Wind Technology

A Passion for Precision

a passion for precision · passion pour la précision · pasión por la precisión · passione per la precisione · a pa

The operation of a wind power plant is not possible without reliable wind-related information. Environmental influences – strong winds, icing, reduced visibilty – control actions have to be optimized immediately. Lufft, with its broad range of intelligent sensors with long-term stability, has the right "meteorological" product range for such an application.

www.lufft.de

Lufft

VENTUS-UMB Ultrasonic Wind Sensor

Belongs to Luffts WS family of professional intelligent sensors with digital and analog interfaces. The ultrasonic wind sensor is designed without mechanical parts as they have been used with traditional „cups and vanes“. The digital or analog output delivers instantaneous, average, min or max value with flexible measuring rate. The VENTUS is heated in case reaching critical ambient conditions. Made for cold climate!

Recommended for:
- wind turbines
- marine/ships
- meteorology
- building automation

Lufft sensors, both in plastic and metal housing, use ultrasonic technology for the precise measuring of wind speed and direction. Our sensors are tested in our own high-precision wind tunnel, so that you know how strong and where the wind is blowing.

Metal housing and 200W-heater

VENTUS-Ultrasonic Wind Sensor			Order No.
Extremely precise and maintenance-free measurement of wind velocity and wind direction as well as calculation of acoustic virtual temperature.			
Ventus-UMB			**8371.UM**
Technical Data	Dimensions	Ø approx. 150 mm, height approx. 200 mm	
	Weight	approx. 2,5 kg	
Wind direction	Principle	Ultrasonic	
	Measuring range	0.1…360 °	
	Resolution	0.1 °	
	Accuracy	± 2 ° RMSE >1.0 m/s	
	Start-up treshold	0.1 m/s	
	Measurement rate	15 full measurements per second 60 partial measurement	
	Measurement rate instant. value	1-10 s Default 10 s	
Wind direction	Principle	Ultrasonic	
	Measuring range	0…65 m/s	
	Resolution	0.1 m/s	
	Accuracy	± 0.2 m/s RMSE (<2 m/s) ± 1.5 % RMSE (>=2 m/s) of measurement	
	Start-up treshold	0.1 m/s	
	Measurement rate	15 full measurements per second 60 partial measurement	
	Measuring rate instant. value	1-10 s Default 10 s	
	Unit	m/s; km/h; mph; kts	
Virtual temperature	Principle	Ultrasonic	
	Measuring range	-50 °C…+70 °C	
	Resolution	0.1 °K	
	Accuracy	± 2.0 K (without heater and without sun exposure)	
	Measuring rate	15 full measurements per second 60 partial measurement	
	Measuring rate instant. value	1-10 s Default 10 s	
	Data output	digital	
	Interface	RS485 semi-/full duplex, isolated	
	Baudrate	1200-57600	
	Measurement	Avg (arithmetic, vector), Min, Max 1-10 min	
	Status	Heating, sensor failure	
	Data output	Only semi-duplex mode	
	Output signal	4-20 mA (instantaneous, avg, min, max)	
	Load	max. 300 Ohm	
	Ambient temper.	-40..+60 °C (with heating)	
	Bus operation	Up to 32 devices	
	Operating voltage electronics	10…30 VDC or 24 VDC/1.2VA	
	With heating	24 VDC, max. 200 VA	
	Electr. connection	8 pole plug	
	Housing material	Aluminium, seawater-proof	
	Protection type	IP 65	
	Mounting	Pole diameter 50 mm / 2“	
	Factory certificate	yes	
Accessories	Surge protection		**8379.USP-V**
	Power supply 24 V/10 A		**8366.USV2**
	UMB Interface converter ISOCON		**8160.UISO**
	Connection cable Ventus/V200A, 15m incl. connector		**8371.UK015**
	Connection cable Ventus/V200A, 50m incl. connector		**8371.UK050**
	Connector Ventus/V200A		**8371.UST1**

V200A-Ultrasonic Wind Ssensor, plastic housing and 30W-heater

The ultrasonic wind sensor is designed without mechanical parts as they have been used with traditional „cups and vanes“. The digital or analog output delivers instantaneous, average, min or max value with flexible measuring rate. The V200A-UMB is heated in case reaching critical ambient conditions.

Recommended for:
- meteorology
- building automation

The following outputs/protocols are available:
- NMEA
- ASCII
- UMB
- 4…20 mA analog

V200A-Ultrasonic Wind Ssensor			Order No.
Extremely precise and maintenance-free measurement of wind velocity and wind direction as well as calculation of acoustic virtual temperature. Belongs to Luffts WS family of professional intelligent sensors with digital and analog interfaces.			
V200A-UMB			**8371.UA01**
Technical Data	Dimensions	Ø approx. 150 mm, heigth approx. 200 mm	
	Weight	approx. 0.8 kg	
Wind direction	Principle	Ultrasonic	
	Measuring range	0.1…360 °	
	Resolution	0.1 ° (standard)	
	Accuracy	< 3 ° RMSE from1.0 m/s	
	Start-up treshold	0.3 m/s	
	Measuring rate	15 full measurements per second 60 partial measurement	
	Measuring rate instant. value	1-10 s Default 10 s	
Wind speed	Principle	Ultrasonic	
	Measuring range	0…60 m/s	
	Resolution	0.1 m/s	
	Accuracy	± 0.3 m/s or 3 % (0…35 m/s) ± 5 %(> 35 m/s) RMSE	
	Start-up treshold	0.3 m/s	
	Measuring rate	15 full measurements per second 60 partial measurement	
	Measuring rate instant. value	1-10 s Default 10 s	
	Unit	m/s; km/h; mph; kts	
Virtual temperature	Principle	Ultrasonic	
	Measuring range	-50 °C…+70 °C	
	Resolution	0.1 K	
	Accuracy	± 2.0 K (without heater and without sun exposure)	
	Measuring rate	15 full measurements per second 60 partial measurement	
	Measuring rate instant. value	1-10 s Default 10 s	
Allgemein	Data output	digital	
	Interface	RS485 semi-/full duplex, isolated	
	Baud rate	1200-57600	
	Measurement rate	instantaneous value 1-10 s	
	Measurement	Avg (arithmetic, vector), Min, Max 1-10 min	
	Status	Heating, sensor failure	
	Data output	Only semi-duplex mode	
	Output signal	4-20 mA (instantaneous, avg, min, max)	
	Max. load	max. 300 Ohm	
	Resolution	16 bit	
	Permissible ambient temperature	-40..+60 °C (with heating)	
	Bus operation	Up to 32 devices	
	Operating voltage	electronic 10…30 VDC or 24 VDC/1.2VA	
	With heating	24 VDC, max. 20 VA	
	Electrical connection	8 pole plug	
	Housing material	Plastic	
	Protection type	IP 65	
	Mounting	Pole diameter 50 mm / 2“	
	Factory certificate	yes	
Accessories	Surge protection		**8379.USP-V**
	Power supply 24 V/4 A		**8366.USV1**
	UMB Interface converter ISOCON		**8160.UISO**
	Connection cable Ventus/V200A, 15 m incl. connector		**8371.UK015**
	Connection cable Ventus/V200A, 50 m incl. connector		**8371.UK050**
	Connector Ventus/V200A		**8371.UST1**

WS200-UMB – Windsensor

WS200-UMB Compact weather station			Order No.
From the WS product family of professional intelligent measurement transducers with digital interface for environmental applications.			
WS200-UMB			**8371.U01**
Technical Data	Dimensions	Ø approx. 150 mm, height approx. 200 mm	
	Weight	approx. 1.3 kg	
Wind direction	Principle	Ultrasonic	
	Measuring range	0…359,9 °	
	Accuracy	±3 °	
Wind direction	Principle	Ultrasonic	
	Measuring range	0…60 m/s	
	Accuracy	±0.3 m/s or ±3 % (0…35 m/s)	
Allgemein	Interface	RS485, 2-wire, half-duplex	
	Heating	10 VA at 24 VDC	
	Power supply	24 VDC +/-10 % <4 VA (without heating)	
	Operating rel. humidity	0…100 %	
	Operating temperature	-50…60 °C	
Accessories	Surge protection		**8379.USP**
	Power supply 24 V/4 A		**8366.USV1**
	UMB Interface converter ISOCON		**8160.UISO**

Heated wind sensor construction:
- *Wind direction*
- *Wind speed*

Ultrasound sensor technology is used to take wind measurements. Measurement data are available for further processing in the form of a standard protocol (Lufft-UMB protocol).
- *Ultrasonic wind sensor*
- *Open communication protocol:*
  ASCII
  UMB
  SDI12 coming soon

Windsensor BASIC

Wind sensors BASIC are recommendes for use in.:

- *building services*
- *Umweltmesstechnik*
- *environmental measurements*
- *wind power plants*
- *stadiums*
- *industrial meteorology*
- *solar plants*
- *controlling of jalousies*

Windsensor BASIC			Order Nr.
The slender, flow-optimized external geometry ensures certain and precise measurement. For highest stability under load and safe long-term use we rely on robust materials, such as the anodised aluminium housing. The compact sensors with their simple mounting principles additionally provide a high degree of flexibility. Without heating.			
Technical data	***Windsensor BASIC***		
Wind direction	Dimensions	Blade wind fane L 232 mm / H 260 mm	**8368.100**
	Weight	ca. 0.95 kg	
	Principle	magnetic	
	Measuring range	0…360 °	
	Resolution	3 °	
	Accuracy	+/-5 °	
	Starting value	0.7 m/s	
	Outputs	0…5 V	
	Supply voltage	24 VDC (6…28 VDC)	
	current consumption	15 mA at 12 V / 18 mA t 28 V	
Wind speed	Dimensions	3-armed cup-Ø 95 mm / H 180 mm	**8368.110**
	Weight	approx. 0.9 kg	
	Principle	magnetic	
	Measuring range	0.7…50 m/s	
	Resolution	0.26 m/s	
	Accuracy	+/- 2 % FS	
	Starting value	0.7 m/s	
	Outputs	0…192 Hz	
	Supply voltage	24 VDC (4.7…28 VDC)	
	current consumption	max. 8 mA | <4 mA at 5 V	
Temperature-measuring range	-30… +70 °C under non-icing environmental conditions		
Housing	sea water resistant aluminium, anodized, IP53 for boreswith Ø 30 mm at max. 10 mm material thickness incl. 5 m fixed cable		
Accessories	Mast adapter Ø 50 mm		**8368.Z100**
	Traverse		**8368.Z101**

The wind sensors without heating offer:

- wearfree data acquisition
- robust housing
- dimensionally stable blade wind vane
- fail-safe cup
- ouble precision bearing

Wind Sensor INDUSTRY

Wind-Sensor INDUSTRY			Order No.
The wind sensors impress with high accuracy, simplest mounting methods and ultimately robust, seawater-proof materials.			
Technical Data	***Wind-Sensor INDUSTRY***		
Wind direction	Dimensions	Blade wind fane, L 232 mm, H 307 mm dimensionally stable, plastic	
	Weight	approx. 0.35 kg	
	Measuring range	0…360 °	
	Resolution	2 °	
	Accuracy	+/-2 °	
	Starting value	< 0.7 m/s	
	Outputs	0(4)…20 mA / max. load 600 Ohm	
Wind direction	Dimensions	3-armed cup-Ø 95 mm / H 230 mm	
	Weight	Approx. 0.25 kg	
	Measuring range	0.7…50 m/s	
	Resolution	< 0.02 m/s	
	Accuracy	+/-2 % FS	
	Starting value	< 0.7 m/s	
	Outputs	0(4)…20 mA = 0…50 m/s, max. load 600 Ohm	
Allgemein	Measuring principle	Hall Sensor Array	
	Range of application	temperatures -30…+70 °C heated, wind speed 0…60 m/s	
	Supply voltage	24 (20…28) VDC, max. 800 mA electr. controlled heating, 18 W	
	Housing	Aluminium, anodized, IP53, Ø 32 mm	
	Bore	Ø 30 mm for mounting at traverse	
Included in delivery	cable with plug 12 m, ready-made		
Varieties	**(Sensors with fixed cable or without heating on request)**		
	Wind direction	0…20 mA – output	**8368.200**
	Wind direction	0…20 mA – output	**8368.210**
	Wind direction	4…20 mA – output	**8368.220**
	Wind direction	4…20 mA – output	**8368.230**
	Wind direction	0…10 VDC output = 0…360 °C	**8368.240**
	Wind direction	0…10 VDC output = 0…50 m/s	**8368.250**

Wind sensors INDUSTRY are recommended for use in:

- *wind power plants*
- *building services*
- *wind warning devices on cranes*
- *industrial applications*
- *in all climatic zones*
- *environmental measurements*

The optimal heating of the sensor head and minimum powerdemand of the system are made possible by thermal decoupling of the housing shaft.

- precision, tradition and future reliability
- large operative measuring and temperature range
- simplest mast mounting
- very good starting values through magnetic, contactless measuring principle
- optimal heating concept

Further information about our products can be found on our website www.lufft.de

Wind sensor PROFESSIONAL

The titan in the catagory „professional wind sensors“ meets the challenge of highest reliability over a very large measuring range.

Wind sensor PROFESSIONAL			Order No.
Two optimized versions are available with regard to power supply and signal output. The design is not only aerodynamically optimized but also effectuates extremely good deep-seaworthiness through the special surface treatment.			
Technical Data	***Windsensor Professional***		
Wind direction	Dimensions	Blade wind vane, L 240 mm, H 310 mm	**8368.300**
	Weight	approx. 0.4 kg	
	Principle	Magnetical Positioning Encor System	
	Measuring range	0…360 °	
	Resolution	< 1°	
	Accuracy	± 1°	
	Outputs	4…20 mA analogue	
	Starting valuee	≤ 0.3 m/s	
	Measuring element	Blade wind vane, dimensionally stable, aluminium	
Wind speed	Dimensions	3-armed cup CB, Ø 215 mm	**8368.310**
	Weight	approx. 0.35 kg	
	Principle	Magnetical Positioning Encor System	
	Measuring range	0.3…75 m/s	
	Resolution	< 0.1 m/s	
	Accuracy	± 0.3 m/s ≤10 m/s ± 1 % FS…50 m/s	
	Outputs	4…20 mA analogue	
	Starting valuee	< 0.3 m/s	
	Measuring element	3-armed cup, dimensionally stable, aluminium	
Range of application	Temperatures -40…+70 °C, heated, max. gusts of 100 m/s		
Supply voltage	24 VDC (20…28 VDC), max 800 mA, electr. controlled heated		
Housing	Seawater resistant aluminium, surface (special anodised oxidised Al, black, IP 65		
Measuring element	in upright position, Ø 32 mm, bore Ø 30 mm for mounting at mast or traverses		
Included in delivery	Cable 12 m, plug connection, 4 pin, polarity protection ready-made		
Accessories	Mast adapter Ø 50 mm		**8368.Z100**
	Traverse, for mast Ø 30-80 mm lenght 825 mm		**8368.Z101**
	Traverse, for mast top 50 mm, lenght 600 mm		**8368.Z102**
	Lightning rod		**8368.Z103**

- Precision, tradition and future reliability
- Large measuring range of 75 m/s!
- Very low starting value of 0.3 m/s through magnetic, contactless measuring principle
- Optimal heating concept at the 4…20 mA version

Wind sensors PROFESSIONAL are recommended for use in:

- Offshore
- wind power plants
- meteorology
- wind warning systems
- power plants
- airports
- military and civil ships

Wind sensor PROFESSIONAL-IX

Wind sensor PROFESSIONAL-IX			Order No.
Robust sensor for reliable measurement of wind direction and wind speed at extremely low temperatures			
Technical Data	***Windsensor Professional-IX***		
Wind direction	Dimensions	Blade wind vane L 195 mm, H 295 mm	
	Weight	approx. 0.8 kg	
	Principle	Hall Sensor Array contact-free	
	Measuring range	0…360 °	
	Resolution	< 1 °	
	Accuracy	± 1 °	
	Outputs	0/4…20 mA	
	Starting valuee	< 0.4 m/s	
	Power supply	Sensor, 24 (20…28) VDC Heating, 24 VDC, 125 W	
Wind speed	Dimensions	3-armed cup Ø 218 mm H 241 mm	
	Weight	approx. 0.8 kg	
	Principle	Hall Sensor Array contact-free	
	Measuring range	0.4…50 m/s	
	Resolution	< 0.1 m/s	
	Accuracy	± 2% FS at 50 m/s	
	Outputs	0…500 Hz, 0/4…20 mA	
	Starting valuee	< 0.4 m/s	
	Messelement	3-armed cup, dimensionally stable, aluminium	
	Power supply	Sensor, 24 (20…28) VDC Heating, 24 VDC, 125 W	
Varieties	Wind direction	4…20mA	**8368.400**
		0…20mA	**8368.410**
	Wind speed	4…20mA	**8368.450**
		0…20mA	**8368.460**

- made for extreme conditions
- excellent heating concept
- easy to install
- low start-up treshold

NON-ICING wind sensor with
- *125 W Heating*
- *Cold Climate Standard*

Wind sensors PROFESSIONAL-IX are recommended for use in:
- *polar stations*
- *wind power plants*
- *Ascents supports*
- *environental applications*
- *Wintersportanlagen*
- *wind warning systems for cranes*

Further information about our products can be found on our website www.lufft.de

WS600-UMB Compact weather station

S600-UMB compact weather station for air temperature, relative humidity, precipitation intensity, precipitation type, precipitation quantity, air pressure, wind direction and wind speed.

WS600-UMB Compact weather station			Order No.
Relative humidity is measured by means of a capacitive sensor element; a precision NTC measuring element is used to measure air temperature. Precipitation is measured by way of a 24 GHz Doppler radar, which measures the drop speed of an individual drop of rain/snow. Precipitation quantity and intensity are calculated from the correlation between drop size and speed.			
WS600-UMB		Canada, EU, USA, V	**8370.U01**
		UK	**8370.U02**
Technical Data	Dimensions	Ø approx. 150 mm, hight approx. 345 mm	
	Weight	approx. 2.2 kg	
	Interface	RS485, 2-wire, half-duplex	
	Power supply	24 VDC ±10% <4 VA (without Heating)	
	Operating temperature	-50…60 °C	
	Operating rel. humidity	0…100% RH	
	Heating	30 VA bei 24 VDC	
	Cable length	10 m	
Temperature	Principle	NTC	
	Measuring range	-50…60 °C	
	Unit	°C	
	Accuracy	±0.2 °C (-20…50 °C) otherwise ±0.5 °C (>-30 °C)	
Rel. Feuchte	Principle	Capacitive	
	Measuring range	0…100 % RH	
	Unit	% RH	
	Accuracy	±2 % RH	
Air pressure	Principle	MEMS Capacitive	
	Measuring range	300…1200 hPa	
	Unit	hPa	
	Accuracy	±1.5 hPa	
Wind direction	Principle	Ultrasonic	
	Measuring range	0…359.9 °	
	Unit	°	
	Accuracy	±3°	
Wind speed	Principle	Ultrasonic	
	Measuring range	0…60 m/s	
	Unit	m/s	
	Accuracy	±0.3 m/s or 3 % (0…35 m/s)	
Recipitation quantity	Resolution	0.01 mm	
	Reproducibility	typ. > 90%	
	Measuring range	0.3…5 mm	
	Type of precipitation	rain/snow	

The difference in drop speed determines the type of precipitation (rain/snow). Maintenance-free measurement offers a major advantage over the common tipping spoon and tipping bucket processes. Ultrasound sensor technology is used to take wind measurements. Measurement data are available for further processing in the form of a standard protocol (Lufft-UMB protocol).Special features:

- All in One
- aspirated temperature/humidity measurement
- maintenance-free operation
- open communication protocol

Combined-Weather-Sensor WENTO-IND

Combined-Weather-Sensor WENTO-IND			Order No.
Unique all-rounder the new generation of a professional, particularly compact weather station for universal application!			
Technical Data	***WENTO-IND***		**8368.500**
	Dimensions	H 440 mm, B max. 475 mm mast mounting Ø 51 mm pipe 2.3 kg	
	Weight	approx. 2.3 kg	
Wind direction	Measuring range	0…360°	
	Accuracy	+/-1°	
	Resolution	< 1°	
Wind speed	Measuring range	0.3…75 m/s	
	Accuracy	+/-2 % FS at 0.3…50 m/s	
	Resolution	< 0.1 m/s	
Rel. humidity	Measuring range	0…100 % r. F	
	Accuracy	+/-3 % (10…90 %)	
	Resolution	0.5 % r. F.	
Air pressure	Measuring range	600…1100 hPa	
	Accuracy	+/-2 hPa (-30…70 °C)	
	Resolution	0.1 hPa	
Air temperature	Measuring range	-30…+70 °C	
	Accuracy	+/- 0.8 °C *	
	Resolution	0.1 °C	
Dewpoint	parameter dewpoint	-30…+70° (calculated value)	
Range of application	Temperatures	-30…+70 °C heated	
	Speeds	0…80 m/s	
Protocols	NMEA 0183, WIMWV, WIMHU, WIMMB,WIMTA, WIXDR		
Interface	serial RS422, Baud rate 4800, 1 Hz (at measuring cycle 10 Hz), 8 N 1		
Supply voltage	sensor 11…28 DC, 50 mA at 24 VDC, max. 120 mA heater electr. controlled 24 VDC / 2 x 9 W		
Housing	saltwater-proof aluminium, especially-anodized protective paint (RAL9006), IP65 in upright position		

Measurement of 6 meteorological parameters and the precipitation quantity (optional), and that at an optimum price-performance ratio. The wind sensors an the integrated weather module have a very robust design.

High-quality special alloys make this weather station environmentally resistant and extremely stress resistant. Reliable measurement of meteorological paramters is ensured even under extreme weather conditions.

Combined-weather-Sensors WENTO-IND offer:

- extremely robust and compact
- reliable year-round operation in all climate zones
- simple and rapid mounting
- serial interface for direct connection to PC technology

Combined-weather-Sensors WENTO-IND are recommended for use in:

- industrial applications
- building services
- enviromental measurements under extreme enviromental conditions

Further information about our products can be found on our website www.lufft.de

WS300-UMB Kompaktwetterstation

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

WS300-UMB			Order No.
WS300-UMB compact weather station for air temperature, relative humidity and air pressure.			
WS300-UMB			**8372.U01**
Technical Data			
	Dimensions	Ø approx. 150 mm, hight approx. 225 mm	
	Weight	approx. 2 kg	
	Interface	RS485, 2-wire, half-duplex	
	Power supply	24 VDC ±10 % <4 VA	
	Operating temperature	-50…60 °C	
	Operating rel. humidity	0…100 % RH	
	Cable length	10 m	
Temperatur	Principle	NTC	
	Measuring range	-50…60 °C	
	Unit	°C	
	Accuracy	±0.2 °C (-20…50 °C) otherwise ±0.5 °C (>-30 °C)	
Rel. Feuchte	Principle	Capacitive	
	Measuring range	0…100 % RH	
	Unit	% RH	
	Accuracy	±2 % RH	
Air pressure	Principle	MEMS Capacitive	
	Measuring range	300…1200 hPa	
	Unit	hPa	
	Accuracy	±1.5 hPa	
Accessories	UMB Interface converter ISOCON		**8160.UISO**
	Power supply 24 V/4 A		**8366.USV1**
	Surge protection		**8379.USP**

Relative humidity is measured by means of a capacitive sensor element; a precision NTC measuring element is used to measure air temperature. Measurement data are available for further processing in the form of a standard protocol (Lufft-UMB protocol).

Special features:

- aspirated temperature/humidity measurement
- open communication protocol

WS400-UMB Compact weather station

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

WS400-UMB			Order No.
WS400-UMB compact weather station for air temperature, relative humidity, precipitation intensity, precipitation type, precipitation quantity and air pressure.			
WS400-UMB		Canada, EU, USA, V	**8369.U01**
		UK	**8369.U02**
Technical Data	Dimensions	Ø approx. 150 mm, hight approx. 280 mm	
	Weight	approx. 2kg	
	Interface	RS485, 2-wire, half-duplex	
	Power supply	24 VDC ±10 % <4 VA (without heating)	
	Operating temperature	-50…60 °C	
	Operating rel. humidity	0…100 % RH	
	Heating	20 VA at 24 VDC	
	Cable length	10 m	
Temperature	Principle	NTC	
	Measuring range	-50…60 °C	
	Unit	°C	
	Accuracy	±0.2 °C (-20…50 °C) otherwise ±0.5 °C (>-30 °C)	
Relative humidity	Principle	Capacitive	
	Measuring range	0 .. 100 % RH	
	Unit	% RH	
	Accuracy	±2 % RH	
Air pressure	Principle	MEMS Capacitive	
	Measuring range	300…1200 hPa	
	Unit	hPa	
	Accuracy	±1,5 hPa	
Precipitation amount	Resolution	0.01 mm	
	Reproducibility	typ.>90 %	
	Measuring range	Drop size 0.3…5 mm	
	Type of precipitation	Rain/snow	
Accessories	UMB Interface converter ISOCON		**8160.UISO**
	Power supply 24 V/4 A		**8366.USV1**
	Surge protection		**8379.USP**

Relative humidity is measured by means of a capacitive sensor element; a precision NTC measuring element is used to measure air temperature. Precipitation is measured by way of a 24 GHz Doppler radar, which measures the drop speed of an individual drop of rain/snow. Precipitation quantity and intensity are calculated from the correlation between drop size and speed. The difference in drop speed determines the type of precipitation (rain/snow). Maintenance-free measurement offers a major advantage over the common tipping spoon and tipping bucket processes. Measurement data are available for further processing in the form of a standard protocol (Lufft-UMB protocol).

Special features:

- Radar-based precipitation detection
- aspirated temperature/humidity measurement
- open communication protocol

Further information about our products can be found on our website www.lufft.de

WS500-UMB

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

WS500-UMB			Order No.
WS500-UMB compact weather station for air temperature, relative humidity, air pressure, wind direction and wind speed.			
WS500-UMB			**8373.U01**
Technical Data	Dimensions	Ø approx. 150 mm, hight approx. 290 mm	
	Weight	approx. 1.3 kg	
	Interface	RS485, 2-wire, half-duplex	
	Power supply	24 VDC ±10 % <4 VA (without heating)	
	Operating temperature	-50…60 °C	
	Operating rel. humidity	0…100 % RH	
	Heating	10 VA at 24 VDC	
	Cable length	10 m	
Temperatur	Principle	NTC	
	Measuring range	-50…60 °C	
	Unit	°C	
	Accuracy	±0.2 °C (-20…50 °C) otherwise ±0.5 °C (>-30 °C)	
Rel. Feuchte	Principle	Capacitive	
	Measuring range	0…100 % RH	
	Unit	% RH	
	Accuracy	±2 % RH	
Air pressure	Principle	MEMS Capacitive	
	Measuring range	300…1200 hPa	
	Unit	ha	
	Accuracy	±1.5 hPa	
Wind direction	Principle	Ultrasonic	
	Measuring range	0…359.9 °	
	Unit	°	
	Accuracy	±3 °	
Wind direction	Principle	Ultrasonic	
	Measuring range	0…60 m/s	
	Unit	m/s	
	Accuracy	±0.3 m/s or 3 % (0…35 m/s)	
Accessories	UMB Interface converter ISOCON		**8160.UISO**
	Power supply 24 V/4 A		**8366.USV1**
	Surge protection		**8379.USP**

Relative humidity is measured by means of a capacitive sensor element; a precision NTC measuring element is used to measure air temperature. Ultrasound sensor technology is used to take wind measurements. Measurement data are available for further processing in the form of a standard protocol (Lufft-UMB protocol).

Special features:

- ultrasonic wind sensor
- aspirated temperature measurement
- maintenance-free operation
- open communication protocol

Further information about our products can be found on our website www.lufft.de

Measurement

Storage and Transfer

Representation and Evaluation

Qualification and Calibration

Alarm

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