

DCA system

Optical sensor system for measuring dynamic camber angle

The DCA system is designed for precise dynamic camber angle measurement relative to ground.

- Mounts easily onto the vehicle wheel with collets that clamp directly to the wheel nuts; collets are optionally available for most standard wheel types
- Online display and parameterization via KiCenter Software
- A DCA processor supports two sensor systems,
- Data output via CAN and USB
- For passenger cars and SUVs, truck version available on request
- Can be combined with RoaDyn wheel force transducers

Description

The ability to measure dynamic camber angle accurately is crucial to effective suspension design. In passenger car and truck as well as racing applications, knowledge of camber angle is imperative. Due to forces created by driving maneuvers, static camber angle cannot be assumed to correspond to dynamic camber values, which change continually as the vehicle is driven.

Using two ride height sensors of the HF series mounted on the vehicle wheel, accurate dynamic measurement of wheel camber relative to ground is at last a reality. The applied laser height sensors are proved to be accurate even in extreme environmental conditions, including intense sunlight, and high temperature and humidity, as found in India and Arizona.

The DCA system acquires dynamic wheel camber angle by comparing the relative change in height between the two sensors, as measured from the optical plane of each sensor to the surface of the road or track.

The system also provides the option to mount a sensor out of the Correvit/KiMotion series for non-contact measurement of slip angle.

Application

- Dynamic camber measurement relative to the road surface
- Characteristic curve for camber as function of lateral acceleration
- · Chassis and suspension setup
- Determination of the tire characteristics

Type 18012583, 18012584, 18012585



Technical data

Performance specifications

62 195
420 - 830
±25
<0.5
0.04
3,400
250
125 625
150 900

Signal outputs 2)

Analog	V	–10 10
Camber angle		yes
Height 1 and 2		yes
Wheel speed and position ³⁾		optional
Calculated distance ³⁾		optional

¹⁾ Values based on a basis length of 162 mm

 $^{\mbox{\tiny 2)}}$ All inputs/outputs are protected against overvoltage and short circuit

³⁾ When used with wheel pulse transducer type CWPT...

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Technical Data (Continuation)

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

System specifications		
Power supply	V	10 36
Supply current	A	<0.5
Temperature range		
Operation	°C	-10 50
Storage	°C	-20 60
Relative humidity (non-condensing)	%	5 80
Degree of protection (cable mounted)		
Sensor heads		IP67
Electronics		IP55
Dimensions (LxWxH)		
Sensor head ⁴⁾	mm	100x20x40
Electronics	mm	174x125x95
Weight		
Sensor head ⁴⁾	grams	155
Electronics	grams	1080
Shock g	g	50 half-sine
	ms	6
Vibration	g	10
	Hz	10 150
Light source HF Sensors		Laser
Laser class		3R
		(IEC608251)
Laser power		<5
Wave length		660
Spot size (approx.)		1x2

⁴⁾ Without spray guard

Mounting

The DCA system can be mounted on the front and rear wheels using optionally available mounting collets: 17, 19 and 21 mm; other sizes on request.

When mounting the sensor system 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. 1: Possible mounting positions: front and rear wheels



Fig 2: Mounted DCA system



Fig. 3: A mounted DCA system with RoaDyn S625 CFR WFT and optional SFII-P sensor for measurement of tire slip angle

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Dimensions



Fig. 4: DCA system dimensions, sensors (including optional SFII-P sensor) and mounting unit





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Fig. 5: DCA processor dimensions

Included accessories

Type 18012583

DCA system for 1 wheel with processor	Ordering no.
 HF-500C sensor* with CAN, 2 x 	18012320
 Wheel mounting complete, 1 x 	55064168
• Mounting unit HF/DCA without sensors, 1 x	18012546
• Bar double hub for wheel mounting unit, 1 x	55063319
 DCA processor, 1 x 	55064378
 Sensor cable DCA, I = 5 m, 1 x 	55064596
 Power cable, I = 5 m, 1 x 	18012366
 Connection cable CAN, I = 2 m, 1 x 	18012482
 Connection cable RS-232C, I = 2 m, 1 x 	18012469
 Connection cable USB, I = 2 m, 1 x 	18012483
 Distribution cable, I = 1 m, 1 x 	55064423
 Hexagon wrench set, 1 x 	55061932
 Cranked wrench key, 1 x 	55065078
 USB stick software + manuals 	55158846
T	

Туре 18012584

DCA system for 2 wheels with processor	Ordering no.
 HF-500C sensor* with CAN, 4 x 	18012320
 Wheel mounting complete, 2 x 	55064168
• Mounting unit HF/DCA without sensors, 2 x	18012546
• Bar double hub for wheel mounting unit, 2 x	55063319
 DCA processor, 1 x 	55064378
 Sensor cable DCA, I = 5 m, 2 x 	55064596
• Power cable, I = 5 m, 1 x	18012366
 Connection cable CAN, I = 2 m, 1 x 	18012482
• Connection cable RS-232C, I = 2 m, 1 x	18012469
• Connection cable USB, I = 2 m, 1 x	18012483
• Distribution cable, I = 1 m, 2 x	55064423
 Hexagon wrench set, 1 x 	55061932
 Cranked wrench key, 1 x 	55065078
 USB stick software + manuals 	55158846

Type 18012585

DCA system for 1 wheel without processor	Ordering no
 HF-500C sensor* with CAN, 2 x 	18012320
 Wheel mounting complete, 1 x 	55064168
• Mounting unit HF/DCA without sensors, 1 \boldsymbol{x}	18012546
- Bar double hub for wheel mounting unit, 1 \boldsymbol{x}	55063319
 Sensor cable DCA, I = 5 m, 2 x 	18012524
 Hexagon wrench set, 1 x 	55061932
 Cranked wrench key, 1 x 	55065078
 USB stick software + manuals 	55158846

* Alternatively, the DCA system can be equipped with HF-750C sensors

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Optional accessories	Ordering no.
 Wheel pulse transducer incl. mounting 	18012541
 Correvit SFII-P sensor, Type CSF2A 	18017735
 Mounting unit SFII-P for DCA system 	18012510
 Connection to RoaDyn Sx WFTs, with 	55090915
in-board transmission	
 Sensor cable DCA, I = 5 m 	55064596
Collets	on request
Centering stars	on request
Ordering code	Ordering no
Ordering code	Ordering no.

- DCA-1 system, for 1 wheel, with processor, 18012583 without clamps/centering stars
 DCA-2 system, for 2 wheels, with processor, 18012584
- without clamps/centering stars
- DCA system, for 1 wheel, without 18012585 processor, without clamps/centering stars

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