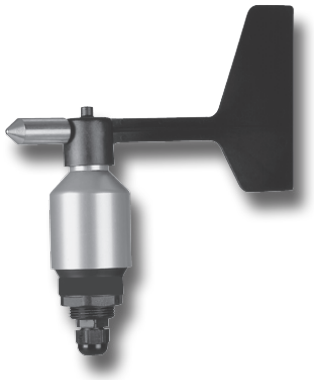

Wind direction sensor

General

The wind direction sensor detects the horizontal wind direction. The measured values are available at the output as analogue voltage or current signal to control for instance wind power plant.

An electronically-regulated heating system has been installed for winter time use, in order to prevent the ball-bearing and the externals rotation parts from freezing. The electronical supply of the heating system is done e.g. by our power supply. When using of attachment adapters (angles, cross member, etc.) an possible interference by turbulences must be observed.

Selection of setup site

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 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. 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 not on the roof side in order to avoid bias in the direction (privileged directions).

Construction and mode of operation

The wind direction transmitter is designed to detect the wind direction and to transform them into electrical signals. The wind direction is recorded by means of a low-inertia light metallic wind vane the ball-bearing axis of which is connected to a slotted disk. This code disc is scanned opto-electronically and has been provided with a 4 bit Gray code (resolution 22,5°) resp. a 5 bit Gray-Code (resolution 11,25 ° - see technical data). The electrical signals are supplied according to the actual position of the wind vane. The instrument is made of corrosion-resistance material (plastic) and the aluminium parts are additionally protected or varnished resp. by means of an anodic coat. Labyrinth sealing protect sensitive parts inside the instrument against humidity

Mounting

The mounting of the sensor could be done for example at a traverse with a boring of PG 21 or on hangers with a boring of 29 mm ∅. When using fastening adapters (angle, traverses etc.) please notice that turbulences could possibly influence the characteristic curve. After flexible connection cable is passes through the boring, wind direction transmitter could be fixed with hexagonal nut (SW36) after being in its right position. For electrical connection please refer to the connection diagram.

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.

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.

Technical data

Type	Wind direction sensor
Art. No.	80086015
Operating voltage	18 - 27 V DC
Current consumption	20 mA
Measuring range	0 ... 360°
Fault tolerance	± 5°
Measuring principle	opto-elektronical
Heating	24 V AC/DC max. 20 W
Output code	4 bit Graycode
Resolution	90°C / 45°C / 22,5°C
Electr. output signal	open collector (source)
Electr. loadable (max.)	50 mA
Supply pipe	LiYCY 8 x 0,25 mm², 5 m long
Dimensions	HxD 220x330mm
Weight	0,60 kg
Ambient temperature	-30°C ... +70°C
Storage temperature	-25°C... +70°C
Humidity	0 ...8 % r.F. non condensing
ESD immunity	Category 3 according to IEC-1000-4-2
EMV immunity	Use in typical industrial enviroment. Category 3 according to IEC-1000-4-4 (Test was carried out within a whole system)
CE sign	yes

Terminal assignment

Number	wire colour	description
1	white	GND
2	brown	BIT 3
3	green	BIT 2
4	yellow	BIT 1
5	grey	BIT 0
6	pink	Operating voltage +18...27V DC
7	blue	Heating supply voltage 24V AC/DC
8	red	Heating supply voltage 0V
	shield	PE

Wiring diagram