



## S635 S935 | LONG RANGE SENSOR

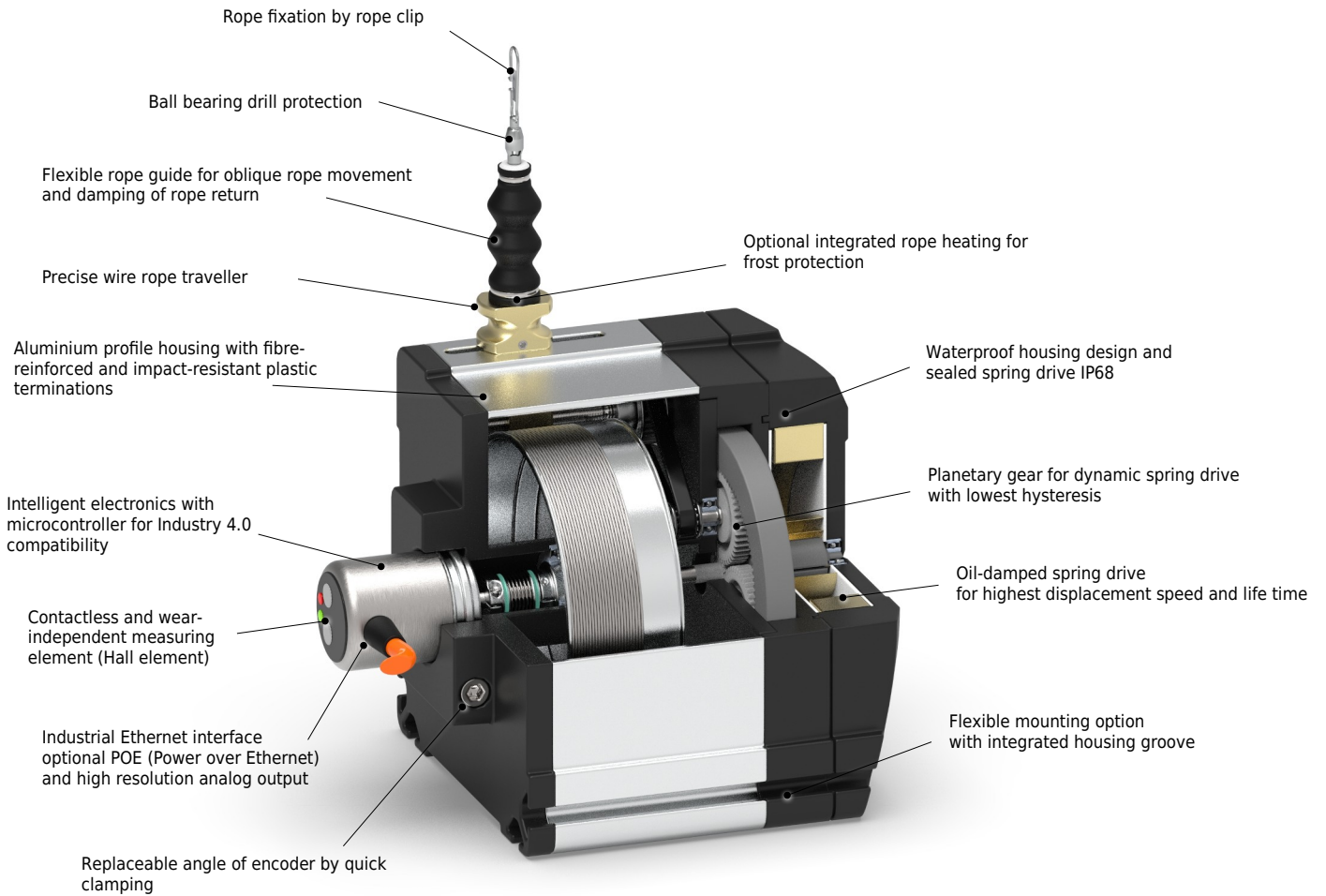
Draw wire sensors for industrial applications with planetary gear -  
for large measuring ranges from 10 to 60 m

- Compatibility of Industry 4.0
- Wear-free Hall-element
- Measurement length 10...60 m
- Industrial Ethernet
- Power over Ethernet POE
- High dynamics and noise immunity
- Customized designs

# OVERVIEW OF SENSOR INNOVATION

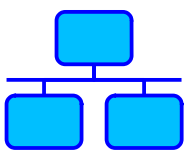
## MECHANICAL DESIGN

The new draw-wire sensors for large measuring ranges have been fundamentally revised and are designed to be particularly durable and robust. The use of a planetary gear in combination with the powerful spring motor enables dynamic measurements with the lowest hysteresis. The "Industrial Ethernet" output type can be quickly integrated into applications and offers Industry 4.0 compatibility. Alternatively, commercially available rotary encoders can be attached by means of quick clamping and a separable bellows coupling. The housings are made of high-quality aluminum profile with fiber-reinforced plastic terminations and offer high flexibility with regard to installation. The sensors have an oil-damped spring drive mechanism, which enables particularly low-friction, highly dynamic and long-lasting cable pull-off.



## INDUSTRIAL ETHERNET

For a fast and efficient exchange of data, such as the measurement data (rope extension length, rope speed and acceleration) or the configuration of the hardware, an Ethernet/IP interface is implemented. The output signal is processed by a Hall sensor and a microcontroller and output via the interface. (Ethernet/IP IEEE 802.3 standard)

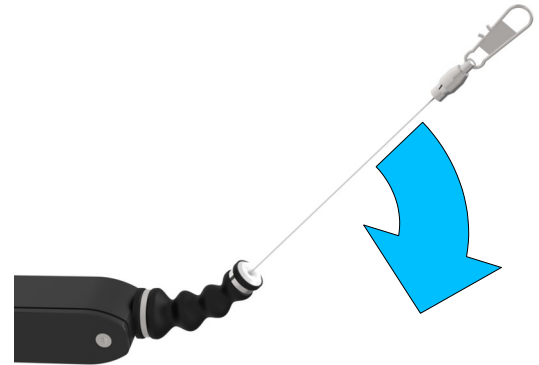


ETHERNET	
Storage (Input/Output)	4K Byte Data (read and write up to 2048 variables)
Baudrate	10/100 Mbit/s
Protocols	TCP/IP, UDP or ICMP, DHCP
Extras	VLAN Tagging, AMBA 2.0 (Master/Slave)
Potential Separation	500 V system/field

## OVERVIEW OF SENSOR INNOVATION

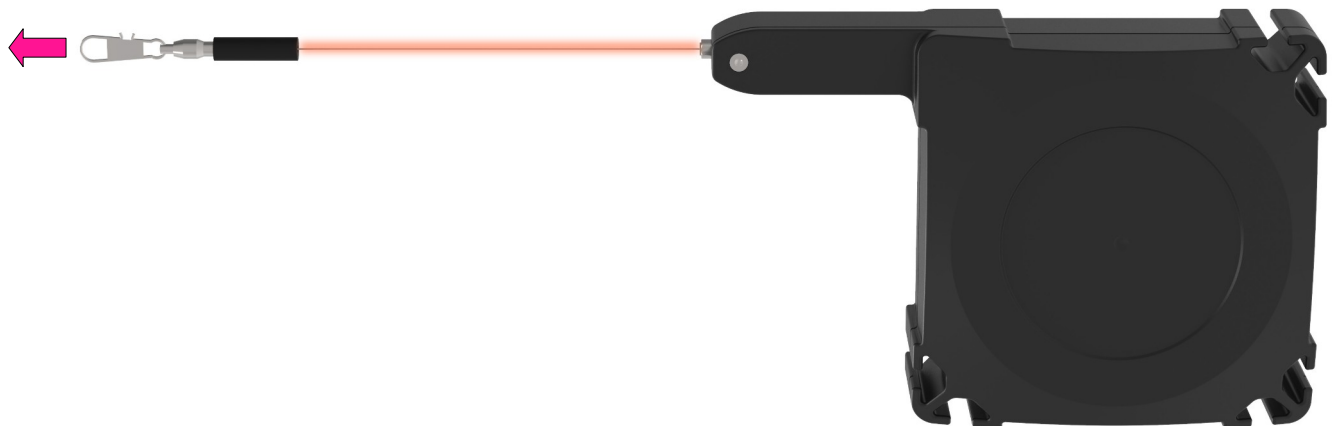
### ■ FLEXIBLE CABLE GUIDE

The use of the patented flexible cable guide allows an inclined pull of up to 50° in all directions. The rope is deflected softly and kink-free with a large bending radius in a special sliding guide. This results in maximum wear protection of the measuring rope.



### ■ FROST PROTECTION - HEATED MEASURING ROPE

For low operating temperatures and extreme outdoor operating conditions. Reliably prevents freezing water drops on the measuring cable and blocking of the cable run-off at minus temperatures and humidity. The rope heating leads a heating current over the measuring rope and regulates it depending on the outside temperature and the extension length. The sensor as well as the measuring rope is protected against frost by the patented solution independent of the rope pull-out length.



### ■ HOUSING DESIGN

The housings are constructed of impact-resistant fiber-reinforced plastic with continuous mounting grooves. This allows simple and flexible mounting via slot nuts or mounting brackets. Direct connection with construction profiles from various manufacturers is easily possible.

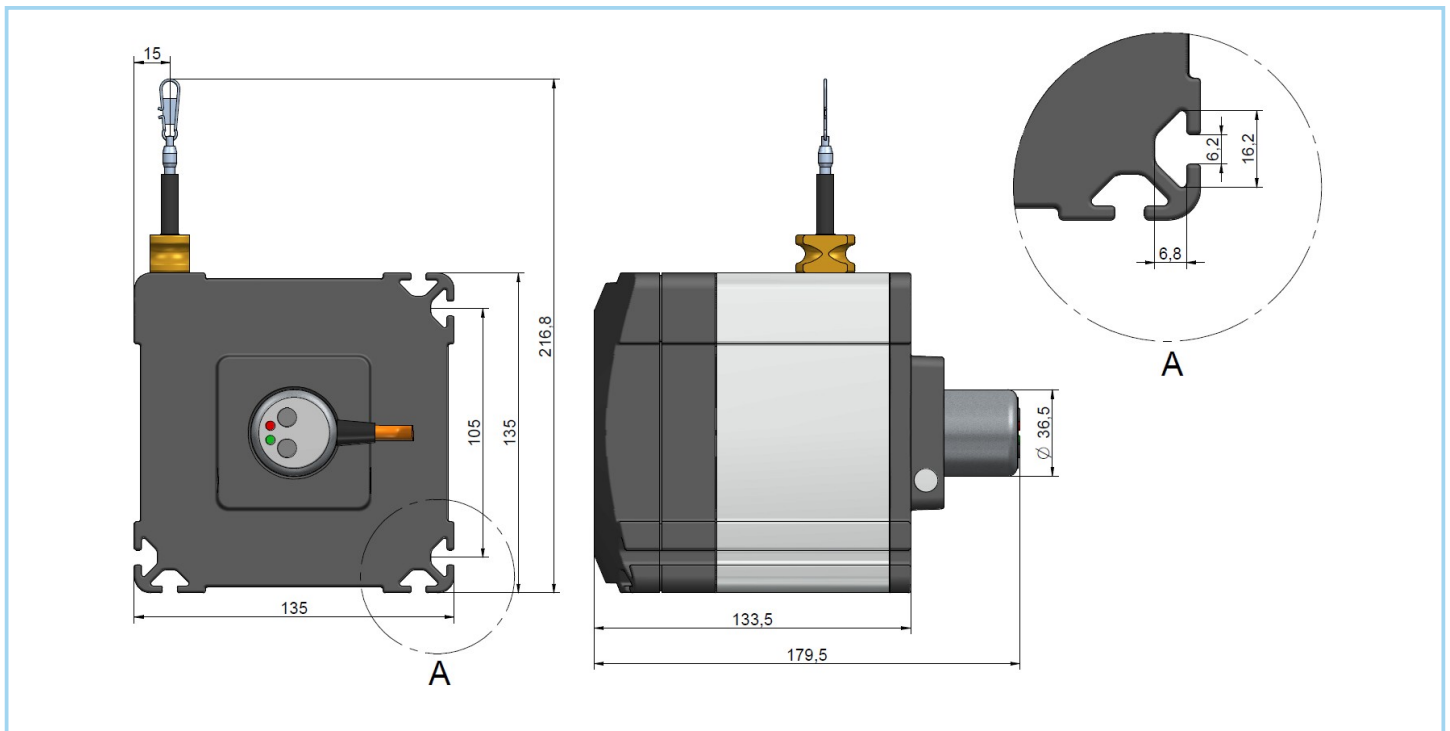


## TECHNICAL DATA – S635



SENSOR		S635
Measurement range	[m]	10 / 15 / 20
Linearity	[%]	0,01
Resolution	[%]	0,005
Hysteresis	[%]	0,05
Draw wire diameter	[mm]	1,00
Draw wire material		1.4401
Rope extraction speed		10 m/s
Rope retraction force		14...20 N
Temperature range		-30...+85°C
Lifetime		1 Mio. Full cycles
Protection class		IP67 (optional IP68)
Housing		Aluminium profile housing with fiber-reinforced plastic with fastening grooves
Weight	[g]	1800
Vibration load		20 g, DIN EN 60068-2-6
Shock		100 g / 6 ms, DIN EN 60068-2-27
Sensor element		Hall-element
Rope fixation		Ball bearing clip with drillprotection

### ■ TECHNICAL DRAWING S635

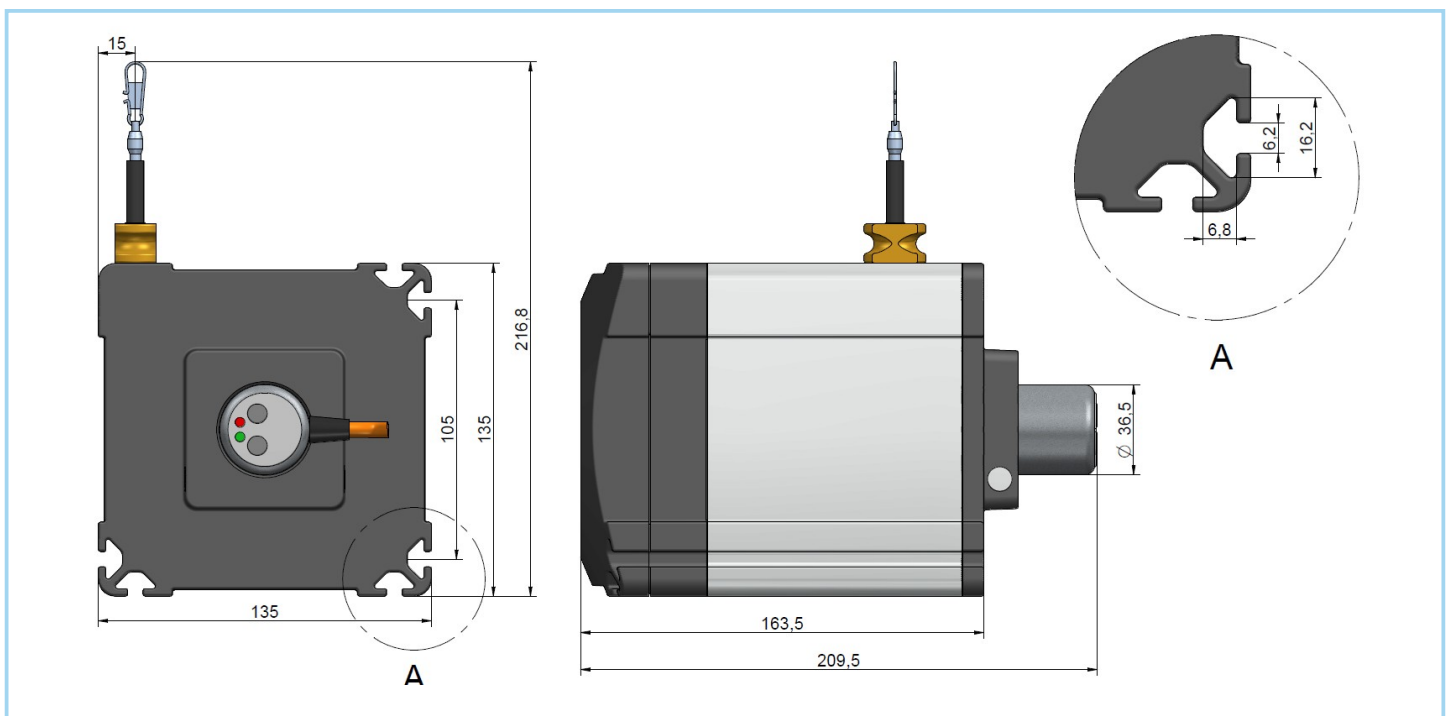


## TECHNICAL DATA – S935



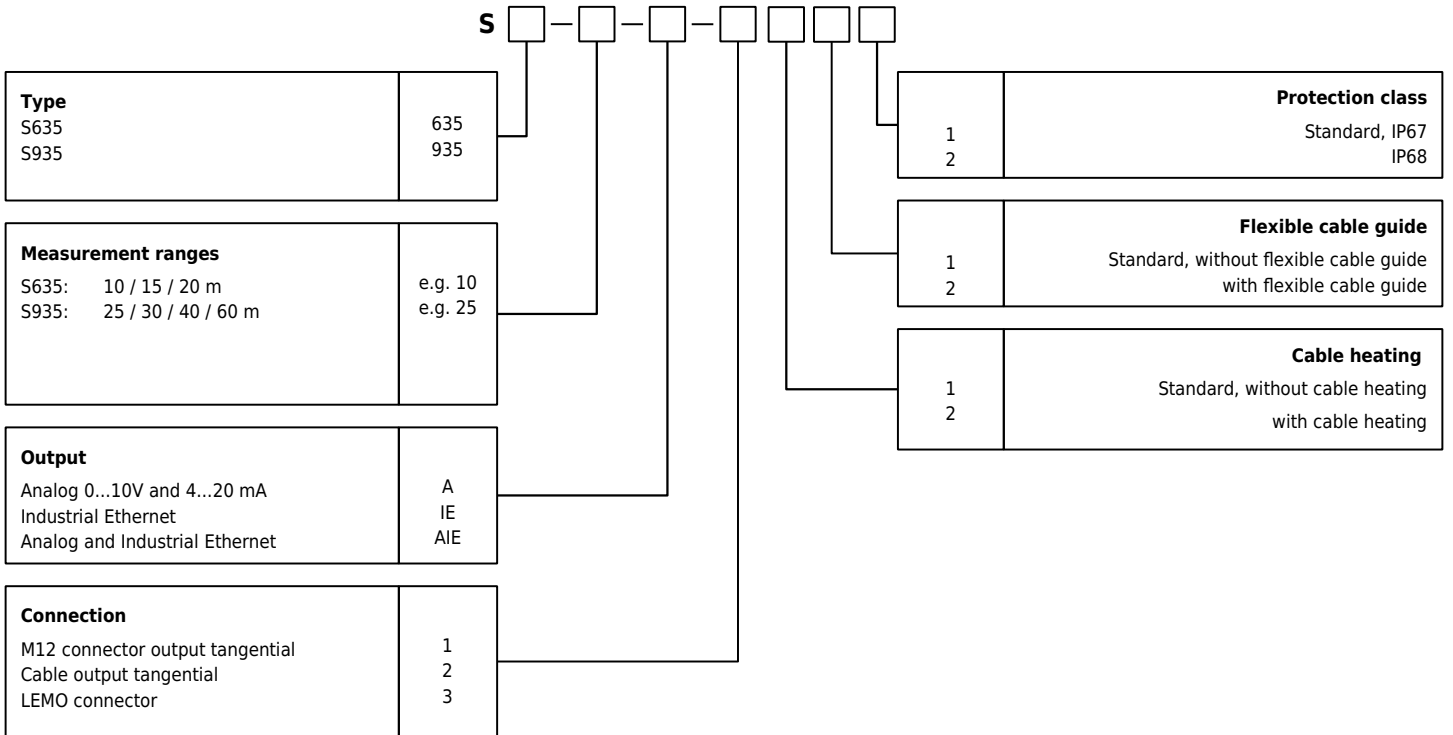
SENSOR		S935
Measurement range	[m]	25 / 30 / 40 / 60
Linearity	[%]	0,01
Resolution	[%]	0,005
Hysteresis	[%]	0,05
Draw wire diameter	[mm]	1,00
Draw wire material		1.4401
Rope extraction speed		10 m/s
Rope retraction force		5...30 N
Temperature range		-30...+85°C
Lifetime		1 Mio. Full cycles
Protection class		IP67 (optional IP68)
Housing		Aluminium profile with fiber-reinforced plastic with fastening grooves
Weight	[g]	2700
Vibration load		20 g, DIN EN 60068-2-6
Shock		100 g / 6 ms, DIN EN 60068-2-27
Sensor element		Hall-element
Rope fixation		Ball bearing clip with drillprotection

## ■ TECHNICAL DRAWING S935



# ORDER CODE

■ SENSOR



## PRECAUTIONS



- **Attach the sensor to the mounting holes at the designated location before pulling out the rope or before attaching the rope to the measurement object.**
- **Open the rope clip after the sensor has been firmly mounted and pull out the measuring rope. Hang the rope clip on the object and close the bracket of the rope clip. For safety, use a thin screwdriver and pass it through the rope clip to pull out the rope.**
- **Check the travel distance of the measurement object for collision with the sensor housing or exceeding the specified measurement range. Install the sensor in such a way that the stopper rubber does not hit the rope tower or the flexible rope guide of the sensor during rope return.**
- **Carry out the electrical connection according to the output type. When laying the cable, observe the minimum permissible cable bending radius (5 x cable diameter).**
- **The cable must be extended vertically from the sensor during operation. The maximum deviation from the vertical is 3° without using the flexible cable guide. It is essential to avoid pulling out the measuring cable at an angle. This would shorten the service life of the device. If the tolerance limit of 3° cannot be maintained, it is necessary to use the flexible rope guide.**
- **The measuring range or the zero point starts after approx. 2 mm rope extension. The mechanical reserve at the end of the measuring range is approx. 20 mm.**
- **Protect the sensor and the rope against ice formation when mounting outdoors at minus temperatures. For outdoor applications with danger of frost, the use of the rope heater is necessary.**
- **Preferably lay the rope in corners or protected under guides to avoid contamination or accidental contact.**
- **When handling the sensor, be careful not to let the rope snap accidentally or to extend the rope beyond the specified measuring range. The rope snapping back uncontrollably can cause personal injury.**
- **Maintenance: The devices are maintenance-free. However, if the rope becomes dirty due to adverse environmental conditions, clean this with a lightly oil-soaked cloth as required. Use resin-free machine oil for this purpose.**

