

Correvit SFx-F1

Type 2067A

Non-contact optical sensors

The Correvit SFx-F1 complements the Kistler family of optical sensors, and builds upon its predecessors with a range of innovative features. It presents an adjustable filter time for precise tuning, two working distance options for versatility, and lighter, more compact electronic components for enhanced usability and weight saving. Furthermore, its increased robustness against vibrations ensures consistent performance even in the challenging racing environments. As the ultimate Ground-Truth sensor for racing applications, the Correvit SFx-F1 sets a new standard for precision and reliability.

- Velocity range from 0.1 km/h to 400 km/h
- Small and lightweight - optimized for racing applications
- Speed measurement accuracy: $<\pm 0.5\%$
- Sideslip angle measurement accuracy: $<\pm 0.2^\circ$
- Adjustable filter time: unfiltered, moving average (adjustable from 8 ms and up to 512 ms)
- Advanced signal processing

Description

Introducing the Correvit SFx-F1: the latest evolution stage of automotive sensor technology. Designed and engineered with cutting-edge innovation, the SFx-F1 sets a new standard in performance and reliability. Designed to meet the highest demands of racing environments, it boasts several competitive advantages.

Firstly, the SFx-F1 features lighter and more compact electronics. Its streamlined design minimizes size and weight, which avoids performance losses due to added weight and saves costs driven by expensive vehicle re-designs.

Unlike other sensors that merely estimate it, the Correvit SFx-F1 is able to provide direct, highly accurate sideslip measurements. An estimated sideslip, while informative, is not as reliable as a measured one because it relies on assumptions rather than concrete data. This crucial capability of performing highly accurate sideslip measurements is of great importance because it enables the creation of estimators of the force transmission from the wheels to the road, which allows for a precise measurement and tracking of the vehicle dynamics. This essential information is critical for fully exploiting the vehicle's performance and to push it to its absolute limits.



Moreover, the SFx-F1 incorporates superior weather protection for its ECU, ensuring optimal performance even in the harshest environmental conditions. With enhanced resistance to water, dust, and other elements, you can trust the SFx-F1 to deliver consistent results regardless of the weather.

But that's not all – the SFx-F1 takes durability to the next level with increased ECU resistance to vibrations. This means you can rely on precise measurements and data acquisition even in the high-vibration racing environments, giving you unparalleled confidence in the sensor measurements.

From Formula Student competitions, and all the way up to Formula 1 teams, the Correvit SFx-F1 is the ideal racing companion. You can rest assured that every measurement is accurate and precise, and that it can serve as ground-truth and reference for the optimization of your vehicle's performance. Experience the future of automotive sensor technology with the SFx-F1 from Kistler.

Application

Measurement of vehicle dynamics in racing environments
High-precision, slip-free measurement of:

- distance,
- longitudinal and lateral velocity
- sideslip angle

2067A_003-607e-05.25

Technical data

Performance specifications

Speed	km/h	±0.1 ... 400
Distance resolution	mm	≤5
Measurement accuracy ¹⁾	%FSO	<±0.5
Angle	°	±30
Angle resolution	°	<±0.01
Meas. accuracy angle ¹⁾		
Typical	°	<±0.1
Guaranteed	°	<±0.2
Measurement frequency	Hz	250
Working distance / range 2067A1xxx	mm	180 ±50
Working distance / range 2067A2xxx	mm	270 ±50

Interfaces

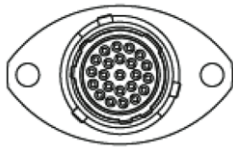
CAN (Motorola/Intel)		2.0B
----------------------	--	------

System specifications

Power supply	V	10 ... 28
Power consumption max. (at 12 V)	W	≈20
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		IP67
Dimensions (LxWxH)		
Sensor head 2067A1xxx	mm	88x44x28
Sensor head 2067A2xxx	mm	88x49x28
Electronics	mm	128x106x22
Weight		
Sensor head	grams	150
Electronics	grams	330
Shock	g ms	50 half-sine 6
Vibration	g Hz	10 10 ... 150
Illumination		LED-IR 850 nm Lamp risk group 1

¹⁾ Determined on test surface with distance >200 m at constant temperature (+/-2K)

Pin assignments



ECU Plug: 55249551 Connector: ASDD010-23SN	
Pin	Signal
1	LED_ILLU_VOUT
2	LED_ILLU_VOUT
3	GND_ILLU
4	GND_ILLU
5	+8V
6	-8V
7	Diode 1+
8	Diode 1-
9	Diode 2+
10	Diode 2-
11	AGND
12	DGND
13	COM_MOSI+
14	COM_MOSI-
15	COM_MISO+
16	COM_MISO-
17	DGND Spare
18	NC
19	NC
20	NC
21	NC
22	NC
23	NC



Sensor head plug: 55184814 Connector: 19p m EDS.2M.319.XLB	
Pin	Signal
1	LED_ILLU_VOUT
2	LED_ILLU_VOUT
3	GND_ILLU
4	GND_ILLU
5	+8V
6	-8V
7	Diode 1+
8	Diode 1-
9	Diode 2+
10	Diode 2-
11	AGND
12	DGND
13	COM_MOSI+
14	COM_MOSI-
15	COM_MISO+
16	COM_MISO-
17	DGND Spare
18	NC
19	NC



ECU power plug: 55065924 Connector: ASL006-05PN-HE	
Pin	Signal
1	+12V
2	+12V
3	NC
4	0V
5	0V



ECU communication plug: 55065923 Connector: ASL006-05SN-HE	
Pin	Signal
1	RS 232 Rx
2	RS 232 Tx
3	GND
4	CAN-L
5	CAN-H

2067A_003-607e-05.25

Dimensions

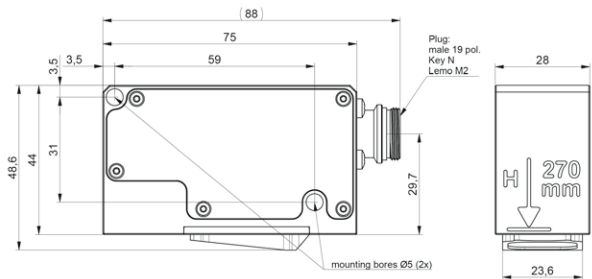


Fig. 1: Correvit SFx-F1 sensor head dimensions 2067A2

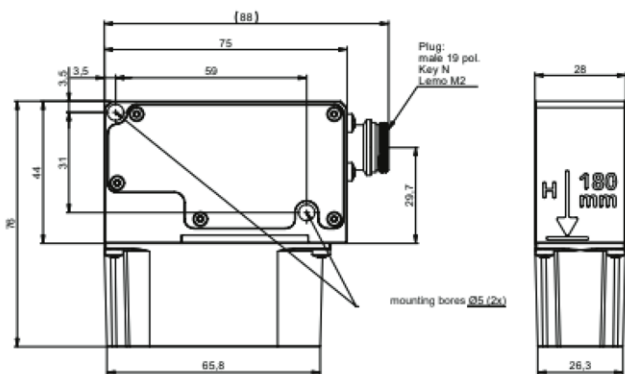


Fig. 2: Correvit SFx-F1 sensor head dimensions 2067A1

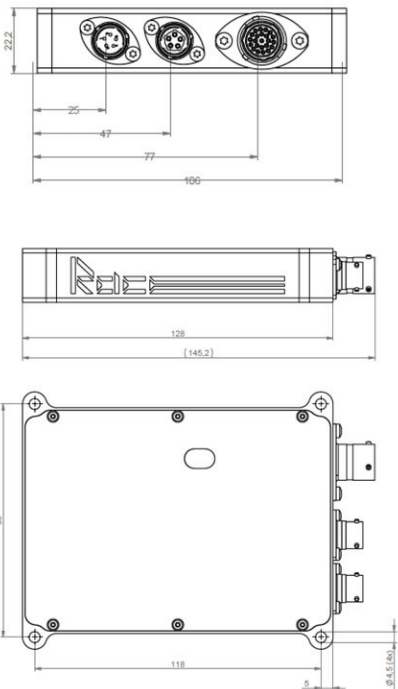


Fig. 3: Correvit SFx-F1 electronics dimension

Included accessories

- Cable set
 - Sensor cable. (0.5 m) or
 - Sensor cable (2 m)
 - Power cable (2 m)
 - RS 232 cable (2 m)
 - CAN cable (2 m)
 - USB/serial adapter (0.8 m)

- USB stick software + manuals (including KiCenter)
- Screw set for SF
- Screw set
- Mini folding rule
- Transport case complete

Mat. No.

55254119
55249549
18012480
18012475
18012476
55065718

55158846
55086107
55082183
55064207
55187733

Ordering key

Type 2067A ☐ ☐ ☐ ☐

Working distance

180 mm ± 50 mm	1
270 mm ± 50 mm	2

Sensor cable

Without sensor cable	0
With sensor cable (0.5 m)	1
With sensor cable (2 m)	2

Filter

Without IR filter glass	0
With IR filter glass (not mounted)	1

Spray guard

Without spray guard	0
With spray guard	1

Ordering example

Type 2067A1011

SFx-F1 sensor, 180 mm ±50 mm, without sensor cable, with IR Filter glass, with spray guard

2067A_003-607e-05.25