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Compact evaluation unit for speed monitoring/Screw Volumetr VHS

- Measures and monitors viscous media (oil) 1.4..2500 l/min
- Connection G 1..G 2 1/2
- Very low dependence on viscosity
- Can be used up to 40,000 mm²/s (cSt)
- Light and compact device (aluminium housing)
- For cost-sensitive applications

Characteristics

The VHS flow transmitter measures the flow using the volumetric principle, and is suitable for fluid, viscous, lubricant media.
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.
The device bodies are made of aluminium, and the connections

either of aluminium (achieves PN 160 bar) or steel (achieves PN 350 bar)

Used electronics UNI-F-DA converter input signal in the following output:

- Analog signal 0/4 – 20 mA
- Analog signal 0 – 10 V
- Frequency signal 0 .. 2000Hz
- Impulse about the volume of flowing liquid
- Swith output

Sensor with switching output push/pull, pnp, npn.
Set by parameter.

Specifications

Sensor	screw volumeter
Nominal width	DN 25..65
Process connection	female thread G 1..G 21/2
Accuracy	±1 % of the measured value at 20 mm²/s, (cSt) of 1 %..100 % nominal working range
Pressure resistance	160, bar with SAE flange 350 bar.
Operating temperature	-25..+80 °C
Storage temperature	-25 .. +80°C
Materials	Aluminium 6082 ,Steel 35SMnPb10 UNI 4838-80, GHISA GJL-250 EN1561,NBR
Power supply	15 .. 30 V DC
Power requirement	< 1 W (for no-load output)
Output data	all outputs are resistant to short circuits and reversal polarity protected
Current output:	0/4 .. 20 mA
Voltage output:	0 .. 10 V or 0 .. 5V
Frequency output	0 .. 2000 Hz Push/pull, pnp, npn. Iout = 200 mA max.
Swich ouptut	Push/pull, pnp, npn. Iout = 200 mA max.
Puls output	Push/pull, pnp, npn. Iout = 200 mA max.
Display	Yellow LCD shows Operating voltage/Output status
Electrical connection	for round plug connector M12x1, 4pole
Ingress protection	IP 67
Conformity	CE

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Range and weights

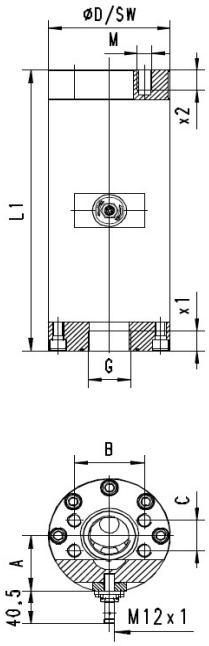
G	DN		Metering range 1..100 % Q_{nom} l/min	Volume / pulse cm³	pulses / litre	Output frequency at Q_{nom} Hz	Output frequency at Q_{max} Hz	Types	Q_{max} recommended l/min
G 1	DN 25	●	1.4.. 140	13.10	76.340	178.1	254.5	VHS-025...0140	200
G 1¼	DN 32	●	3.5.. 350	29.00	34.480	201.1	287.4	VHS-032...0350	500
G 1½	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 2½	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 1¼	032...0350	●	6.35	8.50	9.55
G 1½	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 2½	065...2500	●	42.70	56.10	60.70

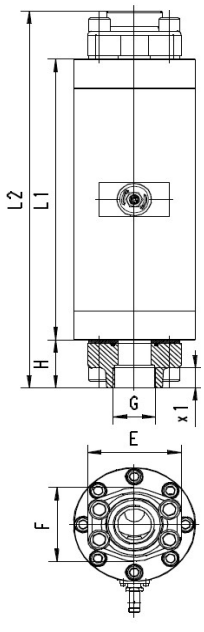
● = Standard ❍ = Option

								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 1¼	032...0350	●	22	285	103	-	55.0	14	22	66.7	31.6	381	48	94	77
G 1½	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 2½	065...2500	●	35	475	203	-	86.0	24	42	123.8	58.7	633	79	166	150

VHS-..GAO



VHS-..GAX



Any flow direction is possible during installation. Ensure that pipework is clean. Flush before installation. A 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.

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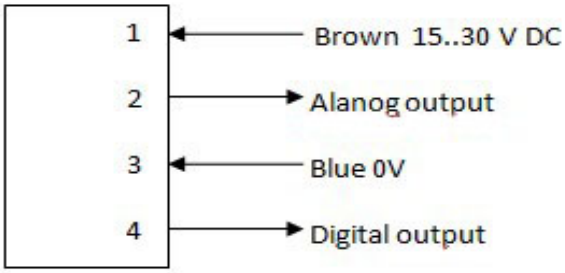
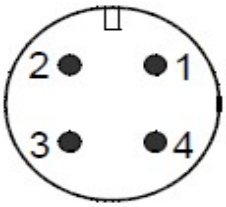
Wiring



Connection



It is recommended to use shielded wiring.

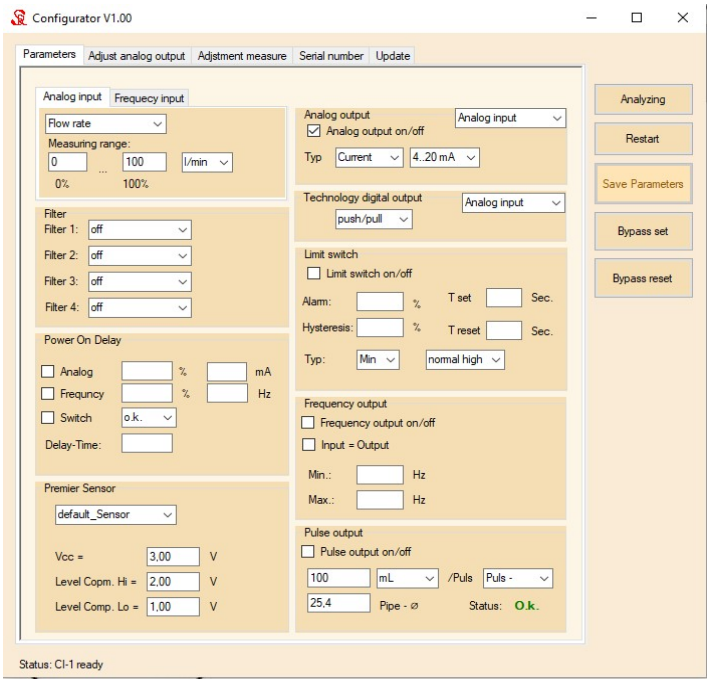
The push-pull output of the frequency, swith or pulse output version can as desired be switched as PUSCH/PULL a PNP or an NPN output.

The magnetic field sensor reacts to magnetic fields of both polarities perpendicular to the end face.

Note

The CI-1 device configurator with associated software is available as a convenient option for programming all parameters by PC, and for adjustment.

Programming

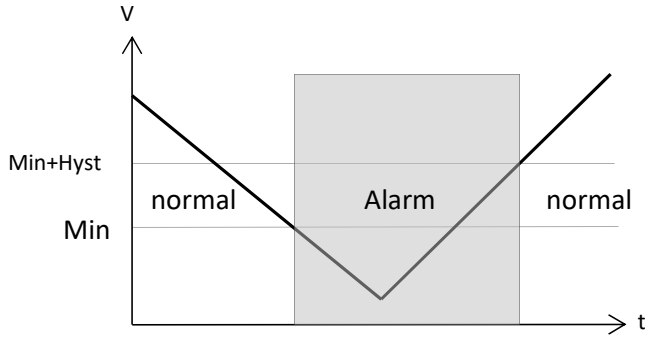


Interface CI-1

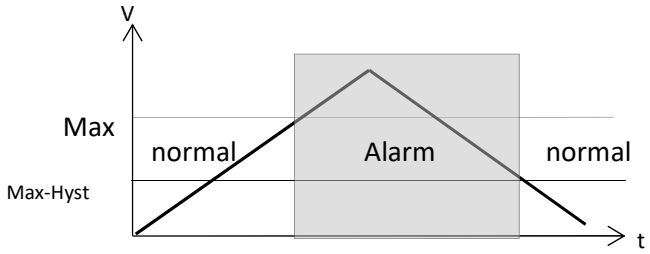
Swith output

The limit switch can be used to monitor minimal or maximal.

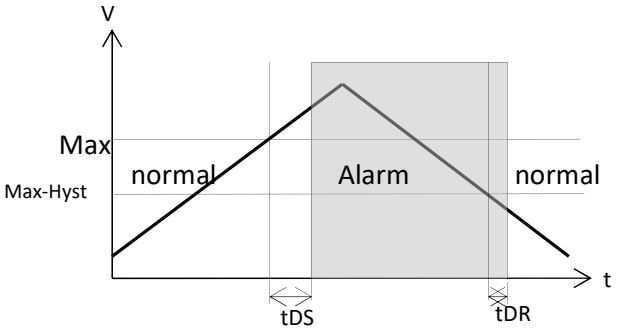
With a minimum-switch, falling below the limit value causes
a switchover to the alarm state. Return to the normal state occurs
when the limit value plus the set hysteresis is once more exceeded.



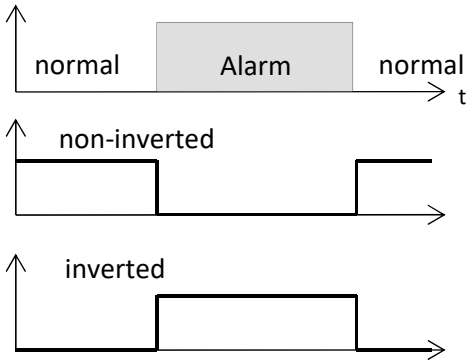
With a maximum-switch, exceeding the limit value causes
a switchover to the alarm state. Return to the normal state occurs
when the measured value once more falls below the limit value
minus the set hysteresis.



A changeover delay time (tDS) can be applied
to switching to the alarm state. Equally, one switch-back delay time (tDR)
of several can be applied to switching back to the normal state.



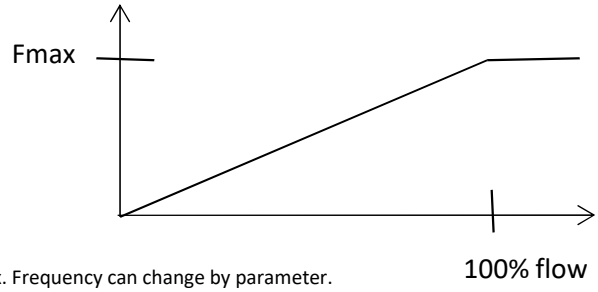
In the normal state the integrated LED is on, in the alarm state it is off,
and this corresponds to its status when there is no supply voltage
In the non-inverted (standard) model, while in the normal state
the switching output is at the level of the supply voltage;
in the alarm state it is at 0 V, so that a wire break would also display
as an alarm state at the signal receiver.
Optionally, an inverted switching output can also be provided,
i.e. in the normal state the output is at 0 V, and in the alarm state
it is at the level of the supply voltage.



Power-On-Delay for swith output

A Power-On-Delay function (ordered as a separate option) makes
it possible to maintain the switching output in the normal state
for a defined period after application of the supply voltage.

Frequency output



Max. Frequency can change by parameter.
Settings area 0 .. 2000 Hz
The frequency output can be configured so that the signal from
the primer sensor is reproduced 1: 1.
This makes it much more convenient to position
the sensor in the mechanical block.

Power-On-Delay for frequency output

A Power-On-Delay function (ordered as a separate option) makes
It is possible to have the frequency output with a fixed frequency
for a defined period after application of the supply voltage.

Pulse output

Pulse width 10 ms

Pulse per volume should be specified.

Min. Pulse value = max. Flow rate in sec. / 50

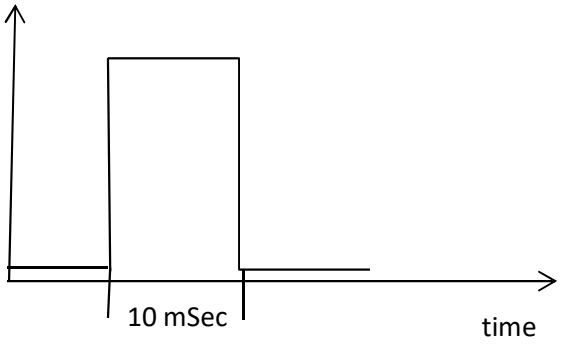
For example:

Flow max = 100 L / min

or Flow max = 100/60 = 1.6 (6) L / sec

Min. pulse per volume = 1,6(6)/50 = 0.03(3) L or ca. 34 mLiter

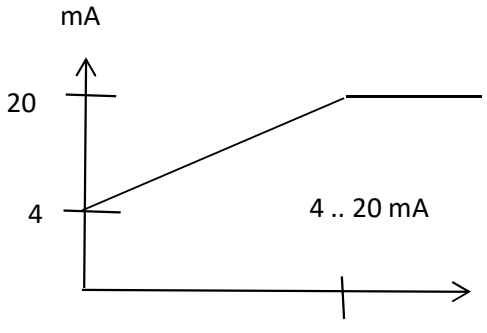
Configurator software checks parameters for pulse and outputs message "O.k." or "Error."

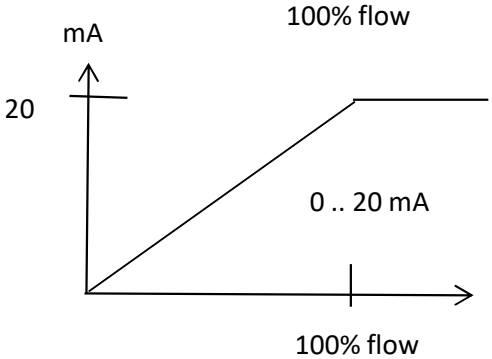


Software "Configurator" converter Input of parameters and helps with settings.

Current output

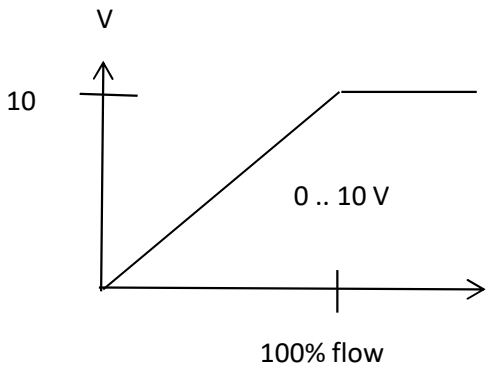
The current output can be operated as 4 .. 20 mA or 0 .. 20 mA





Voltage output

The voltage output can be operated as 0 .. 10V or 0 ..5 V.



Power-On-Delay for analog output

A Power-On-Delay function (ordered as a separate option) makes

It is possible to have the analog output with a fixed value

for a defined period after application of the supply voltage.

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Ordering code

VHS - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8

1. 025 - DN25-G1
   032 - DN32-G1 1/4
   040 - DN40-G1 1/2
   050 - DN50 - G2
   065 - DN - G2 1/2
2. Additional flange
   0 - no SAE flange
   1 - with SAE flange
3. 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
4. S -Swith output
   F - Frequency output
   P - Pulse output
5. at swith output 4 digit number of limit value
   000,0 .. 100,0 %
   at swith frequency 4 digit number of max. frequency
   0000 .. 2000
   at pulse output 4 digit number of pulse per volume
   0000 .. 9999
6. Only for pulse output: unit
   1 m^3
   2 L
   3 mL
7. I - Current output
   U - Voltage output
8. at current output 2 digit number
   04 - 4 ..20 mA
   00 - 0 .. 20 mA
   at votage output 2 digit number
   10 - 0 ..10 V
   05 - 0..5V