

The Perfect Weather Sensor

- For industrial use as well as under extreme environmental conditions
- **5+1 (+1) parameters in one** and at the same time
 - ▷ Wind direction
 - ▷ Wind speed
 - ▷ Air temperature
 - ▷ Air humidity
 - ▷ Barometric pressure
 - ▷ + Dew point temperature (calculated value)
- With independent, integrated sensors for high accuracies of each individual parameter
- Without movable measuring elements, i. e. no abrasion, low maintenance and very easy to service

Applications

- Land applications under any conditions
- Wind turbines
- Railway line monitoring
- Traffic meteorology
- Chemical and industrial facilities
- Power plants, sewage plants and landfills

Advantages at a Glance

- Extreme robust, compact weather sensors in the high-quality, pollutant-resistant housing made of anodized aluminium
- Lamella shelter for accurate measurements of the temperature-humidity sensors
- Static-thermal measuring principle for wind parameters with permanent air density compensation for wear-free, reliable measurements
- Standard RS-485 interface with ESD protection
- Modbus-RTU
- Power supply 24 VDC with integrated overvoltage protection
- Simple, space-saving assembly on 50 mm standard pipe



Content

| | |
|-------|--|
| 1 | Introduction |
| 1.1 | Warranty Advices |
| 1.2 | Advantages of the Static Measuring Principle |
| 2 | Setting to Work |
| 2.1 | Installation Conditions |
| 2.1.1 | Generally |
| 2.2 | Tools and Installation Aids |
| 2.3 | Unpacking the Sensor |
| 2.4 | Goods Inspection |
| 2.5 | Power Supply |
| 2.5.1 | Power Input |
| 2.5.2 | Protection |
| 2.6 | Installation Procedure (Short Instruction) |
| 2.7 | Mounting |
| 2.7.1 | North Alignment of Wind Sensor |
| 2.7.2 | Power and Signal Connection |
| 2.7.3 | Safety Regulations |
| 3 | Maintenance |
| 3.1 | Regular Maintenance and Calibration |
| 3.2 | Visual Check and Cleaning |
| 4 | Transports |
| 5 | Dimensional Drawings and Electrical Connections |
| 6 | Modbus Protocol |
| 6.1 | Data Encoding |
| 6.2 | Device Address |
| 6.3 | Standard Configuration - Default |
| 6.4 | Modbus Command Set |
| 6.5 | Measured Value and Parameter Register |
| 7 | Holding Register |
| 7.1 | Sensor Parameters / Configuration Parameters |
| 7.2 | Register Mask for Autoconfiguration - Mapping Register |
| 8 | Autoconfiguration |
| 9 | Mapping Register EOLOS-IND Modbus |
| 10 | Technical Data |

1 Introduction

The sensors of the EOLOS family are very robust, compact and extremely reliable. When developing these sensors particular consideration has been given to highest quality for fulfilment of meteorological requirements.

The sensors embody the experience of more than 150 years of development and production of LAMBRECHT wind sensors. The system acquires the horizontal air flow and processes the measuring data to the meteorological parameters wind speed and wind direction. Furthermore the weather-module of the EOLOS-IND acquires the meteorological parameters air temperature, relative humidity and barometric pressure. The EOLOS-IND uses the measured data to calculate the dew point temperature and makes it available together with the measured values.

The sensors and further system components are mounted in a splash water- and dust proof metal housing.

Due to their shock- and vibration proof construction the sensor EOLOS-IND is particularly qualified for use under severe environmental conditions. The housing is made of anodised seawater resistant aluminium.

1.1 Warranty Advices

Please note the loss of warranty and non-liability by unauthorised manipulation of the system. You need a written permission of the LAMBRECHT meteo GmbH for changes of system components. These activities must be operated by a qualified technician.

The warranty does not cover:

1. Mechanical damages caused by external impacts (e. g. icefall, rockfall, vandalism).
2. Impacts or damages caused by over-voltages or electromagnetic fields which are beyond the standards and specifications in the technical data.
3. Damages caused by improper handling, e. g. by wrong tools, incorrect installation, incorrect electrical installation (false polarity) etc.
4. Damages which are caused by using the device beyond the specified operation conditions.

1.2 Advantages of the Static Measuring Principle

The sensor EOLOS-IND is a modern system to carry out precise and reliable measurements under hardest application and environmental conditions. The wind measurements take place according to the principle „TAV“ (thermal aura field variation), i. e. static, without moving parts.

Static measuring principle for wind measurements means:

- Determination of data works without moving measuring elements, i.e. none abrasion, least maintenance and none recalibration because of this method.
- Lightweight mass and immovable measuring elements to enable very low starting values, distance- and attenuation constants as well as a very high repetition accuracy.

- The sensor can be installed rapidly. Due to the special measuring principle minor changes from the angle of pitch can be disregarded.

Advantages of the sensor:

- Apart from the sensors for wind speed and direction the compact housing also contains built-in sensors for air temperature, relative humidity and barometric pressure.
- The compact design of this sensor with 5 meteorological parameters is eliminating the traditional cabling and installation work significantly. Distribution boxes, power supply units and other accessories can be reduced to a minimum expense.

2 Setting to Work

Wind can be represented by a vector quantity. For a complete description of the wind it is necessary to specify its speed and direction. The two components are subject to spatial and temporal variations; thus, strictly speaking, they are valid only for the site where the measuring instrument is installed. We therefore recommend selecting the place of installation very carefully.

2.1 Installation Conditions

2.1.1 Generally

For professional wind measurements according to meteorological standards (e. g. VDI 3786, Part 2) location and height of the wind sensor are important for representative and accurate results. Generally, wind measuring instruments should not measure the specific wind conditions of a limited area, but indicate the typical wind conditions of a wider area. To obtain results which are representative for a wider area and comparable to values measured at different places, the sensor must not be mounted under the lee of higher obstacles.

The distance to any obstacle should be at least 10 times the obstacle's height (corresponding to the definition of an undisturbed area). In general a measuring height of 10 m above ground is regarded ideal. If an undisturbed terrain of this kind does not exist the sensor have to be put up at an height of at least 6 m above the obstacle height.

If the above mentioned requirements are not feasible e. g. on mobile measurements at vehicles or at measuring containers compromises have to be found and documented.

If the sensor must be installed on a roof top the place of installation must be in the middle of the roof to avoid predominant wind directions. If you want to measure both wind direction and wind speed, it is recommended to mount both sensors at the same spot, where any interaction between the sensors should be avoided. The sensor EOLOS-IND easily meets this requirement.



The place of installation should not be in the operation fields of radar devices (radar scanners or radar transmitters), generators or antennas. We recommend a minimum distance of 2 m to these installations. Furthermore a minimum distance of 5 m to MF-/ HF- and Satcom- (e. g. Inmarsat, VSat) antennas has to be kept. The maximum electric field intensity may not exceed 10 V/m (tested according to EMC standard). When indicated a greater distance should be kept.

To avoid possible measurement errors due to heat sources as hot or warm fumes, hot surfaces etc. next to the sensor, the mounting site should be chosen accordingly.

2.2 Tools and Installation Aids

There are no special tools or materials required for the installation works. All work can be carried out with standard tools available in a regular workshop.

2.3 Unpacking the Sensor

The sensor is packed in a separate box, carefully protected against mechanical influences during transport.

Please verify that the following parts and documents are enclosed:

- 1 sensor EOLOS-IND Modbus
- 1 operating manual

Accessories: (depending on order size, in all cases separately packed)

Connecting cable with plug and core cable ends

2.4 Goods Inspection

Please thoroughly check the delivery with regard to completeness and eventual transport damages. In case of eventual claims please contact us in writing immediately.

2.5 Power Supply

The sensor requires at the input connector a 24 VDC nominal power source for operation.

2.5.1 Power Input

The power input of the EOLOS reaches its peak in the start-up period (activation phase). The maximum of the power input is 2.5 A. In normal operation the average power input is significantly lower (see table). The power input mainly depends on the flow rate.

| Wind speed | Ø Power input |
|--|---------------|
| 0 m/s | 500 mA |
| 5 m/s | 650 mA |
| 20 m/s | 900 mA |
| 38 m/s | 1100 mA |
| Measured at supply voltage of 24 VDC and 20 °C | |

2.5.2 Protection

Generally it is not necessary to protect the secondary side (24 VDC) of the EOLOS. Normally only the primary side has to be protected. Nevertheless if the supply should be protected especially we recommend using a micro-fuse 3.15 A - medium time-lag.

2.6 Installation Procedure (Short Instruction)

The installation of the sensor involves 3 steps:

- (1) Mounting the cable at the sensor and if necessary draw the cable through the mast.
- (2) Mounting the sensor at the mast, but before tightening the screws you must align the sensor to the north.
- (3) Attaching the cable to the power supply and the signal acquisition system.

2.7 Mounting

The sensor can be installed on a standard pipe with an outer diameter of 50 mm and an inner diameter of maximum 40 mm. Before tightening the two 8 mm socket screws and attaching the sensor you have to draw the cable through the pipe and align the sensor into driving direction.

For this purpose the housing is marked accordingly (see drawing). Before the screws of the sensor are tightened, the sensor is adjusted to north. Please pay attention to a firm mounting of the sensor at the mast!

In addition the sensor has a pin for the north direction. You can put this pin into the nick at the mast (if available). If needed you can turn in or unscrew the pin by means of allen key.

2.7.1 North Alignment of Wind Sensor

For wind direction measurements the north mark on the sensor must be aligned with the geographical north direction.

To adjust the wind sensor in a firm and correct manner into the north direction this item is equipped with an integrated mounting aid. Inside the inner bottom of the sensor a small bolt



pointing to the north is integrated to be set into a corresponding slot of the mounting pipe (if available). Thus the sensor is safely attached. If needed you can turn in or unscrew the pin by means of allen key.



To set up the sensor's north orientation select a landmark which is as far as possible up north with regard to the final position of the wind direction sensor.

The reference point can be selected using a topographical map (1:25000). The exact position of the reference point is determined using an amplitude compass that can be adjusted horizontally on a stand.



Compass declination has to be considered!

To align the sensor ahead (on ships) locate a point outside the ship in the landscape which is located in the ship ahead direction respectively in the centre line or in case of the sensor is mounted far away from the middle line a line parallel to the centre line.

Once the sensor is adjusted, it can be fixed with the two hexagonal screws. Finally the earth screw has to be connected to the ship's ground. Acid-free contact grease is recommended to protect contact surfaces against corrosion.



Follow all safety instructions while setting up the sensor onto a mast.

2.7.2 Power and Signal Connection

A 4-pin/ M12 cable socket is required for the electrical connection of the sensor. The shielding of the cable has to be connected to the protective conductor



To reduce the risk of inductive interference the sensor must be properly grounded (screening on both sides).

The external connection is via central connector which is located in housing base. For further details about electrical connection please see chapter „Connecting diagrams“.

If the sensor is mounted in correct manner and connected with the right cable (accessory), you can attach the wires to power supply and signal outputs to data acquisition equipment (computer).

The typical power supply requirements of the EOLOS-IND sensor are 24 VDC with a maximum current drain of 2.5 A. The input range is max. 18... 32 VDC.

The output signal of the sensor corresponds to the RS-485 standard. The signal levels allow transmission via shielded signal cables up to a maximum length of 1,200 meters or 4,000 feet. The cable lengths depend on the quality of the cables used.

When the power supply of the sensor is switched on, after 30 seconds (in order to reach operating temperature) the sensor cyclically starts sending data protocols.

2.7.3 Safety Regulations



Because the wind sensor often is mounted on exposed locations in dangerous heights the installation personnel has to pay attention to the relevant safety regulations for such works. During the electrical installation and termination works the external circuit-breaker must be switched off.

It is not permitted to open those housings by unauthorised persons!

3 Maintenance

3.1 Regular Maintenance and Calibration

The sensor EOLOS-IND is service reduced and designed for a very long lifetime. Recommended is a regular visual check regarding dirt of surface caused by the weather and if so, to clean up.



If reference measurements should be necessary stringently must be noted that a comparability of the measured values is given only if the measurements take place under same conditions. I.e. the reference equipment must be used very close to the sensor!

The sensor is a measuring instrument and thus apply user specific standards regarding period of recalibration.

Recommendation: 2 years.

We recommend to have the filter cap of the humidity-temperature sensor every two years exchanged in our plant. Depending on the application shorter maintenance cycles could be necessary.

3.2 Visual Check and Cleaning

The use of the sensor under the respective environmental conditions requires certain steps. It is thus recommendable to clean the outside of the housing and shelter within specific intervals. The intervals are dependant on the environmental conditions and the degree of soiling. We recommend a regular sight and functional check.

In case you should be faced with any specific problems please contact the LAMBRECHT meteo service under:

Tel.: +49-(0)551-4958-0

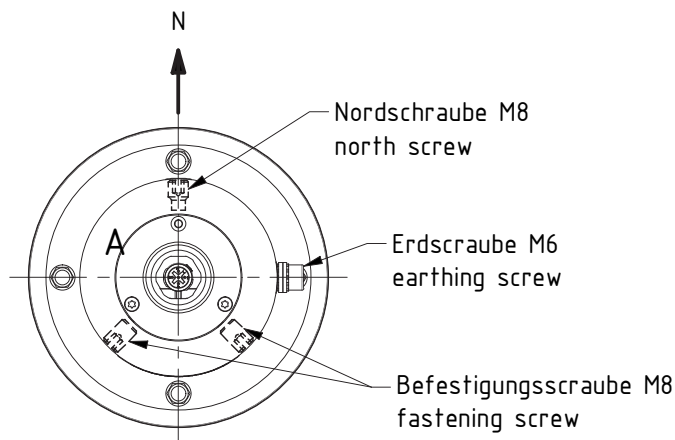
Fax: +49-(0)551-4958-327

E-Mail: support@lambrecht.net

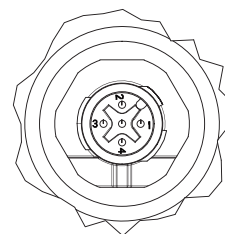
4 Transports

In case it is necessary to ship or to transport the sensor must be carefully packed to prevent damages during transport.

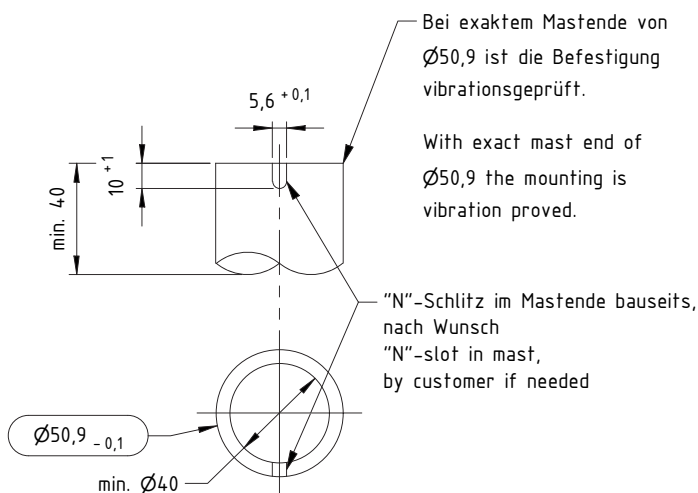
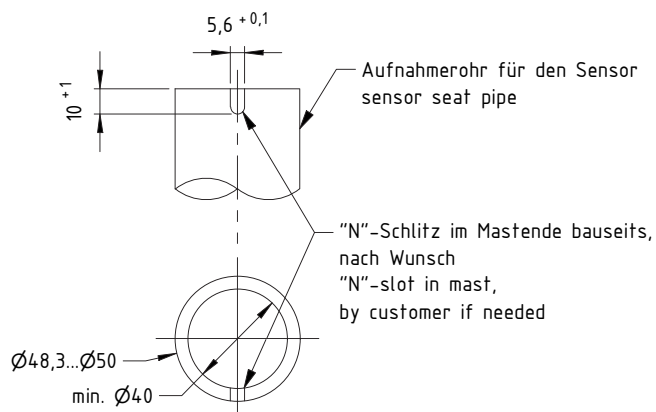
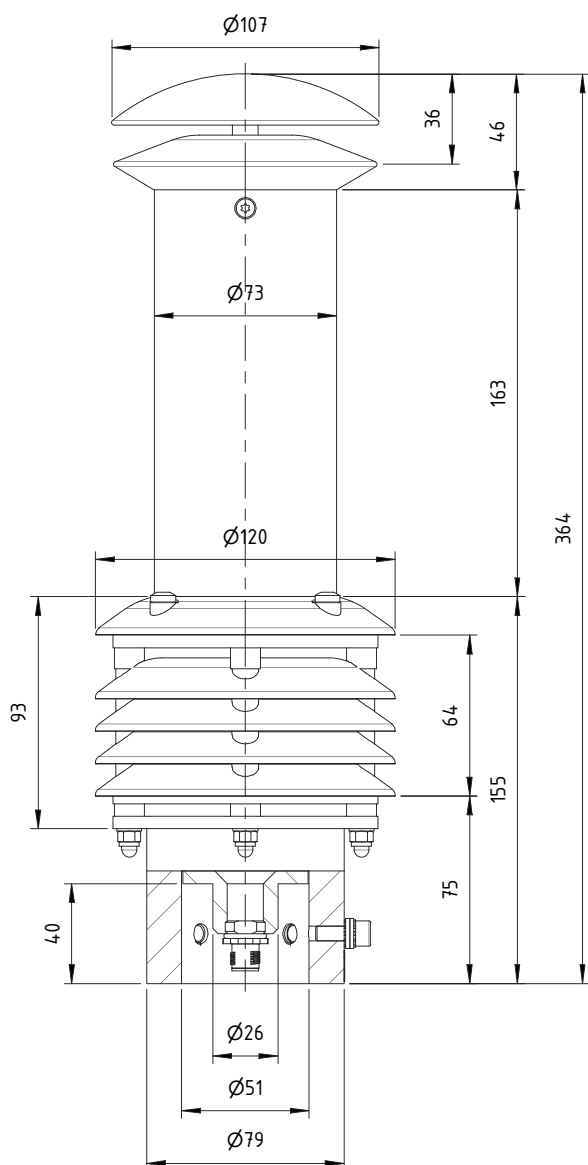
5 Dimensional Drawings and Electrical Connections

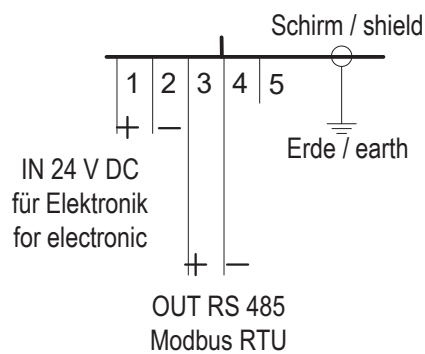
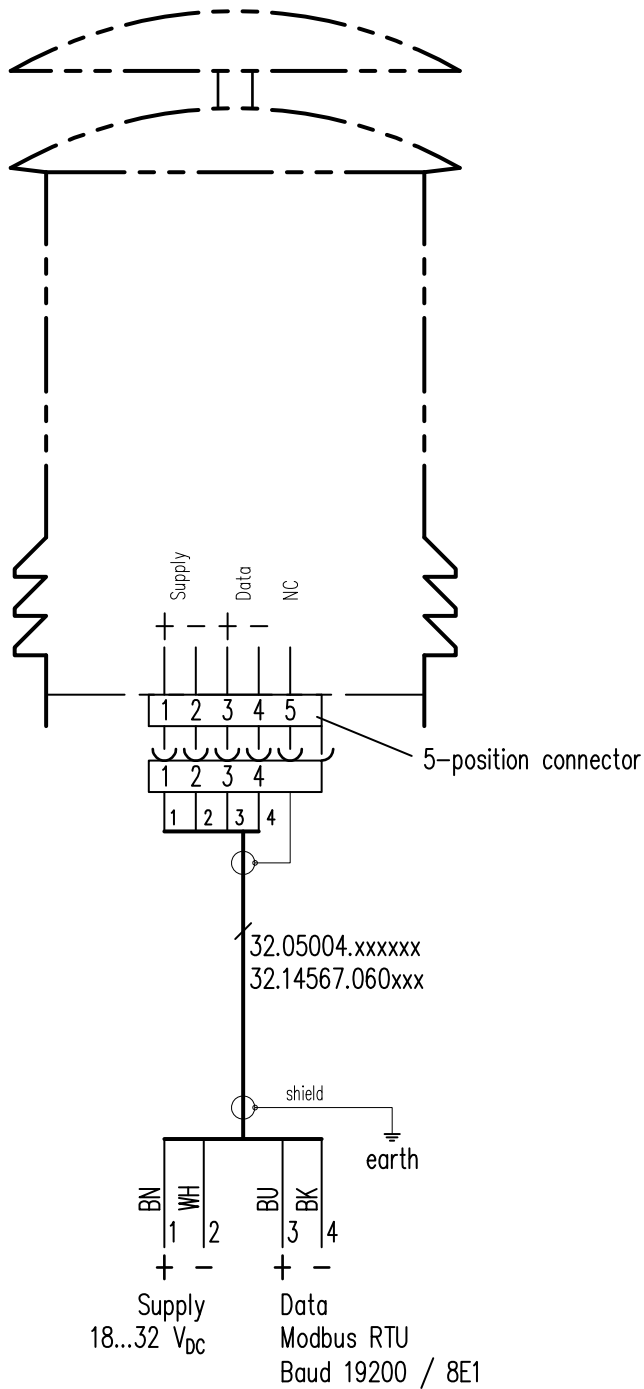


A (1 : 1)



Ansicht Steckerseite
view male side





| PIN | color | Farbe |
|-----|-------|-------|
| 1 | br | br |
| 2 | wt | ws |
| 3 | bl | bl |
| 4 | bk | sw |
| 5 | N/A | N/A |



6 Modbus Protocol

The Lambrecht meteo Modbus sensors and the met[LOG] follow the specification of the Modbus organization: "MODBUS APPLICATION PROTOCOL SPECIFICATION V1.1b3" (see www.modbus.org).

6.1 Data Encoding

MODBUS uses the „big-endian“ format for addresses and data. This means that if a value is transmitted with a number format that is larger than a single byte, the „most significant byte“ is sent first. For values that go beyond one register (e.g. 32 bit) this is not clearly specified for the Modbus. In these cases (32 bit or 64 bit) the LAMBRECHT Modbus sensors follow the big-endian number format.

Example Big-Endian:

Register size value

16 - bits 0x1234 is transmitted in the order: 0x12 0x34.

Example big-endian (32 bit or 64 bit):

Register size value

32 - bits 0x12345678 is transmitted in the order: 0x12 0x34 0x56 0x78.

6.2 Device Address

The addresses 1...247 are permitted for Modbus.

6.3 Standard Configuration - Default

Baud rate: 19200 Baud

Address: Each sensor type (or family) has its own default address.

Default addresses of the LAMBRECHT sensors:

| Address | Sensor |
|---------|---|
| 1 | Wind speed |
| 2 | Wind direction |
| 3 | Precipitation rain[e] |
| 4 | THP |
| 5 | EOLOS IND |
| 6 | com[b] |
| 7 | PREOS |
| 8 | ARCO |
| 9 | u[sonic] |
| 10 | Pyranometer 2nd Class |
| 11 | Secondary standard Pyranometer |
| 12 | PT100 to Modbus converter (temperature) |

Byte frame according to MODBUS standard for RTU mode:

8E1 (1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit)

6.4 Modbus Command Set

The LAMBRECHT Modbus sensors support the following commands:

- Read Input Register" command: **0x04** (measured data)
- Write Multiple Register" command: **0x10** (Write sensor data)



6.5 Measured Value and Parameter Register

The register range 30001 to 35000 of the Lambrecht sensors is intended for measured values.

The following measured values are provided by the EOLOS sensor.

| Register address | Parameter Name | Unit | Factor | Description | |
|------------------|---|--------|--------|-----------------|-----|
| 30001 | Wind speed instantaneous value | m/s | 10 | 1 decimal place | INT |
| 30002 | Wind speed mean value since last retrieval | m/s | 10 | 1 decimal place | INT |
| 30003 | Wind speed maximum value | m/s | 10 | 1 decimal place | INT |
| 30004 | Wind speed minimum value | m/s | 10 | 1 decimal place | INT |
| 30201 | Wind direction instantaneous value | ° | 10 | 1 decimal place | INT |
| 30202 | Wind direction mean value since last retrieval | ° | 10 | 1 decimal place | INT |
| 30203 | Wind direction maximum value | ° | 10 | 1 decimal place | INT |
| 30204 | Wind direction minimum value | | 10 | 1 decimal place | INT |
| 30401 | Air temperature instantaneous value | °C | 10 | 1 decimal place | INT |
| 30402 | Air temperature mean value since last retrieval | °C | 10 | 1 decimal place | INT |
| 30403 | Air temperature maximum value | °C | 10 | 1 decimal place | INT |
| 30404 | Air temperature minimum value | °C | 10 | 1 decimal place | INT |
| 30601 | Humidity instantaneous value | % r.h. | 10 | 1 decimal place | INT |
| 30602 | Humidity mean value since last retrieval | % r.h. | 10 | 1 decimal place | INT |
| 30603 | Humidity maximum value | % r.h. | 10 | 1 decimal place | INT |
| 30604 | Humidity minimum value | % r.h. | 10 | 1 decimal place | INT |
| 30701 | Dew point instantaneous value | °C | 10 | 1 decimal place | INT |
| 30702 | Dew point mean value since last retrieval | °C | 10 | 1 decimal place | INT |
| 30703 | Dew point maximum value | °C | 10 | 1 decimal place | INT |
| 30704 | Dew point minimum value | °C | 10 | 1 decimal place | INT |
| 30801 | Air pressure instantaneous value | hPa | 10 | 1 decimal place | INT |
| 30802 | Air pressure mean value since last retrieval | hPa | 10 | 1 decimal place | INT |
| 30803 | Air pressure maximum value | hPa | 10 | 1 decimal place | INT |
| 30804 | Air pressure minimum value | hPa | 10 | 1 decimal place | INT |

The registers addresses 30001 to 35000 apply to all LAMBRECHT meteo Modbus sensors, but are only available or valid if the respective sensor supports the corresponding values. (e.g. a pure wind sensor does not provide any air humidity).

As error code or invalid value the LAMBRECHT sensors return 0xD8F1 (0xFF676981).

Note: For each measurement type, the values from the registers with the maximum values (3XXX3) and minimum values (3XXX4) are automatically reset as soon as the register with the mean values (3XXX2) has been read out. For example, reading 30402 resets registers 30403 and 30404.



7 Holding Register

Register address 40001 to 49000

Register addresses 40001 to 46000 contain the configuration parameters of the sensor.

Register address 46001-49000 Contain the available registers for each sensor with measured values and sensor data from the range 30001-35000.

7.1 Sensor Parameters / Configuration Parameters

| Register address | Parameter name | Unit | Divisor | Description | |
|------------------|-----------------------------|------|---------|--|-----|
| 40001 | Modbus device address | | 1 | The addresses 1...247 are allowed. | |
| 40200 | Baud rate | | 0,01 | 96=9600 192=19200 384=38400 | |
| 46000 | Number of mapping registers | | | Contains the number of occupied mapping registers for autoconfiguration, with EOLOS-IND = 40 | INT |

7.2 Register Mask for Autoconfiguration - Mapping Register

Register address 46001-49000. Contains the available registers for each sensor with measured values and sensor data from the range 30001-35000.

The registers can only be read out as a block! The length of the block or the number of available mapping registers can be found in holding register 46000.

E.g. at the Modbus-Pro-WG there are valid addresses in registers 46001 to 46004. Holding register 46000 contains the number of registers 4. All 4 registers must be read out in the block with command 0x04. Too many registers or too few lead to an error message.

8 Autoconfiguration

The Modbus sensors from LAMBRECHT meteo offer the possibility of autoconfiguration. This is supported e.g. by the data logger met[LOG]. For autoconfiguration, the register addresses of the measured values and sensor data available in the register range 30001 to 35000 are listed as consecutive values in the register range 46001 to 49000 in the LAMBRECHT sensors. Registers 46001 to 49000 can only be read out as blocks! The length of the block or the number of available mapping registers can be found in holding register 46000.

Since the addresses from the range 30001 to 35000 are valid for all LAMBRECHT sensors, an address from this range is also representative of a measured value type.

E.g. register 30401 always contains the instantaneous value of the air temperature. If this register address is not contained in the list in register range 46001 to 49000, the connected Modbus sensor does not supply an air temperature.

If the autoconfiguration is started with the data logger met[LOG], it queries the existing mapping registers on each COM interface in the device address range 1...25. For this purpose, the number of mapping registers is read from register 46000 and the register range from 46001 is read as a block.

The following table contains the assignment of the configuration to the individual (possible) instantaneous value registers of the sensors. Some sensors supply registers with mean, minimum and maximum values or additional values in addition to this specification. Unknown register addresses (or registers that are not required) must therefore be ignored during autoconfiguration.



| Register address | Parameter name | Unit | Factor | Description | Data type | Function-code | Storage-type >16 bit |
|------------------|---|------------------|--------|--|-----------|---------------|----------------------|
| 30001 | Wind speed instantaneous value | m/s | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 30201 | Wind direction instantaneous value | ° | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 30401 | Air temperature instantaneous value | °C | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 30601 | Humidity instantaneous value | % r.F. | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 30701 | Dew point instantaneous value | °C | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 30801 | Air pressure instantaneous value | hPa | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 31001 | Precipitation amount total | mm | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 31101 | Precipitation amount total (High-WORD) | mm | 1000 | 3 decimal places | LONG | 0x04 | Big-Endian WORD |
| 31102 | Precipitation amount total (Low-WORD) | | | 3 decimal places Registers 31101 + 31102 can only be read out together. (function code 0x04) | | 0x04 | Big-Endian WORD |
| 31201 | Precipitation intensity 1-minute sliding | mm/min | 1000 | = average (1-min.) 3 decimal places Time base = 1 min. Meas. rate = 6x per min. | INT | 0x04 | Big-Endian WORD |
| 31401 | Global radiation instantaneous value | W/m ² | 10 | 1 decimal place | INT | 0x04 | Big-Endian WORD |
| 31501 | Global radiation instantaneous values (High-WORD) (temperature compensated) | W/m ² | 100 | 2 decimal places Registers 31501 + 31502 can only be read out together. (function code 0x04) | LONG | 0x04 | Big-Endian WORD |
| 31502 | Global radiation instantaneous values (Low-WORD) (temperature compensated) | | | | | 0x04 | Big-Endian WORD |
| 31591 | Global radiation instantaneous values (High-WORD) (uncompensated) | W/m ² | 100 | 2 decimal places Registers 31591 + 31592 can only be read out together. (function code 0x04) | LONG | 0x04 | Big-Endian WORD |
| 31592 | Global radiation instantaneous values (Low-WORD) (uncompensated) | | | | | 0x04 | Big-Endian WORD |

9 Mapping Register EOLOS-IND Modbus

| Register address | Register value | Unit | Factor | Description | |
|------------------|----------------|------------------|--------|---|-----|
| 46001 | 30001 | Register address | 1 | Wind speed instantaneous value | INT |
| 46002 | 30002 | Register address | 1 | Wind speed mean value since last retrieval | INT |
| 46003 | 30003 | Register address | 1 | Wind speed maximum value | INT |
| 46004 | 30004 | Register address | 1 | Wind speed minimum value | INT |
| 46005 | 30201 | Register address | 1 | Wind direction instantaneous value | INT |
| 46006 | 30202 | Register address | 1 | Wind direction mean value since last retrieval | INT |
| 46007 | 30203 | Register address | 1 | Wind direction maximum value | INT |
| 46008 | 30204 | Register address | 1 | Wind direction minimum value | INT |
| 46009 | 30401 | Register address | 1 | Air temperature instantaneous value | INT |
| 46010 | 30402 | Register address | 1 | Air temperature mean value since last retrieval | INT |
| 46011 | 30403 | Register address | 1 | Air temperature maximum value | INT |
| 46012 | 30404 | Register address | 1 | Air temperature minimum value | INT |
| 46013 | 30601 | Register address | 1 | Humidity instantaneous value | INT |
| 46014 | 30602 | Register address | 1 | Humidity mean value since last retrieval | INT |
| 46015 | 30603 | Register address | 1 | Humidity maximum value | INT |
| 46016 | 30604 | Register address | 1 | Humidity minimum value | INT |
| 46017 | 30701 | Register address | 1 | Dew point instantaneous value | INT |
| 46018 | 30702 | Register address | 1 | Dew point mean value since last retrieval | INT |
| 46019 | 30703 | Register address | 1 | Dew point maximum value | INT |
| 46020 | 30703 | Register address | 1 | Dew point minimum value | INT |
| 46021 | 30801 | Register address | 1 | Air pressure instantaneous value | INT |
| 46022 | 30802 | Register address | 1 | Air pressure mean value since last retrieval | INT |
| 46023 | 30803 | Register address | 1 | Air pressure maximum value | INT |
| 46024 | 30804 | Register address | 1 | Air pressure minimum value | INT |
| 46025 | 33560 | Register address | 1 | Abs. humidity instantaneous value | INT |
| 46026 | 33561 | Register address | 1 | Abs. humidity mean value since last retrieval | INT |
| 46027 | 33562 | Register address | 1 | Abs. humidity maximum value | INT |
| 46028 | 33563 | Register address | 1 | Abs. humidity minimum value | INT |
| 46029 | 33580 | Register address | 1 | QFE instantaneous value | INT |
| 46030 | 33581 | Register address | 1 | QFE mean value since last retrieval | INT |
| 46031 | 33582 | Register address | 1 | QFE maximum value | INT |
| 46032 | 33583 | Register address | 1 | QFE minimum value | INT |
| 46033 | 33584 | Register address | 1 | QNH instantaneous value | INT |
| 46034 | 33585 | Register address | 1 | QNH mean value since last retrieval | INT |
| 46035 | 33586 | Register address | 1 | QNH maximum value | INT |
| 46036 | 33587 | Register address | 1 | QNH minimum value | INT |
| 46037 | 33588 | Register address | 1 | QFF instantaneous value | INT |
| 46038 | 33589 | Register address | 1 | QFF mean value since last retrieval | INT |
| 46039 | 33590 | Register address | 1 | QFF maximum value | INT |
| 46040 | 33591 | Register address | 1 | QFF minimum value | INT |

Note: For each measurement type, the values from the registers with the maximum values (3XXX3) and minimum values (3XXX4) are automatically reset as soon as the register with the mean values (3XXX2) has been read out. For example, reading 30402 resets registers 30403 and 30404.



10 Technical Data

(1643) Static Weather Sensor EOLOS-IND Modbus

Id-No. 00.16430.001032

Range of application: Temperature -40...+70 °C
Wind speed 0...100 m/s
Humidity 0...100 % r.h.

Parameters:

Wind direction

Measuring range: 0...360°
Accuracy: 3° RMS
Resolution: 1°

Wind speed

Measuring range: 0.1...50 m/s
Accuracy: 0.5 m/s ± 5 % RMS of the meas. value
at 5.1...40 m/s
Resolution: 0.1 m/s

Air temperature

Measuring range: -40...+70 °C
Accuracy: ± 0.8 °C (v > 2 m/s) ¹⁾
Resolution: 0.1 °C

Relative humidity

Measuring range: 0...100 % r.h.
Accuracy: ± 3 % (10...90 %) r.h. ²⁾³⁾
± 4 % (0...100 %) r.h.
Resolution: 0.5 % r.h.

Barometric pressure

Measuring range: 600...1100 hPa
Accuracy: ± 2 hPa (-30...+70 °C)
Resolution: 0.1 hPa

Protocol: Modbus RTU
Supply voltage: 24 VDC ⁴⁾ · max. 2.5 A
Housing: Aluminium · anodized · IP 66
Dimensions: H 382 mm · Ø 120 mm · mast adapter
Ø 50 mm for mounting on standard pipe
Weight: approx. 2.5 kg
Interface: serial · RS-485 · baud rate 16200 ·
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Standards

- NMEA 0183
- Standard of construction: VDE 0100
- Low voltage guide line: 72/23 EWG
- EMC/ EMI: DIN EN 60945 and DIN EN 61000-4-2, 3, 4, 6, 11
- Salt fog: EN 60945
- Protection class: DIN EN 60529
- Vibration: BV 0240

¹⁾ Temperature influence of the shelter: accuracy +1.5 °C at v < 2 m/s and intensive solar radiation

²⁾ Temperature influence of the shelter: ± < 0.1 % r.h. at +10...+40 °C

³⁾ Shelter inaccuracy: < 4 % r.h. dependant on v > 2 m/s and solar radiation

⁴⁾ at sensor connector; when connected to a Lambrecht standard cable (15 m) the supply voltage range on the side of the power supply switches to 18.7...32 VDC. When using other cables and cable lengths the individual voltage drop has to be considered.

Accessories: (please order separately)

32.14567.060000 Sensor cable, 12 m · 4 pole

Options: (please order separately)

00.95800.010000 Data logger met[LOG]

00.95770.000000 Data logger Ser[LOG]



Quality System certified by DQS according to
DIN EN ISO 9001:2015 Reg. No. 003746 QM15

Subject to change without notice.

EOLOS-IND Modbus_b-de.indd 14.19

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