

Wind Transmitter - compact

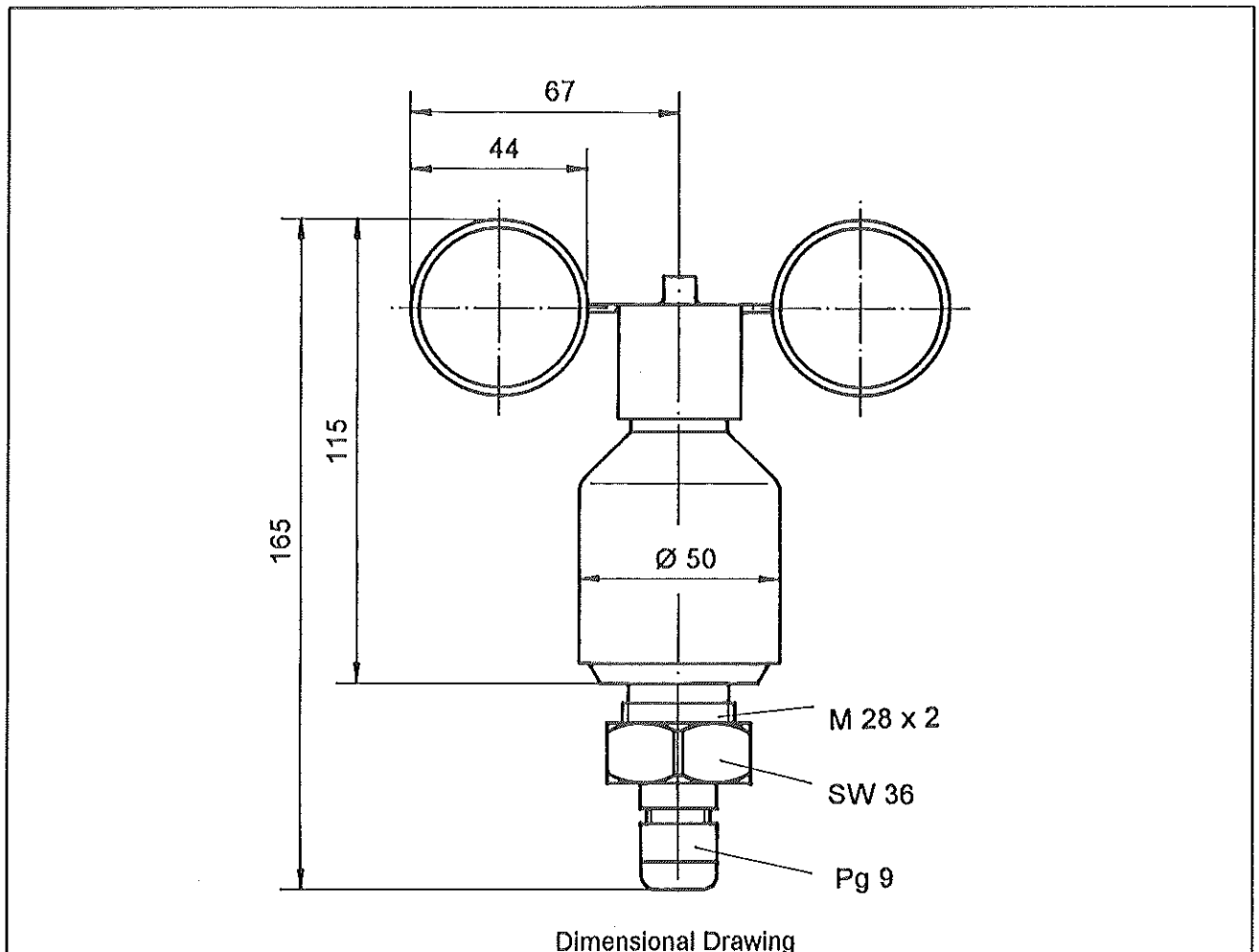
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Instruction for Use

4.3518.00.000	<i>Frequency Output</i>
4.3519.00.000	<i>Low power with Frequency Output</i>
4.3519.00.xxx	<i>Analog Output</i>
4.3520.xx.000	<i>Frequency Output</i>



Range of application

The wind sensor measures and transmits the horizontal wind velocity. The measured values are available at the output as digital signal to control for instance wind power plant. However, with the resp. design, it can be used as input signal for dataloggers, display instruments, recording instruments or alike.

The instrument could be used in the range of 0,5...50 m/s wind velocity.

An electronically-regulated heating system has been installed for wintertime 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 notice that turbulences could possibly influence the characterisic curve

Technical Data

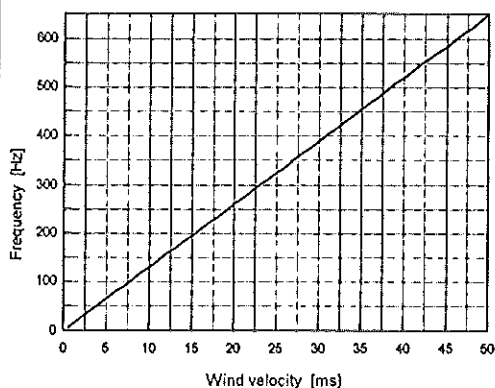
General

Measuring Range : 0,5 ... 50 m/s
Meas. Accuracy : $\pm 3\%$ of measuring value
Heating : 24 V AC/DC max. 20 W
Ambient Temperature : - 30 °C ... + 70 °C
Mounting : onto masttube (boring thread M 28 x 2)
or onto traverse, boring $\varnothing 28$ mm

Order-No.: 4.3518.00.000 / 4.3520.xx.000

Resolution : 10 pulses / Revolution
50 m/s $\hat{=}$ 648 Hz
 V [m/s] = 0,07713 \cdot f [Hz]
Operating voltage V_{cc} : 12 - 24 V DC
Current input : 20 mA
Signal output : Puls (amplitude $\hat{=}$ V_{cc})
Output : 4.3518.00.000 | 4.3520.xx.000
open collector sink | open collector source
Load : max. 30 mA
Scanning : Light barrier - slotted disc
Supply cable : LIYCY 5 x 0,25 mm² , 5 m long
Weight : 0,40 kg

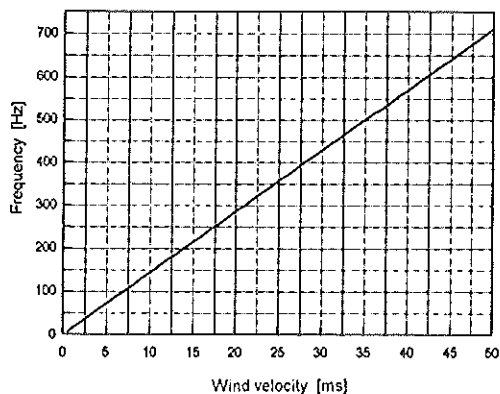
Characteristic
wind transmitter-compact



Order-No.: 4.3519.00.000

Resolution : 11 pulses / Rotation
50 m/s $\hat{=}$ 713 Hz
 V [m/s] = 0,07012 \cdot f [Hz]
Operating voltage V_{cc} : 4 - 18 V DC
Current input : < 1 mA
Signal output : Puls (amplitude $\hat{=}$ V_{cc})
Scanning : Lightbarrier - cup wheel
Supply cable : LIYCY 5 x 0,25 mm², 12 m long
Weight : 0,75 kg

Characteristic
wind transmitter-compact low power

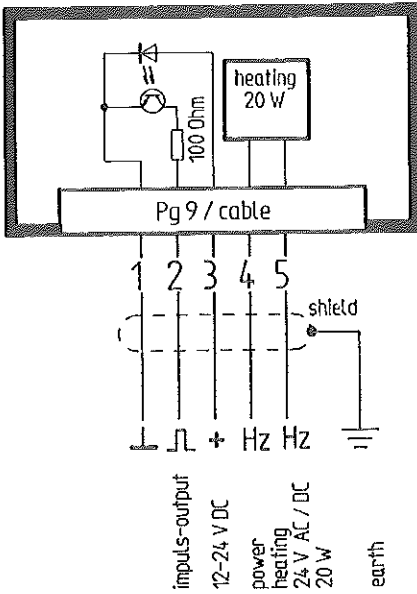


Order-No.: 4.3519.00.xxx

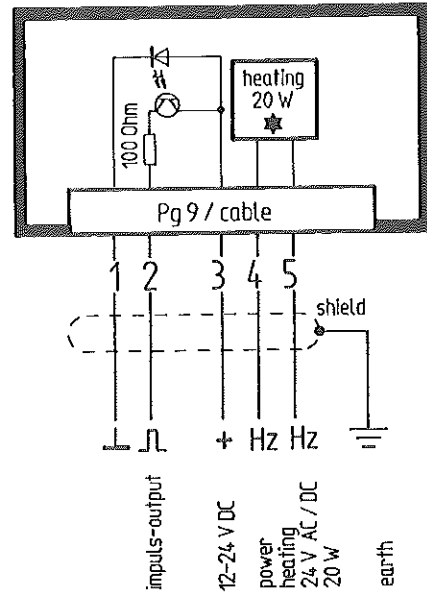
Resolution : < 0,1 m/s
Electr. Output
Ord.-No. 4.3519.00.040 : 0 - 20 mA Load max. 500 Ω (> 13 V DC Operating voltage)
4.3519.00.041 : 4 - 20 mA Load max. 500 Ω (> 13 V DC Operating voltage)
4.3519.00.061 : 0 - 10 V Load resistance min. 1 k Ω
4.3519.00.067 : 0 - 2 V Load resistance min. 1 k Ω
4.3519.00.073 : 0 - 5 V Load resistance min. 1 k Ω
Operating voltage : 9 - 18 V DC or 24 V AC/DC
(13 - 18 V DC for 0 - 10 V Output)
see Connecting diagrams
Current input : approx. 10 mA
Scanning : Light barrier - slotted disc
Supply cable : LIYCY 6 x 0,25 mm², 12 m long
Weight : 0,75 kg

Connecting Diagrams

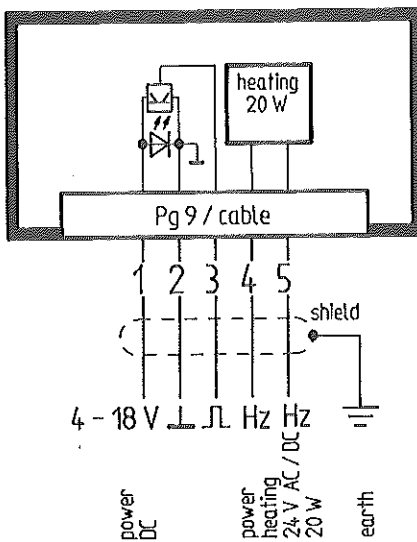
Order-No.: 4.3518.00.000



Order-No.: 4.3520.00.000



Order-No.: 4.3519.00.000

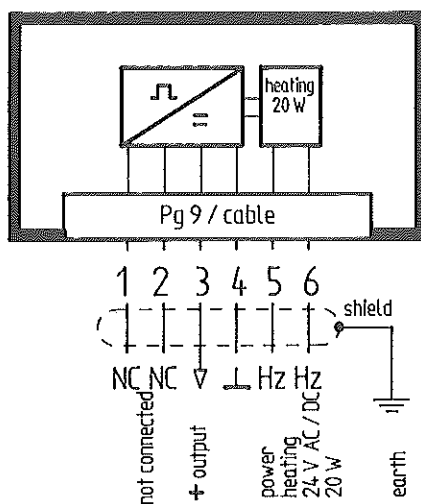


Order-No.: 4.3520.10.000

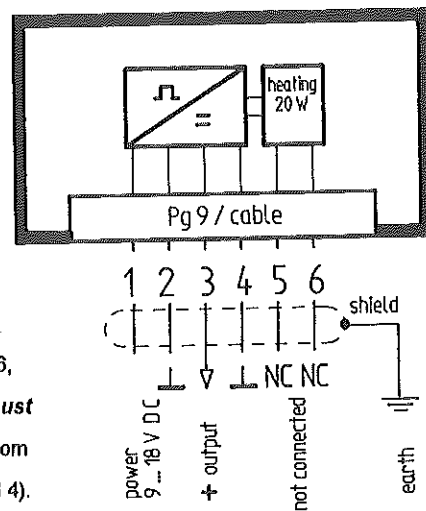
★ without Heating
Pin 4 and Pin 5 not connected

Order-No.: 4.3519.00.xxx

Operation with Heating



Operation without Heating



In case of power supply for heating at pin 5 and 6, power supply voltage **must** be galvanic separated from signal voltage (pin 3 and 4).

Construction and mode of operation

The wind velocity is recorded by means of a low-inertia plastic cupstar the ball-bearing axis of which is connected to a slotted disk or cup wheel. The slotted disc/cup wheel is scanned opto-electronically and supplies 10 resp. 11 pulses with every rotation (see Technical Data).

The built-in electronic forms pulses

..... the frequency of which is proportional to the wind velocity order-no.: 4.3518.00.000
/ 4.3520.xx.000

..... which is used for digital data processing order-no.: 4.3519.00.000

..... the frequency of which is transformed into the analog order-no.: 4.3519.00.xxx
signal by means of the integrated measuring transducer.

Normally, the measuring transducer is fed from the heating voltage.

However, the instrument can be operated also without heating.

in this case, a separate supply voltage is to be applied for the measuring transducer.

The external parts of the instruments are made of corrosion-resistance material (plastic) resp. the aluminium housing is additionally protected by means of an anodic coat.

Labyrinth sealing protect sensitive parts inside the instrument against humidity.

Selecting a 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 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 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 not on the avoid bias in the direction (privileged directions).

Mounting

The mounting of the transmitter could be done for example onto a central mast tube with a boring of 28 mm Ø or on hangers with a boring of 28 mm Ø.

When using fastening adapters (angle, traverses etc.) please notice that turbulences could possibly influence the characteristic curve

After flexible connection cable is passed through the boring, wind transmitter could be fixed with hexagonal nut (SW36). For electrical connection please refer to the connection diagram.

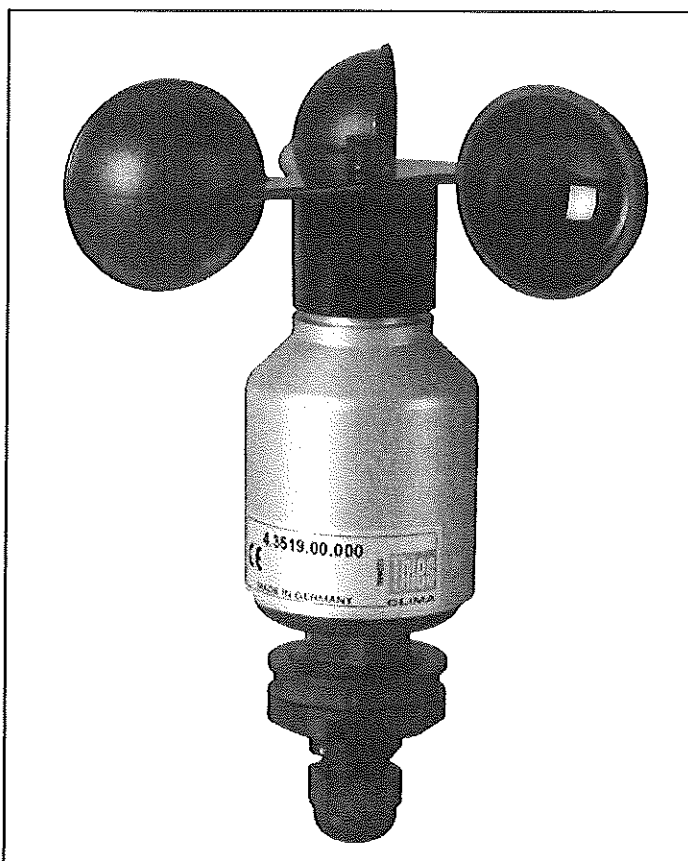
Maintenance

After proper mounting the instruments 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.

Instruction for Use
021075/07/05

Wind Transmitter compact
4.3519.xx.140 ... 961



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1 Models

Order-No.	Electr. Output	Meas. range	Heating power	Connection
4.3519.00.140	0 ... 20 mA	0 ... 50 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.141	4 ... 20 mA	0 ... 50 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.161	0 ... 10 V	0 ... 50 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.167	0 ... 2 V	0 ... 50 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.173	0 ... 5 V	0 ... 50 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.740	0 ... 20 mA	0 ... 50 m/s	20 W	7 pole plug
4.3519.00.741	4 ... 20 mA	0 ... 50 m/s	20 W	7 pole plug
4.3519.00.761	0 ... 10 V	0 ... 50 m/s	20 W	7 pole plug
4.3519.00.961	0 ... 10 V	0 ... 15 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.361	0 ... 10 V	0 ... 3 m/s max. 13,8 V at >3m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.01.140	0 ... 20 mA	0 ... 50 m/s	20 W	1,5 -3 m spiral cable LiYY 6x0,14 mm ²
4.3519.00.641	4 ... 20 mA	0 ... 60 m/s	20 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.05.641	4 ... 20 mA	0 ... 60 m/s	20 W	15 m cable LiYCY 6 x 0,25 mm ²
4.3519.10.441	4 ... 20 mA	0 ... 40 m/s	w/o heating	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.00.441	4 ... 20 mA	0 ... 40 m/s	20 W	3 m PUR - cable 6 x 0,25 mm ²
4.3519.20.141	4 ... 20 mA	0 ... 50 m/s	10 W	12 m cable LiYCY 6 x 0,25 mm ²
4.3519.02.141	4 ... 20 mA	0 ... 50 m/s	10 W	2 m cable 6 x 0,56 mm ²
4.3519.05.141	4 ... 20 mA	0 ... 50 m/s	20 W	15 m cable LiYCY 6 x 0,25 mm ²
4.3519.04.441	4 ... 20 mA	0 ... 40 m/s	20 W	0,95 m PUR- cable 6 x 0,25 mm ²

2 Application

The wind transmitter detects the horizontal wind speed. 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 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

Remark:

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

3 Mode of Operation

The cup star (in ball bearing) is set into rotation by the wind. An opto-electronic speed scanning produces a frequency which is transformed into an analogue signal by an integrated measuring transformer.

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

4 Recommendation Site Selection / Standard Installation

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 (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.

5 Installation

5.1 Mechanical 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. In doing so please pay attention to possible obstacles which might effect the air flow and the measuring value. The connecting cable or the connector is guided through the boring, and the wind transmitter is fixed with a hexagon nut (WO 36).

Attention:

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

5.2 Electrical Mounting:

For electrical connection please refer to the connecting diagram.

6 Plug mounting

Applies only to instruments with connection „plug“.

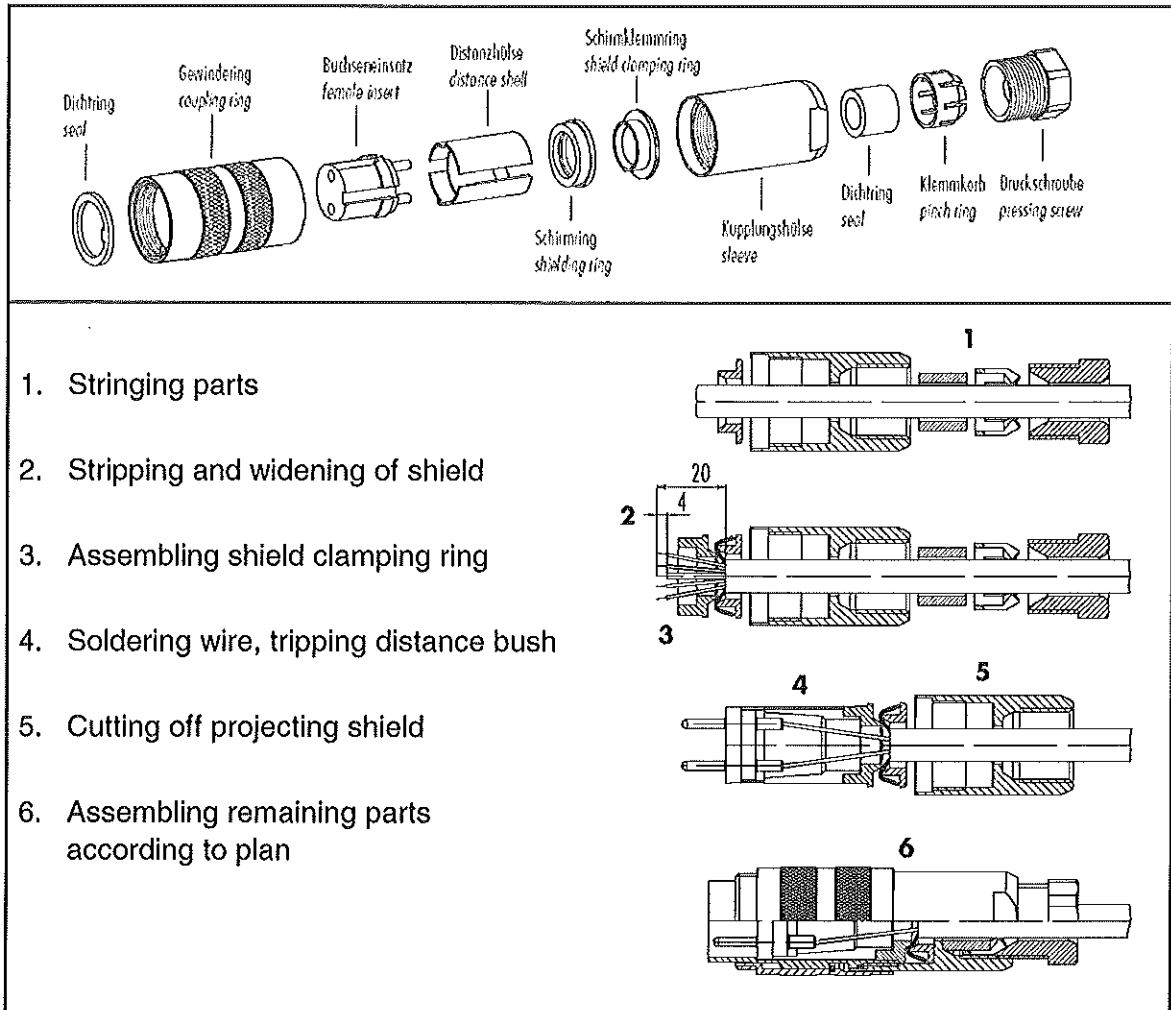


Figure 1: plug mounting

7 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.

8 Connecting Diagram

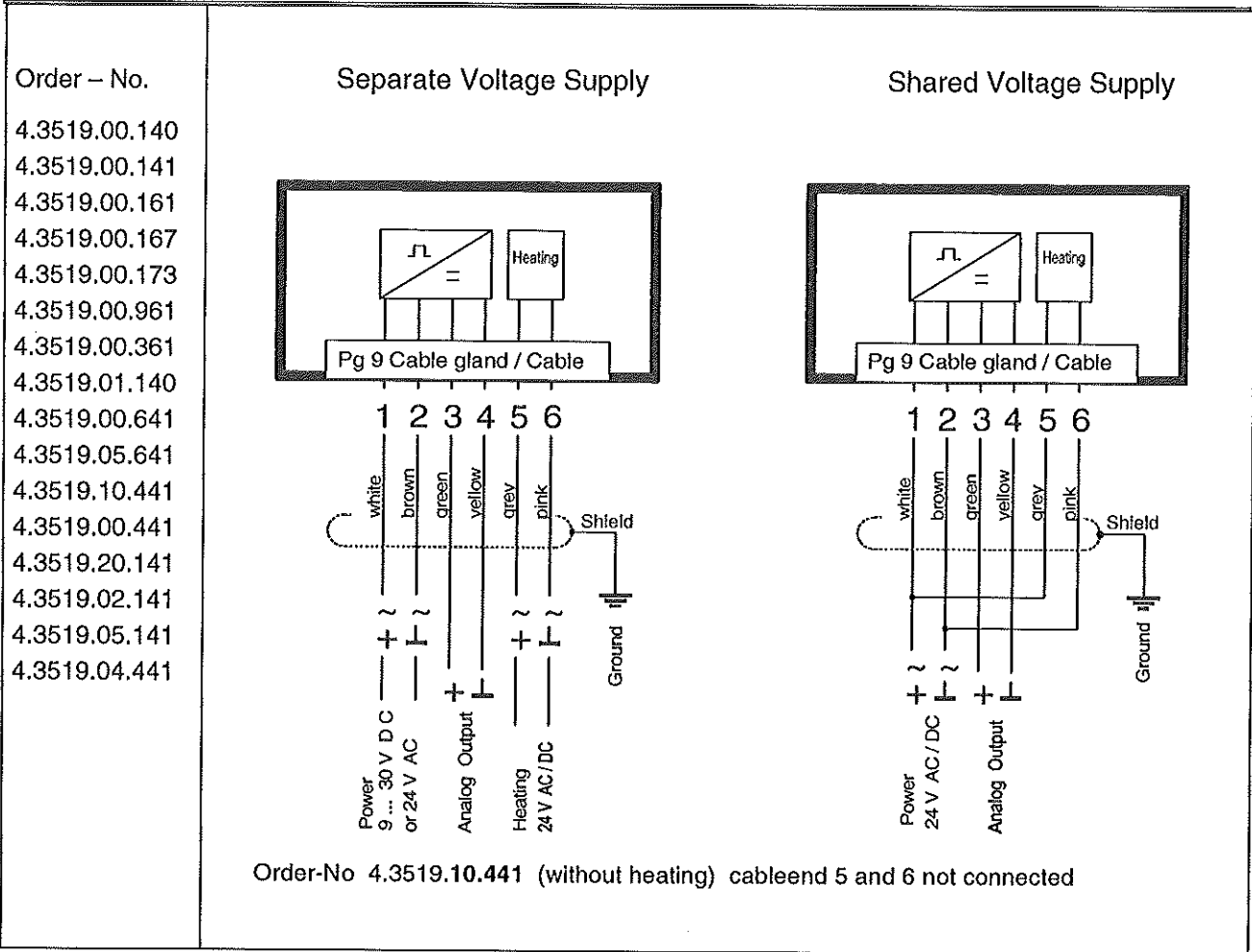


Figure 2: Connecting Diagram for Models with fixed Connecting Cable

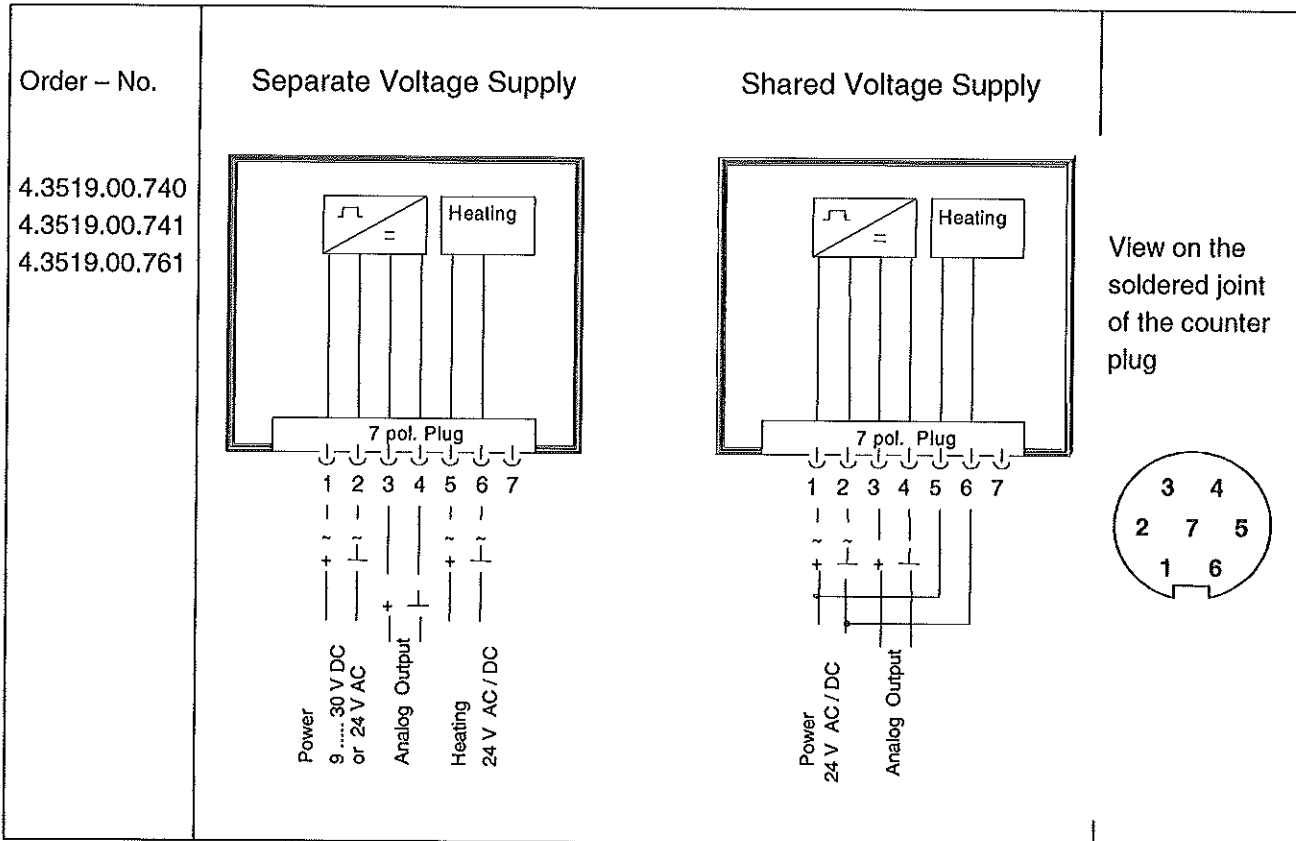


Figure 3: Connecting Diagram for Models with Connector

9 Technical Data

Measuring range	See model
resolution	0,1 m/s
Responsiveness	0,5 m/s
Accuracy	$\pm 0,5$ m/s or $\pm 3\%$ of measuring value
Measuring principle	Opto-electronic (slotted disc)
Electrical output	See model
Load	
for current output (mA)	Max. 500 Ohm (for > 13 V DC operating voltage)
for current output (V)	Min. 1 K Ω
Operating voltage	9 ... 30 V DC or 24 V AC/DC
for 0 -10 V output	13 ... 30 V DC or 24 V AC/DC
Operating voltage heating	24 V DC/AC, max. 20 W (10 W *)
Ambient temperature	-30°C ... 70°C
connection	See model
dimensions	See dimensional drawing
Montage	For ex. onto mast tube with receptacle thread Pg 21 or boring \varnothing 29 mm
Protection	IP 55
Weight	0,40 – 0,75 kg depending on model

10 Dimension diagram

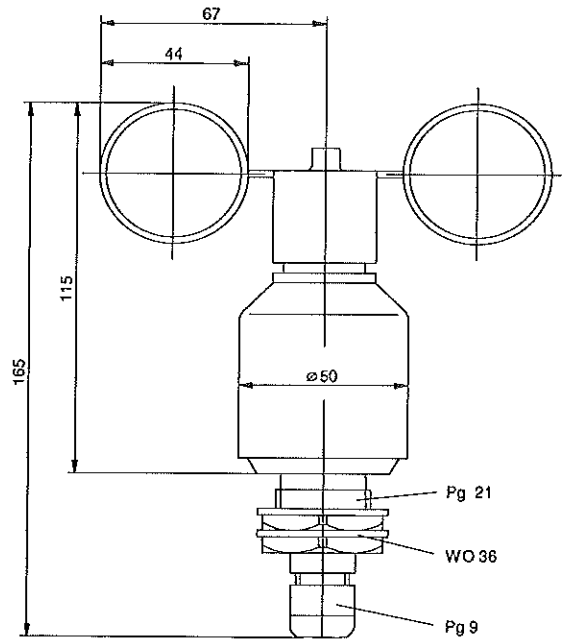


Figure 4: Dimensional Drawing Model cable gland

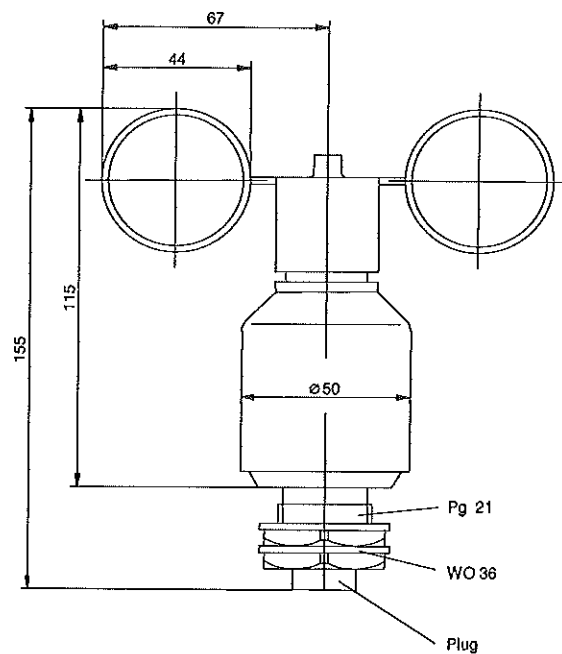


Figure 5: Dimensional Drawing Model plug

11 Accessories

For the wind transmitter the following accessories are available:

Traverse	4.3171.30.000	Clamping range: Ø 48 ... 102 mm
For mounting the wind 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: Aluminium

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

Lightning Rod	506351	Length: 0,56 m
For mounting onto the a/m traverse		Material: stainless steel

Other accessories such as cables, power supply units, masts as well as additional mast- or system-constructions on request.

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