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Warranty

Please note the loss of warranty and non-liability by unauthorised manipulation of the system. You need a written permission from 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.



1.4 Message string WIMWV at 2455-NMEA

Wind direction and wind speed

Example of data sequence with comma separated

fields: \$WIMWV,357.0,R,5.2,M,A*CS<CR><LF>

field delimiter: , (comma)

header: \$WIMWV

wind direction: 0.0 to 360.0

R: relative wind direction

wind speed: 0.4 to 60.0

M: metric units m/s

status A (valid) / V (not valid)

stop delimiters: <CR> <LF>

error code: WD 999.9

error code: WS 999.9

Important! Please note:

Field length

The development of a NMEA decoder should not be proceeded from firm field lengths. The NMEA definition proceeds from a variable field length. The comma character (",") serves as field disconnecting switch. Numeric values in a field can be presented differently. In case a field is not sent, it has a length of 0 characters (,,) [comma-comma].

Check sum

The check sum "CS" is covered to two ASCII characters hexadecimal value. "CS" calculated by XOR operation of each character in the sentence between "\$" and "*", but excluding "\$" and "*".

Error code

In case, that the sensor cannot generate a measuring value because e.g. a sensor element is defect or implausible (raw) values are collected the sensor outputs in the corresponding data protocol the above mentioned error code (e.g. 999.9) and sets the status from "A" (valid) to "V" (not valid).

Example: \$WIMWV,999.9,R,999.9,M,V*37<CR><LF>

Particular characteristics wind direction value

Theoretically the value for the wind direction can take any value between 0.0° and 360.0°. It should be noted, that in a full circle the values "0.0" and "360.0" are describing the same direction. According to the international valid recommendations of the WMO (World Meteorological Organization) in the "Guide to Meteorological Instruments and Methods of Observation" (WMO-No.8) the wind direction value 0.0° just has to be output at calm. The sensor follows the recommendation of the WMO and outputs at wind from the north the value "360.0" respectively "0.0" at calm (lull).

Norms:

Emission

EN 60945:2002

CISPR 16-1 :1999 Part 1

Immunity

EN 60945:2002

includes:

EN 61000-4-6:1996 Injected RF currents

EN 61000-4-3:2002 Radiated RF fields

EN 61000-4-4:1995 Burst

EN 61000-4-2:1995 ESD

EN 61000-4-5:1995 Surge

EN 61000-4-11:1994 Voltage variations

2 Setting into operation

2.1 Unpacking

When removing the sensor from the original cardbox, take care not to damage the cup rotor and the wind vane.

The measuring elements must not be used as a handle.

2.2 Choice of the installation place

For representative wind measuring the sensor should not be installed under the lee of large obstacles. The distance between obstacle and sensor should be at least 10 times the height of the obstacle. Furthermore the sensor should be at least 5 meter higher than the height of the obstacle.

For operation on ships you should select a mounting place with little interferences of obstacles such as masts, antennas, and chimneys. In most cases the users mount the sensor on a crossarm on the ship's highest mast.

2.3 Mounting

After inserting the plug connector into the socket at the bottom of the sensor shaft, the sensor is mounted on a fitting tube with an outer diameter of 75 mm and an inner diameter at least 65 mm. If a traverse is supplied for the sensor then the fitting tube is a part of the traverse. Before the screws of the sensor are tightened, the sensor is adjusted to north.

In order to install the wind sensor fast and correct regarding the north-adjustment 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. Therefore the mast piece

has to be designed with a corresponding slot as illustrated in the dimensional drawing.

Alternatively the correct north setting can be carried out by searching a point outside the vessel in the landscape which is located in the ship ahead direction respectively in the bow-stern line or a parallel line in case of the sensor is mounted far away from the middle line. The sensor finally can be fastened by means of the two hexagonal screws when the selected point in the outer terrain is in the view-finder (groove) of the sensor which is located on the top of its housing. Finally the earth screw has to be connected to the ship's ground. An acid-free contact grease is recommended to protect contact surfaces against corrosion.



Obey all safety instructions while setting up the sensor onto a mast!

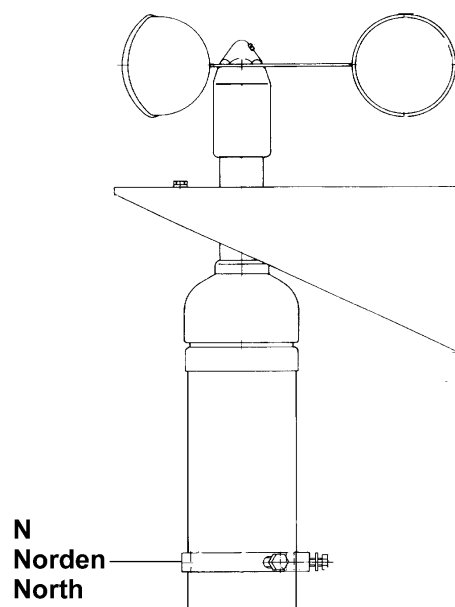
2.4 Electrical connection

The cable is connected to the sensor by means of a splash-proof plug connection in the shaft of the sensor. Before mounting the sensor on the fitting tube, the cable with the plug connector has to be passed through the tube.

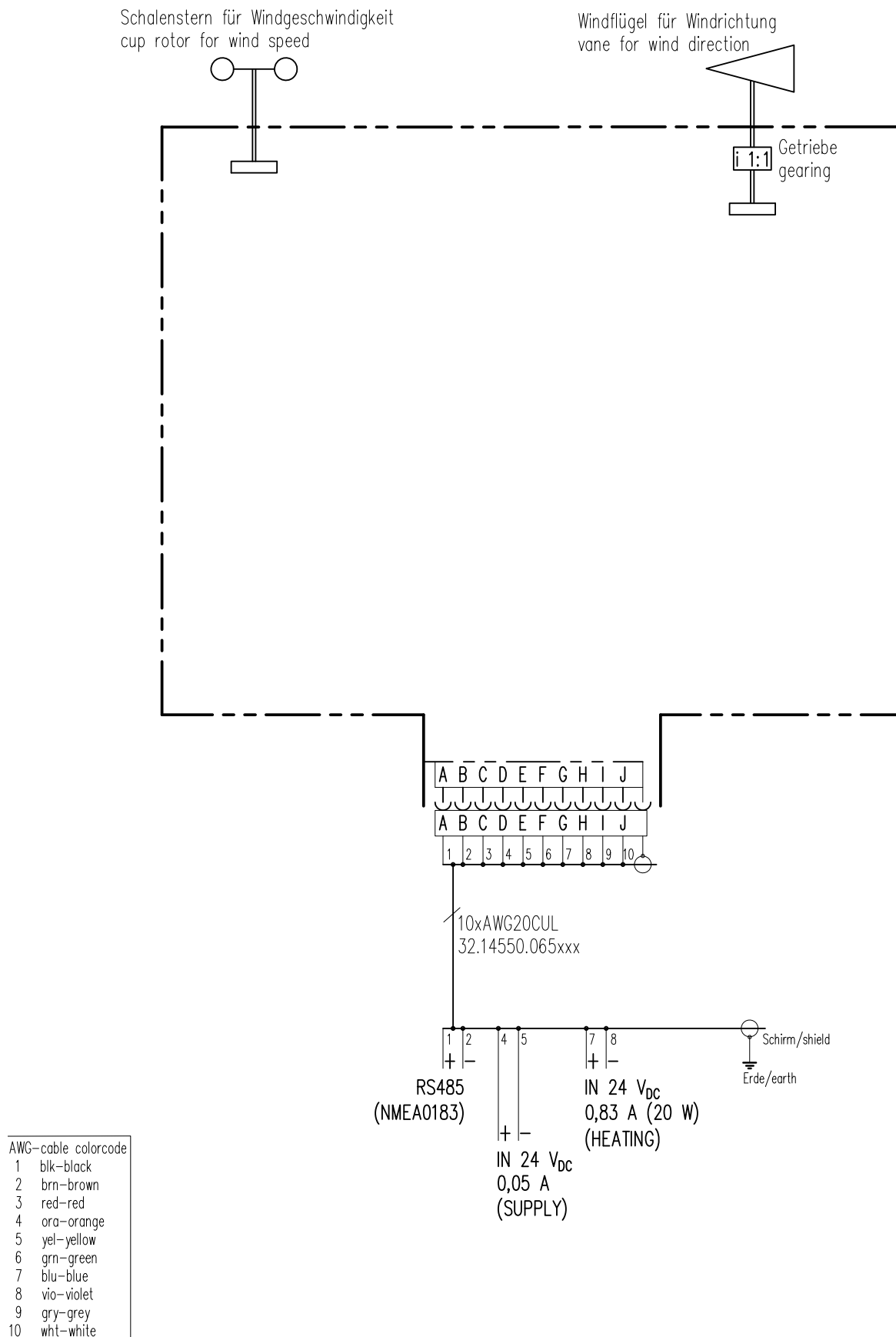
The electrical connection can be found in the wiring diagram



Wrong connection may cause a destruction of this or other connected components.



Wiring diagram





2.5 Cable entries

Type of cable: LiYCY 10*0,75 mm²

or: 10*AWG 20 CUL sw

After finishing the installation the earthing screw must be connected to the ship's ground. It should be protected against corrosion using a special acid-free contact grease.

For this purpose the sensor must be held in a horizontal position (90° shifted from the position during normal operation).

If the balancing is correct, the vane will be stable in every position. The adjustment can be made with the weight at the end opposite to the vane. It can be moved after loosening the threaded pin.

Please make sure that all screws are fixed before mounting the sensor on the mast again.

2.6 Setting into operation

After having finished the electrical and mechanical installation work of this item as mentioned in this manual and other related instructions the wiring should be checked once again before switching on the mains for the whole measuring system. As the main interface system of the device will start all functions and routines automatically by means of a micro-controller circuit no further operating handling is required.

2.7 Performance check

When the system installation is completed a simple performance check as mentioned here can be carried out:

- To check the sensor for wind direction the wind vane is set in the directions NORTH-EAST-SOUTH-WEST and fixed in these positions for a while. Accordingly to this directions the following values must be displayed: N or 0° (360°), E or 90°, S or 180°, W or 270°.

If the display does not correspond to the actual positions of the wind vane, the sensor must be aligned again and the cable connections checked.

- When stopping the cup rotor carefully by hand at its axis, the displays must indicate a value of 0 knots (m/s).

3 Service and maintenance

3.1 Regular maintenance

Replacement of outer spare parts

As the wind transmitter is working under harsh conditions it may be necessary that the following spare parts have to be replaced:

Cup rotor: After bending away the washer, the hexagonal screw can be loosened with a wrench size SW 27. The faulty cup rotor can be removed together with the washer.

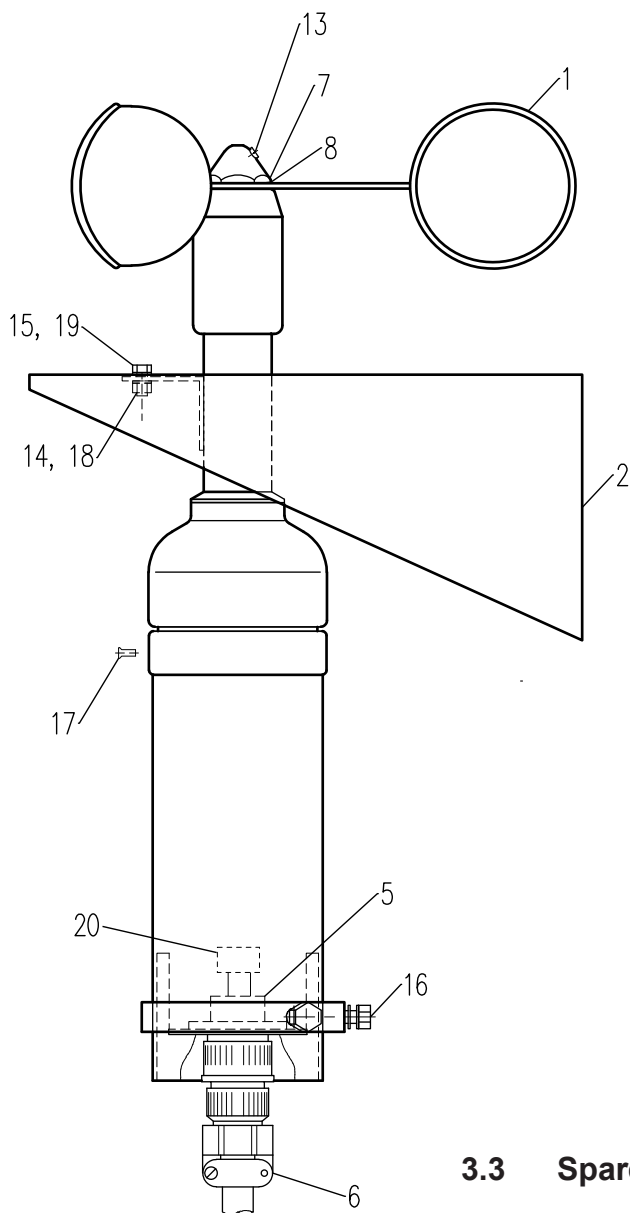
The new cup rotor is mounted so that the concave sides of the cups are always on the right side and the cup rotor always rotates to the left.

After replacement of a cup rotor it will always be necessary to use a new washer in order to fix the rotor safely. New balancing will not be required.

Wind vane: The wind vane blades can be removed after loosening the three screws of each blade.

After the mounting the new parts the wind vane has to be balanced.

3.2 Spare parts drawing



3.3 Spare parts list

No.	Description	Ident-No.	Qty
1	Cup rotor	32.14676.003000	1
2	Wind vane	32.14550.006000	1
5	Flange socket	65.53040.020000	1
6	Cable plug	65.53040.010000	1
7	Cap	33.14676.015000	1
8	Locking plate	33.14676.017000	1
13	Screw M3x4 DIN 84	35.00842.418201	1
14	Washer 5.3 DIN 125	35.01251.500531	1
15	Screw M5x16 DIN 933	35.09331.530500	1
16	Screw M8x20 DIN 933	35.09331.540300	1
17	Screw M3x6 DIN 963	35.09631.518400	1
18	Nut M5 DIN 985	35.09851.500500	1
19	DUBO screw lock M5	69.12010.030000	1
20	Thermostat	68.45010.050000	1



3.4 Repair procedures

The fault tracing and service work only should be carried out by skilled mountaineers having passed a factory training at our facilities or a similar event.

All spares of the sensor mentioned here can not be repaired and have to be disposed appropriately according to the local instructions of the waste management. For all other repairs which can not be carried out by own staff the sensor has to be returned to our works .

The full shipping address of our company is mentioned in this operating instructions.

3.5 Ordering of spares

In case of spares as mentioned here are required are required for replacements or to be put on stock the following information are required to forward the right spare parts to the customer:

- name of item and type number
- ordering number/parts number
- required quantity
- related component or name of higher assembly
- type of vessel and country of origin
- reference number of Lambrecht's wiring diagram (marked by bold letters SKF or SWF, followed by 3 or 4 numbers)

A detailed inquiry containing these information will be appreciated by us for the safe identification of the required item(s) and to prevent wrong deliveries. Above mentioned data can be obtained from the designation label and from the spares list of this system component.

4 Setting out of operation

4.1 Storage

The wind sensor (2455-NMEA) is to be stored in a clean storage room with temperatures between -40 and 60°C (not condensing) in the original cardbox or a similar packing.

4.2 Dispatching

We recommend using the original carton or similar packaging for shipping. To prevent transport damage, the wind vane and the cup rotor must be protected.

4.3 Remarks

This operating instruction describes the standard design as well as possible options. The respective performance will be stated in the specification and/or the commercial documents of the contract.

Our products are subject to continuous developments. Technical alterations for the technical progress are reserved.



6 Technical data

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 Baud rate 4800 · 1 Hz (at measuring cycle 4 Hz) · 8 N 1	
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	
<u>Accessory:</u>		
(please order separately)		
32.14550.065040	Sensor cable · 4 m · 10-pole plug	
32.14550.065100	Sensor cable · 10 m · 10-pole plug	
32.14550.065150	Sensor cable · 15 m · 10-pole plug	
	(other lengths possible)	
<u>Options:</u>		
36.09340.000000	Visualization and evaluation software MeteoWare-CS3	
00.95800.010000	Data logger met[LOG]	
00.14742.301002	Display unit METEO-LCD/NAV	



Quality System certified by DQS according to
DIN EN ISO 9001:2015 Reg. No. 003748 QM15

Subject to change without notice.

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