

Product Information

Flow Transmitter / Screw Volumeter VHS



- Measures and monitors viscous media (oil) 1.4..2500 l/min
- Connection G 1..G 2¹/₂
- Very low dependence on viscosity
- Can be used up to 40,000 mm²/s (cSt)
- Linear frequency output (push-pull)
- Light and compact device (aluminium housing)
- Operation and measurement possible with forwards and reverse flow
- For cost-sensitive applications

Characteristics

The VHS flow transmitter measures the flow using the volumetric principle, and is suitable for fluid, viscous, lubricant media (e.g. lubricating oil). If the material for the VHS is selected appropriately, aqueous fluids such as soaps, pastes, and emulsions with non-abrasive characteristics can also be measured, as long as they have sufficient lubricity. Because of the volumetric functioning principle, the device is almost completely independent of viscosity. The VHS system consists of two interlacing screws which run in opposite directions, driven by the flowing medium. A magnetically pre-tensioned Hall sensor positioned outside the flow space detects the screw flanks, and creates a frequency signal proportional to the flow. Here, two pulses correspond to one revolution of the screws, and therefore to a specific measured volume (see data table) There are no magnets in the flow space. A push-pull transistor output, an A / B output or a two wire output are available as signal output. The push-pull output can as desired be switched as a PNP or an NPN output, and emits a frequency proportional to the flow rate.

The A / B output consists of two push-pull outputs, whose signals are phase-shifted by 90°. This makes it possible to determine the direction of flow using the bidirectionally driven sensor.

The 2 wire model represents the pulse as two different currents, and has the advantage of reduced wiring effort. Alternatively, it is possible to use add-on electronics with signal processing, in the series OMNI, FLEX and LABO.

The device bodies are made of aluminium, and the connections either of aluminium (achieves PN 160 bar) or steel (achieves PN 350 bar). Optionally, both process connections can be fitted with SAE flanges, which simplify the installation in the pipework, and in both cases achieve a pressure resistance of PN 350.

Technical data

| | | | |
|--|--|--|---------------|
| Sensor | screw volumeter | | |
| Nominal width | DN 25..65 | | |
| Process connection | female thread G 1..G 2 ¹ / ₂ | | |
| Metering ranges | see table "Ranges" | | |
| Measurement accuracy | ±1 % of the measured value (at 20 mm ² /s, (cSt) of 1 %..100 % nominal working range (see also diagram in upstream pages) | | |
| Repeatability | ±0,25 % | | |
| Pressure resistance | Connection material | SAE flange | PN bar |
| | aluminium | without | 160 |
| | aluminium | with | 350 |
| | steel | without | 350 |
| | steel | with | 350 |
| | others available on request | | |
| Pressure loss | see diagrams in upstream pages | | |
| Medium | oil or non-aggressive self-lubricating fluids | | |
| Medium temperature | -25..+80 °C (150 °C available on request) | | |
| Materials medium-contact | (special materials available on request): | | |
| | | | |
| 1. Body 2. Connections: 3. Main screw 4. Subsidiary screw 5. Ball bearing 6. Ball bearing 7. Screws 8. O-ring 9. Seeger ring 10. Seeger ring 11. O-ring 12. SAE connection 13. SAE flange 14. O-ring 15. Screws 16. Sensor spacer | Aluminium 6082 anodised | | |
| | Aluminium 6082 anodised or steel | | |
| | Steel 35SMnPb10 UNI 4838-80 | | |
| | GHISA GJL-250 EN1561 | | |
| | Steel | | |
| | Steel | | |
| | Galvanised steel | | |
| | NBR | | |
| | Steel | | |
| | Steel | | |
| | NBR | | |
| | ASTM A216WCB | | |
| | ASTM A216WCB | | |
| | NBR | | |
| | Galvanised steel | | |
| | Aluminium 6082 anodised | | |
| 3 wire or A / B-output | Supply voltage | 10..30 V DC | |
| | Curr. consumpt. | approx. 20 mA without load | |
| | Signal output | Transistor output "push-pull" (resistant to short circuits and reversed polarity protected) I _{out} = 100 mA max. | |

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|--------|----------------|--------------|---------------|--------------------------|
| 2 wire | Supply voltage | 4.5..24 V DC | Signal output | Low: 7 mA High: 14 mA |
|--------|----------------|--------------|---------------|--------------------------|

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| | |
|-----------------------------|-----|
| Reversed polarity protected | yes |
|-----------------------------|-----|

| | |
|-----------------------|---|
| Electrical connection | plug DIN 43650-A / ISO 4400 or for round plug connector M12x1, 4-pole |
| Ingress protection | IP 67 |
| Weight | see table "Ranges and weights" |
| Conformity | CE |

Ranges and weights

● = Standard ○ = Option

| G | DN | | Metering range 1..100 % Q _{nom} l/min | Volume / pulse cm ³ | pulses / litre | Output frequency at Q _{nom} Hz | Output frequency at Q _{max} Hz | Types | Q _{max} recommended l/min |
|---------------------------------|-------|---|--|-----------------------------------|----------------|--|--|----------------|---------------------------------------|
| G 1 | DN 25 | ● | 1.4.. 140 | 13.10 | 76.340 | 178.1 | 254.5 | VHS-025...0140 | 200 |
| G 1 ¹ / ₄ | DN 32 | ● | 3.5.. 350 | 29.00 | 34.480 | 201.1 | 287.4 | VHS-032...0350 | 500 |
| G 1 ¹ / ₂ | DN 40 | ○ | 5.5.. 550 | 48.58 | 20.590 | 188.7 | 274.5 | VHS-040...0550 | 800 |
| | | ● | 8.0.. 800 | 72.00 | 13.890 | 185.2 | 277.8 | VHS-040...0800 | 1200 |
| G 2 | DN 50 | ○ | 10.0..1000 | 103.63 | 9.650 | 160.6 | 257.3 | VHS-050...1000 | 1600 |
| | | ● | 15.0..1500 | 133.00 | 7.519 | 188.0 | 275.7 | VHS-050...1500 | 2200 |
| G 2 ¹ / ₂ | DN 65 | ● | 25.0..2500 | 238.82 | 4.187 | 174.5 | 265.2 | VHS-065...2500 | 3800 |

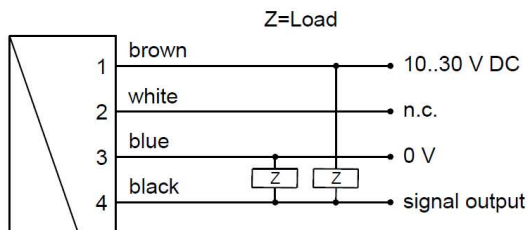
| G | DN...range | | Body with aluminium connections kg | Body with steel connections kg | SAE Flanges (Weight per pair) kg |
|---------------------------------|------------|---|---------------------------------------|-----------------------------------|--|
| G 1 | 025...0140 | ● | 3.44 | 4.76 | 5.76 |
| G 1 ¹ / ₄ | 032...0350 | ● | 6.35 | 8.50 | 9.55 |
| G 1 ¹ / ₂ | 040...0550 | ○ | 10.50 | 13.60 | 15.10 |
| | 040...0800 | ● | 14.20 | 18.50 | 18.80 |
| G 2 | 050...1000 | ○ | 20.70 | 27.70 | 30.30 |
| | 050...1500 | ● | 25.00 | 33.20 | 34.60 |
| G 2 ¹ / ₂ | 065...2500 | ● | 42.70 | 56.10 | 60.70 |

Wiring

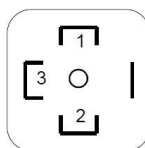
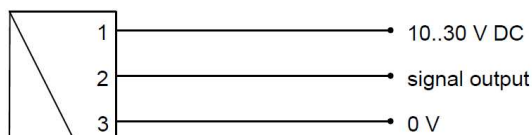
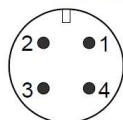
Before the electrical installation, it must be ensured that the supply voltage corresponds with the data sheet.
 The use of shielded cabling is recommended.

with plug as per DIN 43650-A / ISO 4400

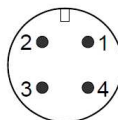
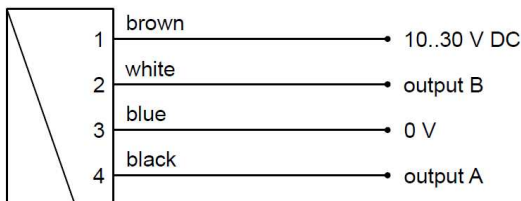
Push-pull output
 with 4-pole round plug connector



Connection example: PNP NPN



A / B output
 only with 4-pole round plug connector

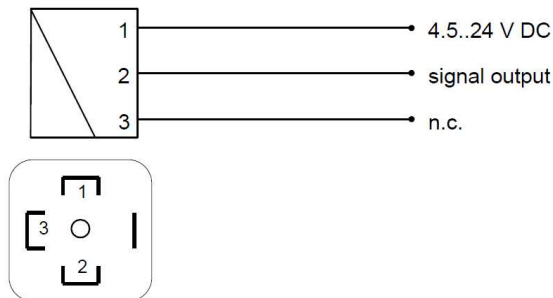
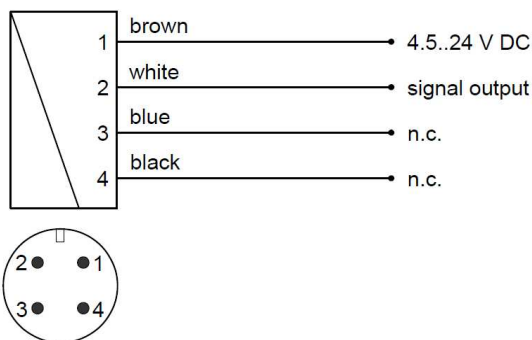


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2 wire model
 with 4-pole round plug connector

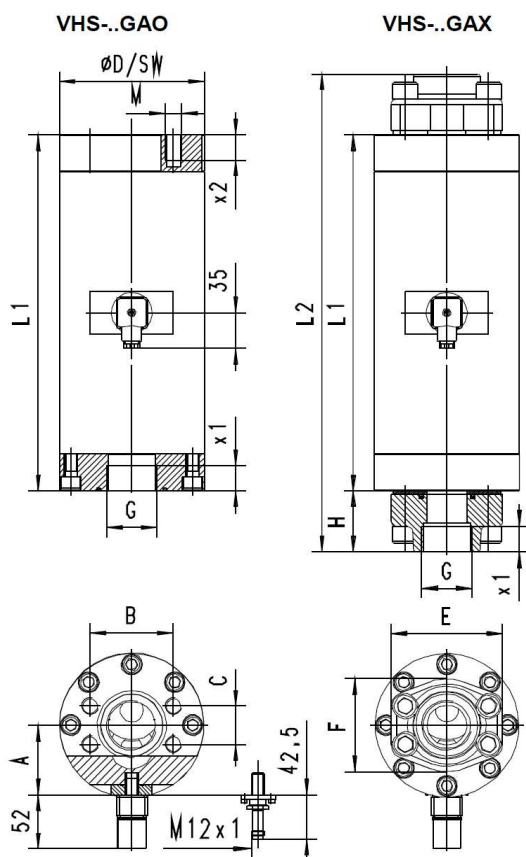
with plug as per DIN 43650-A / ISO 4400



Dimensions

● = Standard ○ = Option

| | | | | | | | VHS-...GAO... | | | | VHS-...GAX... | | | |
|---------|------------|------|-----|-----|----|------|---------------|----|-------|------|---------------|----|-----|-----|
| G | DN...range | x1 | L1 | ØD | SW | A | M | x2 | B | C | L2 | H | E | F |
| G 1 | 025...0140 | ● 20 | 220 | 88 | 78 | 49.0 | 12 | 20 | 57.1 | 27.8 | 324 | 52 | 80 | 69 |
| G 1/4 | 032...0350 | ● 22 | 285 | 103 | - | 55.0 | 14 | 22 | 66.7 | 31.6 | 381 | 48 | 94 | 77 |
| G 1/2 | 040...0550 | ○ 24 | 332 | 122 | - | 58.8 | 16 | 24 | 79.4 | 36.5 | 448 | 58 | 106 | 89 |
| | 040...0800 | ● | 340 | 138 | - | 66.5 | | | | | 456 | | | |
| G 2 | 050...1000 | ○ 33 | 396 | 155 | - | 71.0 | 20 | 35 | 96.8 | 44.4 | 544 | 74 | 135 | 116 |
| | 050...1500 | ● | 405 | 168 | - | 77.3 | | | | | 553 | | | |
| G 2 1/2 | 065...2500 | ● 35 | 475 | 203 | - | 86.0 | 24 | 42 | 123.8 | 58.7 | 633 | 79 | 166 | 150 |



SAE adapter for convenient installation and for increased stability to pressure! (350 bar)

Handling and operation

Installation

Any flow direction is possible during installation. Ensure that pipework is clean. Flush before installation. A filter with 30 µm mesh filter should be used. The use of SAE flanges enables the sensor to be installed and removed more easily, and increases the stability to pressure to 350 bar for every connection material. It is possible to replace the electronics during operation, and this presents no danger to the fitter. The sensor does not go into the flow space.

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Product Information

Ordering code

VHS - 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

 G A N

○=Option

| | | |
|---------------------------------|--|---|
| 1. Nominal width | | |
| 025 | DN 25 - G 1 | |
| 032 | DN 32 - G 1 ^{1/4} | |
| 040 | DN 40 - G 1 ^{1/2} | |
| 050 | DN 50 - G 2 | |
| 065 | DN 65 - G 2 ^{1/2} | |
| 2. Process connection | | |
| G | female thread | |
| 3. Connection material | | |
| A | AL connection, anodised (160 bar, in combination with SAE flange: 350 bar) | |
| S ○ | Connection, steel (350 bar) | |
| 4. Additional flange | | |
| X | SAE flange, steel (350 bar) | |
| O | no SAE flange (pressure resistance depends on the connection material) | |
| 5. Body material | | |
| A | anodised aluminium | |
| 6. Metering range | | |
| 0140 | 1.4.. 140 l/min | ● |
| 0350 | 3.5.. 350 l/min | ● |
| 0550 ○ | 5.5.. 550 l/min | ● |
| 0800 | 8.0.. 800 l/min | ● |
| 1000 ○ | 10.0..1000 l/min | ● |
| 1500 | 15.0..1500 l/min | ● |
| 2500 | 25.0..2500 l/min | ● |
| 7. Seal material | | |
| N | NBR | |
| V ○ | FKM | |
| 8. Signal output | | |
| M | push-pull transistor output | |
| A ○ | A / B output (2 x push-pull) | |
| Z ○ | 2 wire | |
| 9. Electrical connection | | |
| B | plug DIN 43650-A / ISO 4400 | |
| S ○ | for round plug connector M12x1, 4-pole | |
| 10. Option | | |
| H ○ | high temperature model only for M12x1 Plug, electronics recessed by 30 cm | |

Accessories

- Cable/round plug connector (KB...)
see additional information "Accessories"

Accessories

- External counter EEZ-904
- External counter OMNI-C (panel-mounting IP 67)
- External display / converter OMNI-TA (panel-mounting IP 67)
- External display / converter OMNI-REMOTE (panel-mounting IP 67)

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