

# VELOCITY SENSOR

Links to further documents for this series:  
[Installation guide](#)



## VX SERIES

### Key-Features:

- Draw wire sensor for velocity measurement
- Measurement range up to 42.5 m
- Linearity up to  $\pm 1$  %
- Protection class IP67
- Temperature range:  $-20...+85$  °C
- Multiple rope fixations: rope clip, M4 thread, eyelet, cylindrical pin with through bore, carbine ring
- Optional with increased corrosion protection

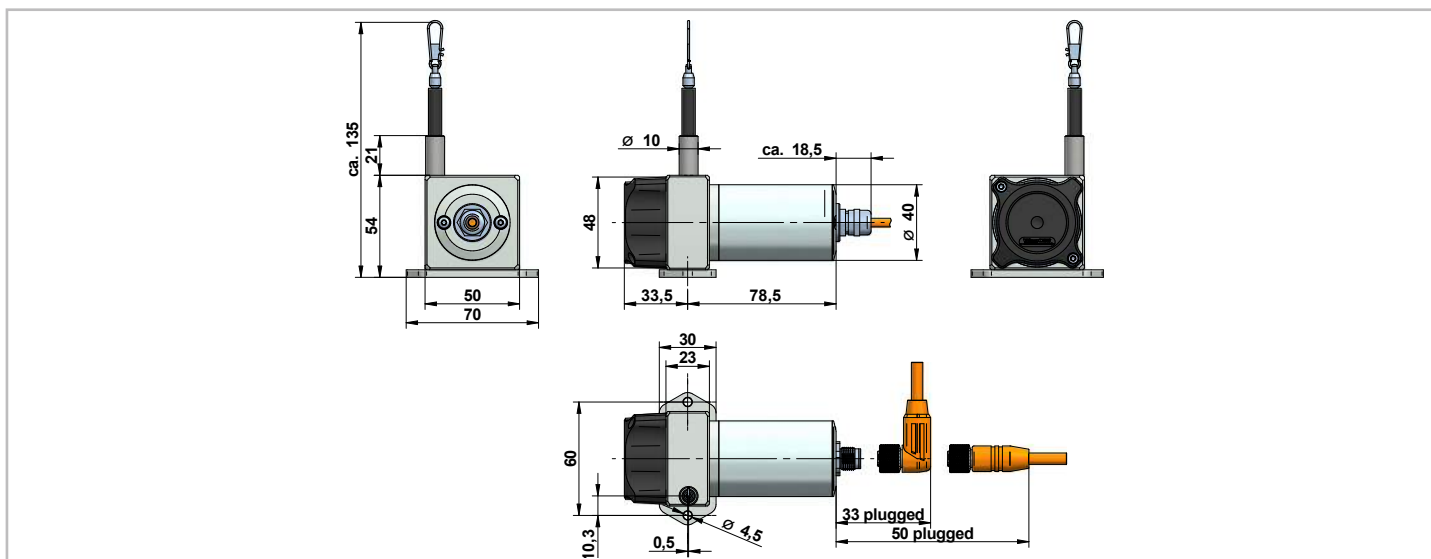
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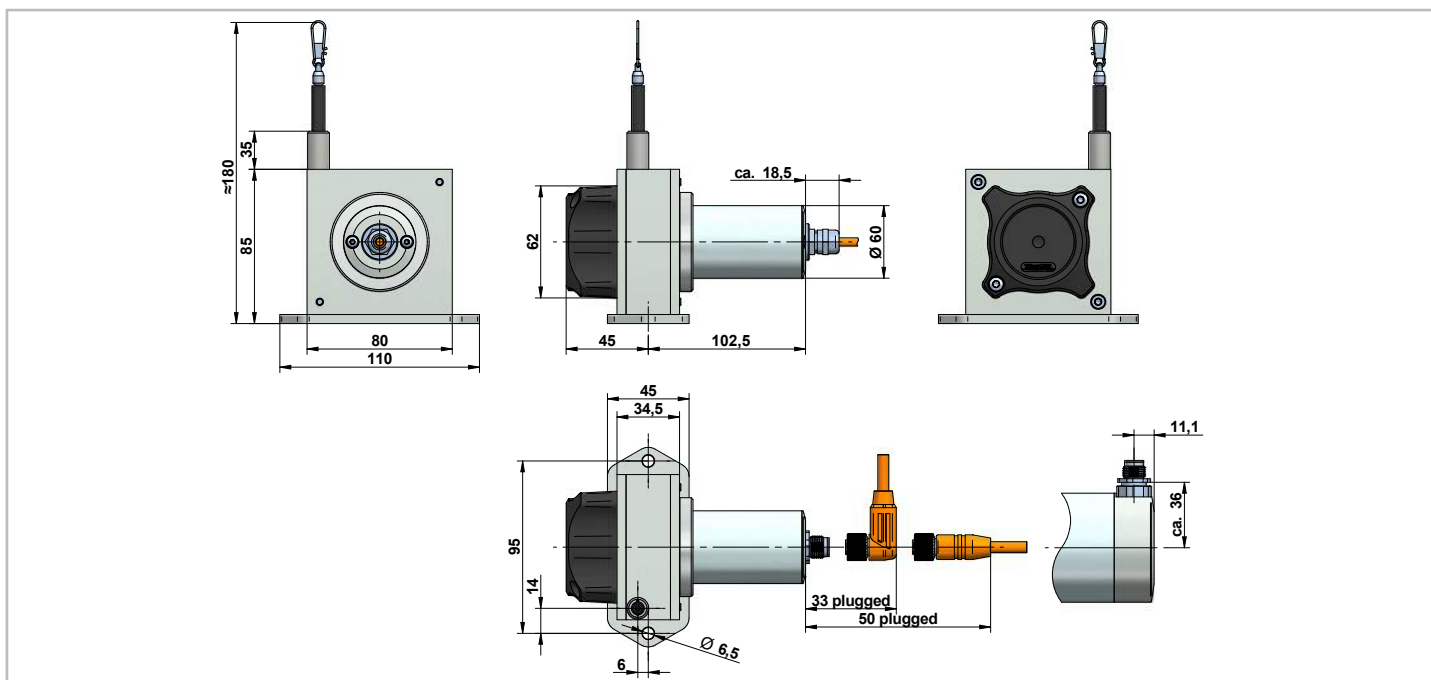
## TECHNICAL DATA

Product series		VX50	VX80	VX120	VX135-8	VX135			
Travel range	[mm]	1250	3000	5000	8000	12000	20000	30000	42500
Output	[V/m/s]	1.01	1.03	1.07	0.95	1.02			
Linearity	[%]	±1							
Commutation noise	[V]	±1 % of the output value							
Speed $V_{min}$	[mm/s]	5	10						
Speed $V_{max}$	[m/s]	10				5			
Extraction force $F_{min}$	[N]	4.6	5	8	8.2	5.4			
Extraction force $F_{max}$	[N]	5.6	6.4	11.6	15.2	9			
Acceleration $a_{max}$	[m/s <sup>2</sup> ]	300	140	140	140	60			
Tachometer supply		self-sufficiency							
Temperature range	[°C]	-20...85							
Protection class		IP65 (optional IP67)							
Weight	[g]	500	900	1600	ca. 1700	3200...5000			
Housing		aluminium, anodised, spring case PA6							

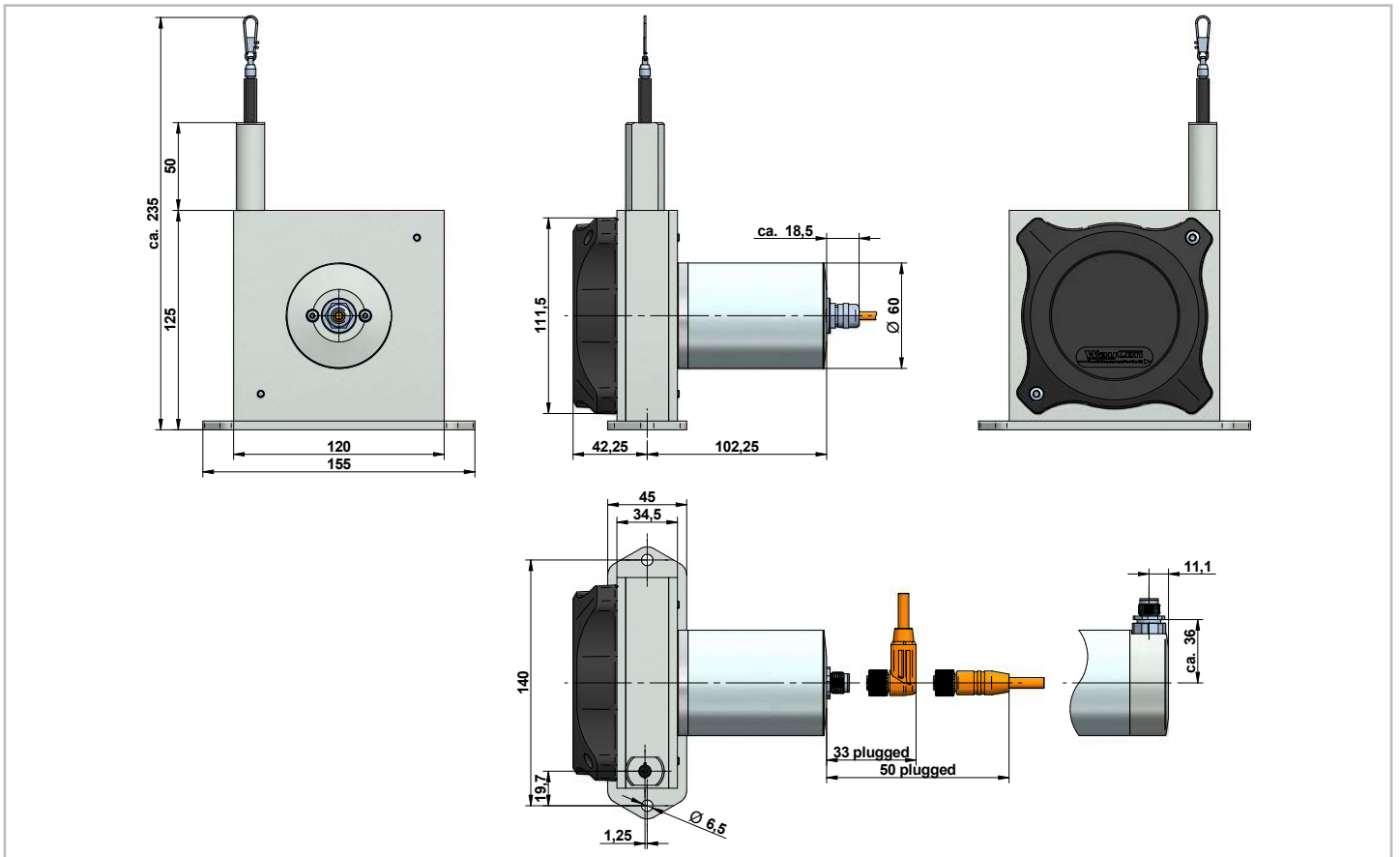
## TECHNICAL DRAWING VX50



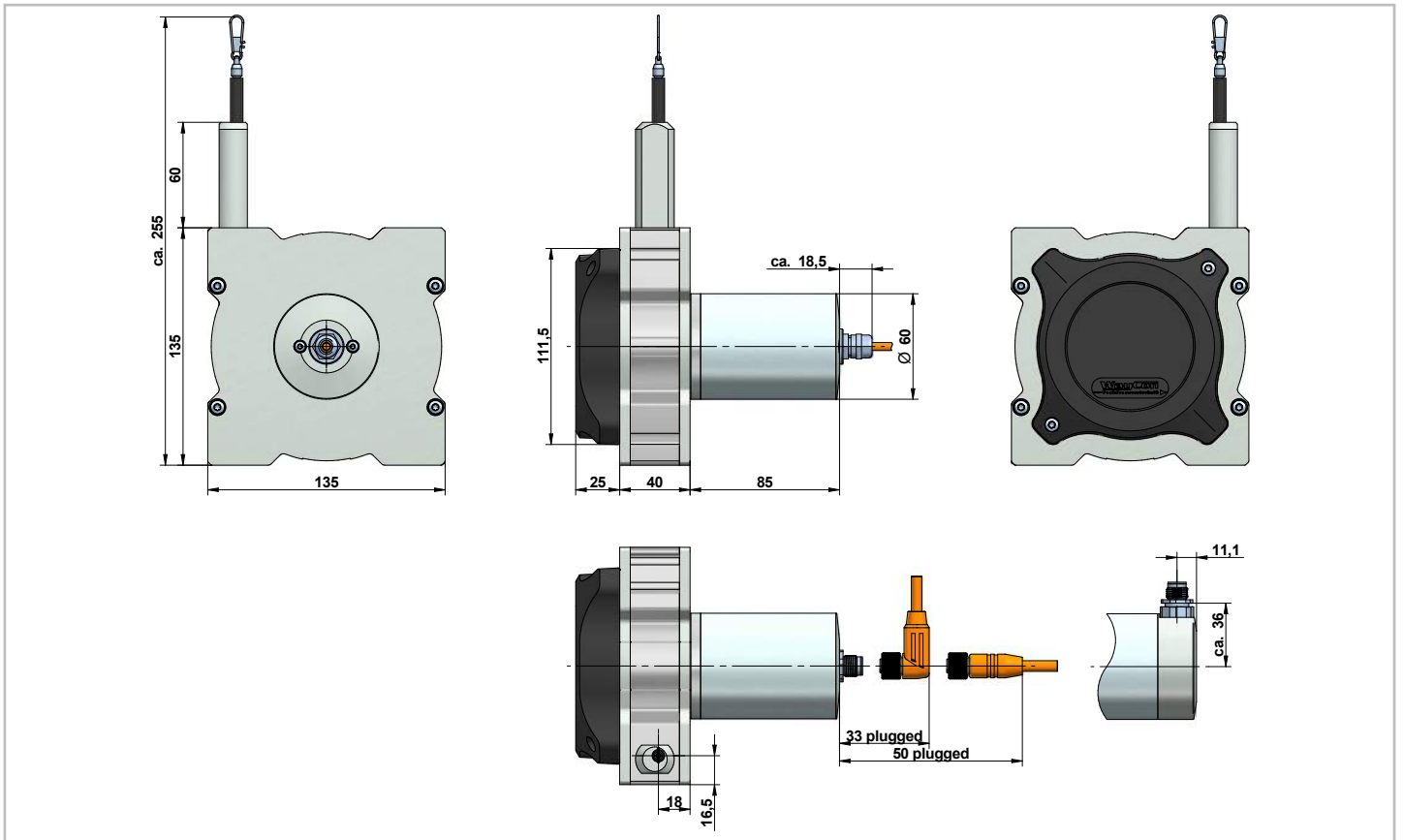
## TECHNICAL DRAWING VX80



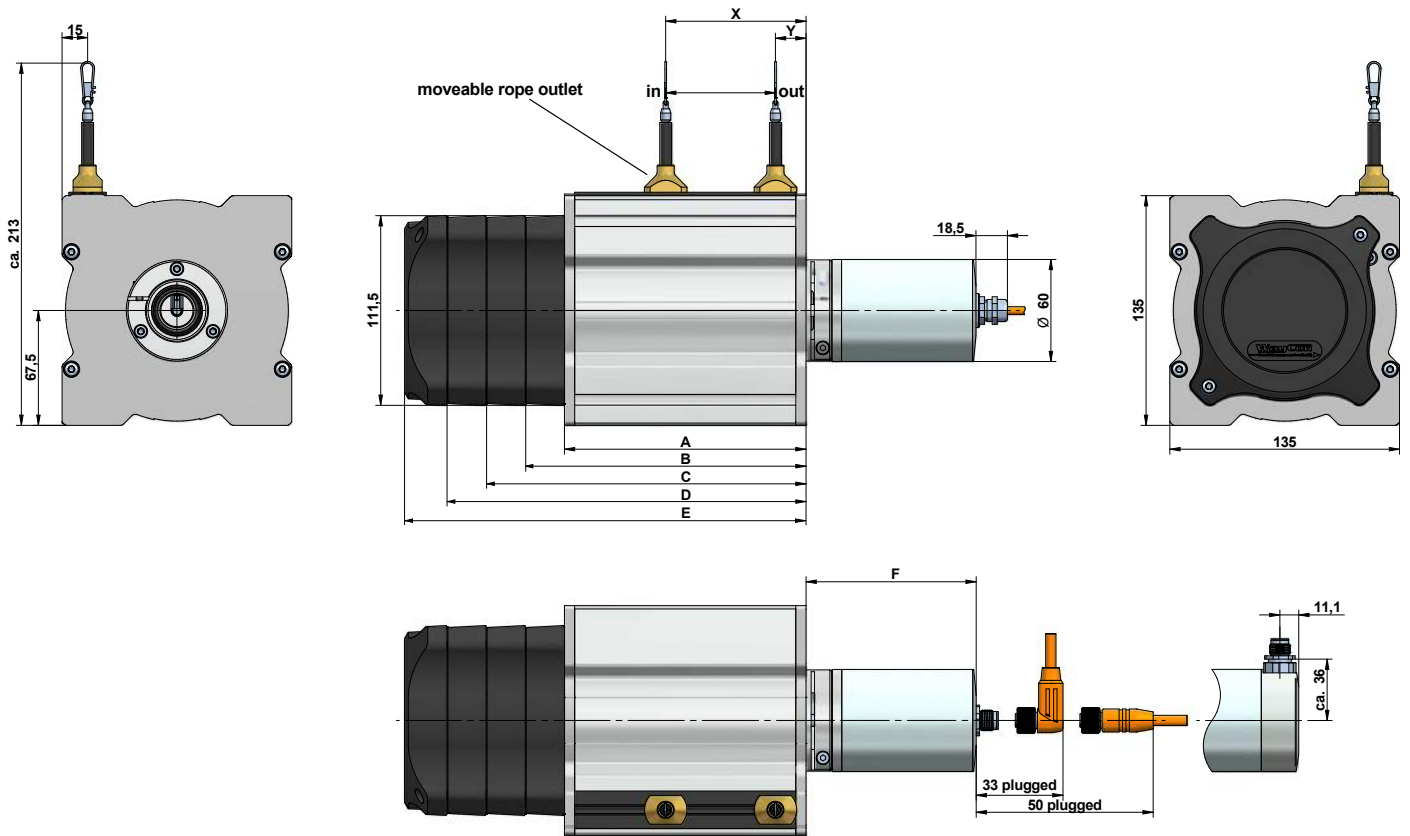
### TECHNICAL DRAWING VX120



### TECHNICAL DRAWING VX135 MEASUREMENT RANGE UP TO 8 m



**TECHNICAL DRAWING VX135 MEASUREMENT RANGE 10 m OR MORE**

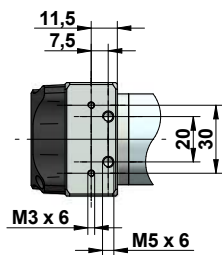


Range [m]	Letter	Length
12 / 20	A	112
30 / 42.5	A	142
12	B	137
20	C	160
30	D	213
42,5	E	236
12 / 20	F	100
30 / 42.5	F	120

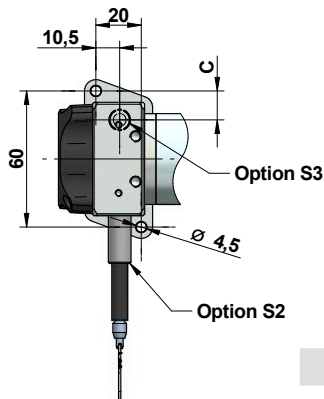
Position rope outlet at ...	12 m	20 m	30 m	42.5 m
... start of measurement range (X)	36	48	63	82
... end of measurement range (Y)	18	18	18	18

**MOUNTING OPTIONS VX50**

**Mounting: standard rope outlet, rope outlet sideways top (S1)**  
 The sensor is usually installed by using the regular mounting plate (see technical drawing above). By disassembling the mounting plate, there are 4 threads (2 x M3, 2 x M5) in the sensor housing for alternative installation.



**Mounting: rope outlet sideways bottom (S2), rope outlet bottom (S3)**  
 Sensors with option rope outlet S2 and S3 have a modified base plate:

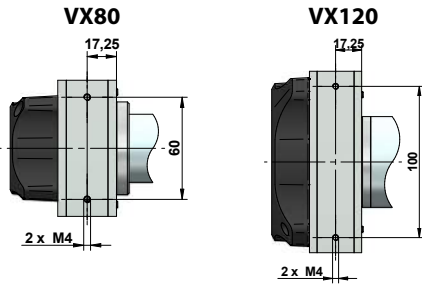


Range [mm]	Option	C
1250	Standard	10.3

## MOUNTING OPTIONS VX80 AND VX120

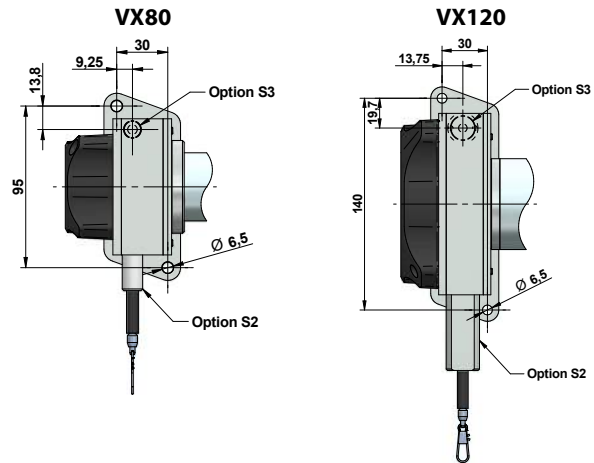
### Mounting: standard rope outlet, rope outlet sideways top (S1)

The sensor is usually installed by using the regular mounting plate (see technical drawing above). By disassembling the mounting plate, there are 4 threads (2 x M3, 2 x M5) in the sensor housing for alternative installation.



### Mounting: rope outlet sideways bottom (S2), rope outlet bottom (S3)

Sensors with option rope outlet S2 and S3 have a modified base plate:

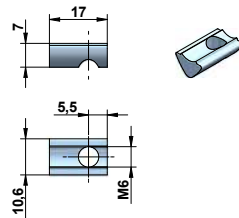


## MOUNTING OPTIONS VX135-8 AND VX135

### 1. by using the grooves in the sensor housing

The included slot nuts can be easily inserted into the grooves of the sensor housing. The slot nuts have a metric M6 thread.

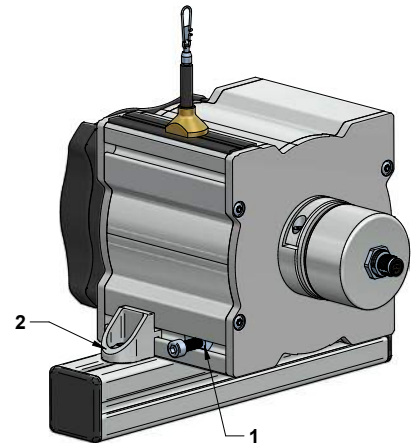
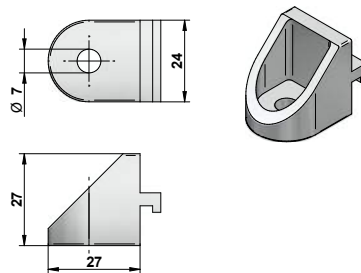
Each sensor with a measurement range of 20 m or lower is delivered with two slot nuts. Each sensor with a measurement range of 25 m or greater is delivered with four slot nuts.



### 2. by angle clamp brackets

The angle clamp brackets feature a bore for M6 screws to fix it on a plate / slab or a profile.

Each sensor with a measurement range of 20 m or lower is delivered with two brackets. Each sensor with a measurement range of 25 m or greater is delivered with four brackets.



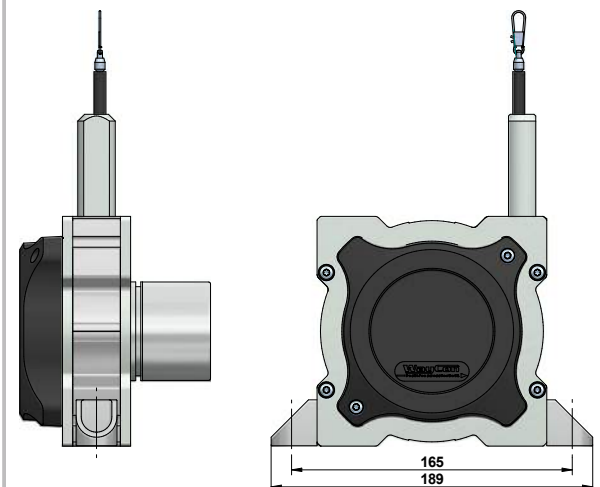
### Note:

The grooves of the sensor housing, the slot nuts and brackets are compatible to the aluminium building kit system from *item Industrietechnik GmbH*.

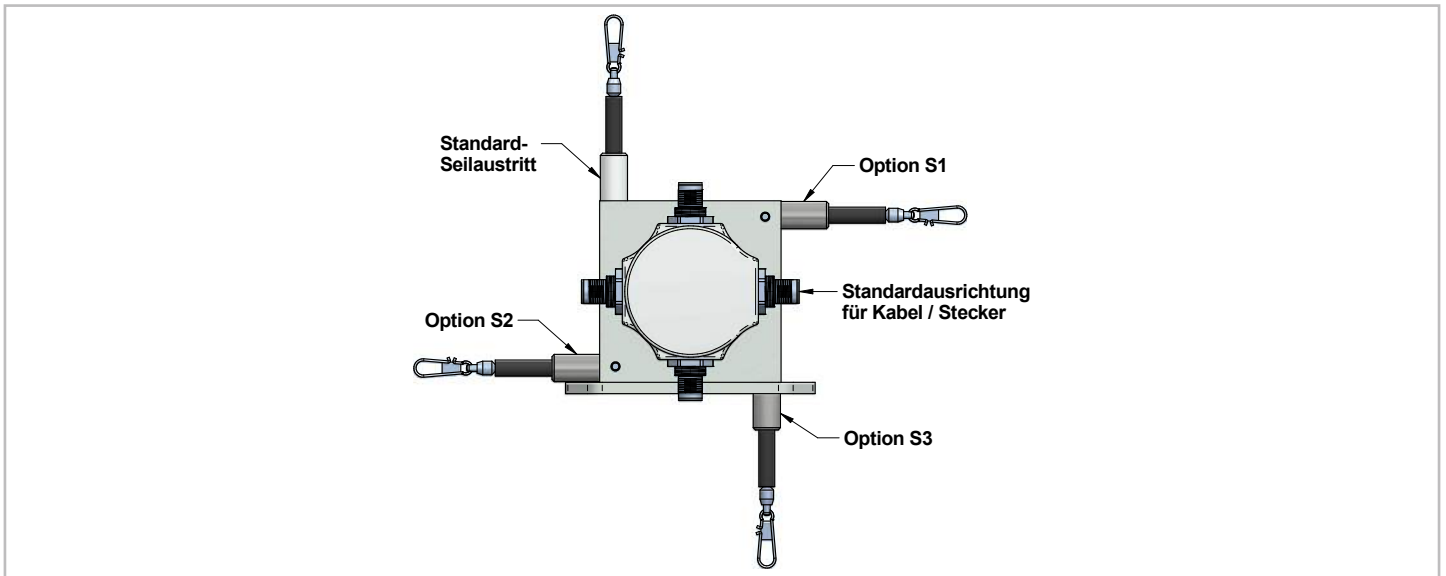
### Position of the grooves



### Mounting by using brackets

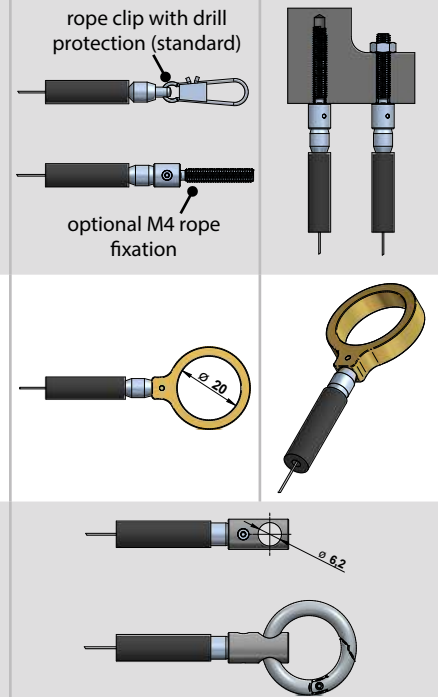


## CHANGED ROPE OUTLET VX50/80/120



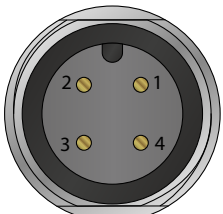
## OPTIONS

Option	Order code	Description
Changed wire output (see drawing above)	S1, S2, S3	S1: rope outlet sideways at the top S2: rope outlet sideways at the bottom (modified mounting plate, see page 4 to 5) S3: rope outlet on the bottom (modified mounting plate, see page 4 to 5)
Rope fixation by M4 thread	M4	Optional, pivoted rope fixation with screw thread M4, length 22 mm. Ideal for attachment to through holes or thread holes M4.
Rope fixation by eyelet	RI	The end of the wire rope is equipped with a eyelet instead of a rope clip. Inside diameter 20 mm
Rope fixation with cylindrical pin and M6 through bore	ZH, ZR	ZH: cylindrical pin with M6 through bore ZR: cylindrical pin with M6 through bore and carbine ring
Protection class IP67	IP67	Use option IP67, if the sensor will operate in a humid environment. Note that with this option there may occur a light hysteresis in the output signal due to the special sealing. The max. acceleration and displacement speed are reduced to 60 % of the specified value.
Corrosion protection	CP	Includes a V4A wire rope, stainless steel bearings and option M4. The sensors rope drum gets HARTCOAT® coated. This coating is a hard-anodic oxidation that protects the sensor from corrosion by aggressive media (e. g. sea water) with a hard ceramics-like layer.
Increased corrosion protection	ICP	Components of the housing and the rope drum get HARTCOAT® coated. Includes the options CP, IP67 and M4.



## ELECTRICAL CONNECTION

Function	Cable output Cable colours	Connector output M12, male
Signal+	BN	Pin 1
n. c.	WH	Pin 2
Signal-	BU	Pin 3
n. c.	BK	Pin 4

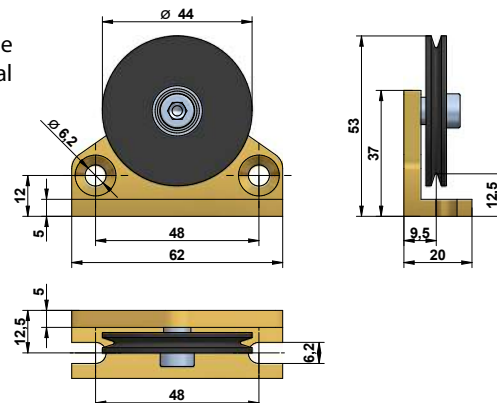
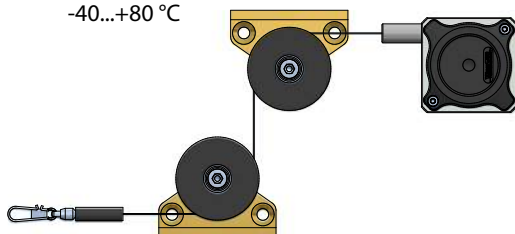


## ACCESSORIES

### Deflection pulley - UR2

The rope must be extracted from the sensor vertically. The maximum variation from the vertical is 3°. A deflection pulley allows a change in the direction of the wire rope. Several pulleys may be used. The rope clip must not be guided over the deflection pulley. Suitable for standard wire rope diameter 0.5 mm.

Material foot: anodised aluminium  
 Material rope wheel: POM-C  
 Mounting: by 2 hexagon socket or countersunk screws M6, vertical or horizontal mounting possible. Ball bearings: with special low temperature grease and RS-sealing.  
 Temperature: -40...+80 °C

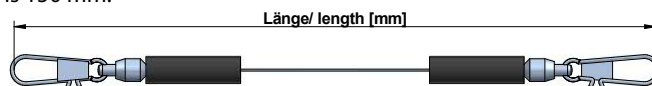


### Rope extension - SV

For bridging a greater distance between the measuring target and the sensor a rope extension can be applied. The rope clip must not be guided over the deflection pulley.

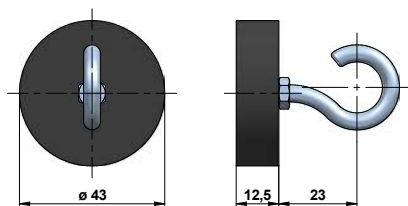
Please specify the length needed in your order (XXXX). The minimum length is 150 mm:

- SV1-XXXX: rope extension (150...4995 mm)
- SV2-XXXX: rope extension (5000...19995 mm)
- SV3-XXXX: rope extension (20000...40000 mm)



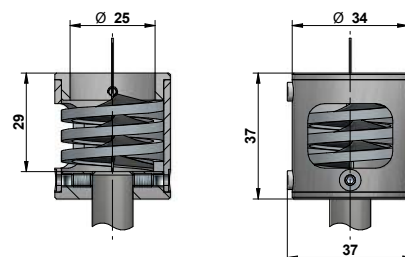
### Magnetic clamp - MGG1

Use the magnetic clamp to quickly attach the rope to metallic objects without any assembly time. A rubber coating provides gentle contact (e. g. on varnished surfaces) and prevents from slipping due to vibration. The magnet consists of a neodym core for an increased adhesive force of 260 N. The hook makes it easy to attach the rope clip.



### Rope cleaner - RCS

Use the RCS rope cleaner to remove dirt from the measuring rope of the sensor. Please note that the maximum measuring range of the sensor is reduced by 29 mm.





## ORDER CODE

VX  -  -

Measurement range [mm]	
1250	50-1250
3000	80-3000
5000	120-5000
8000	135-8
12000	135-12
20000	135-20
30000	135-30
42500	135-42,5

Connection	
Connector output M12, axial, 4 poles	<b>SA12</b>
Cable output, axial, 2 m	KA02
Cable output, axial, 5 m	KA05
Cable output, axial, 10 m <sup>1)</sup>	KA10

Version	
Standard	-
Sensor with options	O

<sup>1)</sup> larger lengths on request

**Bold text:** standard with shorter lead time

Option	Description
S1	Rope outlet sideways top
S2	Rope outlet sideways bottom
S3	Rope outlet bottom
M4	Rope fixation M4
RI	Rope fixation eyelet
ZH	Cylindrical pin
ZR	Cylindrical pin with carbine ring
IP67	Protection class IP67
CP	Corrosion protection
ICP	Increased corrosion protection

Option	Not combinable with
S1,S2,S3	VX135-8, VX135
M4	RI, ZH, ZR, CP, ICP
RI	M4, ZH, ZR, CP, ICP
ZH	M4, RI, ZR, CP, ICP
ZR	M4, RI, ZH, CP, ICP
IP67	ICP
CP	M4, RI, ZH, ZR, ICP
ICP	M4, RI, ZH, ZR, IP67, CP

## GENERAL ACCESSORIES

UR2	deflection pulley (for rope diameter 0.5 mm)
MGG1	magnetic clamp
SV1-XXXX	rope extension (150 mm up to 4995 mm)
SV2-XXXX	rope extension (5000 mm up to 19995 mm)
SV3-XXXX	rope extension (20000 mm up to 40000 mm)

RCS-SX50 <sup>1)</sup>	rope cleaner for VX50
RCS-SX80-32 <sup>1)</sup>	rope cleaner for VX80
RCS-SX120 <sup>1)</sup>	rope cleaner for VX120
RCS-SX135-8 <sup>1)</sup>	rope cleaner for VX135 range 8 m
RCS-SX135 <sup>1)</sup>	rope cleaner for VX135 ranges from 12 m

<sup>1)</sup> please note that the maximum measuring range is reduced by 29 mm when using the rope cleaner

## ACCESSORIES CONNECTION

Cable with connector (female) M12, 4 poles, shielded, IP67	
K4P2M-S-M12	2 m, straight connector
K4P5M-S-M12	5 m, straight connector
K4P10M-S-M12	10 m, straight connector
K4P2M-SW-M12	2 m, angular connector
K4P5M-SW-M12	5 m, angular connector
K4P10M-SW-M12	10 m, angular connector

Mating connector (female) M12, 4 poles, for self assembly	
D4-G-M12-S	straight connector
D4-W-M12-S	angular connector

Subject to change without prior notice.

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