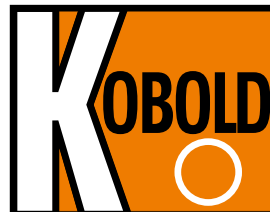




## Vortex Flowmeter Compact for low viscosity liquids



measuring  
•  
monitoring  
•  
analysing

### DVZ



- Range:  
0.5 - 4.5...10 - 100 L/min
- Accuracy:  $\pm 2.5\%$  of f.s.
- $p_{max}$ : 10 bar;  $t_{max}$ : 80 °C
- Connections:  
G $\frac{1}{4}$ ...G1,  $\frac{1}{4}$  NPT...1 NPT



- Connection material:  
brass or stainless steel
- Switching output, frequency  
output, analogue output
- Compact electronics with  
digital display



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DVZ-...S300

DVZ-...F300  
DVZ-...L303  
DVZ-...L343

DVZ-...L443

DVZ-...L443  
(usage with AUF-3000)

DVZ-...C3...  
(compact electronics)

**Description**

The compact KOBOLD Vortex flow meter Type DVZ is used for measuring and monitoring smaller and medium-sized flow of low viscosity, water-like liquids in pipes. The device works using the vortex principle, making it virtually maintenance-free. This involves the installation of a sharp-edged object (the vortex generator) in the flow duct. Vortices are created behind the object whose frequency is proportional to the velocity of flow of the liquid. The flow volume can be determined with a very great degree of accuracy by measuring the vortex frequency. This achieves a very high linearity over the whole measuring range.

The device can be fitted with switching, frequency or analogue outputs. There is also an optional compact electronics package that includes a digital display, and both a switching and analogue output. Dosing and metering electronics are currently being developed.

**Areas of Application**

- Monitoring the flow of low viscosity liquids
- Measuring of aggressive, high-purity or salty solutions
- Unsuitable for abrasive media or media containing a large proportion of fibres

**Technical Details**

Measurement process: vortex principle  
 Mounting position: any, flow in direction of arrow  
 Accuracy: ±2.5 % of f.s.  
 Repeat accuracy: ±1 % of f.s.  
 Inlet runs: 10×DN/2×DN  
 Media temperature: 0...80 °C  
 Ambient temperature: -10...+60 °C

Connection	fixed	rotatable
standard version	10 bar	20 bar
reinforced version	20 bar	–

**Max. pressure**

**Wetted parts**

Sensor housing: PPS, fibreglass-reinforced  
 Sensor: PVDF  
 Connections: brass, up to 32 L/min nickel plated, from 40 L/min blank or stainless steel 1.4404  
 Bluff body: PPS, fibreglass-reinforced or oxide ceramic (non-wear version)  
 Seal: NBR, EPDM or FPM  
 Response time: 1 s  
 Protection: IP 65  
 Weight: depending on version (see table)

**Technical Details** (continued)

**DVZ-...S300, DVZ-...S30D**

Display: DUO-LED for switching condition and when range limit is exceeded

Switching output: relay change over, max. 1A/30 V<sub>DC</sub> or active 24 V<sub>DC</sub>, N/C / N/O

Switch point: 10...90 % of f.s. in 10 %-steps that can be configured by the customer using a rotary switch

Power supply: 24 V<sub>DC</sub> ± 20 %

Power consumption: 12 mA

Electrical connection: plug M 12x1, 5 pole

Meas. range overflow: flash of the DUO-LED (red/green) from 105 % of f.s.

**DVZ-...F300, DVZ-...F390**

Pulse output: PNP, Open Collector, max. 200 mA

Frequency at f.s.: 500 Hz (...F300)  
50...1000 Hz (...F390)

Power supply: 24 V<sub>DC</sub> ± 20 %

Power consumption: 5 mA

Electrical connection: plug M 12x1

Meas. range overflow: F<sub>out</sub> approx. 2 kHz from 105 % of f.s.

**DVZ-...L303; DVZ-...L343**

Output: 0(4)-20 mA, 3-wire

Max. load: 500 Ω

Power supply: 24 V<sub>DC</sub> ± 20 %

Electrical connection: plug M12x1

Meas. range overflow: I<sub>out</sub> approx. 20.5 mA from approx. 103 % of f.s.

**DVZ-...L443 (usage with AUF-3000)**

Output: 4...20 mA, 3-wire

Max. load: 500 Ω (250 Ω with AUF-3000)

Power supply: 24 V<sub>DC</sub> ± 20 %

Electrical connection: plug DIN 43650

Meas. range overflow: I<sub>out</sub> approx. 20.5 mA from 103 % of f.s.

**DVZ-...C3xx (Compact electronics)**

Display: 3-digit LED

Analogue output: (0)4...20 mA adjustable, max. 500 Ω (only for DVZ-...C34)

Type of switch. output: 1 or 2 Open Collector PNP or NPN, factory set, max. 300 mA

Contact function: N/C, N/O, frequency, programmable (frequency output not calibrated at f.s. approx. 500-600 Hz)

Programming: with 2 keys

Power supply: 24 V<sub>DC</sub> ± 20 %, 3-wire techn.

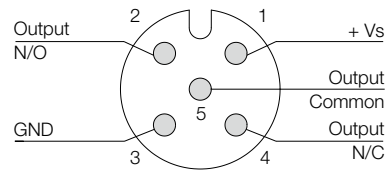
Power consumption: approx. 100 mA

Electrical connection: plug M 12x1, 5-pole

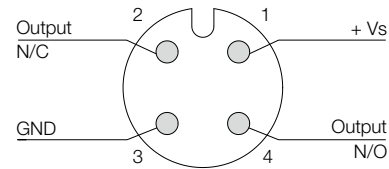
Meas. range overflow: display "OF" from 105 % of f.s.

**Electrical Connections**

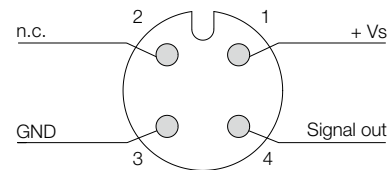
**DVZ-...S300**



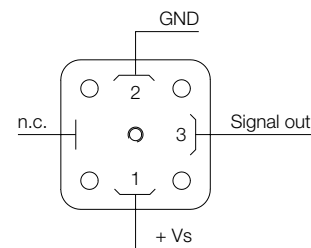
**DVZ-...S30D**



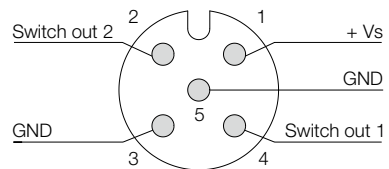
**DVZ-...F300; DVZ-...L3x3**



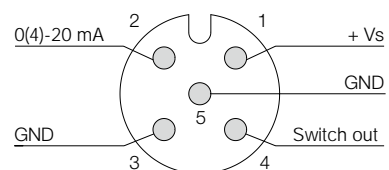
**DVZ-...L443**



**DVZ-...C30x**



**DVZ-...C34x**





**Technical Details** (continued)

**DVZ-...Exxx (Counter electronics)**

Display: LCD, 2x8 digit, illuminated total, part and flow quantities, units selectable

Quantity meter: 8-digit

Analogue output: (0)4...20 mA adjustable

Load: max. 500 Ω

Switching output: 2 relays, max. 250 V/5 A/1000 VA

Settings: via 4 buttons

Functions: reset, MIN/MAX memory, flow monitor, monitoring for part and total quantity, language

Power supply: 24 V<sub>DC</sub> ±20%, 3-wire

Power consumption: approx. 150 mA

Electrical connection: cable connection or M12 plug

more technical details see data sheet ZED in the brochure Z2

**DVZ-...Gxxx (Dosing electronics)**

Display: LCD, 2x8 digit, illuminated, dosing-, total-, and flow quantity, units selectable

Quantity meter: 8-digit

Dosage: 5-digit

Analogue output: (0)4...20 mA adjustable

Load: max. 500 Ω

Switching output: 2 relays, max. 250 V/5 A/1000 VA

Settings: via 4 buttons

Functions: dosing (relay S2), start, stop, reset, fine dosing, correction amount, flow switch, total quantity, language

Power supply: 24 V<sub>DC</sub> ±20%, 3-wire

Power consumption: approx. 150 mA

Electrical connection: cable connection or M12 plug

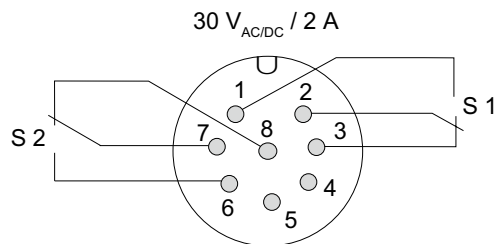
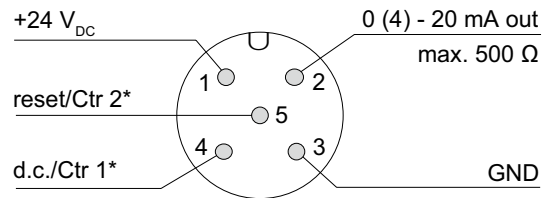
more technical details see data sheet ZED in the brochure Z2

**DVZ-...E14R, DVZ-...G14R Cable connection**

Wire number	DVZ-...E14R Counter electronics	DVZ-...G14R Dosing electronics
1	+24 V <sub>DC</sub>	+24 V <sub>DC</sub>
2	GND	GND
3	4-20 mA	4-20 mA
4	GND	GND
5	n. c.	control 1*
6	reset part quantity	control 2*
7	relay S1	relay S1
8	open without current	open without current
9	relay S2	relay S2
10	open without current	open without current

\* Control 1 <-> GND: Start-dosing  
 Control 2 <-> GND: Stop-dosing  
 Control 1 <-> Control 2 <-> GND: Reset-dosing

**Plug connection**



Measuring range	Size	Connection fixed	Connection reinforced	Connection turnable
up to 32 L/min	¼", ⅜", ½"	approx. 450 g	approx. 600 g	approx. 800 g
up to 32 L/min	¾"	approx. 600 g	approx. 600 g	approx. 900 g
up to 32 L/min	1"	approx. 1050 g	approx. 950 g	approx. 950 g
40...100 L/min	¾"	approx. 1050 g	approx. 1300 g	approx. 1350 g
40...100 L/min	1"	approx. 900 g	approx. 1150 g	approx. 1400 g

Model	Weight
DVZ-...F3x0 DVZ-...S30x DVZ-...Lxx3	approx. 80 g
DVZ-...C3xx	approx. 300 g
DVZ-...Exxx DVZ-...Gxxx	approx. 250 g



Order Details (Example: DVZ-1 1 04 G2 S300)

Storage body	Connection/seal	Measuring range	Connections		Electronics
			fixed	rotatable	
<b>DVZ-1..</b> = PPS <b>DVZ-2..</b> = ceramic <b>DVZ-3..*</b> = PPS/reinforced version <b>DVZ-4..*</b> = ceramic/reinforced version	..1.. = brass/NBR ..2.. = st. steel/NBR ..4.. = brass/EPDM ..5.. = st. steel/EPDM ..7.. = brass/FPM ..8.. = st. steel/FPM	..04.. = 0.5-4.5 L/min ..07.. = 0.8-6.5 L/min ..10.. = 1.3-10.0 L/min	..G2.. = G ¼ ..G3.. = G ⅜ ..G4.. = G ½ ..N2.. = ¼ NPT ..N3.. = ⅜ NPT ..N4.. = ½ NPT	..B2.. = G ¼ ..B3.. = G ⅜ ..B4.. = G ½ ..P2.. = ¼ NPT ..P3.. = ⅜ NPT ..P4.. = ½ NPT	<b>switching output</b> ..S300 = relay, M12-plug ..S30D = active 24 V <sub>DC</sub> , M12-plug <b>frequency output</b> ..F300 = M12-plug, 500 Hz ..F390 = M12-plug, 50...1000Hz <b>analogue output</b> ..L303 = M12-plug, 0-20 mA ..L343 = M12-plug, 4-20 mA ..L443 = DIN-plug, 4-20 mA <b>compact electronics**</b> ..C30R = 2x Open Coll., PNP ..C30M = 2x Open Coll., NPN ..C34P = 4-20 mA, 1x OpenColl., PNP ..C34N = 4-20 mA, 1x Open Coll., NPN <b>counter electronics</b> ..E14R = LCD, 0(4)-20 mA, 2x relays, 1m cable ..E34R = LCD, 0(4)-20 mA, 2x relays, plug M12 <b>dosing electronics</b> ..G14R = LCD, 0(4)-20 mA, 2x relays, 1m cable ..G34R = LCD, 0(4)-20 mA, 2x relays, plug M12
		..16.. = 2.0-16.0 L/min	..G3.. = G ⅜ ..G4.. = G ½ ..G5.. = G ¾ ..N3.. = ⅜ NPT ..N4.. = ½ NPT ..N5.. = ¾ NPT	..B3.. = G ⅜ ..B4.. = G ½ ..B5.. = G ¾ ..P3.. = ⅜ NPT ..P4.. = ½ NPT ..P5.. = ¾ NPT	
		..22.. = 3.2-22.0 L/min ..32.. = 4.0-32.0 L/min	..G4.. = G ½ ..G5.. = G ¾ ..G6.. = G 1 ..N4.. = ½ NPT ..N5.. = ¾ NPT ..N6.. = 1 NPT	..B4.. = G ½ ..B5.. = G ¾ ..B6.. = G 1 ..P4.. = ½ NPT ..P5.. = ¾ NPT ..P6.. = 1 NPT	
		..40.. = 4.0-40 L/min ..50.. = 5.0-50 L/min ..63.. = 6.5-63 L/min ..80.. = 8.0-80 L/min ..99.. = 10.0-100 L/min	..G5.. = G ¾ ..G6.. = G 1 ..N5.. = ¾ NPT ..N6.. = 1 NPT	..B5.. = G ¾ ..B6.. = G 1 ..P5.. = ¾ NPT ..P6.. = 1 NPT	

\* Reinforced version only in combination with fixed connection

\*\* Please specify flow direction in the order

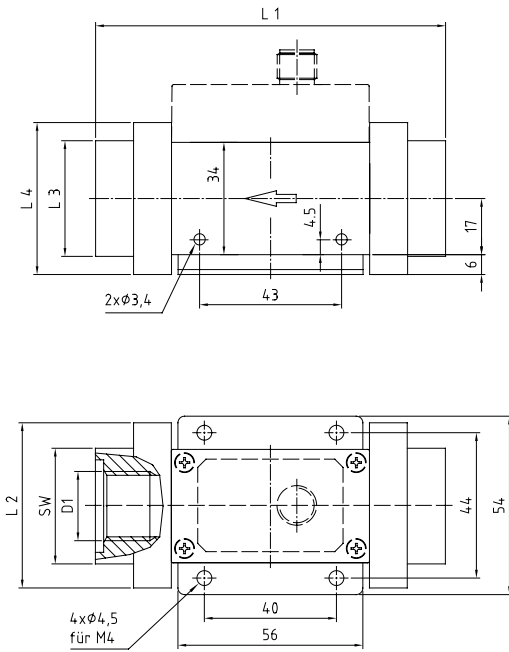
Pressure Loss at Range End Value

Model	Meas. range end value [L/min]	Pressure loss [mbar]
DVZ-__ 04	4.5	420
DVZ-__ 07	6.5	650
DVZ-__ 10	10.0	780
DVZ-__ 16	16.0	600
DVZ-__ 22	22.0	450
DVZ-__ 32	32.0	370
DVZ-__ 40	40.0	450
DVZ-__ 50	50.0	400
DVZ-__ 63	63.0	380
DVZ-__ 80	80.0	400
DVZ-__ 99	100.0	350

**Dimensions**

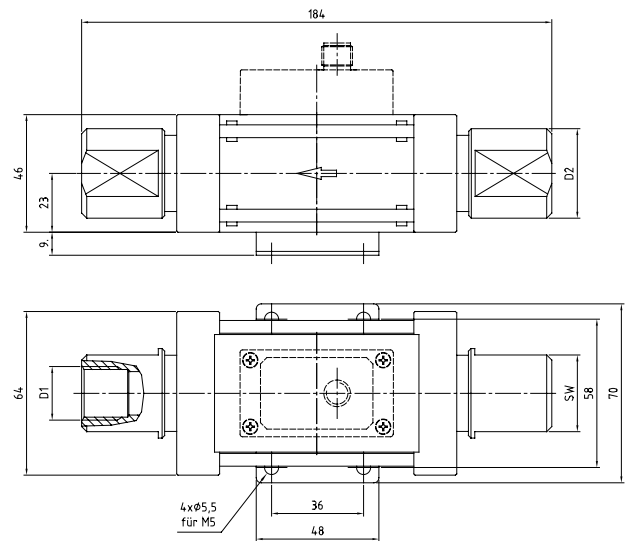
**DVZ sensor with fixed connection**

Measuring range up to 32 L/min



**DVZ sensor with fixed connection**

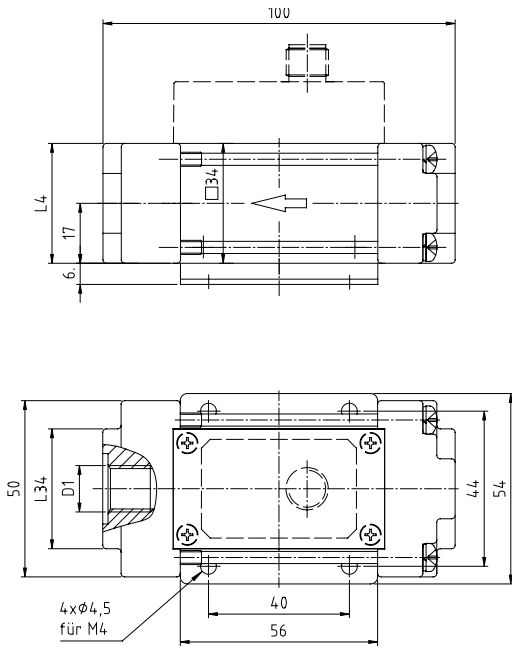
Measuring range from 40 L/min



MB	..04/..07/..10	..04/..07/..10/..16	..04/..07/..10/ ..16/..22/..32	..16/..22/..32	..22/..32
D 1	1/4"	3/8"	1/2"	3/4"	1"
SW	35	35	35	34	-
L 1	100	100	106	120	128
L 2	-	-	-	50	50
L 3	35	35	35	34	-
L 4	-	-	-	-	46

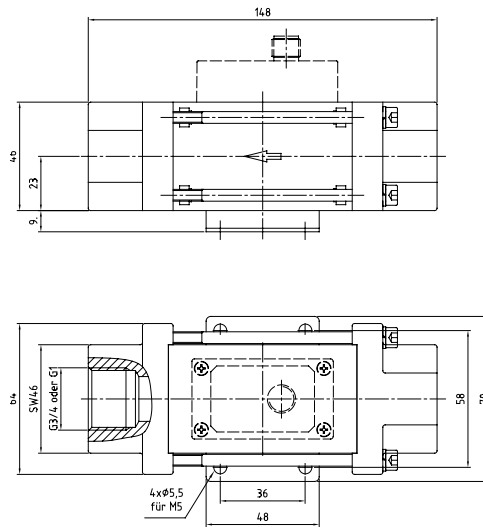
**DVZ sensor with reinforced connection**

Measuring range up to 32 L/min



**DVZ sensor with reinforced connection**

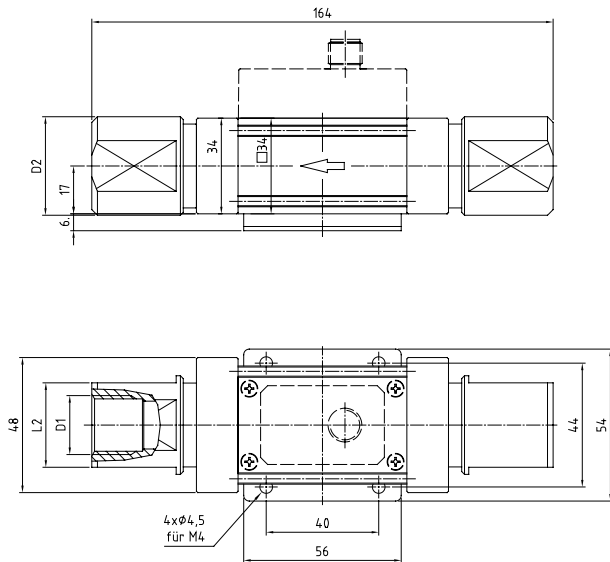
Measuring range from 40 L/min



MB	..04/..07/..10	..04/..07/..10/..16	..04/..07/..10/ ..16/..22/..32	..16/..22/..32	..22/..32
D 1	1/4"	3/8"	1/2"	3/4"	1"
SW	35	35	35	34	-
L 1	100	100	106	120	128
L 4	-	-	-	50	50

**DVZ sensor with turnable connection**

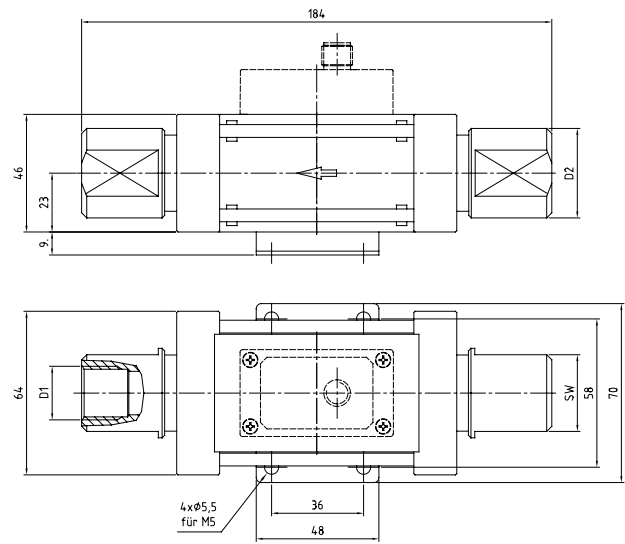
Measuring range up to 32 L/min



DVZ-BP drehbar

**DVZ sensor with turnable connection**

Measuring range from 40 L/min



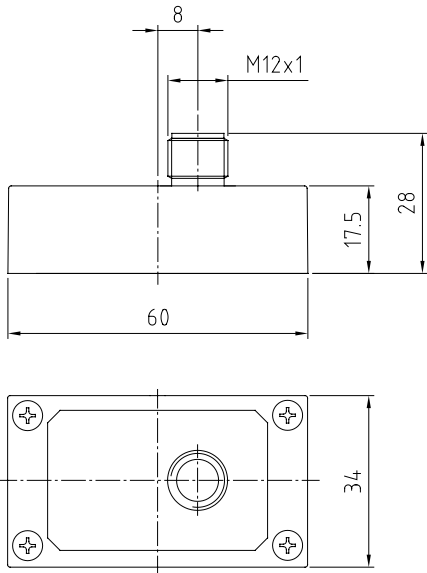
DVZ-B drehbar

MB	..04/..07/..10	..04/..07/..10/..16	..04/..07/..10/..16/..22/..32	..16/..22/..32	..22/..32	..40/..50/..60/..80/..99	..40/..50/..60/..80/..99
D 1	1/4"	3/8"	1/2"	3/4"	1"	3/4"	1"
D 2	24	28	35	40	45	40	45
SW	19	24	30	36	41	36	41

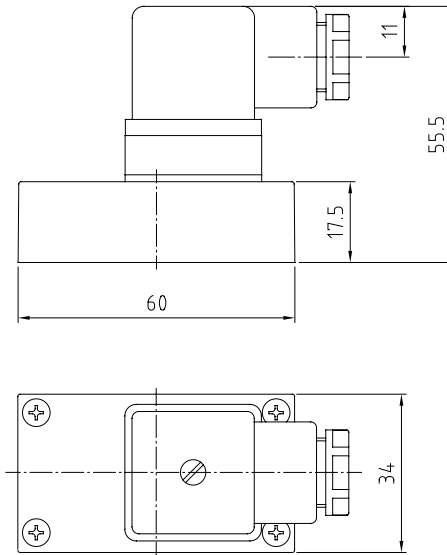


**Electrical Dimensions**

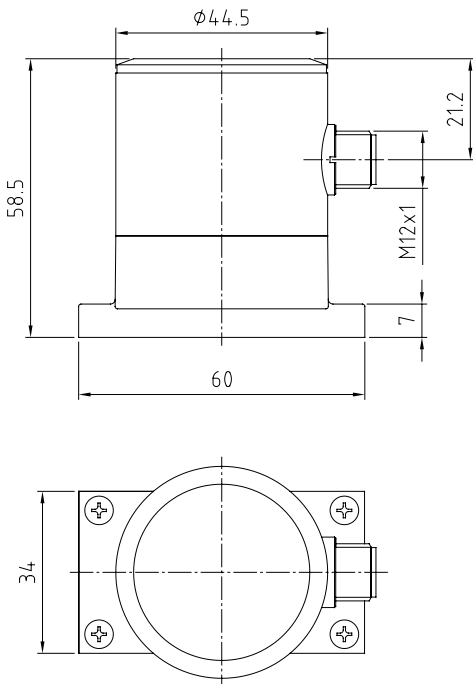
DVZ-...S30x, DVZ-...F3x0, DVZ-...L3x3



DVZ-...L443



DVZ-...C3xx



DVZ-...Exxx, DVZ-...Gxxx

