

# Correvit® S-350

## Non-Contact Optical Sensors

Type CS350A...

Patent No. DE 43 13 497 C2

The 2-axis Correvit S-350 sensors are designed for direct, slip-free measurement of longitudinal and transversal vehicle dynamics.

- Correvit S-350 Aqua and S-350D sensors with working range of 350 ±100 mm, applicable from 0,5 ... 250 km/h (optional 400 km/h)
- Correvit S-350 Racing with working range of 350 ±50 mm, applicable from 0,5 ... 400 km/h
- Correvit S-350D: capable of detecting driving direction – forward or backward – throughout the entire speed range
- The S-350 Aqua sensor electronics provide option for connection of a gyro to attain yaw rate for measurement of sideslip angle relative to the vehicle's center of gravity (not applicable with S-350 Racing)
- Adjustable filter time (unfiltered, moving average 8 ... 512 ms, FIR 2 ... 100 Hz)

### Description

Correvit S-350 sensors produce unparalleled accuracy on all standard testing surfaces, even under the most challenging conditions.

Compact and lightweight, Correvit S-350 sensors can be easily operated. Versatile mounting equipment enables quick and easy sensor installation.

S-350 sensors feature high-quality optical elements, the newest optoelectrical components and state-of-the-art high-performance signal processing based on DSP and FPGA's. Speed and distance information is updated at 250 Hz to track every highly dynamic maneuver.

Programmable, standardized signal outputs and interfaces allow direct connection to PC and virtually all data acquisition systems, making all measured values directly available.

Durable technology guarantees negligible service and maintenance requirements.

### Application

High-precision, slip-free measurement of distance, speed (longitudinal/transversal) and angle for dynamic vehicle testing, e.g. steady-state circular-course driving (ISO 4138).

The extended working range of the Correvit S-350 Aqua sensors make them ideal for measurement of transversal dynamics with trucks, busses, and off-road vehicles.



Correvit® S-350 Aqua  
Correvit® S-350D



Correvit® S-350 Racing

### Technical Data

Performance Specifications		S-350	S-350	S-350
		Aqua	D	Racing
Speed range	km/h	0,5 ... 250 <sup>1)</sup>	±0,5 ... 250	0,5 ... 400
Distance resolution	mm	2,47	2,32	2,47
Measurement accuracy <sup>2)</sup>	%FSO	<±0,2	<±0,25	<±0,2
Angle range	°	±40	±30	±40
Angle resolution <sup>3)</sup>	°		<±0,1	
Meas. accuracy angle <sup>4)</sup>	°		<±0,2	
Measurement frequency	Hz		250	
Working distance/range	mm	350 ±100	350 ±100	350 ±50

### Signal Outputs

Output Dig1 IVI or V <sub>I</sub> <sup>5)</sup>	pulses/ m	1 ... 1 000/TTL		
Output Dig2 V <sub>q</sub> or angle <sup>5)</sup>	kHz	0 ... 46/TTL		
Output Dig3 90° phase shifted to Dig 1	pulses/ m	no	0 ... 1 000/ TTL <sup>6)</sup>	no
Output Ana1 IVI or V <sub>I</sub> <sup>5)</sup>	V	0 ... 10	-10 ... 10	0 ... 10
Output Ana2 V <sub>q</sub> or angle <sup>7)</sup>	V	-10 ... 10		
Output Ana3 –angle	V	-10 ... 10	-10 ... 10	no

<sup>1)</sup> optional: calibrated up to 400 km/h

<sup>2)</sup> determined on test surface with distance >200 m

<sup>3)</sup> determined at 50 km/h and default settings

<sup>4)</sup> determined on test surface with distance >200 m in the range of ±30 °

<sup>5)</sup> switching-over between the respective measured variables via CeCalWin Pro possible

<sup>6)</sup> dependent on direction

<sup>7)</sup> switching-over between the respective measured variables via CeCalWin Pro possible (only for S-350 Racing)

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This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.

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## Technical Data (Continuation)

		S-350 Aqua	S-350 D	S-350 Racing
<b>Signal Inputs</b>				
Trigger input		yes	yes	no
Analog input 1+2	V	-10 ... 10	-10 ... 10	no
Counter input	kHz	0 ... 100	0 ... 100	no

### Interfaces

CAN (Motorola/Intel)		2.0B		
USB (Full Speed)		2.0	2.0	no
RS-232C		yes		

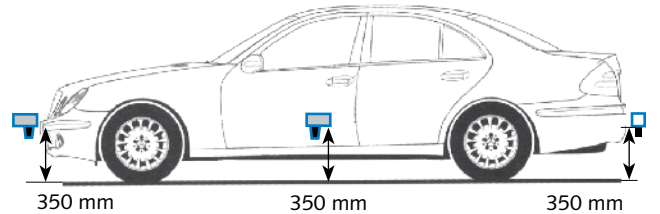
### System Specifications

Power supply <sup>8)</sup>	V	10 ... 28		
Power consumption max. (at 12 V)	W	33	35	52
Temperature range				
Operation	°C	-25 ... 50		
Storage	°C	-40 ... 85		
Relative humidity (non-condensing)	%	5 ... 80		
Protection standard (cable mounted)				
Sensor head		IP67		
Electronics		IP30	IP30	IP50
Dimensions (LxWxH)				
Sensor head	mm	125x70x45	125x70x45	125x70x45
Electronics	mm	180x125x95	180x125x95	145x107x37
Weight				
Sensor head	grams	500		
Electronics	grams	1 100	1 250	555
Shock	g ms	50 half sine 6		
Vibration	g Hz	10 10 ... 150		
Illumination		Halogen	Halogen	LED-IR 850 nm laser class1

<sup>8)</sup> S-350 Aqua: from serial number 640-084100

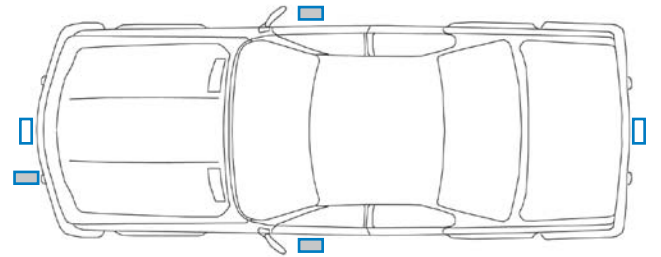
## Mounting

With Kistler mounting equipment S-350 (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 within the specified range (see technical data, page 1).



longitudinal mounting

transversal mounting



**Dimensions**

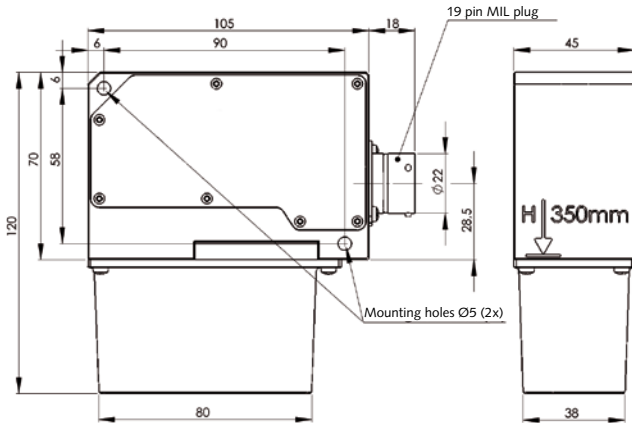


Fig. 1: Dimensions Correvit® S-350 Aqua and S-350D sensor

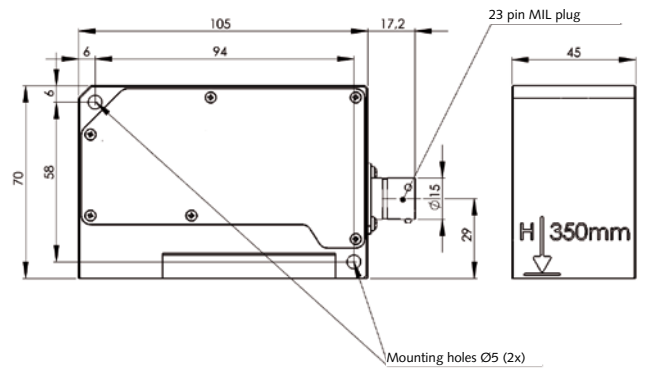


Fig. 2: Dimensions Correvit® S-350 Racing sensor

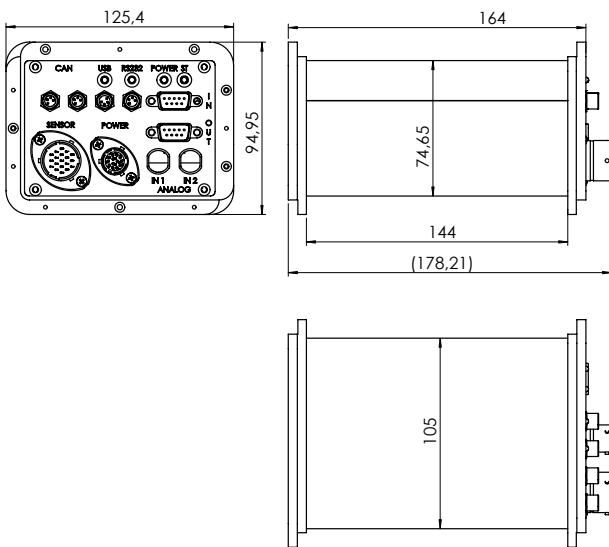


Fig. 3: Dimensions Correvit® S-350 Aqua and S-350D electronics

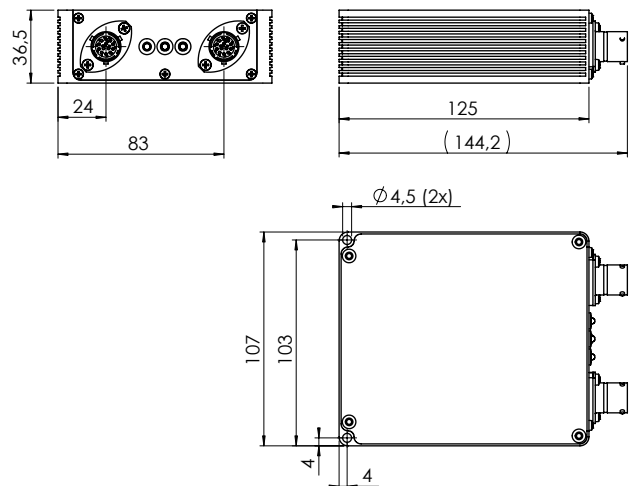


Fig. 4: Dimensions Correvit® S-350 Racing electronics

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### Included Accessories

- Mini folding rule
- Multimedia-CD incl. software & manuals
- Sensor calibration (DIN EN ISO 9001)
- Hexagon wrench 6 kt 4 mm
- Screw set for S-350

### Additional for S-350 Aqua Sensors

- Power cable, MIL, 6 pin. Banana, l = 2 m
- Connection cable CAN, l = 2 m
- Connection cable RS-232C, l = 2 m
- Connection cable USB, l = 2 m
- Distribution cable, D-Sub, 2 x BNC, l = 1 m
- Halogen lamp 20 W/12 V
- Tool to exchange the sensor halogen lamp
- Screw driver Torx T10
- Transport case, complete

### Additional for S-350 Racing Sensors

- Combined power and data cable, l = 2 m
- USB Adapter (USB 1.0 to RS-232C)
- Transport case complete

### Optional Accessories

- Suction holder S-350
- Magnetic holder S-350
- Brake switch
- Light barrier

### Optional Accessories for S-350 Racing

- Triggerbox

### Type/Art. No.

KCD14643  
KCD11343  
KCD11427  
KCD14283  
KCD17193

### Type/Art. No.

KCD17360  
KCD13946  
KCD13425  
KCD13947  
KCD10523  
KCD14893  
KCD15437  
KCD15887  
KCD17198

### Type/Art. No.

KCD15821  
KCD13971  
KCD17199

### Type/Art. No.

KCD15408  
KCD15213  
KCD11199  
KCD11357

### Type/Art. No.

KCD11346

### Ordering Key

#### Sensor Head

Racing (Infrared)	1
Aqua (Halogen)	2

#### Sensor Cable

2 m	1
5 m	2
10 m	3
15 m	4
20 m	5

#### Electronics

Standard	1
Racing	2
Standard with direction detection	3

#### Interface Outputs

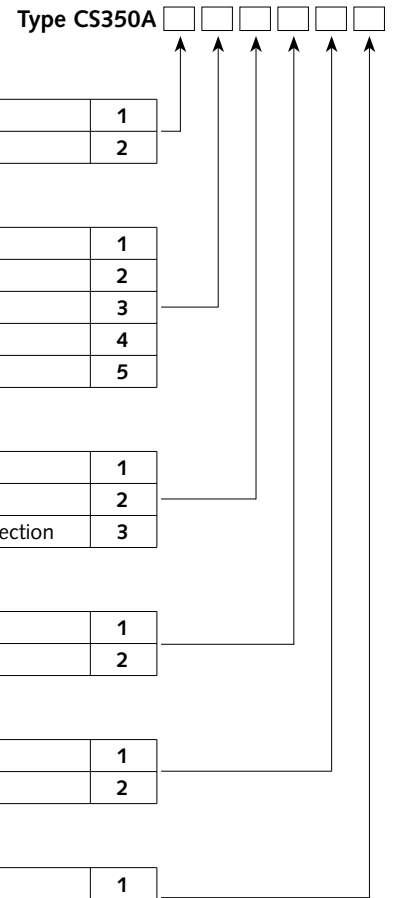
±10 V	1
±5 V	2

#### Mounting Directions

Longitudinal	1
Transversal	2

#### Interface Inputs

±10 V	1
0 ... 5 V	2



### Ordering Example

**Type CS350A221111**

S-350 Aqua sensor, standard halogen illumination, 5 m cable, standard electronics, ±10 V, longitudinal mounting direction