









# Lufft UMB Sensor Overview

	Wind	Temperature Rel. humidity Air pressure	Temperature Rel. humidity Air pressure Precipitation	Temperature Rel. humidity Air pressure Radiance (solar radiation)
Titan				
	Ventus			WS310
Platinum				
				WS301/303
Gold				
	V200A	WS300	WS400	WS304
Professional				
	WS200		WS401	WS302



Temperature Rel. humidity Air pressure Wind speed Wind direction	Temperature Rel. humidity Air pressure Wind speed Wind direction Radiance (solar radiation)	Temperature Rel. humidity Air pressure Wind speed Wind direction Precipitation	Temperature Rel. humidity Air pressure Wind speed Wind direction Precipitation Radiation	2 Channel EXPANDER	Protocols
				ANACON	UMB MODBUS ASCII SDI12
	WS510				
				ANACON	UMB MODBUS ASCII SDI12
	WS501/503				
				ANACON	UMB MODBUS ASCII SDI12
WS500	WS504	WS600	WS700		
				ANACON	UMB MODBUS ASCII SDI12
	WS502	WS601			



# Lufft WS501-UMB – Temperature, Relative Humidity, Radiation, Air Pressure, Wind, Electronic Compass

From the WS product family of professional intelligent measurement transducers with digital interface for environmental applications.

Integrated design with ventilated radiation protection for measuring:

- Air temperature
- Relative humidity
- Air pressure
- Wind direction
- Wind speed
- Solar Radiation

Relative humidity is measured by means of a capacitive sensor element; a precision NTC measuring element is used to measure air temperature.

The world renowned technology of Kipp+Zonen CMP3 is integrated.

Ultrasonic sensor technology is used to take wind measurements.

Measurement output can be accessed by the following protocols:  
UMB-Binary, UMB-ASCII, SDI-12, MODBUS

**One external temperature or rain sensor is connectable.**

Lufft WS501-UMB Smart Weather Sensor			Order No.
<b>WS501-UMB</b>			<b>8375.U01</b>
<b>Technical Data</b>	Dimensions	Ø approx. 150mm, height 332mm	
	Weight	Approx. 1.5kg	
<b>Temperature</b>	Principle	NTC	
	Measuring range	-50...60 °C	
	Accuracy	± 0.2 °C (-20 °C... +50 °C), otherwise ± 0.5 °C (>-30 °C)	
<b>Relative humidity</b>	Principle	Capacitive	
	Measuring range	0...100% RH	
	Accuracy	±2% RH	
<b>Radiation</b>	Response time (95%)	< 18s	
	Non-stability (change/year)	< 1%	
	Non-linearity (0 to 1,000 W/m²)	< 1%	
	Directional error (at 80° with 1,000 W/m²)	< 20W/m²	
	Temperature dependence of sensitivity	< 5% (-10... +40 °C)	
	Tilt error (at 1000 W/m²)	< 1%	
	Spectral range (50% points)	300...2800nm	
	Measuring range	1400W/m²	
<b>Air pressure</b>	Principle	MEMS capacitive	
	Measuring range	300...1200hPa	
	Accuracy	±0.5hPa (0...+40°C)	
<b>Wind direction</b>	Principle	Ultrasonic	
	Measuring range	0...359.9°	
	Accuracy	< 3° RMSE >1.0 m/s	
<b>Wind speed</b>	Principle	Ultrasonic	
	Measuring range	0...75m/s	
	Accuracy	±0.3m/s or 3% (0...35m/s) RMS of reading, whichever is greater, ±5% (>35m/s) RMS	
<b>General Information</b>	Heating	20VA at 24VDC	
	Protection type housing	IP66	
	Interface	RS485, 2-wire, half-duplex	
	Operating power consumption	4...32VDC	
	Operating humidity range	0...100%	
<b>Accessories</b>	Operating temperature range	-50...60 °C	
	Surge protection		<b>8379.USP</b>
	Power supply 24V/4A		<b>8366.USV1</b>
	UMB Interface converter ISOCON-UMB		<b>8160.UISO</b>
	Digital-analog-converter DACON8-UMB		<b>8160.UDAC</b>
	Temperature Sensor WT1		<b>8160.WT1</b>
	Road Surface Temperature Sensor WST1		<b>8160.WST1</b>
	Connection cable, 20m		<b>8370.UKAB20</b>
	Rain Sensor WTB100		<b>8353.10</b>



All in One

Aspirated temperature/humidity measurement

Open communication protocol:

- UMB-ASCII
- UMB-Binary
- SDI-12
- MODBUS
- Analogue outputs in combination with 8160.UDAC

Third-Party-Rain gauge sensors are compatible: 0.1mm, 0.2mm, 0.5mm, 1mm heated and unheated.



# Standard Certificate for all UMB-Sensors



LUFFT Mess- und  
Regeltechnik GmbH

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Herstellerprüfzertifikat M nach DIN 55350-18-4.2.2  
Manufacturer test certificate M according to DIN 55350-18-4.2.2

Gegenstand Object	IRS31-UMB		
Sensornummer Sensor number		Seriennummer Serial number	
Hersteller Manufacturer	G. Lufft Mess- und Regeltechnik GmbH Gutenbergstraße 20 70736 Fellbach, Germany		

### Temperaturmessung / Temperature measurement

Prüfpunkt Test point	Prüfbedingung Test conditions	Bestanden Passed	
		Ja Yes	Nein No
Fahrbahnoberflächentemperatur Road surface temperature	Temperatur = 0,0 °C ± 0,1 °C Temperature = 0,0 °C ± 0,1 °C	X	
Tiefentemperatur 1 Temperature under ground 1	Temperatur = 0,0 °C ± 0,1 °C Temperature = 0,0 °C ± 0,1 °C	X	
Tiefentemperatur 2 Temperature under ground 2	Temperatur = 0,0 °C ± 0,1 °C Temperature = 0,0 °C ± 0,1 °C	X	

### Temperatursensor / Temperature sensor

Prüfpunkt Test point	Prüfbedingung Test conditions	Bestanden Passed	
		Ja Yes	Nein No
Fahrbahnoberflächensensor Road surface sensor	Temperatur = 0,0 °C ± 0,1 °C Temperature = 0,0 °C ± 0,1 °C		
Tiefentemperatursensor 1 Temperature sensor under ground 1	Temperatur = 0,0 °C ± 0,1 °C Temperature = 0,0 °C ± 0,1 °C		
Tiefentemperatursensor 2 Temperature sensor under ground 2	Temperatur = 0,0 °C ± 0,1 °C Temperature = 0,0 °C ± 0,1 °C		

Dieses Prüfzertifikat darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung des Ausstellers. Prüfzertifikate ohne Unterschrift und Stempel haben keine Gültigkeit.  
This test certificate may not be reproduced other than in full except with the permission of the exhibitor. Test certificates without signature and seal are not valid.

Stempel Seal      Datum Date      Qualitätssicherung Quality control      Bearbeiter Person in charge

F. V. Hoff Großmann

LUFFT Mess- und  
Regeltechnik GmbH



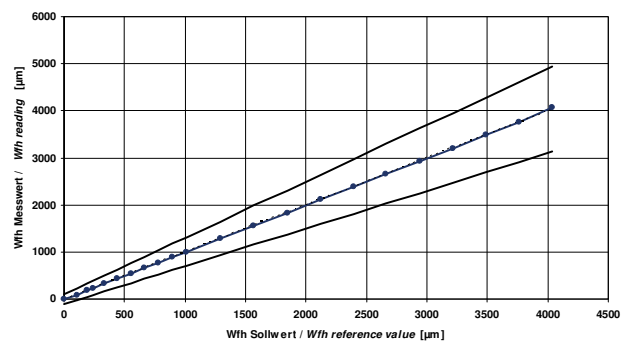
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Herstellerprüfzertifikat M nach DIN 55350-18-4.2.2  
Manufacturer test certificate M according to DIN 55350-18-4.2.2  
Seriennummer / Serial number:

### Kalibrierung Gefriertemperatur / Calibration freezing point

Wasserfilmhöhe water film height	Gefriertemperatur freezing point	Sollwert reference value	Messwert reading
H <sub>2</sub> O + NaCl 11,8 %, 1000 µm	-8,9 °C ± 1 °C	11,8 % ± 1,0 %	%
H <sub>2</sub> O + NaCl 2,0 %, 500 µm	-1,0 °C ± 1 °C	2,0 % ± 1,0 %	%
H <sub>2</sub> O + NaCl 1,1 %, 250 µm	-0,6 °C ± 1 °C	1,1 % ± 1,0 %	%

### Kalibrierung Wasserfilmhöhe / Calibration water film height



### Funktionstest / Function test

Prüfpunkt Test point	Prüfbedingung Test conditions	Bestanden Passed	
		Ja Yes	Nein No
Temperaturzyklus von -30 °C...+70 °C Temperature cycle from -30 °C...+70 °C	Alle Messwerte korrekt All measured values correctly	X	