



The maximum heated¹ wind sensor PROFESSIONAL-IX 3.0

- ▶ Robust sensor for reliable measurement of wind direction and wind speed at extremely low temperatures
- ▶ Contact-free measuring principle „Magnetical Positioning Encoder System“ for wear resisting, precise acquisition of measuring data
- ▶ Highest loading capacity and longevity through special mode of bearing and special alloys
- ▶ Special blade wind vane and 3-armed cup made of dimensionally stable and break-proof aluminium
- ▶ Easy mounting principles for mast, flange or bore for high flexibility
- ▶ Heating supplied separately from sensor electronic for operation at lowest temperatures
- ▶ Integrated 125 watt-heating for optimal heating of the moving parts

Features and advantages of the PROFESSIONAL-IX 3.0

- Excellent quality plus optimal price-performance-ratio
- Low-friction acquisition of measuring data by contact-free measuring principle
- Seawater resistant surfaces for high product longevity
- Wide measuring range of 0.4...50 m/s.
- Especially low starting values 0.4 m/s.
- High resolution of the measuring data
- Maximum heated sensor for use at extremely low temperatures
- Optimized heating construction with regard to airflow
- Improved universal earthing concept

¹The heating refers to the sensor head with the 125 W-heating.



Warranty

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.

Accessories:

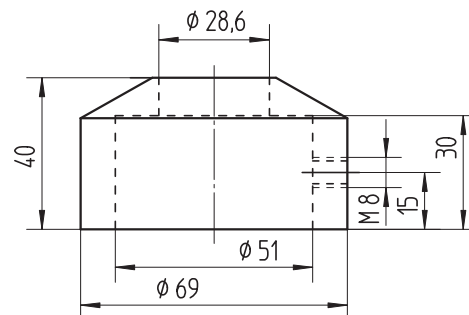
Id-No. 32.14601.060 000

15 m cable onesided with connector

Please only use this original cable, because it has reinforced core cross-sections for the heating supply!

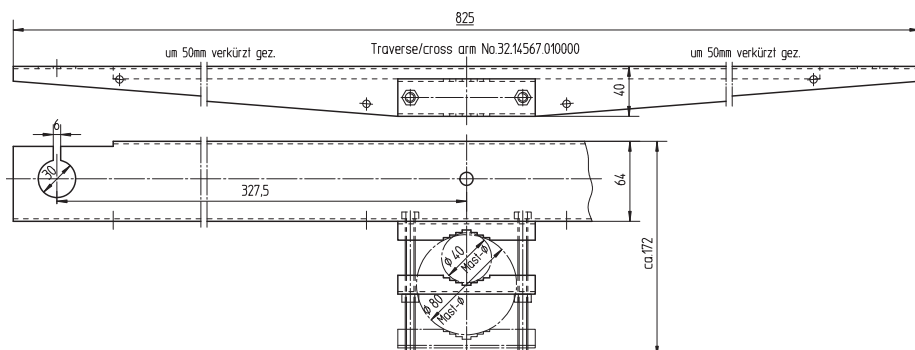
Id-No. 32.14567.006 000

Mast adapter



Id-No. 32.14567.010 000

Traverse





1 Introduction

PROFESSIONAL-IX is a very robust, compact and extremely reliable wind sensor. The system is specially designed for use under extremely low temperatures.

PROFESSIONAL-IX represents the experience of LAMBRECHT in development and production of wind sensors of more than 150 years.

The system acquires the horizontal air flow and processes the measured data into the meteorological parameters wind speed or wind direction.

All measuring parts and the other system components are integrated in the sealed, water-proof housing.

The PROFESSIONAL-IX wind sensor is particularly designed for use under extreme climate conditions. The 125 watt-heating of the sensor head allows the operation of the sensor within a wide temperature range of -40 to +70 °C.

2 Setting to work

The 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. Therefore, we recommend to select the place of installation very carefully.

2.1 Installation conditions

2.1.1 Generally

Generally, wind measuring instruments should not measure the specific wind conditions of a limited area, but indicate the typical wind conditions of a wider terrain. The values measured at different places must be comparable. Thus, when installing the sensor you should make sure that the place of installation is not under the lee of great obstacles. The distance between the obstacles and the sensor should be 10 times the height of the obstacles (this corresponds to the definition of an undisturbed terrain).

If an *undisturbed terrain* of this kind does not exist the sensor must be put up at a height of at least 5 m above the obstacle height. If the sensor is 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, the sensors should be installed at the same measuring point and any mutual influence of the sensors should be avoided. The sensor pair PROFESSIONAL-IX with its arrangement of sensors next to each other easily meets this requirement.



The sensor must not be installed onto transmitting plants or antennas or close to them. A minimum distance of 2 m is to be kept for interference-free signal transfer.

2.2 Tools and installation aids

There are no special tools or materials required for the installation and maintenance works. All works can be carried out with standard tools available in the specialized trade.

2.3 Unpacking the sensor

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

Please verify that the following parts and documents are enclosed:

- 1 sensor PROFESSIONAL-IX 3.0
- 1 operating manual

Accessories:

(in accordance with the order separately packed)

Connecting cable with plug

2.4 Goods inspection

Please verify in detail 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 a 24 volt nominal DC power source (20...28 V_{DC}) for operation. The heater of the PROFESSIONAL-IX has to be supplied with 24 volt DC and has a power consumption of 125 W.

2.6 Installation



Attention! The installation takes place in a dangerous height; the assembly personnel must therefore follow the safety regulations.

2.6.1 Mast or pipe mounting



Make sure the device is easily accessible so that you can set up the north direction for the wind direction sensor and perform eventual maintenance works. For access to the sensors use a ladder of the appropriate length or a telescope working platform of the appropriate height, if applicable.



Ladders or other lifting helps must be absolutely in order and must be guarantee a secure support! Follow the rules for prevention of accidents.



Masts or tubes (grounded) suitable for mounting have an outer diameter of \varnothing 48-50 mm. A mast adapter (see accessories) is necessary.

Mounting of the adapter at the wind sensor:

1. Remove both thread nuts from the sensor.
2. Insert the sensor into the bore (\varnothing 30 mm) of the adapter.
3. Fasten the sensor with the flat side of a detached nut from the lower side. Tighten with a suitable tool (wrench size 36), until a twisting safety of the sensor is given.

Mounting of the wind sensor at the mast:

1. Install the cable with plug connection inside the mast.
2. Connect the cable with the sensor and screw down the locking nut of the cable gland.
3. Put the sensor on the mast (tube). With regard to the wind direction sensor the north mark on the sensor must be aligned to the geographical north direction acc. to 2.6.4. Afterwards fasten the locking screw in the mast adapter to give the sensor a fixed and torsion-free fit.

Proceed analogously when mounting the sensor on a tube traverse.

2.6.2 Mounting on traverse with slotted bore hole

At each end of the traverse (Id-No. 32.14567.010 000) there are slotted bores with a diameter of 30 mm.

1. Remove the lower nut from the sensor.
2. Put a sensor with assembled cable sidewise into the bore.
3. Fasten the sensor with the flat side of the detached nut from the lower side. Tighten with a suitable tool (wrench size 36), until a twisting safety of the sensor is given.

2.6.3 Mounting on traverse with 30 mm-bore hole

Material thickness for installation of the sensor between the nuts may be max. 10 mm. Mounting is to be made in the following steps:

1. Remove the lower thread nut from the sensor.
2. The sensor has to be inserted into the bore and fastened by the opposite side with the loose nut (removed as under 1.). With regard to the wind direction sensor the north mark on the sensor must be aligned to the geographical north direction acc. to 2.6.4 before finally fastening the nut.

2.6.4 North alignment of wind vane

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

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.

You have to turn the wind vane's marking exactly over the marking at the sensor shaft. When you have aligned the marks, you may fix the wind vane with e.g. a piece of adhesive tape. When you have fixed the wind vane you can locate the reference point by aiming at it over the axis. Now you must turn the sensor casing on the mounting tube until the tip of the wind vane points to the reference point in the north.

This requires that the sensor is easily turnable on the mounting part. The sensor has to be fixed in this position.



Forceful turning of the mounted sensor can damage the instrument!

After alignment the adhesive tape has to be removed.



For precise north alignment compass declination have to be considered!



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

2.6.5 Earthing

To improve the operating security in lightning-prone areas we suggest an additional earthing of the sensors via the integrated earthing screw of the PROFESSIONAL-IX 3.0.

The following illustration shows the steps of installation of an earthing connection with a cable clip and earthing screws onto the sensor.

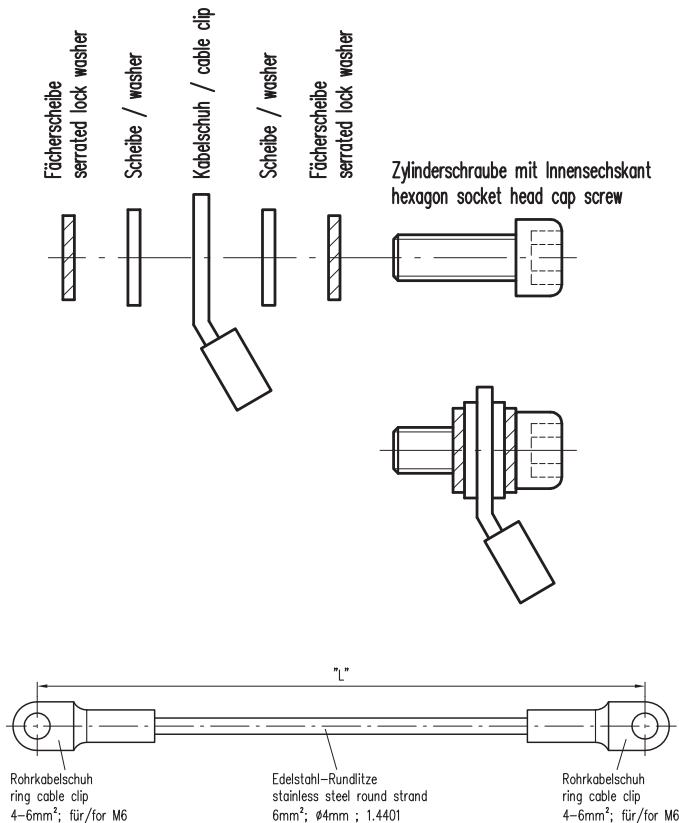


Figure: Example of an earthing cable

2.6.6 Power and signal connection

The PROFESSIONAL-IX sensors dispose of separate connections for the heating supply and for the supply and signal transmission of the sensor.

2.6.7 Connection of sensor electronic

PROFESSIONAL-IX sensors will be connected to a data measuring system via the open cable end (see chapter 5).

The connecting cable is suitably installed along the mast between the data evaluation device (indicating instrument or data acquisition system) and the sensor. The cable must be secured using appropriate cable ties (length depends on the mast diameter).

The cable routing should be arranged in accordance with the installation site. Make sure that the cable is secured by suitable cable binders.

For further details about the electrical connection of the sensor please see paragraph „Dimensional drawings and electrical connections“.



Lead the cable in a wide curve from the mast to the bottom of the casing so that you can later easily dismount the cable.

Please make sure the cable is protected from humidity on the side of the data processing system resp. the power supply. Generally, cable sockets that use a rubber joint to prevent humidity from penetrating into the terminal box of the data processing system provide sufficient protection.



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

2.6.8 Safety instructions



As the sensor is often mounted at considerable heights, the appropriate safety instructions need to be observed in the course of mounting. During electrical installation works the respective AC/DC must be switched off.

Please note that the sensor head can be very hot!

The housing must not be opened by unauthorized personnel!

3 Maintenance

The sensor design permits long periods of maintenance-free operation.

We recommend a regular visual verification and functional test of the wind sensors.

In case of specific problems or difficulties do not hesitate to contact our LAMBRECHT service under:

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

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

E-Mail: support@lambrecht.net

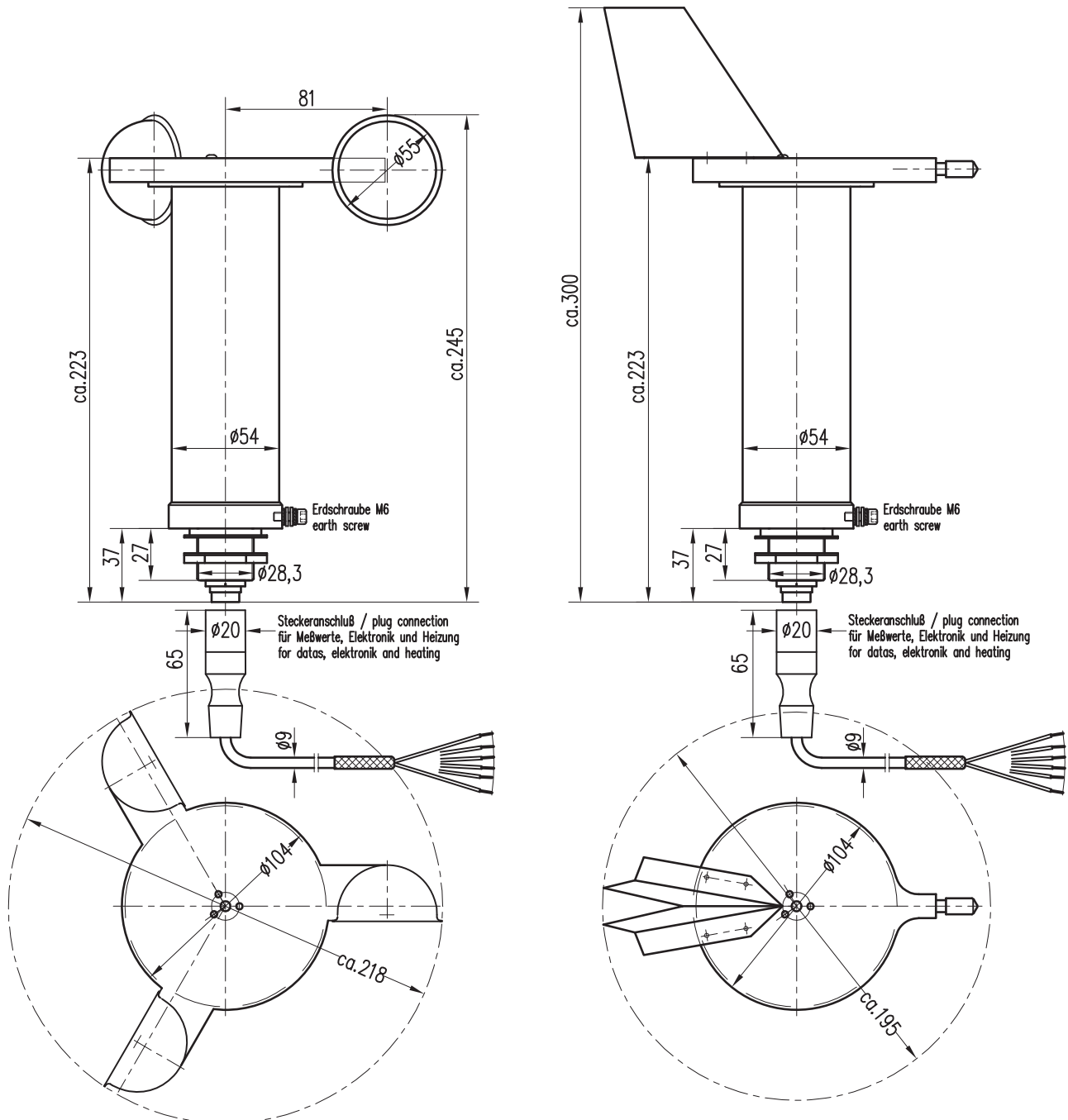
For the long-term assurance of the function and accuracy of the proposed components, we are pleased to offer you our professional maintenance and calibration services.

4 Transports

In case it is necessary to ship or to transport the sensor, the instrument must be carefully packed to prevent mechanical influences or other damages. It is recommended to use the original packing.

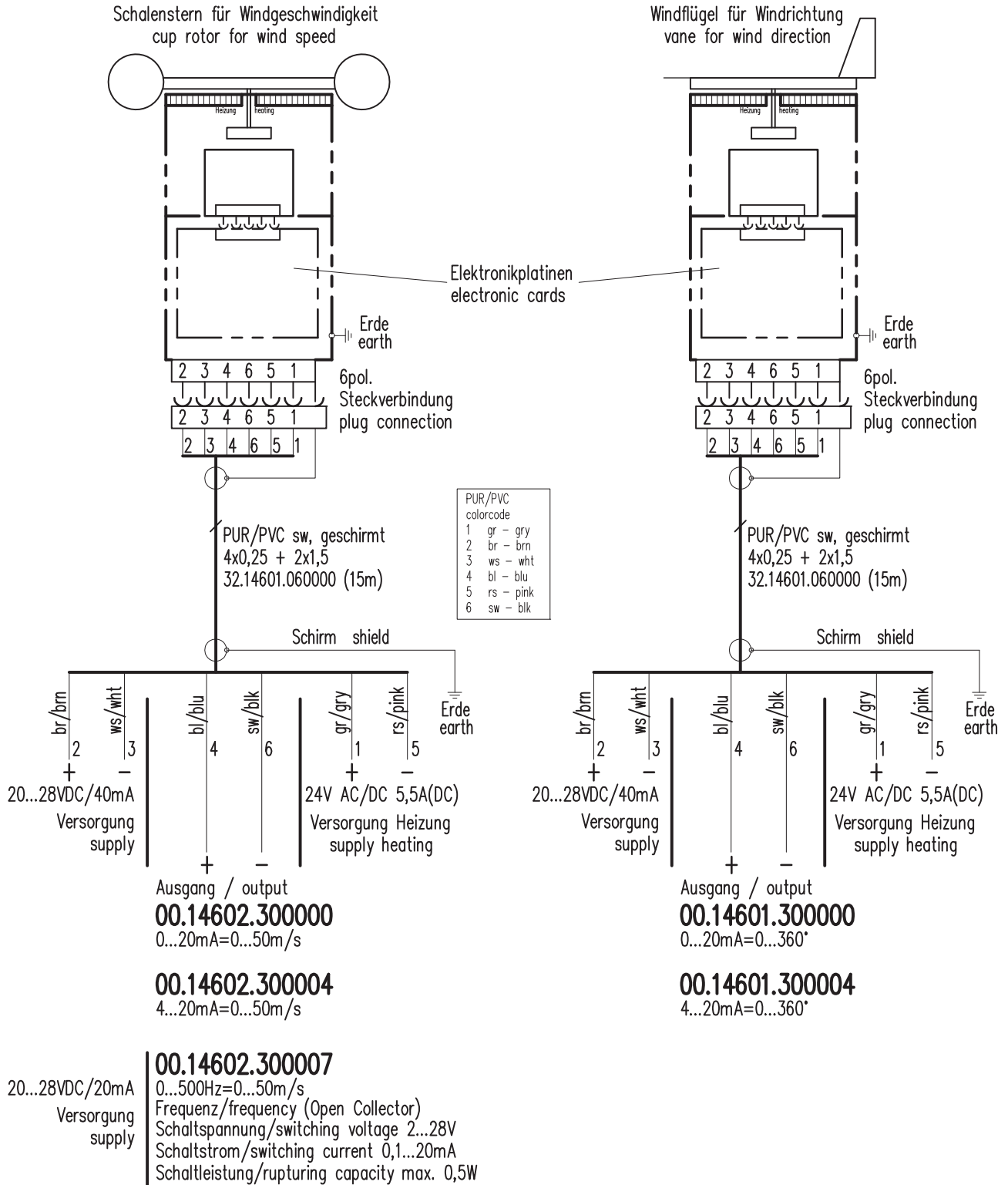


5 Dimensional drawings and electrical connections





Electrical connections





6 Technical data

Maximum heated wind sensor PROFESSIONAL-IX 3.0
14601 and 14602

Measuring principle: contact-free • "Hall Sensor Array"

Range of application: temperature -40...+70 °C maximum
heated • wind speed 0...60 m/s •
humidity 0...100 % r. h.

Supply voltage: sensor 24 V_{DC} • (20...28 V_{DC}) • heating
24 V_{DC}, 125 W

Housing: seawater resistant aluminium • especially
anodized • IP65 in upright position

Dimensions: see dimensional drawings

Weight: 0.8 kg

Parameter wind direction (sensor)

Parameter: wind direction in °

Measuring element: wind vane • inherently • aluminium •
special surface

Measuring range: 0...360°

Accuracy: ± 1°

Resolution: < 1°

Starting value: 0.4 m/s

Output:

Id-No. 00.14601.300 000 0...20 mA = 0...360°

Id-No. 00.14601.300 004 4...20 mA = 0...360°

Id-No. 00.14601.300 004 0...10 V = 360 degr.

Parameter wind speed (sensor)

Parameter: wind speed in m/s

Measuring element: 3-armed cup • aluminium • special sur-
face

Measuring range: 0.4...50 m/s

Accuracy: ± 2 % FS at 0.4...50 m/s

Resolution: < 0.1 m/s

Starting value: 0.4 m/s

Output:

Id-No. 00.14602.300 000
0...20 mA = 0-50 m/s

Id-No. 00.14602.300 004
4...20 mA = 0-50 m/s

Id-No. 00.14602.300 007
frequency • 0...500 Hz = 0...50 m/s



At the current outputs (0/4...20 mA) a load of max.
600 Ω must not be exceeded.



Quality System certified by DQS according to
DIN EN ISO 9001:2008 Reg.No. 003748 QM08

Subject to change without notice.

1460x_3.0_b-de.indd 31.16

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