

Wind Direction Transmitter - compact

Instruction for Use

- TMR, analogue output -

4.3129.6x.xxx

4.3129.70.xxx

4.3129.8x.xxx



Dok. No. 021488/01/21

THE WORLD OF WEATHER DATA

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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Included in delivery

1 x Wind Direkten Transmitter;
1 x Operating Instructions.

1 Models Available

Order-No.	Meas. range	Electrical Output	Heating	Operating voltage	Connection
4.3129.60.140	0 ... 360°	0 ... 20mA	20W	12 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,25mm ²
4.3129.60.141	0 ... 360°	4 ... 20mA	20W	12 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,25mm ²
4.3129.60.161	0 ... 360°	0 ... 10V	20W	12 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,25mm ²
4.3129.60.167	0 ... 360°	0 ... 2V	20W	8 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,25mm ²
4.3129.60.173	0 ... 360°	0 ... 5V	20W	8 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,25mm ²
4.3129.60.740	0 ... 360°	0 ... 20mA	20W	12 ... 30V DC or 24V AC	7 pole plug
4.3129.60.741	0 ... 360°	4 ... 20mA	20W	12 ... 30V DC or 24V AC	7 pole plug
4.3129.60.761	0 ... 360°	0 ... 10V	20W	12 ... 30V DC or 24V AC	7 pole plug
4.3129.60.767	0 ... 360°	0 ... 2V	20W	8 ... 30V DC or 24V AC	7 pole plug
4.3129.60.773	0 ... 360°	0 ... 5V	20W	8 ... 30V DC or 24V AC	7 pole plug
4.3129.65.141	0 ... 360°	4 ... 20mA	20W	12 ... 30V DC or 24V AC	15m cable LiYCY 6 x 0,25mm ²
4.3129.65.161	0 ... 360°	0 ... 10V	20W	12 ... 30V DC or 24V AC	15m cable LiYCY 6 x 0,25mm ²
4.3129.65.941 ¹	0 ... 360°	4 ... 20mA	20W	12 ... 30V DC or 24V AC	15m cable LiYCY 6 x 0,25mm ²
4.3129.70.773	0 ... 360°	0 ... 5V	-----	8 ... 30V DC or 24V AC	7 pole plug
4.3129.80.140	0 ... 360°	0 ... 20mA	60W	12 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,5mm ²
4.3129.80.141	0 ... 360°	4 ... 20mA	60W	12 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,5mm ²
4.3129.80.161	0 ... 360°	0 ... 10V	60W	12 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,5mm ²
4.3129.80.167	0 ... 360°	0 ... 2V	60W	8 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,5mm ²
4.3129.80.173	0 ... 360°	0 ... 5V	60W	8 ... 30V DC or 24V AC	12m cable LiYCY 6 x 0,5mm ²
4.3129.80.740	0 ... 360°	0 ... 20mA	60W	12 ... 30V DC or 24V AC	7 pole plug
4.3129.80.741	0 ... 360°	4 ... 20mA	60W	12 ... 30V DC or 24V AC	7 pole plug
4.3129.80.761	0 ... 360°	0 ... 10V	60W	12 ... 30V DC or 24V AC	7 pole plug

4.3129.80.767	0 ... 360°	0 ... 2V	60W	8 ... 30V DC or 24 V AC	7 pole plug
4.3129.80.773	0 ... 360°	0 ... 5V	60W	8 ... 30V DC or 24 V AC	7 pole plug
4.3129.81.741	0 ... 360°	0 ... 20mA	110W	8 ... 30V DC or 24V AC	7 pole plug

¹⁾Remark: On wind direction transmitter 4.3129.65.941 is a south marking instead of the north marking.

2 Application

The wind direction transmitter is designed for the acquisition of the horizontal wind direction. The measuring values are output as electrical analogue signals. The measuring data available are ideally adapted to the supply in display instruments, recording instruments, datalogger, as well as process control systems.

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.

Thanks to the 60/110-Watt-heating as well as to the optimized regulating characteristic, model no. 4.3129.**80/81**.xxx is especially suited for the extremely difficult application in high mountains or at other critical sites, where icing is to be expected.

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 (TMR-Sensor = Tunnel Magneto Resistance), which gives two sinus- and cosines-dependent voltages as output signals.

From this, a micro-controller calculates the wind direction, and the linear relationship between the angle and the analogue output.

4 Recommendation Side 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 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 - 10m 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

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, hangers etc.) please take a possible effect by turbulences into consideration.

5.1 Mechanical Mounting

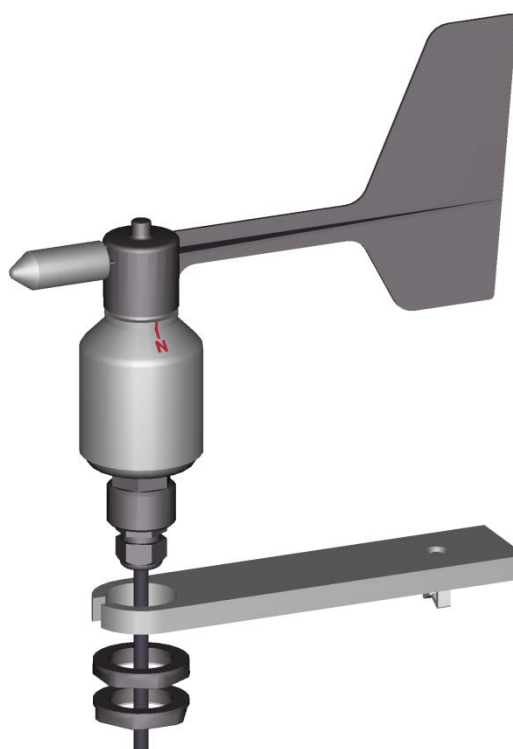
The mounting of the transmitter could be done for example at a traverse with a boring of PG 21 or on hangers with a boring of 29mm Ø.

The cable or plug is passed through the boring, and the wind direction transmitter is fixed with hexagonal nut (SW36) after the north alignment.

The cable or the plug is passed through the boring, and the wind direction transmitter is fixed with hexagonal nut (SW36) after the north alignment (see **chapter 5.2**).

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

Remark:
The traverse is not included in delivery.



5.2 North Alignment

For the precise determination of the wind direction the wind direction transmitter must be aligned **northwards** (geographical north).

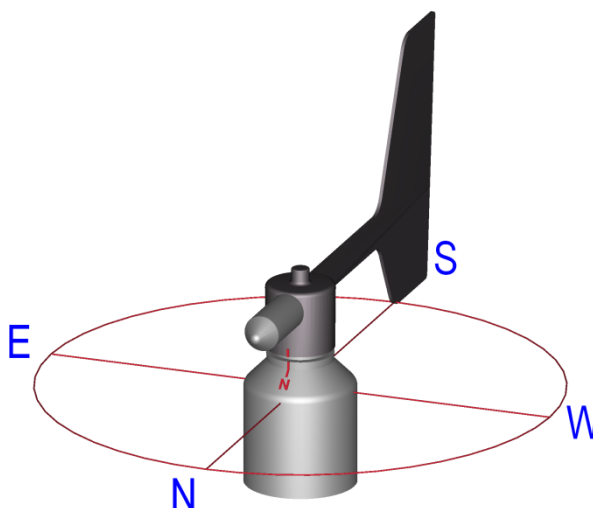
Tools:

Hexagonal wrench SW36.

Procedure:

1. Rotate north marking (**N**) at the housing and wind vane axially one above the other, acc. to figure.
2. Determine a prominent spot in the surrounding area (tree, building etc.) in northward direction, by means of a compass.
3. Locate the prominent spot over wind vane and balance weight of the wind direction transmitter.
4. Align wind direction transmitter.
The north marking must indicate the *geographical north*.
5. In case of conformity, safeguard the wind direction transmitter by two hexagonal nuts (PG21, SW 36).

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



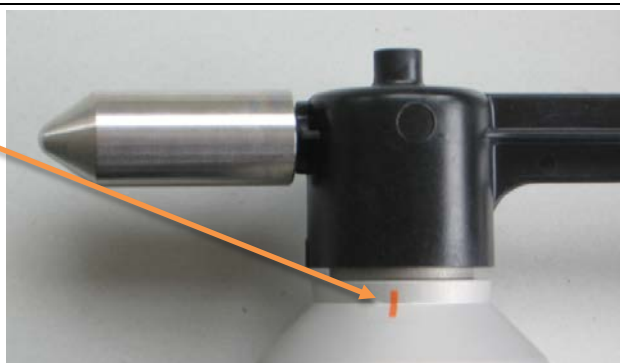
Remark:

If the north alignment is carried out by compass, please consider the local declination (= deviation of direction of the magnetic needle from the true north), and local magnetic interferences (e.g. hardware, electric cable).

When aligning the wind direction transmitter on a moving object (e.g. vehicle, wind wheel, ship etc.) please consider that the "north point" to be determined, might possibly be located on the object.

Remark:

Wind direction transmitter 4.3129.65.941 has a south marker instead of the north marker.



5.3 Electrical Mounting

For electrical connection please refer to the connecting diagram.

5.4 Plug Mounting

Applies only to instruments with connection „plug“.

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

Cable connection: Without cable shield.

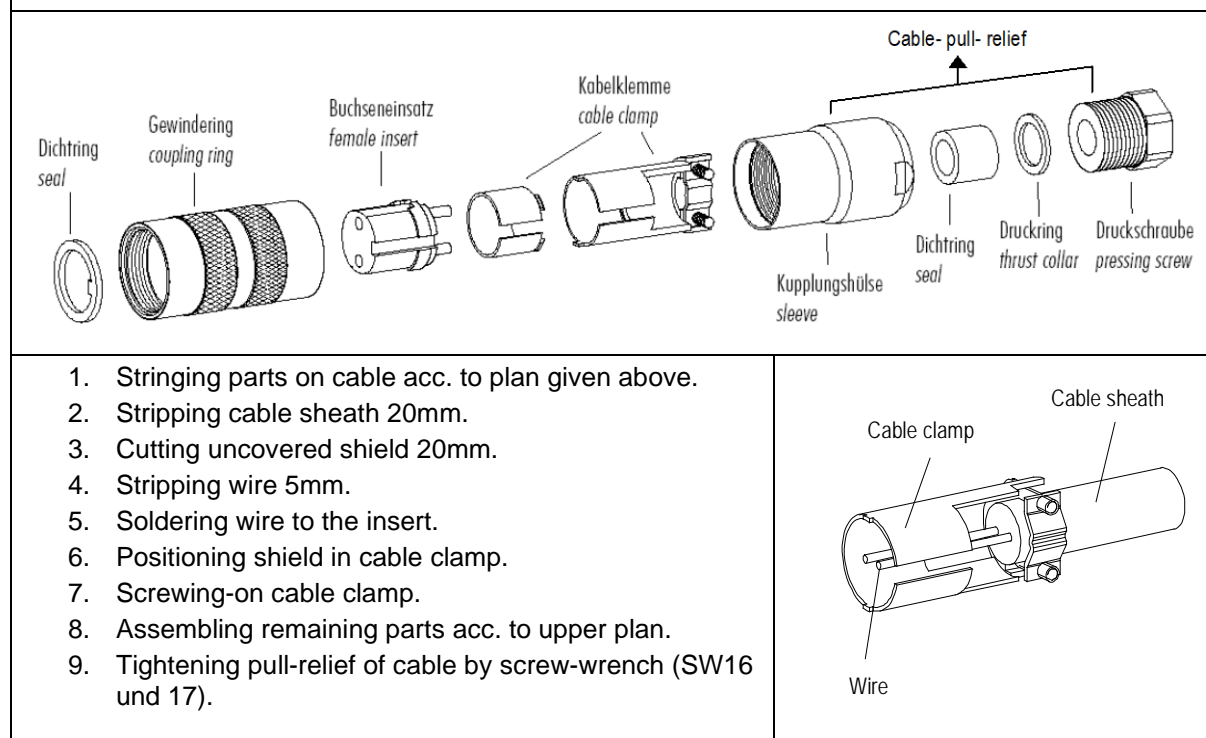


Figure 1: Plug Mounting

6 Connecting Diagram

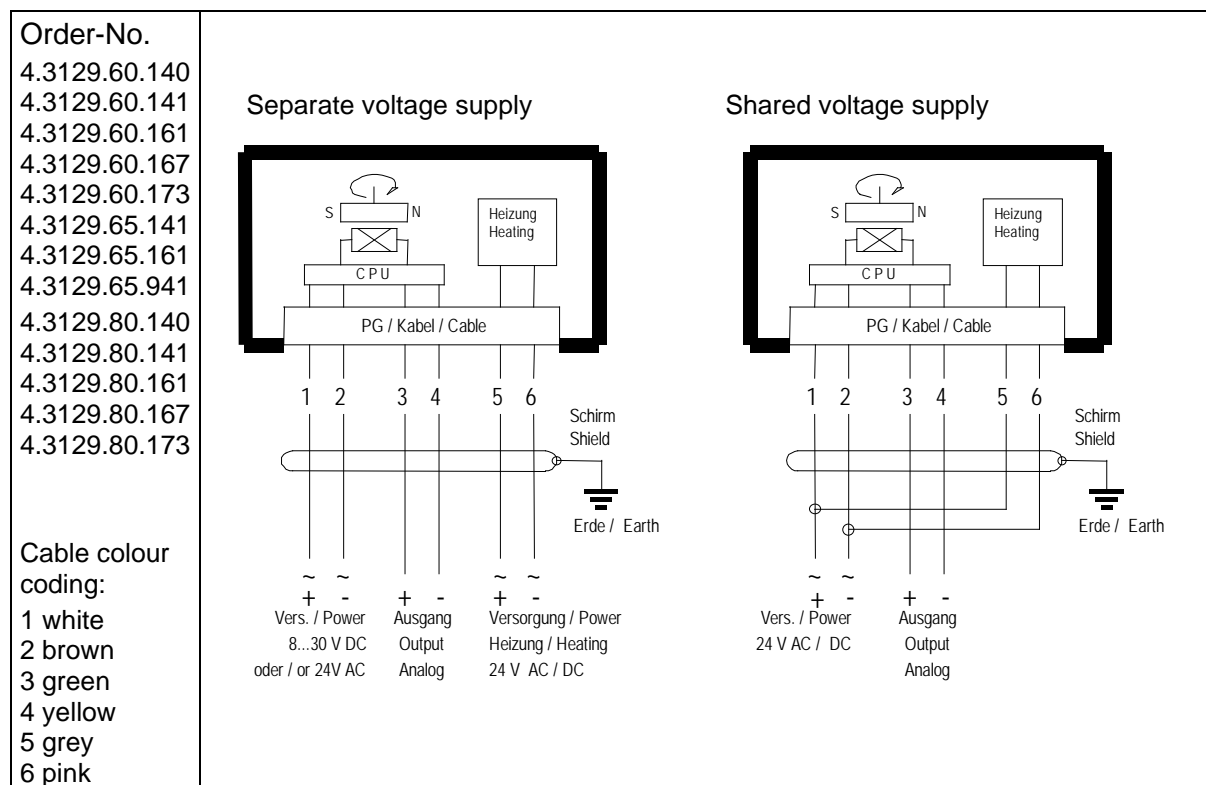


Figure 2: Connecting Diagram for Models with Cable

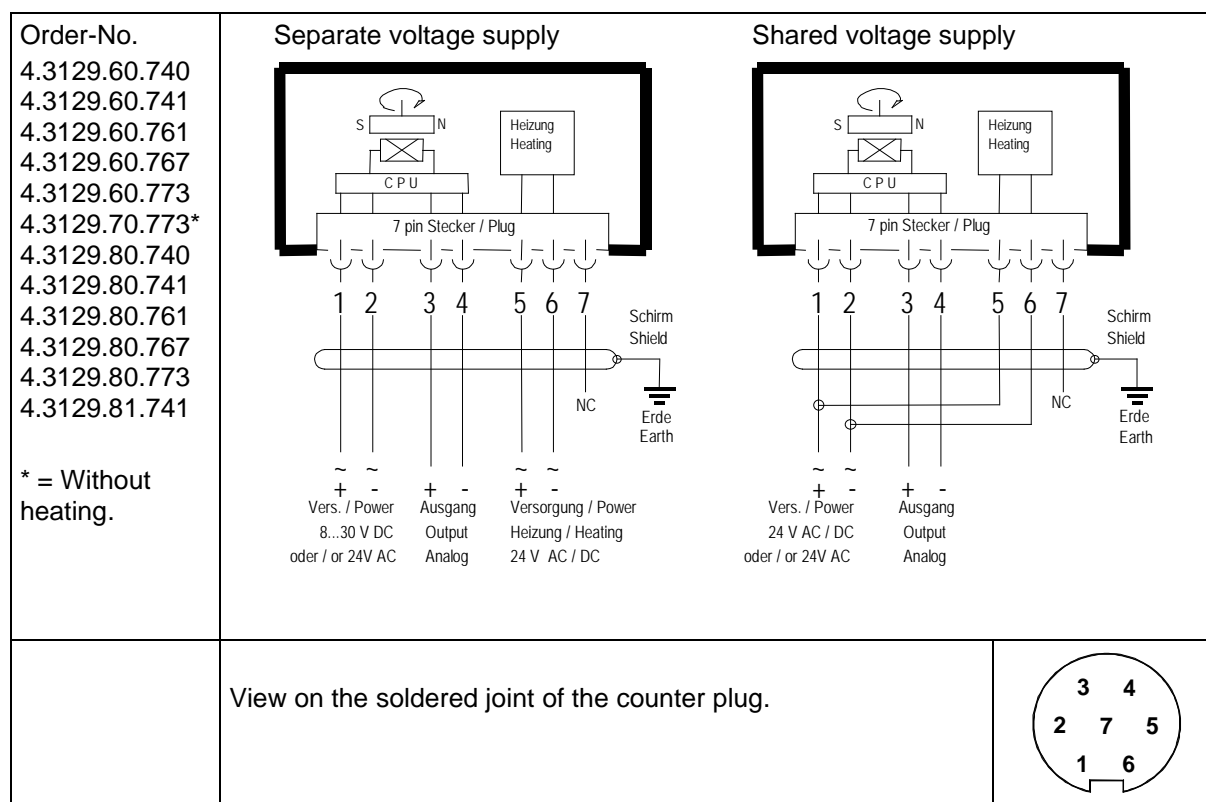


Figure 3: Connecting Diagram for Models with Plug

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

Characteristic	Description / Value
Measuring range	0 ... 360°
Resolution	Ca. 0.4°
Starting Threshold	≤1m/s acc. to ASTM Standards D 5366-96. ≤0.4m/s acc. to VDI Directive 3786 Part 2.
Delay Distance	<2.5m acc. to ASTM Standards D 5366-96.
Accuracy	±2°
Measuring principle	Magnetic.
Electrical output	See chapter 1 0 ... 20mA; 4 ... 20mA @ 400Ω, U _B ≥ 15V; @ 300Ω, U _B ≥ 12V 0 ... 2V; 0 ... 5V @ ≤2000Ω 0 ... 10V @ ≤2000 Ω, U _B ≥ 12V
Operating voltage (V _{cc})	8 ... 30V DC / 24V AC.
Current consumption	<10mA + I _{out}
Operating voltage heating 4.3129.60.xxx 4.3129.80.xxx 4.3129.81.741	24V DC/AC, max. 20W 24V DC/AC, max. 60W 24V DC/AC, max. 110W
Ambient temperature	- 40 ... +70°C - 50 ... +70°C (@ 4.3129.81.741)
Ambient air humidity	0 ... 100% rel. humidity
Survival speed	Maximally 80m/s, 30 minutes.
Connection	See model (chapter 1).
Dimensions	See dimensional drawing.
Mounting	For ex. onto mast tube receptacle thread PG 21 or boring Ø 29mm.
Protection	IP 55, in position of application.
Weight w/o cable with cable	Ca. 0.3kg Ca. 0.3kg + 0.075kg / m cable.
Material Housing Vane Bottom	Aluminium (AlMgSi1). Polycarbonat, glass fiber reinforced. Synthetic (POM H2320).

9 Dimensional Drawing

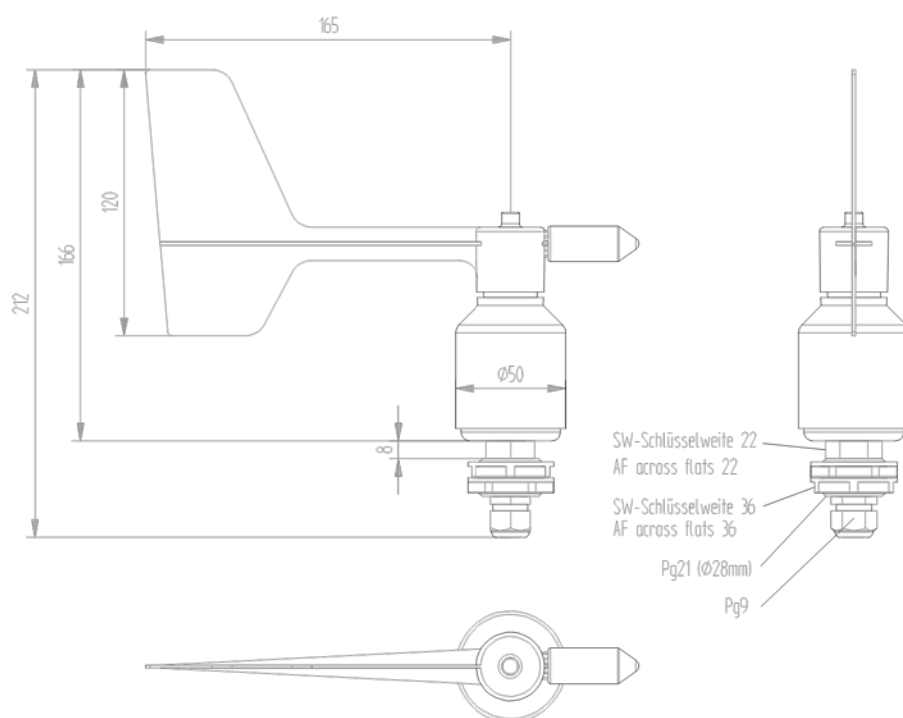


Figure 4: Dimensional Drawing with Cable

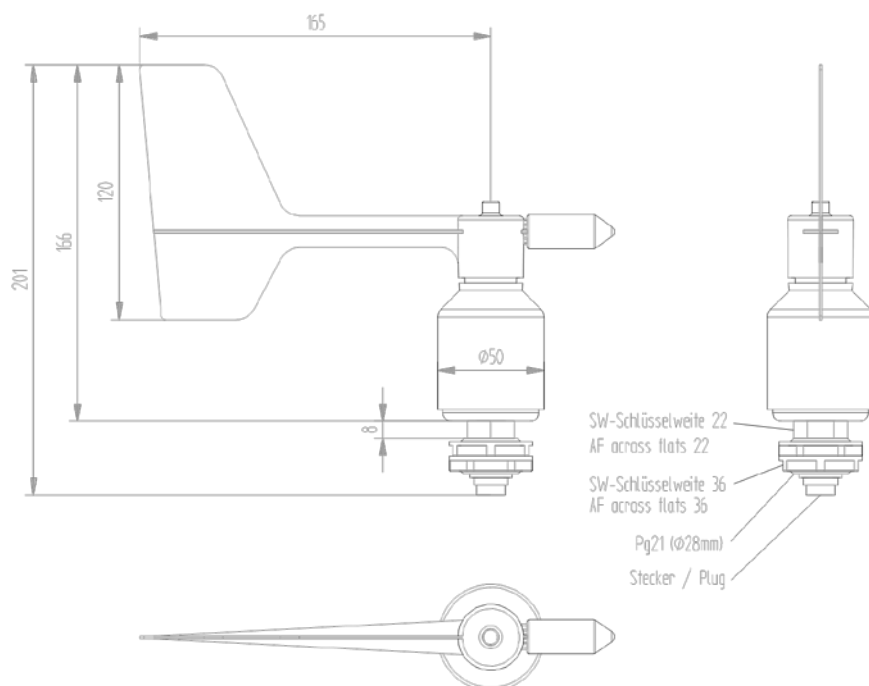


Figure 5: Dimensional Drawing with Plug

10 Accessories

The following accessories are available for the wind direction transmitter:

Traverse	4.3171.30.000	Clamping range: Ø 48 ... 102mm
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 ... 200mm Sensor distance: 0.8m Material: Aluminum

Traverse, short	4.3171.40.000	Clamping range: Ø 48 ... 102mm
For mounting the wind direction transmitter <i>compact</i> onto a mast.	4.3171.41.000	Clamping range: Ø 116 ... 200mm Length: 0.4 m Material: Aluminum

Lightning rod	506351	Length: 0.56m
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.

11 EC-Declaration of Conformity

Document-No.: 001223

Month: 01 Year: 21

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

Hauptstr. 76
D-37083 Göttingen
Tel.: (0551) 79001-0
Fax: (0551) 79001-65
email: Info@ThiesClima.com

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

Description of Product: **Wind Direction Transmitter – compact analog**

Article No.	4.3129.00.140	4.3129.00.141	4.3129.00.161	4.3129.00.167
4.3129.00.173	4.3129.00.740	4.3129.00.741	4.3129.00.761	4.3129.00.767
4.3129.00.773	4.3129.00.940	4.3129.00.941	4.3129.02.141	4.3129.03.141
4.3129.04.767	4.3129.05.140	4.3129.05.141	4.3129.05.161	4.3129.09.141
4.3129.39.141	4.3129.53.141	4.3129.54.141	4.3129.55.141	4.3129.56.141
4.3129.60.140	4.3129.60.161	4.3129.60.167	4.3129.60.173	4.3129.60.573
4.3129.60.141	4.3129.60.741	4.3129.60.761	4.3129.60.767	4.3129.60.773
4.3129.60.740	4.3129.80.140	4.3129.80.141	4.3129.80.161	4.3129.80.167
4.3129.65.941	4.3129.80.740	4.3129.80.741	4.3129.80.761	4.3129.80.767
4.3129.80.173	4.3129.81.741	4.3129.90.741	4.3129.91.741	
4.3129.80.773				

specified technical data in the document: 021071/05/10; 021189/04/20; 021453/06/05; 021487/01/21; 021732/03/20

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)
2002/75/EC	COMMISSION DIRECTIVE 2002/75/EC of 2 September 2002 amending Council Directive 96/98/EC on marine equipment

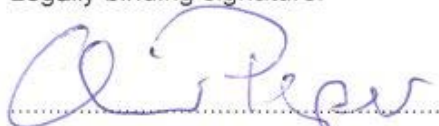
The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

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: 12.01.2021

Legally binding signature:


Dr. Christoph Peper, General Manager

issuer:


ppa. Jörg Petereit, 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.

**Please contact us for your system requirements.
We advise you gladly.**

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