

Microstar II

Non-Contact Microwave Sensors

Microstar II Sensors are designed for longitudinal vehicle dynamics tests which require a large working range, making them ideally suited for off-road applications.

- Working range of 300 ... 1 200 mm, speed range 0,5 ... 400 km/h
- Adjustable filter time (unfiltered, moving average 8 ... 512 ms, FIR-Filter 2 ... 100 Hz)
- Compensation of mounting angle errors (pitch angle) by two-beam planar antenna
- Direct connection to PC or various evaluation systems
- Signal outputs: Analog, digital, CAN bus, USB or RS-232C
- Negligible service and maintenance requirements

Description

The measurement principle of the Microstar II Sensor is based on the Radar-Doppler-Effect. The sensor consists of a twobeam planar antenna and the new CDS electronics unit with CAN bus.

The very large working distance of 300 ... 1 200 mm makes it ideally suited for applications with utility and off-road vehicles and to accurately measure longitudinal speed under extreme conditions, e.g. in woods or mountains, where GPS or optical sensors are not capable of good measurements.

Within the product range, sensors of the Microstar type are the most cost-efficient solution for measuring longitudinal dynamics.

Microstar II sensors measure the relative movement between sensor and test surface using a planar antenna, which projects two radar beams at 45° angles. Upon striking the test surface, the beams are reflected back to the sensor antenna. The resulting double frequency (equal to the difference of sent and received frequencies) is directly speed-proportional. The gained signal is converted to the desired dimension via highperformance signal processing and then sent to the corresponding outputs.

Additional connections, such as an interface for flow-measurement systems (for consumption tests), or trigger inputs for light barriers or brake switches, provide exceptional testing power and flexibility in a highly compact package.

When used with the delivered software, the Microstar II sensor functions as a complete data acquisition and evaluation system. The software enables test parameters and definitions to



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be permanently saved via software, along with online displays and evaluations, e.g. charts and plots. All measured signals can be saved and evaluated off-line.

Application

For non-contact distance and speed measurement, e.g.:

- Driving performance measurements
- Determination of longitudinal parameters
- Fuel consumption measurements
- Off-road measurements
- Monitoring the actual speed of off-road vehicles, e.g. Jeeps, Quads, military vehicles, agricultural vehicles, etc.

Technical Data

Performance Specifications

Speed range	km/h	0,5 400
Distance resolution mm		9,5
Measurement accuracy ¹⁾ %FSO		<±0,5
Measurement frequency	Hz	250
Working range	mm	300 1 200

 $^{1)}$ determined on test surface with distance >200 m

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measure. analyze. innovate.

Technical Data (Continuation)

Signal Outputs

Digital output 1 - VL	pulses/m	1 1 000/TTL
Analog output 1 - VL	V	0 10

Signal Inputs

Trigger input calibration		yes
Analog input 1+2	V	-10 10
Counter input	kHz	0 100

Interfaces

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

System Specifications

Power supply	V	10 28	
Power consumption at 12 V	W	10	
Temperature range			
Operation	°C	-25 50	
Storage	°C	-40 85	
Relative humidity (non condensing)	%	5 80	
Protection standard			
Sensor head (cable mounted)		IP65	
Electronics (cable mounted)		IP30	
Dimensions (LxWxH)			
Sensor head	mm	166x44x108	
Electronics	Electronics mm		
Weight			
Sensor head	grams	550	
Electronics	grams	1 100	
Shock	g	50 half sine	
	ms	6	
Vibration	g	10	
	Hz	10 150	

Antenna Specifications

Transmission frequency	GHz	24,125 ±0,05
Transmission power	dBm	<+25
Source power	mW	5
Radiation angle		
Longitudinal direction	٥	2 x 45 ±10
Transversal direction	0	90 ±7,5

Included Accessories	Type/Art. No.
Power cable	KCD17180
• Sensor cable, I = 5 m	KCD17390
 Connection cable CAN, I = 2 m 	KCD13946
 Connection cable RS-232C, I = 2 m 	KCD13425
 Connection cable USB, I = 2 m 	KCD13947
• Distribution cable, D-Sub, 2 x BNC, I = 1 m	KCD10532
 Transport case, complete 	KCD17415
Mini folding rule	KCD14643
Multimedia-CD incl. software & manuals	KCD11343
Sensor calibration	KCD11427
Screw set for Microstar II	KCD17416
• Tools: Hexagron wrench, 6 kt, 3 mm	KCD11285
Optional Accessories	Type/Art. No.
 Suction holder Microstar 	KCD17418
 Magnet holder Microstar 	KCD17417

Ordering Key

	Type CMSTRA		
		$\uparrow \uparrow \uparrow$	$\uparrow \uparrow \uparrow$
Sensor Head			
Standard*	1		
Sensor Cable			
2 m	1		
5 m*	2		
10 m	3		
Electronics			
Standard*	1		
Interface Outputs			
±10 V*	1		
±5 V	2		
Mounting Direction			
Longitudinal*	1		
Interface Inputs			
±10 V*	1		
0 5 V	2		

Ordering Example*

Type CMSTRA121111

Microstar II sensor head standard, 5 m sensor cable, standard electronics, interface output ± 10 V, longitudinal mounting direction, interface input ± 10 V

* Standard configuration

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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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