

# Wind Direction Transmitter - compact

Instruction for Use 4.3130.00.700



## Application

The wind direction transmitter detects the horizontal wind direction. The measured values are output as electrical digital signals, for example for further processing or storing.

An electronically-regulated heating system has been installed for winter time use, in order to prevent the ball-bearing and the external rotation parts from freezing.

Power for the heating system could be provided for instance by our **Power Supply Unit**, order - no. **9.3388.00.000**.

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

## Construction and Mode of Operation

The wind direction is detected by means of a low-inertia, balanced wind vane, made of fiber-reinforced plastic. The axis (in ball bearing) of the wind vane is connected with a code disc.

The code disc is scanned opto-electronically. The output signal is available as parallel 6-bit Gray-code. The 64 sectors, resulting from the resolution, start with wind direction N = 0° (ref. also to output-code-table).

The outer parts of the instrument are made of corrosion-resistant materials. Labyrinth gaskets protect the parts inside the instrument against precipitations.

## Technical Data

| Characteristic   | Description / Value   |
|--|---|
| Sensor / measuring principle                             | Wind vane / opto-electronic   |
| Measuring range  | 0 – 360°  |
| Resolution   | 5,6° (6 bit Gray-code)  |
| Accuracy*<br>(* Differential Nonlinearity)               | <± 2°   |
| Output   | 6-bit parallel Gray-code  |
| Operating voltage V <sub>cc</sub>                        | 5V...30V  |
| Operating current I <sub>VCC</sub>                       | < 1mA (I <sub>out</sub> = 0 mA)   |
| Signal outputs U <sub>out</sub> (I <sub>out</sub> < 1mA) | U <sub>out</sub> ≈ U <sub>VCC</sub> / U <sub>out(max)</sub> approx. 16V |
| Signal outputs I <sub>out max</sub>                      | 5mA   |
| Signal resistance R <sub>a</sub>                         | 220 Ω   |
| Measuring rate   | 20 Hz   |
| Operating voltage heating                                | 24 V DC/AC, max. 20 W   |
| Ambient temperature                                      | - 30 °C ... + 70 °C   |
| Connection   | 12 pole plug connection   |
| Dimensions   | Ref. to dimensional drawing   |
| Mounting   | For ex. onto mast tube with boring thread Pg 21 or boring Ø 29 mm       |
| Protection   | IP 55   |
| Weight   | 0,40 kg   |

## Output-Code-Table

| Output |                   | Output |                   | Output |                   | Output |                   |
|--------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|
| Degr   | G5 G4 G3 G2 G1 G0 | Degr   | G5 G4 G3 G2 G1 G0 | Degr   | G5 G4 G3 G2 G1 G0 | degr   | G5 G4 G3 G2 G1 G0 |
| N 0    | 0 0 0 0 0 0       | E 90   | 0 1 1 0 0 0       | S 180  | 1 1 0 0 0 0       | W 270  | 1 0 1 0 0 0       |
| 6      | 0 0 0 0 0 1       | 96     | 0 1 1 0 0 1       | 186    | 1 1 0 0 0 1       | 276    | 1 0 1 0 0 1       |
| 11     | 0 0 0 0 1 1       | 101    | 0 1 1 0 1 1       | 191    | 1 1 0 0 1 1       | 281    | 1 0 1 0 1 1       |
| 17     | 0 0 0 0 1 0       | 107    | 0 1 1 0 1 0       | 197    | 1 1 0 0 1 0       | 287    | 1 0 1 0 1 0       |
| 23     | 0 0 0 1 1 0       | 113    | 0 1 1 1 1 0       | 203    | 1 1 0 1 1 0       | 293    | 1 0 1 1 1 0       |
| 28     | 0 0 0 1 1 1       | 118    | 0 1 1 1 1 1       | 208    | 1 1 0 1 1 1       | 298    | 1 0 1 1 1 1       |
| 34     | 0 0 0 1 0 1       | 124    | 0 1 1 1 0 1       | 214    | 1 1 0 1 0 1       | 304    | 1 0 1 1 0 1       |
| 39     | 0 0 0 1 0 0       | 129    | 0 1 1 1 0 0       | 219    | 1 1 0 1 0 0       | 309    | 1 0 1 1 0 0       |
| 45     | 0 0 1 1 0 0       | 135    | 0 1 0 1 0 0       | 225    | 1 1 1 1 0 0       | 315    | 1 0 0 1 0 0       |
| 51     | 0 0 1 1 0 1       | 141    | 0 1 0 1 0 1       | 231    | 1 1 1 1 0 1       | 321    | 1 0 0 1 0 1       |
| 56     | 0 0 1 1 1 1       | 146    | 0 1 0 1 1 1       | 236    | 1 1 1 1 1 1       | 326    | 1 0 0 1 1 1       |
| 62     | 0 0 1 1 1 0       | 152    | 0 1 0 1 1 0       | 242    | 1 1 1 1 1 0       | 332    | 1 0 0 1 1 0       |
| 68     | 0 0 1 0 1 0       | 158    | 0 1 0 0 1 0       | 248    | 1 1 1 0 1 0       | 338    | 1 0 0 0 1 0       |
| 73     | 0 0 1 0 1 1       | 163    | 0 1 0 0 1 1       | 253    | 1 1 1 0 1 1       | 343    | 1 0 0 0 1 1       |
| 79     | 0 0 1 0 0 1       | 169    | 0 1 0 0 0 1       | 259    | 1 1 1 0 0 1       | 349    | 1 0 0 0 0 1       |
| 84     | 0 0 1 0 0 0       | 174    | 0 1 0 0 0 0       | 264    | 1 1 1 0 0 0       | 354    | 1 0 0 0 0 0       |

0 = 0V / 1 = Uvcc

## Dimensional Drawing

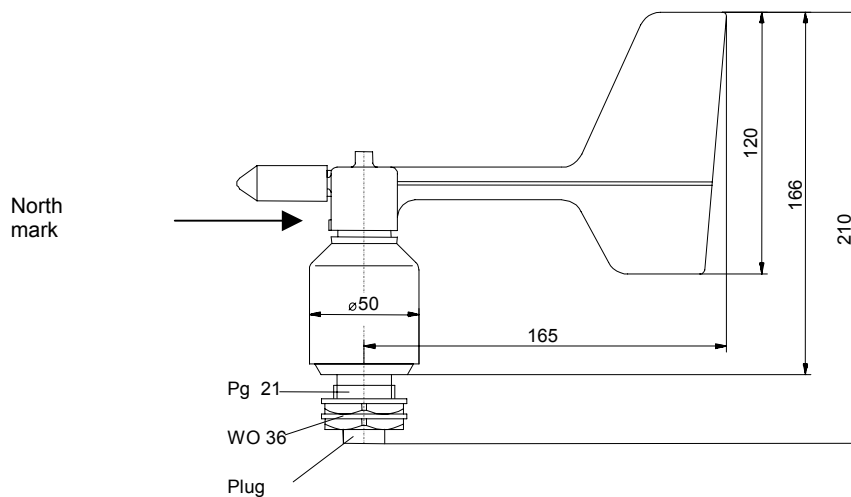


Table: Pin Assignment of Plug

| Pin assignment of plug | Function                          | View on the soldered connection of female plug |
|------------------------|-----------------------------------|--|
| A                      | Operating voltage, Vcc = 5V...30V |  |
| B                      | GND, ground                       |  |
| C                      | G5 - signal output                |  |
| D                      | G4 - signal output                |  |
| E                      | G3 - signal output                |  |
| F                      | G2 - signal output                |  |
| G                      | G1 - signal output                |  |
| H                      | G0 - signal output                |  |
| J                      | Heating voltage 24V AC/DC         |  |
| K                      | Heating voltage 24V AC/DC         |  |
| L                      | Not used                          |  |
| M                      | Not used                          |  |

## Preparation for Use

### Selecting a Site

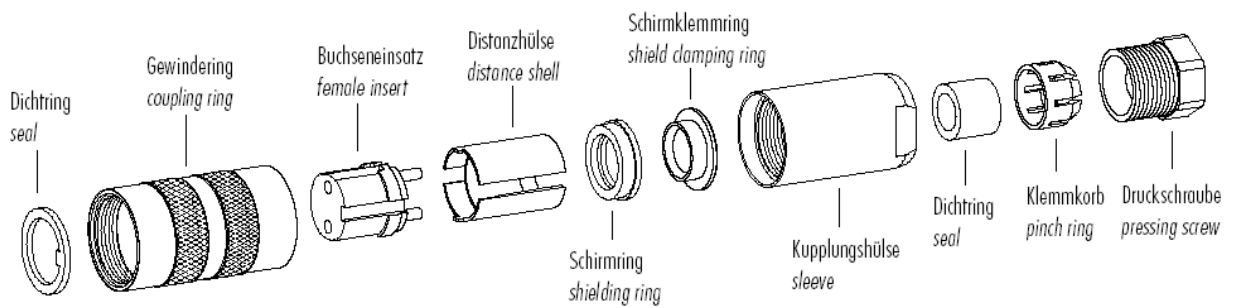
In order to obtain comparable values when determining the surface wind, measurements should be taken at a height of 10 meters over an even area with no obstacles. An area with no obstacles means that the distance between the wind direction transmitter and an obstacle should be at least 10 times the height of the obstacle ( s. VDI 3786 ). If it is not possible to fulfil this condition then the wind direction 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 direction transmitter should be set up in the centre of flat roofs and not on the edge in order to avoid any preferential directions.

### Mounting

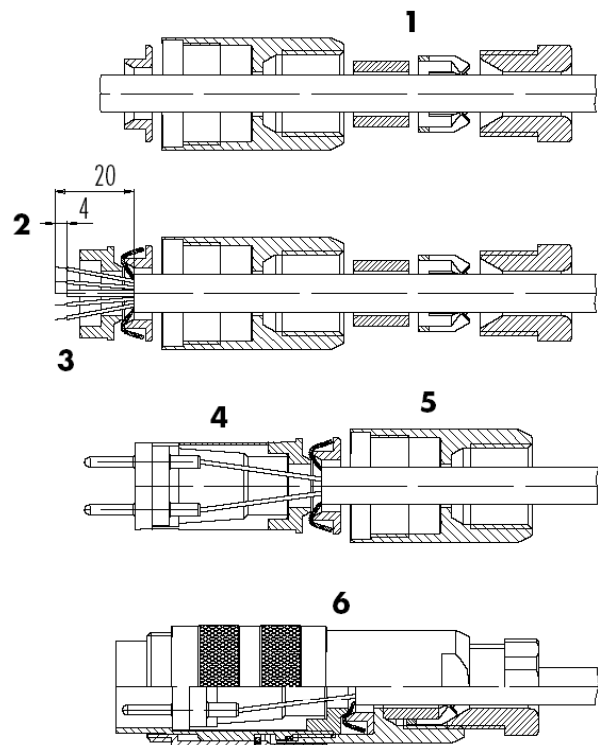
The mounting of the wind transmitter could be done for example on a central mast tube with a Pg 21-boring thread, or on hangers or the like with a boring of  $\varnothing 29$  mm (for example traverse *compact*, order- no. 4.3171.30.000). In doing so please pay attention to possible obstacles which might effect the air flow and the measuring value.

The connector is guided through the boring, and the wind transmitter is fixed with a hexagon nut (WO 36). For electrical connection please refer to the table of pin assignment of plug.

### Plug monting



1. Stringing parts
2. Stripping and widening of shield
3. Assembling shield clamping ring
4. Soldering wire, tripping distance bush
5. Cutting off projecting shield
6. Assembling remaining parts according to plan



## North alignment

Rotate the case markings 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 metal deflector and rod of the wind vane and when these coincide screw the transmitter into place (*the north mark must indicate the geographical North*).

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

## 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.



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