

# Correvit® SFII Sensors

## Non-Contact Optical Sensors

Type CSF2A...

Patent No. DE 43 13 497 C2

The Correvit SFII sensors are designed for racing applications to measure longitudinal and transversal speed.

- Developed for measurement of tire slip angle from 0,3 ... 250 km/h; Racing version with speed range 0,3 ... 400 km/h available
- Small and lightweight – just 250 g
- Adjustable filter time (unfiltered, moving average 8 ... 512 ms)
- Measurement accuracy  $<\pm 0,5\%$
- Improved features by application of advanced DSP technology
- Signal outputs: Analog, Digital, CAN-Bus or RS-232C



### Description

Correvit SFII sensors represent an advanced development of the Formula-1 proven Correvit SF sensor, with its 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, 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 <sup>1)</sup>                | km/h | 0,3 ... 250  |        |
| Distance resolution                      | mm   | 2,08         |        |
| Measurement accuracy <sup>2)</sup>       | %FSO | $<\pm 0,5$   |        |
| Angle range                              | °    | $\pm 40$     |        |
| Angle resolution <sup>3)</sup>           | °    | $<\pm 0,1$   |        |
| Measurement accuracy angle <sup>3)</sup> | °    | $<\pm 0,5$   |        |
| Measurement frequency                    | Hz   | 250          |        |
| Working distance and range               | mm   | 180 $\pm$ 50 |        |

### Signal Outputs

|                     |          |                 |
|---------------------|----------|-----------------|
| Output Dig1 - IVI   | Pulses/m | 1 ... 1 000/TTL |
| Output Dig2 - $V_l$ | 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 - $V_l$ | 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  |

<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 standard settings

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## Technical Data (Continuation)

| System Specifications              |       | SFII          | SFII-P    |
|------------------------------------|-------|---------------|-----------|
| Power supply                       | V     | 10,5 ... 24   |           |
| Power consumption at 12 V          | W     | 28            |           |
| Temperature range                  |       |               |           |
| Operation                          | °C    | –25 ... 50    |           |
| Storage                            | °C    | –40 ... 85    |           |
| Relative humidity (non-condensing) | %     | 5 ... 80      |           |
| Protection standard                |       |               |           |
| Sensor head (cable mounted)        |       | IP67          |           |
| Electronics (cable mounted)        |       | IP50          |           |
| Dimensions (LxWxH)                 |       |               |           |
| 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

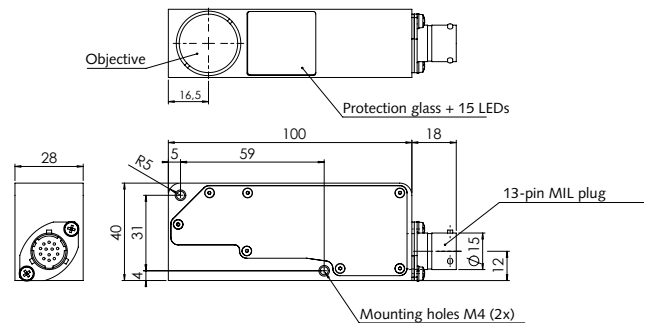


Fig. 1: Dimensions Correxit® SFII sensor

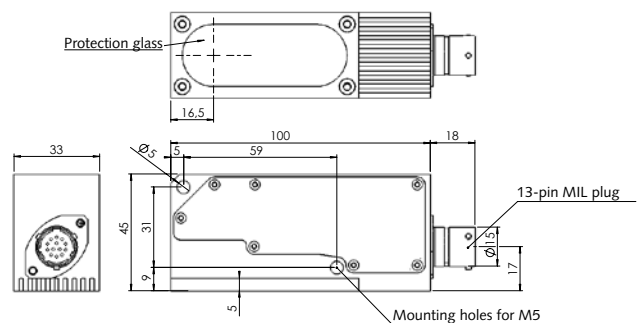


Fig. 2: Dimensions Correxit® SFII-P sensor

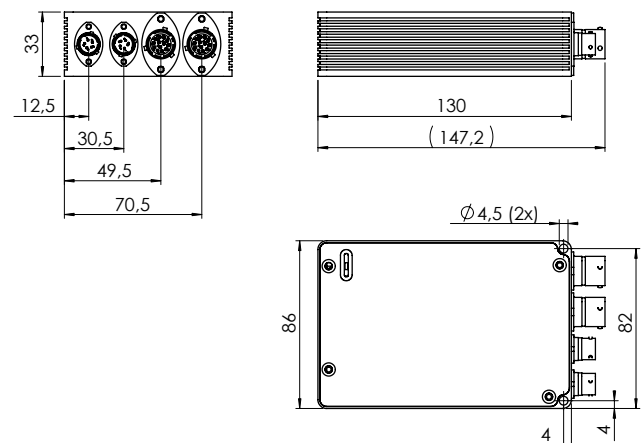
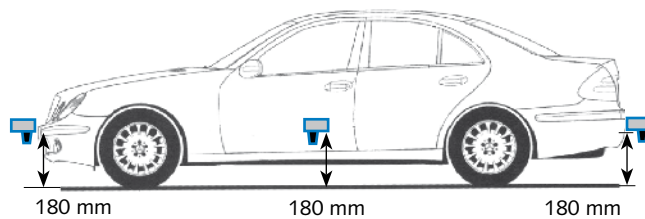


Fig. 3: Dimensions Correxit® SFII/SFII-P electronics

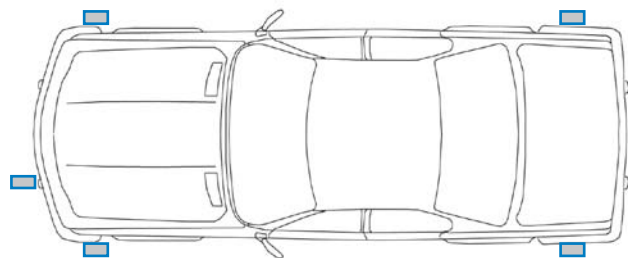
## Mounting

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).



Longitudinal mounting only!



## Included Accessories

- Power cable, MIL, 5 pin, 2 x bunch, l = 2 m
- Connection cable CAN, l = 2 m
- Connection cable RS-232C, l = 2 m
- Signal cable analog-digital, l = 2 m
- USB adapter
- Mini folding rule
- Multimedia-CD incl. software & manuals
- Sensor calibration 2-axis sensors
- Cooling element left & right, black
- Screw set for SF
- Transport case, complete

## Type/Art. No.

KCD13854  
KCD13683  
KCD13682  
KCD14273  
KCD13971  
KCD14643  
KCD11343  
KCD11427  
KCD14044  
KCD17194  
KCD17197

## Optional Accessories

- 3-point suction holder
- 8-point magnetic holder

## Type/Art. No.

KCD16049  
KCD14091

## Ordering Key

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

|                  |   |
|------------------|---|
| Standard*        | 1 |
| Racing, 400 km/h | 2 |

### Interface

|        |   |
|--------|---|
| ±10 V* | 1 |
| ±5 V   | 2 |

### Mounting Direction

|               |   |
|---------------|---|
| Longitudinal* | 1 |
|---------------|---|

## Ordering Example

Type CSF2A12111

SFII-P sensor, infrared with protection glass, 5 m cable, standard electronics, ±10 V, longitudinal mounting direction

\* Standard configuration