

# Correvit S-HR

## Non-contact optical sensors

Type CSHRA...

Patent no. 44 44 223 C5 DE 10 2007 008 004 B4
--

The Correvit S-HR sensors are an advancement of the proven 2-axis Correvit sensors and feature a high-resolution, low-noise angle signal.

- Correvit S-HR with working range 250 ±50 mm, applicable from 0.5 ... 250 km/h
- Accuracy of the unfiltered angle within the range of ±15 ° is ±0.1 °
- High-resolution slip angle measurement by enhanced measuring principle
- Adjustable filter time (unfiltered, moving average 8 ... 512 ms, FIR-Filter 2 ... 100 Hz)
- Extremely high measurement accuracy, better than ±0.2 %, as a result of precise optics and digital signal processing
- Signal outputs: Analog, Digital, CAN-Bus, USB, RS-232C

### Description

S-HR sensors measure slip angle and sideslip angle with high dynamics and an exceptionally high measurement accuracy.

The patented enhancement of the well-known Correvit principle, the application of new optical components, and the latest technology in digital signal processing enable the most precise high-resolution slip angle measurement. True 250 Hz signal update rate tracks every high dynamic maneuver.

Due to the new operating principle (absolute measuring) the angle signal is very low-noise which provides maximum dynamic performance of the angle signal without further signal filtering. This advantage make the sensors especially suited for measuring transversal vehicle dynamics like sideslip angle but also tire slip angle when mounted on wheel.

The S-HR sensors represent an essential contribution to the development of automotive measuring engineering.

### Application

High-precision, slip-free measurement of distance, longitudinal/transversal speed and angle (high-resolution) for dynamic vehicle testing, e.g. ISO 4138 steady-state circular-course driving, ISO 7401 sudden steering angle change, tire research.



### Technical data

#### Performance specifications

Speed range	km/h	0.5 ... 250
Angle measurement range	°	±40
High-resolution	°	±15
Distance resolution	mm	2.66
Measurement accuracy <sup>1)</sup>	%FSO	<±0.2
High-resolution angle output range	km/h	10 ... 250
Angle resolution	°	<0.01
Angle accuracy	°	<±0.1
Measurement frequency	Hz	250
Working distance and range	mm	250 ±50

#### Signal outputs

Digital output 1 - IVI or V <sub>I</sub> <sup>2)</sup>	pulses/m	1 ... 1,000/TTL
Digital output 2 - V <sub>q</sub> or angle <sup>2)</sup>	kHz	0 ... 46/TTL
Analog output 1 - IVI or V <sub>I</sub> <sup>2)</sup>	V	0 ... 10
Analog output 2 - V <sub>q</sub>	V	-10 ... 10
Analog output 3 - angle	V	-10 ... 10

#### Signal inputs

Trigger input		yes
Analog input 1+2	kHz	-10 ... 10
Counter input	kHz	0 ... 100

<sup>1)</sup> Determined on test surface with distance >200 m

<sup>2)</sup> Switching-over between the respective measured variables via KiCenter possible

**Technical data (continuation)**

**Interfaces**

CAN (Motorola/Intel)		2.0B
USB (Full Speed)		2.0
RS-232C		yes

**System specifications**

Power supply	V	10 ... 28
Power consumption at 12 V	W	60
Temperature range		
Operation (ambient temperature)	°C	-5 ... 50
Storage	°C	-10 ... 85
Relative Humidity (non-condensing)	%	5 ... 80
Degree of protection (cable mounted)		
Sensor head		IP67
Electronics		IP30
Dimensions (LxWxH)		
Sensor head	mm	165x50x130
Electronics	mm	180x125x95
Weight		
Sensor head (with spray guard)	grams	1,250
Electronics	grams	1,250
Shock	g ms	50 half-sine 6
Vibration	g Hz	10 10 ... 150
Illumination		halogen

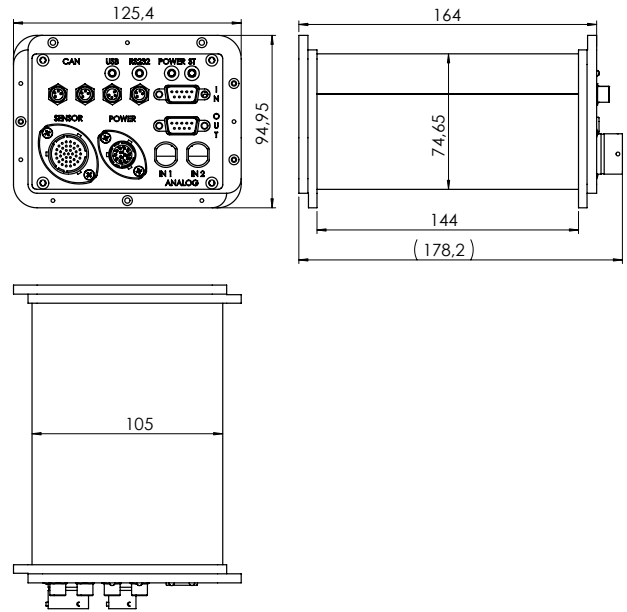


Fig. 2: Dimensions of the Correvit S-HR electronics

**Dimensions**

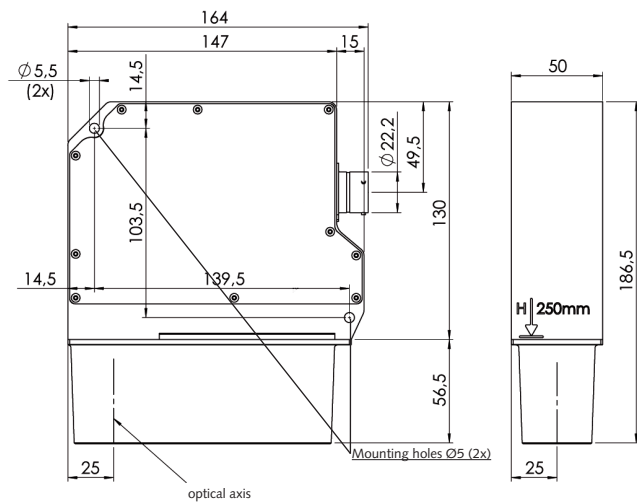


Fig. 1: Dimensions of the Correvit S-HR sensor

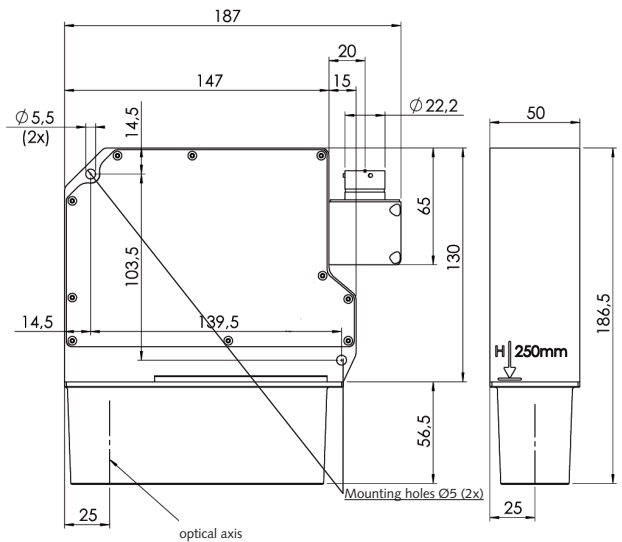


Fig. 3: Dimensions of the Correvit S-HR sensor with 90° connector

CSHRA\_000-806e-02.19

### Mounting

With mounting equipment from Kistler (see optional accessories).

When mounting the sensor at the vehicle, the mounting distance from the lower surface of the sensor body (not including the spray guard) to the road must be  $250 \pm 50$  mm.

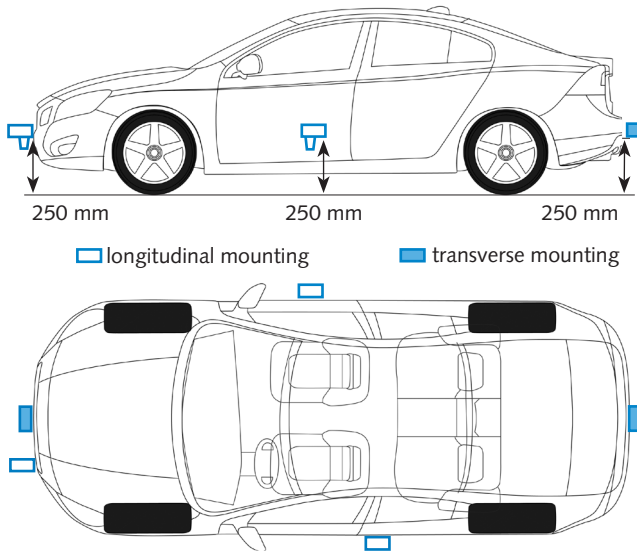


Fig. 4: Possible mounting options

### Ordering key

		Type CSHRA					
<b>Sensor head</b>							
Halogen*	2						
<b>Sensor cable</b>							
2 m	1						
5 m*	2						
10 m	3						
<b>Electronics</b>							
Standard*	1						
<b>Interface outputs</b>							
$\pm 10$ V*	1						
$\pm 5$ V	2						
<b>Mounting directions</b>							
Longitudinal*	1						
Transverse	2						
Longitudinal with 90° connector	3						
Transverse with 90° connector	4						
<b>Interface inputs</b>							
$\pm 10$ V*	1						

### Included accessories

- Power cable, l = 2 m
- Connection cable CAN, l = 2 m
- Connection cable RS-232C, l = 2 m
- Connection cable USB, l = 2 m
- Distribution cable, l = 1 m
- Transport case S-HR, complete
- Mini folding rule
- USB stick software and manuals
- Sensor calibration
- Halogen lamp 20 W/12 V
- Tool to exchange the sensor halogen lamp
- Angled pin spanner torx
- Hexagon wrench key, 6 kt 4 mm
- Screw set S-HR
- Spray guard

### Ordering no.

- 18012634
- 18012482
- 18012469
- 18012483
- 55061503
- 55066885
- 55064207
- 55158846
- 44000659
- 18012531
- 55064735
- 55065040
- 55063983
- 55085761
- 18012623

### Optional accessories

- Suction holder S-HR
- Magnet holder S-HR

### Ordering no.

- 18012622
- 18012621

### Ordering example

Type CSHRA22111

S-HR sensor, standard halogen illumination, 5 m cable, standard electronics, interface outputs  $\pm 10$  V, longitudinal mounting direction, interface inputs  $\pm 10$  V

\* Standard configuration