VSD

Design and applications

The VSD flow meter is used to monitor the volume flow of liquids such as water or oil. Each device is calibrated to meet the customer's specific needs and is given a scale to match the medium being measured.
In the measuring cylinder, a spring-loaded piston plate, is attached to a push rod. The piston plate moves upwards according to the flow rate. A break-proof magnetic coupling transmits the movement to an external pointer.

The standard indicator is designed as a round stainless steel housing with bayonet lock and can be optionally equipped with limit switches.

- **no power requirement for indication**
- **for water, oils and liquids**
- **vertical or horizontal installation**
- **spring-loaded measuring piston**
- **display 360° rotatable**
- **wetted parts made of stainless steel**
- **optionally**
  - **limit value switches**

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Version 1.0

Type series

VSD NG ...	for installation in valve blocks
VSD Gi ...	with female thread connection
VSD-IK1 ...	Indicator with one inductive limit value switch
VSD-IK2 ...	Indicator with two inductive limit value switches
VSD-IKS1 ...	Indicator with one electronic limit value switch
VSD-IKS2 ...	Indicator with two electronic limit value switches
VSD-RK1 ...	Indicator with one reed limit value switch
VSD-RK2 ...	Indicator with two reed limit value switches

Materials

Measuring cylinder	Wetted internal parts	Wetted gasket [1]	NG
1.4571	1.4571	FKM	28 - 65
Indicator			
scale casing	stainless steel 1.4301		
pointer	aluminium painted		
scale	aluminium coated		
screen	PC, optionally glass		

[1] other materials on request

Technical Data

Measuring accuracy	5 % FS
Scale	in physical units, z. B.: l/h, m³/h [1]
Measuring range	min. 1:10
Pressure resistance	10 bar
Max. ambient temperature	70°C
Max. media temperature	75°C
Degree of protection, indicator part	IP66

[1] other units on request

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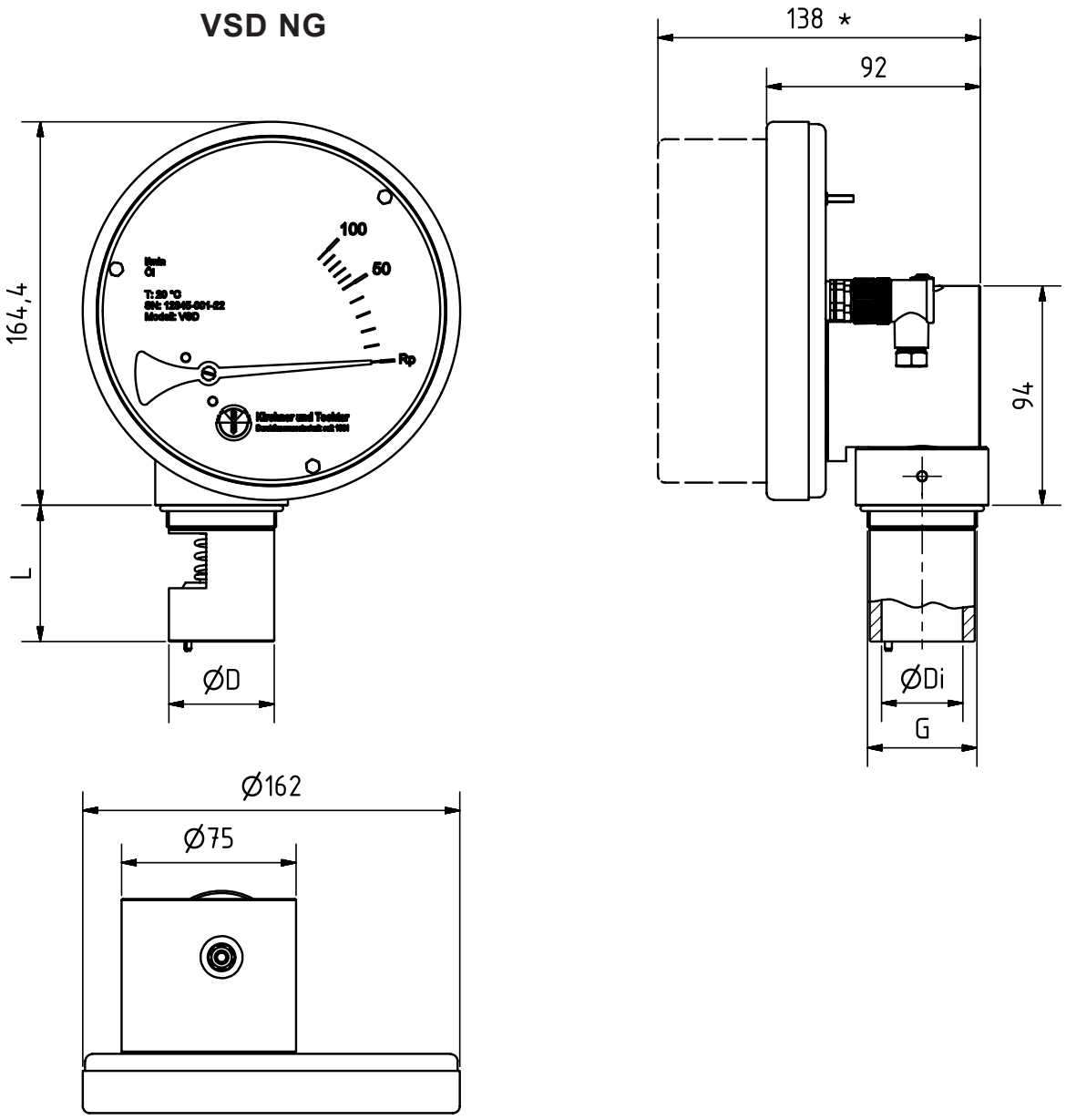
VSD NG

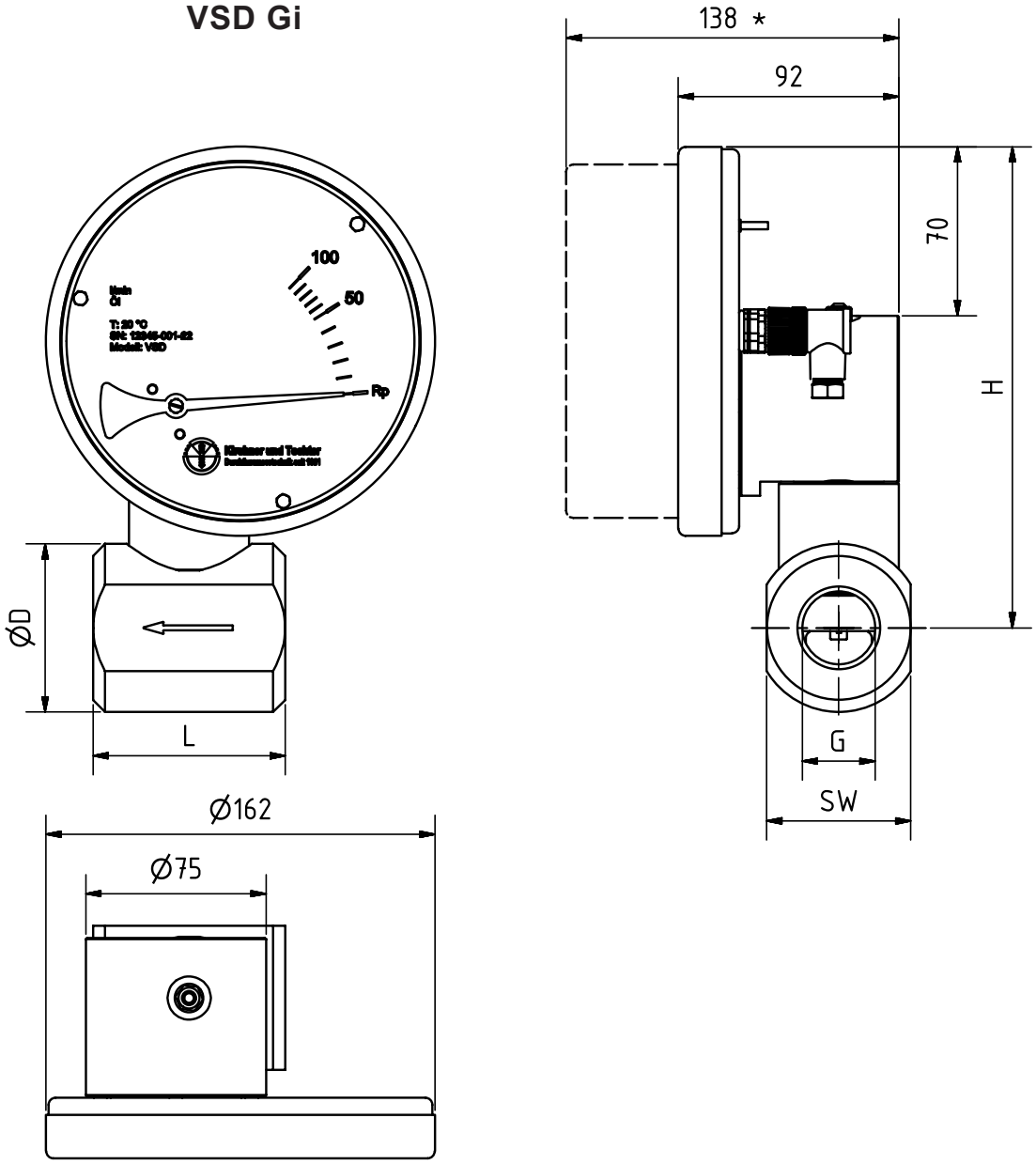


Dimensions and measuring ranges

NG	G	ØD [mm]	ØDi [mm]	L [mm]	Weight [kg]	Range [l/min]
28	M40 x 1,5	38,1	28	50,3	3,2	10 - 100
35	M47 x 1,5	45,2	35	58,3	3,4	30 - 150
45	M56 x 1,5	54,2	45	67,8	3,7	50 - 250
65	M75 x 1,5	73,1	65	80	4,2	100 - 500
* VSD with RK1/RK2/IK1/IK2/IKS1/IKS2 limit value switch						

[1] other measuring ranges on request

VSD Gi



Dimensions and measuring ranges

G	ØD [mm]	SW [mm]	L [mm]	H [mm]	Weight [kg]	Range [l/min]
G ½“	70	60	80	200	3,7	10 - 100
G ¾“	70	60	80	200	3,6	10 - 100
G 1“	70	60	80	200	3,5	10 - 100
G 1¼“	80	70	95	200	4,4	30 - 150
G 1½“	90	80	105	200	5,5	50 - 250
G 2“	105	95	120	200	6,5	100 - 500
* VSD with RK1/RK2/IK1/IK2/IKS1/IKS2 limit value switch						

[1] other measuring ranges on request

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Limit value switch

In order to realize a local display with a monitoring function, the flowmeter can be equipped with limit value switches.

Inductive switch IK1 and IK2

Limit value switch with inductive slot initiator, optionally explosion-proof design.

The pointer in the indicator activates a built-in inductive switch by means of a metal vane. The switching point is adjustable over the full measuring range. A maximum of two IK switches can be built into one VSD. The switching point is indicated on the flow meter scale by a pointer.

Switch data	
IK1	version with one inductive limit value switch
IK2	version with two inductive limit value switches
Function	Inductive slot initiator acc. to NAMUR, 2-wire
Switching function	NC or NO
Slot width	2,0 mm
Hysteresis	1,0 % v. E ... 10 % v.E
Repeat accuracy	≤ 2,0 %
Temperature drift	≤ ± 10 %
Ambient temperature	-25 ... +70° C
Voltage	nom. 8,2 V DC
Switching frequency	≤ 2,5 kHz
Switching performance	bistable
Nominal Voltage	8 V DC via isolation switching amplifier KFA
Power consumption	
Active area uncovered	≥ 2,1 mA
Active area covered	≤ 1,2 mA
Ambient temperature	-25 ... +70 °C
Polarity reversal protection	yes
Certification to	KEMA 02 ATEX 1090 X
Inner inductance (L_i) / capacitance (C_i)	266 µH/41 nF * Values for pre-assembled cables up to 10 m
Switch marking	II 1G Ex ia IIC T4...T6 Ga (max. Ui = 20 V DC, Ii = 60 mA, Pi = 130 mW)

Reed switch RK1 and RK2

The VSD flow meter can optionally be equipped with a limit value switch RK for flow monitoring and control purposes. The limit value switch is adjustable over the full measuring range.

RK1	Version with one switch
RK2	Version with two switches
Switch	Reed switch, floating
Switching function	NC or NO
Switching performance	bistable
Proof voltage	max. 140 V AC/200 V DC
Switching voltage	50 V AC/75 V DC
Current switched	max. 0,25 A
Switch rating	max. 5 VA/3 W
Ambient temperature	-25 ... +70 °C

Inductive switch with slot initiator for PLCs IKS1 and IKS2

The pointer of the flow meter activates the inductive switch that is built into the indicator casing by means of a metal vane. The limit value switch is adjustable over the full measuring range. A maximum of two IKS switches can be built into one VSD. The switching point is indicated on the meter scale by a pointer.

The IKS version is particularly suitable for the direct connection to PLCs.

Switch data	
IKS1	version with one electronic limit value switch
IKS2	version with two ielectronic limit value switches
Switch	inductive slot initiator, 3-wire
Switching function	NC or NO
Slot width	2,0 mm
Hysteresis	3 ... 15 % v.E.
Repeat accuracy	≤ 2,0 % v.E.
Temperature drift	≤ ± 10 %
Ambient temperature	-25 ... +70 °C
Supply voltage	10 ... 30 V DC
Schaltstrom I_A	≤ 100 mA
Open-circuit power consumption	≤ 10 mA
Explosion protection	no
Voltage drop (at I_{max})	≤ 1,2 V

Notes

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Notes

Low Voltage Directive

Above 50 V AC/75 V DC, electrical components are subjected to the EU Low Voltage Directive (LVD). The user is required to verify their use accordingly.

Proper use

The user is responsible for assessing the suitability of the flow meters for his case of application, for use as prescribed and for material compatibility regarding the fluid product used in his process.

The manufacturer shall not be liable for any damage arising from incorrect or improper use of the devices.

Pressure surges can cause device damage and should therefore be generally avoided.
The limit values given in the data sheet should be observed.

The equipment from **Kirchner und Tochter** has been tested in compliance with applicable CE-regulations of the European Community. The respective declaration of conformity is available on request. Subject to change without notice. The current valid version of our documents can be found at www.kt-flow.de

The **Kirchner und Tochter** QM-System is certified in accordance with DIN EN ISO 9001:2015. The quality is systematically adapted to the continuously increasing demands.

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