

Correvit SFII sensors

Non-contact optical sensors

Type CSF2A

Patent no. DE 43 13 497 C2

The Correvit SFII sensors are designed for measuring longitudinal and transverse dynamics at high speed and especially suited for racing applications.

- For measurement of slip angle from
0,3 ... 250 km/h
0,3 ... 400 km/h racing version available
- Small and lightweight
- Adjustable filter time (unfiltered, moving average
8 ... 512 ms)
- Measurement accuracy $<\pm 0,5$ % FSO
- Improved features by application of advanced DSP technology
- Signal outputs: analog, digital, CAN-Bus or RS-232C

Description

SFII sensors have a long-life, vibration-resistant infrared LED illumination. Consistent miniaturization and a low weight enable universal mounting positions, e.g. below the vehicle near the center of gravity. The applied state-of-the-art technology provide improved performance, even under harsh environmental conditions.

Equipped with 4 analog and 4 digital outputs, SFII sensors permit simultaneous measurement of longitudinal, transversal, and magnitude speed, as well as angle measurement. Complemented with high-speed data transfer via CAN Bus, RS-232C, or USB Adapter, the SFII sensors can be used with any current data acquisition system.

A protective optical-glass lens prevents damage to the optics and the illumination source and can be easily replaced without use of special tools.

Application

High-precision, slip-free measurement of distance, longitudinal and transversal speed as well as angle for vehicle dynamics testing.



Technical data

Performance specifications		SFII	SFII-P
Speed range ¹⁾	km/h	0,3 ... 250	
Distance resolution	mm	2,08	
Measurement accuracy ²⁾	%FSO	$<\pm 0,5$	
Angle range	°	± 40	
Angle resolution ³⁾	°	$<\pm 0,1$	
Meas. accuracy angle ³⁾	°	$<\pm 0,5$	
Meas. frequency	Hz	250	
Working distance and range	mm	180 \pm 50	

Signal outputs

Output Dig1 – IVI	pulses/m	1 ... 1 000/TTL	
Output Dig2 – V _I	pulses/m	1 ... 1 000/TTL	
Output Dig3 – V _q	kHz	0 ... 46/TTL	
Output Dig4 – angle	kHz	0 ... 46/TTL	
Output Ana1 – IVI	V	0 ... 10	
Output Ana2 – V _I	V	0 ... 10	
Output Ana3 – V _q	V	-10 ... 10	
Output Ana4 – angle	V	-10 ... 10	

Interfaces

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

¹⁾ Optional: calibrated up to 400 km/h

²⁾ Determined on test surface with distance >200 m

³⁾ Determined at 50 km/h and standard settings

Technical data (continuation)

System Specifications		SFII	SFII-P
Power supply	VDC	10,5 ... 24	
Power consumption at 12 V	W	21	
Temperature range			
Operation	°C	-25 ... 50	
Storage	°C	-40 ... 85	
Relative humidity (non condensing)	%	5 ... 80	
Degree of protection (cable mounted)			
Sensor head		IP67	
Electronics		IP50	
Dimensions (LxWxD)			
Sensor head	mm	100x28x40	118x33x45
Electronics	mm	130x86x33	130x86x33
Weight			
Sensor head	grams	180	250
Electronics	grams	490	490
Shock			
	g	50 half-sine	
	ms	6	
Vibration			
	g	10	
	Hz	10 ... 150	
Illumination			
		LED-IR 850 nm laser class 1	

Dimensions

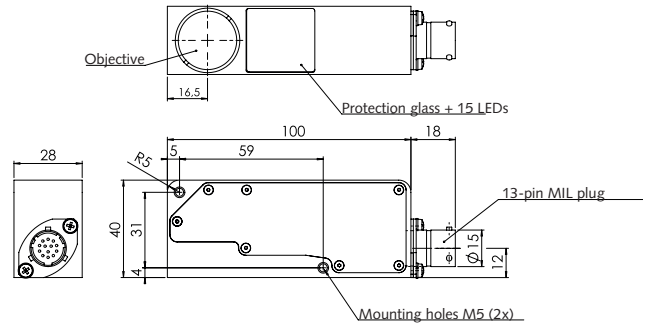


Fig. 1: Correvit SFII sensor dimensions

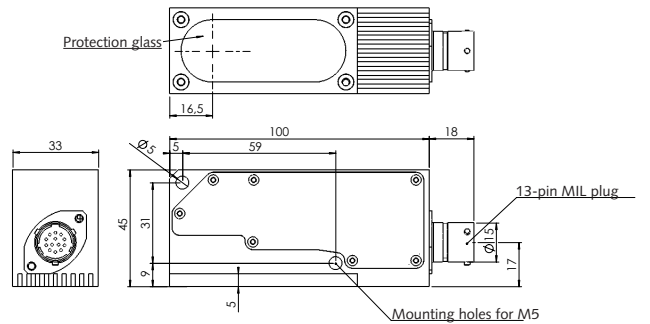


Fig. 2: Correvit SFII-P sensor dimensions

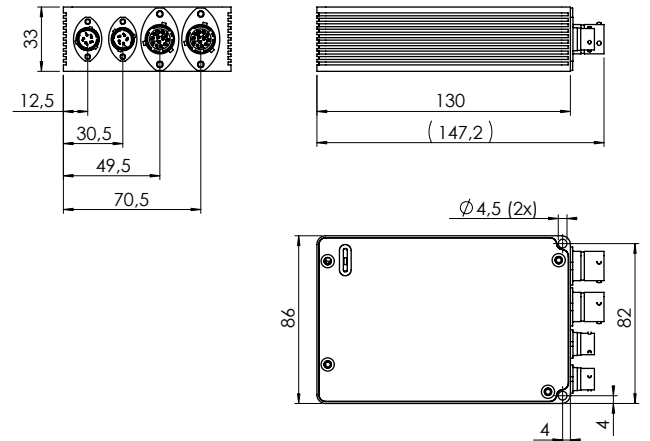


Fig. 3: Correvit SFII/SFII-P electronics dimensions

CSF2A_000-812e-02.19

Mounting

With Kistler mounting equipment (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).

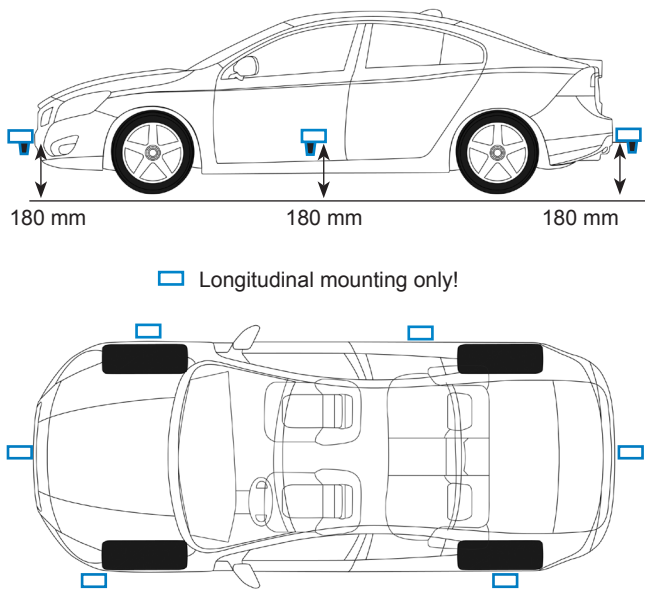


Fig. 4: Possible mounting positions

Included accessories

• Power cable, MIL, 5 pin, 2 x bunch, l = 2 m	18012480
• Connection cable CAN, l = 2 m	18012476
• Connection cable RS-232C, l = 2 m	18012475
• Signal cable analog-digital, l = 2 m	55063976
• USB adapter	18012484
• Mini folding rule	55064207
• USB stick software + manual	55158846
• Calibration 2-axis sensors (up to 250 kph)	44000607
• Cooling element	55063822
• Screw set for SF	55086107
• Transport case, complete	55066886

Optional accessories

• 3-point suction holder	18012595
• 8-point magnetic holder	18012490

CSF2A_000-812e-02.19

Ordering key

Art. No. 18017735

Type CSF2A

Sensor head

SFII-P (infrared, with protection glass)*	1
SFII (infrared, without protection glass)	2

Sensor cable

2 m	1
5 m	2

Electronics

250 km/h*	1
400 km/h	2

Interface

±10 V*	1
±5 V	2

Mounting direction

Longitudinal*	1
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Ordering example

Type CSF2A12111

SFII-P sensor, infrared with protection glass, 5 m cable, standard electronics (250 km/h), ±10 V, longitudinal mounting direction

* Standard configuration