LAMBRECHT meteo

closer to the climate

Product Catalogue

Meteorological Instruments










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WIND

Wind, in meteorological sense means airflow is caused by differences in atmospheric pressure and temperature. Rotation of the earth causes the deflection of winds to the right in the northern hemisphere, to the left in the southern hemisphere. The wind blows from high to low pressure areas, from cold to warm areas. LAMBRECHT offers the appropriate sensor for any application!

The large range of applications reaches from classical, professional meteorology, via building automation and wind power plants to coastal protection and navigation. The product range covers all standard and special demands. The simple wind vane or the special sensor for extreme environmental conditions promise excellent LAMBRECHT quality. Characteristics such as contaminant-, shock-, vibration- and seawater resistance, e.g. by means of bichromate conversion coatings of the materials surfaces, as well as EMC safety are understood. Constructions with low-wear mechanisms, precision bearings, as well as easy handling and service friendliness provide the basis for their success.

COMBINED WIND SENSOR

ULTRASONIC SENSOR "u[sonic]"

Wind direction and wind speed

The combined ultrasonic wind sensor u[sonic]...

for wind direction and wind speed. This seawater resistent sensor is perfectly heated and ideal for use under cold climate conditions.
The equipment is connected by an 8 pole screw connector. The measured values can be requested over a variety of interfaces.

- without moving measuring elements
- 2 parameters measurable
- intelligent heating depending on wind speed and wind direction
- easy installation, easy to maintain

professional meteorological application • wind turbines on- and off-shore • ship weather station • building automation • traffic meteorology • industrial meteorology • wind warning

NO MOVING PARTS
Al METAL MATERIAL
SEAWATER RESISTENT
NMEA DATA PROTOCOL
4 ... 20mA ANALOG OUTPUT

Professional Line	**(16470)**	**Combined Ultrasonic Wind Sensor u[sonic]**	**Id-No. 00.16470.000000**

Parameter:	Measuring range:	Accuracy:	Resolution:
Wind direction:	0...359.9°	< 2° (> 1 m/s) RMSE	0.1°
Wind speed:	0...75 m/s	± 0.2 m/s RMSE (v < 10 m/s); ± 2 % RMSE (10 m/s < v < 65 m/s)	0.1 m/s

Response threshold:	0.1 ms (adjustable for wind direction)
Measurement rate:	0.1...10 Hz • (internal measurement 50 Hz)
Operating conditions:	-40...+70 °C (with heating -50...+70 °C) • 0...100 % r. h.
Analog output:	0...20 mA • 4...20 mA • 0...5 V • 0...10 V • free scalable
Interfaces:	RS 485/ RS 422 • SDI-12 • RS 232 (optional)
Protocols:	NMEA 0183 • WIMWV · WIMTA • SDI-12 • Modbus (optional) • other protocols on request
Power supply:	6...60 VDC • 24 V AC/DC
Current consumption and power input:	sensor: typ. 35 mA at 24 VDC and deactivated analog output • with heating: configurable (factory-setting) 60 W · 120 W · 240 W (standard)
Housing:	seawater-resistant aluminium · IP 66 · IP 67
Dimensions/ Weight:	Ø 199 mm · height 149 mm · approx. 2 kg
Accessory: (order separately)	Sensor cable, 15 m, 8-pole bayonet plug (Id.-No. 32.16470.060000)

STATIC WEATHER SENSOR "EOLOS-IND"

Wind · Air temperature · Rel. humidity · Barometric pressure
5 parameters plus dew point!

The perfect weather sensor...

for a wide range of applications, especially for use under harsh environmental conditions. The integrated sensors in the weather module are measuring the ambient parameters with high precision. The compact construction of the static measuring system and the space saving, robust housing make the sensor extremely reliable and durable.

- very high wind velocities up to 85 m/s measurable!
- without moving measuring elements
- 5 weather parameters measurable
- lamella shelter for accurate measurements of the temperature-humidity sensor
- optimal heatable
- easy installation, easy to maintain

land applications under any conditions • wind turbines • railway line monitoring • traffic meteorology • weather services and Offices of the Environment • chemical and industrial facilities • power plants, sewage plants and landfills

Professional Line	**(1643)**	**Static Weather Sensor EOLOS-IND H**		**Id-No. 00.16430.010 002**
Parameters:		Meas. range:	Accuracy:	Resolution:
Wind direction:		0...360°	± 3°	1°
Wind speed:		0.1...85 m/s	± 0.5 m/s ± 5 % of the meas. value	0.1 m/s
Air temperature:		-40...+70 °C	± 0.8 °C (v > 2 m/s)	0.1 °C
Relative humidity:		0...100 % r. h.	± 3 % (10...90 %) • ± 4 % (0...100 %)	0.5 r. h.
Barometric pressure:		600...1100 hPa	± 2 hPa (-30...+70 °C)	0.1 hPa
Range of application:		temperature -40...+70 °C heated • wind speed 0...100 m/s • 0...100 % r. h.		
Protocols:		NMEA 0183 • WIMWV · WIMHU · WIMMB · WIMTA		
Interface:		serial · RS 422/ talker • baud rate 4800 • 1 Hz (meas. cycle of 10 Hz) • 8 N 1		
Supply voltage:		24 VDC (-22 %/ +34 %) · max. 2.5 A • heating: 24 VDC/ 70 W (max. 3 A) · electr. controlled		
Housing:		aluminium · anodized · IP 66		
Dimensions/ Weight:		H 382 mm · Ø 120 mm · mast adapter Ø 50 mm for mounting on standard pipe • 2.5 kg		
Version:	**(1643)**	**Static Weather Sensor EOLOS-IND unheated**		**Id-No. 00.16430.000 002**
		Range of application: -30...+70 °C · under non-icing conditions		
Accessory:				
32.16420.066 100		Cable 10 m · 12-pole bayonet plug · ready-made		
Options:				
36.09340.000 000		Visualisation and evaluation software MeteoWare-CS3		
00.95800.010 000		Data logger met[LOG]		
00.14742.401 002		Display unit METEO-LCD/IND		

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COMBINED WIND SENSOR

STATIC WIND SENSOR "EOLOS-MET T"

Wind direction · Wind speed · Air temperature

Compact, robust, reliable...

three characteristics that describe the ingenious static construction of this sensor. Without any moving measuring parts it is extremely resistant to wear. Wind movement is registered highly responsive, competently and very accurate by means of a thermal measuring principle.
The integrated temperature sensor determines the air temperature, which will also be send via the serial output.

- very high wind velocities up to 85 m/s measurable
- without moving measuring elements
- 3 parameters measurable
- lamella shelter for accurate measurements of the temperature sensor
- optimal heatable
- easy installation, easy to maintain

land applications under any conditions • wind turbines • railway line monitoring • traffic meteorology • chemical and industrial facilities • power plants, sewage plants and landfills

NO MOVING PARTS
70W HEATED
Al METAL MATERIAL
NMEA DATA PROTOCOL
AIR TEMPERATURE

Professional Line | **(1643)** | **Static Wind Sensor EOLOS-MET TH** | **Id-No. 00.16430.410 002**

Parameters:	Meas. range:	Accuracy:	Resolution:
Wind direction:	0...360°	± 3°	1°
Wind speed:	0.1...85 m/s	± 0.5 m/s ± 5 % of the meas. value	0.1 m/s
Air temperature:	-40...+70 °C	± 0.8 °C (v > 2 m/s)	0.1 °C

Range of application:	temperature -40...+70 °C heated • wind speed 0...100 m/s • 0...100 % r. h.
Protocols:	NMEA 0183 • WIMWV · WIMTA
Interface:	serial · RS 422/ talker • baud rate 4800 • 1 Hz (meas. cycle of 10 Hz) • 8 N 1
Supply voltage:	24 VDC (-22 %/ +34 %) · max. 2.5 A • heating: 24 VDC/ 70 W (max. 3 A) · electr. controlled
Housing:	aluminium · anodized · IP 66
Dimensions/ Weight:	H 382 mm · Ø 120 mm · mast adapter Ø 50 mm for mounting on standard pipe • 2.5 kg

Version: **(1643)** **Static Wind Sensor EOLOS-MET T unheated** **Id-No. 00.16430.400 002**
Range of application: -30...+70 °C · under non-icing conditions

Accessory:
32.16420.066 100 Cable 10 m · 12-pole bayonet plug · ready-made

Options:
36.09340.000 000 Visualisation and evaluation software MeteoWare-CS3
00.95800.010 000 Data logger met[LOG]
00.14742.401 002 Display unit METEO-LCD/IND

STATIC WEATHER SENSOR "EOLOS-NAV2"

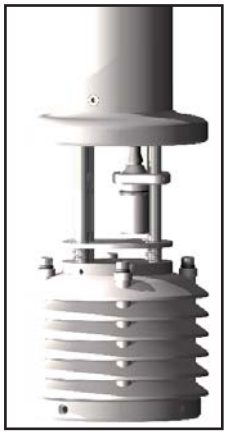
Wind · Air temperature · Rel. humidity · Barometric pressure
5 parameters plus dew point

The perfect ship weather sensor...

and specialized for offshore operation is the static weather sensor EOLOS-NAV2. The compact, space saving construction of the housing, the special anodized coating as well as the protective paint finish make it extremely resistant to sea-water as well as durable and reliable.

- with independent, integrated sensors for high accuracies for each individual parameter
- very high wind velocities up to 85 m/s measurable!
- very easy to maintain
- no moving parts
- versions with or without heating

on board of all types of ships (ship meteorology) • Coastal Surveillance • offshore wind turbines • industrial and port facilities • rigs • extreme, aggressive environmental conditions



NAVAL · NO MOVING PARTS · COMBINED WIND SENSOR · COMBINED HUMIDITY TEMPERATURE · AIR PRESSURE · NMEA DATA PROTOCOL

Professional Line	**(16432)**	**Static Weather Sensor EOLOS-NAV2**		**Id-No. 00.16432.210 002**
Parameters:		Meas. range:	Accuracy:	Resolution:
Wind direction:		0...360°	± 3°	1°
Wind speed:		0.1...85 m/s	± 0.5 m/s ± 5 % of the meas. value	0.1 m/s
Air temperature:		-40...+70 °C	± 0.8 °C (v > 2 m/s)	0.1 °C
Relative humidity:		0...100 % r. h.	± 3 % (10...90 %) r. h. • ± 4 % (0...100 %) r. h.	0.5 % r. h.
Barometric pressure:		600...1100 hPa	± 2 hPa (-40...+85 °C) • ± 0.5 hPa at 25 °C	0.1 hPa
Range of application:		temperature -40...+70 °C heated • wind speed 0...100 m/s • 0...100 % r. h.		
Protocols:		NMEA 0183 • WIMWV · WIMHU · WIMMB · WIMTA		
Interface:		serial · RS 422/ talker • baud rate 4800 • 1 Hz (meas. cycle of 4 Hz) • 8 N 1		
Supply voltage:		18...32 V DC · max. 2.5 A • heating: 24 V DC/ 70 W (max. 3 A) · electr. controlled		
Housing:		aluminium · anodized · IP 66		
Dimensions/ Weight:		H 388 mm · Ø 120 mm · mast adapter Ø 50 mm for mounting on standard pipe · approx. 2.5 kg		
Version:	**(16432)**	**Static Weather Sensor EOLOS-NAV2 unheated**		
		Range of application: -30...+70 °C · under non-icing conditions		
Accessory:				
32.16420.066 100		Cable 10 m · 12-pole bayonet plug · ready-made		
Options:				
36.09340.000 000		Visualisation and evaluation software MeteoWare-CS3		
00.95800.010 000		Data logger met[LOG]		
00.14742.301 002		Display unit METEO-LCD/NAV		

COMBINED WIND SENSOR

STATIC WIND SENSOR "PREOS"

Wind direction and wind speed

The hottest candidate...

under the static sensors specially designed for extreme environmental conditions (Cold Climate).
The sensor is without movable measuring elements and for very high wind speeds up to 65 m/s. This extreme robust, compact sensor has a high-quality, pollutant-resistant housing made of anodized aluminium.

- without movable measuring elements
- standard RS 422 interface with ESD protection
- ASCII data protocol according to NMEA 0183
- analog output 4...20 mA for wind speed and wind direction
- power supply 18...32 VDC with integrated overvoltage protection
- simple, space-saving assembly

under icing conditions • various offshore applications • wind turbines • railway line monitoring • traffic meteorology • chemical and industrial facilities • power plants, sewage plants and landfills

integrated sensor head heating and heating ring in the base

prevent growing of ice and snow at the sensor

COLD CLIMATE

4 ... 20mA ANALOG OUTPUT

NO MOVING PARTS

70W HEATED

Al METAL MATERIAL

NMEA DATA PROTOCOL

Professional Line	(1644)	Static Wind Sensor PREOS		Id-No. 00.16440.014 002
Parameters:		Meas. range:	Accuracy:	Resolution:
Wind direction:		0...360°	± 3°	1°
Wind speed:		0.1...65 m/s	± 0.5 m/s ± 5 % of the meas. value	0.1 m/s

Range of application:	temperature -40...+70 °C heated (Cold Climate applications) • survival speed 0...100 m/s • 0...100 % r. h.
Protocols:	NMEA 0183 • WIMWV
Interface:	serial · RS 422/ talker • baud rate 4800 • 1 Hz (meas. cycle of 4 Hz) • 8 N 1
Analog output:	4...20 mA for wind speed and wind direction
Supply voltage:	18...32 VDC · max. 2.5 A • heating: 24 VDC/ 70 W (max. 3 A) · electr. controlled
Housing:	aluminium · anodized · IP 66
Dimensions/ Weight:	H 298 mm · Ø 108 mm · mast adapter Ø 50 mm for mounting on standard pipe · 1.5 kg

Options:*

36.09340.000 000	Visualisation and evaluation software MeteoWare-CS3
00.95800.010 000	Data logger met[LOG]
00.14742.401 002	Display unit METEO-LCD/IND

*) not included in scope of delivery

STATIC WIND SENSOR "com[b]"

Wind direction and wind speed

5 unbeatable reasons to use the com[b] for measurement

- **Clever combined.** The com[b] doesn't only measure 2 parameters but it also has 2 types of interfaces on board: analogue and serial. With this you are perfectly equipped for the future.
- **Safety in stormy times.** com[b] has no moving parts. Its spectacular survival velocity of more than 100 m/s makes it unbreakable for wind influences.
- **Ready-to-go in bitter coldness.** The sensor offers the required measuring data even in challenging climatic conditions of up to -40°C.*
- **Easy and mobile.** The space-saving, easy installation reduces costs and makes it flexible in use, e.g. on cranes and vehicles.
- **Unbeatable price-performance-ratio.** Precious materials like aluminium and zinc oxide and the optimised thermo-dynamic measuring principle stand for highest quality. Never before such high Lambrecht standards were available for such a good price.

Not least the com[b] is an absolute eye-catcher.

wind power plants • cranes • vehicles • railway line monitoring • traffic meteorology • industrial facilities • power plants, sewage plants and landfills

Standard Line	Static Wind Sensor com[b]			Id-No. 00.16441.004 112
Parameters:		Measuring range:	Accuracy:	Resolution:
Wind direction:		0...360°	at >1 m/s is 3° RMS	1°
Wind speed:		0.2...50 m/s	0.25 m/s ± 5 % RMS at 0...15 m/s	0.1 m/s
Range of application:		temperature -40...+70 °C • survival speed 100 m/s • 0...100 % r. h.		
Protocols:		NMEA 0183 • WIMWV		
Interface:		serial · RS 422/ Talker • baud rate 4800 • 1 Hz (meas. cycle of 4 Hz) • 8 N 1		
Analog output:		2 x 4...20 mA (for wind speed and wind direction)		
Supply voltage:		18...32 VDC · max. 2.5 A		
Housing:		aluminium · anodized · IP 66		
Dimensions/ Weight:		H 298 mm · Ø 108 mm · mast adapter Ø 50 mm for mounting on standard pipe · 1.5 kg		
Accessory:**		Connection cable, 10 m (Id-No. 32.15184.060 000)		
Options:**				
36.09340.000 000		Visualisation and evaluation software MeteoWare-CS3		
00.95800.010 000		Data logger met[LOG]		
00.14742.401 002		Display unit METEO-LCD/IND		

*) under non-icing environmental conditions

**) not included in scope of delivery

WIND SENSORS "PRO-WEA"

Wind direction and wind speed

The universal-genius...

with improved protection against electrostatic discharge!
Thus these high-tech sensors are predestinated for operation in lightning-prone regions.
The design is aerodynamically optimised, the housing and the measuring elements are made of seawater resistant aluminium.
The integrated, controlled heating and the optionally available cable with high UV-resistance are further advantages. PRO-WEA sensors are robust and best suited for year-round applications in most climatic zones.

- improved protection against electrostatic discharge
- especially robust due to reinforced axis
- high measuring range of 60 m/s
- low starting values of ‹ 0.5 m/s
- very high resolution of measuring values

wind power plants • lightning-prone regions • all kinds of industrial applications • crane systems • open-pit mining

WIND ENERGY

Al METAL VANE

Al METAL CUP ROTOR

SEAWATER RESISTENT

IP 65 PROTECTION RATING

18W HEATED

METAL MATERIAL

Standard Line	**Wind Sensors PRO-WEA**	
Id-No.	**(14523) Wind direction** **00.14523.130 040**	**(14524) Wind speed** **00.14524.100 040**
Measuring elements:	wind vane • aluminium · special surface	3-armed cup • aluminium · special surface
Measuring range:	0...360°	0.5...60 m/s
Accuray:	± 2°	± 0.3 m/s ≤ 10 m/s · ± 0.5 m/s...60 m/s
Resolution/ Starting value:	‹ 1° • ‹ 0.5 m/s	‹ 0.1 m/s • ‹ 0.5 m/s
Output:	4...20 mA = 0...360° · 4 Hz update rate	4...20 mA = 0...60 m/s · 4 Hz update rate
	At the current output (4..20 mA) a load of max. 600 Ohm must not be exceeded.	
Weight:	0.4 kg	0.35 kg
Measuring principle:	Hall Sensor Array, non-contact	
Range of application:	temperatures -40...+70 °C · heated • wind speed max. gusts 100 m/s • humidity 0...100 % r.h.	
Supply voltage:	24 V_{DC} (20...28 V_{DC}) · 18 W heating· max. 800 mA · The heating within the sensor head prevents blocking of the moving parts under most climatological conditions.	
Housing:	seawater-resistant aluminium · IP 65 in upright position · M12 cable-plug connection · stainless steel nut and lock washer	
Included in delivery:	1 sensor • 15 m cable · with 4 pin M12 plug connector	

WIND SENSORS "PRO-WEA/RF"

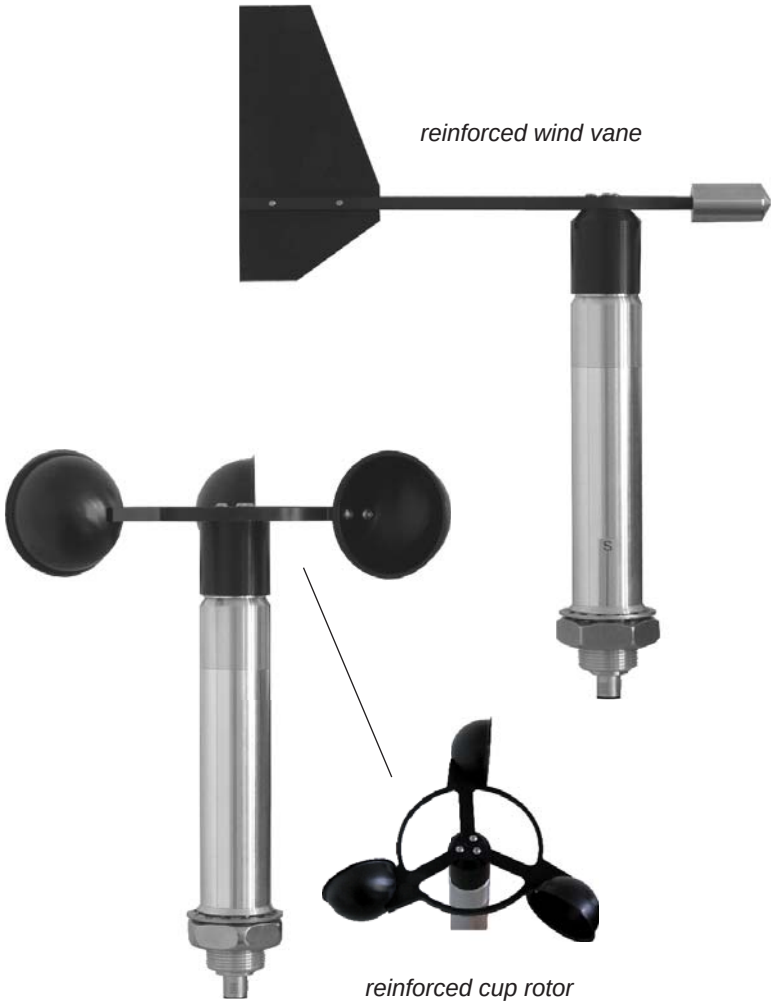
Wind direction and wind speed

Ultra robust and storm proof...

due to reinforced measuring elements! Improved protection against electrostatic discharge due to special surface! Thus these high-tech sensors are perfectly suitable for use in all regions that are at risk form lightning and storms.
The design is aerodynamically optimised, the housing and the measuring elements are made of seawater resistant aluminium.
The integrated, controlled heating and the optionally available cable with high UV-resistance are further advantages.

- reinforced measuring elements and stronger axis
- high vibration resistance
- improved protection against electrostatic discharge
- high measuring range of 60 m/s
- low starting values
- very high resolution of measuring values

wind power plants • for use in all regions that are at risk from lightning and storms • robust industrial applications • crane systems • open-pit mining



WIND ENERGY · ROBUST · Al METAL VANE · Al METAL CUP ROTOR · SEAWATER RESISTENT · IP 65 PROTECTION RATING · 18W HEATED · METAL MATERIAL

Professional Line	Wind Sensors PRO-WEA/RF	
Id-No.	**(14523 RF) Wind direction 00.14523.230 040**	**(14524 RF) Wind speed 00.14524.200 040**
Measuring elements:	reinforced wind vane • aluminium · special surface	reinforced 3-armed cup • aluminium · special surface
Measuring range:	0...360°	0.6...60 m/s
Accuray:	± 2°	± 0.3 m/s ≤ 10 m/s · ± 0.6 m/s ...60 m/s
Resolution/ Starting value:	‹ 1° • ‹ 0.5 m/s	‹ 0.1 m/s • ‹ 0.6 m/s
Output:	4...20 mA = 0...360° · 4 Hz update rate	4...20 mA = 0...60 m/s · 4 Hz update rate
	At the current output (4..20 mA) a load of max. 600 Ohm must not be exceeded.	
Weight:	0.4 kg	0.35 kg
Measuring principle:	Hall Sensor Array, non-contact	
Range of application:	temperatures -40...+70 °C · heated • wind speed max. gusts 100 m/s • humidity 0...100 % r.h.	
Supply voltage:	24 V_{DC} (20...28 V_{DC}) · 18 W heating· max. 800 mA · The heating within the sensor head prevents blocking of the moving parts under most climatological conditions.	
Housing:	seawater-resistant aluminium · IP 65 in upright position · M12 cable-plug connection · stainless steel nut and lock washer	
Included in delivery:	1 sensor • 15 m cable · with 4 pin M12 plug connector	

WIND SENSORS "PRO-WEA 0...10 V"

Wind direction and wind speed

The universal-genius...

with improved protection against electrostatic discharge!
Thus these high-tech sensors are predestinated for operation in lightning-prone regions.
The design is aerodynamically optimised, the housing and the measuring elements are made of seawater resistant aluminium.
The integrated, controlled heating and the optionally available cable with high UV-resistance are further advantages. PRO-WEA sensors are robust and best suited for year-round applications in most climatic zones.

- improved protection against electrostatic discharge
- especially robust due to reinforced axis
- high measuring range of 60 m/s
- low starting values of < 0.5 m/s
- very high resolution of measuring values

wind power plants • lightning-prone regions • all kinds of industrial applications • crane systems • open-pit mining

WIND ENERGY
Al METAL VANE
Al METAL CUP ROTOR
SEAWATER RESISTENT
IP 65 PROTECTION RATING
18W HEATED
METAL MATERIAL

Standard Line	Wind Sensors PRO-WEA 0...10 V	
Id-No.	**(14523) Wind direction 00.14523.130 080**	**(14524) Wind speed 00.14524.100 080**
Measuring elements:	wind vane • aluminium · special surface	3-armed cup • aluminium · special surface
Measuring range:	0...360°	0.5...60 m/s
Accuracy:	± 2°	± 0.3 m/s ≤ 10 m/s • ± 0.5 m/s...60 m/s
Resolution/ Starting value:	< 1° • < 0.5 m/s	< 0.1 m/s • < 0.5 m/s
Output:	0...10 V = 0...360° 4 Hz update rate	0...10 V = 0...60 m/s · 4 Hz update rate
Weight:	0.4 kg	0.35 kg

Measuring principle:	Hall Sensor Array, non-contact
Range of application:	temperatures -40...+70 °C · heated • wind speed max. gusts 100 m/s • humidity 0...100 % r.h.
Supply voltage:	24 V_{DC} (20...28 V_{DC}) · 18 W heating· max. 800 mA · The heating within the sensor head prevents blocking of the moving parts under most climatological conditions.
Housing:	seawater-resistant aluminium · IP 65 in upright position · M12 cable-plug connection · stainless steel nut and lock washer
Included in delivery:	1 sensor • 15 m cable · with 4 pin M12 plug connector

WIND SENSORS "PRO-NAV"

Wind direction and wind speed

Open sea and storm resistant!

Seawater-resistant and special re-inforced measuring elements assure high reliability over a wide working life. The special coating ensures the sensors to be used on vessels, off-shore wind energy plants and further applications close to the sea.
The housing and the measuring elements are made from seawater-resistant aluminium and the design was aerodynamically optimised. The heating integrated in the head of the sensor as well as the re-inforced, double bearing axis makes this sensors to the most robust version of it's class.

- re-inforced measuring elements, axis and bearing for high vibration resistance
- special coating for error-free long time use
- low start-up values and wide measuring range up to 60 m/s
- wear-free data collection for high accuracy and resolution of the measuring values

ship meteorology • wind energy plants • robust industry applications • cranes • buoys and other off-shore applications

NAVAL

Al METAL VANE

Al METAL CUP ROTOR

SEAWATER RESISTENT

IP 65 PROTECTION RATING

18W HEATED

METAL MATERIAL

Professional Line	**Wind Sensors PRO-NAV**	
Id-No.	**(14523) Wind direction** **00.14523.140 040**	**(14524) Wind speed** **00.14524.140 040**
Measuring elements:	reinforced wind vane • aluminium · special surface	reinforced 3-armed cup • aluminium · special surface
Measuring range:	0...360°	0.6...60 m/s
Accuracy:	± 2°	± 0.3 m/s ≤ 10 m/s · ± 0.6 m/s ...60 m/s
Resolution/ Starting value:	< 1° • < 0.5 m/s	< 0.1 m/s • < 0.6 m/s
Output:	4...20 mA = 0...360° · 4 Hz update rate	4...20 mA = 0...60 m/s · 4 Hz update rate
	At the current output (4..20 mA) a load of max. 600 Ohm must not be exceeded.	
Weight:	0.4 kg	0.35 kg
Measuring principle:	Hall Sensor Array, non-contact	
Range of application:	temperatures -40...+70 °C · heated • wind speed max. gusts 100 m/s • humidity 0...100 % r.h.	
Supply voltage:	24 V_{DC} (20...28 V_{DC}) · 18 W heating· max. 800 mA · The heating within the sensor head prevents blocking of the moving parts under most climatological conditions.	
Housing:	seawater-resistant aluminium · anodised and white coated · IP 65 in upright position · M12 cable-plug connection · stainless steel nut and lock washer	
Included in delivery:	1 sensor • 15 m cable · with 4 pin M12 plug connector	

WIND SENSORS "INDUSTRY"

Wind direction and wind speed

Of a special nature...

and very economical in acquisition is this wind pair... Furthermore, the sensors impress with high accuracy, simplest mounting methods and ultimately robust, seawater-proof materials.
The optimal heating of the sensor head and the minimum power demand 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

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

SYNTHETIC VANE
SYNTHETIC CUP ROTOR
ANALOG OUTPUT
IP 55 PROTECTION RATING
18W HEATED

Standard Line	**Wind Sensors INDUSTRY**	
	(14567) Wind direction	**(14577) Wind speed**
Measuring elements:	blade wind vane • dimensionally stable	3-armed cup rotor • fail-safe
Measuring range/ Accuracy:	0...360° • ± 2°	0.7...50 m/s • ‹ ± 2 % FS
Resolution/ Starting value:	2° • ‹ 0.7 m/s	‹ 0.02 m/s • ‹ 0.7 m/s
Outputs:	0(4)...20 mA or 0...2 V • max. load 600 Ω	0(4)...20 mA = 0...50 m/s • max. load 600 Ω
Dimensions:	wind vane L 232 mm · H 327 mm	cup rotor Ø 95 mm · H 230 mm
Weight:	approx. 0.35 kg	approx. 0.25 kg
Measuring principle:	Hall Sensor Array	
Range of application:	temperatures -30...+70 °C heated • wind speed 0...60 m/s	
Supply voltage:	24 (20...28) V_{DC} · max. 800 mA • electr. controlled heating · 18 W	
Housing:	aluminium · anodized · IP 55 · 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.)	
00.14567.100 000	**(14567) Wind direction sensor**	with 0...20 mA output
00.14577.100 000	**(14577) Wind speed sensor**	with 0...20 mA output
00.14567.100 040	**(14567) Wind direction sensor**	with 4...20 mA output
00.14577.100 040	**(14577) Wind speed sensor**	with 4...20 mA output
00.14567.100 180	**(14567) Wind direction sensor**	0...10 V_{DC}-output = 0...360°
00.14577.100 180	**(14577) Wind speed sensor**	0...10 V_{DC}-output = 0...50 m/s

WIND SENSORS "PROFESSIONAL-IX 3.0"

Wind direction and wind speed

Safe operation at ice and snow...

of the sensors PROFESSIONAL-IX 3.0 with 125-watt heating unit! Consequently, these high-quality wind sensors are particularly appropriate for use at extremely low temperatures. The double bearings as well as special alloys enable the large measurement and temperature operating ranges. The contactless measuring principle ensures wear-free, precise and thus certain data acquisition. The simple mounting methods provide a high degree of flexibility.

- large measuring and temperature operating range, all-season
- very good starting values due to its contactless measuring principle
- optimum heating concept
- extremely high robustness and longevity

cold-climate standard • polar stations • wind power plants • cable railways • environmental measurements in all climatic zones • wind warning devices on cranes

Professional Line	**Wind Sensors PROFESSIONAL-IX 3.0**	
	(14601) Wind direction	**(14602) Wind speed**
Measuring element:	wind vane • inherently stable aluminium • special surface	3-armed cup • aluminium • special surface
Measuring range/ Accuracy:	0...360° • ± 1°	0.4...50 m/s • ± 2 % FS at 0.4...50 m/s
Resolution/ Starting value:	‹ 1° • 0.4 m/s	‹ 0.1 m/s • 0.4 m/s
Dimensions:	wind vane L 195 mm · H 295 mm	cup rotor Ø 218 mm · H 241 mm
Weight:	approx. 0.8 kg	approx. 0.8 kg
Measuring principle:	contact-free • Hall Sensor Array	
Range of application:	temperatures -40...+70 °C maximum heated • wind speed 0...60 m/s • humidity 0...100 % r. h.	
Supply voltage:	sensor 24 (20...28) V_{DC} • heating 24 V_{DC} · 125 W	
Housing:	seawater resistant aluminium · especially anodized · IP 65 in upright position	

Varieties:			Output:
00.14601.300 000	**(14601)**	**Wind direction sensor**	0...20 mA = 0...360°
00.14601.300 004	**(14601)**	**Wind direction sensor**	4...20 mA = 0...360°
00.14602.300 000	**(14602)**	**Wind speed sensor**	0...20 mA = 0...50 m/s
00.14602.300 004	**(14602)**	**Wind speed sensor**	4...20 mA = 0...50 m/s
00.14602.300 007	**(14602)**	**Wind speed sensor**	Frequency · 0...500 Hz = 0...50 m/s

Accessories:

32.14601.060 000 **15 m cable** onesided with connector
32.14567.006 000 **Mast adapter** · Ø 50 mm
32.14567.010 000 **Traverse**
Data logger e. g. TROPOS or SYNMET

(Please note that the controlling of the heating has to be carried out externally!)

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WIND SENSORS "PROFESSIONAL"

Wind direction and Wind speed

The titan...

under the wind sensors meets the challenge of highest reliability over a very large measuring range. Thus two 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, means sea-water resistance, through the special surface treatment and a water trap in the sensor head.

- precision, tradition and future reliability
- large measuring range of 75 m/s!
- very low starting value of ‹ 0.3 m/s through the magnetic, contactless measuring principle
- extreme high seawater resistance through the high-quality surface
- optimal heating concept at the 4...20 mA version

offshore • wind power plants • meteorology • wind warning systems • power plants • airports • navigation

18W HEATED
24V DC POWER SUPPLY
ANALOG OUTPUT
IP 65 PROTECTION RATING
Al METAL VANE
Al METAL CUP ROTOR
LONGEVITY
SEAWATER RESISTENT

Professional Line	**Wind Sensors PROFESSIONAL**	
Id-No.:	**(14521) Wind direction** **00.14521.100 040**	**(14522) Wind speed** **00.14522.100 040**
Measuring elements:	blade wind vane • dimensionally stable	3-armed cup rotor • fail-safe
Meas. range/ Accuracy:	0...360° • ± 1°	0.3...75 m/s • ± 0.3 m/s ≤ 10 m/s; ± 1 % FS...50 m/s
Resolution/ Starting value:	‹ 1° • ‹ 0.3 m/s	‹ 0.1 m/s • ‹ 0.3 m/s
Output:	4...20 mA = 0...360°	4...20 mA = 0...75 m/s
Dimensions/ Weight:	wind vane L 174 mm · H 310 mm · 0.4 kg	cup rotor R81 · H 235 mm · 0.35 kg
Measuring principle:	Magnetical Positioning Encoder System (MPES)	
Supply voltage:	with electr. controlled shank heating · 18 W • 24 V_{DC} (20...28 V_{DC}) · max. 800 mA	
Range of application:	temperatures -40...+70 °C · heated • max. gusts of 100 m/s	
Update rate:	4 Hz	
Housing/ Meas. elements:	alu · special surfaces · black · seawater resistant • IP 65 in upright position • Ø 32 mm · bore Ø 30 mm for mounting at a mast or traverse	
Included in delivery:	cable 12 m • plug-connection · 4 pin • polarity protected · ready-made	
Accessories:	see chapter “Periphery”	
32.14567.006 000	**(14567 U6)** **Mast adapter** · Ø 50 mm	
32.14565.017 000	**(14565 U17)** **Traverse** (stepped)	
32.14567.010 000	**(14567 U10)** **Traverse** (plane)	
	Data logger e. g. SYNMET or TROPOS	

WIND SENSORS "ORA"

Wind direction and wind speed

Highly precise, robust...

and professional are these new wind sensors of the ORA-family. The low power consumption of ‹ 2 mA makes this sensor ideal suitable for solar powered applications.
The sensor is completely made of metal. If necessary the cup rotor is easy to change in the field.

- 4...15 VDC
  low power consumption ‹ 2 mA
- all-metal housing made of sea-water-resistant aluminium
- on site changeable cup rotor made of seawater-resistant aluminium
- protection class IP 65 in upright position

small wind power plants • professional weather stations • agriculture • solar powered applications

Standard Line	**Wind Sensors ORA**	
Id-No.	**(14594) Wind direction** **00.14594.110 000**	**(14594) Wind speed** **00.14594.210 000**
Measuring elements:	wind vane · aluminium	3-armed cup rotor · aluminium
Measuring principle:	magnetic	magnetic
Measuring range/ Accuracy:	0...360° • ‹ ± 2°	0.4...55 m/s • ‹ ± 0.5 m/s
Resolution/ Starting value:	1° • 0.4 m/s	‹ ± 0.1 m/s • 0.4 m/s
Outputs:	0...2.5 V = 0...360°	0...2.5 V = 0....55.55 m/s
Supply voltage:	4...15 VDC	4...15 VDC
Current consumption:	‹ 2 mA (low power)	‹ 2 mA (low power)
Strongest wind impact velocity:	80 m/s	80 m/s
Dimensions:	wind vane L 230 mm · H 256 mm	cup rotor Ø 108 mm · H 192 mm
Weight:	approx. 0.95 kg	approx. 0.90 kg
Temperature meas. range:	-40...+70 °C • under non-icing environmental conditions	
Housing:	sea water resistant aluminium • IP 65 • for bores with Ø 30 mm at max. 10 mm material thickness • incl. plug connector	
Included in delivery:	1 sensor • 12 m cable · with 4 pin M12 plug connector	
Accessories:		
32.14567.006 000	**(14567 U6)** **Mast adapter** · Ø 50 mm	
32.14627.010 000	**Wind traverse**	

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WIND SENSORS "BASIC"

Wind direction and wind speed

Small but fine...

and particularly economical in acquisition are the sensors of the BASIC Series.
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.

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

building services • environmental measurements • wind power plants • stadiums • industrial meteorology • solar plants • controlling of jalousies

ANALOG OUTPUT
PULSE OUTPUT
SYNTHETIC VANE
COMBINED WIND SENSOR
UNHEATED

Standard Line	**Wind Sensors BASIC**	
Id-No.	**(14564) Wind direction** **00.14564.000 000**	**(14574) Wind speed** **00.14574.000 000**
Measuring elements:	wind vane · stable · fibre-reinforced plastics	3-armed cup rotor • fail-safe synthetics
Measuring principle:	magnetic	magnetic
Measuring range/ Accuracy:	0...360° • ± 5°	0.7...50 m/s • ± 2 % FS
Resolution/ Starting value:	3° • 0.7 m/s	0.26 m/s • 0.7 m/s
Outputs:	0... 5 V = 0...360°	0...192 Hz = 0.7...50 m/s
Supply voltage:	24 V_{DC} (6...28 V_{DC})	24 V_{DC} (4.7...28 V_{DC})
Current consumption:	15 mA at 12 V • 18 mA at 28 V	max. 8 mA • ‹4 mA at 5 V
Strongest wind impact velocity:	60 m/s	60 m/s
Dimensions:	wind vane L 232 mm · H 260 mm	cup rotor Ø 95 mm · H 180 mm
Weight:	approx. 0.95 kg	approx. 0.90 kg
Temperature meas. range:	-30...+70 °C • under non-icing environmental conditions	
Housing:	sea water resistant aluminium • anodized • IP53 • for bores with Ø 30 mm at max. 10 mm material thickness • incl. 5 m fixed cable	

Accessories:

32.14567.006 000	**(14567 U6)** **Mast adapter** · Ø 50 mm
32.14567.010 000	**(14567 U10)** **Traverse**
	Data logger e. g. TROPOS or SYNMET
	Traverses/ Masts and Power supply units see chapter „Periphery“

WIND SENSOR "REED"

Wind speed

Particularly energy-saving...
and economical is the wind speed sensor REED.
The slim, flow-optimised outer geometry ensures reliable and precise measurements.
For highest stability under load and safe long-term use we rely on robust materials such as seawater-resistant aluminium for the housing. The compact sensor with its simple mounting principles additionally provide a high degree of flexibility.

- wearfree data acquisition
- robust housing
- fail-safe cup rotor
- double precision bearing

building services • environmental measurements • stadiums • industrial meteorology • controlling of jalousies

ECONOMICAL

BUILDING

Hz FREQUENCY OUTPUT

ROBUST

Standard Line	**Wind Speed Sensor REED**
Versions:	**Id-No. 00.14595.211070** · Wind speed sensor, unheated
	Id-No. 00.14595.201070 · Wind speed sensor, heated
Measuring element:	3-armed cup rotor • breakproof plastic
Measuring principle:	reed switch · non-contact
Measuring range:	0.7...50 m/s
Accuracy:	2 % FS
Resolution:	0.26 m/s
Starting value:	0.7 m/s
Output:	frequency · 0...192 Hz = 0...50 m/s
Ranges of application:	temperatures -40...+70 °C heated *) • wind speed up to 60 m/s • rel. humidity 0...100 % r. h. (non-condensing)
Strongest wind impact velocity:	60 m/s
Current consumption:	6 W heating· nominal 24 VDC *)
Housing:	seawater resistant aluminium • IP 65 • for bores with Ø 30 mm at max. 10 mm material thickness
Dimensions:	see dimensional drawing
Weight:	approx. 0.35 kg
Standards:	VDI 3786, sheet 2 • WMO No. 8
Connectable to:	Ser[LOG] · met[LOG]
Accessories: (please order separately)	**Id-No. 32.05005.001500** · 15 m sensor connection cable with plug connector M12, 5-wire
	Id-No. 32.14627.010000 · Traverse for wind sensors
	Id-No. 32.14567.006000 · Adapter for mast mounting

*) The heating in the sensor head also allows operation in winter, but cannot prevent the sensor from freezing under all climatic conditions.

WIND SENSORS "ECONOMY"

Wind direction and wind speed

Good orientation...

is provided by these wind measuring sensors proven a thousand times.
The dimensionally stable measuring parts, the robust all-metal housing, good starting values and linearity amount to a very good price-performance ratio. Best prerequisites for world-wide applications in any location.

- good response sensitivity
- high accuracy across large tempe rature range
- 3 output signals
- simplest installation by means of plug-in connection and fixing with one screw
- with integrated heating absolutely winter-fit

wind power plants • building services • wind warning devices for cranes • industrial applications • in all climatic zones

Standard Line	**Wind Sensors ECONOMY**	
Id-No.:	**(14565 24V) Wind direction 00.14565.200 304**	**(14575 24V) Wind speed 00.14575.200 004**
Measuring elements:	blade wind vane • dimensionally stable	3-armed cup rotor • fail-safe
Measuring range/ Accuracy:	0...360° • ± 3.6°	0.7...35 m/s • ± 2 % FS
Resolution/ Starting value:	2.5° • ‹ 0.7 m/s	0.1 m/s • ‹ 0.7 m/s
Outputs:	0...20 mA • max. load 500 Ω 4...20 mA • max. load 500 Ω 3 x 0...10 V_{DC}	0...20 mA = 0...35 m/s • max. load 500 Ω 4...20 mA = 0...35 m/s • max. load 500 Ω 0...700 Hz = 0...35 m/s • max. load 500 Ω
Dimensions:	wind vane L 195 mm · H 260 mm	cup rotor Ø 95 mm · H 155 mm
Measuring principle:	opto-electronical	
Range of application:	temperatures -30...+70 °C heated • wind speed 0...60 m/s	
Supply voltage:	10...30 V_{DC} for internal transducer • heating 24 V_{DC}/ 600 mA · electr. controlled	
Housing:	seawater resistant aluminium · anodized · IP 53 · Ø 74 mm · for mounting pipe Ø 50 mm	
Weight:	approx. 0.4 kg	
Included in delivery:	1 plug · 12-pole · when a cable is ordered, the plug is mounted to that	

Accessories:

32.14565.060 000 **(14565 U60)** **Cable** · 12 m · with 12-pole plug · ready-made
32.14565.060 020 **(14565 U60b)** **Cable** · 15 m · with 12-pole plug · ready-made
Indicator units e. g. (1476 Q144N) · (1477 Q144)
Traverses/ Masts and Power supply units

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A mighty midget...

that's the compact, inexpensive wind sensor.
The cup rotor axis is mounted on precision ball bearings. As a result, the exclusively wind powered rotor moves in a smooth and exact operation.
The DC signal generator transforms this movement into reliable electronic output signals.

- small and light
- very good price/performance ratio
- seawater proof aluminum
- fail-save synthetic cup rotor
- no auxiliary energy required
- year-round operation

green houses • building services • wind warning devices • building equipment • yachts • sports facilities • aquatics facilities

Standard Line	**(1457 S2)**	**Wind Speed Sensor**	**Id-No. 00.14572.105 000**
Measuring element:		3-armed cup rotor with DC measuring generator	
Measuring range:		0...35 m/s	
Accuracy:		± 2 % FS	
Resolution:		0.1 m/s	
Range of application:		temperatures -30...+70 °C no icing • wind speed 0...60 m/s	
Starting value:		1 m/s	
Output:		0...1 mA/ 0...2 V at 0...35 m/s • R_a = 2000 Ω	
Housing:		aluminium · anodized · IP 53 · with mounting strap	
Dimensions:		cup rotor Ø 95 mm · H 146 mm •	
Weight:		approx. 0.7 kg	
Included in delivery:		cable · 5 m · ready-made	
Accessories:		**Indicator units** e. g. (1477 Q144)	

COMBINED WIND SENSOR

WIND SENSOR "ARCO-SERIAL"

Wind direction and wind speed

The robust combined sensor.

The sensors of the ARCO family are very robust, compact and extremely reliable. Due to their shock and vibration proof construction the sensors ARCO-SERIAL are particularly qualified for use under severe environmental conditions. The housing and the measuring elements are made of seawater resistant aluminium alloys. The housing, the cup rotor and the wind vane are anodised.

- qualitatively ambitious and cost-effective solution
- reliable wind measurement, including under extreme weather conditions
- seawater resistant materials and surface finishes for long-life application, including under harsh conditions
- quick and easy pipe mounting, connection with just one cable

Applications:
robust industry applications

Al METAL VANE

Al METAL CUP ROTOR

SEAWATER RESISTENT

IP 65 PROTECTION RATING

9W 9W HEATED

METAL MATERIAL

Professional Line	**Wind Sensor ARCO-SERIAL**	**Id.-No. 00.14581.010010**
Meas. range wind direction:	0...360°	
Meas. range wind speed:	0.3...75 m/s	
Accuracy wind direction:	± 1°	
Accuracy wind speed:	± 2 % FS at 0.3...50 m/s	
Resolution wind direction:	1°	
Resolution wind speed:	‹ 0.1 m/s	
Range of application:	temperature -30...+70 °C heated	
	wind speed 0...80 m/s	
	0...100 % r. h.	
Wind sensors with heating:	2 x 9 W	
Output:	serial RS 422,	
	NMEA 0183 - Talker	
Supply voltage sensor:	(10...28 V DC) , 24 V DC	
	50 mA (at 24 V DC)	
Supply voltage heating:	(20...28 V DC), 24 V DC, 800 mA	
Housing:	made of anodized seawater resistant aluminium, stainless steel	

WIND SENSOR "ARCO-NAV"

Wind direction and wind speed

The classical combined sensor...

for off-shore applications. The robust design made from seawater-resistant materials and additional special coating guarantees high reliability and error-free long time use. The measured wind values will be given as NMEA-protocol serially every second. Both under extreme weather conditions and on the high seas and applications close to the sea this sensor is the first choice.

- ▶ approved combined sensor design for universal use
- ▶ special coating for error-free long time use
- ▶ best material quality and precision for low start-up values and wide measuring range
- ▶ wear-free data collection for high accuracy and resolution of the measuring values
- ▶ serial interface with NMEA 0183 protocol

professional naval meteorology • ship meteorology • coastal surveillance • cranes • buoys • off-shore wind energy plants • other off-shore applications and robust industry applications

NAVAL

Al METAL VANE

Al METAL CUP ROTOR

SEAWATER RESISTENT

IP 65 PROTECTION RATING

9W 9W HEATED

METAL MATERIAL

Professional Line	**Wind Sensor ARCO-NAV**	**Id.-No. 00.14581.110010**
Meas. range wind direction:	0...360°	
Meas. range wind speed:	0.3...75 m/s	
Accuracy wind direction:	± 1°	
Accuracy wind speed:	± 2 % FS at 0.3...50 m/s	
Resolution wind direction:	1°	
Resolution wind speed:	‹ 0.1 m/s	
Range of application:	temperature -30...+70 °C heated	
	wind speed 0...80 m/s	
	0...100 % r. h.	
Wind sensors with heating:	2 x 9 W	
Output:	serial RS 422,	
	NMEA 0183 - Talker	
Supply voltage sensor:	(10...28 V DC) , 24 V DC	
	50 mA (at 24 V DC)	
Supply voltage heating:	(20...28 V DC), 24 V DC, 800 mA	
Housing:	made of anodized seawater resistant aluminium, stainless steel · white coated	

COMBINED WIND SENSOR "WENTO-MET"

Wind direction and wind speed

Extreme weather conditions...

are no problem at all for this extremely robustly designed sensor. The high-quality construction with integrated, electronically controlled heating allows reliable wind measurement even under extreme weather conditions. Special alloy and double high-performance bearings provide for supreme ruggedness and long service life.

- very broad measuring range
- simple and rapid pipe mounting, connection with only one cable
- serial interface for direct connection to PC technology
- contactless data acquisition

industrial applications • wind power plants • building automation • environmental measurements in all climatic zones

Professional Line	(14516) Combined Wind Sensor WENTO-MET	Ident-Nr. 00.14516.010 001

Parameters:	Measuring range:	Accuracy:	Resolution:
Wind direction:	0...360°	± 1°	< 1°
Wind speed:	0.3...75 m/s	± 2 % FS at 0.3...50 m/s	< 0.1 m/s

Range of application:	temperature -30...+70 °C heated • wind speed 0...80 m/s • 0...100 % r. h.
Protocols:	NMEA 0183 • WIMWV
Interface:	serial RS 422/ Talker Baud rate 4800 • 1 Hz (at measuring cycle 10 Hz) • 8 N 1
Supply voltage:	sensor 11...28 VDC/ 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 (RAL 9006) · IP 65 in upright position
Dimensions/ Weight:	H 440 mm · B max. 475 mm · mast mounting: Ø 51 mm pipe • 2.3 kg

Accessory:	
32.16420.066 100	Cable 10 m · with 12-pole bayonet plug · ready-made
Options:	
36.09340.000 000	Visualisation and evaluation software MeteoWare-CS3
00.95800.010 000	Data logger met[LOG]
00.14742.401 002	Display unit METEO-LCD/IND

COMBINED WEATHER SENSOR "WENTO-IND"

Wind parameters · air temperature · relative humidity · barometric pressure · dew point / 6 parameters and optional precipitation!

Unique all-rounder...

the new generation of a professional, particularly compact weather station for universal application. Measurement of 6 meteorological parameters and the amount of precipitation (optional). And this at an optimal price-performance ratio! The wind sensors and 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 parameters is ensured even under extreme weather conditions.

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

industrial applications • building automation • environmental measurements under extreme environmental conditions

Professional Line | **(14516) Combined Weather Sensor WENTO-IND** | **Id-No. 00.14516.210 001**

Parameters:	Measuring range:	Accuracy:	Resolution:
Wind direction:	0...360°	± 1°	< 1°
Wind speed:	0.3...75 m/s	± 2 % FS at 0.3...50 m/s	< 0.1 m/s
Relative humidity:	0...100 % r. h..	± 3 % (10...90 %) • ± 4 % (0...100 %)	0.5 % r. h.
Barometric pressure:	600...1100 hPa	± 2 hPa (-30...+70 °C)	0.1 hPa
Air temperature:	-30...+70 °C	± 0.8 °C (influence of the shelter see manual)	0.1 °C
Precipitation:	see precipitation sensors (*precipitation protocol activating WIXDR: Id. 97.14516.000 000)		

Range of application:	temperature -30...+70 °C heated • wind speed 0...80 m/s • 0...100 % r. h.
Protocols:	NMEA 0183 • WIMWV · WIMHU · WIMMB · WIMTA • WIXDR *
Interface:	serial RS 422/ Talker Baud rate 4800 • 1 Hz (at measuring cycle 10 Hz) • 8 N 1
Supply voltage:	sensor 11...28 VDC / 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 (RAL 9006) · IP 65 in upright position
Dimensions/ Weight:	H 440 mm · B max. 475 mm · mast mounting: Ø 51 mm pipe • 2.3 kg

Accessory:	
32.16420.066 100	Cable 10 m · with 12-pole bayonet plug · ready-made
Options:	
36.09340.000 000	Visualisation and evaluation software MeteoWare-CS3
00.95800.010 000	Data logger met[LOG]
00.14742.401 002	Display unit METEO-LCD/IND

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COMBINED NAVAL WIND SENSOR

Wind direction and wind speed

Modern electronic...

paired with robust mechanics. Mechanical abrasion is reduced to a minimum. The measured wind values are serially supplied at every second as a NMEA protocol.
Under extreme weather conditions at sea as well as on land this top sensor is the first choice!

- seawater-resistant housing
- IP 65
- low starting values
- high measuring accuracy and linearity over the entire measuring range
- NMEA 0183
- high-quality and durable construction

professional marine meteorology • coastal surveillance • offshore wind power plants • drilling platforms • buoys • aggressive environmental conditions

Professional Naval Line | **(24513-NMEA) Combined Naval Wind Sensor** | **Id-No. 00.24513.205 010**

	Wind direction	Wind speed
Measuring element:	wedge-shaped wind vane	3-armed cup rotor
Measuring range:	0...360°	0.4...60 m/s
Accuracy:	± 2.5°	± 2 % FS
Resolution:	< 1°	0.1 m/s
Starting value:	< 0.8 m/s related to a deflection of the wind vane of 90°	≤ 0.4 m/s

Range of application:	temperatures -35...+70 °C heated • wind speed 0...60 m/s
Protocol:	NMEA 0183 • WIMWV
Interface:	Serial RS 485/ Talker Baudrate 4800 · 1 Hz (at measuring cycle 4 Hz) · 8 N1
Supply voltage:	24 VDC/ 50 mA · heating 24 VDC/ 1.5 A/ max. 35 VA • electr. controlled
Housing:	seawater resistant aluminium
Dimensions/ Weight:	cup rotor Ø 280 mm · H 520 mm · for mounting pipe Ø 50 mm · 2.7 kg
Accessory:	
32.16420.066 100	Sensor cable · 10 m (other lengths possible) · with 12-pole bayonet plug
Options:	
36.09340.000 000	Visualisation and evaluation software MeteoWare-CS3
00.95800.010 000	Data logger met[LOG]
00.14742.301 002	Display unit METEO-LCD/NAV

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COMBINED WIND SENSOR

NAVAL WIND SENSOR “2455-NMEA”

Wind direction and wind speed

LONGEVITY · ROBUST · BRASS METAL MATERIAL · SEAWATER RESISTENT · NAVAL · NMEA DATA PROTOCOL · RS485 DIGITAL OUTPUT · 35W HEATED · 24VDC POWER SUPPLY

With modern electronics...

and storm-tested, the wind sensor 2455-NMEA is a constructive masterpiece.

Daily exposed to extreme conditions, the sensor is at home on all oceans of the world. It has also proven itself on land as a robust measuring instrument. Splash water traps against splash water and the electric shaft heating ensure optimum operating and measuring conditions.

- seawater-resistant housing · IP 53
- low starting values
- high measuring accuracy and linearity over the entire measuring range
- NMEA 0183
- high-quality and durable construction

professional marine meteorology • coastal surveillance • offshore wind power plants • drilling platforms • buoys • aggressive environmental conditions

Professional Naval Line | **(2455-NMEA) Combined Naval Wind Sensor** | **Id-No. 00.24550.200000**

	Wind direction	Wind speed
Measuring element:	wedge-shaped wind vane	3-armed cup rotor
Measuring range:	0...360°	0.6...60 m/s (120 kn)
Accuracy:	± 2.5°	± 2 % FS
Resolution:	< 1°	0.1 m/s
Starting value:	< 0.8 m/s related to a deflection of the wind vane of 90°	≤ 0.6 m/s

Range of application:	Temperatures -35...+70 °C heated • wind speed 0...60 m/s
Protocol:	NMEA 0183 • WIMWV
Interface:	Serial RS 485/ Talker Baudrate 4800 · 1 Hz (at measuring cycle 4 Hz) · 8 N1
Supply voltage:	24 VDC / 50 mA · heating 24 VDC / 1.5 A / max. 35 VA / bimetal controlled
Housing:	Measuring element: seawater resistant aluminium · housing: brass · IP 53 · RAL 7000
Dimensions/ Weight:	Cup rotor Ø 320 mm · H 460 mm · for mounting pipe Ø 75 mm · 4.0 kg
Accessory:	
32.14550.065040	Sensor cable · 4 m (other lengths possible) · with 10-pole plug
Options:	
36.09340.000000	Visualisation and evaluation software MeteoWare-CS3
00.95800.010000	Data logger met[LOG]
00.14742.301002	Display unit METEO-LCD/NAV

COMBINED WIND SENSOR

Wind direction and Wind speed

The jack of all trades...

is this combined sensor for reliable wind data optimized by experience. The double blade wind vane's and the cup rotor's axis run individually on precision ball bearings. Smooth running, low-wear and longevity are the outcome. Reliable and trustworthy measuring results are guaranteed.

- compact and robust
- corrosion and seawater-resistant
- low starting values
- high accuracy and linearity across the whole measuring range
- easy installation
- versions without heating available

container terminals • industrial applications • classical meteoroogy (Swiss standard) • weather observation networks in extreme climatic zones

Professional Line	**(14512) Combined Wind Sensors**	
	Wind direction	**Wind speed**
Measuring elements:	double-blade wind vane	3-armed cup rotor
Measuring range:	0...360°	0...35 m/s
Accuracy/ Resolution:	± 1 % • 0.1°	± 2 % FS • 0.1 m/s
Starting value:	1 m/s	0.2 m/s (I-type) • 1 m/s (G4-type)
Range of application:	temperatures -35...+70 °C heated • wind speed 0...60 m/s	
Output:	4 mA at 0...35 m/s • R_a = 3541 Ω	
Supply voltage:	12 V_{DC}/ max. 0.7 W for one indicator • up to 8 indicator units possible • heating 24 V_{DC}/ 1.25 A/ 30 VA • versions without heating on request	
Housing:	aluminium · RAL 9002 (grey-white) · partially grey coated	
Dimensions/ Weight:	cup rotor Ø 278 mm · H 500 mm · for mounting pipe Ø 50 mm · approx. 2.4 kg	
Included in delivery:	1 plug · 12-pole · when a cable is ordered, the plug is mounted to that	
Versions		
00.14512.260 030	**(14512 HG4F1000)** Precision ring potentiometer F1000	DC-generator G4
00.14512.260 300	**(14512 HG4N)** Precision ring potentiometer	DC-generator G4
00.14512.270 030	**(14512 HIF1000)** Precision ring potentiometer F1000	Inductive proximity switch DIN 19234
Accessories:		
32.14511.065 020	**(14511 U65b)** **Cable** · for F1000-versions · 8-pole · 4 m · ready-made	
32.14511.065 000	**(14511 U65)** **Cable** · for N-varieties · 8-pole · 4 m · ready-made	
	Indicator units e. g. (1476 Q144N) · (1477 Q144)	
	Power supply units see chapter „Periphery"	

COMBINED NAVAL WIND SENSOR

Wind direction and wind speed

Loyal at sea...

the robust, shock- and vibration resistant sensor delivers wind data without compromise. This top quality sensor is first class in extreme weather conditions at sea as well as ashore!

- seawater-resistant with three coats of paint
- glass fiber wedge-shaped wind vane warrants minimal radar signature
- low starting values
- high measuring accuracy and linearity across the whole measuring range
- plug-in connector acc. to MIL standard
- meets VG- and IMO-standards and the requirements of the German Lloyd
- NATO-Supply number

professional marine meteorology • coastal surveillance • offshore wind power plants • drilling platforms • buoys • aggressive environmental conditions

Professional Naval-Line	**(14513 HG4N18) Combined Naval Wind Sensor**		**Id-No. 00.14513.263 400**
		Wind direction	**Wind speed**
Measuring elements:		wedge-shaped wind vane with precision ring potentiometer	3-armed cup rotor with DC measuring generator
Measuring range:		0...360°	1...120 kn (60 m/s)
Accuracy:		± 1 %	± 2 % FS
Resolution:		0.3°	0.1 m/s
Starting value:		0.8 m/s	0.8 m/s
Range of application:		temperatures -35...+70 °C heated • wind speed 0...60 m/s	
Output:		4 mA at 120 kn • R_a = 6656 Ω/ 5.2 mA at 120 kn • R_a = 5024 Ω	
Supply voltage:		heating 24 V_{DC}/ 1.25 A/ 30 VA • electr. controlled	
Housing:		aluminium · RAL 7000 (grey) · other colors on request	
Dimensions/ Weight:		cup rotor Ø 280 mm · H 520 mm · for mounting pipe Ø 50 mm · 2.7 kg	
Included in delivery:		1 plug · 10-pole · MIL-standard · when a cable is ordered, the plug is mounted to that	
Accessories:		**Indicator units** e. g. (1476 Q144SBN18) · (1477 Q144SB) · (14763 Q144SBN18) • **Power supply units**	
32.14513.066 040	**(14513 U66d)**	**Cable** · 4 m · with 10-pole plug · MIL-standard · ready-made	

LAMBRECHT meteo

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COMBINED SMALL WIND SENSOR

Wind direction and wind speed

Double is simply...

optimal for combined measuring. Firstly, the aluminium wind vane for direction and secondly, the cup rotor for wind velocity.
These two typical measuring parts are integrated into the very robust all-metal housing.
They run independently from each ot her on precision ball bearings.
Thus, highly accurate recording is warranted.

- small, light, compact and robust
- seawater-resistant
- includes mounting bracket
- inexpensive top class combined sensor
- low power consumption

mobile weather stations • industrial and nautical applications • buoys • vehicles

Professional Line	(1453 S2) Combined Small Wind Sensors	
	Wind direction	**Wind speed**
Measuring elements:	wedge-shaped wind vane	3-armed cup rotor
Measuring range:	0...360°	0...35 m/s
Accuracy/ Resolution:	± 1 % • 0.1°	± 2 % FS • 0.1 m/s
Starting value:	1 m/s	1 m/s
Range of application:	temperatures -30...+70 °C no icing • wind speed 0...60 m/s	
Output:	1 mA at 0...35 m/s • R_a = 2000 Ω	
Supply voltage:	12 V_{DC}/ max. 0.6 W for direction transmission	
Housing:	aluminium · special surface · seawater-resistant · black • IP 53	
Dimensions/ Weight:	cup rotor Ø 96 mm · H 290 mm · for mounting strap · approx. 0.3 kg	
Included in delivery:	1 plug · 7-pole · when a cable is ordered, the plug is mounted to that	
Versions:		
00.14532.000 030	**(1453 S2F1000)** Precision ring potentiometer F1000	DC-generator G2
00.14532.000 300	**(1453 S2N)** Precision ring potentiometer	DC-generator G2
Accessories:		
32.14530.060 010	**(1453 U60a)** **Cable** · 10 m · with 7-pole plug · ready-made	
32.14530.060 060	**(1453 U60f)** **Cable** · 15 m · with 7-pole plug · ready-made	
32.14530.060 090	**(1453 U60i)** **Cable** · 2 m · with 7-pole plug · ready-made	
	Indicator units e. g. (1476 Q144N) · (1477 Q144)	

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PRECIPITATION

PRECIPITATION:

The condensation of the water vapour in the air to fog, dew, rain, snow or hail.
For you only the best! This has been LAMBRECHT's motto for decades in the production of precipitation sensors.
Solely high-quality, weather-, and UV-proof materials are used. Every component is especially tested. The production of exceedingly robust constructions, e.g. full-metal housings, precise tipping bucket bearings, and heating systems is a central issue.
High mountains or tropics - LAMBRECHT doesn't leave you in the cold with your meteorological problems.
Different precipitation measuring methods are used. Especially useful in cases of extremely high amounts of precipitation is the tipping bucket method. Individually tuned tipping buckets are mounted on precision-grinded cut bearings. Filled up, the 2- or 4-cm³ buckets are emptied automatically. The emptyings are counted, thus a permanent recording of precipitation is ensured. Overflowing is impossible!
Another LAMBRECHT specialty is the only precipitation sensor with heatable collecting ring - for prompt and exact snow fall measurement.

PRECIPITATION SENSOR “rain[e]”

Weighing precipitation sensor

The first of a new kind

rain[e] is a new type of weighing precipitation sensor: Highest resolution combined with the most compact design.

The unique self-emptying collection system enables the measurement of every single drop with the high resolution of 0.001 mm/m².

Full functionality all year around without antifreeze fluid makes the rain[e] very environmentally friendly.

rain[e] is easy to lift, transport, install and maintain. The small packing volume and the low weight ensure minimum logistical effort.

The rain[e] series is compatible with OTT and Campbell Scientific data loggers and ideal for setup and expansion of rainfall measurement networks.

- amazing resolution and accuracy
- checking of sensors with tipping bucket and other weighing systems
- compact and robust construction with a very low weight
- all-metal housing, weatherproof and durable
- best connectivity by several interfaces
- installation and maintenance are very simple

classical meteorology and hydrology • measuring networks of water suppliers • lysimeter systems • sewage plants • Weather Services • airports • traffic meteorology

Professional Line	**Weighing precipitation sensor rain[e]**
rain[e], unheated	**Id-No. 00.15184.000 000**
Measurement principle:	weighing with automatic self emptying
Operating temperature:	0...+70 °C (unheated)
Collecting area:	200 cm²
Amount measurement range:	without limitation (0.005…∞ mm)
Amount resolution:	0.001 mm (pulse output: 0.01 mm)
Amount accuracy:	± 0.1 mm or ± 1 % at < 6 mm/min and ± 2 % at ≥ 6 mm/min
Intensity range:	0…20 mm/min resp. 0…1200 mm/h
Intensity resolution:	0.001 mm/min resp. 0.001 mm/h
Intensity accuracy:	± 0.1 mm/min resp. ± 6 mm/h
Standards:	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 • EN 61000-4-2, -3, -4, -5, -6, -11 NAMUR NE-21
Protection class load cell:	IP67
Current consumption:	max. 45 mA at 24 V power supply and analogue output • typ. 7.5 mA at 24 V power supply and deactivated analog output • typ. 12.5 mA at 12 V
Supply voltage:	9.8...32 V DC
Signal outputs:	· SDI-12 • RS-485 (SDI-12 protocol, ASCII protocol, TALKER protocol) · 2 Pulse-Outputs for linearised, bounce-free output signal · Status-Output (configurable, e.g. rain yes/no or heating on/off) · Analogue output 0/4...20 mA (0...2.5/5 V)
rain[e], heated	**Id-No. 00.15184.400 000**
Data like rain[e] Id-No. 00.15184.000 000, but in addition with controlled 2-circuit-heating	
Target temperature (heating):	+2 °C funnel surface temperature
Heating power:	80 W (funnel) • 60 W (outlet/ tipping bucket)
Supply voltage:	24 V DC / 2 heating circuits 80 W and 60 W
Operating temperature:	-40...+70 °C (no icing, no snowdrift)

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PRECIPITATION SENSOR “rain[e]one”

Weighing precipitation sensor

The entry-level model in the rain[e] series

The reasonably priced rain[e]one stands out due to its first-class, proven quality and equipment as in the premium class of the rain[e] series. Only the technical data (amount and intensity of all precipitation) differ slightly.

The latest weighing technology in a very small design combined with a self-emptying collecting system also allows the rain[e]one an excellent resolution and accuracy.

The rain[e]one is ideal to setup new measurement network as well as addition to an existing rainfall measurement network. The Modbus RTU interface simplifies sensor installation and integration into networks.

- amazing resolution and accuracy
- compact design, very low weight
- weatherproof all-metal housing
- best connectivity by several interfaces
- installation and maintenance are very simple

classical meteorology and hydrology • measuring networks of water suppliers • lysimeter systems • sewage plants • airports • traffic meteorology

Professional Line	Weighing precipitation sensor rain[e]one
rain[e]one, unheated	**Id-No. 00.15184.000 001**
Measurement principle:	weighing with automatic self emptying
Operating temperature:	0...+70 °C (unheated)
Collecting area:	200 cm²
Amount measurement range:	without limitation (0.005…∞ mm)
Amount resolution:	0.001 mm (pulse output: 0.01 mm)
Amount accuracy:	0.1 mm or 2 %
Intensity range:	0…10 mm/min resp. 0…600 mm/h
Intensity resolution:	0.001 mm/min resp. 0.001 mm/h
Intensity accuracy:	± 0.1 mm/min resp. ± 6 mm/h
Standards:	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 • EN 61000-4-2, -3, -4, -5, -6, -11 NAMUR NE-21
Protection class load cell:	IP67
Current consumption:	max. 45 mA at 24 V power supply and analogue output • typ. 7.5 mA at 24 V power supply and pulse output • typ. 12.5 mA at 12 V
Supply voltage:	9.8...32 VDC
Signal outputs:	· SDI-12 • RS-485 (SDI-12 protocol, ASCII protocol, TALKER protocol) • Modbus RTU · 2 Pulse-Outputs for linearised, bounce-free output signal · Status-Output (configurable, e.g. rain yes/no or heating on/off) · Analogue output 0/4...20 mA (0...2.5/5V)
rain[e]one, heated	**Id-No. 00.15184.400 001**
Data like rain[e]one 00.15184.000 001, but in addition with controlled 2-circuit-heating	
Target temperature (heating):	+2 °C funnel surface temperature
Heating power:	80 W (funnel) • 60 W (outlet/ tipping bucket)
Supply voltage:	24 VDC / 2 heating circuits 80 W and 60 W
Operating temperature:	-40...+70 °C (no icing, no snowdrift)

Accessories:

Id-No. 32.15184.060 000 Cable, M12 plug for connection sensor/data logger; L = 10 m (8-core)
Id-No. 65.53090.160 100 USB cable for sensor configuration

PRECIPITATION SENSOR “rain[e]H3”

Weighing precipitation sensor

Protected against freezing.

Due to the innovative weighing technology combined with a self-emptying collection vessel the rain[e] sets new standards in professional precipitation measurement. Its outstanding resolution and accuracy are approved all over the world. The rain[e]H3 with electronically regulated ring heating is designed especially for extreme cold climates. Integrated outside temperature sensor, real time clock, electronic monitoring when opening the housing and remote servicing are features of continuous development.

With optional port server and web interface the rain[e]H3 is well equipped for all communicative demands in future.

- electronically controlled ring-, funnel- and drain-line heatings
- easy installation and maintenance

Technical Data	Weighing Precipitation Sensor rain[e]H3	Id-No. 00.15184.540 020
Measurable precipitation types:	liquid, solid, mixed	
Measurement principle:	weighing with automatic self emptying	
Operating temperature:	-40...+70 °C (no icing or snow drift)	
Storage temperature:	-40...+70 °C	
Collecting area:	200 cm²	
Measurement range (amount):	without limitation (0.005…∞ mm)	
Resolution (amount):	0.001 mm	
Accuracy (amount):	± 0.1 mm or ± 1 % at < 6 mm/min and ± 2 % at ≥ 6 mm/min	
Measurement range (intensity):	0…20 mm/min	resp. 0…1200 mm/h
Resolution (intensity):	0.001 mm/min	resp. 0.001 mm/h
Accuracy (intensity):	± 0.1 mm/min	resp. ± 6 mm/h
Integrated outside temperature sensor:	measuring range: -35...+45 °C • basic accuracy*: < 0.5 °C	
Dimensions:	377 mm × 190 mm (H × Ø)	
Mountable on:	Ø 60 mm	
Weight:	approx. 4 kg	
Standards:	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 EN 61000-4-2, -3, -4, -5, -6, -11 • NAMUR NE-21	
Protection class load cell:	IP67	
Protection class housing:	IP64	
Current consumption:	max. 12.5 mA at 12 V supply without Ethernet with RS485 max. 150 mA at 12 V supply with Ethernet	
Supply voltage:	9.8...32 V DC	
Heating data:	electronically controlled ring-, funnel- and drain-line heatings	
Target temperature:	+2 °C funnel-surface temperature	
Accuracy:	± 1 °C	
Heating power:	70 W (funnel) · 60 W (discharge/ collecting vessel) · 70 W (ring heating)	
Output signals:	· SDI-12 • RS-485 (SDI-12 protocol, ASCII protocol, TALKER protocol) · 2 Pulse-Outputs for linearised, bounce-free output signal · Status-Output (configurable, e.g. rain yes/no or heating on/off) · Analogue output 0/4...20 mA (0...2.5/5V)	
Real Time Clock (RTC):	integrated	

*) without the influence of sunlight

PRECIPITATION SENSOR “rain[e]400”

Weighing precipitation sensor

rain[e]400 is...

ecological

Full functionality all year around without antifreeze fluid makes the rain[e]400 very environmentally friendly.

extraordinary

The rain[e]400 is a new type of weighing precipitation sensor. Highest resolution combined with the most compact unique design.

exact

The unique self-emptying collection system enables the measurement of every single drop with the high resolution of 0.001 mm/m².

efficient

Highest functionality offered in one compact design with 6 different interfaces. It is available with a highly efficient heater with minimised heating current consumption.

easy

rain[e]400 is easy to lift, transport, install and maintain.

economic

The small packing volume and the low weight ensure minimum logistical effort. The rain[e]400 is up to 50 % cheaper than other weighing precipitation sensors, yet providing similar or improved functionality.

WEIGHING TIPPING BUCKET

PRECIPITATION EVENTS

mm PRECIPITATION AMOUNT

RAIN INTENSITY

HIGH RESOLUTION

SDI-12 DIGITAL OUTPUT

Professional Line	**Weighing precipitation sensor rain[e]400**
rain[e]400, unheated	**Id-No. 00.15184.004 000**
Measuring principle:	weighing with automatic self emptying
Operating temperature:	0...+70 °C (unheated)
Collecting area:	400 cm²
Amount measuring range:	without limitation (0.0025…∞ mm)
Amount resolution:	0.001 mm (pulse output: 0.01 mm)
Amount accuracy:	± 0.1 mm or ± 1 % at < 3 mm/min and ± 2 % at > 3 mm/min
Intensity range:	0…10 mm/min resp. 0…600 mm/h
Intensity resolution:	0.001 mm/min resp. 0.001 mm/h
Intensity accuracy:	± 0.1 mm/min resp. ± 6 mm/h
Standards:	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 • EN 61000-4-2, -3, -4, -5, -6, -11 NAMUR NE-21
Protection class weighing cell:	IP67
Current consumption:	max. 45 mA at 24 V power supply and analogue output • typ. 7.5 mA at 24 V power supply and deactivated analog output • typ. 12.5 mA at 12 V
Supply voltage:	9.8...32 VDC
Signal outputs:	· SDI-12 • RS-485 (SDI-12 protocol, ASCII protocol, TALKER protocol) · 2 Pulse-Outputs for linearised, bounce-free output signal · Status-Output (configurable, e.g. rain yes/no or heating on/off) · Analogue output 0/4...20 mA (0...2.5/5 V)
rain[e]400, heated	**Id-No. 00.15184.404 000**
Data like rain[e]400 00.15184.004 000, but in addition with controlled 2-circuit-heating	
Target temperature (heating):	+2 °C funnel surface temperature
Heating power:	150 W (funnel) • 60 W (outlet/ tipping bucket)
Supply voltage:	24 VDC / 2 heating circuits 150 W and 60 W
Operating temperature:	-40...+70 °C (no icing, no snowdrift)

PRECIPITATION SENSOR

acc. to Joss-Tognini

A uniquely brilliant idea...
lies behind the sensor 1518 H3.
Not only are collecting and drain funnel heated, but also the collecting ring.
Here, the snow is thawed so that the snow fall is measured promptly.
The new electronically regulated three-circle heating device minimizes evaporation effects.
Several thousand of these sensors are in use world-wide.

- suitable in high mountain areas
- constant operating temperature 4 °C +/- 1 °C for accurate measurement
- 2 or 4 cm^3 high-quality stainless steel buckets
- absolutely weather-proof
- easy installation
- simple handling

meteorological reference device • automatic and high mountain area weather station • classical meteorology and hydrology • with lysimeter systems • sewage plants • building systems • water management/agriculture • forestry

Grown out of experience!
- **controlled three-circuit heating**
- **2- and 4 cm^3-volume of bucket**
- **no plastics at measuring parts**

Professional Line	**(1518 H3)**	**Precipitation Sensors**
Measuring element:		tipping bucket • precision stainless steel bucket acc. to Joss-Tognini
Meas. range/ Resolution:		2 cm^3-volume of bucket - 0.1 mm • 0...10 mm/min 4 cm^3-volume of bucket - 0.2 mm • 0...20 mm/min
Accuracy:		± 2 % with intensity compensation • controlled temperature 4 °C ± 1 °C within a range of -35...+4 °C
Collecting surface:		200 cm^2/ WMO standard
Range of application:		operating temperatures -35...+70 °C
Data of heating:		electr. controlled three-circuit heating • 235 VA total heating energy • 100 VA for ring • 100 VA for collecting funnel • 35 VA for downpipe/ bucket • supply voltage 42 V_{AC}
Pulse output:		reed contact · polarity protected · bounce-free signal • current consumption max. 100 µA · typical 50 µA • load max. 30 V_{DC}/ 0.5 A • supply voltage 4...30 V_{DC}
Housing/ Funnel + ring:		stainless steel • aluminium, anodized
Dimensions/ Weight:		H 494 mm · Ø 224 mm · for mounting pipe with Ø 60 mm · approx. 7 kg
Standards:		WMO-No. 8 · VDI 3786 page 7 · EN 50081/82 · VDE 0100
Versions:		
00.15183.002 000	**(1518 H3)**	**Precipitation Sensor** with 2 cm^3-volume of bucket
00.15183.004 000	**(1518 H3W4)**	**Precipitation Sensor** with 4 cm^3-volume of bucket
Accessories: (optional)		**LAMBRECHT's data loggers**: met[LOG], Ser[LOG], PreLOG, TROPOS and SYNMET

PRECIPITATION SENSOR

acc. to Joss-Tognini

With success...
the sensor 15188 stands up to any comparison with others in its class. Modern tipping- and heating technologies guarantee high reliability, precision and minimal evaporation influences. The system empties itself and registers - overflowing is impossible.
The 4cm³ bucket with large volume has been constructed especially for extreme precipitation incidents, e. g. tropical rainstorms or longer recording intervals.

- smooth running tipping bucket bearings
- high resolution
- easy installation
- maintenance-free electronics
- fine materials

automatic weather stations • classical meteorology and hydrology • with lysimeter systems • sewage plants • building systems • water management/agriculture • forestry

Precision Inside!
- **no plastics at measuring parts**
- **2- and 4 cm³-volume of bucket**
- **controlled dual-circuit heating**

Professional Line	**(15188)**	**Precipitation Sensors**
Measuring element:		tipping bucket · precision stainless steel bucket acc. to Joss-Tognini
Meas. range/ Resolution:		2 cm³- (~2 g) volume of bucket - 0.1 mm · 0...10 mm/min 4 cm³- (~4 g) volume of bucket - 0.2 mm · 0...20 mm/min
Accuracy:		± 2 % with intensity compensation · controlled temperature 4 °C ± 2 °C within a range of -20...+4 °C*
Collecting surface:		200 cm²/ WMO standard
Range of application:		operating temperatures 0...+70 °C metering (down to -20 °C frost resistant) · -30...+70 °C* controlled
Data of heating*:		electr. controlled dual-circuit heating · 170 VA total heating energy · 100 VA collecting funnel · 70 VA downpipe/ bucket · supply voltage 42 V_{AC}
Pulse output:		reed contact · polarity protected · bounce-free signal · current consumption max. 100 µA · typical 50 µA · load max. 30 V_{DC}/ 0.5 A · supply voltage 4...30 V_{DC}
Housing/ Funnel + ring:		stainless steel · aluminium, anodized
Dimensions/ Weight:		H 395 mm · Ø 190 mm · for mounting pipe with Ø 60 mm · approx. 4 kg
Standards:		WMO-No. 8 · VDI 3786 page 7 · EN 50081/82 · VDE 0100
Versions:		
00.15188.002 000	**(15188)**	**Precipitation Sensor** with 2 cm³-volume of bucket · unheated
00.15188.202 000	**(15188 H)***	**Precipitation Sensor** with 2 cm³-volume of bucket · heating
00.15188.004 000	**(15188 W4)**	**Precipitation Sensor** with 4 cm³-volume of bucket · unheated
00.15188.204 000	**(15188 HW4)***	**Precipitation Sensor** with 4 cm³-Volume of bucket · heating
Accessories: (optional)		**LAMBRECHT's data loggers**: met[LOG], Ser[LOG], PreLOG, TROPOS and SYNMET

PRECIPITATION SENSOR

acc. to Joss-Tognini

High reliability...
and precision as well as minimal evaporation influences guaranteed by modern tipping- and heating technologies.
The system empties itself and registers - overflowing is impossible.
The 4 cm³ bucket with large volume has been constructed especially for extreme precipitation incidents, e. g. tropical rainstorms.

- with linearised impulse output and/ or analog output signal
- smooth running tipping bucket bearings
- high resolution
- easy installation
- maintenance-free electronics
- fine materials

automatic weather stations • classical meteorology and hydrology • with lysimeters • sewage plants • building systems • water management/agriculture • forestry

Precision Inside!

- **no plastics at measuring parts**
- **2- and 4 cm³-volume of bucket**
- **controlled dual-circuit heating**

Professional Line	**(15188++)**	**Precipitation Sensors**
Measuring element:		tipping bucket · precision stainless steel bucket acc. to Joss-Tognini
Meas. range/ Resolution:		2 cm³- (~2 g) volume of bucket - 0.1 mm · 0...10 mm/min 4 cm³- (~4 g) volume of bucket - 0.2 mm · 0...20 mm/min
Accuracy:		± 2 % · controlled temperature 4 °C ± 2 °C within a range of -20...+4 °C*
Collecting surface:		200 cm²/ WMO standard
Ranges of application:		unheated versions: 0...+70 °C metering (frost resistant down to -20 °C) heated versions: -30...+70 °C · no icing · no snowdrift
Analog outputs:		0...20 mA = basic setting · 4...20 mA · 0...5/10 V - selectable current consump. ≤ 40 mA · supply voltage 18...30 VDC · max. load 600 Ω
Pulse output:		for linearised, bounce-free output signal · At deactivated analog output: current consump. max. 100 µA · typical 50 µA · supply voltage 5...30 VDC · switch load max. 30 VDC/ max. 0.5 A - at pure ohm load
Housing/ Funnel + ring:		stainless steel · aluminium, anodized
Dimensions/ Weight:		H 395 mm · Ø 190 mm · for mounting pipe with Ø 60 mm · approx. 4 kg
Standards:		WMO-No. 8 · VDI 3786 page 7 · EN 50081/82 · VDE 0100
Versions:		
00.15188.002 050	**(15188++)**	**Precipitation Sensor** with 2 cm³-volume of bucket · unheated
00.15188.004 050	**(15188 W4++)**	**Precipitation Sensor** with 4 cm³-volume of bucket · unheated
00.15188.202 050	**(15188 H++)***	**Precipitation Sensor** with 2 cm³-volume of bucket · heated
00.15188.204 050	**(15188 HW4++)***	**Precipitation Sensor** with 4 cm³-Volume of bucket · heated
Data of heating*:		electr. controlled dual-circuit heating · 170 VA total heating energy · 100 VA collecting funnel · 70 VA downpipe/ bucket · supply voltage 42 VAC
Accessories: (optional)		**LAMBRECHT's data loggers**: met[LOG], Ser[LOG], PreLOG, TROPOS and SYNMET

PRECIPITATION SENSOR

with tipping bucket according to Joss-Tognini

Grown by experiences...
and equipped with the features and advantages of the proven forerunners is the sensor (15189) the “class winner”! Its functionality meets exactly the demands of the classical meteorology and hydrology as well as the semi-professional industrial meteorology. The sensor (15189) and its versions are very efficient and economical investment for a lifetime.

- best price-performance ratio in its class!
- single device or part of an automatic weather station
- connectable to LAMBRECHT’s data loggers: met[LOG], Ser[LOG], PreLOG, TROPOS and SYNMET
- very reliable measuring system
- high-quality materials
- easy installation

classical meteorology and hydrology • agriculture meteorology • measuring networks of water suppliers • lysimeter systems • sewage plants • Weather services • airports

Standard Line	(15189)	Precipitation sensors
Meas. principle/ element:		tipping bucket system • precision stainless steel bucket acc. to Joss-Tognini
Meas. range/ Resolution:		2 cm^3- (~2 g) volume of tipping bucket - 0.1 mm • 0...8 mm/min 4 cm^3- (~4 g) volume of tipping bucket - 0.2 mm • 0...16 mm/min
Accuracy:		± 2 % with intensity correction
Collecting funnel:		200 cm^2/ WMO standard
Ranges of application:		unheated version: 0...+70 °C metering (frost resistant down to -20 °C) heated version: -20...+70 °C · no icing · no snowdrift
Pulse output:		reed contact · polarity protected · bounce-free signal • supply voltage 4...30 V_{DC} • current consumption max. 100 µA · typical 50 µA • load max. 30 V_{DC}/ 0.5 A
Housing/ Funnel + ring:		aluminium · anodized
Dimensions/ Weight:		H 292 mm · Ø 190 mm · for mounting pipe Ø 60 mm · approx. 3 kg
Standards:		WMO-No. 8 · VDI 3786 lf. 7 · EN 50081/82 · VDE 0100
Versions:		
00.15189.002 000	**(15189)**	**Precipitation sensor** with 2 cm^3-volume of bucket · unheated
00.15189.004 000	**(15189 W4)**	**Precipitation sensor** with 4 cm^3-volume of bucket · unheated
00.15189.402 000	**(15189 H)**	**Precipitation sensor** with 2 cm^3-volume of bucket · heated*
00.15189.404 000	**(15189 HW4)**	**Precipitation sensor** with 4 cm^3-volume of bucket · heated*
*Heating data:		electr. controlled dual-circuit heating • supply voltage 24 V_{DC} • controlled temperature of 4 ± 2 °C within a range of -20...+4 °C • heating power 150 W
Accessories:		Masts, dirt pan, protection ring, connecting cables, data logger, evaluation software
00.14966.200 000	**(1496 S62)**	**Power supply unit** for heated sensors

PRECIPITATION SENSOR

with tipping bucket acc. to Joss-Tognini

Robustness meets design...
The resistant and beautifully designed sensor has a linearised pulse output for high accuracy and easy connection to external data loggers. Its selectable analog output signal substantially simplifies the connection to PLC.
Winter-fit models and in general a long durability are guaranteed by weather-proof materials.

- selectable measuring ranges as well as absolute or gliding sum
- for the analogue output signals
- single device or part of an automatic weather station
- very reliable measuring system
- high-quality material
- easy installation
- connectable to Lambrecht's data loggers met[LOG], Ser[LOG], PreLOG, TROPOS and SYNMET

classical meteorology and hydrology • agriculture meteorology • measuring networks of water suppliers • lysimeter systems • sewage plants • Weather services • airports

Standard Line	**(15189 analog) Precipitation Sensors**
Meas. principle/ element:	tipping bucket system · precision stainless steel bucket acc. to Joss-Tognini
Meas. range/ Resolution:	2 cm^3- (2 g) volume of tipping bucket - 0.1 mm • 0...8 mm/min 4 cm^3- (4 g) volume of tipping bucket - 0.2 mm • 0...16 mm/min
Accuracy:	± 2 %
Collecting funnel:	200 cm^2/ WMO standard
Ranges of application:	unheated versions: 0...+70 °C metering (frost resistant down to -20 °C) heated versions: -20...+70 °C · no icing · no snowdrift
Analog outputs:	0...20 mA = basic setting · 4...20 mA · 0...5/10 V - selectable current consump. ≤ 40 mA • supply voltage 18...30 VDC · max. load 600 Ω
Pulse output:	for linearised, bounce-free output signal · At deactivated analog output: current consump. max. 100 µA · typical 50 µA · supply voltage 5...30 VDC · switch load max. 30 VDC/ max. 0.5 A - at pure ohm load
Housing/ Funnel + ring:	aluminium • anodized
Dimensions/ Weight:	H 292 mm · Ø 190 mm · for mounting pipe Ø 60 mm • approx. 3 kg
Standards:	WMO-No. 8 · VDI 3786 page 7 · EN 50081/82 · VDE 0100
Versions:	
00.15189.002 050	**(15189 analog)** **Precipitation sensor** with 2 cm^3-volume of bucket · unheated
00.15189.004 050	**(15189 W4 analog)** **Precipitation sensor** with 4 cm^3-volume of bucket · unheated
00.15189.402 050	**(15189 H analog)** **Precipitation sensor** with 2 cm^3-volume of bucket · heated*
00.15189.404 050	**(15189 H W4 analog)** **Precipitation sensor** with 4 cm^3-volume of bucket · heated*
	*Heating data: electr. controlled dual-circuit heating • controlled temperature of 4 ± 2 °C within a range of -20...+4 °C • heating power 150 W • supply voltage 24 VDC
Accessories:	
00.14966.200 000	**(1496 S62)** **Power supply unit** for heated sensors

PRECIPITATION SENSOR

with tipping bucket acc. to Joss-Tognini

The successful precipitation sensor...

now available with serial interface. The resistant and beautifully designed sensor has additionally a linearised pulse output for high accuracy and easy connection to external data loggers.
This sensor provides intensity adjusted measurement of precipitation with serial measurand output via RS485.

- SDI-12 protocol (at RS485) for
- universal use
- interface RS485
- LBP protocol (Lambrecht Bus Protocol)
- integrated intensity adjustment
- calculation of:
  precipitation sum since last data call,
  precipitation intensity for a slipping minute,
  precipitation intensity for a slipping hour (minute interval)

system integrators • classical meteorology and hydrology • measuring networks of water suppliers • sewage plants • traffic meteorology

Standard Line	**(15189 serial) Precipitation Sensors**
Meas. principle/ Element:	tipping bucket system • precision stainless steel bucket acc. to Joss-Tognini
Meas. range/ Resolution:	2 cm^3- (2 g) volume of tipping bucket - 0.1 mm • 0...8 mm/min 4 cm^3- (4 g) volume of tipping bucket - 0.2 mm • 0...16 mm/min
Accuracy:	± 2 %
Collecting funnel:	200 cm^2/ WMO standard
Ranges of application:	unheated versions: 0...+70 °C metering (frost resistant down to -20 °C) heated versions: -35...+70 °C · no icing · no snowdrift
Interface:	RS485 • SDI-12 protocol (at RS485) • LBP protocol (Lambrecht Bus Protocol)
Supply voltage:	10...30 V DC (12 V DC/ 24 V DC)
Housing/ Funnel + ring:	aluminium • anodized
Dimensions/ Weight:	H 292 mm · Ø 190 mm · for mounting pipe Ø 60 mm • approx. 2.5 kg
Standards:	WMO-No. 8 · VDI 3786 page 7 · EN 50081/82 · VDE 0100
Versions:	
00.15189.002 060	**(15189 serial)** **Precipitation sensor** with 2 cm^3-volume of bucket · unheated
00.15189.004 060	**(15189 W4 serial)** **Precipitation sensor** with 4 cm^3-volume of bucket · unheated
00.15189.402 060	**(15189 H serial)** **Precipitation sensor** with 2 cm^3-volume of bucket · heated*
00.15189.404 060	**(15189 H W4 serial)** **Precipitation sensor** with 4 cm^3-volume of bucket · heated*
	*Heating data: electr. controlled dual-circuit heating • controlled temperature of 4 ± 2 °C within a range of -20...+4 °C • heating power 150 W • supply voltage 24 V DC
Accessories (optional):	**00.14966.200 000 Power supply unit** for heated sensors **LAMBRECHT's data loggers** met[LOG], Ser[LOG], PreLOG, TROPOS and SYNMET

ACCESSORIES

for precipitation sensors

Id-No.	15189	15189 analog	15189H	15189H analog	15188	15188++	15188H	15188H++	1518H3	1518H3++	Description of the item
00.15123.242000							x	x	x	x	Filament transformer · supply voltage 230 V_{AC} · output voltage 42 VAC/ 250 VA · protection class IP 65
00.14966.200000			x	x							Power supply unit · supply voltage 88...264 VAC · output voltage 24 VDC/ 150 W · protection class IP 65
00.15180.400000	x	x	x	x	x	x					Stainless steel mast for concrete foundation · Ø 60 mm · length 1.2 m · for measuring height 1 m
00.15180.400010							x	x	x	x	Stainless steel mast for concrete foundation with support for filament transformer · Ø 60 mm · length 1.2 m · for measuring height 1 m
00.15180.800000	x	x	x	x	x	x					Stainless steel mast for concrete foundation with base plate · Ø 60 mm · length 650 mm · for measuring height 1 m (for 15188)
00.15180.800010									x	x	Stainless steel mast for concrete foundation with base plate and support for filament transformer · Ø 60 mm · length 570 mm · for measuring height 1 m
00.15180.800030							x	x			Stainless steel mast for concrete foundation with base plate and support for filament transformer · Ø 60 mm · length 650 mm · for measuring height 1 m
32.14622.220000			x	x							Support for power supply
33.15180.049000	x	x	x	x	x	x	x	x	x	x	Dirt spiral (spare part)
32.15180.021010	x	x	x	x	x	x	x	x			Protection ring against birds Ø 190 mm
32.15183.021010									x	x	Protection ring against birds Ø 224 mm
32.15183.060000									x	x	Connecting cable · 1 m · sensor/ filament transformer, 2 x 2-core, with plug
32.15183.060090									x		Connecting cable · 7 m · sensor/ data logging system, 2-core · shield on third stranded wire
32.15188.060060							x	x			Connecting cable · 1 m · sensor/ filament transformer, 2-core
32.15188.060090	x		x		x		x				Connecting cable · 7 m · sensor/ data logging system, 2-core
32.15188.061020			x	x							Connecting cable · 1 m · sensor/ filament transformer, 4-core
32.15188.061090		x		x		x		x		x	Connecting cable · 7 m · sensor/ data logging system, 4-core

PRECIPITATION RECORDER

according to Hellmann

All in good time...

reliably registered with strip chart and drum recorder.
Precipitation is registered free of manipulation. Especially in remote locations, which can only be controlled sporadically, a recording time of 31 days is of great advantage. Depending on the conditions of employment, the varieties can be used year-round out of doors and up to -20 °C (with heater).

- very robust measuring system with precision bearing
- wide temperature range of application
- easy to mount/easy to use
- data logging requires no auxiliary power

classical meteorology and hydrology • in combination with lysimeters • sewage plants • sanitary land fills • building services • water management • agriculture • forestry

Professional Line	**Series (1507) and (1509) Precipitation Recorder according to Hellmann**
Measuring elements:	(1507) drum recorder • (1509) strip chart recorder
Measuring ranges:	80 mm recording height / 10 mm precipitation quantity 10 l collecting can • 500 mm precipitation quantity 200 cm^3 measuring cylinder • 10 mm precipitation quantity
Clockwork accuracy:	± 50 s/ day
Resolution/ Scale:	0.1 mm/ 0...10 mm • recorder and measuring cylinder: 0.05 mm
Collecting surface:	200 cm^2/ WMO standard
Range of application:	operating temperatures 0...+60 °C • -20...+60 °C with electr. controlled heating
Housing/ Measuring cylinder:	zinc plate • RAL 7038 (agate-grey) • polystyrene acc. to DIN 58667
Dimensions/ Weight:	H 1200 mm · proof-Ø 420 mm · housing-Ø 302 mm • approx. 21 kg
Standards:	VDI 3786 page 7

Precipitation recorders series (1507)				
Id-No.	**00.15072.010.000**	**00.15072.020 000**	**00.15072.210 000**	**00.15072.220 000**
Code	**(1507)**	**(1507 a)**	**(1507 H42)**	**(1507 a H42)**
Recording period:	7 days	1 day	7 days	1 day
Recording reserve:	10 hours	2 hours	10 hours	2 hours
Operating temperatures:	0...+60 °C	0...+60 °C	-20...+60 °C	-20...+60 °C
Heating:	--	--	42 V_{AC} · 215 VA	42 V_{AC} · 215 VA
Chart speed:	2.29 mm/h	16 mm/h	2.29 mm/h	16 mm/h
Accuracy of registration:	0.1 mm with max. 0.5 mm/min	0.1 mm with max. 3.5 mm/min	0.1 mm with max. 0.5 mm/min	0.1 mm with max. 3.5 mm/min

Precipitation recorders series (1509)				
Id-No.	**00.15090.010.000**	**00.15090.020 000**	**00.15090.210 000**	**00.15090.220 000**
Code	**(1509-10)**	**(1509-20)**	**(1509-10 H42)**	**(1509-20 H42)**
Recording period:	31 days	31 days	31 days	31 days
Recording reserve:	1 day	1 day	1 day	1 day
Operating temperatures:	0...+60 °C	0...+60 °C	-20...+60 °C	-20...+60 °C
Heating:	--	--	42 V_{AC} · 215 VA	42 V_{AC} · 215 VA
Chart speed:	10 mm/h	20 mm/h	10 mm/h	20 mm/h
Accuracy of registration:	0.1 mm with max. 2.5 mm/min	0.1 mm with max. 4.5 mm/min	0.1 mm with max. 2.5 mm/min	0.1 mm with max. 4.5 mm/min

Accessories		
32.15070.030 000	**(1507 U30)**	**Snow cross** • weight approx. 0.2 kg · for (1507) and (1509)
32.15070.121 000	**(1507 U121)**	**Protection ring** against birds · for (1507) and (1509)
32.15070.010 000	**(1507 U10)**	**Pipette** (glass tube) · for (1507) and (1509)
32.15070.002 000	**(1507 U2)**	**Float** with guide tube · for (1507) and (1509)
33.15070.149 000	**(1507-149)**	**Dirt pan*** · for (1507) and (1509)
34.15070.001 000	**(1507 D1)**	**Graph paper*** · 100 sheets · 1 day · approx. 0.5 kg · for (1507)
34.15070.002 000	**(1507 D2)**	**Graph paper*** · 100 sheets · 7 days · approx. 0.5 kg · for (1507)
34.15090.003 000	**(1509 D3)**	**Recording chart rolls*** · 12 rolls · 31 days · 20 mm/h · approx. 1.2 kg · for (1509)
34.15090.004 000	**(1509 D4)**	**Recording chart rolls*** · 12 rolls · 31 days · 10 mm/h · approx. 1.2 kg · for (1509)
33.02520.144 000	**(252-144)**	**Felt-tipped pens**** · 6 pieces · violet · for (1507) and (1509)

Accessories for heated models (H-models):		
00.15123.242 000	**(15123)**	**Filament transformer** Supply voltage 230 V_{AC} · output voltage 42 V_{AC}/ 250 VA · protection class IP 65 dimensions 220 x 168 x 116 mm · weight approx. 6 kg

Connecting cable between sensor/ filament transformer on request.
* 1 set included in delivery of the unit. ** 1 piece included in delivery of the unit.

PRECIPITATION SENSOR

RAIN GAUGE

according to Hellmann

The rain classic...
and evergreen. Plain and rigorously useful technologies guarantee high quality. Construction according to the requirements of the German meteorological service (DIN 58666). The polystyrene measuring cylinder is equipped with a scale with very good reading accuracy.

- measurement according to DIN-norm
- easy to mount
- simple usage and handling
- weather-proof materials
- very robust and compact
- good value
- b-variety with twice as much equipment for snow measurement

classical meteorology • sewage plants • water management and agriculture • structural and civil engineering • forestry

mm PRECIPITATION AMOUNT

MECHANICAL SENSOR

Standard Line	**(1500)**	**Rain Gauge according to Hellmann**	**Id-No. 00.15000.000 000**
Measuring element:		collecting funnel with collecting can	
Measuring ranges:		1.2 l collecting can: precipitation quantity 60 mm 200 cm^3 measuring cylinder: 10 mm	
Collecting surface:		200 cm^2/ WMO standard	
Range of application:		operating temperatures 0...+60 °C	
Scale:		0.1 mm/ 0...10 mm	
Maximum Permissible Error:		0.1 mm precipitation	
Housing/ Design:		Zinc plate · RAL 7038 (agate-grey) · acc. to DWD/DIN 58666	
Collecting can/ Cylinder:		plastics/ polystyrene acc. to DIN 58667	
Dimensions/ Weight:		H 450 mm · Ø 190 mm • approx 2.3 kg	
Version:			
00.15002.000 000	**(1500 b)**	**Rain and Snow Gauge according to Hellmann** With 2 collecting cans · 2 collecting funnels · 2 bottom parts · 2 snow crosses · 200 cm^3 measuring cylinder: 10 mm · weight approx. 5.2 kg	
Accessories:			
32.15000.005 000	**(1500 U5)**	**Support** · necessary for assembly of (1500) · galvanized flat steel · H 375 mm • weight approx. 0.7 kg	
32.15000.030 000	**(1500 U30)**	**Snow cross** • weight approx. 0.5 kg	
33.15000.031 000	**(1500-31)**	**Spare measuring cylinder** · polystyrene acc. to DIN 58667 • weight 0.05 kg	

RAIN GAUGE

according to Diem

Really simple...
is the classical collecting funnel with measuring scale made of poly-styrene clear as crystal.
The popular model belongs in every garden, just as the measuring cup belongs in the kitchen and the inch rule in the toolbox.
Every floriculturist or farmer uses this rain gauge to optimally and economically water of the flora.

- simple measuring principle
- easy-to-read scale
- good value, with stainless steel mounting
- small, compact, practical

farmers • gardeners • hobby y meteorology • hobby gardening

Standard Line	**(1503)**	**Rain Gauge according to Diem**	**Id-No. 00.15030.000 000**
Measuring element:		Collecting funnel with measuring scale	
Measuring ranges:		Collecting funnel 400 cm^3 • precipitation quantity 40 mm	
Collecting surface:		100 cm^2	
Range of application:		Operating temperatures 0...+60°C	
Resolution/ Scale:		0.5 mm/ 0...5 mm • 1.0 mm/ 5...40 mm	
Collecting funnel:		Highly transparent polystyrene	
Holder:		Stainless steel	
Dimensions:		H 365 mm · collecting funnel Ø 113 mm	
Weight:		Approx. 0.15 kg · holder approx. 0.3 kg	
Accessories:			
33.15030.001 000	**(1503-1)**	**Spare collecting funnel** • weight approx. 0.15 kg	

When raindrops ...
hit the sensor surface, incidents are registered without delay.
The detector (15153) counts the adjustable incidents, is heated and can therefore transform snow and hail into evaluable measurands.
The rain registrator (15152.1) reacts to wetting with contact conclusion. The result at any one time is a reliable signal for the beginning and ending of precipitation. The detectors can control safety systems, locking systems, and protection units.

- easy to mount
- protection against snowing in and freezing
- large temperature range of application
- includes pole mounting, suitable for wall mounting

building automation • weather stations

(15152.1)

(15153)

Standard Line	**(15152.1)**	**Electronic Indicator for Rain**	**Id-No. 00.15152.100 002**
Measuring element:		sensor surface • contact conclusion by wetting	
Measuring value:		precipitation yes/no	
Sensor surface:		18 cm^2	
Range of application:		temperatures -30...+60 °C	
Switch-on delay:		< 0.5 s signal output · 15 s heating	
Supply voltage:		11...28 V_{AC} or 11...32 V_{DC} max. 0.75 A	
Signal output:		semiconductor relay · max. 36 V_{DC} · max. 0.5 A · potential-free/electrically isolated/galvanically isolated · precipitation „no“ = output activated · precipitation „yes“ = output opened · sensor „off“ (no supply voltage) = output opened	
Protection class:		IP 66 acc. to DIN 40050	
Abmessungen/ Gewicht:		77 x 49 x 25 mm · approx. 150 g	

Professional Line	**(15153)**	**Electronic Indicator for Precipitation**	**Id-No. 00.15153.000 002**
Measuring element:		optical, light-barrier	
Measuring range:		yes/ no of precipitation • size of the drop ≥ 0.2 mm	
Sensor surface:		25 cm^2	
Range of application:		temperatures -35...+65 °C	
Signal-/ Switch-off delay:		none/ 25...375 s adjustable	
Switch-on conditions:		1...15 events in 50 seconds	
Supply voltage:		12...28 V AC/DC	
Breaking capacity:		230 V AC/ 4 A	
Protection class:		IP 65 acc. to DIN 40050	
Dimensions/ Weight:		130 x 140 x 40 mm • approx. 400 g	
Accessory:		**00.15152.124 000 Power supply unit** for (15152.1) and (15153)	

EVAPORATION GAUGE

acc. to Piche or with Evaporation Pan „Class A“

Simply evaporate ...
is impossible for the elements here. According to Piche, the water-level indicator is read on the glass tube. This method is easily applied inside buildings as well as in the open field.
Realistic measuring conditions are created in the evaporation pan. Therefore, level measurement by hook gauge in the still well is the most commonly, best tested and most accurate measuring principle.

- no auxiliary power required
- easy handling

hydrology • soil science • classical meteorology • dams, reservoirs • waste management • science and research

Standard Line		**(1522)**	**Evaporation Gauge according to Piche**	**Id-No. 00.15220.000 000**
Measuring principle:		water level indication in the glass tube		
Measuring range:		0...30 ml		
Accuracy:		± 0.3 ml		
Division of scale:		0.1 ml		
Dimensions:		H 335 mm · measuring tube Ø 14 mm · blotting paper discs Ø 30 mm		
Weight:		approx. 0.07 kg		
Accessories:				
33.15220.001 000	**(1522-1)**	**Spare measuring tube**		
33.15220.002 000	**(1522-2)**	**Blotting paper discs** · 100 discs		

Professional Line		**(1523)**	**Evaporation Measuring System with Pan „Class A“ consisting of:**
00.15230.400 000	**(1523)**	**Hook gauge** for level measurement Measuring range 0...100 mm • resolution 0.2 mm • weight approx. 340 g	
00.15230.110 000	**(15230.11)**	**Still well** for evaporation pan Made of brass · 215 x 254 x 254 mm · weight approx. 1.8 kg	
00.15230.200 000	**(15230.2)**	**Evaporation pan „Class A“** made of aluminium Ø 1.200 mm x 250 mm · weight approx. 16 kg	
00.15230.310 000	**(15230.31)**	**Min-Max-floating thermometer** (optional) Measuring range -5...+55 °C · accuracy ± 1 °C · resolution 0.5 °C	
00.14400.000 000	**(1440)**	**Wind-Run-Indicator** (optional)	

DETERMINATION OF EVAPORATION

with water-level-sensor and pan „Class A“

A noble performance from LAMBRECHT again...

for precision measurement of water levels to determine the evaporation rate.
The sensitive pressure difference sensor element is built in the extreme robust stainless steel housing (IP 68).
The high-quality sensor is simply mounted on a delta base plate. This plate is designed for use in evaporation pans "Class A". The levelling of the plate can be carried out simply by levelling screws.

- flexible cable with pressure-compensation capillary
- simply handling
- water levels effective up to 180 mm
- 0...5 V output for data transfer to data logger
- meets the WMO specifications for classical, hydrological applications

classical hydrology • classical meteorology • soil science • dams, reservoirs • waste management • science and research

Standard Line	**(15235)**	**Water-Level-Sensor**	**Id-No. 00.15235.100 001**
Measuring principle:		pressure difference transducer	
Measurand:		water level difference	
Measuring range:		200 mm total · 180 mm between the MIN- and MAX- marks at the level stick	
Accuracy/ Resolution:		0.4 mm (10...50 °C) · 0.05 mm	
Range of application:		Temperatures 0...+80°C	
Current consumption:		4 mA	
Supply voltage:		8...28 V_{DC}	
Output:		0...5 V = 0...200 mm	
Weight/ Dimension:		approx. 3.1 kg · with delta base plate · leg lenght approx. 310 mm	
Standards:		Stability EN 500 82-1 · Emitted interferences EN 500 81-2	
Options:			
00.15230.200 000	**(15230.2)**	**Evaporation pan "Class A"**	
	made of aluminium · Ø 1.200 mm x 250 mm · weight approx. 16 kg		
00.95666.x00 000	**(95666)**	**Data logger TROPOS**	

HUMIDITY

Humidity:
moisture, water content, especially the amount of water vapour in the air (air humidity).
Relative humidity is the ratio of the actual water vapour in the air to the max. water vapour quantity at the respective temperature, indicated in %.
Absolute humidity designates the contingent of water in g per 1m³ air.
Looking back on 150 years of expertise, LAMBRECHT is the most experienced producer of humidity measuring devices world-wide.
The classical measuring element, the human hair grid, is the best-tried measuring principle. Systems working with this principle are almost maintenance free and corrosion resistant and are therefore applicable indoors as well as outdoors in up to 100 % relative humidity.
A special example is the only calibratable system, the Assmann-Psychrometer. Like many other LAMBRECHT instruments it is handmade and individually adjusted.
Easy to read, short response times and no saturation effects are the distinctive qualities of the system. In short: a traditional as well as up-to-date masterpiece from LAMBRECHT.

COMBINED SENSOR “THP[pro]”

Temperature · Humidity · Pressure

Proven measurement technology

The sensor THP[pro] is a combined measuring instrument for measuring relative humidity, air temperature and air pressure. The sensor is characterised by high accuracy and energy-saving electronics. Also with Modbus or customised protocols realisable.

- combined measuring instrument for high-quality use
- capacitive humidity measuring element
- low maintenance
- signal output humidity: RS 422/ Talker · NMEA
- for use in all climatic zones
- suitable sensor shelter type 8141.6 optional available

hydrology • building technology • power plants • industry

Sensor shelter 8141.6 (option)

Professional Line	THP[pro] Sensor	Id-No. 00.08095.100000
Temperature		
Measuring range:	-40...+70 °C	
Resolution:	0.1 °C	
Improved accuracy:	± 0.1 K (0...60 °C) • ± 0.2 K (-40...0 °C) [1]	
Relative humidity		
Measuring range:	0...100 % r. h.	
Resolution:	0.1 % r. h.	
Improved accuracy:	typ. ± 1.5 % (0...80 %) r. h. • ± 2 % (> 80 %) r. h. [1] • Reaction time rel. humidity (at v = 1.5 m/s): 30 s [2]	
Barometric pressure		
Measuring range/Resolution:	500...1100 hPa • 0.1 hPa	
Accuracy:	± 2 hPa (-30...+70 °C) • ± 1 hPa (-10...+60 °C)	
Further technical data		
Supply voltage:	4.8...33 VDC	
Current consumption [3]:	4 mA at 24 VDC • 6 mA at 12 V DC • 11 mA at 4.8 VDC	
Housing:	Aluminium especially-coated • IP 65 (housing) • M12 plug connector (4-pole)	
Weight/Dimensions:	approx. 80 g • H 140 mm x Ø 20 mm	
Interface:	Serial RS 422/ Talker • Baudrate 4800 • 1 Hz • 8 N 1 • Modbus RTU • (SDI-12 on request)	
Protocols:	NMEA 0183 · WIMHU · WIMMB · WIMTA	
Accessories: (please order separately)	Sensor shelters: 00.08141.600000 (with natural ventilation) 00.08141.600004 (with artificial ventilation)	

[1] ventilated sensor shelter recommended [2] with filter membrane [3] without terminating resistor

COMBINED SENSOR “THP[pro]NAV”

Temperature · Humidity · Pressure

The sensor THP[pro]NAV...

is a combined measuring instrument for measuring relative humidity, air temperature and air pressure.

The sensor is characterised by high accuracy and a power-saving electronic. The membrane filter reliably protects the capacitive measuring element from air pollutants.

- combined measuring instrument for high-quality maritime use
- capacitive humidity measuring element
- low maintenance
- special resistance to air pollutants
- signal output humidity: RS 422/ Talker · NMEA · Modbus
- for use in all climatic zones
- suitable sensor shelter Type 8141.62 (recommended option)

high-quality use in meteorology and on ships

Professional Line	THP[pro]NAV Sensor	Id-No. 00.08095.101000
Temperature		
Measuring range:	-40...+70 °C	
Resolution:	0.1 °C	
Accuracy:	± 0.1 K (0...60 °C) • ± 0.2 K (-40...0 °C) [1]	
Relative humidity		
Measuring range:	0...100 % r. h.	
Resolution:	0.1 % r. h.	
Accuracy:	typ. ± 1.5 % (0...80 %) r. h. • ± 2 % (> 80 %) r. h. [1] • Reaction time rel. humidity (at v = 1.5 m/s): 30 s [2]	
Barometric pressure		
Measuring range/Resolution:	500...1100 hPa • 0.1 hPa	
Accuracy:	± 2 hPa (-30...+70 °C) • ± 1 hPa (-10...+60 °C)	
Further technical data		
Supply voltage:	4.8...33 VDC	
Current consumption [3]:	4 mA at 24 VDC • 6 mA at 12 V DC • 11 mA at 4.8 VDC	
Housing:	Aluminium especially-coated • IP 65 (housing) • M12 plug connector (4-pole)	
Weight/Dimensions:	approx. 80 g • H 140 mm x Ø 20 mm	
Interface:	Serial RS 422/ Talker • Baudrate 4800 • 1 Hz • 8 N 1 • Modbus RTU • (SDI-12 on request)	
Protocols:	NMEA 0183 · WIMHU · WIMMB · WIMTA	
Accessories: (please order separately)	Sensor shelters: 00.08141.620000 (for maritime use) • 00.08141.630000 (yacht version)	

[1] ventilated sensor shelter recommended [2] with filter membrane [3] without terminating resistor

COMBINED SENSOR “TH[pro]”

Temperature · Humidity

Proven measurement technology

The sensor TH[pro] is a combined measuring instrument for measuring relative humidity and air temperature. The sensor is characterised by high accuracy and energy-saving electronics. Also with Modbus or customised protocols realisable.

- combined measuring instrument for high-quality use
- capacitive humidity measuring element
- low maintenance
- signal output humidity: RS 422/ Talker · NMEA · Modbus
- for use in all climatic zones
- suitable sensor shelter type 8141.6 optional available

hydrology • building technology • power plants • industry

Sensor shelter 8141.6 (option)

Professional Line	TH[pro] Sensor	Id-No. 00.08095.100001
Temperature		
Measuring range:	-40...+70 °C	
Resolution:	0.1 °C	
Improved accuracy:	± 0.1 K (0...60 °C) • ± 0.2 K (-40...0 °C) [1]	
Relative humidity		
Measuring range:	0...100 % r. h.	
Resolution:	0.1 % r. h.	
Improved accuracy:	typ. ± 1.5 % (0...80 %) r. h. • ± 2 % (> 80 %) r. h. [1] • Reaction time rel. humidity (at v = 1.5 m/s): 30 s [2]	
Further technical data		
Supply voltage:	4.8...33 VDC	
Current consumption [3]:	4 mA at 24 VDC • 6 mA at 12 V DC • 11 mA at 4.8 VDC	
Housing:	Aluminium especially-coated • IP 65 (housing) • M12 plug connector (4-pole)	
Weight/Dimensions:	approx. 80 g • H 140 mm x Ø 20 mm	
Interface:	Serial RS 422/ Talker • Baudrate 4800 • 1 Hz • 8 N 1 • Modbus RTU • (SDI-12 on request)	
Protocols:	NMEA 0183 · WIMHU · WIMTA	
Accessories: (please order separately)	Sensor shelters: 00.08141.600000 (with natural ventilation) 00.08141.600004 (with artificial ventilation)	

[1] ventilated sensor shelter recommended [2] with filter membrane [3] without terminating resistor

HUMIDITY-TEMPERATURE SENSOR

Precision measuring instrument...

for measuring relative humidity and air temperature.
The compact sensor is characterised by a power-saving electronic and high measuring accuracy. A membrane filter reliably protects the high-quality capacitive measuring element from air pollutants.

- measuring element temperature: Pt100 1/3 DIN
- capacitive humidity
- measuring element
- high measuring accuracy
- special resistance to air
- pollutants
- high long-term stability

high-quality use in meteorology and industry • automatic weather stations in all climatic zones

Sensor 8096

Sensor shelter (accessory)

Professional Line	**(8096)**	**Humdity-Temperature Sensor**	**Ident-Nr. 00.08096.230402**
Measuring elements:		Humidity: capacitive Temperature: Pt100 1/3 DIN (DIN EN 60571) · IEC 751 Class B (± 0.1 °C)	
Range of application:		0...100 % r. h. • -40...+70 °C	
Measuring range:		0...100 % r. h. • -40...+70 °C	
Accuracy:		Humidity: ± 2 % r. h. at: 5...95 % r. h. • +10...+40 °C (at ≥ 0.5 m/s) Plus: < 0.1 % r. h./ °C at: < +10 °C • > +40 °C Temperature: ± 0.1 °C, 1/3 DIN IEC 751 Class B	
Response time:		Humidity: < 20 s (without wind and without filter, otherwise at 1.5 m/s: 1.5 min)	
Minimum air velocity:		≥ 0.5 m/s	
Output signal:		Humidity: 0...1 V DC = 0...100 % r. h. • min. load resistance ≥ 2 kOhm Temperature: Pt100 (4-wire circuit)	
Supply voltage:		6...30 V DC	
Current consumption:		< 1 mA	
Sensor protection:		membrane filter for outdoor use	
Cable:		3.3 m · fixed cable	
Housing:		stainless steel · IP 65 · protection class of filter IP 40	
Weight:		approx. 0.3 kg	
EMC:		DIN EN 60945 - Chapter 9, 10	
Accessory:			
00.08141.600000	**(8141.6)**	**Sensor shelter for (8096)**	

HUMIDITY-TEMPERATURE SENSOR

COMBINED HUMIDITY TEMPERATURE

Shock and vibration-tested...

precision instrument for measuring relative humidity and air temperature. The compact sensor is characterised by a power-saving electronic and high measuring accuracy. A membrane filter reliably protects the high-quality capacitive measuring element from air pollutants.

- shock- and vibration-tested in accordance with BV0230/ 0430 and BV0440/ 0240
- EMC-prooved in accordance with VG 95373
- sensor is supplied with Calibration Certificate
- high measuring accuracy
- special resistance to air pollutants
- high long-term stability

ships • high-quality use in meteorology and industry • automatic weather stations in all climatic zones

Sensor 8096-Z

Sensor shelter (accessory)

0 ... 1V ANALOG OUTPUT

V4A METAL MATERIAL

Pt TEMPERATURE

IP 65 PROTECTION RATING

CERTIFICATE

NAVAL

Professional Line	**(8096-Z)**	**Humidity-Temperature Sensor**	**Id-No. 00.08096.330402**
Measuring elements:		Humidity: capacitive Temperature: Pt100 1/3 DIN (DIN EN 60571) · IEC 751 Class B (± 0.1 °C)	
Range of application:		0...100 % r. h. • -40...+70 °C	
Measuring range:		0...100 % r. h. • -40...+70 °C	
Accuracy:		Humidity: ± 2 % r. h. at: 5...95 % r. h. • +10...+40 °C (at ≥ 0.5 m/s) Plus: < 0.1 % r. h./ °C at: < +10 °C • > +40 °C Temperature: ± 0.1 °C, 1/3 DIN IEC 751 Class B	
Response time:		Humidity: < 20 s (without wind and without filter, otherwise at 1.5 m/s: 1.5 min)	
Minimum air velocity:		≥ 0.5 m/s	
Output signal:		Humidity: 0...1 VDC = 0...100 % r. h. • min. load resistance ≥ 2 kOhm Temperature: Pt100 (4-wire circuit)	
Supply voltage:		6...30 VDC	
Current consumption:		< 1 mA	
Sensor protection:		membrane filter for outdoor use	
Cable:		3.3 m · fixed cable	
Housing/ Weight:		stainless steel · IP 65 · protection class of filter IP 40 • approx. 0.3 kg	
EMC:		DIN EN 60945 - Chapter 9, 10 + VG 95 373	
Shock/ Vibration:		BV0230/ 0430 • BV0440/ 0240	
Accessory:			
00.08141.620 000		**Sensor shelter for protection of the sensor against radiation influences**	

HUMIDITY-TEMPERATURE SENSOR

Combined - for two parameters!

Special resistance ...

to airborne pollutants as a result of the use of a high-quality measuring element. This ensures - in combination with the high-quality electronics - excellent measuring accuracy and high long-term stability.
As a consequence, the sensor 8091 is particularly appropriate for measurements outdoors in different areas of application.

- small, light, compact
- simple mounting, very robust, low-maintenance
- low power consumption
- good dynamic behaviour
- reliable membrane filter as protection against atmospheric pollutants
- high long-term stability

building technology • industry

Humidity/Temperature Sensor 8091

Sensor Shelter 8141.6
(optional)

Standard Line	**(8091)**	**Humidity/Temperature Sensor**	**Id-No. 00.08091.000 042**
Measuring elements:		capacitive • Pt100 · IEC 751 class B	
Measuring range:		0...100 % r. h. • -30...+70 °C	
Accuracies:		± 2 % r. h. (5...95 % r. h. at 10...40 °C)	plus < 0.1 %/ K (<10 °C, >40 °C)
		± 0.3 °C (4...20 mA)	plus ± 0.007 K/K (<10 °C, >40 °C)
		self-heating coefficient Pt 100 (v = 2 m/s in air) 0.2 K/mW	
Time constant:		< 1 min	
Long-term stability:		typical under normal conditions < 1 % r. h./ year	
Outputs:		humidity: 4...20 mA = 0...100 % r. h. • temperature: 4...20 mA = -30...+70 °C	
Supply voltage:		12...30 V_{DC}	
Current consumption:		max. 45 mA	
Housing:		aluminium · lacquered · grey-white • IP 65 • membrane filter as sensor protection IP 30 •	
Cable:		4 x AWG 20 C UL sw (Id-No. 67.01002.056 041 · not included in delivery)	
Dimensions/ Weight:		H 180 mm · Ø 20 mm • 0.34 kg	
Standards:		CE/ EMC: DIN 50082-2 · EN 550011 Cl. B	
Accessories:			
00.08141.600 000	**(8141.6)**	**Sensor shelter** for sensor (8091) • **Data logger TROPOS**	
Version:	**(8091)**	**Humidity-Temperature Sensor**	**Id-No. 00.08091.000 012**
Signal output H:		0...10 V_{DC} · 0...100 % r. h.	
Signal output T:		0...10 V_{DC} · -30...+70 °C	
Supply voltage:		15...30 V_{DC}	
Cable:		8 x AWG 20 C UL sw (Id-No. 67.01002.056 081 · not included in delivery)	

HUMIDITY-TEMPERATURE SENSOR

Combined · for two parameters

Sensor shelter (accessory)

Sensor (8093.1)

Aloft...

or at the roadside this humidity temperature sensor (8093.1) is most commonly used. The instrument is characterized by the high-quality measuring elements, robust housing, reliable membrane filter and low-current electronics. Thus the sensor (8093.1) is especially suitable for meteorological outdoor measurements in very different application fields.

- small, light, compact
- easy installation, robust, nearly maintenance free
- low power consumption
- good dynamical behaviour
- reliable membrane filter as protection against pollutants
- high long-term stability and nearly linear characteristic line

building technology • traffic systems • automatic weather stations • buoys • agricultural weather stations • energy supply and disposal systems • environmental measurement technology

Professional Line	**(8093.1)**	**Humidity-Temperature Sensor**	**Id-No. 00.08093.100 000**
Measuring elements:		capacitive • Pt100 1/3 DIN · IEC 751 class B	
Measuring range:		0...100% r. h. • -30...+70 °C	
Accuracies:		± 2 % r. h. at 5...95 % r. h. • +10...+40 °C	Plus: < 0.1 % r. h./ °C at < +10 °C and > +40 °C
		± 0.2 °C at -27...+70 °C	Plus: ± 0.007 °C/ °C at < +10 °C and > +40 °C
Response time:		humidity < 20 s (without wind and filter, otherwise at 1.5 m/s: 1.5 min	
Long-term stability:		typical under normal conditions < 1 % r. h./ year	
Outputs:		0...1 V_{DC} = 0...100 % r. h. • min. load resistance ≥ 2.5 kΩ • Pt100 (4-wire circuit)	
Supply voltage:		10...30 V_{DC}	
Current consumption:		< 1 mA	
Housing:		aluminium · lacquered · grey-white • IP 65 • membrane filter as sensor protection	
		IP 30 • incl. 5 m cable	
Dimensions/ Weight:		H 122 mm · Ø 20 mm • approx. 0.3 kg	
Standards:		CE/ EMC: DIN 50082-2 · EN 550011 Cl. B	
Accessory:			
00.08141.600 000	**(8141.6)**	**Sensor shelter** for sensor (8093.1)	

HUMIDITY-TEMPERATURE SENSOR

Combined - for two parameters

A particular feature...

of this compact sensor is the sophisticated electronics and the guaranteed outstanding measuring accuracy.

The high-quality capacitive measuring element is reliably protected against air pollutants by a membrane filter. The combined sensor is designed for high-quality use in meteorology and industry.

The user can independently calibrate the sensor using the calibration and adjustment software.

- capacitive humidity measuring element
- special resistance to air pollutants
- high long term stability
- signal output humidity: 0...1 V (linear 0...100 %)
- temperature measuring element: Pt100 1/3 DIN
- signal output temperature: 4-wire-circuit Pt100

building technology • traffic systems • automatic weather stations

Professional Line	**(8092.3)**	**Humidity-Temperature Sensor**	**Id-No. 00.08092.330 402**
Measuring elements:		capacitive • Pt100 1/3 DIN (DIN EN 60571) · IEC 751 class B (± 0.1 °C)	
Measuring range:		0...100 % r. h. • -40...+85 °C	
Accuracies:		± 1.5 % r. h. at 10...90 % r. h. · at 23 °C ‹ 10 % r. h. › 90 % r. h. ± 2 % r. h.	
		temperature influence TK (does not equal 23 °C): ‹ 0.02 % r. h. /K	
Time constant:		humidity ‹ 20 s (without wind and filter, otherwise at 1.5 m/s: 1.5 min	
Long-term stability:		typical under normal conditions ‹ 1 % r. h./ year	
Outputs:		0...1 V DC = 0...100 % r. h. • min. load resistance ≥ 2.0 kΩ • Pt100 (4-wire circuit)	
Supply voltage:		5...30 V DC	
Current consumption:		‹ 3 mA	
Sensor protection:		membrane filter for outdoor applications · Ø 20 x 25 mm · M18 x 1	
Housing:		aluminium · lacquered · grey • IP 65 • sensor filter area IP 30	
Dimensions/ Weight:		H 122 mm · Ø 20 mm • approx. 0.3 kg	
Standards:		CE/ EMC: EN 61326-2-3	
Accessories:			
00.08141.600 000	**(8141.6)**	**Sensor shelter** for sensor (8092.3)	
32.08092.061 050		**Cable 5 m** with cable socket	
		Further accessories on request, e. g.: Humidity standard	

ASPIRATION PSYCHROMETER

According to Assmann

Measure of the elements...

is the Lambrecht-Psychrometer as reference for other humidity measuring instruments. It is especially designed for scientific demands. Through the measured temperatures and in connection with air pressure, as with instrument 706, different parameters are determined and additionally checked.

- standard instrument with reference quality
- most precise, reliable, long-time stable
- life-long guarantee* on thermometer function
- high resolution
- double wall thermometer protection tube for minimal radiation influence
- transportation case for mobility

Reference instrument for HVAC construction and in calibration laboratories • testing apparatus for laboratorial application

*except glass breakage

Professional Line	**(761)**	**Aspiration Psychrometer according to Assmann**
Measuring elements:		precision thermometer acc. to DIN 58 661
Meas.-/ Application range:		-5...+60 °C • -30...+40 °C depending on type
Accuracy:		± 0.2 °C within the total range • ± 0.1 °C within any scale section of 10 °C
Resolution/ Scale:		≤ 0.2 °C/ 0.2 °C
Housing/ Dimensions:		chromium-plated protection pipes · otherwise lacquer RAL 9010 (clean-white) 420 x 90 mm · carrying case 420 x 285 x 100 mm
Weight:		device approx. 1.2 kg · carrying case with contents approx. 2.7 kg
Included in delivery:		humidifying equipment · 0.5 m of spare wick · test certificate psychrometric table (771 b) · carrying case
Option:		thermometers available with DAkkS calibration certificate (on request)
Versions:		
00.07610.000 010	**(761)**	Measuring-/ Application range -5...+60 °C
00.07610.000 020	**(761)**	Measuring-/ Application range -30...+40 °C

WHIRLING PSYCHROMETER

Determination of relative air humidity

The knack of ...

mobile and indirect humidity measurement has the handy instrument. The radiation protected casing contains two liquid thermometers.
Dry and humid temperature are measured, then manual aspiration is achieved by whirling the instrument.
The graphical psychrometer-table makes the easy determination of relative humidity possible (additional tables on request).

- small, light, handy
- easy handling
- inexpensive and always ready for use
- life-long guarantee* on thermometer function

expeditions • navigation • building services • industrial safety and health standards

*except glass breakage

Professional Line	**(740)**	**Whirling Psychrometer**	**Id-No. 00.07400.000 010**
Measuring element:		liquid expansion thermometer	
Meas.-/ Application range:		-10...+60 °C	
Accuracy:		± 0.2 °C within the total range • ± 0.1 °C within any scale section of 10 °C	
Resolution/ Scale:		≤ 0.2 °C/ 0.2 °C	
Housing/ Dimensions:		RAL 9010 (clean-white) • 305 x 60 x 22 mm with folded handle	
Weight:		approx. 0.6 kg	
Included in delivery:		psychrometric table (771 b) · 1 moistening tube · 0.5 m of spare wick • in leather case	
Options:		thermometers available in -30...+40 °C · thermometers available with DAkkS calibration certificate (on request)	

Id-No.	Code	Spare Thermometer
33.02020.008 000	**(202-8)**	for Polymeter (202)
32.07060.006 050	**(706 U6)**	for (706) Psychrometer Thermometer -30...+50 °C · div. 0.2 °C · L 370 mm · Ø 15 mm · approx. 0.06 kg
32.10520.001 020	**(1052 U1b)**	for Psychrometer (706) and Extreme Thermometer (1052): Maximum Thermometer -30...+50 °C · div. 0.5 °C · L 290 mm · Ø 18 mm · 0.06 kg
32.10520.001 050	**(1052 U1e)**	for Psychrometer (706) and Extreme Thermometer (1052): Maximum Thermometer -30...+50 °C · div. 0.2 °C · L 360 mm · Ø 18 mm
32.10520.002 020	**(1052 U2b)**	for Psychrometer (706) and Extreme Thermometer (1052): Minimum Thermometer -40...+40 °C · div. 0.5 °C · L 290 mm · Ø 18 mm · 0.06 kg
32.10520.002 050	**(1052 U2e)**	for Psychrometer (706) and Extreme Thermometer (1052): Minimum Thermometer -40...+40 °C · div. 0.2 °C · L 360 mm · Ø 18 mm
32.07400.003 010	**(740 U3a)**	for Whirling Psychrometer (740) -10...+60 °C · div. 0.2 °C · L 295 mm · Ø 9 mm · approx. 0.03 kg
32.07610.003 010	**(761 U3a)**	for Aspiration Psychrometer (761) -5...+60 °C · div. 0.2 °C · L 280 mm · Ø 8 mm · approx. 0.025 kg
32.07610.003 012	**(761 U3a)**	for Aspiration Psychrometer (761), with DAkkS test certificat -5...+60 °C · div. 0.2 °C · L 280 mm · Ø 8 mm · approx. 0.025 kg
32.07610.003 020	**(761 U3b)**	for Aspirations Psychrometer (761) -30...+40 °C · div. 0.2 °C · L 280 mm · Ø 8 mm · approx. 0.025 kg
32.07610.003 022	**(761 U3b)**	for Aspirations Psychrometer (761), with DAkkS test certificat -30...+40 °C · div. 0.2°C · L 280 mm · Ø 8 mm · approx. 0.025 kg
		Further Accessories
00.07710.020 000	**(771 b)**	**Psychrometer Table according to Bongards** This graphic psychrometer table is used for simple determination of relative humidity (0...100 % r. h.). For that the measured temperatures and the psychrometric difference calculated for an air pressure of 1006.6 hPa are used. Each LAMBRECHT psychrometer is provided with the table (771b).
00.07680.030 000	**(768 G)**	**Psychrometer Table according to Sonntag** (DIN A4 folder) Calculating the humidity with the measurement values and the Sprung formula would require a lot of time. Therefore, numerical psychrometric tables are used for evaluation, without large time exposure, for humidity (10...100 % r. h.), dew point (-10...60 °C) and vapour pressure (0.5...190 hPa). Calculating tables with detailed instructions for the correction as well as evaluation are also available. In case of high-precision requirements, a pressure correction must be carried out whenever the deviation exceeds 20 hPa.
00.10960.000 000	**(1096)**	**Large thermometer shelter** for meteorological measuring instruments
32.07060.009 000	**(706 U9)**	**Spring-driven aspirator** for Psychrometer (706) and (761) · approx. 0.6 kg
32.07610.009 000	**(761 U9)**	**Wind shield** · white · weight approx. 0.2 kg
32.07610.020 000	**(761 U20)**	**Handle** · black · weight approx. 0.2 kg
33.08000.150 000	**(800-150)**	**Protection tube** for sensors
		Sensor accessories
00.08140.600 000		**Sensor shelter** · 11 lamellas · natural ventilation of the sensors
00.08141.600 004		**Sensor shelter** · 15 lamellas · artificial ventilation
00.08141.620 000		**Sensor shelter** · 11 lamellas · professional use, e.g. naval applications

THERMO-HYGROMETER

as Polymeter

The „real“ Lambrecht classic...

was developed as early as 1890 by the company's founder Wilhelm Lambrecht. The classical miniature weather station is ideal for measuring local weather data and for forecasting. This means variety, certainty and a clear view on the present and the future.

The instrument measures:
• temperature • relative humidity • saturation pressure
And additionally:
absolute humidity • dew point • partial vapor pressure • saturation deficit

- ▶ exact scale
- ▶ decorative design
- ▶ precise, universal measuring station for several parameters
- ▶ long-term stable measuring elements
- ▶ special case for regeneration

storage rooms • weather shelters • hobby meteorologists • weather watchers • stock depots • agriculture

Standard Line	**(202)**	**LAMBRECHT-Polymeter**	**Id-No. 00.02020.100 000**
Measuring elements:		natural hair string • liquid expansion thermometer	
Measuring range:		5...100 % r. h. • -30...+50 °C • 0.1...80 g/m³ absolute humidity	
Accuracy:		± 2.5 % r. h. with regular regeneration Below 0 °C: ± 1 °C • above 0 °C: ± 0.7 °C	
Resolution/ Scale:		≤ 1 % r. h./ 1 % r. h. • ≤ 1 °C/ 1 °C	
Range of application:		Humidity 0...100 % r. h. • temperatures -38...+50 °C	
Housing/ Dimensions:		H 242 mm · Ø 81 mm · D 28 mm · RAL 9010 (clean-white) · mat chromium-plated cover ring for front glass · dial silver anodized · with black inscription	
Weight:		approx. 0.3 kg	

“Hairmony”...

is realized inside the device. The treated natural hairs as humidity measuring device move the thermometer capillary shaped as a pointer.
The scale of the optimized double purpose instrument is highly accurate and a pleasure to look at. Four parameters can easily be read off at the same time.

- long-term stable measuring ele ment
- compact precision measuring station for relative humidity, absolute humidity, temperature and dew point temperature
- integrated radiation protection
- decorative and appealing design

stock-breeding • wine cellars • wood storage • musical instruments • church organs • storage of sensitive materials

MECHANICAL SENSOR

Standard Line	**(198)**	**Thermo-Hygrometer**	**Id.-No. 00.01980.100 000**
Measuring elements:		natural hair string • liquid expansion thermometer	
Measuring range:		5...100 % r. h. • -25...+40 °C • 0.5...45 g/m³ absolute humidity	
Accuracy:		± 2.5 % r. h. with regular regeneration • ± 1 °C	
Resolution/ Scale:		≤ 1 % r. h./ 1 % r. h. • ≤ 1 °C/ 1 °C • 0.5...5 g/m³	
Range of application:		humidity 0...100 % r. h. • temperatures -38...+40 °C	
Housing/ Dimensions:		Ø 133 mm · D 46 mm · RAL 9010 (clean-white) · mat chromium-plated cover ring for front glass · dial silver anodized · with black inscription	
Weight:		approx. 0.5 kg	

ROUND HYGROMETER

Humidity

The small classic...

is simply ingenuous. Thousandfold and world-wide it is looked upon with great interest. Whether as a wall-mounted or as a stand alone device, ventilation holes take care of real measuring conditions around the integrated string. Maintenance and care solely consist of the use of a damp cloth to regenerate the natural hair measuring element.

- easy-to-read scale
- high accuracy
- decorative, attractive design

storage rooms • wine cellars • saunas • plant breeding • humidors • bakeries • food storage • fruit and grain storage

Standard Line	(194) Round Hygrometer	Id-No. 00.01940.100 000
Measuring element:	natural hair string	
Measuring range:	5...100 % r. h.	
Accuracy:	± 2.5 % r. h. with regular regeneration	
Resolution/ Scale:	≤ 2 % r. h./ 2 % r. h.	
Range of application:	Humidity 0...100% r. h. • temperatures -60...+70 °C	
Housing/ Dimensions:	Ø 102 mm · D 35 mm · RAL 9010 (clean-white) · mat chromium-plated Cover ring for front glass · dial silver anodized · with black inscription	
Weight:	approx. 0.2 kg	

TEMPERATURE

Temperature: the dimension which describes the state of heat of a medium. It is initiated by the movement of its smallest parts (atoms, molecules).

Environmental climate is significantly determined by the influence of warm and cold, as well as dry and humid temperatures. They contribute to the feeling of wellness and are involved in many processes in industry, construction and material industry as well as in meteorology.

Fields of application are the storage of food, the drying of wood or other organic substances, the warming of the earth's surface, as well as the supervision of production processes or road construction and building systems.

LAMBRECHT delivers long-term stable, maintenance free liquid expansion thermometers, highly precise electronic sensors and reliably registering thermographs for any kind of application (see also chapter "Drum Recorders").

MODULE TEMPERATURE SENSOR

Especially for photovoltaic systems

The sensor (829) has been specially developed for measuring the module temperature of photovoltaic (PV) systems.

A Pt100 measuring resistor is used as measuring element, which is protected in a body made of seawater-resistant aluminium. An optimal heat conduction between body and measuring element is achieved by a special casting compound.

The temperature can be measured in a 4-wire circuit via the permanently connected cable. This and the shielded cable make the measurement less sensitive to external interference.

photovoltaic (PV) systems

Standard Line	(829)	Module Temperature Sensor	Id.-No. 00.08290.00030
Measuring element:		Pt100 F 0.3 resp. DIN EN 60751	
Measuring range:		-40...+105 °C	
Accuracy:		(0.3 + 0,005 · |T|)	
Protection class:		IP 67	
Weight:		0.4 kg	
Electrical parameters:			
Measurement current (DC) at 25 °C:		1.0 mA	
Maximal permissible peak current at 25 °C:		3.0 mA	
Insulation resistance:		> 10 MΩ	
Self-heating at 0 °C:		< 0.5 K/mW	
Approx. dimensions:			
Cable length:		3000 mm	
Body thickness:		10 mm	
Body Ø:		39.5 mm	
Cable:		Length 3 m, shielded, with bending radius = 41 mm · (approval UL/cUL UL-Style 20233)	
Accessory: (please order separately)		PT100 Modbus Converter	**Id-No. 00.08790.000000**

SIX THERMOMETER

AIR TEMPERATURE

Six Thermometers...

are produced for the first time by James Six in 1782 and accordingly named after its inventor. They are suitable for determination of instantaneous temperature but also the highest and lowest temperature values of the past observation period.

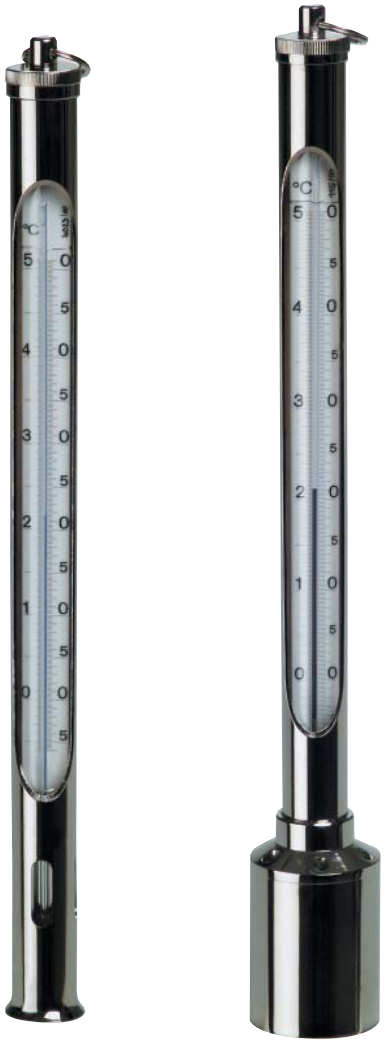
- simple measuring principle
- capable to notice at every time or be read afterwards as conveniently as you read every raise and fall of temperature indicated on it
- very popular, practical and easy to use
- field proven

universally applicable air temperature thermometer

Standard Line	**(1014)**	**Six Thermometer**	**Id-No. 00.10140.100 000**
Measuring element:		liquid expansion thermometer with drag marker (mercury free)	
Measuring-/ Application range:		-30...+50 °C	
Resolution/ Scale:		≤ 1 °C/ 1 °C	
Dimensions:		220 x 50 x 20 mm mm	
Weight:		0.13 kg	

INDOOR- AND WATER THERMOMETER

TEMPERATURE



MECHANICAL SENSOR

Rich in contrast and brilliant...

are the fine scales which are readable without eyestrain. The glass thermometers are safe and radiation protected encased in a nickel-plated brass frame.
The ladle of the water thermometer (1077) is made of the same material and therefore very robust.
In case a thermometer actually has to be replaced, this can be done in no time at all.

- simple measuring principle
- lifelong guarantee* on thermometer function and accuracy
- long-term stable and reliable

ventilation systems (DIN 1946) • spas • hydrology and environmental measurement technology

* except glass breakage

Professional Line	**(1069)**	**Indoor Thermometer**	**Id-No. 00.10690.700 000**
Measuring element:		liquid expansion thermometer	
Measuring range/ Accuracy:		-5...+50 °C • ± 0.2 °C (at 0 °C)	
Resolution/ Scale:		≤ 0.2 °C/ 0.2 °C	
Dimensions/ Weight:		Ø max. 32 mm · L 300 mm · 0.3 kg	
Version:			
00.10690.700 002	**(1069)**	**Indoor Thermometer** with DAkkS calibration certificate	

Professional Line	**(1077)**	**Water Thermometer**	**Id-No. 00.10770.000 000**
Measuring element:		liquid expansion thermometer	
Measuring range/ Accuracy:		-5...+50 °C • ± 0.2 °C (at 0 °C)	
Resolution/ Scale:		≤ 0.2 °C/ 0.2 °C	
Dimensions/ Weight:		Ø 20 mm · L 290 mm · 0.2 kg	
Version:			
00.10770.000 002	**(1077)**	**Water Thermometer** with DAkkS calibration certificate	

TEMPERATURE

SOIL- AND DEPTH THERMOMETER

In the soil's depth...

the thermometer (1084) reliably measures temperatures up to 310 mm deep, instrument (1092) measures up to 1 m deep. The high contrast analogous scales always offer high accuracyi n combination with lifelong guarantee*.

- simple measuring principle
- easiest, practical handling
- brilliant scales
- variety with officially calibrated thermometers available

classical meteorology • mobile pedological analysis • environmental measurement technology • agriculture and forestry

* except glass breakage

MECHANICAL SENSOR

Professional Line	**(1084)**	**Soil Thermometer****
Measuring element:		liquid expansion thermometer • DIN 58655
Measuring range:		-25...+60 °C** depending on model
Accuracy:		± 0.3 °C at › 50 °C • ± 0.2 °C at 0...+50 °C • ± 0.4 °C at ‹ 0 °C
Resolution/ Scale:		≤ 0.2 °C/ 0.2 °C
Immersion depth:		20...310 mm** depending on model • support made of steel
Dimensions/ Weight:		see drawing • 1.2 kg...1.4 kg**.
** Varieties:		see page "Varieties, spare thermometers"

Professional Line	**(1092)**	**Soil Depth Thermometer**	
Measuring element:		Liquid expansion thermometer • DIN 58664	
Measuring range:		-10...+30°C	
Accuracy:		± 0.3°C at -10...-5°C • ± 0.15°C at -5...+30°C	
Resolution/ Scale:		≤ 0.1°C/ 0.1°C	
Varieties:		**Dimensions:**	**Weight:**
00.10920.050 000	**(1092 E5)**	L 600 mm · guide tube Ø 40 mm made of rigid PVC immersion depth 500 mm	1 kg
00.10920.100 000	**(1092 E10)**	L 1100 mm · guide tube Ø 40 mm made of rigid PVC immersion depth 1000 mm	1.5 kg

TEMPERATURE SENSORS

Air, water and soil temperature

Desert sand and frozen soil...

are the objects to be measured. They are the starting point for the right choice of sensors.
The sensor (828) is water-proof and is used to measure air, water and soil temperatures precisely.
Best suited for temperatures of about 5 cm above ground (grass level) is instrument (8241), which includes radiation protection and mounting rod. For measurement of air temperatures in higher areas, sensor (8281) is best suited.

- world-wide popular standard measuring elements
- robust, corrosion resistant through stainless steel housing

automatic weather stations • meteorology and environmental measurement technology • building systems • climate monitoring • industrial metrology

(8241)

(828)

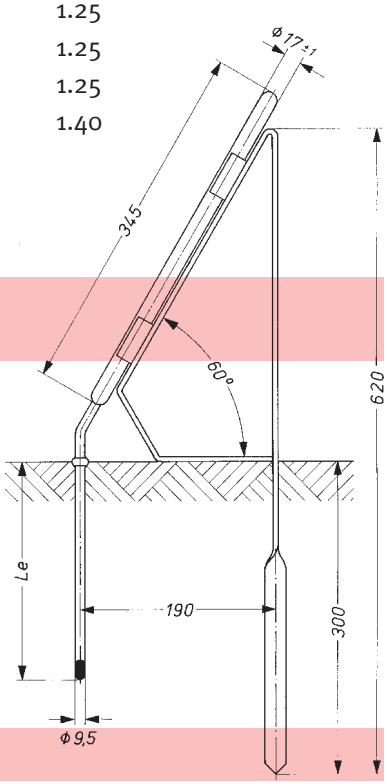
(8281)

Professional Line		**Temperature Sensors**
Measuring element:		platinum thermometer • Pt 100 1/3 DIN 43760 class B
Measuring range/ Accuracy:		-30...+70 °C • ± 0.1 °C at 0 °C
Operating temperature:		-60...+90 °C
Output:		Pt 100 • 4-wire circuit
Versions:		
00.08241.000 000	**(8241)**	**Air Temperature Sensor** with protection roof against radiation
Range of application:		grass temperature 50 mm above ground
Dimensions/ Weight:		L 120 mm · Ø 5 mm · cable length 7.5 m · approx. 1 kg incl. protection- and installation equipment (250 x 60 x 45 mm)
00.08280.010 507	**(828)**	**Air, Soil, Water Temperature Sensor**
Range of application:		air, soil or water temperature
Dimensions/ Weight:		L 105 mm · Ø 8 mm · cable length 7.5 m · approx. 0.4 kg
00.08281.008 005	**(8281)**	**Air Temperature Sensor**
Range of application:		air temperature
Dimensions/ Weight:		L 120 mm · Ø 5 mm · cable length 7.5 m · approx. 0.3 kg
Accessories: (please order separately)		
00.08141.600 000	**(8141.6)**	**Sensor shelter**
32.08141.001 010		**Adapter** for mounting of sensor (8281)
32.08280.010 060		**Armoured conduit** for ground installation (rodent protection) of sensor (828), 6 m
00.08763.012 002	**(8763TH)**	**Two-channel transducer** (optional)

VARIETIES, SPARE THERMOMETER

Accessories for LAMBRECHT Thermometers:

Id-No.	Code			
		Varieties and Accessories for Soil Thermometer		
		Measuring range [°C]	**Immersion length [mm]**	**Weight [approx. kg]**
00.10840.002 000	**(1084 E2)**	-25...+60	20	1.20
00.10840.003 000	**(1084 E3)**	-25...+60	30	1.20
00.10840.006 000	**(1084 E6)**	-25...+45	60	1.20
00.10840.011 000	**(1084 E11)**	-20...+40	110	1.25
00.10840.016 000	**(1084 E16)**	-15...+40	160	1.25
00.10840.021 000	**(1084 E21)**	-15...+35	210	1.25
00.10840.031 000	**(1084 E31)**	-15...+35	310	1.40
37.10840.700 000	**(1084 H)**	Support for Soil Thermometer (1084)		
		Spare Thermometer for Soil Thermometer		
		Measuring range [°C]	**Immersion length [mm]**	
33.10840.001 020	**(1084 T2)**	-25...+60	20	
33.10840.001 030	**(1084 T3)**	-25...+60	30	
33.10840.001 060	**(1084 T6)**	-25...+45	60	
33.10840.001 110	**(1084 T11)**	-20...+40	110	
33.10840.001 160	**(1084 T16)**	-15...+40	160	
33.10840.001 210	**(1084 T21)**	-15...+35	210	
33.10840.001 310	**(1084 T31)**	-15...+35	310	
		Spare Thermometer		
32.10520.001 020	**(1052 U1b)**	for Extreme Thermometer (1052) and Psychrometer (706): Maximum Thermometer -30...+50°C • div. 0.5°C • L 290 mm • Ø 18 mm • approx. 0.06 kg		
32.10520.001 050	**(1052 U1e)**	for Extreme Thermometer (1052) and Psychrometer (706): Maximum Thermometer -30...+50°C • div. 0.2°C • L 360 mm • Ø 18 mm		
32.10520.002 020	**(1052 U2b)**	for Extreme Thermometer (1052) and Psychrometer (706): Minimum Thermometer -40...+40°C • div. 0.5°C • L 290 mm • Ø 18 mm • approx. 0.06 kg		
32.10520.002 050	**(1052 U2e)**	for Extreme Thermometer (1052) and Psychrometer (706): Minimum Thermometer -40...+40°C • div. 0.2°C • L 360 mm • Ø 18 mm		
38.10690.700 000	**(1069 a)**	for Indoor Thermometer (1069) and Water Thermometer (1077)		
38.10690.700 002	**(1069 a)**	for Indoor Thermometer (1069) and Water Thermometer (1077) with DAkkS calibration certificate		
32.10920.004 000	**(1092 U4)**	for Soil Depth Thermometer (1092) • approx. 0.1 kg		



PRESSURE

Pressure: in physical sciences, the perpendicular force per unit area.
The SI unit of pressure is Pascal (Pa), Bar (bar) is still legally in use.
1 Pa = 1 N/m², 1 bar = 100,000 Pa. Air pressure is generally specified in millibar: 1 mbar = 100 Pa = 1 hPa (Hectopascal).
The measurement of air pressure is in many areas an important factor. LAMBRECHT delivers officially calibrated high-quality products. Measuring elements are the carefully aged German silver aneroid capsules.
Pressure measurement is used in classical meteorology. High and low pressure areas significantly determine atmospheric conditions and therefore influence all areas of life and all spheres in nature. Exemplary mentioned shall be aviation and airports, as well as navigation and submarine technology. Statements about air pressure are of high importance in operating and clean rooms, as well as in higher altitudes.
For “Air Pressure Measurement” also see chapter “Drum Recorder”.

PRECISION AIR PRESSURE SENSOR

Explicitly highly precise...

that's how this LAMBRECHT meteo sensor for absolute pressure works. It is applicable world-wide in a large altitude range. The measuring system with its seawater resistant, multi-layer paint coated housing is extremely robust.

- ► high reliability
- ► serial output signal
- ► with factory test certificate
- ► microprocessor technology

application in navigation • aviation • professional meteorology, e. g. at airports • scientific laboratory applications

ROBUST · METAL MATERIAL · RS485 DIGITAL OUTPUT · PROFESSIONAL

Professional Line	**(8126 X81)**	**Precision Air Pressure Sensor**	**Id-No. 00.08126.481 002**
Measuring element:		silicon resonator	
Measuring range:		35...2000 hPa	
Precision:		0.01 % FS	
Accuracy:		± 0.0144 % FS	
Long-term stability:		± 100 ppm/ year	
Range of application:		-45...+85 °C during operation	
Interface:		RS 485 (no bus function)	
Supply voltage:		11...28 V_{DC}	
Current consumption:		typically 16.5 mA · max. 32 mA	
Housing:		grey (RAL 7001)	
Dimensions:		205 x 180 x 81 mm	
Weight:		approx. 2.0 kg	
Standards:		BS EN 61000-6-1:2007 • BS EN 61000-6-2:2005 • BS EN 61000-6-3:2007 • BS EN 61000-6-4:2007 • BS EN 61326-1:2006	
Version:			
32.95665.020 040		**Precision Air Pressure Sensor Module** (without protective housing) Installation kit for mounting into data acquisition unit SYNMET-IND/-LOG	

AIR PRESSURE SENSOR

Emphasis ...

is on the advantageous ratio of performance and cost. As part of automatic weather stations in altitudes of up to 3200 m the sensor precisely reacts to any change in air pressure. The robust housing makes trouble-free outdoor application possible.

- inexpensive
- energy saving
- analogous output signal
- with factory test certificate
- microprocessor technology

cruise ships • heliports • professional meteorology e. g. at airports • industrial applications • development • weather stations

Professional Line	**(8128)**	**Air Pressure Sensor**
Measuring element:		pressure-sensitive silicon diaphragm • capacitive
Measuring range:		600...1100 hPa Id-No. **00.08128.085 072**
		800...1100 hPa Id-No. **00.08128.095 072**
Accuracy:		± 0.3 hPa within the range of 800...1100 hPa • 20 °C
		± 0.5 hPa within the range of 600...1100 hPa • 20 °C
Long-term stability:		0.1 hPa/ year
Resolution:		0.01 hPa
Range of application:		altitude 0...3200 m • temperatures -40...+60 °C
Supply voltage:		9.5...28 V_{DC}
Output voltage:		0...5 V_{DC}
Current consumption:		3 mA
Housing:		aluminium protection guard · RAL 9010 (clean-white) · IP 43
Dimensions/ Weight:		196 x 160 x 97 mm • sensor module 0.135 kg • 1.6 kg with guard

Versions:
(see chapter „Data logger and Software“)

32.95660.008 020 (600...1100 hPa)	**Air pressure sensor module** for SYNMET-IND... (installation kit)
32.95660.008 040 (800...1100 hPa)	**Air pressure sensor module** for SYNMET-IND... (installation kit)
32.95665.020 010 (600...1100 hPa)	**Air pressure sensor module** for SYNMET-LOG... (installation kit)
32.95665.020 030 (800...1100 hPa)	**Air pressure sensor module** for SYNMET-LOG... (installation kit)

AIR PRESSURE SENSOR

The analogue ...

pressure sensors of the 8128 family are very accurate and versatile instruments. They suit ideally for applications in non air-conditioned measuring stations or data loggers. The sensors have a very low current consumption and are suitable for pressure measurements in clean and dry air or other non-condensing gases.

- ► inexpensive
- ► energy saving
- ► analogous output signal
- ► with factory test certificate
- ► microprocessor technology

cruise ships • professional meteorology • industrial applications • development • weather stations

ANALOG OUTPUT

METAL MATERIAL

ROBUST

Professional Line	**(8128 M500)**	**Air Pressure Sensor**	**Id-No. 00.08128.080 072**
Measuring element:		pressure-sensitive silicon diaphragm • capacitive	
Measuring range:		500...1100 hPa	
Accuracy:		± 0.6 hPa	
Long-term stability:		0.1 hPa/ year	
Resolution:		0.01 hPa	
Range of application:		altitude 0...3200 m • temperatures -40...+60 °C	
Supply voltage:		9.5...28 V_{DC}	
Output voltage:		0...5 V_{DC}	
Current consumption:		3 mA	
Housing:		aluminium protection guard · RAL 9010 (clean-white) · IP 43	
Dimensions/ Weight:		196 x 160 x 97 mm • sensor module 0.135 kg • 1.6 kg with guard	
Version:			
63.06010.090 200		**Air pressure sensor module 500...1100 hPa · without housing**	

AIR PRESSURE SENSOR

Absolute pressure...

is measured inside the cost effective, practical and robust standard housing. The technical design makes the measuring range changeover on site as well as the choice of the output signal possible.
The universally applicable sensor is the proper solution for price conscious customers.
It distinguishes itself by its low maintenance and easy operation.

- cost effective
- OEM version with 3 modes of operation
- applicable with/ on data loggers in energy-saving mode (e. g. solar operation)
- 1 instrument with 2 ranges of pressure measurement and 3 standard outputs - adjustable with plug-in jumpers

building services • industrial applications • weather stations

INDUSTRIAL · IP 66 PROTECTION RATING · METAL MATERIAL

Standard Line	**(8121)**	**Air Pressure Sensor**	**Id-No. 00.08121.100 002**
Measuring element:		piezoresistive pressure measuring cell	
Measuring range:		600...1100 hPa • switchable to 800...1100 hPa	
Accuracy:		± 1 hPa within the range of -10...+60 °C • < ± 2 hPa within the range of -20...-10 °C	
Resolution:		0.1 hPa	
Range of application:		altitude 0...4000 m • temperatures -20...+70 °C • humidity 0...99 % r. h.	
Supply voltage:		12...30 V_{DC} (current output) • 5...30 V_{DC} (voltage output)	
Outputs:		0...20 mA • 4...20 mA • 0...2 V - selectable/ adjustable	
Current consumption:		< 30 mA at 0(4)...20 mA output •	
		< 4 mA at 0...2 V_{DC} output · at 1000 Ω load resistor	
Housing:		polycarbonate · RAL 7035 (light-grey) · IP 66 · for wall mounting ·	
		1 cable entrance · 1 pressure equalisation · 2 m connecting cable · 4-pole	
Dimensions/ Weight:		130 x 80 x 60 mm · 0.3 kg with cable	
Standard Line	**(8121M500)**	**Air Pressure Sensor**	**Id-No. 00.08121.110 002**
Measuring range:		500...1100 hPa • switchable to 800...1100 hPa	

Multifunction Measuring Meter XA1000

An impression of...

quality and precision is left by this hand-held instrument for high accuracy barometric pressure measurement.
The mobile precision instrument works reliably in altitudes between 800 and 1100 hPa.
It is easy to use by means of an intuitive, scratch resistant touchscreen.

- high precision
- real-time clock
- automatic switch-off function
- scratch resistant colour display
- robust and attractively shaped housing
- touch operation

development • technical inspection agencies • classical meteorology • laboratorial and test bed measurements • aeronautics

Standard Line	**Multifunction Measuring Meter**	**Id-No. 00.09171.000 000**
Functions:	HOLD / MAX / MIN / AVG	
Air pressure, absolute		
Measuring range:	800...1100 hPa	
Accuracy:	± 0.5 hPa at 25°C / long term stability ± 1.0 hPa/year	
Resolution:	0.024 hPa	
Operating temperature:	0...50 °C	
Storage temperature:	-20...+60 °C at max. 90 % r. h. (non-condensing)	
Battery type:	4 x 1.5 V (type IEC LR6 AA), alkaline-manganese	
Operating time:	passive: approx. 1 year / active: at least 24 h	
Dimensions:	170 x 62 x 34 mm	
Weight:	205 g	
Included in delivery:	Multifunction Measuring Meter · USB connection cable · 4 batteries · getting started guide · factory test certificate · carrying case	
Accessories:	Available digital sensors e. g. No. 103: for temperature and humidity No. 106: for temperature and air flow	

DRUM RECORDER

Drum Recorders are mechanical recording measuring instruments for temperature, humidity and / or pressure of the air.

The high-precision mechanics drum clockwork (manually wound), the mechanically adjustable natural hair grid as well as the bimetal or artificially aged aneroid capsule as measuring elements are the core components of these masterpieces of workmanship. The timeless measuring principles have proved themselves over decades. They provide ease of maintenance and longevity.

More than 100,000 LAMBRECHT Thermo-Hygrographs are in use world-wide. Full metal, white coated housings as well as the abandonment of the use of plastic in measuring elements are excellent predispositions for robustness, weathering resistance and protection against radiation influences.

For almost a century, these measuring instruments have been constantly enhanced.

Very easy handling, application oriented ranges of measurement and the approval of the weather services are highly appreciated qualities. They benefit from the off line and manipulation-proof recording of the results. Not only in museums and laboratories but also on ships or in agriculture, LAMBRECHT's drum recorders are applied.

Competence, tradition and modernity are united in LAMBRECHT's drum recorders!

HYGROGRAPH

Air humidity

DRUM RECORDER

RELATIVE HUMIDITY

METAL MATERIAL

MECHANICAL SENSOR

The specific graph paper acc. to DIN 16234 possesses an aligned fiber structure. This guarantees constant paper dimensions when humidity varies as well as steady line thickness in different rotation durations.

In fact a female affair ...

is the donation of choice natural hair as humidity measuring element. The resulting manually adjusted sensitive natural hair grid has been employed for decades outdoors or when high accuracy is required.
The precision mechanics meter drives the recording drum (acc. to DIN 58658), on which the special smear-proof charts are mounted. The even draft of curves as a continuous recording of rel. humidity is written by a felt pen.

- manipulation proof
- off line
- very low maintenance
- very robust (metal housing)
- long-term stable measuring element
- hygro-mechanic, recording
- easy reading and handling
- large temperature application range

storage rooms • classical climatology, meteorology • technical and medical laboratories • paper industry • tobacco industry • wine cellars

Professional Line — **Series (250) Hygrographs**

Measuring element: natural hair grid • standardized (removable)
Measuring range: 0...100 % r. h.
Accuracy: ± 2 % r. h. with regular regeneration
Range of application: temperatures -35...+70 °C • humidity 0...100 % r. h.

Versions:		**Recording period**	**Graph paper** [1 set = 100 pieces, approx. 0.25 kg]
00.02500.111 000	**(250)**	7 days	34.02500.001 000 (250 D1)
00.02500.131 000	**(250 Ua)**	7 days or selectable 1 day (31 days on request)	34.02500.001 000 (250 D1) 34.02500.003 000 (250 D3)

Housing/ Weight: Dimensions 280 x 145 x 180 mm · RAL 9010 (clean-white) · 3 kg
Included in delivery: 1 set = 100 pieces of graph paper · 1 violet felt-tipped pen

Accessories:

33.02520.144 000	**(252-144)** **Felt-tipped pens** (6 pieces) · violet
33.02520.144 010	**(252-144a)** **Felt-tipped pens** (6 pieces) · red
33.02520.144 020	**(252-144b)** **Felt-tipped pens** (6 pieces) · black

The ink of a felt-tipped pen is sufficient for one year.
The felt-tipped pens are applicable for all drum recorders.

Graph paper see above.

LAMBRECHT meteo
Tel +49 (0) 551-4958-0 www.lambrecht.net
E-mail info@lambrecht.net

A Masterpiece ...

in mechanics and precision are LAMBRECHT's drum recorders. Manually manufactured, these instruments are liable to very narrow production tolerances. Traditional but matching today's high requirements, the recording of temperature values is provided off the line and manipulation proof. The well organized display of the results as well as robustness and stability distinguish the drum recorders.

- very low maintenance
- easy reading and handling
- thermo-mechanic measuring principle
- clockwork drums and drives acc. to DIN 58658

storage and cold storage rooms • laboratories • classical climatology, meteorology • ergonomics and industrial medicine

AIR TEMPERATURE

METAL MATERIAL

MECHANICAL SENSOR

Professional Line	**Series (251)**	**Thermographs**		
Measuring element:		high-quality aged bimetal		
Accuracy:		± 0.3 °C		
Range of application:		temperatures -40...+80 °C		
Versions:		**meas. ranges** [°C]	**recording period**	**graph paper** [1 set = 100 pieces, approx. 0.25 kg]
00.02510.010 100	**(251)**	-35...+45	7 days	34.02510.004 000 (251 D4)
00.02510.010 700	**(251)**	-10...+50	7 days	34.02510.051 000 (251 D51)
00.02510.010 900	**(251)**	0...+40	7 days	34.02510.008 000 (251 D8)
00.02510.030 100	**(251 Ua)**	-35...+45	7 days or 1 day selectable 31 days on request	34.02510.004 000 (251 D4) 34.02510.018 000 (251 D18)
Housing/ Weight:		dimensions 280 x 145 x 180 mm •RAL 9010 (clean-white) • 3 kg		
Included in delivery:		1 set = 100 pieces of graph paper • 1 violet felt-tipped pen		
Accessories:		**Felt-tipped pens** **Graph paper**		

DRUM RECORDER

Thermo-Hygrograph - temperature and humidity

A well done product ...

is this combination of high-quality measuring elements, housing and drum materials and highly precise clockworks. It is manually assembled, adjusted and tested. The proven natural hair grid is the most frequently used device to measure humidity.
In low (‹25%) or quickly changing humidity as well as in temperatures below -10°C the Pernix®-elements are the best qualified. They guarantee for low reaction time and high quality. Especially advantageous is the use of synthetic fiber in rooms and in temperatures between -10...+40°C, since no regeneration is required.

- precision mechanics clockwork*
- clearly arranged results
- off the line

* also available with quartz clockwork with batteries

museums • galleries • libraries • storage rooms • classical meteorology • paper industry • printing and textile industry

More than 100,000 units are successfully in use world-wide!

What is Pernix?
By a special treatment the natural hair receives a particular structure. The hair thus reacts with utmost sensitivity and in very fast responding mode to fluctuations of humidity.

COMBINED HUMIDITY TEMPERATURE

METAL MATERIAL

MECHANICAL SENSOR

Professional Line	**Series (252) Thermo-Hygrographs**			
	Temperature	**Humidity**		
Measuring elements:	high-quality aged bimetal	hair grid made of natural hair	Pernix®	synthetic fibre
Accuracy:	± 0.3 °C	± 2 % r. h. with regular regeneration		± 3 % r. h. without regeneration
Range of application:	-40...+80 °C	-35...+70 °C	-40...+80 °C	-10...+40 °C
		0...100 % r. h.		25...70 % r. h.

Varieties and measuring ranges see table.

Recording period: 1 day • 7 days • 31 days – depending on model
Housing/ Weight: dimensions 280 x 145 x 255 mm • RAL 9010 (clean-white) • 4 kg
Included in delivery: 1 set = 100 pieces of graph paper [not for models (252 Q 1731)] • 2 violet felt-tipped pens

Accessories:

Felt-tipped pens
Graph paper

DRUM RECORDER

ANEROID BAROGRAPH

Air pressure

Nine capsules...

make up an aneroid capsule set – the measuring element of the Barograph. The carefully aged materials guarantee the highest long-term stability. LAMBRECHT adjusts the measuring ranges to the locations altitude, which encompass a range of 106.7 hPa. They can lie between 705...1241.7 hPa.

- off the line and manipulation proof
- precision mechanics measuring element
- clearly arranged display of results on smear resistant registration charts
- pressure measuring element with overload protection for transport to up to 2700 m altitude
- white coating for protection against radiation influences
- applicable world-wide and in a large temperature range

classical meteorology • shipping • chemical industry • calibration laboratories • pharmaceutical industry • motor test stands

AIR PRESSURE

METAL MATERIAL

MECHANICAL SENSOR

Professional Line	**Series (290) Aneroid Barographs**		
Measuring element:	set of aneroid capsules (nickel silver) • 9-fold • high-quality aged • compensated		
Measuring range:	945...1051.7 hPa (other ranges on request)		
Accuracy:	± 0.2 hPa of measuring value		
Range of application:	Temperatures -10...+50 °C • altitude 55...170 m (others on request)		
Varieties:		**Recording period**	**Graph paper** [1 set = 100 pieces, approx. 0.25 kg]
00.02900.010 025	**(290)**	7 days	34.02900.019 000 (290 D19)
00.02900.030 025	**(290 Ua)**	7 days or selectable 1 day (31 days on request)	34.02900.019 000 (290 D19) 34.02900.024 000 (290 D24)
Housing/ Weight:	dimensions 280 x 145 x 180 mm · RAL 9010 (clean-white) · 3.3 kg		
Included in delivery:	1 set = 100 pieces of graph paper · 1 violet felt-tipped pen		
Accessories:	**Felt-tipped pens** **Graph paper** see above.		

Varieties of series 252:

Id-No.	Code	Meas. range [°C]	mech. clockwork 7 days	mech. clockwork 1/7 days	mech. clockwork 31 days	Quartz clockwork 1/7/31 days	Normal hair*	Pernix®	Synthetic fibre*	Graph paper [1 set = 100 pieces, approx. 0.50 kg]		
00.02520.110 100	**(252)**	-35...+45	x				x			34.02520.007 000	(252 D7)	7 days
00.02520.150 100	**(252 c)**	-35...+45			x		x			34.02520.075 000	(252 D75)	31 days
00.02520.130 100	**(252 Ua)**	-35...+45		x			x			34.02520.007 000	(252 D7)	7 days
										34.02520.034 000	(252 D34)	1 day
00.02520.110 300	**(252)**	-20...+60	x				x			34.02520.011 000	(252 D11)	7 days
00.02520.130 300	**(252 Ua)**	-20...+60		x			x			34.02520.011 000	(252 D11)	7 days
										34.02520.048 000	(252 D48)	1 day
00.02520.370 600	**(252 QK1731)**	-10...+40				x			x	34.02520.121 000	(252 D121)	7 days
synthetic drum										34.02520.120 000	(252 D120)	1 day
										34.02520.119 000	(252 D119)	31 days
00.02520.110 700	**(252)**	-10...+50	x				x			34.02520.022 000	(252 D22)	7 days
00.02520.150 700	**(252 c)**	-10...+50			x		x			34.02520.116 000	(252 D116)	31 days
00.02520.170 700	**(252 Q1731)**	-10...+50				x	x			34.02520.022 000	(252 D22)	7 days
synthetic drum										34.02520.052 000	(252 D52)	1 day
										34.02520.116 000	(252 D116)	31 days
00.02520.110 900	**(252)**	0...+40	x				x			34.02520.019 000	(252 D19)	7 days
00.02520.150 900	**(252 c)**	0...+40			x		x			34.02520.105 000	(252 D105)	31 days
00.02520.130 900	**(252 Ua)**	0...+40		x			x			34.02520.019 000	(252 D19)	7 days
										34.02520.041 000	(252 D41)	1 day
00.02520.170 900	**(252 Q1731)**	0...+40				x	x			34.02520.019 000	(252 D19)	7 days
synthetic drum										34.02520.041 000	(252 D41)	1 day
										34.02520.105 000	(252 D105)	31 days
00.02520.230 900	**(252 UaP)**	0...+40		x				x		34.02520.019 000	(252 D19)	7 days
										34.02520.041 000	(252 D41)	1 day
00.02520.370 900	**(252 QK1731)**	0...+40				x			x	34.02520.113 000	(252 D113)	7 days
synthetic drum										34.02520.114 000	(252 D114)	1 day
										34.02520.115 000	(252 D115)	31 days

Other possible varieties on request.

* The measuring elements have different coefficients of extension and are thus not exchangeable among each other. When ordering please indicate the appropriate type of spare hair grids!

AIR FLOW

AIRFLOW: In physics, laminar flow is the movement of fluids (liquids or gases) in which the fluid travels smoothly or in regular paths, in contrast to turbulent flow, in which the fluid undergoes irregular fluctuations and mixing.

Velocity of flow of liquids and gases is determined with pitot tubes and flow probes by dynamic pressure.

Simple physical principles are employed. Vane anemometers already record the slightest airflow. Precision ball bearings and light metals provide for low starting values and high dynamics of the rotors. The blades of LAMBRECHT's anemometers are very carefully and evenly counterbalanced against the rotation level. The number of revolutions is therefore proportional to fluid velocity in axial direction. Hence, the result is very reliable.

Flow measurement takes place wherever movement of liquid or gaseous media influences processes and system securities, e.g. in underground mining, in tunnels, pipelines, or chimneys, as well as in workshops and drying plants, air conditioning, and clean room technology.

VANE ANEMOMETER

Bidirectional air flow

Sturdy, small construction...

for mobile or stationary use.
Version 1468 transmits an active, analogous output signal.
It does not require any auxiliary power and has robust aluminum blades.
High resolution, especially low starting values, and a large temperature range of application are characteristics of the version with inductive proximity switches acc. to NAMUR.
Bidirectional flow measurement is made possible with unit 1468 S9 by two inductive sensors and rotational direction indicator.

- 10 blade impeller warrants fast response
- 3 versions for specific requirements available
- cable length 3 m

heating / air conditioning • ventilation and exhaust devices

Professional Line	**(1468)**	**Vane Anemometers**		
Measuring range:		0.1 (0.5)...20 m/s		
Housing:		light metal · RAL 5009 (azure) · vane made of aluminium		
Dimensions/ Weight:		protection ring outside Ø 109 mm · D 60 mm · approx. 0.4 kg		
Versions:				
Id-No.:		**00.14680.020 400**	**00.14683.015 070**	**00.14689.005 020**
Code:		**(1468)**	**(1468 I507)**	**(1468 S9)**
Measuring elements:		DC-measuring generator	1 inductive sensor acc. to NAMUR	2 inductive sensors acc. to NAMUR
Range of application:		-30...+60 °C	-25...+100 °C	-30...+60 °C
Starting values:		0.5 m/s	0.1 m/s	0.1 m/s
Outputs:		0...4 mA = 0...20 m/s Ra = 105 Ω	300 Hz ± 6 Hz at 10 m/s	2 x 170 Hz ± 4 Hz at 20 m/s
Current characteristic:		v = 4.9 I + 0.5		
Internal resistance:		-	~ 1 kΩ	~ 1 kΩ
Supply voltage:		-	8 V_{DC} for proximity switch	8 V_{DC} for proximity switch
Standards:		-	DIN 19234	DIN 19234
Accessories:				
00.14953.000 000	**(14953 DA)**	**Digital-Analog-Transducer** (optional) for (1468 I507)		
00.14949.200 000	**(14949.2)**	**Digital-Analog-Transducer** with detection of direction of rotation (optional) for (1468 S9)		

METEODIGIT

Digital hand-held measuring instrument

Differential pressure module

Innovation and tradition...

characterise this ideal hand-held measuring device.
The advantages of intelligent digital technology are combined with precision mechanics and electronic accurateness.
Intelligent loading system, automatic sensor recognition, null balance, averaging and high measuring accuracy describe this universal and flexible instrument.

- economical compact solution
- sensors for flow velocity, wind velocity, rel. humidity and temperature
- averaging, for each sensor individual adjustable and storable
- fail-safe, easy handling

building services engineering • air conditioning and ventilation technology • storage • scientific laboratories • technical inspection agencies • test bed measurements

Professional Line	**(9164) METEODIGIT IV**			**Id-No. 00.09164.000 000**
	Air flow	**Wind speed**	**Humidity**	**Temperature**
Measuring elements:	measuring generator or Reed contact	measuring generator	capacitive	Pt100
Measuring ranges:	0.2...40 m/s depending on sensors	1.1...90 m/s	0...100 % r. h.	-40...+85 °C
Accuracy:	± 1.5 % of meas. value	± 1.5 % of meas. value	‹ ± 1.5 % r. h.	‹ ± 0.3 °C

Display/ Resolution:	Measured value: 5 x 7-segm. 15 mm, 2 x 16-segm. 9 mm Function: 4 1/2 x 7-segm. 9 mm, 9 symbols
Suitable conditions:	Operating temperature -10...+50 °C • sensors in part –20...+80 °C/ +150 °C
Supply voltage:	3 AA alkaline batteries · or adapter for mains supply
Dimensions/ Weight:	127 x 83 x 42 mm · 0.26 kg + sensor and accessories

Accessories:

Sensors and further accessories see next page

50.09164.002 000	**(9164 K2)**	**Carrying case** for basic unit (9164) and sensors (8163) + (14164) or (14423) or for (9163) and (14423) + (14433)+ (14143) · 400 x 90 x 320 mm · 1.5 kg
32.09164.012 000	**(9164 U12)**	**Adapter** for mains supply

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00.14433.420 000	(14433)	Vane Generator Anemometer
Measuring element:		Measuring generator
Measuring range:		0.4...20 m/s velocity of airflow
Accuracy:		± 1.5 % of measuring value • ± 0.2 m/s
Starting value:		0.4 m/s (compensated)
Range of application:		-10...+80 °C
Dimensions:		Protection ring outside Ø 109 mm · D 60 mm · 0.8...2 m helix cable
Weight:		Approx. 0.4 kg

00.14143.420 000	(14143)	Vane Reed Contact Anemometer
Measuring element:		Reed contact
Measuring range:		0.2...20 m/s velocity of airflow
Accuracy:		± 1.5 % of measuring value • ± 0.3 m/s
Starting value:		0.2 m/s (compensated)
Range of application:		-30...+150 °C
Dimensions:		Protection ring outside Ø 109 mm · D 60 mm · 3 m cable
Weight:		Approx. 0.4 kg

00.14423.490 000	(14423)	Cup Anemometer
Measuring element:		Measuring generator
Measuring range:		1.1...90 m/s wind speed
Accuracy:		± 1.5 % of measuring value • ± 0.2 m/s
Starting value:		1.1 m/s (compensated)
Range of application:		-10...+80 °C
Dimensions:		Cup Ø 65 mm · shaft Ø 23 mm · 0.8...2 m helix cable
Weight:		Approx. 0.5 kg

PITOT TUBES

Dynamic pressure

METAL MATERIAL

INDUSTRIAL

SCIENTIFIC

Simple and flexible...

are the crucial dimensions adjusted to any particular application.
Over short distances, rapidly changing pressures are recorded without delay. Application in rough conditions benefits from material and robustness.
Recalibration is not required.

- fail-safe, easy handling
- employment irrespective to location
- high accuracy in evaluating pressure, velocity and amount of flow
  inflexible parts, no wear, robust
- nickel-plated, non-corrosive metals

wind tunnel • research • aerodynamic inspections • heating/ air conditioning/ ventilation • chimneys

Scientific Line — **Pitot Tubes according to Prandtl**

Measuring elements: length and diameter of pitot tube • 2 ports for static and dynamic pressure • pressure of gas

Measuring ranges: depending on used differential pressure manometer

Range of application: temperatures up to 300 °C • connecting hoses to indicators recommended: rubber up to 60 °C • silicon-caoutchouc up to 200 °C (not included in delivery)

Versions:

		Orifice Ø [mm]	Outside Ø [mm]	Length [mm]	Weight [g]
00.06280.025 000	**(628)**	1	3	250	20
00.06300.025 000	**(630)**	3	10	250	200
00.06300.050 000	**(630 a)**	3	10	500	250
00.06300.075 000	**(630 b)**	3	10	750	300

Accessories:

At the fixed mounting* of the pitot tubes:

00.06286.000 000	**(628 G)** **Screw Necks** for the pitot tube (628)
00.06306.000 000	**(630 G)** **Screw Necks** for the pitot tube (630)

* With deep immersion depth and very high flow rates pitot tubes must be supported additionally.

RADIATION

Radiation: In meteorology, different kinds of radiation are considered.

Global radiation (short-wave < 3 µm) describes solar radiation hitting a horizontal area on earth. It consists of direct and diffuse radiation.

Radiation balance on the other hand is the difference between global radiation and reflected radiation. It is also called Net-radiation. The ratio of these different kinds of radiation depicts the Albedo-radiation.

In daily life, man is subject to permanent impacts of radiation. It is important to detect and professionally register these influences of radiation.

Sunshine and brightness (luminance) are critical determining factors of our environment and LAMBRECHT makes them measurable.

Not only is the human mind affected by radiation, it also influences the growth of plants, building materials, documents, works of art as well as the energy extraction from natural resources.

PYRANOMETER “16103.5”

Global Radiation

ISO 9060 “Second Class”

16103.5 series is the most affordable range of pyranometers meeting ISO 9060 second class requirements. They are ideal for general solar radiation measurements in (agro-) meteorological networks and PV monitoring systems.

The pyranometers are easy to mount and install. Various outputs are available, both digital and analogue, for ease of integration.

- Industry standard digital outputs or analogue millivolt output: easy implementation and servicing
- Easy mounting and levelling
- Second Class pyranometers finally affordable for large networks

general solar radiation measurements • (agro-)meteorological networks • PV power plant monitoring

Standard Line	Pyranometer 16103.5
Meas. element/ -principle:	thermopile with high-quality thermo-electric cells • thermal
Measuring range:	0...2000 W/m² • global radiation within a range of 285...3000 nm
Range of application:	temperatures -40...+80 °C
Non-linearity:	< ± 1 % (100...1000 W/m²)
Resolution:	0.2 W/m²
Power supply:	24 V (5...30 VDC)
Power requirement:	75 mW
Response time (95%):	< 18 s
Directional answer:	< ± 25 W/m²
Dimensions/ Weight:	approx. Ø 56 mm (without plug) · H 80 mm (without adapter) • approx. 0.3 kg
Standards:	ISO 9060 "Second Class" • IP 67 • certificate for sensitivity (included in delivery) • ISO 9847
Versions:	
00.16103.501040	Digital sensor with analogue 4-20 mA output
00.16103.501000	Analogue sensor with passive millivolt output
Accessories: (please order separately)	
32.14567.060030	Cable 5 m, M12 plug connector
32.14567.060000	Cable 12 m, M12 plug connector
32.14567.060010	Cable 15 m, M12 plug connector
32.14567.060040	Cable 20 m, M12 plug connector
32.14627.006000	Ball levelling set
32.16103.500010	Ball level set for tube and panel mounting

PYRANOMETER “16131.5”

Global Radiation

“First Class” Pyranometer

16131.5 digital pyranometer series is a range of high-accuracy digital solar radiation sensors.

It is “First Class” according to the WMO guide and ISO 9060:1990 standard and “Spectrally Flat Class B” in the 2018 revision.

Version 00.16131.501030, equipped with an on-board heater, is compliant in its standard configuration with the requirements for “Class B” PV monitoring systems of the IEC 61724-1:2017 standard.

The 16131.5 measures the solar radiation received by a plane surface, in W/m², from a 180° field of view angle. Various outputs are available, both digital and analogue, for ease of integration.

- best measurement accuracy in “First Class”
- improved response time
- with 00.16131.501030’s on-board heater: compliant with IEC 61724-1 Class B in its standard configuration

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

Professional Line	**“First Class” Pyranometer 16131.5**
Meas. element/ -principle:	thermopile • thermal difference measurement
Measuring range:	0...3000 W/m² • global radiation within a range of 285...3000 nm
Range of application:	temperatures -40...+80 °C
Spectral sensitivity:	< ± 3 % (0.35...1.5 µm) • tilt deviation < ± 2 %
Non-linearity:	< ± 1 % (100...1000 w/m²)
Resolution:	0.01 W/m²
Power supply:	24 VDC (8...30 VDC)
Power requirement:	< 48 mW (at 12 VDC)
Response time:	< 10 s (95 %)
Directional answer:	< ± 20 W/m²
Dimensions/ Weight:	max. Ø 92 mm · approx. H 95 mm • approx. 0.64 kg
Standards:	ISO 9060 “First Class” • IP67
Versions:	
00.16131.501040	Digital sensor with analogue 4-20 mA output
00.16131.501000	Analogue sensor with passive millivolt output
Accessories: (please order separately)	
32.14581.060000	Cable 10 m, M12 plug connector. 5-pin
32.05005.001500	Cable 15 m, M12 plug connector. 5-pin

Become delighted...

by this new pyranometer.
Due to selected silicon transducers an excellent function and precision will be realised.
Box level is already integrated, so adjustment is very easy to be done by knurled screws.

- measuring range 0...1400 W/m²
- output signal 0...50 mV (passive)
- protection class IP 67
- ready to use with an integrated box level
- easy and fast levelling/mounting due to fixation with integrated knurled scew

routine measurements • agricultural measuring stations • environmental measuring stations • photovoltaic (monitoring and site determination)

Standard Line	**(16106)**	**Pyranometer**	**Id-No. 00.16106.000 000**
Power supply:		not required	
Signal output:		Analog (passive out) 0...50 mV = 0...1400 W/m²	
Measurement range:		Irradiance 0...1400 W/m²	
Spectral response:		350...1100 nm	
Accuracy:		<4 % at 1000 W/m2 @22 °C (against Secondary Standard Pyranometer)	
Temperature drift:		0.1 %/K	
Cosine response:		<10 % @80°	
Operating temperature:		-40...+60 °C	
Response time:		<< 1 sec.	
Housing:		Aluminium/ABS · IP67	
Dimensions/ Weight:		Ø 80 mm · H 46 mm • approx. 150 g	
Cable:		2 m · PUR-cable, UV- and heat resistant up to 90 °C, UL approved	

Version:	**(16106)**	**Pyranometer**	**Id-No. 00.16106.000 080**
		Data as above but:	
Power supply U:		12...24 VDC · short circuit, inverse polarity and over-voltage protected up to U	
Current consumption:		typical 7 mA	
Signal output:		Analog voltage 0...10 V · reverse polarity protected	

Accessory:

00.08763.055 002	**(8763 S)**	**Two-channel transducer** for Pyranometer (optional), see „Periphery“

NET RADIOMETER

Radiation balance

Design and progress...

are united in this revolutionary and futuristic-looking radiometer to an ingenious and highly reliable measuring system. Maintenance-free, conic and teflon-coated sensor elements make the constructive abandonment of housing and glass dome possible.
The vertical metal rod prevents soiling by landing birds.

- small, light, robust
- highly precise evaluation of radiation balance in long-wave ranges
- thermopile measuring principle
- high quality materials guarantee long-term stability and weathering resistance
- integrated level for easy levelling
- analogous signal output
- factory test certificate included (DIN 10204)

agricultural meteorology • building physics (comfort analysis) • road condition monitoring

Professional Line	**(16123)**	**Net Radiometer**	**Id-No. 00.16123.100 000**
Measuring element:		thermopiles • conic, teflon-coated absorber (without glass dome)	
Measuring range:		-2000...+2000 W/m² • radiation balance within a range of 0.2...100 µm	
Range of application:		temperatures -30...+70 °C	
Non-linearity:		< 1 %	
Response time (95 %):		< 60 s	
Sensitivity:		10 µV/ W/m² (nominal)	
Temperature dependence of sensitivity:		-0.1 %/ °C (typical)	
Directional error:		< 3 % at 0...60° angle of incidence at 1000 W/m² • sensor asymmetry < 15 %	
Dimensions:		Ø 80 mm • supporting arm L 800 mm · Ø 20 mm • cable length 15 m	
Weight:		approx. 0.5 kg	
Included in delivery:		certificate for sensitivity	
Accessories:			
00.08763.056 002	**(8763 SB)**	**Two-channel transducer** for Radiometer (optional)	

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RADIATION SENSOR

Sunshine duration

Positive events...

in the form of sunshine trigger the three identical sensor elements' quick response.
The elements themselves are absolutely immovable and thus guarantee nearly maintenance-free operation, extreme robustness and longevity.
Aligned to the nearest pole - the sensor is easy to install at all latitudes.
In ice and snow, the system's two-phase heating is controlled external or by an internal thermostat (variety).
The amount of sunny hours per day is of particular importance both for the growth of plants and for the human well-being.

- stable glass cylinder for protection of the sensor elements
- water-proof cable plug connection for safe application
- innovative humidity indicator for easy handling

agricultural meteorology • weather services for climate charts and tourist information • health care • climate categorization of health resorts

PROFESSIONAL

SUNSHINE DURATION

Professional Line	**(16203)**	**Sunshine Duration Sensor**	**Id-No. 00.16203.010 004**
Measuring element/ -principle:		3 photodiodes • photoelectric	
Measuring range:		sunshine yes or no • spectral range 400...1100 nm	
Range of application:		temperatures -40...+70 °C	
Response time:		‹ 1 ms	
Output signals:		0 ± 0.1 V_{DC}: no sunshine · direct irradiance ‹ 120 W/m²	
		1 ± 0.1 V_{DC}: sunshine yes · direct irradiance › 120 W/m²	
Power requirement:		at supply voltage of 12 V_{DC}:	
		without heating:	‹ 0.1 W
		at heating level 1 for defrosting of dew:	1 W ± 0.1 W (nominal)
		at heating level 2 for deicing of snow:	10 W ± 1 W (nominal)
Housing:		IP 67 • glass cylinder · dimensions approx. L 294 mm · Ø max. 72.5 mm • incl. cable with 15 m length and 8 pole plug • 2 drying cartridges • specific test report	
Weight:		approx. 0.9 kg	
Standards:		CE 89/336/EEC • 73/23/EEC	
Variety:			
00.16203.110 004	**(16203)**	**Sunshine Duration Sensor** Technical data like above, but with integrated thermostat for heating control Heating level 2 on at ‹ 6 ± 3 °C • heating level 2 off at › 14 ± 3 °C	

LAMBRECHT meteo

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LIGHTNESS SENSOR

Illumination - Luxmeter

Brightness in (de)lux(e)...

is measured by this sensor.
It determines the momentary degree of illumination intensity.
The highly sensitive photodiode reacts quickly to the prevailing circumstances, to half-light as well as to spot light.
The device 16321 is especially adequate for the use outside and has a very robust housing and connecting ports.

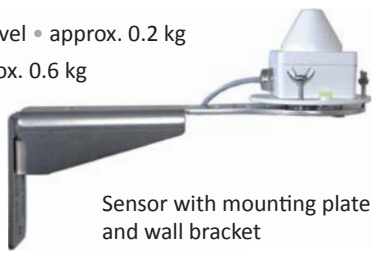
- weather resistant aluminium die-cast housing IP 65
- integrated transmitter
- easy mounting and adjustment by three-point plate and built-in box level
- standard unit: Lux = lx
  100 Lux equal 1 W/m² or 9.29 foot candle
- analogous signal output
- factory test certificate included (DIN EN 10204)

Weather stations • green houses • monitoring systems • building automation

BUILDING

0 ... 20mA ANALOG OUTPUT

Standard Line	(16321)	Lightness Sensor	Id-No. 00.16321.010 302
Measuring element:		special silicium photo diodes	
Measuring range:		0...100 klx	
Range of application:		temperatures -30...+60 °C	
Non-linearity:		±3 %	
Response time:		< 5 ms	
Inclination error:		< ±5 %	
Output signal:		0...20 mA	
Supply voltage:		24 V_{DC}	
Dimensions/ Weight:		65 x 59 x 68 mm · IP 65 · cable length 3.5 m • approx. 0.4 kg	
Accessories:			
32.16321.001 000		**Three-point mounting plate** with built-in level • approx. 0.2 kg	
33.14627.012 000		**Wall bracket** made of stainless steel • approx. 0.6 kg	



Sensor with mounting plate and wall bracket

SUNSHINE RECORDER

according to Campbell-Stokes

Good times ...

are coming when sunbeams hit the precision-grinded glass sphere and the rays are focussed.
The stronger the sun shines, the more intensive is the focal point which leaves traces on the recording cards.
Absolutely self-sufficient, the sunshine recorder reliably measures year-round the sunniest hours.
The robust, non-corrosive and easy-to-use device is employed in northern as well as in southern latitudes worldwide.

- easy to adjust by built-in box level
- nearly maintenance-free – every now and then use a shammy cloth to dust the glass sphere

classical meteorology • meteorological services

Professional Line		**Sunshine Recorder according to Campbell-Stokes**
Measuring element:		Glass sphere • burning glass • optical principle
Housing/ Dimensions:		RAL 5009 (azure) · black· 200 x 180 x 250 mm
Weight:		5.7 kg
Included in delivery:		1 set of recording cards = 380 sheets
Versions:		Range of application:
00.16030.000 000	**(1603)**	0...40° northern or southern latitude
00.16040.000 000	**(1604)**	25...60° northern or southern latitude
Accessories:		
34.16030.001 000	**(1603 D1)**	**Recording cards for** 0...40°
		140 pieces for winter time · 140 pieces for summer time
		100 pieces for spring and autumn • weight approx. 1.0 kg
34.16040.003 000	**(1604 D3)**	**Recording cards for** 25...60°
		140 pieces for winter time · 140 pieces for summer time
		100 pieces for spring and autumn • weight approx. 1.0 kg
33.16010.015 000	**(1601-15)**	**Spare glass sphere** • weight approx. 1.3 kg

INDICATORS

INDICATORS:

Most indicators are analogous with scale and pointer or digital with 7-segment display or a combination of both.

In combination with high quality sensors and high-performance data logging systems indicators are an important part of LAMBRECHT's system solutions. They are especially advantageous when determining wind direction. Data is displayed unambiguously and up-to-date by the movement of the pointers.

In the category "Naval-Line" LAMBRECHT presents a line of instruments which is especially designed for the application on ships. The displays with black background and white labelling are illuminated. Robust and shock proof meters resist the rough conditions. Easy and unambiguous reading in darkness, direct sunshine and rough seas is possible without problems. "Roll & Pitch" or "Speed and Heading" are important ship data, which guarantee, among other things, the safety on board.

ANALOG WIND INDICATOR UNITS

DISPLAY UNIT

In black and white...

the current wind direction and wind speed are clearly displayed. The data is unambiguously interpretable on the ergonomically well-made scale faces.
Robust moving-coil measuring system and metal housings guarantee long-term stability and linearity.
Standard housings (Q 144 format) permit easy mounting into control panels.

- inner scale of indicator (1476 Q 144N) with 8 main and 8 intermediate wind directions
- good readability of analogous scales
- no individual power supply required

measuring stations • industrial plants• air fields • cranes

INDUSTRIAL

Professional Line	**Wind Analog-Indicators**	
Parameters:	**Wind direction (1476 Q144N)**	**Wind speed (1477 Q144)**
Measuring element:	three-coil meas. system • „electric shaft“	moving-coil measuring system
Measuring range:	0...360° • analog	0...35 m/s • analog
Accuracy:	± 5°	± 2 % FS
Resolution/ Div. of scale:	≤ 10° • 10°	≤ 1 m/s • 1 m/s
Range of application/ Connectable to:	sensors with N-potentiometer e. g. (1453 S2N) • (14512 HG4N) as well as with 3 x 10 V output • (14566) • (14565)	sensors with analog output e. g. (1457 S2) • (1467 G4..) • (14575 24V) • (14576 24V) • (14512 G4..) • (1453 S2) • (no „I“–varieties)
Dimensions/ Weight:	144 x 144 x 130 mm • 2 kg	144 x 144 x 90 mm • 1.4 kg
Housing:	standard housing for installation in control panels • white scale • black inscription	
Included in delivery:	2 brackets	

Versions:		**Parameters**	**Input signal**
00.14763.000 000	**(1476 Q144N)**	Wind direction	N-potentiometer • 3 x 10 V
00.14773.035 090	**(1477 Q144)**	Wind speed	0...20 mA • linear
00.14773.035 210	**(1477 Q144)**	Wind speed	0...1 mA • R_i = 2000 Ω
00.14773.035 610	**(1477 Q144)**	Wind speed	0...4 mA • R_i = 220 Ω

DIGITAL MULTIFUNCTIONAL INDICATOR UNIT

The multi talent...

is very versatile and flexible.
The high contrast display can be adjusted by dimmer to the prevailing lighting conditions. The compact design proves to be very advantageous and cost efficient when mounted into control panels. The instruments are reliable and cross-linkable. They can, when series-connected, display all 6 measured main parameters at the same time.

- ▶ big, graphic, high-resolution display with background illumination
- ▶ contrast and brightness adjustable
- ▶ variety with water-proof front plate design
- ▶ low mounting depth
- ▶ galvanically separated supply- and signal channels
- ▶ momentary, mean and extreme values

measuring stations • air fields • industrial and chemical plants • vehicles of civil protection • mobile towers • ships

RS422 INPUT

RS485 INPUT

NMEA DATA PROTOCOL

Professional Line	**(14742)**	**Digital Indicator Meteo-LCD-IND**	**Id-No. 00.14742.401 002**
Display:		digital • partially analog display in the compass rose	
Parameters:		wind direction and wind speed • air temperature • air humidity • air pressure • dew point temperature	
Measuring range/ Accuracy:		depending on the digital input signals of the attached sensors	
Range of application:		temperatures 0...+50 °C • humidity 0...95 %	
Measuring cycle/ Baud rate:		1 Hz • 4800...38400	
Message strings:		WIMWV · WIMTA · WIMHU · WIMMB • NMEA 0183	
Interface:		RS 422/ 485	
Supply voltage:		9...36 V DC (2.5...5 W) • isolation voltage 500 V DC	
Housing:		standard housing for installation in control panels • IP 23 (indoor)	
Dimensions/ Weight:		144 x 144 x 72 mm • 0.8 kg	
Connectable to:		Data acquisition system SYNMET-IND (95661) • all sensors with NMEA 0183-protocol and RS 422	
Version:			
00.14742.111 002	**(14742 W)**	**Meteo-LCD-IND/ W** with water resistant design of the front plate in the style of IP 66 • 160 x 160 x 78 mm • 1 kg	
Accessory:			
00.90515.024 000	**(90515-24/3)**	**Plug-in power supply unit** • 100...240 V AC • 24 V DC · 1.25 A · 30 VA	

LAMBRECHT meteo

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DISPLAY UNIT

DIGITAL INDICATORS

for multifunctional display

The steadfast multi talent...

has passed the shock and shake tests (acc. to BV 0440 and BV 0430) for naval applications on the high seas with bravura.
The indicator (14742) is multi-functional, flexible and compact.
It is an essential part of the proven LAMBRECHT system solutions with SYNMET and various more sensors.
The high contrast graphic LCD display, the low mounting depth and the integration of various devices into a network are the most important qualities of the highly qualified indicator.

- display of specific ship parameters
- Shock class A !
- big multifunctional display with adjustable background illumination
- variety with water-proof front plate design
- galvanically separated supply- and signal channels
- momentary, mean and extreme values

drilling platforms • container ships • naval applications

RS422 INPUT

RS485 INPUT

NMEA DATA PROTOCOL

Professional Naval-Line	**(14742)**	**Digital Indicator for ships Meteo-LCD-NAV**	**Id-No. 00.14742.301 002**
Display:		digital display • partially analog display in the compass rose	
Parameters:		ship-specific data - speed & heading • roll & pitch • true as well as relative wind direction and wind speed • air temperature • air humidity • air pressure • dew point temperature	
Measuring range/ Accuracy:		depends on the digital input signals of the attached sensors	
Range of application:		temperatures 0...+50 °C • humidity 0...95 %	
Measuring cycle/ Baud rate:		1 Hz • 4800...38400	
Message strings:		WIMWV · WIMWD · WIMTA · WIMHU · WIMMB · PPPRP · HEOSD • NMEA 0183	
Interface:		RS 422/ 485	
Supply voltage:		9...36 V DC (2.5...5 W) • isolation voltage 500 V DC	
Housing:		Standard housing for installation in control panels • IP 23 indoor	
Dimensions/ Weight:		144 x 144 x 72 • approx. 0.8 kg	
Connectable to:		Combined Naval Wind Sensor (24513) • data acquisition system SYNMET-NAV (95664) • all sensors with NMEA 0183 protocol and RS 422	
Version:			
00.14742.011 002	**(14742 W)**	**Meteo-LCD-NAV/ W** with water resistant design of the front plate in the style of IP 66 • 160 x 160 x 78 mm • 1 kg	
Accessory:			
00.90515.024 000	**(90515-24/3)**	**Plug-in power supply unit** • 100...240 V AC • 24 V DC · 1.25 A · 30 VA	

LAMBRECHT meteo

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INDICATORS

DISPLAY UNIT

Wind indicator units for naval application

Illustration 1

Illustration 2

Illustration 3

Example illustration - others on request.

In white and black...

moves the pointer on the ergonomically well readable scale. With reference to the ship's momentary values for wind direction are clearly and unambiguously interpretable (illustration 1).
Green-red segments for port and starboard support this function.
The indicator (illustration 3) is a complete solution.
As indicator station for wind parameters two indicators each (e.g. illustration 1+2) can be combined into one panel.

- very reliable and long-term stable indicators
- white, dimmable scale illumination
- clearly interpretable and very well readable analogous scales
- standard housing for installation
- robust meters and scales
- high linearity

civil ships • container ships • marine

Professional Naval-Line	**Wind Indicators for ships**		
Code Id-No.	**Wind direction WD (1476 Q144SBN18) 00.14763.300 023**	**Wind speed WS (1477 Q144SB) 00.14773.300 004**	**WD and WS (14763 Q144SBN18) 00.14763.311 442**
Measuring element:	three-coil system • „electric shaft“	moving-coil meas. system	WD: „electric shaft“ • WS: digital voltmeter
Measuring range:	0...360° • analogue	0...120 kn • 0...25 kn • analogue	WD: 0...360° • analog WS: 0...120 kn • digital
Accuracy:	± 5°	± 2% FS	WD: ± 5° WS: ± 2% FS
Resolution/ Div. of scale:	≤ 10°/ 10°	≤ 1 kn/ 1 kn • ≤ 5 kn/ 5 kn	WD: ≤ 10°/ 10° • analog WS: 0.1 kn • dig. 3 1/2-digits
Input signal:	N18-potentiometer • 3 x 10 V	0...5.2 mA • R_i = 110 Ω	WD: N18-potentiometer 3 x 10 V • WS: 0...4 mA
Dimensions/ Weight:	144 x 144 x 130 mm • 2 kg	144 x 144 x 90 mm • 1.4 kg	144 x 144 x 130 mm • 3 kg
Housing:	standard housing for control panels • black scale • white inscription • lighted		
Supply voltage:	for lighting 24 V_{AC} • 4 W		
Connectable to:	WD/WS sensors e. g. (1455 HGN18) • (14513 HG4N18)* • SYNMET-DAC-module		
Included in delivery:	2 brackets		

* adaptation necessary

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DISPLAY UNIT

Further indicator units for meteorological parameters (on request)

Professional Line	**(1479 C) Wind Speed Indicator with limiting contact**
Switching accuracy:	± 1 % of scale length (± 0.9 mm at ...96 DIN or ± 1.3 mm at ...144 DIN)
Hysteresis:	± 0.5 % of scale length (± 0.4 mm at ...96 DIN or ± 0.6 mm at ...144 DIN)
Response delay :	100 ms after exceeding the limit value
Limit setting :	at the front over the full scale, by using a screwdriver
Relay contacts:	1 changeover contact for each limit contact, max. 8 A, 250 V AC, 2000 VA
Switching status	closed current principle (relay drops out when the limit is exceeded)
Auxiliary voltage:	230 V AC ± 15 %, 45-65 Hz, 2 VA
Test voltage:	2.5 kV, 50 Hz, 10 sec, between measuring input, housing, auxiliary voltage and relay contacts
EMC:	DIN EN 61 326
Mechanic solidity:	DIN EN 61 010 Part 1
Electrical safety:	DIN EN 61 010 Part 1, degree of pollution 2, measuring category CAT III, at nominal voltages up to 300 V (working voltage against ground)
Accuracy, overload:	DIN EN 60 051
Protection class:	DIN EN 60 529, housing IP 52, clamps IP 10
Special versions:	
Measuring ranges:	moving iron instrument · moving-coil rectifier instrument
Scales:	on request
Auxiliary voltage:	110 V AC ± 15 %, 45-65 Hz, 2 VA 24 V AC + DC, -15 % up to +25 %, 2 W
Relays:	reverse switching states (open-circuit principle), per contact
Relay contacts:	1 or 2

	(1475...) Wind-Analog-Anzeiger
Measuring range:	WD: 0...360° - analog • WS: 0...120 kn resp. 0...25 kn
Range of application:	combinations of different single indicator units

	(8536) Digital Indicator Unit (without illustration)
	7-segment display • standard housing DIN 43700 • dimensions 96 x 48 x 110 mm • connectable to sensors and signal conditioners with an output of 0...20 mA

DATA LOGGER AND SOFTWARE

Data Logger and Software are fundamental parts of complete measuring systems. A multiplicity of meteorological sensors can be connected to LAMBRECHT's data acquisition system SYNMET. Weather or naval data are recorded and backed up-to-date. The accruing data bases cover large time series and are a reliable source for far reaching evaluation and control operations. The METEOWARE-Software provides, among other things, evaluations of momentary values on screen or assures data transfer into measuring systems or to television stations. Modern communication technologies make contemporaneous and location-independent usage of measured values for live or freeze frame pictures as well as climate statistics possible.

The data logger TROPOS-100 is constructed for precipitation sensors with tipping bucket technology. The software METEOWARE-RAIN is specialized for this purpose and reliably displays up-to-date and back-dated precipitation values as well as total amounts or mean values of precipitation incidents.

Ser[LOG]*Plus*

Outstanding versatility and performance...

for your professional meteorological data acquisition.

Ser[LOG] *Plus* is more than just a data logger: Due to its versatility by configuration and scaling you can adjust Ser[LOG] *Plus* to the specific challenges of your daily measurement tasks.

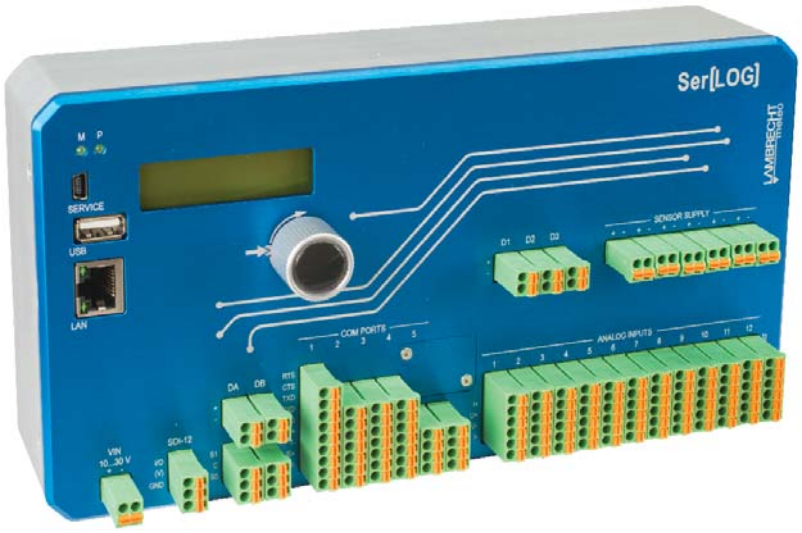
Ser[LOG]*Plus* is particularly communicative: the logger is equipped with numerous interfaces and records data from almost all analog and digital sensors.

Features:

- extensive sensor library, freely configurable and scalable by user
- formulary and free formula parser
- integrated alarm system for 10 alarm outputs via built-in and external relays, email, SMS
- EMI resistant by shielded aluminium housing
- user-friendly with free access to all connections and controls

Applications:

Meteorology • environmental and agricultural monitoring networks • water management • industry • measurement and control technology • spas • airports • authorities applications



ANALOG DIGITAL · METAL MATERIAL · VERSATILE · ROBUST

Professional Line	**Data logger Ser[LOG]*Plus***	**Id-No. 00.95770.100 000**
Communication interfaces:	4 x RS 485 · 5 x RS 422 · 4 x RS 232 · USB device · USB host · Ethernet	
Signal inputs:	SDI12 • 12 analog/ 5 digital inputs • expandable to: 36 analog/ 11 digital inputs	
Resolution:	16 bit ADC (SAR) with up to 1024-times oversampling • Processing in 8-byte IEEE real format	
Outputs:	2 potential-free, programmable relays • via Modbus expandable to 10 relays	
Ethernet:	100 MBit • connector RJ45	
External supply (V_0):	10...30 VDC	
Current consumption:	from 133 mA (12 V) up to 350 mA (12 V) depending on configuration	
Environmental conditions:	-30...+70 °C • 5...95 % r. h. (not condensing)	
EMC:	IEC 60945	
Mount:	35 mm DIN rail	
Dimensions/ Weight:	135 x 238 x 72 mm • approx. 1.3 kg	
Communication paths:	Ser[LOG] - User: either via USB storage device, cable, network, Bluetooth or mobile communications (GPRS, EDGE, UMTS, HDSP, LTE) · dialogue support (SNAP), FTP, email, SMS • Ser[LOG] - Sensors: either NMEA, Modbus RTU, Modbus TCP, SDI12 and numerous proprietary protocols • other protocols on request	
Memory:	1 year in ring memory (8-byte IEEE real format) - not depending on configuration	
Included in delivery :	USB cable · configuration software Ser[LOG]-Commander	

Ser[LOG]

Data loggers for serial sensors

The Ser[LOG] system family allows you the greatest possible freedom for customizing your measurement tasks:

- ✓ extensibility due to modular design
- ✓ high flexibility due to a variety of configuration options
- ✓ many possibilities through state-of-the-art communication interfaces

Ser[LOG] can be extended to a total of 3 AnDiMod analog/digital measuring modules. Available then up to
36 differential analog channels,
11 digital channels.

Features:

- extensive sensor library
- formulary and free formula parser
- integrated alarm system for 10 alarm outputs via built-in and external relays, email, SMS
- interference-proof due to high-quality, shielded aluminium housing
- user-friendly with free access to all connections and controls

Applications:

Meteorology • environmental and agricultural monitoring networks • water management • industry • measurement and control technology • spas • airports • authorities applications

ANALOG DIGITAL · METAL MATERIAL · VERSATILE · ROBUST

Professional Line	Data logger Ser[LOG]	Id-No. 00.95770.000 000
Communication interfaces:	5 x RS 485 · 6 x RS 422 · 4 x RS 232 · USB-Device · USB-Host · Ethernet	
Signal inputs:	COM5 also available as SDI12 • 2 status inputs	
Resolution:	16 bit ADC with up to 1024-times oversampling • processing in 8-byte IEEE real format	
Outputs:	2 potential-free, programmable relays • with max. 8 Modbus relays expandable to 10 relays	
Ethernet:	100 MBit • connector RJ45	
External supply (V_0):	10...30 VDC	
Current consumption:	from 34 mA (12 V) up to 200 mA (12 V) depending on configuration	
Environmental conditions:	-30...+70 °C • 5...95 % r. h. (not condensing)	
EMC:	IEC 60945 • RS422 and RS485 up to 2.5 kV isolated • all interfaces with 15 kV ESD protection	
Mount:	35 mm DIN rail	
Dimensions/ Weight:	135 x 135 x 72 mm • approx. 0.9 kg	
Communication paths:	Ser[LOG] - User: either via USB storage device, cable, network, Bluetooth or mobile communications (GPRS, EDGE, UMTS, HDSP, LTE) · dialogue support (SNAP), FTP, email, SMS • Ser[LOG] - Sensors: either NMEA, Modbus RTU, Modbus TCP, SDI12 and numerous proprietary protocols (other protocols on request)	
Memory:	1 year in ring memory (8-byte IEEE real format) - configuration-independent	
Included in delivery :	USB cable · configuration software Ser[LOG]-Commander	

MEASURING MODULE "AnDiMod“

Measuring module for data logger Ser[LOG]

Benefit from the modular system of the data logger family Ser[LOG] and put together your system platform in a customized way. In this way, you can easily defy the growing challenges of your daily measuring tasks.

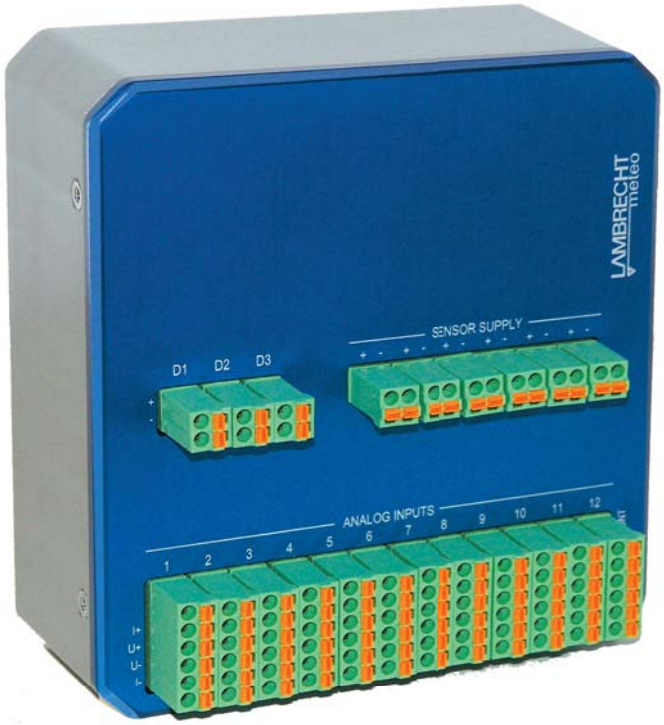
Up to 3 AnDiMod can be connected to the data logger Ser[LOG], to the Ser[LOG]Plus up to 2 AnDiMod.

Each measuring module AnDiMod contains

- ► 12 analog differential channels
- ► 3 digital channels
- ► 6 connections for power supply of the sensors

With AnDiMod measuring modules, you can expand your Ser[LOG] to a total of up to 36 analog measurement inputs and 11 digital inputs.

Of course, AnDiMod - like the data loggers - is also interference-free due to its shielded aluminium housing and user-friendly with free access to all connections.



meteorology • environmental and agricultural monitoring networks • water management • industry • measurement and control systems • Health resorts • air traffic control • government applications

Professional Line	Measuring Module AnDiMod	Id-No. 00.95770.20000X
Signal inputs:	12 analog/ 3 digital inputs • 6 connections for power supply of the sensors	
Resolution:	16 bit ADC with up to 1024-times oversampling • Processing in 8-byte IEEE real format	
External supply (V_0):	10…30 VDC	
Current consumption:	from 92 mA (12 V) up to 98 mA (12 V) depending on configuration	
Environmental conditions:	-30…+70 °C • 5...95 % r. h. (not condensing)	
EMC:	IEC 60945	
Mount:	35 mm DIN rail	
Dimensions:	125 x 115 x 72 mm	
Weight:	approx. 0.6 kg	
Communication paths:	Ser[LOG] Bus	

DATA LOGGER "met[LOG]"

Plug & Play

met[LOG]

The Smart Serial Solution.

Small 3.4-channel data logger with serial interface and connection to the LAN (Ethernet).

The new met[LOG] and LAMBRECHT meteo sensors (rain[e], EOLOS, ARCO, THP, WENTO) operational through auto-configuration at just one push of a button.

- Alarm generation with hysteresis or window function; alarm output via 4 digital outputs, 8 logically connectable warning channels
- Graphical development display, trend display, indicator for wind speed and wind direction, status indication for sunshine duration and precipitation event, indication heat index/humidex and wind chill, sector indication for 8x brightness, indication for sunshine and rainfall duration for the day (available indications depending on the connected sensors)
- Data storage on micro SD-card in a ring memory for one year

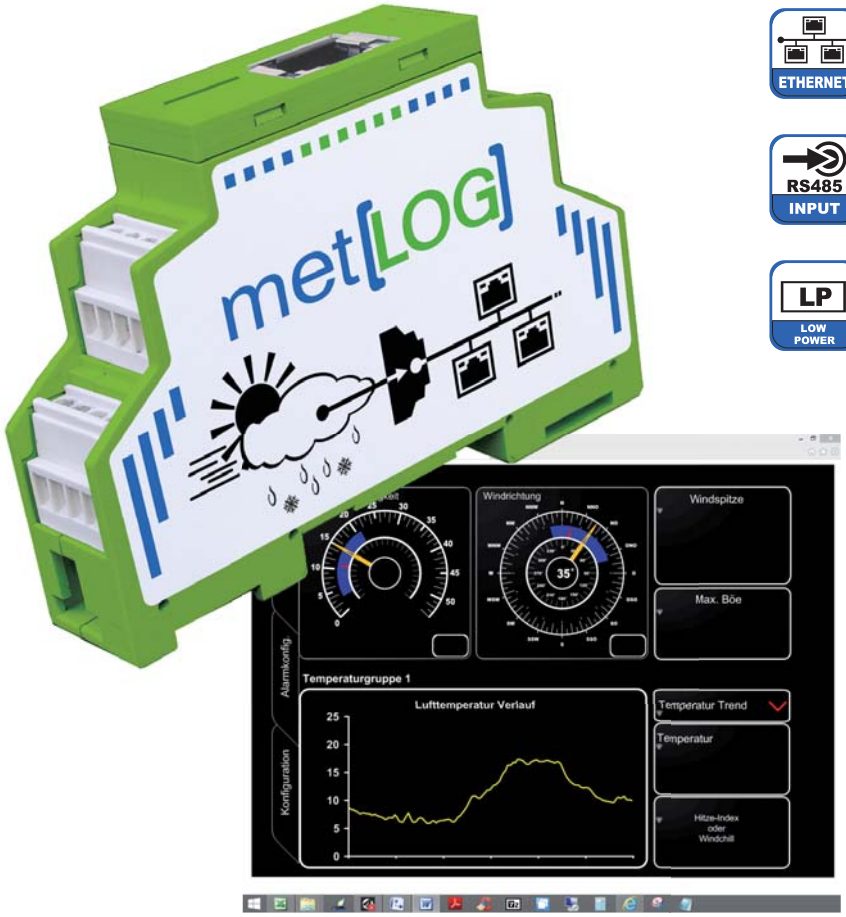
building automation • environmental monitoring • weather services • universities • information platforms • industry • wind warning • spas

DATA LOGGER

ETHERNET

RS485 INPUT

LP LOW POWER



Professional Line	**Data Logger met[LOG]** **Id-No. 00.95800.000000**
Interface:	3 x RS 485 • A+, B-; half duplex
Input:	4 analogue/ digital input • range: 0...10 V (configurable) • $R_i \geq 10$ KΩ
Output:	4 digital output • digital output max. voltage: V_0-0.1 V up to V_0 • max. 0.7 A
Ethernet:	10/100 BaseT • connector RJ45 shielded
Power Supply (V_0):	11...32 V DC Caution: Power supply switched through at the digital outputs.
Power consumption:	500 mW typically (no digital output active)
Operating temperature:	-40...+85 °C
ESD:	IEC 61000-4-2 up to 8 kV
Mechanics:	DIN rail mount 3 TE
Dimensions:	17.8 x 89 x 60 mm
Weight:	62 g
Webserver:	integrated web page for visualisation of instantaneous values • configuration web page • data export
Alarm:	8 free configurable warning channels • direction dependent wind warning • logical link of warning channels
Auto configuration:	automatic configuration of connected serial LAMBRECHT sensors: rain[e], EOLOS, WENTO, ARCO and THP sensor as well as all Modbus sensors of LAMBRECHT
Accessory:	60 W power supply: Id-No. 00.14966.300000

WIND WARNING DEVICE "WWS"

Wind Warning Device
WWS (14787)

Wind Speed Sensor
INDUSTRY (14577)

Indicator (8537)

Alarming...

in many and various applications - with a particularly attractive price-performance ratio!
Our wind warning system comprises the wind warning device, the INDUSTRY wind speed sensor, which has been tried and tested worldwide and the indicator type 8537.
It ensures continuous monitoring of the wind velocity with advance and primary warnings. Two freely configurable relays provide a high degree of flexibility; on-delay and drop-out delay can be adjusted separately.

- safety due to immediate detection of malfunctions
- individual, application-oriented setting of the functional parameters
- simple and rapid top hat rail mounting
- clear and lucid display of the measured values and the switching states

cranes • solar tracking systems • cable railways • harbour loading facilities • traffic meteorology • building maintenance units • fire services • excavators • amusement parks • locks

Professional Line	**(14787)**	**Wind Warning Device WWS**	**Id-No. 00.14787.000 000**
Relay outputs:		max. switching voltage AC max. switching current AC max. switching voltage DC max. switching current DC	250 V AC 2 A AC 50 V DC 2 A DC
Supply voltage:		supply voltage	50...253 V AC 20...350 V DC
		max. power consumption at 24 V DC max. power consumption at 230 V AC	2.6 W 5 VA
Environmental conditions:		permissible ambient temperature storage and transport	-10...+60 °C -10...+70 °C
LCD display:		background lighting	three-coloured red, green, blue
Housing:		dimensions	33 x 110 x 128 mm
	(14577)	**Wind Speed Sensor INDUSTRY**	**Id-No. 00.14577.100 040**
Measuring range:		0.7...50 m/s	
Accuracy:		± 2 % FS	
Supply voltage:		24 (20...28) V DC · max. 800 mA · heating · electr. controlled · 18 W	
Accessories:			
00.08537.000 000		**Indicator** for WWS	
32.14567.006 000		**(14567 U6) Mast adapter**	
64.59020.960 000		**Power supply unit** for DIN-Rail top hat rail mounting	

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DATA LOGGER "PreLOG"

Standard precipitation data logger

The compact standard rainlogger...

for most precipitation sensors with tipping bucket and reed switch output.

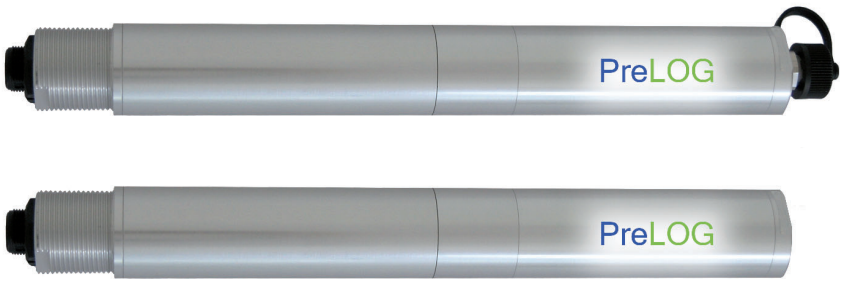
In addition, the PreLOG can be used as an independent pulse counter.
The rechargeable battery of the PreLOG allows a reliable operation of up to 5 years. The logger is configured, read out and charged via the mini-USB interface.

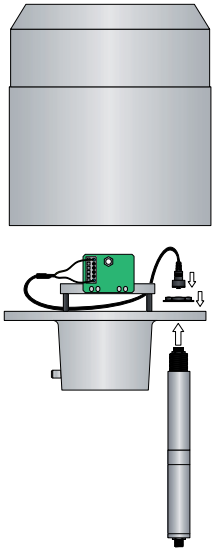
The communication of PreLOG via GPRS can be carried out with a modem, via which it also sends alarm messages in the event of an alarm.

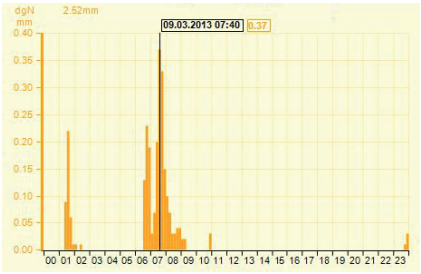
PreLOG ECO is the cost-effective version for manual readout of data.

- waterproof and low-maintenance
- user-friendly software
- sampling mode: event-based recording (no zero values)
- maximum of readings: 65535
- integrated intensity correction for Lambrecht precipitation sensors type 15189 (can be deactivated)

autarkic precipitation stations • agricultural meteorology • measuring networks of water management • sewage treatment plants • international Weather Services • agriculture and forestry







ALARM
LP LOW POWER
PULSE OUTPUT
USB
ROBUST

Standard Line		PreLOG	PreLOG ECO
Id-No.		**00.15190.000000**	**00.15190.010000**
Input:	1 Pulse Input, integrated signal debouncing	x	x
Output:	1 Pulse Output (OC)	x	
Resolution:	configurable (Standard value 0.1 mm)	x	x
Power Supply Modem:	switchable via PreLOG 12 V DC (9...26 V DC)	x	
USB-Interface:	USB for configuration, data retrieval and battery recharging	x	x
Interface:	RS232 for data retrieval and connection to a modem	x	
Rechargeable Battery:	3.6 V Li-Ion, exchangeable	x	x
Ext. Power Supply:	12 V DC (9...26 V DC) Caution: Power supply with connected modem is patched through directly to the modem.	x	
Charging the Battery:	only via USB-interface (5 V DC, 500 mA)	x	x
Max. Current Consump.:	at 12 V DC ext. power supply, 2...10.5 mA; typ. ca. 2.5 mA	x	
Battery life:	up to 5 years (without recharging, at +20 °C)	x	x
Operating temperature:	-20... +60 °C (battery)	x	x
Protection class:	IP65 (casing), IP67 (connected connector)	x	x
Casing:	seawater resistant aluminium	x	x
Dimensions:	approx. 290 x Ø 32 mm	x	x
Weight:	0.33 kg	x	x

DATA LOGGER "SYNMET-LOG"

for use under rough, industrial conditions

The standard under rough conditions.

The perfect combination of the system's components offers a high degree of flexibility and reliability. The two-piece housing divides high quality electronics and installation. The galvanic separation of the measuring system, remote configuration and diagnosis are representative of a multitude of modern future-proof features.

- ring buffer for 1 year
- free configurable sensor inputs
- 17 sensor channels
- 43 virtual channels ▶ able to communicate via Internet with a router *
- LAN integration via Ethernet-Interface *
- simultaneous communication with up to 10 users *

rough industrial surroundings • wide range of application on-shore • agricultural meteorology • observational networks

Picture without housing cover

METAL MATERIAL · INDUSTRIAL · ROBUST · USB · ETHERNET

Professional Line	**(95665)**	**SYNMET-LOG**	**Id-No. 00.95665.600 000**
Range of application:		temperatures -30...+70 °C • humidity 0...100 % r. h.	
Accuracy:		depending on parameters and sensors	
Resolution:		16 bit-ADC with up to 1024-fold oversampling	
Measuring interval:		1 Hz / 2 Hz • average value 1...60 min	
Storage:		dynamically organized ring storage for mean and extreme values for 1 year	
Inputs:		12 analogue · 5 digital · universal sensor inputs • for Pt100 · voltage · current · frequency · impulse · status · serial sensors	
Interfaces:		1x RS-232/ 422/ (485 optional on request) • 1 x RS-232	
Supply voltage:		18...32 V_{DC}	
Housing/ Weight:		aluminium · 306 x 241 x 136 mm (without sockets) · approx. 8 kg · 20 EMC-cable sockets	
Standards:		EMC EN 50081/ 82 • ESD-protection IEC 61000-4-2/-4-5 • MIL STD 3015.7	
Accessories:		sensors · cables · power supplies · modules · modems · software · PC · masts · indicators	

* Ethernet connection kit required

Further data see separate folder.

DATA LOGGER "SYNMET-IND"

for universal landfield applications

METAL MATERIAL
SCIENTIFIC
ROBUST
USB
ETHERNET

Picture without housing cover

The standard in meteorology.

The system's components own intelligence as well as modular upgrades stand for future orientation. A large amount of specific applications can be realized with efficiency. Ease of maintenance, reliability and simple installation are further advantages of this standard logger for highest demands.

- ring buffer for 1 year
- free configurable sensor inputs
- 17 sensor channels
- 43 virtual channels
- able to communicate via Internet with a router *
- LAN integration via Ethernet-Interface *
- Integrated sensor and hardware control
- simultaneous communication with up to 10 users *

meteorological applications • wide range of applications onshore • agricultural meteorology • hydrology

Professional Line	**Series (95661) SYNMET-IND**	**Id-No. 00.95661.600 000**
Range of application:	temperatures -30...+70 °C • humidity 0...100 % r. h.	
Accuracy:	depending on parameters and sensors	
Resolution:	16 bit-ADC with up to 1024-fold oversampling	
Measuring interval:	1 Hz / 2 Hz • average value 1...60 min	
Storage:	dyn. organized ring storage for mean and extreme values for 1 year	
Inputs:	12 analogue · 5 digital · universal sensor inputs • for Pt100 · voltage · current · frequency · impulse · status · serial sensors	
Interfaces:	see versions	
Supply voltage:	85...264 V_{AC}	
Housing/ Weight:	aluminium · 306 x 241 x 220 mm (without sockets) · 8 kg · 20 EMC cable sockets · USV-accumulator · ESD-module · optional with integrated power supply for heated sensors	
Standards:	EMC EN 50081/ 82 • ESD protection IEC 61000-4-2/-4-5 • MIL STD 3015.7	
Accessories:	sensors · cables · power supplies · modules · modems · software · PC · masts · indicators	

DATA LOGGER "SYNMET-NAV"

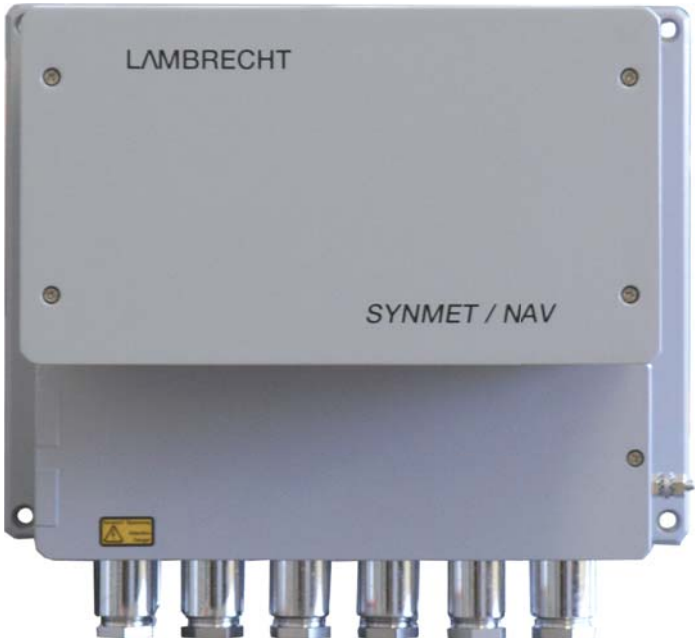
for use under extreme, naval conditions

The high standard in ship meteorology.

Individual ship data are registered professionally in connection with the shipboard computer. Data are then processed for regulation and safety on board. Detection of turbulences, luff and lee comparison, "true wind" as well as "bottom track" shall be named as examples.

- ring buffer for 1 year
- free configurable sensor inputs
- 17 sensor channels
- 43 virtual channels
- able to communicate via Internet with a router *
- LAN integration via Ethernet-Interface *
- Integrated sensor and hardware control
- simultaneous communication with up to 10 users *

integration into navigational systems • project related application



METAL MATERIAL · NAVAL · SEAWATER RESISTENT · ROBUST · USB

Professional Naval-Line	**(95664) SYNMET-NAV**	**Id-No. 00.95664.600 000**
Range of application:	temperatures -30...+70 °C • humidity 0...100 % r. h.	
Accuracy:	depending on parameters and sensors	
Resolution:	16 bit-ADC with up to 1024-fold oversampling	
Measuring interval:	1 Hz / 2 Hz • average value 1...60 min	
Protocols:	NMEA 0183 • WIMTA · WIMTW · WIMHU · WIMMB · WIMWD · WIMWV · HEOSD · VMVHW	
Storage:	dyn. organized ring storage for mean and extreme values for 1 year	
Inputs:	12 analogue · 5 digital · universal sensor inputs • for Pt100 · voltage · current · frequency · impulse · status · serial sensors	
Interfaces:	redundant interfaces for FWD- and AFT-shipboard computer	
Supply voltage:	85...264 V_{AC}	
Housing/ Weight:	aluminium · 306 x 241 x 136 mm (without sockets) · 8 kg · 12 EMC-cable sockets · ESD-module · optional with integrated heating power supply for heated sensors	
Standards:	EMC EN 50081/ 82 • ESD-protection IEC 61000-4-2/-4-5 • MIL STD 3015.7 • Vibration BV 0440 • Shock BV 0430 (MIL-STD 810E)	
Accessories:	sensors · cables · power supplies · modules · modems · software · PC · indicators	

* Ethernet connection kit required

LAMBRECHT meteo

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SYNMET DATA LOGGING SYSTEMS

Modules

Three names – one program...

LOG - the data logger for industrial application,
IND - the data logger for highest demands in meteorology,
NAV - the robust data logger for professional naval applications.

The specific characteristics and the modular construction are optimally customised to each individual field of application. All SYNMET systems are pre-configured and contain an individual documentation.

The following modules can be additionally integrated into the SYNMET data loggers:

Id-No.	SYNMET hardware modules overview	LOG	IND	NAV
32.95527.007 000	**Heating power supply** PSH · 100...240 V_{AC}/ 24 V_{DC} · 35 W	-	x	x
32.95660.031 000	**DAC** · for 8 analog outputs · galvanically isolated · for indicators or SPS	x	x	x
32.95660.032 000	**RS quad interface** · serial · galv. isolated for sensors or further data interfaces	x	x	x
32.95661.009 000	**ESD overvoltage protection** · for all digital and analog sensor inputs	x[1)]	x[1)]	x[1)]
32.95665.008 030	**SI sensor interface** · e.g. DC/DC-converter, RS-485	x	-	-
32.95665.020 010	**Air pressure sensor** • 600...1100 hPa	x	x	-
32.95665.020 030	**Air pressure sensor** • 800...1100 hPa	x	x	-
32.95665.020 000	**Precision air pressure sensor**• 35...1310 hPa · ± 0.1 hPa	x	x	-
32.95660.035 000	**Ethernet connection kit**	x	x	x

[1)] already integrated in basic models of data logger

DATA LOGGER SYSTEM "TROPOS-112/ -124"

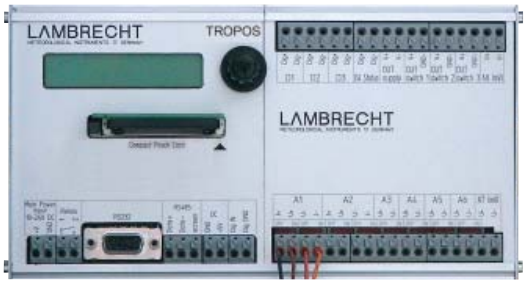
for all meteorological parameters of a weather station

TROPOS - the hero of our time ...

at times in which economizing is a sensitive topic, LAMBRECHT's TROPOS is an ingenious coup.
With TROPOS you not only save energy and money, you gain a large measure of flexibility as a result of its modular structure.
Up to 1+24 sensors can be connected to it for meteorological measurements on a high level.

- cost-efficient investment in state-of-the-art technology
- modular system for a number of classical as well as professional applications
- the core component of a weather station with mains or solar power supply
- Compact Flash Card as central and mobile storage medium
- data transfer via RS 232, RS 485 (optional) or with other well-known modem types
- operation by means of a push-/ rotary switch, LCD as well as intuitive configuration and read-out software.

mobile or stationary weather stations • meteorology • hydrology • industry • agrarian • R & D



Standard Line	**(95666)**	**TROPOS-112 Data logger for 1+12 sensors**	**Id-No. 00.95666.500 000**
Range of application:		-30...+60 °C • 0...100 % r. h. · no condensing	
Supply voltage:		10...24 V	
Power consumption:		~0.7 W (12 V) (online mode) • ~0.5 W (12 V) (logger mode)	
1+12 signal inputs:		1 precipitation reed contact • 8 analogue inputs available: 2 of them as Pt 100 · resistance · voltage or current inputs · 4 of them as voltage or current inputs · 2 of them as voltage inputs • 4 digital inputs: 3 of them as counter or for frequencies · 1 input for status	
6 outputs:		4 outputs for sensor power supply: 3 of them switchable • 1 relay for switching of a communication device (modem) • 1 OC open collector output for precipitation impulses	
Virtual channels:		configurable	
Measuring intervals:		easy adjustable • for single values per channel • for average and extreme values global	
Ring buffer:		for 1 year · data memory Compact Flash Card (CF card)	
Display:		easy to read · 2-lines · 16 characters	
Operation:		via software TROPOS-Commander at a PC · via push-/ rotary switch on TROPOS	
Data transfer:		mobile and wireless via CF card • with cable via interface RS232 or optional via GSM modem · telephone modem · radio modem · RS485 (optional)	
Data evaluation:		proven and comfortable PC evaluation software "MeteoWare..." (option)	
Basic volume:		1 data logger TROPOS • 1 CF card as data memory • 1 null modem adapter + connecting cable • 1 CD TROPOS-Commander (configuration- and data readout software)	
Variety:			
00.95666.600 000	**(95666)**	**TROPOS-124 - The data logger for 1+24 sensors**	

OPUS-20

OPUS-20 THI/ USB: Humidity-/ temperature measurement and evaluation
OPUS-20 THIP/ USB: Humidity-/ temperature-/ air pressure measurement and evaluation

One has clear view...

on the current values of temperature, humidity and air pressure* by means of the high- resolution and well readable display. The integrated memory function for max-, min- and average values also allows deferred and locally independent evaluations. Applicable as wall mounted or hand-held measuring instrument, the DUO-LOG is absolutely safe against misadjustment, as there are no control elements present at the housing. All adjustments are carried out very simply by means of the PC-Software.

- integrated, independent sensors for temperature, relative humidity of the air and air pressure*
- easy handling, adjustment and evaluation
- handy design for mobile, flexible applications

laboratories • museums • offices • production halls

* depending on version

Standard Line	**(963) OPUS-20 THI/ USB Data logger**	**Id-No. 00.09630.100 000**
	(963) OPUS-20 THIP/ USB Data logger	**Id-No. 00.09630.200 000**
Measuring principle:	humidity capacitive • temperature NTC	
Measuring ranges:	Humidity: 10...95 % r. F. • Temperature: -20...+50 °C • Air Pressure: 300...1,300 hPa abs.	
Accuracy:	Humidity: ± 2 % r. h. • Temperature: ± 0.3 °C at 0...40 °C · ± 0.5 °C at ‹ 0 °C and › 40 °C • Air Pressure: 700... 1,100 mbar at 25 °C ± 0.5 hPa	
Resolution:	Humidity: 0.5 % r.h. • Temperature: 0.1 °C • Air Pressure: 0.1 hPa	
Range of application:	0...95 % r. h. • -20...+50 °C • ‹ 20 g/m³ (non condensing) • height max. 10,000 m a.s.l.	
Measuring interval:	10/ 30 s · 1/ 10/ 12/ 15/ 30 min · 1/ 3/ 6/ 12/ 24 h	
Data storage:	16 MB, 3,200,000 measured values	
Data logging:	up to 20 measuring channels parallel	
Interface:	USB, LAN	
Storage interval:	1/ 10/ 12/ 15/ 30 min • 1/ 3/ 6/ 12/ 24 h	
Power supply:	4 x LR6 AA Mignon (battery lifetime › 1 year) • USB	
Display:	90 x 64 mm	
Housing/ Dimensions:	plastic • 166 x 32 x 78 mm	
Weight:	approx. 0.25 kg	
Included in delivery:	PC-Windows Software SmartGraph 3 for graphical and numerical representation of measured values • instruction manual • data cable • battery	
Accessory:	Power supply OPUS20	**Id-No. 32.09630.001000**

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PERIPHERY

PERIPHERY: All measuring systems consist of main components such as sensors and data loggers and various supplementary elements. These elements are of very high importance for the operational reliability as well as application and location specific conditions.

Sensor shelters and casings cover sensitive measuring elements, which are mounted on masts or which are parts of a weather station. They guarantee that the measured results are determined without atmospheric influences.

Thermometer shelters are set up out of doors and house different meteorological measuring instruments. They offer protection against unwanted radiation and precipitation, thus permitting exact measurements of humidity and temperature.

Masts and traverses are matched to their specific application in height and working radius. A multitude of measuring instruments can be attached to them, thus constituting an essential part of any weather station.

Power supply units as well as cables and modems are pre-configured to their special purpose. They are source and interface for the possibility to log and transfer data.

Likewise indispensable are signal converters and signal releasers for the processing and conversion of electronic data into representable and standardized parameters.

SENSOR SHELTER

PERIPHERY

BASIC

ROBUST

LONGEVITY

For all weathers...

and for protection against radiation the sensor shelter with natural ventilation is designed for universal use with relative humidity and air temperature measuring instruments.

Advantages:

- natural ventilation of the sensors
- light and radiation transmission nearly eliminated
- easy installation
- very robust
- to be used individually for different types of sensors

Features:

- improved lamellar system
- including mounting material for different poles
- made from UV and weather-proof material
- no return of heated air into the ventilation circle

Applications:

classical and agricultural meteorology • industry and hydrology • artificial snow plants • traffic meteorology • building services

Standard Line	**(8141.6)**	**Sensor shelter**	**Id.-No. 00.08141.600 000**
Range of application:		-40...+70 °C	
Amount of lamellas:		11	
Dimensions:		Diameter = 120 mm Height = 300 mm (incl. mounting)	
for mast diameter:		25...50 mm	
Weight:		950 g	
Accessories: (included in scope of supply)		Screwing for sensor diameter 14...21 mm	
Accessory: (optional)		Adapter for sensor diameter 5 mm **Id.-No. 32.08141.001010** Screwing for sensor diameter 18...25 mm **Id.-No. 67.26010.540100**	

SENSOR SHELTER

For all weathers...!

This artificially ventilated sensor shelter is designed for universal use with relative humidity and air temperature measuring instruments. The ventilation system draws ambient air and conveys it through the sensor.
Possible measuring errors caused by direct or reflected radiation, especially during calm, will be avoided.

Advantages:

- light and radiation transmission nearly eliminated
- easy installation
- very robust
- to be used individually for different types of sensors

Features:

- improved lamellar system
- artificial ventilation
- including mounting material for
- different poles
- made from UV and weather-proof material
- no return of heated air into the ventilation circle

classical and agricultural meteorology • industry and hydrology • artificial snow plants • traffic meteorology • building services

Professional Line	**(8141.6)**	**Ventilated Sensor Shelter**	**Id-No. 00.08141.600 004**
Range of application:		-40...+70 °C	
Amount of lamellas:		15	
Dimensions:		Diameter = 150 mm	
		Height = 395 mm (incl. mounting)	
for mast diameters:		25...50 mm	
Weight:		1,400 g	
Ventilator:		Range of application:	-40...+70 °C
		Supply voltage:	9.5...13.2 VDC
		Power consumption:	1.4 Watt (max. 1.8 W)
		Durability:	50,000 hr
		Protection class:	IP 68
Accessories: (included in scope of supply)		Screwing for sensor diameter 14...21 mm	
Accessory: (optional)		Adapter for sensor diameter 5 mm **Id.-No. 32.08141.001010**	
		Screwing for sensor diameter 18...25 mm **Id.-No. 67.26010.540100**	

WINDSHIELD ACC. TO TRETJAKOV

for precipitation sensors

Recommendation of the WMO...

to reduce the measurement error due to wind influence.

In combination with the weighing precipitation sensor rain[e]H3, the Tretjakov windshield is used by the German Weather Service (DWD) at selected locations.

The windshield is equipped with vertically circularly arranged stainless steel blades. These segments are horizontally movable and are conically joined at the base of the precipitation sensor.

The Tretjakov windshield consists of a frame, metal segments and accessories for quick and easy installation.

- durable windshield made of corrosion-resistant V4A stainless steel
- different measuring heights available
- for all common precipitation sensors
- simple installation

professional meteorology and hydrology
• measuring networks of water suppliers
• weather services • airports

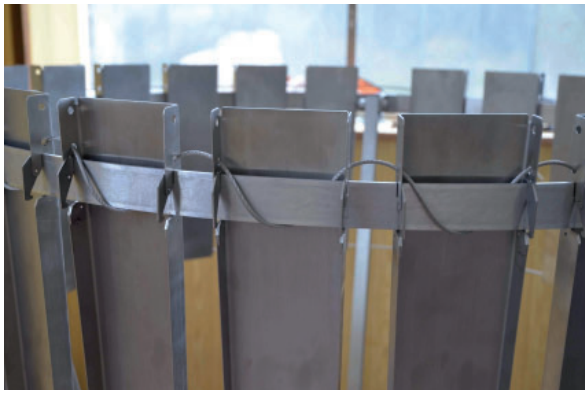
rain[e]H3 and windshield in use at DWD

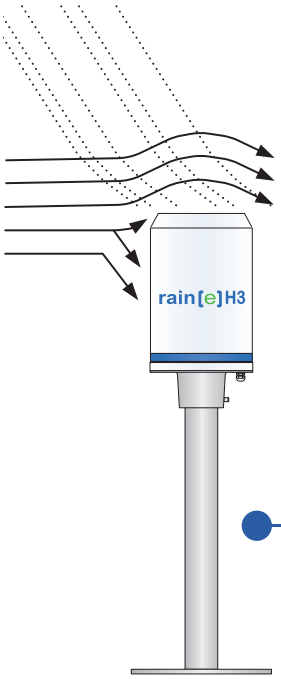
PREMIUM

V4A METAL MATERIAL

ROBUST

LONGEVITY



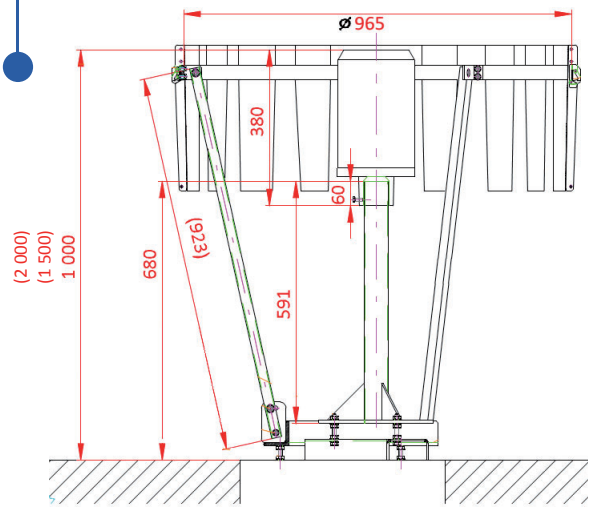


View of the completely installed system with lamella blocking protection (optionally available)

Wind influence without windshield:

The solid lines show streamlines of the wind. The dashed lines show the trajectories of the precipitation particles.

Dimensions



Professional Line	Windshield acc. to Tretyakov for all common precipitation sensors · e.g. rain[e] series
Id-No. 00.15091.600100	Windshield acc. to Tretyakov · for measuring height 1.0 m
Id-No. 00.15091.600150	Windshield acc. to Tretyakov · for measuring height 1.5 m
Id-No. 00.15091.600200	Windshield acc. to Tretyakov · for measuring height 2.0 m

MASTS AND TRAVERSES

for mounting of weather sensors

32.14567.010 000	**(14567 U10) Traverse**
	for mounting of wind sensors e. g. BASIC (145x4), INDUSTRY (145x7), PROFESSIONAL (1452x)

32.14565.019 000	**(14565 U19) Lightning rod**
	for traverse (14565 U17)

on request	**(1462...) 10-meter-masts for weather stations complete with traverses and accessories**
	GFK mast stainless steel mast aluminium telescope further types and heights available on request

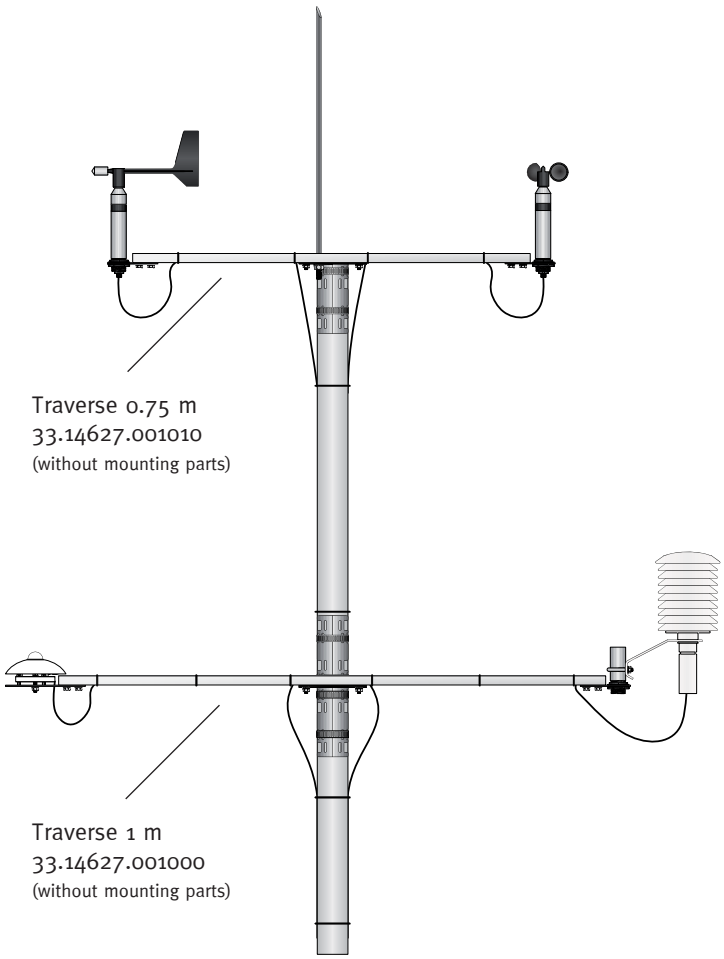
00.14622.200 000	**(1462 S22) Steel tripod**
	is the basis of a small weather station, especially for mobile outdoor applications incl. traverse for humidity-/ temperature- and radiation sensors

00.15180.400 000	**(1518 S4) Assembly mast**
	for sensors (1518H3) and (15188) · 1.2 m
00.15180.400 010	**(1518 S4a) Assembly mast**
	with support for the filament transformer (1518 T)

00.15180.800 000	**(1518 S8) Concrete foundation mast** (no figure)
	for sensors (15188) · 650 mm · Ø 60 mm · measuring height 1 m
00.15180.800 030	**(1518 S8c) Concrete foundation mast** (no figure)
	for sensors (15188H...) · 650 mm · Ø 60 mm · measuring height 1 m · with support for the filament transformer (1518 T)
00.15180.800 010	**(1518 S8a) Concrete foundation mast** (no figure)
	for sensors (1518H3) · 570 mm · Ø 60 mm · measuring height 1 m · with support for the filament transformer (1518 T)

Further traverses and masts with different heights and accessories on request.

TRAVERSE SYSTEM



Traverse 0.75 m
33.14627.001010
(without mounting parts)

Traverse 1 m
33.14627.001000
(without mounting parts)

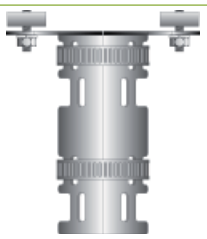
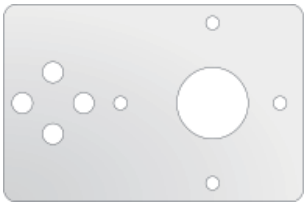
The intelligent and flexible solution...

for mounting your LAMBRECHT sensors!
The traverse system is consisting of anodised aluminium and stainless steel components: traverse, lightning rod, sensor and mast fixation.
The modular conception allows great flexibility and easy installation.

- quick and simple installation of wind sensors, temperature/ humidity sensors with sensor shelter, pyranometers, sensors for sunshine duration etc.
- high quality, robust materials
- high flexibility because of modular conception

agriculture meteorology • traffic meteorology • industry • professional applications • sport airports

Professional Line **(14627) Traverse System** **consisting of:** (example illustrations)

	Mast Fixation Id-No. 32.14627.001000		Fastening Spigot Sensor Shelter Id-No. 32.14627.004000
	Sensor Fixation Round Id-No. 32.14627.002000		Fastening Spigot Sunshine Duration Id-No. 32.14627.005000
	Sensor Fixation Big Id-No. 32.14627.003000		Lightning Rod Id-No. 32.14565.019000

MEASURING TRANSDUCER

and Signal Releaser

(14953 DA) Digital-Analog-Converter for periodical signals... Id-No. 00.14953.000 000

the period duration of the input impulses of different meteorological measuring sensors is converted into a frequency. The results of this A/D transformation are reliable and proportional to the incoming frequency of voltage and/or current values. The pre-setting of parameter is very simple via only 4 keys. Anemometer (1468) or wind sensor (14576 I) e. g. are connectable.

Measuring range:	‹ 10.000 Hz input frequency • ‹ 40 µs pulse duration/ period
Range of application:	temperatures -25...+60 °C • storing -40...+85 °C
Outputs:	voltages: 0...10 V or 2...10 V • 10 mV resolution
	current: 0(4)...20 mA • 20 mA resolution
Supply voltage:	196...264 V • 47...63 Hz • ‹ 5 VA (Cl. 16, 18)
	98...132 V • 47...63 Hz • ‹ 5 VA (Cl. 17, 18)
	20.4...27.6 V • ‹ 5 W (Cl. 11, 12/ power-line)
Housing/ Weight:	modular macrolon housing of • system KF • 40 x 107 x 115 mm IP 20 • assembly on 35 mm standard strip and screwable by 90 mm raster strap • removable, codable terminal clamp · lead ‹ 2 x 2.5 mm² • 0.4 kg
Standards:	EMC according to EN 50081-2 · EN 50082-2

(8763) Two-channel transducer for parameters as ...

air temperature, air humidity, radiation and radiation balance. The sensors which can be used are optimally adjusted and factory-made via DIP-switcher configuration.

Measuring range:	-30...+70°C • 0...100% r. h. • -300...0...1400 W/m² - depending on type
Accuracy:	± 0.1 % at 20 °C • ± 0.5 % at -30...+70 °C
Outputs:	2 x 0(4)...20 mA • 0...2 V • max. load 1.2 kh at 24 V_{DC}
Supply voltage:	10...30 V_{DC}
Housing/ Weight:	100 x 100 x 60 mm • IP 65 • 0.5 kg

Varieties:

00.08763.012 002	(8763 TH)	for Temperature sensors (8241)/ (8281) · Humidity sensor (800)
00.08763.055 002	(8763 S)	for Pyranometer (16103) · (16131) · Albedometer (1611) for direct and indirect radiation or radiation balance
00.08763.056 002	(8763 SB)	for Net Radiometer (16123) for radiation and radiation balance

*drop-out delay only **on-delay only

power[cube]

Power pack for all weathers.

The compact cube is an all-weather-resistant power pack and rounds off for example the rain[e] station regarding power supply and communication. Beside the data logger met[LOG] it protects the net adapter (24 V / 150 W) and the WiFi router against all weather influences.

- easy installation
- very robust
- to be used individually for different types of sensors
- 24 VDC, 150 W, 90...264 VAC
- housing made from UV and weather-proof material

building services • agricultural meteorology • industry and hydrology • artificial snow plants • traffic meteorology

Fig.
„WiFi“ - Edition

Professional Line	**(14966)**	**power[cube]**	**Id-No. 00.14966.715 000**
Output:		24 VDC	
Voltage range:		24...28 V	
Output current:		max. 6.5 A	
Input frequency range:		47...63 Hz	
Input voltage:		90...264 VAC	
Rated power:		156 W	
Working temperature:		-20...+60 °C	
Storage temperature:		-40...+85 °C	
Dimensions:		approx. 190 x 190 x 190 mm	
Accessory: (optional)		Mast attachment for power[cube] **Id-No. 32.14966.030 000**	
Versions:			
power[cube] „s“		power[cube] Power supply 24 V/ 150 W incl. terminal block **Id-No. 00.14966.715 000**	
power[cube] „met“		power[cube] incl. data logger met[LOG] **Id-No. 30.95800.015 000**	
power[cube] „WiFi“		power[cube] incl. data logger met[LOG] and WiFi router **Id-No. 30.95800.115 000**	

met[LOG]

(14963.9) **Power supply unit** **Id-No. 00.14963.924 000**

with a wide entrance area and for connection of several loads at the same time, e. g. wind sensors or DC-heatings.

Input/ Output: 100...240 V_{AC} switching/ 24 V_{DC} · 1.3 A · 30 VA

Housing/ Weight: aluminium • RAL 7038 (agate-grey) • 205 x 140 x 73 mm • IP 65 • 1.5 kg

cable entrances 3x Pg 11/ 2x Pg 13.5

(1496 S62) **Power supply unit** **Id-No. 00.14966.200 000**

for connection of e. g. weather sensors QUATRO with heating. Special features are the wide entrance area, distribution characteristics and the suitability for outdoor use.

Input/ Output: 100...240 V_{AC} switching/ 24 V_{DC} · max. 6.3 A · 150 VA

Housing/ Weight: polycarbonate • RAL 7035 (light-grey) • 278 x 278 x 130 mm • IP 65 •

cable entrances 5x M16 x 1.5/ 1x M20 x 1.5/ 1x M25 x 1.5 • approx. 2.5 kg

(1496 S63) **Power supply unit** **Id-No. 00.14966.300 000**

as (1496 S62) but 24 V_{DC} · 2 A · 48 VA - e. g. for QUATRO without heating

dimensions 278 x 188 x 130 mm • approx. 2 kg

(15123) **Filament transformer** **Id-No. 00.15123.242 000**

to power the heating of precipitation sensors (1507 H), (1509 H), (1518 H3), (15188 H)

Input/ Output: 230 V_{AC} / 42 V_{AC} · 6 A · 250 VA

Housing/ Weight: grey polycarbonate • 241 x 171 x 107 mm • IP 55 • 6.0 kg

cable entrances 2x Pg 11/ 1x Pg 13.5

(90515) **Plug-in power supply** (without figure)

for indoor use and to ensure the power supply of various consumers

Versions:

00.90515.000 120 **(90515-12)** e. g. for wind direction sensors with ring potentiometer
input 100...240 V_{AC} • output 12 V_{DC} · 200 mA · 2.4 VA

00.90515.000 240 **(90515-24)** e. g. for measuring transducer (8763)
input 100...240 V_{AC} • output 24 V_{DC} · 350 mA · 8 VA

00.90515.024 000 **(90515-24/3)** e. g. for SYNMET-LOG and (14742) Meteo-LCD
input 100...240 V_{AC} • output 24 V_{DC} · 1.25 · 30 VA

Cables and Modems

Id-No.	Code	Sensor Connecting Cables
32.14565.060 000	(14565 U60)	**Cable e. g. for wind sensors (145x5) and (145x6)** 10 m · with 12-pole plug · ready-made
32.14565.060 020	(14565 U60b)	**Cable e. g. for wind sensors (145x5) and (145x6)** 15 m · with 12-pole plug · ready-made
32.14511.065 020	(14511 U65b)	**Cable e. g. for wind sensor (14512 ...F1000)** 4 m · with 8-pole plug · ready-made
32.14511.065 000	(14511 U65)	**Cable e. g. for wind sensors (14512 ...N)** 4 m · with 8-pole plug · ready-made
32.14530.060 010	(1453 U60a)	**Cable for wind sensor (1453 S2)** 10 m · with 7-pole plug · ready-made
32.14530.060 060	(1453 U60f)	**Cable for wind sensor (1453 S2)** 15 m · with 7-pole plug · ready-made
32.14530.060 090	(1453 U60i)	**Cable for wind sensor (1453 S2)** 2 m · with 7-pole plug · ready-made
32.14530.061 000	(1453 U61)	**Plug for wind sensor (1453 S2)** spare plug · 7-pole · for mounting to cable or sensor
32.14513.066 040	(14513 U66d)	**Cable e. g. for wind sensor (14513)** 4 m · with 12-pole plug · ready-made · MIL-standard
32.14550.065 040	(1455 U65d)	**Cable e. g. for wind sensor (1455)** 4 m · with 10-pole plug · ready-made · MIL-standard
32.14620.066 100	(1642 U66)	**Cable for wind/ weather sensor QUATRO (1642)** 10 m · with 12-pole plug · ready-made
32.15183.060 000	(15183 U60)	**Connecting cable for precipitation sensor (1518 H3)** 0.6 m · sensor/ filament transformer
32.15183.060 030	(15183 U60c)	**Connecting cable for precipitation sensor (1518 H3)** 11 m · filament transformer/ data logger
32.15188.060 060	(15188 U60f)	**Connecting cable for precipitation sensor (15188 H)** 1 m · sensor/ filament transformer
32.15188.060 090	(15188 U60i)	**Connecting cable for precipitation sensor (15188)** 7 m · sensor/ data logger

Id-No.	Code	PC-Connections and modems
32.09000.057 010	(900 U57a)	**Cable e. g. for SYNMET** 2 m · DSub9-9 · RS 232-PC-communication
32.09000.057 020	(900 U57b)	**Adapter e. g. for SYNMET** 9-pole · null modem DSub9-9
00.90249.000 000	(90249)	**Interface converter RS 232 - RS 422/ 485** incl. cable and power supply unit
00.09350.000 003	(9350...)	**Telephone-Modem ISDN**
00.09350.000 004	(9350...)	**Telephone-Modem analog**

Further communication media on request.

u[sonic] Modbus

The combined ultrasonic sensor u[sonic] Modbus...

for wind direction and wind speed.
The Modbus RTU interface simplifies sensor installation and integration into networks.
This seawater resistent ultrasonic sensor is perfectly heated and ideal for use under cold climate conditions.
The connection of the u[sonic] Modbus is compatible with all meteorology sensors of the Modbus series.

- without moving measuring elements
- 2 parameters measurable
- intelligent heating depending on wind speed and wind direction
- easy installation, easy to maintain

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

NO MOVING PARTS

Al METAL MATERIAL

SEAWATER RESISTENT

Modbus RTU DATA PROTOCOL

Professional Line	**(16470)**	**Combined Ultrasonic Wind Sensor u[sonic] Modbus**		**Id-No. 00.16470.000130**
Parameter:		Measuring range:	Accuracy:	Resolution:
Wind direction:		0...359.9°	< 2° (> 1 m/s) RMSE	0.1°
Wind speed:		0...75 m/s	0.2 m/s RMSE (v < 10 m/s); 2 % RMSE (10 m/s < v < 65 m/s)	0.1 m/s
Response threshold:		0.1 ms (adjustable for wind direction)		
Measurement rate:		0.1...10 Hz • (internal measurement rate 50 Hz)		
Operating conditions:		-40...+70 °C • 0...100 % r. h.		
Interface:		RS 485		
Protocol:		Modbus RTU		
Power supply:		24 VDC		
Current consumption and power input:		sensor: typ. 35 mA at 24 VDC • 60 W at 24 VDC		
Connection:		4-pole M12 plug connector		
Housing:		seawater-resistant aluminium · IP 66		
Dimensions/ Weight:		Ø 199 mm · height 149 mm · approx. 2 kg		

WEATHER SENSOR "EOLOS-Modbus"

Wind · Air temperature · Rel. humidity · Barometric pressure
5 parameters plus dew point!

The perfect weather sensor...
for a wide range of applications, especially for use under harsh environmental conditions.
The Modbus RTU interface simplifies sensor installation and integration into networks.
The integrated sensors in the weather module are measuring the ambient parameters with high precision.
The compact construction of the static measuring system and the space saving, robust housing make the EOLOS-Modbus extremely reliable and durable.

- no moving measuring elements
- provides 6 weather parameters
- lamella shelter for accurate measurements of the temperature-humidity sensor
- height adjustment of air pressure possible
- easy installation, easy to maintain

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Professional Line	(1643)	Static Weather Sensor EOLOS-Modbus	Id-No. 00.16430.001002

Parameters:	Meas. range:	Accuracy:	Resolution:
Wind direction:	0...360°	3° RMS	1°
Wind speed:	0.1...50 m/s	0.5 m/s RMS at 0.1...5 m/s • 0.5 m/s ± 5 % RMS of measured value at 5.1...40 m/s	0.1 m/s
Air temperature:	-40...+70 °C	± 0.8 °C (v > 2 m/s)	0.1 °C
Relative humidity:	0...100 % r. h.	± 3 % (10...90 %) • ± 4 % (0...100 %)	0.5 % r. h.
Barometric pressure:	600...1100 hPa	± 2 hPa (-30...+70 °C)	0.1 hPa

Range of application:	temperature -40...+70 °C • wind speed 0...100 m/s • 0...100 % r. h.
Protocol:	Modbus RTU
Interface:	RS 485
Supply voltage:	24 VDC · max. 2.5 A
Connection:	4-pole M12 plug connector
Housing:	aluminium · anodized · IP 66
Dimensions:	H 382 mm · Ø 120 mm · mast adapter Ø 50 mm for mounting on standard pipe
Weight:	2.5 kg

*) under non-icing environmental conditions

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E-mail info@lambrecht.net

WIND SENSOR "com[b]"Modbus

Wind direction and wind speed

The combined static wind sensor com[b] Modbus...

for wind direction and wind speed. The Modbus RTU interface simplifies sensor installation and integration into networks.
com[b] Modbus has no moving parts. Its spectacular survival velocity of more than 100 m/s makes it unbreakable for wind influences. Precious materials like aluminium and zinc oxide and the optimised thermo-dynamic measuring principle stand for highest quality.

- without moving measuring elements
- 2 parameters measurable
- survival velocity of more than 100 m/s
- the space-saving, easy installation reduces costs

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Standard Line	(16441)	Static Wind Sensor com[b]		Id-No. 00.16441.000 313
Parameters:		Measuring range:	Accuracy:	Resolution:
Wind direction:		0...360°	at >1 m/s is 3° RMS	1°
Wind speed:		0.1...50 m/s	0.25 m/s ± 5 % RMS at 0...15 m/s	0.1 m/s
Range of application:		temperature -40...+70 °C • survival speed 100 m/s • 0...100 % r. h.		
Protocol:		Modbus RTU		
Interface:		RS 485		
Supply voltage:		24 VDC · max. 2.5 A		
Connection:		4-pole M12 plug connector		
Housing:		aluminium · anodized · IP 66		
Dimensions:		H 298 mm · Ø 108 mm · mast adapter Ø 50 mm for mounting on standard pipe		
Weight:		1.5 kg		

*) under non-icing environmental conditions

COMBINED WIND SENSOR

WIND SENSOR "ARCO-Modbus"

Wind direction and wind speed

The robust combined sensor

The sensors of the ARCO family are very robust, compact and extremely reliable. Due to their shock and vibration proof construction the ARCO-Modbus sensors are particularly qualified for use under severe environmental conditions.
The housing and the measuring elements are made of seawater resistant aluminium alloys. The housing, the cup rotor and the wind vane are anodised.
The Modbus RTU interface simplifies sensor installation and integration into networks.

- qualitatively ambitious and cost-effective solution
- reliable wind measurement, including under extreme weather conditions
- seawater resistant materials and surface finishes for long-life application, including under harsh conditions
- quick and easy pipe mounting, connection with just one cable

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

Al METAL VANE

Al METAL CUP ROTOR

SEAWATER RESISTENT

IP 65 PROTECTION RATING

9W 9W HEATED

METAL MATERIAL

Modbus RTU DATA PROTOCOL

Professional Line	**(14581)**	**Wind Sensor ARCO-Modbus**	**Id-No. 00.14581.030430**
Meas. range wind direction:	0...360°		
Meas. range wind speed:	0.3...75 m/s		
Accuracy wind direction:	± 1°		
Accuracy wind speed:	0.5 m/s at 0.3...5 m/s • 2 % FS at 5.1...50 m/s		
Resolution wind direction:	1°		
Resolution wind speed:	< 0.1 m/s		
Range of application:	temperature* -30...+70 °C heated • wind speed 0...80 m/s • 0...100 % r. h.		
Output:	RS 485 · Modbus RTU		
Supply voltage sensor:	(10...28 V DC) , 24 V DC • 50 mA (at 24 V DC)		
Connection:	4-pole M12 plug connector		
Housing:	made of anodized seawater resistant aluminium, stainless steel		

*) under non-icing environmental conditions

WIND SENSORS "PRO-Modbus"

Wind direction and wind speed

The Modbus RTU interface...

simplifies the integration of the sensors into networks and allows the construction of long communication distances.

PRO-Modbus sensors are predestined for use in areas subject to lightning. Their improved protection against electrostatic discharge in combination with the interference-proof communication ensures a high integrity of your data.

PRO-Modbus sensors with their integrated, regulated heating system provide you with reliable work as a tireless endurance runner in all-year use and in most climatic zones.

- improved protection against electrostatic discharge
- especially robust due to reinforced axis
- high measuring range of 75 m/s
- low starting values of < 0.5 m/s
- very high resolution of measuring values

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Standard Line	Wind Sensors PRO-Modbus	
Id-No.	**(14523) Wind direction Id-No. 00.14523.131 030**	**(14524) Wind speed Id-No. 00.14524.101 030**
Measuring elements:	wind vane • aluminium · special surface	3-armed cup • aluminium · special surface
Measuring range:	0...360°	0.5...75 m/s
Accuracy:	2°	0.3 m/s ≤ 10 m/s • 0.5 m/s...60 m/s
Resolution/ Starting value:	< 1° • < 0.5 m/s	< 0.1 m/s • < 0.5 m/s
Output:	Modbus RTU	Modbus RTU
Measuring rate:	4 Hz	4 Hz
Weight:	0.4 kg	0.35 kg
Measured values:	instantaneous value · average value · minimum value · maximum value	
Measuring principle:	Hall Sensor Array, non-contact	
Range of application:	temperatures -40...+70 °C · heated • wind speed max. gusts 100 m/s • humidity 0...100 % r.h.	
Supply voltage:	24 VDC (20...32 VDC with heating (ON) · 4.5...32 VDC without heating (OFF)) · 18 W heating· max. 800 mA · The heating within the sensor head prevents blocking of the moving parts under most climatological conditions.	
Connector:	4-pole M12 plug connector	
Housing:	seawater-resistant aluminium · IP 65 in upright position · M12 cable-plug connection · stainless steel nut and lock washer	
Accessory: (order separately)	Id-No. 32.14567.060010: Connection cable with M12, 4 pin female connector, length: 15 m	

WIND SENSORS "INDUSTRY Modbus"

Wind direction and wind speed

Very economical

This wind pair is of a special nature and very economical in acquisition.

Furthermore, these sensors impress with high accuracy, simplest mounting methods and ultimately robust, seawater-proof materials.
The Modbus RTU interface simplifies sensor installation and integration into networks.

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

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SYNTHETIC VANE

SYNTHETIC CUP ROTOR

Modbus RTU DATA PROTOCOL

IP 55 PROTECTION RATING

18W HEATED

Standard Line	Wind Sensors INDUSTRY Modbus	
	Wind direction **Id-No. 00.14567.110030**	**Wind speed** **Id-No. 00.14577.110030**
Measuring elements:	blade wind vane • dimensionally stable	3-armed cup rotor • break-proof
Measuring range:	0...360°	0.7...50 m/s
Accuracy:	2°	0.5 m/s at 0.7...5 m/s and 2 % FS at 5.02...50 m/s
Resolution/ Starting value:	2° • < 0.7 m/s	< 0.02 m/s • < 0.7 m/s
Outputs:	Modbus RTU · RS 485	Modbus RTU · RS 485
Dimensions:	wind vane L 232 mm · H 327 mm	cup rotor Ø 95 mm · H 230 mm
Weight:	approx. 0.35 kg	approx. 0.25 kg
Measuring principle:	Hall sensor Array	
Range of application:	temperatures* -30...+70 °C • wind speed 0...60 m/s	
Supply voltage:	24 (20...28) VDC· max. 800 mA	
Connection:	4-pole M12 plug connector	
Housing:	aluminium · anodized · IP 55 · Ø 32 mm · bore Ø 30 mm for mounting at traverse	

*) under non-icing environmental conditions

WIND SENSORS "EFFICIENT Modbus"

Wind direction and wind speed

The efficient solution

Do you think cost-conscious and are demanding when it comes to your wind measurement data? Then the EFFICIENT Modbus sensors are your ideal solution.
With this sensor concept, valuable materials meet functional design. EFFICIENT sensors also impress with their high accuracy, effortlessly simple assembly principles and corrosion-resistant materials.
The Modbus RTU interface simplifies sensor installation and integration into networks.

- proven sensor technology
- very good starting values
- simple mast mounting

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

Standard Line	Wind Sensors EFFICIENT Modbus	
	Wind direction **Id-No. 00.14579.101 030**	**Wind speed** **Id-No. 00.14579.201 030**
Measuring elements:	blade wind vane • dimensionally stable	3-armed cup rotor • break-proof
Measuring range:	0...360°	0.7...50 m/s
Accuracy:	2°	0.5 m/s at 0.7...5 m/s and 2 % FS at 5.02...50 m/s
Resolution/ Starting value:	2° • < 0.7 m/s	< 0.02 m/s • < 0.7 m/s
Outputs:	Modbus RTU · RS485	Modbus RTU · RS485
Dimensions:	wind vane L 232 mm · H 327 mm	cup rotor Ø 95 mm · H 230 mm
Weight:	approx. 0.35 kg	approx. 0.25 kg
Measuring principle:	Hall Sensor Array	
Range of application:	temperatures* -30...+70 °C • wind speed 0...60 m/s	
Supply voltage:	24 (6...32) VDC · max. 800 mA at 24 VDC • electr. controlled heating · 18 W 13 mA at 24 VDC with deactivated heating	
Connection:	4-pole M12 plug connector	
Housing:	aluminium · IP 55 · Ø 32 mm · bore Ø 30 mm for mounting at traverse	

*) under non-icing environmental conditions

PRECIPITATION SENSOR “rain[e] Modbus”

Weighing precipitation sensor

The first of a new kind.

Latest weighing technology combined with a self-emptying collecting system allows the rain[e] a high resolution and high precision at a very small construction volume. Already the first drop will be measured! The rain[e] is ideal to setup new measurement network as well as addition to an existing rainfall measurement network. The Modbus RTU interface simplifies sensor installation and integration into networks.

- amazing resolution and accuracy
- checking of sensors with tipping bucket and other weighing systems
- compact and robust construction with a very low weight
- all-metal housing, weatherproof and durable
- best connectivity by several interfaces
- installation and maintenance are very simple

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

Professional Line	**Weighing precipitation sensor rain[e] Modbus**
rain[e] unheated	**Id-No. 00.15184.000 100**
Measurement principle:	weighing with automati c self emptying
Operating temperature:	0...+70 °C (unheated)
Collecting area:	200 cm²
Amount measurement range:	without limitation(0.005…∞ mm)
Amount resolution:	0.001 mm (pulse output: 0.01 mm)
Amount accuracy:	2 %
Intensity range:	0…10 mm/min resp. 0…600 mm/h
Intensity resolution:	0.001 mm/min resp. 0.001 mm/h
Intensity accuracy:	2 %
Standards:	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 • EN 61000-4-2, -3, -4, -5, -6, -11 NAMUR NE-21
Protection class load cell:	IP67
Current consumption:	max. 45 mA at 24 V power supply and analogue output • typ. 7.5 mA at 24 V power supply and pulse output · typ. 10.5 mA at 12 V
Supply voltage:	9.8...32 V DC
Signal outputs:	· RS-485 (ASCII protocol, TALKER protocol) • Modbus RTU (default) · 2 Pulse-Outputs for linearised, bounce-free output signal · Status-Output (configurable, e.g. rain yes/no or heating on/off) · Analogue output 0/4...20 mA (0...2.5/5V)
rain[e] heated	**Id-No. 00.15184.400 100**
Data like rain[e] 00.15184.000 100, but in addition with controlled 2-circuit-heating	
Target temperature (heating):	+2 °C funnel surface temperature
Heating power:	80 W (funnel) • 60 W (outlet/ tipping bucket)
Supply voltage:	24 V DC / 2 heating circuits 80 W and 60 W
Operating temperature:	-40...+70 °C (no icing, no snowdrift)

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PRECIPITATION SENSOR “rain[e]one Modbus”

Weighing precipitation sensor

Ready for your Modbus RTU system

Latest weighing technology combined with a self-emptying collecting system allows the rain[e]one Modbus a high resolution and high precision at a very small construction volume. Already the first drop will be measured!

The weighing precipitation sensor is pre-configured for easy integration into your Modbus RTU system. This simplifies the installation work enormously.

- amazing resolution and accuracy
- compact and robust construction with a very low weight
- all-metal housing, weatherproof and durable
- installation and maintenance are very simple

industrial applications • SCADA systems • large-scale photovoltaic systems • power grids

Professional Line	Weighing precipitation sensor rain[e]one Modbus
rain[e]one Modbus, unheated	**Id-No. 00.15184.000 101**
Measurement principle:	weighing with automatic self emptying
Operating temperature:	0...+70 °C (unheated)
Collecting area:	200 cm²
Amount measurement range:	without limitation (0.005…∞ mm)
Amount resolution:	0.001 mm (pulse output: 0.01 mm)
Amount accuracy:	0.1 mm or 2 %
Intensity range:	0…10 mm/min resp. 0…600 mm/h
Intensity resolution:	0.001 mm/min resp. 0.001 mm/h
Intensity accuracy:	± 0.1 mm/min resp. ± 6 mm/h
Standards:	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 • EN 61000-4-2, -3, -4, -5, -6, -11 NAMUR NE-21
Protection class load cell:	IP67
Current consumption:	max. 45 mA at 24 V power supply and analogue output • typ. 7.5 mA at 24 V power supply and deactivated analog output • typ. 12.5 mA at 12 V
Supply voltage:	9.8...32 VDC
Signal output:	Modbus RTU
rain[e]one Modbus, heated	**Id-No. 00.15184.400 101**
Data like rain[e]one 00.15184.000 001, but in addition with controlled 2-circuit-heating	
Target temperature (heating):	+2 °C funnel surface temperature
Heating power:	80 W (funnel) • 60 W (outlet/ tipping bucket)
Supply voltage:	24 VDC / 2 heating circuits 80 W and 60 W
Operating temperature:	-40...+70 °C (no icing, no snowdrift)
Accessories: (please order separately)	**Id-No. 32.14567.060 000** Sensor cable with M12, 4 pin connector, L = 12 m **Id-No. 32.15184.061 010** Power supply cable for sensor heating, L = 10 m

COMBINED SENSOR “TH[pro] Modbus”

Temperature · Humidity

Sensor shelter 8141.6 (option)

Proven measurement technology

The sensor TH[pro] Modbus is a combined measuring instrument for measuring relative humidity and air temperature. The sensor is characterised by high accuracy and energy-saving electronics. The Modbus RTU interface simplifies sensor installation and integration into networks.

- combined measuring instrument for high-quality use
- capacitive humidity measuring element
- low maintenance
- signal output humidity: RS 485 · Modbus
- for use in all climatic zones
- suitable sensor shelter type 8141.6 optional available

hydrology • building technology • power plants • industry

Professional Line	TH[pro] Modbus Sensor	Id-No. 00.08095.100031
Temperature		
Measuring range:	-40...+70 °C	
Resolution:	0.1 °C	
Improved accuracy:	± 0.1 K (0…60 °C) • ± 0.2 K (-40…0 °C) [1]	
Relative humidity		
Measuring range:	0...100 % r. h.	
Resolution:	0.1 % r. h.	
Improved accuracy:	typ. ± 1.5 % (0...80 %) r. h. • ± 2 % (> 80 %) r. h. [1] • Reaction time rel. humidity (at v = 1.5 m/s): 30 s [2]	
Further technical data		
Supply voltage:	4.8...33 VDC	
Current consumption [3]:	4 mA at 24 VDC • 6 mA at 12 V DC • 11 mA at 4.8 VDC	
Housing:	Aluminium especially-coated • IP 65 (housing) • M12 plug connector (4-pole)	
Weight/Dimensions:	approx. 80 g • H 140 mm x Ø 20 mm	
Interface:	Serial RS 485	
Protocol:	Modbus RTU	
Accessories: (please order separately)	Sensor shelters: 00.08141.600000 (with natural ventilation) 00.08141.600004 (with artificial ventilation)	

[1] ventilated sensor shelter recommended [2] with filter membrane [3] without terminating resistor

COMBINED SENSOR “THP[pro] Modbus”

Temperature · Humidity · Pressure

Proven measurement technology

The sensor THP[pro] Modbus is a combined measuring instrument for measuring relative humidity, air temperature and air pressure. The sensor is characterised by high accuracy and energy-saving electronics. The Modbus RTU interface simplifies sensor installation and integration into networks.

- combined measuring instrument for high-quality use
- capacitive humidity measuring element
- low maintenance
- signal output humidity: RS 485 · Modbus
- for use in all climatic zones
- suitable sensor shelter type 8141.6 optional available

hydrology • building technology • power plants • industry

Sensor shelter 8141.6 (option)

Professional Line	THP[pro] Sensor Modbus	Id-No. 00.08095.100030
Temperature		
Measuring range:	-40...+70 °C	
Resolution:	0.1 °C	
Improved accuracy:	± 0.1 K (0...60 °C) • ± 0.2 K (-40...0 °C) [1]	
Relative humidity		
Measuring range:	0...100 % r. h.	
Resolution:	0.1 % r. h.	
Improved accuracy:	typ. ± 1.5 % (0...80 %) r. h. • ± 2 % (> 80 %) r. h. [1] • Reaction time rel. humidity (at v = 1.5 m/s): 30 s [2]	
Barometric pressure		
Measuring range/Resolution:	500...1100 hPa • 0.1 hPa	
Accuracy:	± 2 hPa (-30...+70 °C) • ± 1 hPa (-10...+60 °C)	
Further technical data		
Supply voltage:	4.8...33 VDC	
Current consumption [3]:	4 mA at 24 VDC • 6 mA at 12 V DC • 11 mA at 4.8 VDC	
Housing:	Aluminium especially-coated • IP 65 (housing) • M12 plug connector (4-pole)	
Weight/Dimensions:	approx. 80 g • H 140 mm x Ø 20 mm	
Interface:	Serial RS 485	
Protocol:	Modbus RTU	
Accessories: (please order separately)	Sensor shelters: 00.08141.600000 (with natural ventilation) 00.08141.600004 (with artificial ventilation)	

[1] ventilated sensor shelter recommended [2] with filter membrane [3] without terminating resistor

PYRANOMETER „sun[e] Modbus“

Globalstrahlung

Digitales „Secondary Standard“ Pyranometer

Das sun[e] Modbus bietet höchste Genauigkeit und höchste Datenverfügbarkeit: Mit neuer Lüftungs- und Heiztechnik übertrifft das sun[e] Modbus alle Pyranometer, die mit herkömmlichen Lüftungssystemen ausgestattet sind.
sun[e] Modbus ist das ideale Instrument für den Einsatz in der Leistungsüberwachung von PV-Anlagen und in meteorologischen Netzen.
Es misst die von einer ebenen Fläche empfangene Sonnenstrahlung in W/m² aus einem Blickwinkel von 180°.

- beheizt für beste Datenverfügbarkeit
- neue Technologie übertrifft herkömmliche Pyranometer-Belüftung
- in der Standardkonfiguration konform mit den Anforderungen an PV-Überwachungssysteme der Klasse A der IEC 61724-1:2017

professionelle meteorologische Applikationen • Gebäudeautomation • Photovoltaikanlagen • Industriemeteorologie

Professional Line	Pyranometer sun[e] Modbus	Ident-Nr. 00.16130.501 030
Messelement/ Messprinzip:	Thermosäule • thermische Differenzmessung	
Messbereich/ -größe:	-400...4000 W/m² • Globalstrahlung im Spektralbereich 285...3000 nm	
Einsatzbereich:	Temperaturen -40...+80 °C	
Spektrale Empfindlichkeit:	< ± 3 % (0,35...1,5 µm) • Neigungsfehler < ± 0,2 %	
Nichtlinearität:	< ± 0,2 % (100...1000 w/m²)	
Auflösung:	0,05 W/m²	
Ausgang:	Modbus RTU	
Versorgung:	24 VDC (8...30 VDC)	
Leistungsaufnahme:	ca. 2,3 W	
Ansprechzeit:	3 s (95 %)	
Richtungsantwort:	< ± 10 W/m²	
Abmessungen/ Gewicht:	max. Ø 92 mm · ca. H 95 mm • ca. 0,64 kg	
Standards und Normen:	ISO 9060 „Secondary Standard“ • IP67	

PYRANOMETER “16131.5 Modbus”

Global Radiation

“First Class” Pyranometer

16131.5 digital pyranometer series is a range of high-accuracy digital solar radiation sensors.

It is “First Class” according to the WMO guide and ISO 9060:1990 standard and “Spectrally Flat Class B” in the 2018 revision.

Version 00.16131.501030, equipped with an on-board heater, is compliant in its standard configuration with the requirements for “Class B” PV monitoring systems of the IEC 61724-1:2017 standard.

The 16131.5 measures the solar radiation received by a plane surface, in W/m², from a 180° field of view angle. Various outputs are available, both digital and analogue, for ease of integration.

- best measurement accuracy in “First Class”
- improved response time
- with 00.16131.501030’s on-board heater: compliant with IEC 61724-1 Class B in its standard configuration

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

Professional Line	“First Class” Pyranometer 16131.5 Modbus	Id-No. 00.16131.501030
Meas. element/ -principle:	thermopile • thermal difference measurement	
Measuring range:	0...3000 W/m² • global radiation within a range of 285...3000 nm	
Range of application:	temperatures -40...+80 °C	
Spectral sensitivity:	< ± 3 % (0.35...1.5 µm) • tilt deviation < ± 2 %	
Non-linearity:	< ± 1 % (100...1000 w/m²)	
Resolution:	0.01 W/m²	
Output:	Modbus RTU	
Power supply:	24 VDC (8...30 VDC)	
Power requirement:	< 48 mW (at 12 VDC)	
Response time:	< 10 s (95 %)	
Directional answer:	< ± 20 W/m²	
Dimensions/ Weight:	max. Ø 92 mm · approx. H 95 mm • approx. 0.64 kg	
Standards:	ISO 9060 “First Class” • IP67	

PYRANOMETER “16103-Modbus”

Global Radiation

Meets the requirements…

of ISO 9060 “Second Class”.

The 16103-Modbus pyranometer is ideal for solar radiation measurements in meteorological networks and PV monitoring systems.

It measures solar radiation received by a plane surface, in W/m², from a 180° field of view angle.

The 16103-Modbus employs a thermopile sensor with black coated surface, one dome and an anodised aluminium body with visible bubble level.

- ISO 9060 “Second Class”
- with Modbus over RS485 and analogue 0-1 V output
- easy mounting and levelling
- ideal for PV power plant monitoring

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

Standard Line	Pyranometer 16103-Modbus	Id-No. 00.16103.501 060
Meas. element/ -principle:	thermopile with high-quality thermo-electric cells • thermal	
Measuring range:	0...2000 W/m² • global radiation within a range of 285...3000 nm	
Range of application:	temperatures -40...+80 °C	
Non-linearity:	< ± 1 % (100...1000 W/m²)	
Resolution:	0.2 W/m²	
Output:	Modbus RTU (RS485) • analogue output 0-1 V	
Power supply:	24 V (5...30 VDC)	
Power requirement:	75 mW	
Response time (95%):	< 18 s	
Directional answer:	< ± 25 W/m²	
Dimensions/ Weight:	approx. Ø 56 mm (without plug) · H 80 mm (without adapter) • approx. 0.3 kg	
Standards:	ISO 9060 "Second Class" • IP 67 • certificate for sensitivity (included in delivery) • ISO 9847	
Accessories: (not included in delivery)		
32.14567.060 010	**Cable for sensor** with M12, 4 pin plug connector · length: 15 m	
32.14627.006 000	**Ball Level** for mounting on traverse system 14627	
32.16103.500 010	**Ball Level Set** for tube and panel mounting	

SENSOR SHELTER TS

For all weathers...

and for protection against radiation the sensor shelter with natural ventilation is designed for universal use with relative humidity and air temperature measuring instruments. The sensor shelter TS is for mounting the temperature-humidity-air pressure sensor THP (8095) to the traverse system Modbus (14627).

Advantages:

- natural ventilation of the sensors
- light and radiation transmission nearly eliminated
- easy installation
- very robust
- to be used individually for different types of sensors

Features:

- improved lamellar system
- including mounting material for different poles
- made from UV and weather-proof material
- no return of heated air into the ventilation circle

Applications:

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology

BASIC

ROBUST

LONGEVITY

Standard Line	Sensor Shelter TS	Id.-No. 00.08141.610 000
Range of application:	-40...+70 °C	
Amount of lamellas:	11	
Dimensions:	Diameter = 120 mm Height = 300 mm (incl. mounting)	
for mast diameter:	for traverse system 14627	
Weight:	950 g	

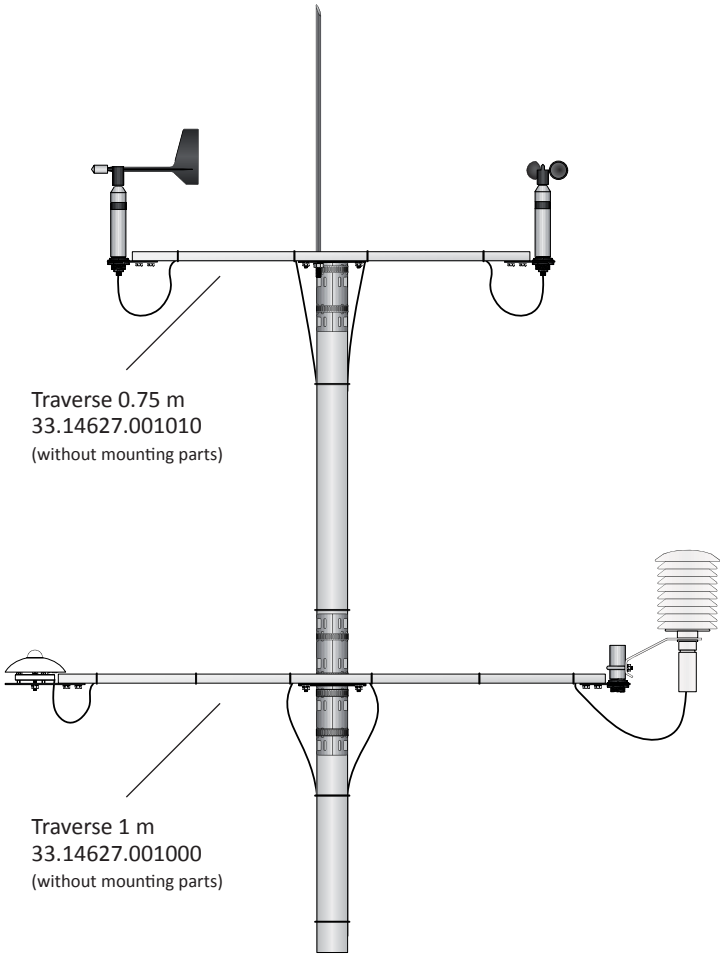
TRAVERSE SYSTEM Modbus

The intelligent and flexible solution...

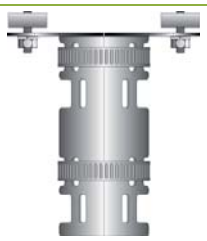
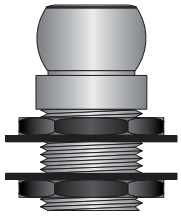
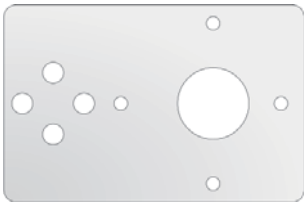
for mounting your Lambrecht meteo Modbus sensors!
The traverse system Modbus is consisting of anodised aluminium and stainless steel components: traverse, lightning rod, sensor and mast fixation.
The modular conception allows great flexibility and easy installation.

- quick and simple installation of wind sensors, temperature/ humidity sensors with sensor shelter, pyranometers, sensors for sunshine duration etc.
- high quality, robust materials
- high flexibility because of modular conception

professional meteorological applications • building automation • photovoltaic systems • industrial meteorology



Standard Line **(14627) Traverse System Modbus** **consisting of:** (example illustrations)

	Mast Fixation Id-No. 32.14627.001000		Fastening Spigot Sensor Shelter Id-No. 32.14627.004000
	Sensor Fixation Round Id-No. 32.14627.002000		Ball Level Fastening for type 00.16103.5XX XXX Id-No. 32.14627.006000
	Sensor Fixation Big Id-No. 32.14627.003000		Lightning Rod Id-No. 32.14565.019000

Pt100 Modbus Converter

From analog signal to industry standard

The Pt100 Modbus converter acquires the measuring signal of a Pt100 temperature sensor and makes the measured value available for interrogation via Modbus RTU (RS485).

Due to the simple address assignment from 1...99 by code switches, up to 99 temperature sensors can be quickly integrated into a bus.

Like the other Lambrecht Modbus RTU sensors, the Pt100 Modbus converter also has autoconfiguration registers (mapping). Thus it can be automatically recognized by the data logger met[LOG] and created for the measurement with just one push of a button.

industrial weather station • process technology • building technology • SCADA system • solar power plants

Connectable Lambrecht meteo sensors [1]

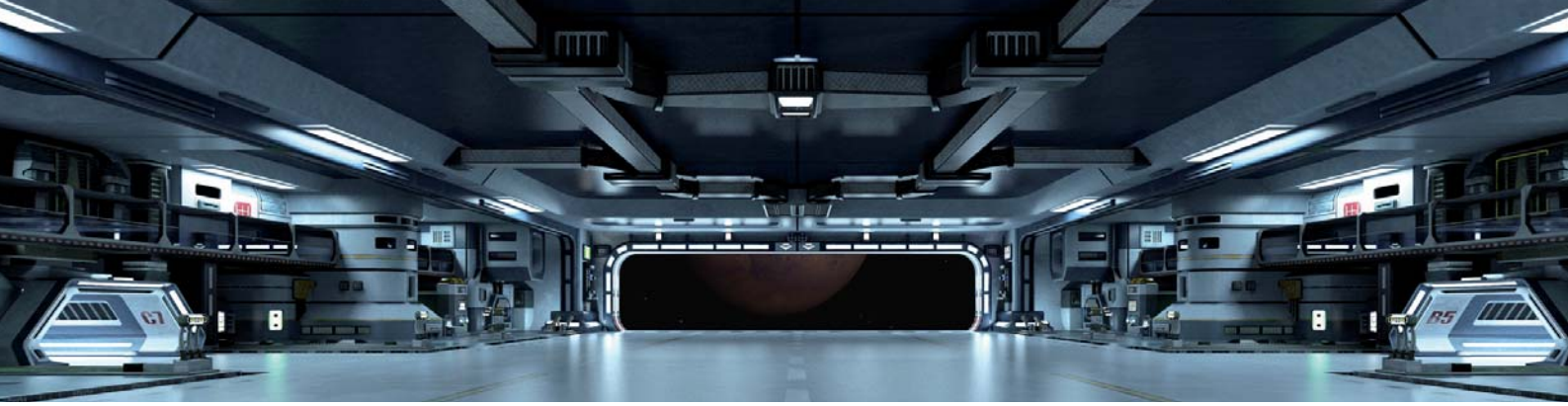

(829)


(828)


(8281)

Standard Line	**Pt100 Modbus Converter**	**Id-No. 00.8790.000000**
Measuring range:	-40 ... +80 °C	
Connection technology:	4-wire	
Max. line resistance: [1]	10 Ohm/line	
Sensor supply Pt100:	1 mA	
Measurement rate:	1 measurement/s	
RS485 bus		
Software protocol:	Modbus RTU	
Data format:	19200, 8, E, 1	
Operating elements		
Address switch:	2 address switches for 10 + 1 · max. bus users: 99	
Supply		
Supply voltage:	18...30 VDC	
Max. power consumption at 24 VDC:	300 mW	
Housing		
Design:	DIN rail 35 mm, EN 50022	
Protection class:	IP 20	
Connection technology:	screw terminals · conductor cross section max. 2.5 mm^2	
Dimensions / Weight:	6.2 x 92 x 101 mm (W x H x D) • approx. 30 g	
Ambient conditions		
Permissible ambient temperature:	-40...+80 °C	
EMC standards / Electrical safety: [2]	EN 61326 · EN 55011, CISPR11 Cl. B · EN 61010-1	
Galvanic isolation, test voltages		
Signal/Supply:	1.5 kV · 50 Hz (1 min.)	
Signal/RS485 bus:	no galvanic isolation	
Connectable sensors: [1]	**00.08290.000030** Module temperature sensor	
	00.08280.010507 Air, soil and water thermometer Pt100, 1/3 DIN	
	00.08281.008005 Air temperature sensor Pt100, 1/3 DIN	
	00.08241.000000 Grass temperature sensor with protection device	

[1] Please order sensors separately.
[2] During interference, small signal deviations are possible.



Room Climate Station[THP]

Top in indoor measurement

LAMBRECHT meteo – closer to the climate

Individual visualization in the browser.
Flexible use.
Easy handling by plug & play.

Station[THP] · For precise measurement of your room climate. Reliably measures temperature, relative humidity and air pressure.

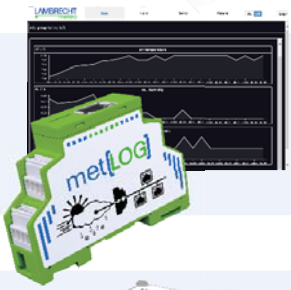
- ✓ Measure precisely · with the high quality sensor "THP"
- ✓ Document professionally · with the data logger met[LOG], without software installation on your PC, tablet or smartphone
- ✓ Save permanently · with the software MeteoWareCS

Station[THP] · The economic replacement for tradional drum recorders: no consumable necessary, no more filing of paper documents!

- ► museums, galleries, libraries
- ► storage rooms
- ► paper, printing and textile industry etc.

COMBINED HUMIDITY TEMPERATURE
AIR PRESSURE

The first step towards optimal room climate
Optimisation of the room climate starts with the precise measurement of temperature and humidity. A filter protects the measurement elements of our compact THP sensor from air pollutants, providing highest reliability and lowest maintenance.



DATA LOGGER
ALARM

Intelligent multitool for all room climate data
Our all-new compact data logger met[LOG] for easiest plug & play data management. The met[LOG] provides data by LAN or WLAN - just at a push of a button. Warnings and alarms, e.g. for customised ventilation and heating, protect humans, buildings and installations.
► Individually customisable visual output in your browser - without any software installation

PERIPHERY
WLAN

Concentrated power · the all new power[cube] ‚WLAN-Edition'
This compact cube is a true powerhouse. Not only does it protect the met[LOG] from all climate impact, but also its power supply (24 V/150 W) and the WLAN router.
► Easy installation · universal application

Id-No. 00.08095.000000 THP sensor
Id-No. 32.14567.060000 12 m cable

Id-No. 30.95800.115000 power[cube] incl. met[LOG]
Id-No. 32.14629.010000 Wall bracket indoor for THP sensor

Tel +49 (0) 551-4958-0 **www.lambrecht.net**
E-mail info@lambrecht.net

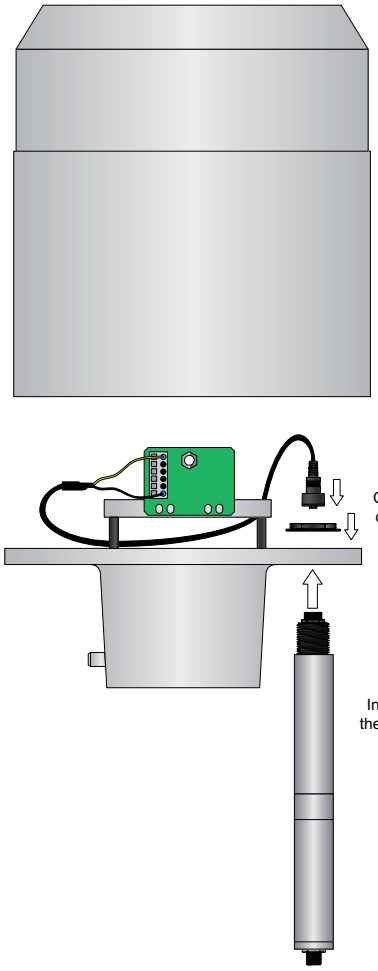
Eco[D]

LAMBRECHT meteo

The stand-alone solution for your precipitation measurement

Easy and fast installation!

- ✓ up to 5 years of operation without recharging of the battery
- ✓ integrated intensity correction for precipitation sensor ECO
- ✓ robust, high-quality materials · longevity and precision on highest level



Eco[D] · Id-No. 00.15189.002 400

consisting of:

Precipitation sensor ECO

Meas. principle:	tipping bucket
Meas. range:	0...8 mm/min
Resolution:	0.1 mm
Accuracy:	± 2 %
Collecting funnel:	200 cm^3
Housing:	aluminium · anodised
Dimensions:	H 292 mm (incl. logger H 474 mm) · Ø 190 mm · for mounting pipe Ø 60 mm
Weight: :	approx. 3.3 kg (incl. logger)

Standards:
WMO-No. 8 · VDI 3786 page 7 · EN 50081/82 · VDE 0100

Data logger PreLOG

Input:	1 Pulse Input, integrated signal debouncing
Output:	1 Pulse Output (OC)
Power supply modem:	switchable via PreLOG 12 V DC (9…26 V DC)
USB Interface:	USB for configuration, data retrieval and battery recharging
Interface:	RS232 for data retrieval and connection to a modem
Rechargeable battery:	3.6 V Li-Ion, exchangeable
Ext. power supply:	12 V DC (9…26 V DC)
Charging the battery:	only via USB-interface (5 V DC, 500 mA)
Max. current consump.:	at 12 V DC ext. power supply, 2…10.5 mA; typ. approx. 2.5 mA
Battery life:	up to 5 years (without recharging, at +20 °C)
Operating temperature:	-20… +60 °C (battery)
Protection class:	IP65 (casing), IP67 (connected connector)
Casing:	seawater resistant aluminium

Mast (optional):

Pipe diameter: 60 mm · lenght: 1200 mm · with mounting material

Tel +49 (0) 551 4958 0 www.lambrecht.net
E-mail info@lambrecht.net

LAMBRECHT
METEOROLOGICAL INSTRUMENTS GERMANY

Stand alone PreLOG precipitation station

Stand alone, solar powered precipitation measuring station with the new data logger PreLOG. Data is sent via GPRS by the integrated modem.

The perfect station for: meteorological and hydrological application, agriculture, irrigations plants, forestry, landfill sites, flood warning,

Features

- Automatic linearisation of the precipitation in dependence of the intensity
- USB-connector to round plug connector for easy configuration and data readout
- Automatic GPRS data transmission at configurable times, amount or intensity threshold
- Powered by 10 W solar panel and 12 V battery
- Emergency power supply for datalogger and precipitation sensor
- Station made of seawater-resistant and non-corroding materials
- ALARM option

  Event-based alarming at:
  - start of precipitation
  - end of precipitation
  - exceeding of a maximum precipitation since the last data request respectively the last message
  - exceeding of a maximum precipitation as a gliding sum in a defined time period (with hysteresis)
  - exceeding of a defined maximum precipitation (with hysteresis)

PreLOG – solar powered GPRS precipitation station

LAMBRECHT
METEOROLOGICAL INSTRUMENTS GERMANY

Technical data

- Storage of 65535 measuring values
- Real-time clock (typ. ± 3 ppm at -15 °C …+60 °C max ± 5 ppm)
- Storage of pulse/value with time-stamp
- Storage of mean values (configurable)
- Resolution 0.1 mm (standard)
- Event controlled storage (no storage of zero-values)
- Easy installation thanks to M8 and M12 round plug connector
- USB-connector for easy configuration
- RS232-interface for modem connection
- Automatic or event controlled data transmission via GPRS
- Modem will be switched on and off by the PreLOG
- Powered by 10 W solar panel and 12 V battery
- Emergency power supply for datalogger and precipitation sensor
- Station made of seawater-resistant and non-corroding materials

Parts of precipitation station

1. precipitation sensor 15189
2. PreLOG low power datalogger
3. GPRS modem
4. charge controller and 12V battery
5. 10 W solar panel
6. plug and go cable set

Stand alone solar GPRS precipitation station

Ident-No. 30.15190.100001

wall of binary code© Ktsdesign – *fotolia.com*

LAMBRECHT
METEOROLOGICAL INSTRUMENTS GERMANY

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E-Mail info@lambrecht.net
Internet www.lambrecht.net

PRODUCT-VIEW

LAMBRECHT meteo

Wind information system
ARCO[LOG]

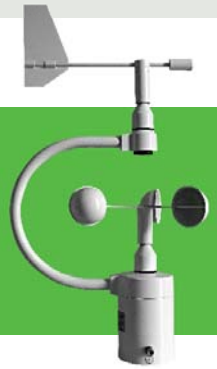
APPLICATIONS

· marinas
· coastal surveillance
· other onshore & offshore applications

What do you expect from a wind information system?

Wind data live on location? Fast and easy data transfer to your devices? Reliability? Durability? ... and even quick and easy mounting with plug & play sensor?

Here is the solution: **Wind information system ARCO[LOG]**



Wind sensor ARCO-NAV

Robust and reliable combined sensor for off-shore applications

Data logger met[LOG]

Smart serial solution with integrated met[APP]

optional with power[cube] WiFi

met[APP]

met[APP] · Integrated browser app for easy visualisation of the current wind data in your network.

Platform-independent on your laptop, tablet and mobile.

- Displays the instantaneous values of your Lambrecht meteo station
- CSV export of the measured values stored by the met[LOG]
- Easy data transfer via FTP client and FTP server

No software installation needed · Visualization in your web browser with met[APP]

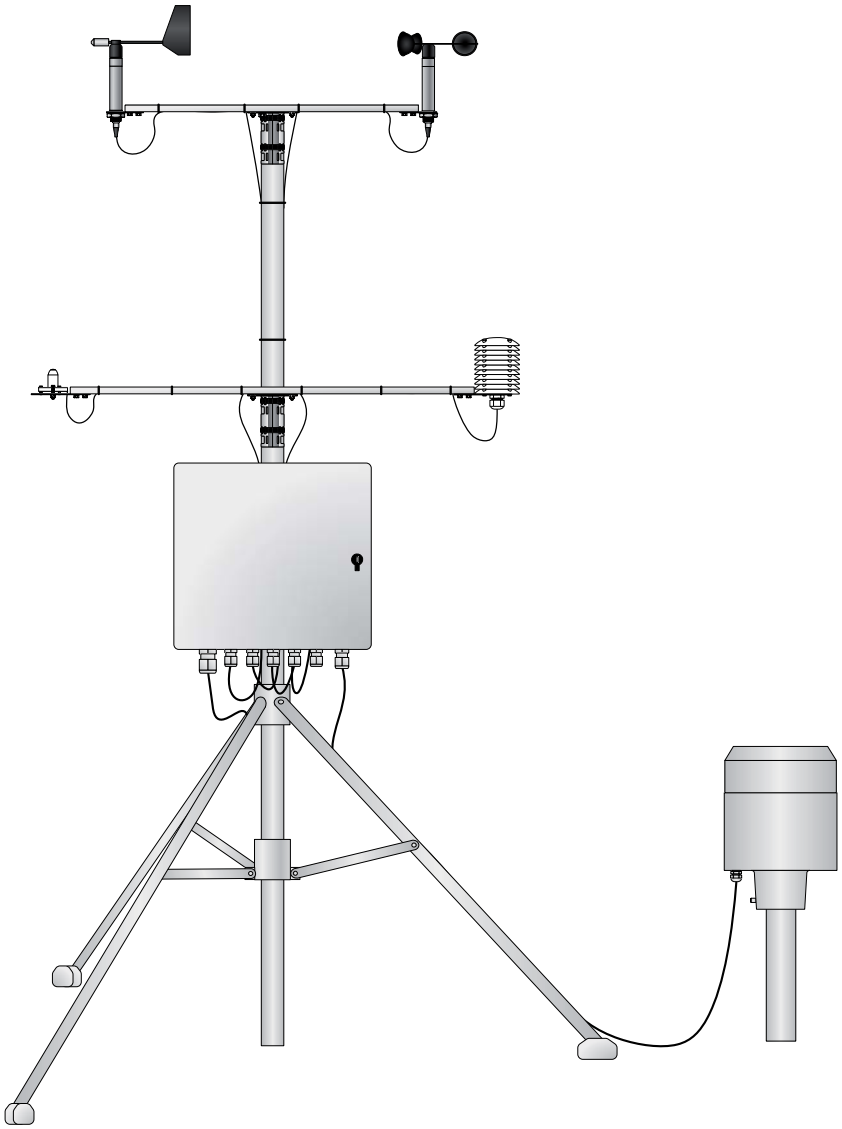
For laptop, tablet & mobile!

LAMBRECHT meteo GmbH Tel +49 (0) 551-4958-0 · info@lambrecht.net · www.lambrecht.net

Weather Station

All-in-one solution with satisfaction guarantee

These modern and economical sensors, combined with high-performance communication technology, guarantee unrestricted availability of the measured environmental parameters, in addition to reliable and precise measurement data. For almost every application, Lambrecht offers a standardised environmental measurement station.
As a matter of course, we like to realise your individual requests!



Wind direction sensor
Weather proven all-metal version · high precision with low starting value · large measuring range

Wind speed sensor
Weather proven all-metal housing · high resolution with low starting value

Precipitation sensor
Weather proven all-metal housing · precise tipping bucket bearing · reliable long-term operation

Temperature/ humidity sensor
Proven environmental measurement technology · sensor shelter, optional artificial ventilation

Air pressure sensor
Robust measurement technology · proven industrial design

Pyranometer
Silicon pyranometer · easy alignment using the integrated circular level

Data logger
Modular design 12+1 channels · outdoor sheet steel housing

MeteoWare-CS
Software for data visualisation, Data storage and export
TROPOS Commander
Software for configuration of the data logger

Mast system
Modular mast system with sensor adapters and clamps · for meteorological sensors

LAMBRECHT meteo

Weather Station

Weather station
All-in-one solution

WIND DIRECTION SENSOR | WIND SPEED SENSOR | PRECIPITATION AMOUNT | COMBINED HUMIDITY TEMPERATURE | AIR PRESSURE | GLOBAL RADIATION

Features and advantages

MECHANICAL SENSOR | TIPPING BUCKET | LONGEVITY | ROBUST

- Lambrecht environmental measurement stations are completely preconfigured
- easy installation and the wiring needs minimal effort
- sensors are extraordinarily precise and durable
- data storage lasts for a whole year
- minimal maintenance costs due to best product quality
- continuous data transfer protects against data loss
- evaluation software and cable are included in scope of delivery

Ident-No. 30.00850.000 000

includes:

00.14523.130040	Wind direction sensor PRO-WEA
00.14524.100040	Wind speed sensor PRO-WEA
00.15189.002000	Precipitation sensor
00.08093.100000	Temperature/ humidity sensor
00.08141.600000	Sensor shelter
00.08121.100002	Air pressure sensor
00.16106.000000	Pyranometer
00.95666.500000	Data logger TROPOS

Weather Station
Solar

All-in-one solution with solar power supply

These modern and economical sensors, combined with high-performance communication technology, guarantee unrestricted availability of the measured environmental parameters, in addition to reliable and precise measurement data. For almost every application, Lambrecht offers a standardised environmental measurement station with solar power. As a matter of course, we like to realise your individual requests!

Wind direction sensor ORA
Weather proven all-metal version · high precision with low starting value · large measuring range

Wind speed sensor ORA
Weather proven all-metal housing · high resolution with low starting value

Precipitation sensor
Weather proven all-metal housing · precise tipping bucket bearing · reliable long-term operation

Temperature/ humidity sensor
Proven environmental measurement technology · sensor shelter, optional artificial ventilation

Air pressure sensor
Robust measurement technology · proven industrial design

Pyranometer
Silicon pyranometer · easy alignment using the integrated circular level

Data logger
Modular design 12+1 channels · outdoor sheet steel housing

Solar panel (2 models)
for self-sufficient energy supply with battery buffer

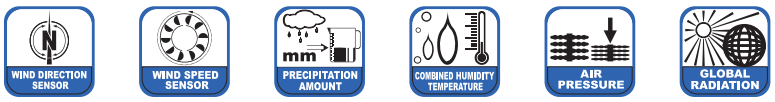
MeteoWare-CS
Software for data visualisation, Data storage and export
TROPOS Commander
Software for configuration of the data logger

Mast system
Modular mast system with sensor adapters and clamps · for meteorological sensors

LAMBRECHT meteo

Weather Station
Solar

Weather station with solar power supply
All-in-one solution



Features and advantages

- Lambrecht environmental measurement stations are completely preconfigured
- easy installation and the wiring needs minimal effort
- sensors are extraordinarily precise and durable
- data storage lasts for a whole year
- minimal maintenance costs due to best product quality
- continuous data transfer protects against data loss
- evaluation software and cable are included in scope of delivery
- Solar set includes:
  solar panel ~ 40 W
  * clamps
  * accu 12 V / 32 Ah
  * connecting cable

Ident-No. 30.00850.100 002

includes

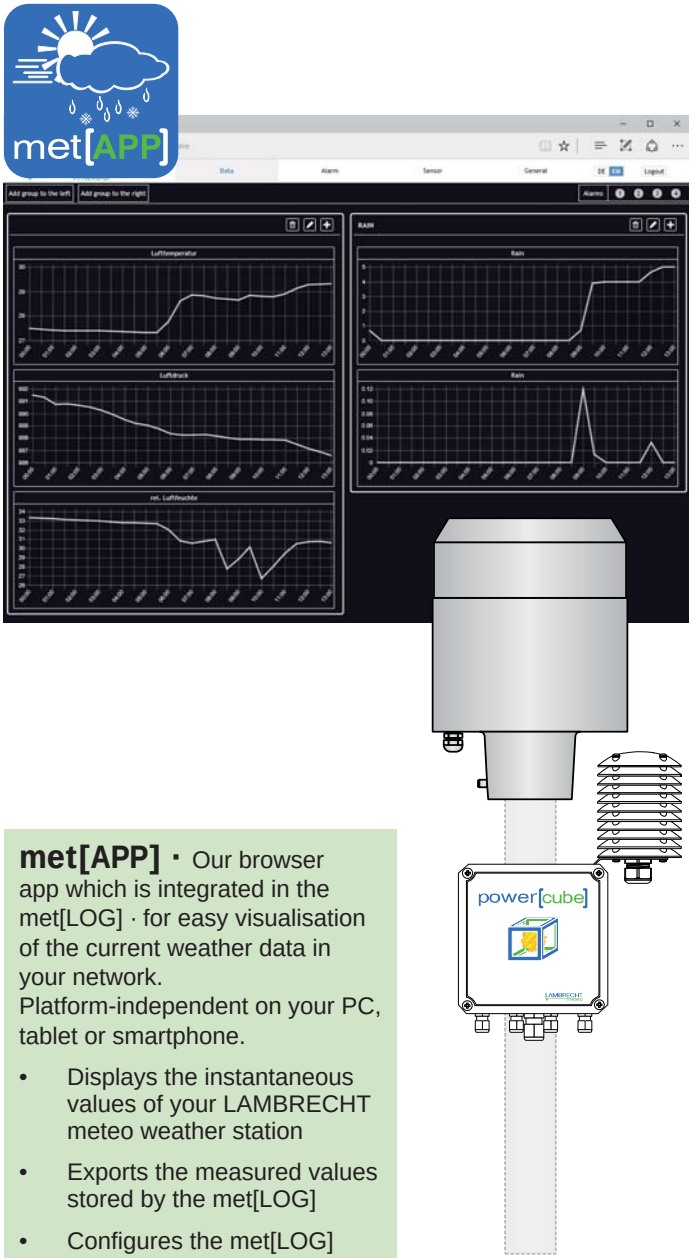
00.14594.110000	Wind direction ORA
00.14594.210000	Wind speed sensor ORA
00.15189.002000	Precipitation sensor
00.08093.100000	Temperature/ humidity sensor
00.08141.600000	Sensor shelter
00.08121.100002	Air pressure sensor
00.16106.000000	Pyranometer
00.95666.500000	Data logger TROPOS

Weather station COMPACT

LAMBRECHT meteo

These high-quality sensors combined with high-performance communication technology guarantee in addition to reliable and precise measurement data unrestricted availability of the measured environmental parameters.

- ✓ visualisation of your data via integrated met[APP] in your web browser
- ✓ no additional software needed
- ✓ robust, high-quality materials assure longevity and precision on highest level
- ✓ simple and quick installation via plug & play

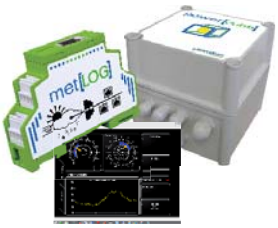


met[APP] · Our browser app which is integrated in the met[LOG] · for easy visualisation of the current weather data in your network.
Platform-independent on your PC, tablet or smartphone.

- Displays the instantaneous values of your LAMBRECHT meteo weather station
- Exports the measured values stored by the met[LOG]
- Configures the met[LOG]

Precipitation sensor 15189
Weather proven all-metal housing · precise tipping bucket bearing · reliable long-term operation

Temperature/humidity/pressure sensor 8095
Proven environmental measurement technology · sensor shelter, optional artificial ventilation



Data logger met[LOG]
Plug & play · visualisation in web browser · alarm generation with hysteresis or window function; alarm output via 4 digital outputs, 8 logically connectable warning channels
power[cube]: all-weather-resistant power pack · rounds off the station regarding power supply and communication.
MeteoWare-CS (option)
Professional software for data visualisation, storage and export

Mast for precipitation sensor
tube diameter: 60 mm
length: 1200 mm

Tel +49 (0) 551 4958 0 www.lambrecht.net
E-mail info@lambrecht.net

Weather station COMPACT

Your advantages

- LAMBRECHT meteo environmental measurement stations are completely preconfigured.
- Easy installation, and the wiring needs minimal effort.
- Sensors are extraordinary precise, robust and durable.
- Data storage lasts for a whole year.
- Minimal maintenance costs due to best product quality
- Continuous data transfer via Ethernet protects against data lost.
- Evaluation software and cable are included in scope of delivery.

Technical data

Operating temp. range:	-20...+70 °C
Supply:	90...264 VAC
Power rating:	156 W
Output power supply:	24 VDC

Weather station COMPACT (Id-No. 30.00851.500 000)

consisting of:

Precipitation sensor ECO, 2 cm³ (15189)

Meas. range: 0...8 mm/min • Resolution: 0.1 mm
Accuracy: ± 2 % with intensity correction

Temp./humidity/air pressure sensor THP (8095)

Temperature
Meas. range: -40...+70 °C
Accuracy: ± 0.3 °C at (v > 2 m/s) •
± 0.4 °C (10...40 °C) • ± 0.8 °C (-10...70 °C)

Relative humidity
Meas. range: 0...100 % r. h.
Accuracy: ± 3 % (10...90 %) r. h. • ± 4 % (0...100 %) r. h.

Barometric pressure
Meas. range: 500...1100 hPa
Accuracy: ± 2 hPa (-30...+70 °C) • ± 1 hPa (-10...+60 °C)

Sensor shelter (8141.6)

11 lamellas, natural ventilation of the sensors

Data logger met[LOG]

Ethernet: 10/100 BaseT • connector RJ45 shielded
Interface: 3 x RS 485 (1 x freely configurable)
Input: 4 analogue/ digital inputs (2 x freely configurable)

Power supply power[cube]

Power: 150 W
Output: 24 VDC

Mast · tube diameter: 60 mm · length: 1200 mm · with mounting material

Applications:

- industry
- wastewater treatment plant, water management
- building automation
- agriculture ...
- highly accurate meteorology optional with weighing precipitation sensor rain[e]

For applications demanding higher precision we recommend our weighing precipitation sensor

rain[e]

The unique self-emptying collecting system of the rain[e] allows single drop measurement at the high resolution of 0.001 mm/m².

Tel +49 (0) 551 4958 0 www.lambrecht.net
E-mail info@lambrecht.net

Weather station ENGINEER

LAMBRECHT meteo

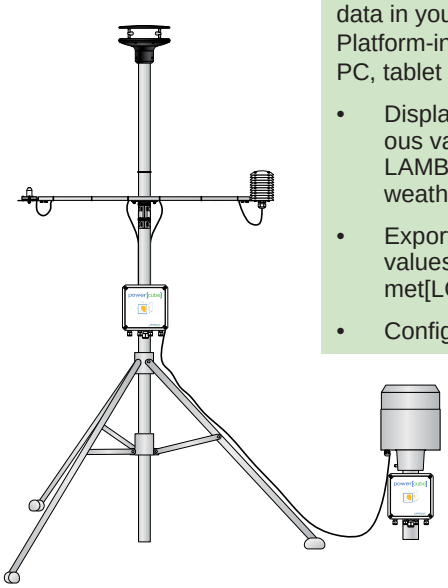
These high-quality sensors combined with high-performance communication technology guarantee in addition to reliable and precise measurement data unrestricted availability of the measured environmental parameters.

- ✓ visualisation of your data via integrated met[APP] in your web browser
- ✓ no additional software needed
- ✓ robust, high-quality materials assure longevity and precision on highest level
- ✓ simple and quick installation via plug & play

met[APP]

met[APP] · Our browser app which is integrated in the met[LOG] · for easy visualisation of the current weather data in your network. Platform-independent on your PC, tablet or smartphone.

- Displays the instantaneous values of your LAMBRECHT meteo weather station
- Exports the measured values stored by the met[LOG]
- Configures the met[LOG]

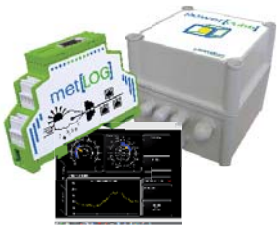


Ultrasound sensor u[sonic]
for wind speed and direction · sea-water resistant sensor, perfectly heated · easy installation and maintainance-free

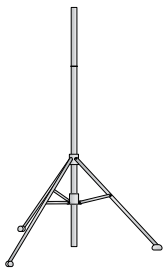
Precipitation sensor 15189
Weather proven all-metal housing · precise tipping bucket bearing · reliable long-term operation

Temperature/humidity/pressure sensor 8095
Proven environmental measurement technology · sensor shelter, optional artificial ventilation

Pyranometer 16106
Silicon pyranometer · easy alignment using the integrated circular level



Data logger met[LOG]
Plug & play · visualisation in web browser · alarm generation with hysteresis or window function; alarm output via 4 digital outputs, 8 logically connectable warning channels
power[cube]: all-weather-resistant power pack · rounds off the station regarding power supply and communication.
MeteoWare-CS (option)
Professional software for data visualisation, storage and export



Mast system
Modular mast system with sensor adapters and clamps ·
for meteorological sensors

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E-mail info@lambrecht.net

Weather station ENGINEER

Your advantages

- LAMBRECHT meteo environmental measurement stations are completely preconfigured.
- Easy installation, and the wiring needs minimal effort.
- Sensors are extraordinary precise, robust and durable.
- Data storage lasts for a whole year.
- Minimal maintenance costs due to best product quality
- Continuous data transfer via Ethernet protects against data lost.
- Evaluation software and cable are included in scope of delivery.

Technical data

Operating temp. range:	-20...+70 °C
Supply:	90...264 VAC
Power rating:	2 x 156 W
Output power supply:	24 VDC

Weather station ENGINEER (Id-No. 30.00851.200 000)

consisting of:

Ultrasonic wind sensor u[sonic]

Wind direction	Meas. range: 0...359.9° · Accuracy: < 2° (> 1 m/s) RMSE
Wind speed	Meas. range: 0...75 m/s Accuracy: ± 0.2 m/s RMSE (v < 10 m/s); ± 2 % RMSE (10 m/s < v < 65 m/s)

Precipitation sensor ECO, 2 cm³ (15189)

Meas. range: 0...8 mm/min • Resolution: 0.1 mm
Accuracy: ± 2 % with intensity correction

Temp./humidity/air pressure sensor THP (8095)

Temperature	Meas. range: -40...+70 °C Accuracy: ± 0.3 °C at (v > 2 m/s) • ± 0.4 °C (10...40 °C) • ± 0.8 °C (-10...70 °C)
Relative humidity	Meas. range: 0...100 % r. h. Accuracy: ± 3 % (10...90 %) r. h. • ± 4 % (0...100 %) r. h.
Barometric pressure	Meas. range: 500...1100 hPa Accuracy: ± 2 hPa (-30...+70 °C) • ± 1 hPa (-10...+60 °C)

Sensor shelter (8141.6)

11 lamellas, natural ventilation of the sensors

Pyranometer (16106) Meas. range: 0...1400 W/m²

Data logger met[LOG]

Ethernet: 10/100 BaseT • connector RJ45 shielded
Interface: 3 x RS 485 (1 x freely configurable)
Input: 4 analogue/ digital inputs (2 x freely configurable)

2 x Power supply power[cube]

Power: each 150 W
Output: 24 VDC

Tripod mast, height 3 m, aluminium-made, with mounting material

Applications:

- hydrology
- building technology
- power plants
- industry ...
- for highly accurate meteorology optional with precipitation sensor rain[e]

For applications demanding higher precision we recommend our weighing precipitation sensor

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Weather station EXPERT

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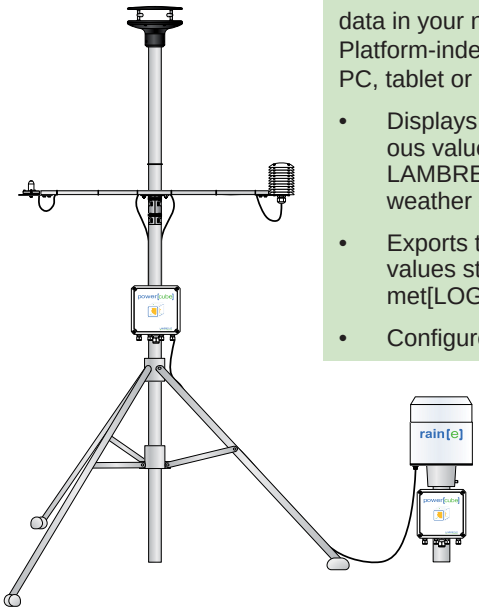


Ultrasound sensor u[sonic]
for wind speed and direction · sea-water resistant sensor, perfectly heated · easy installation and maintainance-free

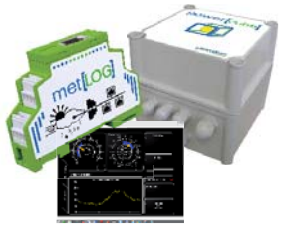
Precipitation sensor rain[e]
Latest weighing technology combined with a self-emptying collecting system · amazing resolution and accuracy · compact and robust construction with a very low weight · weatherproof and durable

Temp./humidity sensor 8093.11
Proven environmental measurement technology · sensor shelter, optional artificial ventilation

Pyranometer 16103.5
easy to mount and install · adjustment with ball levelling mechanism

Air pressure sensor module
integrated in power[cube]

Data logger met[LOG]
Plug & play · visualisation in web browser · alarm generation with hysteresis or window function; alarm output via 4 digital outputs, 8 logically connectable warning channels



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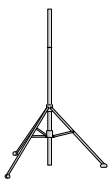
MeteoWare-CS (option)
Professional software for data visualisation, storage and export



Mast system
Modular mast system with sensor adapters and clamps · for meteorological sensors

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Technical data

Operating temp. range:	-30...+70 °C
Supply:	90...264 VAC
Power rating:	2 x 156 W
Output power supply:	24 VDC

Applications:

- professional meteorology
- hydrology
- Weather services
- severe weather warning
- high-precision measurements

Weather station EXPERT (Id-No. 30.00851.100 000)

consisting of:

Ultrasonic wind sensor u[sonic]

Wind direction	Meas. range: 0...359.9° · Accuracy: < 2° (> 1 m/s) RMSE
Wind speed	Meas. range: 0...75 m/s Accuracy: ± 0.2 m/s RMSE (v < 10 m/s); ± 2 % RMSE (10 m/s < v < 65 m/s)

Precipitation sensor rain[e]

Meas. range: 0…20 mm/min resp. 0…1200 mm/h
Resolution: 0.001 mm/min resp. 0.001 mm/h
Accuracy: ± 0.1 mm/min resp. ± 6 mm/h

Temperature/humidity sensor (8093.11)

Temperature	Meas. range: -40...+60 °C Accuracy: ± 0.2 °C at -27...+60 °C Plus: ± 0.007 °C/ °C at < +10 °C and > +40 °C
Relative humidity	Meas. range: 0...100 % r. h. Accuracy: ± 2 % r. h. at 5...95 % r. h. • +10...+40 °C Plus: < 0.1 % r. h./ °C at < +10 °C and > +40 °C

Sensor shelter (8141.6)

11 lamellas, natural ventilation of the sensors

Pyranometer (16103.5)

Meas. range: 0...1600 W/m²

Air pressure sensor module (63.06010.090 100)

Meas. range: 600...1100 hPa
Accuray acc. to international standards (NIST): ± 0.5 hPa

Data logger met[LOG]

Ethernet: 10/100 BaseT • connector RJ45 shielded
Interface: 3 x RS 485 (1 x freely configurable)
Input: 4 analogue/ digital inputs (2 x freely configurable)

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Power: each 150 W
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Tripod mast, height 3 m, aluminium-made, with mounting material

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