

## Instruction for Use

021482/02/06

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# ***Wind Direction Transmitter - compact***

- GMR, serial-synchron output -  
**4.3129.60.xx0**



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## **1 Models available**

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<b>Order-No.</b>	<b>Meas. range</b>	<b>Elect. output</b>	<b>Heating cap.</b>	<b>Connection</b>
4.3129.60.000	0 ... 360°	8 bit serial	20 W	12 m cable LiYCY 6 x 0,25 mm <sup>2</sup>
4.3129.60.150	0 ... 360°	8 bit serial	20 W	15 m cable LiYCY 6 x 0,25 mm <sup>2</sup>

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## 2 Application

The wind direction transmitter is designed for the acquisition of the horizontal wind direction. The measuring values are output as electrical digital signals, for ex. for processing or storing.

For winter operation the instruments are equipped with an electronically regulated heating in order to guarantee a smooth running of the ball bearings, and to avoid ice-formation at the slot of the outer rotation parts. The electrical supply of wind transmitter heating is carried out, for ex., by our power supply unit, order-no. 9.3388.00.000.

## 3 Construction and Mode of Operation

The outer parts of the instrument are made of corrosion-resistant material ( aluminum, stainless steel, plastic ). The aluminum parts are additionally protected by means of an anodic coat. Labyrinth sealing protects sensitive parts inside the instrument against humidity.

The wind direction is detected by a low-inertia wind vane. The axis of the wind vane is running in ball bearings and carries a diametrically magnetized magnet at the inner end. The angle position of the axis is scanned contact-free by a magnetic angle sensor, which gives two sinus- and cosines-dependent voltages as output signals.

From this, a micro-controller calculates the wind direction in 144 sectors (2.5° / sector).

The wind direction **North = 0 degree** is related to the sector (step). The sector 143 corresponds to the wind direction **357.5 degree**.

Step x 2.5°	Bit 0 / Track A	Bit 1 / Track B	Bit 2 / Track C	Bit 3 / Track D	Bit 4 / Track E	Bit 5 / Track F	Bit 6 / Track G	Bit 7 / Track H	Step x 2.5°	Bit 0 / Track A	Bit 1 / Track B	Bit 2 / Track C	Bit 3 / Track D	Bit 4 / Track E	Bit 5 / Track F	Bit 6 / Track G	Bit 7 / Track H	Step x 2.5°	Bit 0 / Track A	Bit 1 / Track B	Bit 2 / Track C	Bit 3 / Track D	Bit 4 / Track E	Bit 5 / Track F	Bit 6 / Track G	Bit 7 / Track H	
0									36									72									108
1									37									73									109
2									38									74									110
3									39									75									111
4									40									76									112
5									41									77									113
6									42									78									114
7									43									79									115
8									44									80									116
9									45									81									117
10									46									82									118
11									47									83									119
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26									62									98									134
27									63									99									135
28									64									100									136
29									65									101									137
30									66									102									138
31									67									103									139
32									68									104									140
33									69									105									141
34									70									106									142
35									71									107									143

Figure 1: Thies Code table for 8 bit serial synchronous

## 4 Recommendation Side Selection / Standard Installation

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In general wind measurement instruments should be able to detect the wind conditions of a large area. In order to obtain comparable values when determining the surface wind, measurements should be taken at a height of 10 meters over an even unobstructed area. An unobstructed area means that the distance between the wind transmitter and an obstacle should be at least 10 times the height of the obstacle ( s. VDI 3786 ). If it is not possible to fulfil this condition, then the wind transmitter should be set up a height where local obstacles do not influence the measured values to any significant extent (approx. 6-10 m above the obstacle).

The wind transmitter should be set up in the centre of flat roofs and not on the roof side in order to avoid bias in the direction (privileged directions).

## 5 Installation

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### **Attention:**

***Storing, mounting and operation under weather conditions is permissible only in vertical position, as otherwise water can get into the instrument.***

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### **Remark:**

*When using fastening adapters (angle, traverses, hangers etc.) please take a possible effect by turbulences into consideration.*

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### 5.1 Mechanical Mounting

The mounting of the transmitter could be done for example at a traverse with a boring of PG 21 or on hangers with a boring of 29 mm  $\varnothing$ . (for ex. traverse *compact*, order-no. 4.3171.30.000). The connection cable or connecting plug is passed through the boring, and the wind direction transmitter is fixed with hexagonal nut (SW36) after the north alignment.

#### **North Alignment**

Rotate the case markings (north marking) on the shaft and on the protective cap until they are aligned. Then select an obvious point in a northerly direction in the surroundings ( a tree, a building etc.) with the aid of a compass. Take a bearing on this point over the wind vane and the counter weight of the wind direction transmitter, and when these coincide screw the wind transmitter into place. (the north marking must indicate to the geographic north).

### 5.2 Electrical Mounting

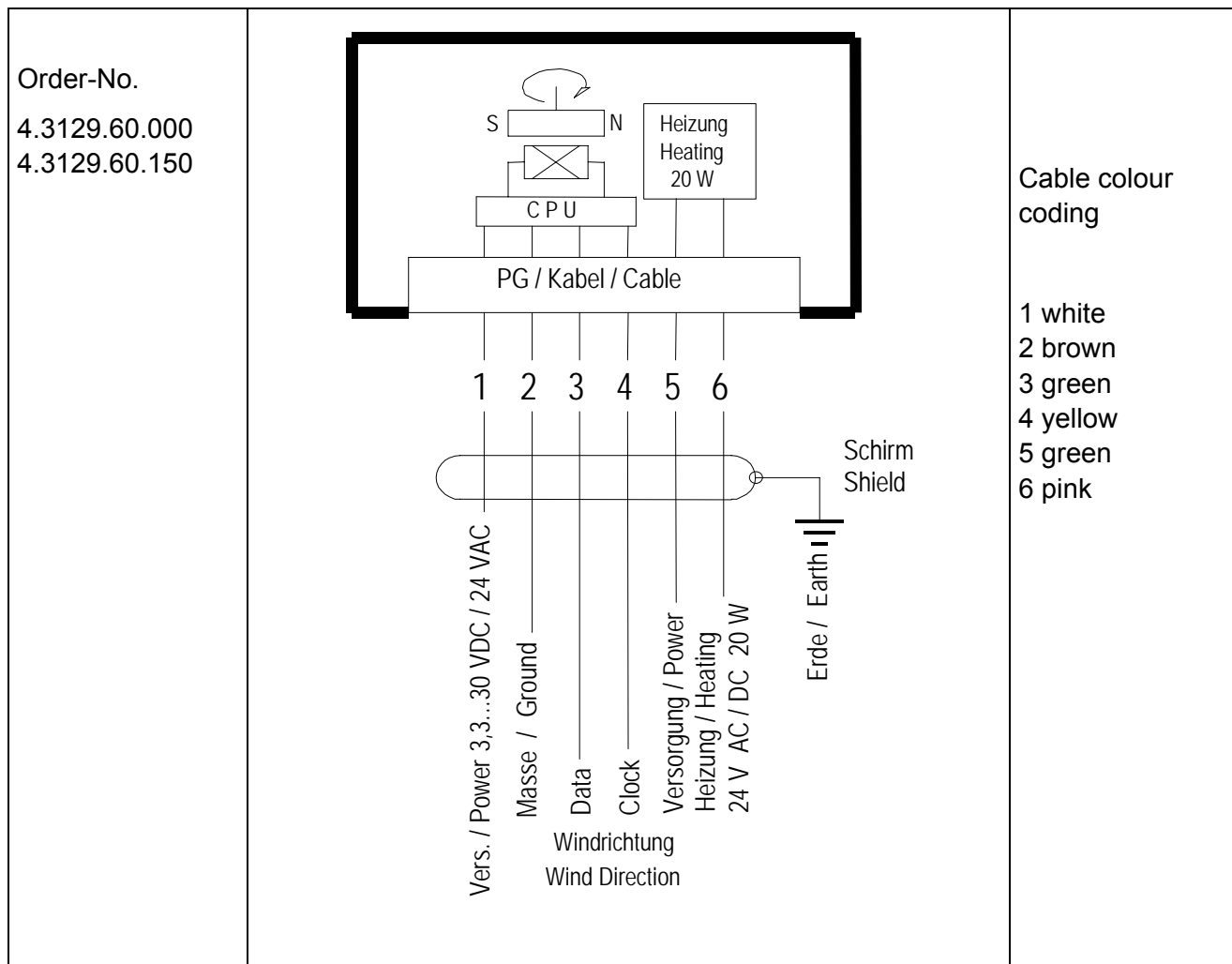
For electrical connection please refer to the connecting diagram.

## 6 Maintenance

After proper mounting the instrument works maintenance free.

Heavy pollution can clog up the slit between the rotating and the stationary parts of the wind transmitter. This slit must be kept clean.

## 7 Connecting Diagram



## 8 Technical Data

Characteristic	Description /Value
Meas. range	0 – 360°
Resolution	2,5°
Accuracy	± 2°
Meas. principle	magnetic
Output	8 bit serial-synchron. (see table 1)
Output data (amplitude)	$U_{pp} = V_{cc}$
Input clock (amplitude)	3,3V – $V_{cc}$ (max)
Electr. Output	
Output signal loadable (max.)	$U_L = 0 / U_H \approx U_B$ (unloaded) 10 mA
Serial Interface	see Interface specification
Starting delay:	The serial data output is transmitted on request at the earliest 5 s after the operating voltage has been connected.
Serial Interface	see interface specification
Operating voltage ( $V_{cc}$ )	3,3 ... 30 V DC / 24VAC
Current consumption	<1,0mA (at $U_B = 5$ V)
Operating voltage heating	24 V DC/AC, max. 20 W
Ambient temperature	- 40 °C ... + 70 °C
Survival speed	maximally 80 m/s, 30 minutes
Connection	See model (chapter 1)
dimensions	See dimensional drawing
Mounting	For ex. onto mast tube receptacle thread PG 21 or boring $\varnothing$ 29 mm
Protection	IP 55 , in position of application
Weight	
	w/o cable ca. 0,3 kg with cable ca. 0,3 kg + 0,075 kg / m cable
EMC	EN 61000-6-2 ( immunity) EN 61000-6-3 ( interfering transmission )

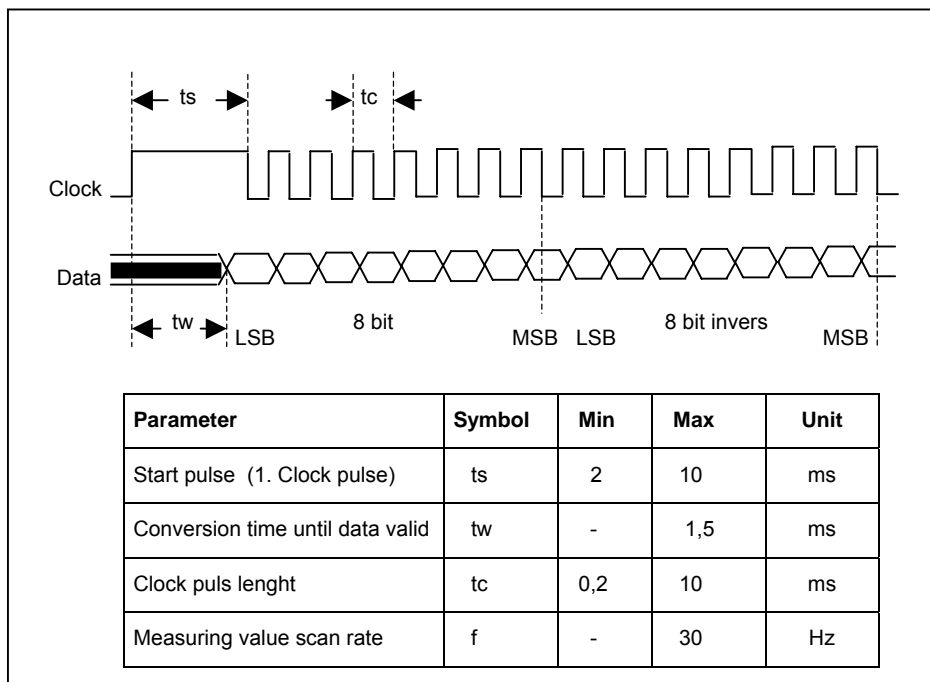


Figure 2: Interface Specification

## 9 Dimensional Drawing

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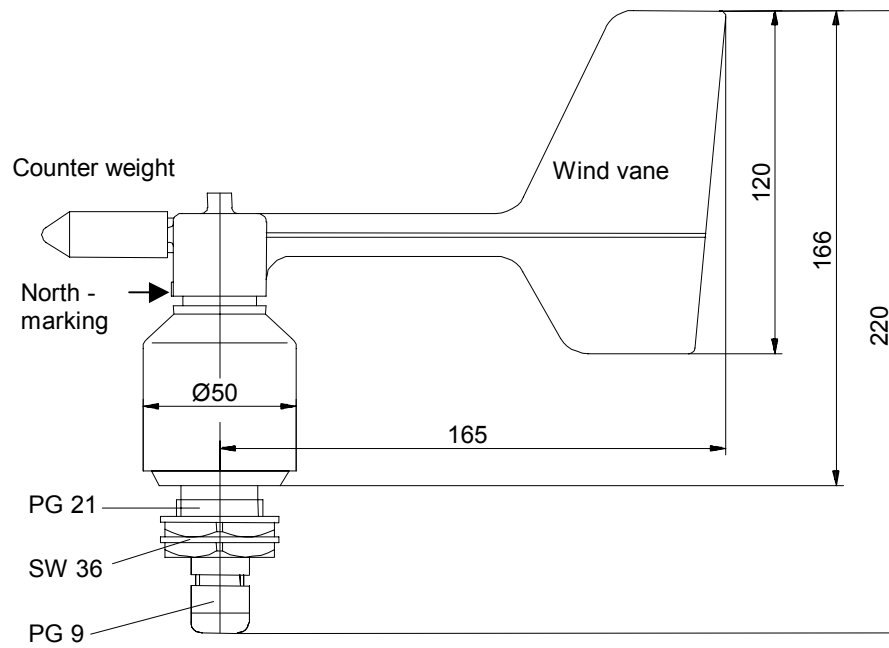


Figure 3: Dimensional drawing

## 10 Accessories

The following accessories are available for the wind direction transmitter:

Traverse	4.3171.30.000	Clamping range: Ø 48 ... 102 mm
For mounting the wind speed transmitter and wind direction transmitter <i>compact</i> jointly onto a mast.	4.3171.31.000	Clamping range: Ø 116 ... 200 mm Sensor distance: 0,8 m Material: Aluminum

Traverse, short	4.3171.40.000	Clamping range: Ø 48 ... 102 mm
For mounting the wind direction transmitter <i>compact</i> onto a mast.	4.3171.41.000	Clamping range: Ø 116 ... 200 mm Length: 0,4 m Material: Aluminum

Lightning rod	506351	Length: 0,56 m
For mounting the a.m. traverses		Material: stainless steel

Please contact us for other accessories such as cables, power supply units, masts, as well as for additional mast- or system-constructions.

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