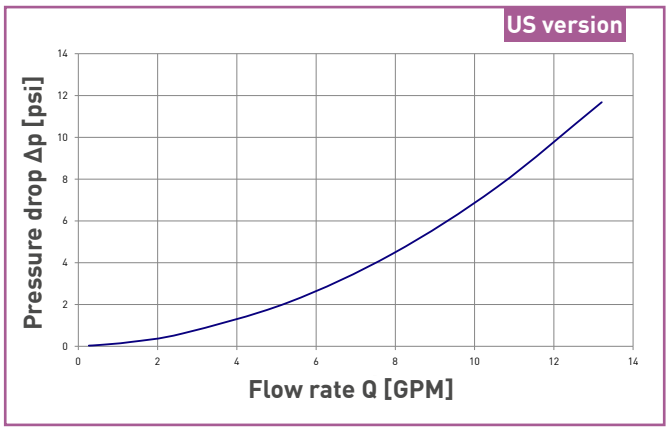
## Typical pressure drop VMI02



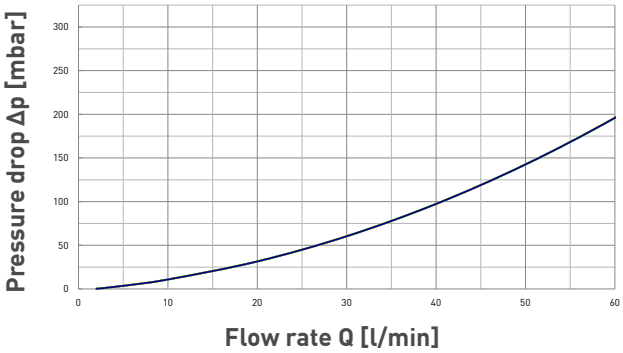



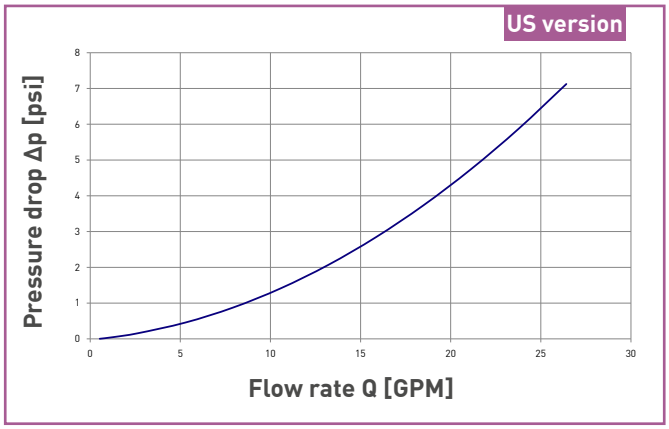

## Typical pressure drop VMI07



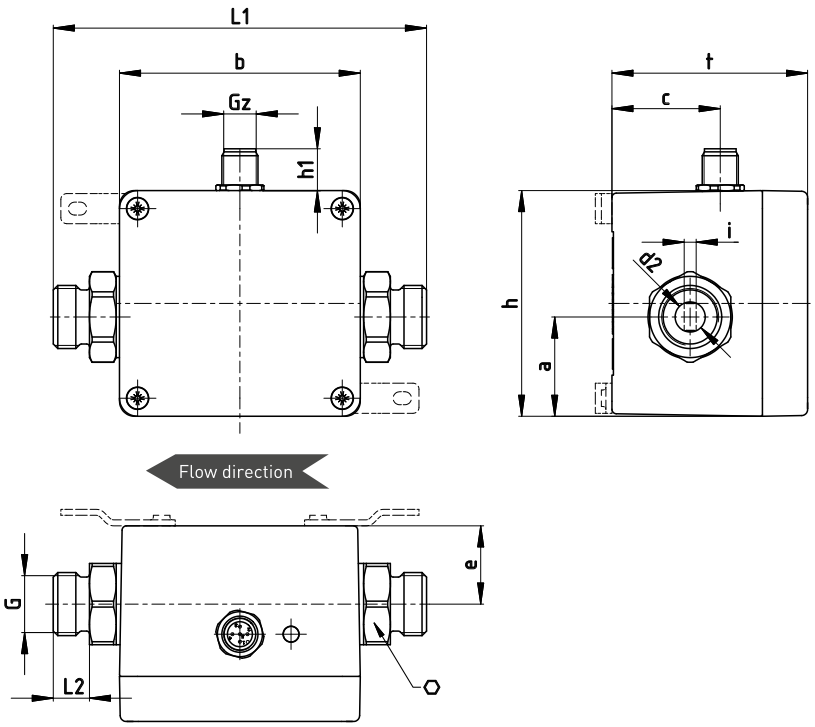




## Typical pressure drop VMI10



## 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 |

| 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 |

| 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 |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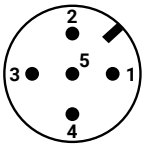
# Wirings

### Pinout

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

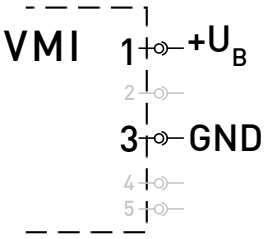



M12x1

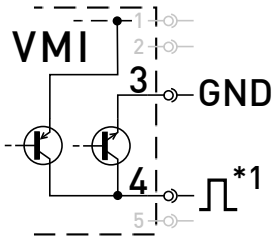
Possible pinout:
Pin 1: +UB
Pin 2: d. n. c. (do not connect) / Analogue U/I
Pin 3: GND
Pin 4: Frequency
Pin 5: n. c. (not connected)

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

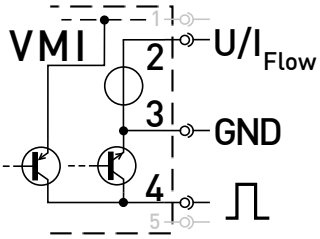
### Supply voltage




### 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.

| 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 | | | 0YGX000 |
| | 0.05...2 l/min | 02A | | | 0YGX001 |
| Frequency signal and analogue signal 4...20 mA | 0...1 l/min | 02A | | | 0YGI000 |
| | 0...2 l/min | 02A | | | 0YGI001 |
| Frequency signal and analogue signal 0...10 V | 0...1 l/min | 02A | | | 0YGU000 |
| | 0...2 l/min | 02A | | | 0YGU001 |
| **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 Außengewinde** | | | | | |
| **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 |
| **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** |



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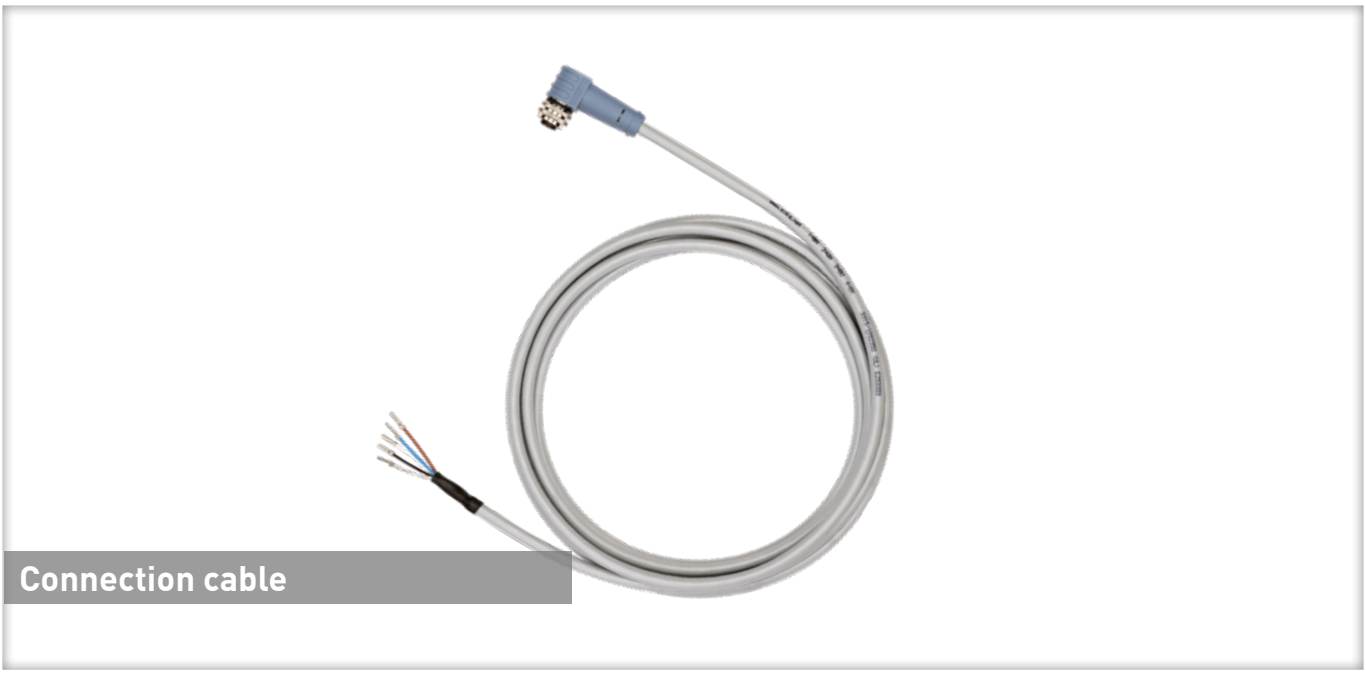
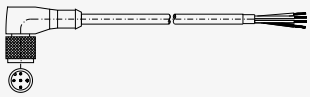
| Order code | | | | | |
|---|---|---|---|---|---|
| **Type** | | | | | |
| VMI | VMI | | | | |
| **Nominal diameter / Process connection** | | | | | |
| **DN 02 / ¼" NPT male** | | | | | |
| **Output signals** | **corresponds to flow rate** | | | | |
| Frequency signal | 0.0022...0.26 gpm | 02B | | | 0YGX200 |
| | 0.0133...0.53 gpm | 02B | | | 0YGX201 |
| Frequency signal and analogue signal 4...20 mA | 0...0.26 gpm | 02B | | | 0YGI200 |
| | 0...0.53 gpm | 02B | | | 0YGI201 |
| Frequency signal and analogue signal 0...10 V | 0...0.26 gpm | 02B | | | 0YGU200 |
| | 0...0.53 gpm | 02B | | | 0YGU201 |
| **DN 07 / ½" NPT male** | | | | | |
| **Output signals** | **corresponds to flow rate** | | | | |
| Frequency signal | 0.027...8 gpm | 07B | | | 0YGX200 |
| Frequency signal and analogue signal 4...20 mA | 0...8 gpm | 07B | | | 0YGI200 |
| Frequency signal and analogue signal 0...10 V | 0...8 gpm | 07B | | | 0YGU200 |
| **DN 10 / ½" NPT male** | | | | | |
| **Output signals** | **corresponds to flow rate** | | | | |
| Frequency signal | 0.053...16 gpm | 10B | | | 0YGX200 |
| Frequency signal and analogue signal 4...20 mA | 0...16 gpm | 10B | | | 0YGI200 |
| Frequency signal and analogue signal 0...10 V | 0...16 gpm | 10B | | | 0YGU200 |
| **DN 10 / ¾" NPT male** | | | | | |
| **Output signals** | **corresponds to flow rate** | | | | |
| Frequency signal | 0.053...16 gpm | 10F | | | 0YGX200 |
| Frequency signal and analogue signal 4...20 mA | 0...16 gpm | 10F | | | 0YGI200 |
| Frequency signal and analogue signal 0...10 V | 0...16 gpm | 10F | | | 0YGU200 |
| **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




| 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<br>5 m<br>10 m | 10<br>16<br>33 | XVT2053<br>XVT2009<br>XVT2070 |
| | 4 pin cable socket M12 x 1 angle type, unassembled | | | VT1331 |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