

Instruction for Use

021094/05/09

Wind Transmitter - compact

4.3518.x0.xxx

4.3519.x0.xx0

4.3520.x0.xx0



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Safety Instructions

- Before operating with or at the device/product, read through the operating instructions. This manual contains instructions which should be followed on mounting, start-up, and operation. A non-observance might cause:
 - failure of important functions
 - endangerment of persons by electrical or mechanical effect
 - damage to objects
- Mounting, electrical connection and wiring of the device/product must be carried out only by a qualified technician who is familiar with and observes the engineering regulations, provisions and standards applicable in each case.
- Repairs and maintenance may only be carried out by trained staff or **Adolf Thies GmbH & Co. KG**. Only components and spare parts supplied and/or recommended by **Adolf Thies GmbH & Co. KG** should be used for repairs.
- Electrical devices/products must be mounted and wired only in a voltage-free state.
- **Adolf Thies GmbH & Co KG** guarantees proper functioning of the device/products provided that no modifications have been made to the mechanics, electronics or software, and that the following points are observed:
- All information, warnings and instructions for use included in these operating instructions must be taken into account and observed as this is essential to ensure trouble-free operation and a safe condition of the measuring system / device / product.
- The device / product is designed for a specific application as described in these operating instructions.
- The device / product should be operated with the accessories and consumables supplied and/or recommended by **Adolf Thies GmbH & Co KG** .
- Recommendation: As it is possible that each measuring system / device / product may, under certain conditions, and in rare cases, may also output erroneous measuring values, it is recommended using redundant systems with plausibility checks for **security-relevant applications**.

Environment

- As a longstanding manufacturer of sensors Adolf Thies GmbH & Co KG is committed to the objectives of environmental protection and is therefore willing to take back all supplied products governed by the provisions of "*ElektroG*" (German Electrical and Electronic Equipment Act) and to perform environmentally compatible disposal and recycling. We are prepared to take back all Thies products concerned free of charge if returned to Thies by our customers carriage-paid.
- Make sure you retain packaging for storage or transport of products. Should packaging however no longer be required, please arrange for recycling as the packaging materials are designed to be recycled.



Documentation

- © Copyright **Adolf Thies GmbH & Co KG**, Göttingen / Germany
- Although these operating instruction has been drawn up with due care, **Adolf Thies GmbH & Co KG** can accept no liability whatsoever for any technical and typographical errors or omissions in this document that might remain.
- We can accept no liability whatsoever for any losses arising from the information contained in this document.
- Subject to modification in terms of content.
- The device / product should not be passed on without the/these operating instructions.

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1 Models

Order - No.	Elect. Output	Meas. range	Heating power	Connection
4.3518.00.000	2 ... 573 Hz	0,5 ... 50 m/s	20 W	5 m cable LiYCY 5 x 0.25 mm ²
4.3518.00.120	2 ... 573 Hz	0,5 ... 50 m/s	20 W	12 m cable LiYCY 5 x 0.25 mm ²
4.3518.00.150	2 ... 573 Hz	0,5 ... 50 m/s	20 W	15 m cable LiYCY 5 x 0.25 mm ²
4.3518.00.700	2 ... 573 Hz	0,5 ... 50 m/s	20 W	7 pol. plug
4.3518.10.110	2 ... 573 Hz	0,5 ... 50 m/s	w/o heating	10 m cable LiYCY 5 x 0.25 mm ²
4.3519.00.000	2 ... 630 Hz	0,5 ... 50 m/s	20 W	12 m cable LiYCY 5 x 0.25 mm ²
4.3519.00.150	2 ... 630 Hz	0,5 ... 50 m/s	20 W	15 m cable LiYCY 5 x 0.25 mm ²
4.3519.00.200	2 ... 630 Hz	0,5 ... 50 m/s	20 W	20 m cable LiYCY 5 x 0.25 mm ²
4.3519.00.700	2 ... 630 Hz	0,5 ... 50 m/s	20 W	7 pol. plug
4.3519.10.000	2 ... 630 Hz	0,5 ... 50 m/s	w/o heating	12 m cable LiYCY 5 x 0.25 mm ²
4.3519.10.200	2 ... 630 Hz	0,5 ... 50 m/s	w/o heating	20 m cable LiYCY 5 x 0.25 mm ²
4.3519.40.000	2...630 Hz	0,5...50 m/s	60 W	12 m Kabel LiYCY 5 x 0,5 mm ²
4.3520.00.000	2 ... 573 Hz	0,5 ... 50 m/s	20 W	5 m cable LiYCY 5 x 0.25 mm ²
4.3520.00.120	2 ... 573 Hz	0,5 ... 50 m/s	20 W	12 m cable LiYCY 5 x 0.25 mm ²
4.3520.10.000	2 ... 573 Hz	0,5 ... 50 m/s	w/o heating	5 m cable LiYCY 5 x 0.25 mm ²
4.3520.10.120	2 ... 573 Hz	0,5 ... 50 m/s	w/o heating	12 m cable LiYCY 5 x 0.25 mm ²
4.3520.10.300	2 ... 573 Hz	0,5 ... 50 m/s	w/o heating	3.3 m cable LiYCY 5 x 0.25 mm ²
4.3520.10.500	2 ... 573 Hz	0,5 ... 50 m/s	w/o heating	5.5 m cable LiYCY 5 x 0.25 mm ²

2 Range of Application

The wind transmitter detects the horizontal wind speed. The measured values are available at the output as frequency, proportional to the wind speed, to control for instance wind power plant. An electronically-regulated heating system has been installed in some models (see chapter 1) 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**.

Thanks to the 60-Watt-heating as well as to the optimized regulating characteristic, model no. 4.3519.40.xxx is especially suited for the extremely difficult application in high mountains or at other critical sites, where icing is to be expected.

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, proportional to the wind speed, available as output signal. The outer parts of the instrument are made of corrosion-resistant materials. Labyrinth gaskets protect the parts inside the instrument against precipitations.

4 Preparation for Use

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

Attention:

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

Remark:

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

Attention:

The device may only be supplied with a power supply of the "Class , 2, limited power".

5.1 Mechanical Mounting

The mounting of the transmitter could be done for example at a support with a boring of PG 21 or on hangers with a boring of 29 mm \varnothing .

Tools:

Hexagonal wrench SW36

Procedure:

1. Push cable/ plug connector of the wind transmitter through the borehole of the mast, tube, arm etc.
2. Put wind transmitter on mast, tube, arm etc.
3. Safeguard the wind direction transmitter by two hexagonal nuts (PG21, SW 36).

Caution: *The Hexagon nuts must be tightened to 6 Nm.*

Remark:

The support is not included in delivery.



5.2 Electrical Mounting

For electrical connection please refer to the connecting diagram.

5.3 Plug mounting

Applies only to instruments with connection „plug“.

Coupling socket, Typ:Binder, Serial 423, EMC with cable clamp

Cable connection: without cable shield

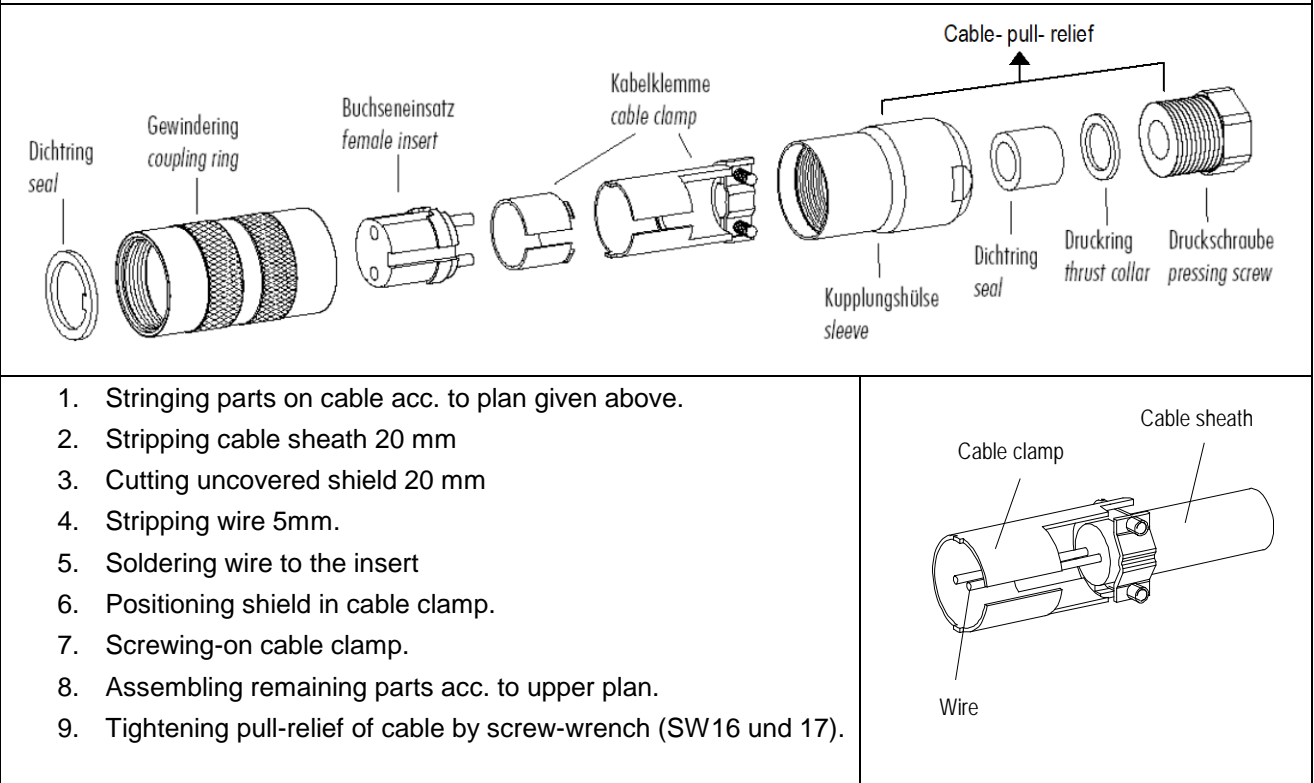
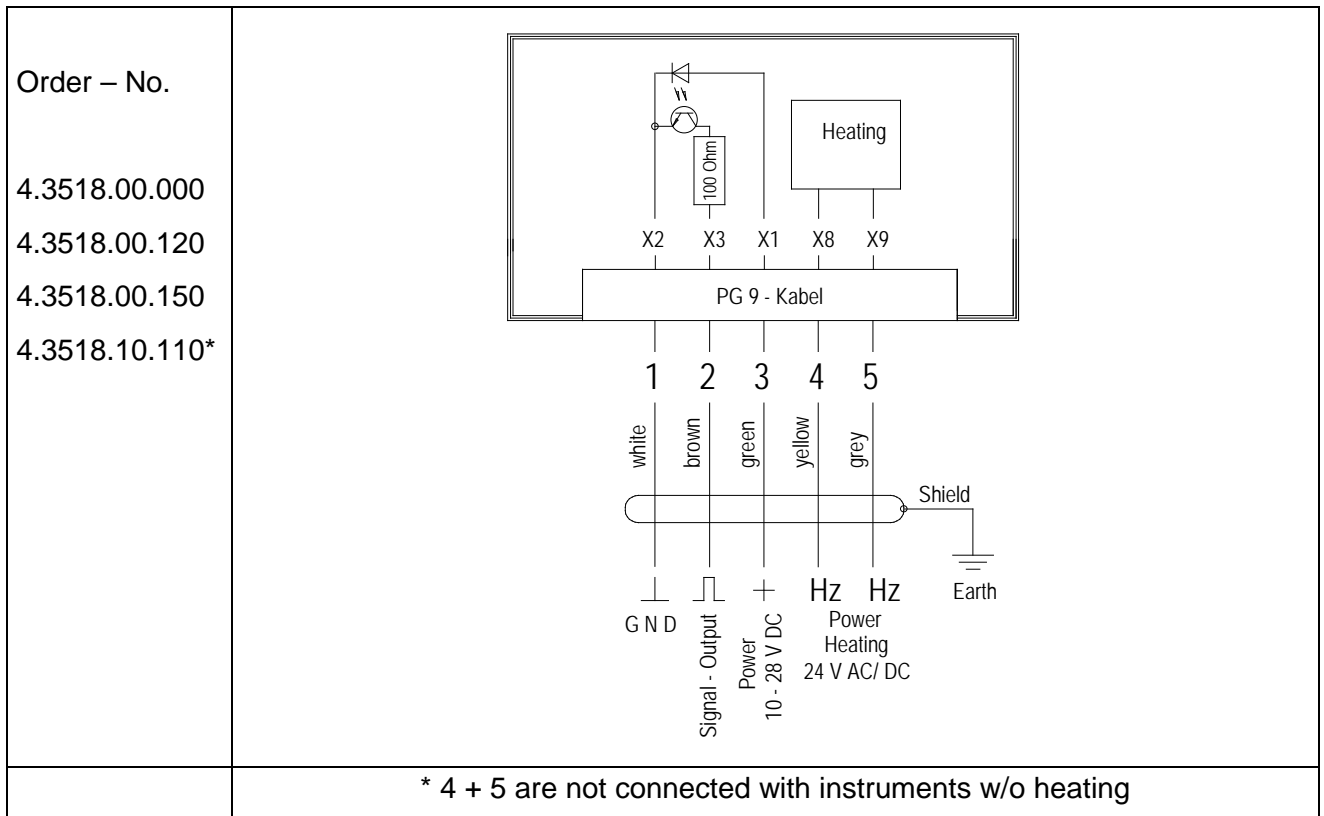


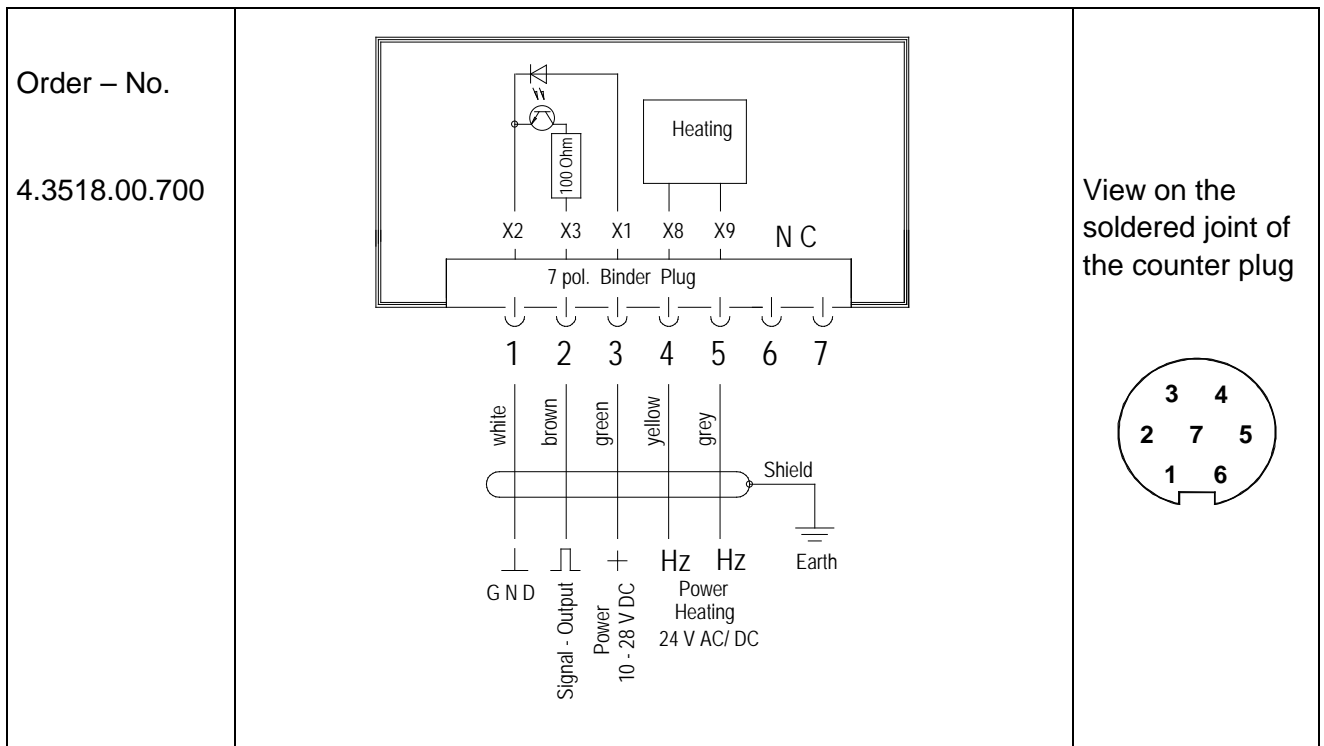
Figure 1: plug mounting

6 Connecting Diagram

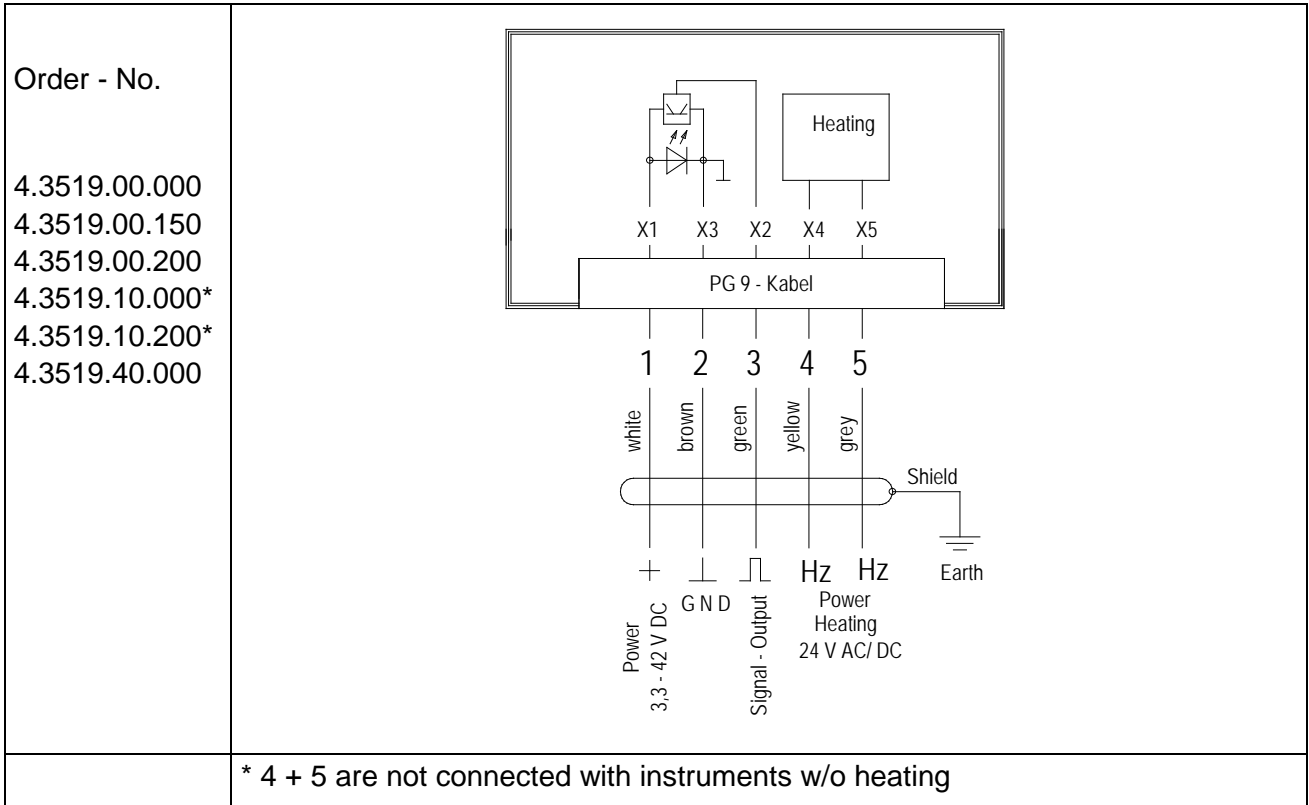
Connecting Diagram for Models with Connecting Cable



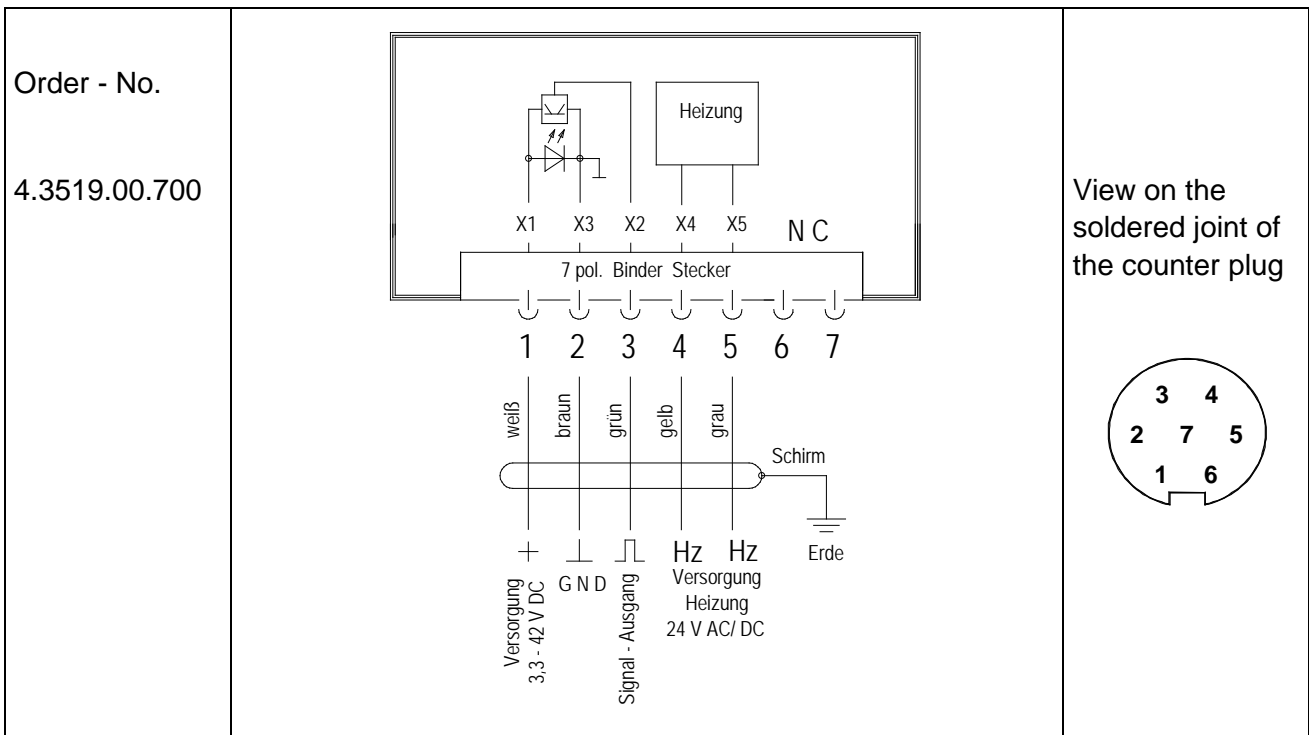
Connecting Diagram for Models with Connector



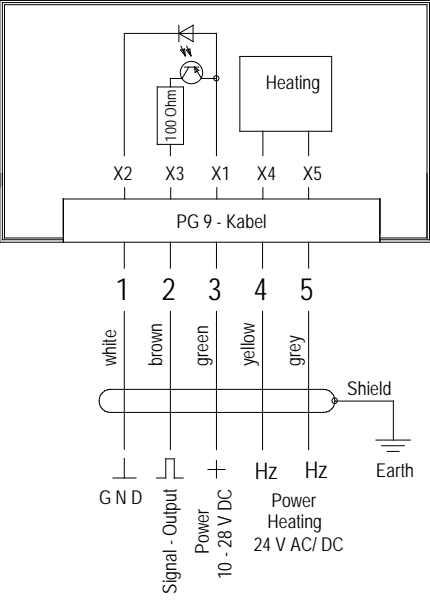
Connecting Diagram for Models with Connecting Cable



Connecting Diagram for Models with Connector



Connecting Diagram for Models with Connecting Cable

<p>Order - No.</p> <p>4.3520.00.000</p> <p>4.3520.00.120</p> <p>4.3520.10.000*</p> <p>4.3520.10.120*</p> <p>4.3520.10.300*</p> <p>4.3520.10.500*</p>	
	<p>* 4 + 5 are not connected with instruments w/o heating</p>

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.

Cleaning

For the cleaning of the device should use a damp cloth without chemical cleaning agents are used

8 Technical Data

	Windtransmitter 4.3518... open collector sink	Windtransmitter 4.3520... open collector source	Windtransmitter 4.3519... low power
Measuring Range	0,5...50 m/s	0,5...50 m/s	0,5...50 m/s
Starting velocity	0,5 m/s	0,5 m/s	0,5 m/s
Accuracy	± 0.5 m/s or ± 3 % of measuring value	± 0.5 m/s or ± 3 % of measuring value	± 0.5 m/s or ± 3 % of measuring value
Delay distance	<3,5 m (DIN ISO17713-1)	<3,5 m (DIN ISO17713-1)	<3,5 m (DIN ISO17713-1)
Measuring principle	opto-electronic (slotted disc)	opto-electronic (slotted disc)	opto-electronic (slotted disc)
Electrical output:	2...573 Hz	2...573 Hz	2...630 Hz
Pulse form	rectangle	rectangle	rectangle
Resolution	10 pulses / revolution	10 pulses / revolution	11 pulses / revolution
Characteristic	0,5 m/s = 2 Hz ; 50 m/s = 573 Hz $V [m/s] = 0,08669 \cdot f [Hz] + 0,32$ (see Diagram 1)	0,5 m/s = 2 Hz ; 50 m/s = 573 Hz $V [m/s] = 0,08669 \cdot f [Hz] + 0,32$ (see Diagram 1)	0,5 m/s = 2 Hz ; 50 m/s = 630 Hz $V [m/s] = 0,07881 \cdot f [Hz] + 0,32$ (see Diagram 2)
Amplitude	$U_{max} \leq 30 V$	$= V_{cc}$	$= V_{cc}$, max. 15V
Signal output load	max. 100 mA	max. 100 mA	R > 1KΩ (output with 220Ω in seria) C < 200nF (corresponds to <1Km of instr.cable)
Electrical supply for Electronics (V_{cc})	U: 10 - 28 V DC	U: 10 - 28V DC	U: 3,3...42 V DC
Current consumption	I : 20 mA	I : 20 mA	I : < 1 mA
Electrical supply for heating			
4.351x.00.xx0	U: 24 V AC/DC,45...65Hz P: max. 20 W I : 0,83 A	U: 24 V AC/DC,45...65Hz P: max. 20 W I : 0,83 A	U: 24 V AC/DC,45...65Hz P: max. 20 W I: 0,83 A
4.3519.40.000	-----	-----	U. 24 V AC/DC,45...65Hz P: max. 60W I : 2,5 A
Ambient temperature	- 40 °C...+ 70 °C	- 40 °C...+ 70 °C	- 40 °C...+ 70 °C
Survival speed	maximally 80 m/s, 30 minutes	maximally 80 m/s, 30 minutes	maximally 80 m/s, 30 minutes
Connection	See model	See model	See model
Dimensions	See dimensional drawing	See dimensional drawing	See dimensional drawing
Mounting	For ex. Onto a mast tube with boring thread Pg 21 or boring Ø 29 mm	For ex. Onto a mast tube with boring thread Pg 21 or boring Ø 29 mm	For ex. Onto a mast tube with boring thread Pg 21 or boring Ø 29 mm
Protection	IP 55	IP 55	IP 55
Weight	0.40 – 0.75 kg depending on model	0.40 – 0.75 kg depending on model	0.40 – 0.75 kg depending on model
Material			
Housing	Aluminium (AlMgSi1)	Aluminium (AlMgSi1)	Aluminium (AlMgSi1)
Cupstar	Synthetic, with fibre glass (PC-GF10)	Synthetic, with fibre glass (PC-GF10)	Synthetic, with fibre glass (PC-GF10)
Bottom	Synthetic (POM H2320)	Synthetic (POM H2320)	Synthetic (POM H2320)

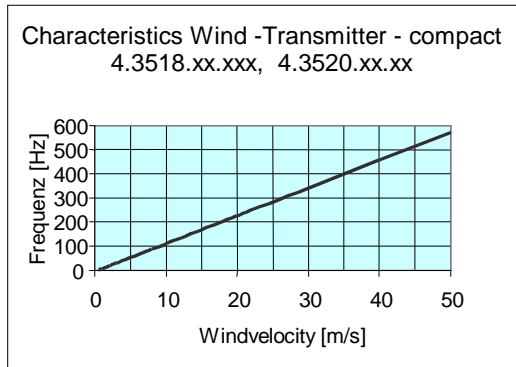


Diagram 1

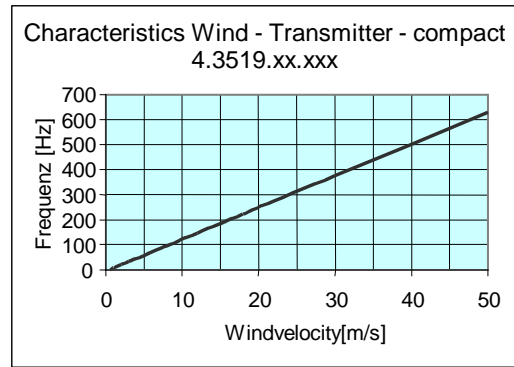


Diagram 2

9 Dimensional Drawing

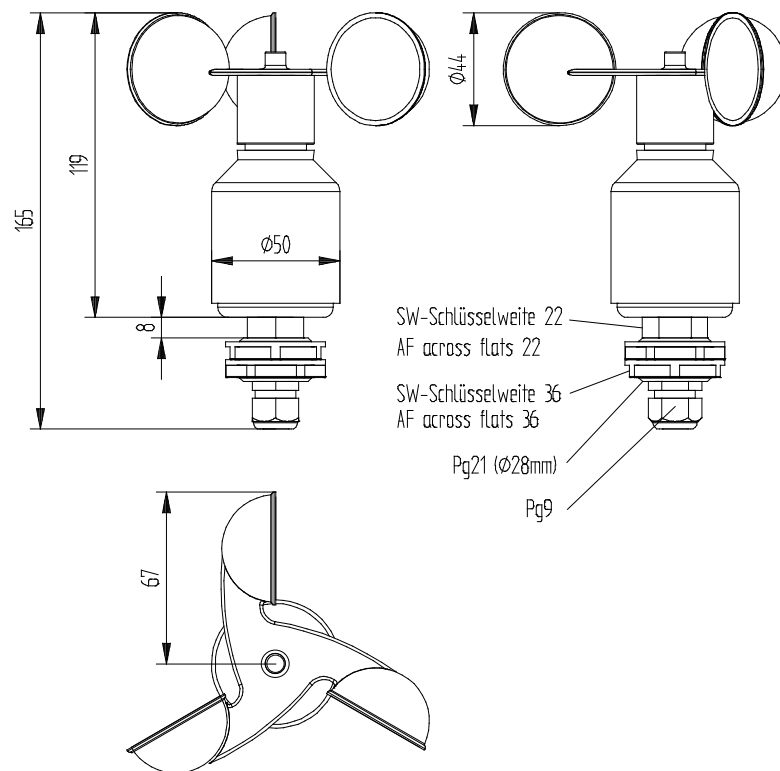


Figure 2: Model cable gland

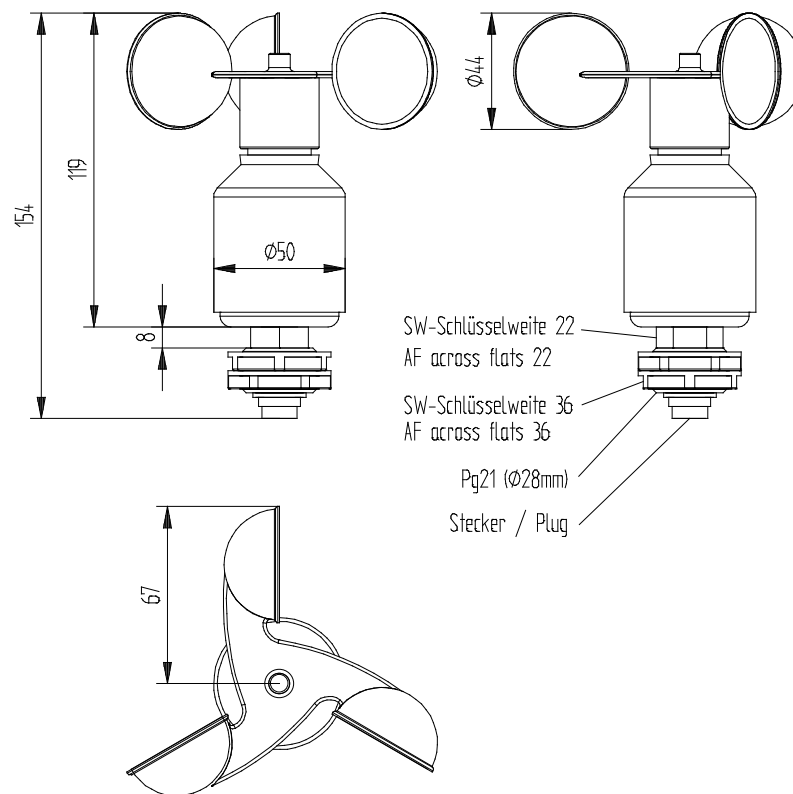


Figure 3: Model plug

10 Accessories

For the wind transmitter the following accessories are available:

Traverse For mounting the wind transmitter and wind direction transmitter <i>compact</i> jointly onto a mast.	4.3171.30.000 4.3171.31.000	Clamping range: Ø 48 ... 102 mm Clamping range: Ø 116 ... 200 mm Sensor distance: 0,8 m Material: Aluminium
Traverse, short For mounting the wind transmitter <i>compact</i> onto a mast.	4.3171.40.000 4.3171.41.000	Clamping range: Ø 48 ... 102 mm Clamping range: Ø 116 ... 200 mm Length: 0,4 m Material: Aluminium
Lightning Rod For mounting onto the a/m traverse	506351	Length: 0,56 m Material: stainless steel

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

11 EC-Declaration of Conformity

Document-No.: 001227

Month: 05 Year: 16

Manufacturer: **ADOLF THIES GmbH & Co. KG**

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This declaration of conformity is issued under the sole responsibility of the manufacturer

Description of Product: **Wind Transmitter – compact digital**

Article No.	4.3518.00.000	4.3518.00.120	4.3518.00.150	4.3518.00.700
	4.3518.00.750	4.3518.03.000	4.3518.10.110	4.3519.00.000
	4.3519.00.001	4.3519.00.150	4.3519.00.200	4.3519.00.700
	4.3519.00.701	4.3519.03.000	4.3519.10.000	4.3519.10.200
	4.3519.40.000	4.3520.00.000	4.3520.00.120	4.3520.10.000
	4.3520.10.120	4.3520.10.300	4.3520.10.500	

specified technical data in the document: **021093/05/09; 021192/02/07; 021393/09/10; 021574/08/08**

The indicated products correspond to the essential requirement of the following European Directives and Regulations:

2014/30/EU	DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
2014/35/EU	DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
552/2004/EC	Regulation (EC) No 552/2004 of the European Parliament and the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation)
2011/65/EU	DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
2012/19/EU	DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE)

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

EN 61000-6-2	Electromagnetic compatibility Immunity for industrial environment
EN 61000-6-3	Electromagnetic compatibility Emission standard for residential, commercial and light industrial environments
EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1: General requirements
EN 50581	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Place: Göttingen
Signed for and on behalf of:

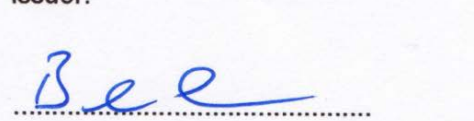
Date: 02.05.2016

Legally binding signature:



Thomas Stadie, General Manager Sales

issuer:



Joachim Beinhorn, Development Manager

This declaration certifies the compliance with the mentioned directives, however does not include any warranty of characteristics. Please pay attention to the security advises of the provided instructions for use.



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