VR20 - Inductive sensor (LVDT) – Measurement range from 25 to 600 mm

Technical data:

Measurement range [mm]	0…25	0…50	00…80	0…100	0…150	0…200	0…300	0…600
Linearity	0,30% (0,20% Optional), 1,50% for a range of 600mm							
Types	Free core Push rod guided Sprung load							
Linear guide	Igus-plain bearing							
Protection class	IP67, optional IP68							
Supply voltage / frequency	3 Veff / 3 kHz							
Vibration stability DIN IEC 68T2-6	10 G							
Shock stability	200 G / 2 ms							
Excitation voltage	0,5 … 8 Veff							
Supply frequency	2 … 10 kHz							
Operating temperature	-40…+120°C (150 °C optional, H-Option, up to 200 °C on demand)							
Mounting	Ø20 mm							
Connection	Cable output 4-pins, or axial/radial M12-connector							
Housing	Stainless steel							
Cable **TPE (Standard)**	Ø 4.5 mm ; 2 non-halogen twisted pairs ; 0.14 mm^2							
PTFE	Ø 3.7 mm ; 0.24 mm2 Max Temp. 205°C							
Max. cable length	100 m between sensor and electronics							
Free core								
Max acceleration of core	100G							
Weight without cable (approx.)	150g	230g	290g	320g	360g	420g	550g	670g

Electronics:

Electronics	**IMCA (External electronics)**	**KAB (Cable electronics)**
Output signal	0…20 mA ; 4…20 mA (load < 500 Ohm)	0…20 mA ; 4…20 mA (load < 100 Ohm)
	0…5 V ; ±5 V (load > 5 kOhm)	0…5 V ; ±5 V (load > 5 kOhm)
	0…10 V ; ±10 V (load > 10 kOhm)	0…10 V ; ±10 V (load > 10 kOhm)
Temperature coefficient	150 ppm/°C for min signal 400 ppm/°C for max signal	460 ppm/°C
Ripple	< 0,5 mVeff, 300 Hz	< 0,5 mVeff, 300 Hz
	< 4 mVeff, 20 MHz	< 4 mVeff, 20 MHz
Max frequency	300 Hz/-3dB	300 Hz/-3dB
Isolation resistance	> 1000 VDC	> 1000 VDC
Power supply	9…36VDC	9…36VDC
Current consumption	75mA (Supply 24 VDC)	65 mA (24 VDC)
Current consumption	150mA (Supply 12 VDC)	140 mA (12 VDC)
Sensor supply	3 Veff , 3 kHz (adjustable, 1-18 kHz)	3 Veff , 3 kHz (adjustable, 1-18 kHz)
Operating temperature	-40 … +85°C	-40 … +85°C
Storage temperature	-40 … +85°C	-40 … +85°C
Housing	Polyamid PA6.6 , UL94-VO	Aluminium
Mounting	on DIN EN-rail	-

The output signal is referring to the electric measuring range. If the sensor is operated outside the measuring range or the measuring range is exceeded, the signal is also outside the defined range (i.e. >10V/20mA or <0V/4mA). Please keep this in mind for control systems with cable break detection lower than 4mA or for a maximum input voltage >10V of measuring instruments. If necessary install the sensor before connecting to the pic.

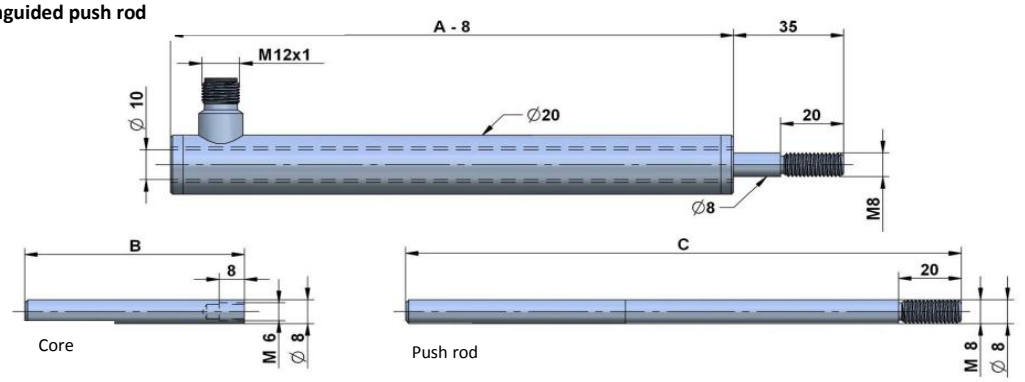
Running direction of signal:
- If the push rod is moving into the sensor (e.g. sprung load pushed in), the signal is reducing.
- If the push rod is moving out, the output signal is increasing.
- The running direction of the signal can also be inverted on demand.

Technical drawing:

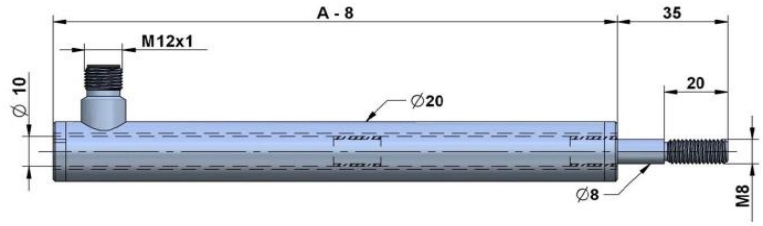
Measurement range (mm)	Body length A (mm)	Body length B (mm)	Core length C (mm)
0…25	137	67	127
0…50	187	70	177
0…80	247	100	237
0…100	287	120	277
0…150	387	170	377
0…200	487	220	477
0…300	687	320	677
0…600	905	240	657

Other ranges on demand.

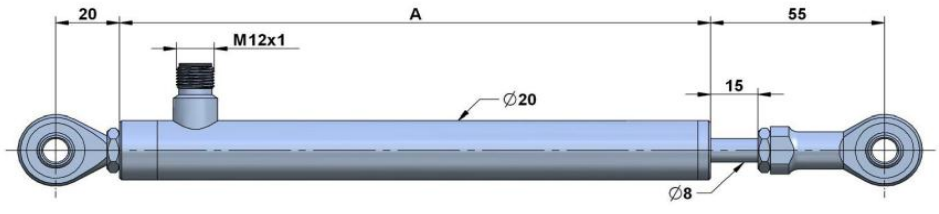
Type: free core, unguided push rod

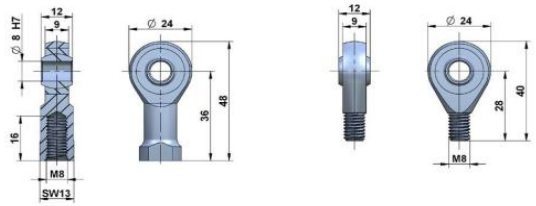


Type: guided push rod

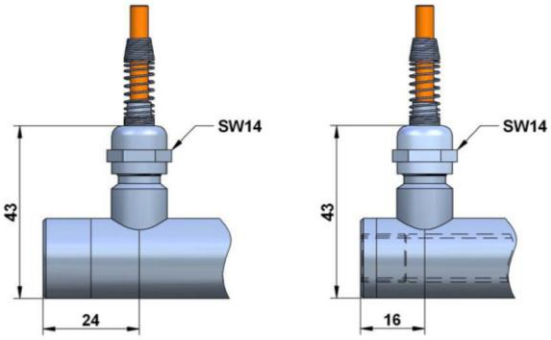


Type: rod end bearings





Cable output radial

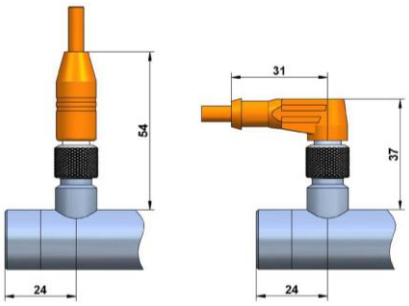


Sensors with cable output have a cable fitting and a spring for bend protection of the cable. For installation, the bending radius should not be less than 3 times the cable diameter. The standard cable length is 2 m.

Instruments with option H for temperatures up to 150 °C feature a PTFE cable. Sensors have a through hole. Please use this type for application at heavy dirt exposure. The movement of the push rod removes the dirt from the sensor and conveys it to the rear. Depending on the application the sensor can - on request – be supplied with a closed rear end body.

Please specify that in your order.

Connector output radial (cable with straight or angular connector)



For sensors with connector output the cable has to be ordered separately. You can choose from a cable with a straight connector or with an angular connector.
The connector is protected from accidental removal by a threaded fitting (M12). The cable lengths are 2/ 5/ 10 m. The connector pair has protection class IP67.

Adjustment of zero point and gain

Please note that the zero point and gain may shift for long cable length between sensor and electronics. Thus install the sensor with the according cable length to the electronics and then adjust zero point and gain.

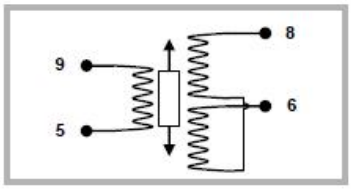
1. Push rod entirely in – adjust offset
Move the sensor to the zero point of the measuring range and set the offset potentiometer on 0 mA/ 0 V for the output signal.

2. Push rod entirely out – adjust gain
Move the sensor to the end of the measuring range (push rod moved out) and set the gain potentiometer on 16 mA / 10 V / 5 V for the output signal.

3. Adjust offset (4...20 mA output only).
Set the offset potentiometer on 20 mA (+4 mA) for the output signal.

4. Signal inversion: If an inverted output signal is required (20...4 mA/ 10...0 V/ 5...0 V), swap clamps 6 and 8 (secondary coil) on the external electronics.

AC Output



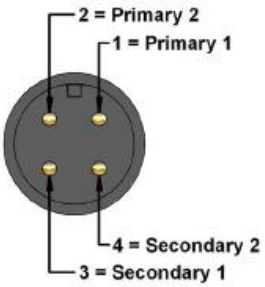
assignment for TPE-cable:

white (5):	primary 2
black (6):	secondary 2
brown (9):	primary 1
blue (8):	secondary 1

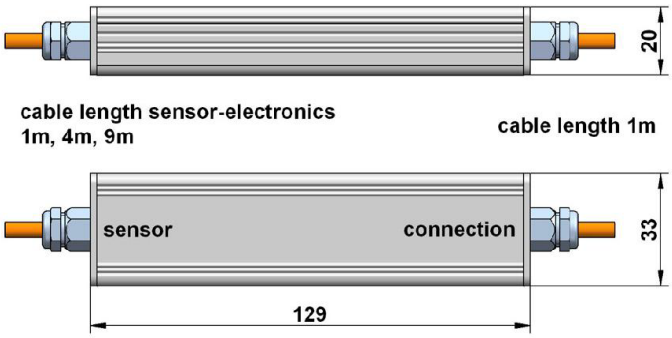
assignment for PTFE-cable:

white (5):	primary 2
green (6):	secondary 2
yellow (9):	primary 1
brown (8):	secondary 1

assignment M12-connector:



Cable electronics KAB



If not specified otherwise the cable electronics is placed at 1 m from the end of the cable.

On request in your order, however, the cable electronics can be placed at any position.

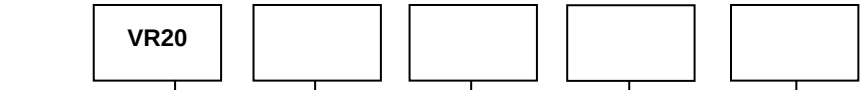
Assignment for TPE-cable:

brown:	supply V+
blue:	GND
black:	output GND
white:	output signal

Assignment for PTFE-cable:

yellow:	supply V+
brown:	GND
green:	output GND
white:	output signal

Order code:



Series

VR20

Measurement range

25	= 0 to 25 mm
50	= 0 to 50 mm
80	= 0 to 80 mm
100	= 0 to 100 mm
150	= 0 to 150 mm
200	= 0 to 200 mm
300	= 0 to 300 mm
600	= 0 to 600 mm

Type

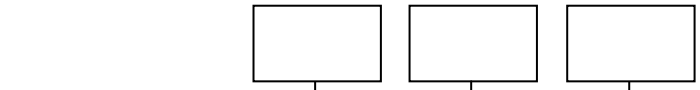
A	= Free core
S	= Push rod
SG	= Push rod guided
G	= Rod end bearings (includes push rod guided)

Connection

SR	= Radial connector M12
KR	= Radial cable output

Options

IP68	= Protection class IP68
H	= Temperature up to 150 °C
L20	= Improved linearity 0,20 %



Electronics type

IMCA	= Extern electronics
KAB	= Cable electronics

Power supply

24V	= 24 VDC

Output

020A	= 0…20 mA
420A	= 4…20 mA
10V	= 0…10 V
5V	= 0…5 V
±5V	= ± 5V
±10V	= ±10V

Connector cable:

Cable with straight connector M12

K4P2M-S-M12 2 m
K4P5M-S-M12 5 m
K4P10M-S-M12 10 m

Cable with angular connector M12

K4P2M-SW-M12 2 m
K4P5M-SW-M12 5 m
K4P10M-SW-M12 10 m