
Combined Wind Transmitter

- with analogue output

4.3324.31.xxx



ADOLF THIES GmbH & Co. KG

Hauptstraße 76

Box 3536 + 3541

Phone ++551 79001-0

www.thiesclima.com

37083 Göttingen Germany

37025 Göttingen

Fax ++551 79001-65

info@thiesclima.com

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1 Models

Order-No.	Meas. range WS	Meas. range WD	Electrical Output	Model
4.3324.31.040	0,3 ... 50 m/s	0 ... 360°	0 ... 20 mA Load resistor: ≤ 500 Ω	Standard
4.3324.31.041	0,3 ... 50 m/s	0 ... 360°	4 ... 20 mA Load resistor: ≤ 500 Ω	Standard
4.3324.31.061	0,3 ... 50 m/s	0 ... 360°	0 ... 10 V Load resistor: ≥ 1000 Ω	Standard
4.3324.31.073	0,3 ... 50 m/s	0 ... 360°	0 5 V Load resistor: ≥ 1000 Ω	Standard
4.3324.31.640	0,3 ... 60 m/s	0 ... 360°	0 ... 20 mA Load resistor: ≤ 500 Ω	Standard
4.3324.31.641	0,3 ... 60 m/s	0 ... 360°	4 20 mA Load resistor: ≤ 500 Ω	Standard
4.3324.31.661	0,3 ... 60 m/s	0 ... 360°	0 ... 10 V Load resistor: ≥ 1000 Ω	Standard
4.3324.31.673	0,3 ... 60 m/s	0 ... 360°	0 5 V Load resistor: ≥ 1000 Ω	Standard
4.3324.31.941	0,3 ... 60 m/s	0 ... 360°	4 ... 20 mA Load resistor: ≤ 500 Ω	"Ship version" * - short wind vane - reinforced cup star - special ball bearing

* Comb. Wind transmitters for heavy mechanical load, for ex. on ships, wind power plants or the like.

The combined wind transmitters are shipped in semi-mounted state, in order to avoid transport damages and to keep the package small.

The following parts are included in delivery:

- 1 x combined wind transmitter, pre-mounted
- 1 x cup star
- 1 x wind vane
- 1 x connecting plug

2 Range of application

The combined wind transmitter serves for the acquisition of the horizontal components of the wind speed and the wind direction. All measuring values are available at the outputs analogue signals . They can be transmitted to display, recording instruments, dataloggers 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.

3 Construction and Mode of Operation

The housing, cup star and wind vane are made of aluminum, die the surfaces are anodized. The bow consists of stainless steel. Labyrinth seals and o-rings protect the sensitive internal parts from precipitation. The instrument is designed for mounting to a mast tube; the electrical plug connection is situated in the transmitter shaft.

A low-inertia light-metal cup star (in ball bearings) is set into rotation by the wind. The opto-electronic revolution-scanning produces a pulse frequency which is transformed into the analogue signal by means of an integrated measuring transducer.

The light-metal wind vane (in ball bearings) is moved by the wind. The opto-electronic scanning of the direction produces a coded signal, which is transformed into an analogue signal by means of an integrated measuring transducer. Generally, the measuring transducers are supplied by the heating voltage. However, the instrument can be operated also without heating system. In this case, a separate supply voltage is to be connected for the measuring transducer. Outputs and inputs are protected against over-voltage by Transzorb diodes.

4 Recommendation Site Selection / Standard Installation

In general, wind measurement instruments should be able to detect wind conditions over a broad range. In order to obtain comparative values of the surface wind, measurements should be taken at a height of 10m above a flat, open terrain. Open terrain means that the distance between the wind transmitter and an obstacle is at least 10 times greater than the height of the obstacle itself. If this requirement cannot be fulfilled, then set the wind transmitter up at a height where the influence of local obstacles on the measured values is minimal (about 6-10 m above the level of the obstacle). If the wind transmitter is set up on a flat roof, then place it in the center of the roof and not at the edge in order to avoid 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:

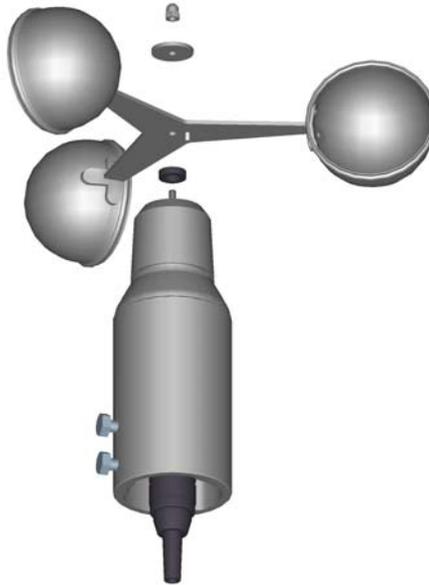
When using fastening adapters (angle, traverses, hangers etc.) please take a possible effect by turbulences into consideration.

Remark:

*A **Lightning Rod** Order-No. **4.3100.99.000** is recommended if the instrument is to be used in areas with considerable lightning activity.*

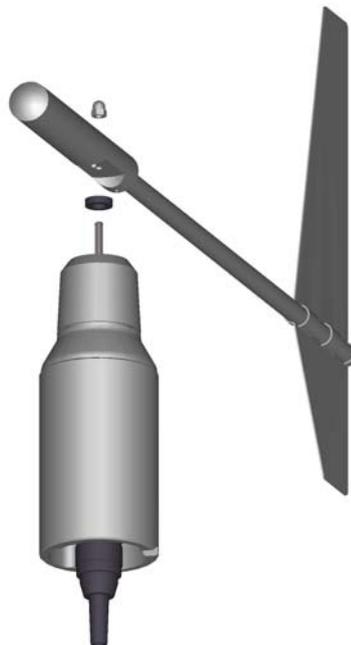
5.1 Mounting the Cup Anemometer

Unscrew the cap nut (SW 8) from the case of the speed transmitter and remove the disk. The rubber gasket remains in the protection cap. Place the cup anemometer such that the set pin on the cup anemometer catches in the notch of the protective cap. Replace the disk and re-screw the cap nut. Make sure you hold the transmitter on the protective cap and not on the cup anemometer.



5.2 Mounting the Wind Vane

Mount the wind vane in the same way as the cup anemometer (see 5.1.) The only difference is that there is no disk.



5.3 Mounting the Wind Transmitter

The transmitter can be mounted onto a tube of R 1 1/2" (\varnothing 48,3 mm), 50 mm long. The internal diameter of the mounting tube must be at least 40 mm since the transmitter will be plugged into an electrical system from below. Solder a cable onto the enclosed plug (see chapter 5.4). After electrical connection, set the wind transmitter onto the tube. North marking and bow shall indicate to the North.

North Alignment

Rotate the case markings (north marking) 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 wind vane and the counter weight of the wind direction transmitter, and when these coincide screw the wind transmitter into place. (the north marking must indicate to the geographic north). The instrument is fixed on the shaft by means of the two hexagon head screws.

Alignment of the comb. Wind Transmitter on a Ship

- The reference point for the wind transmitter is the roll-axis of the ship, whereat "0°" is related to the **ship bow**.

Rotate the case markings (north marking) on the shaft and on the protective cap until they are aligned. Take a bearing on ship bow over the wind vane and the counter weight of the wind direction transmitter, and when these coincide screw the wind transmitter into place. (the north marking must indicate to the geographic north).

When aligning the comb. wind transmitter on other mobile objects (for ex. vehicles, wind power plants etc.) this procedure can be adopted

5.4 Electrical Mounting

A shielded cable with a diameter of 5..8 mm and a core section of 0,5...0,75 mm² must be soldered on to the enclosed coupling socket.

The number of required cores, and the PIN assignment is stated in the connection diagram (chapter 7).

Cable recommendation	
Type/ No. of cores /Diameter	Cable diameter
LIYCY 7 x 0,5 mm ²	approx. 8 mm

Coupling socket 201061 (7-pol), Type Binder, Series 691

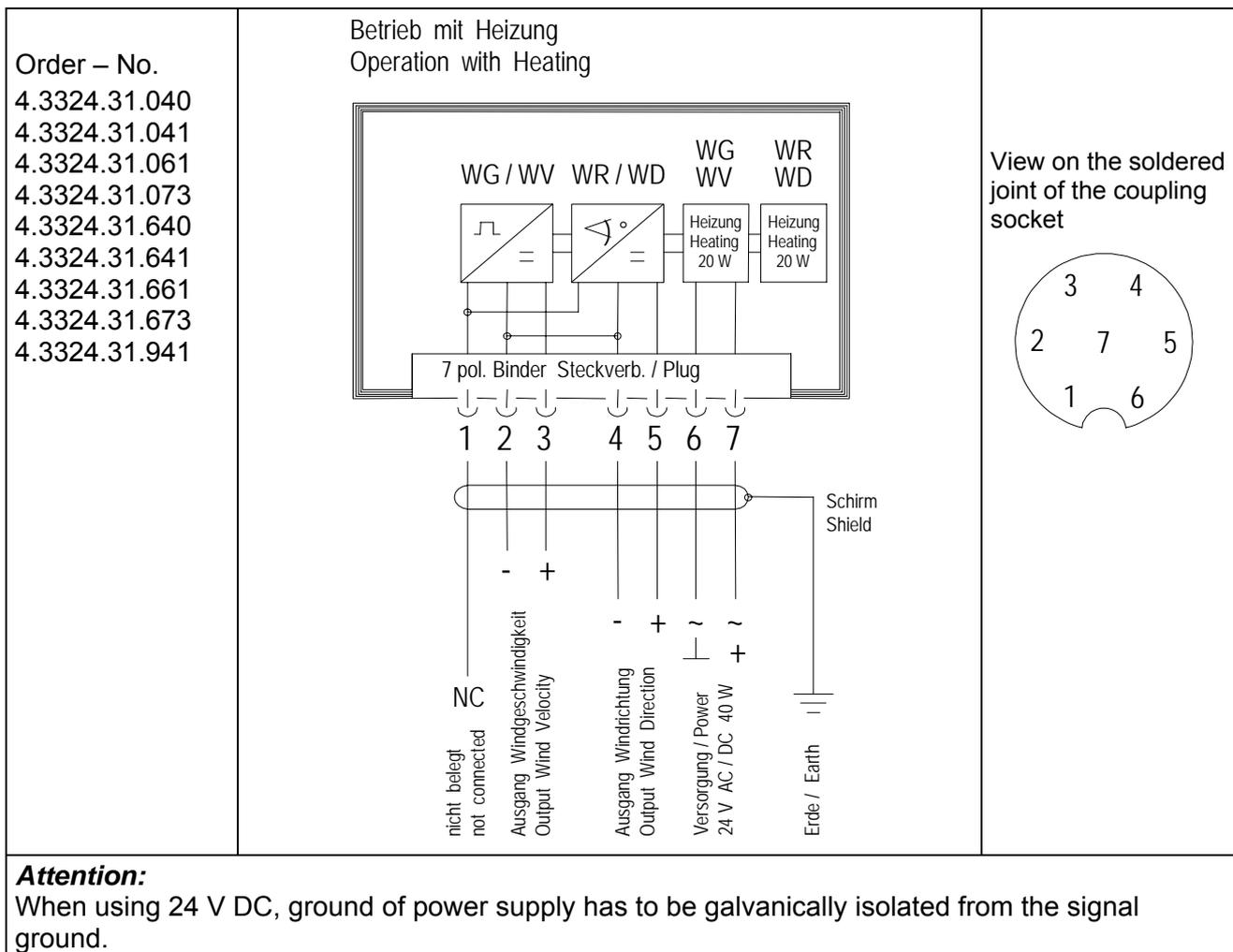
1. Removing Coupling socket
2. Stringing coupling socket on cable
3. Stripping cable sheath 20 mm
4. Putting uncovered shield backwards onto the cable sheath
5. Stripping uncovered cable cores 5 mm
6. Pushing shrink hose over cable cores
7. Soldering stripped cable cores onto the solder filament of the bush insert, pushing shrink hose over the soldering afterwards, and shrinking it.
8. Fastening cable and shield in the carrier sleeve by means of the clamp.
9. Mount coupling socket

6 Maintenance

If the instrument has been properly mounted, no maintenance is required. Heavy pollution can clog the slits between the rotating and stationary parts of the instrument. These slits must always be clean and unclogged.

After years of use, the ball bearings can suffer from wear and tear. This is expressed in a higher starting torque respectively in the fact that the cup anemometer does not start rotating. If such a defect occurs, we recommend that you return the instrument to the factory for repair.

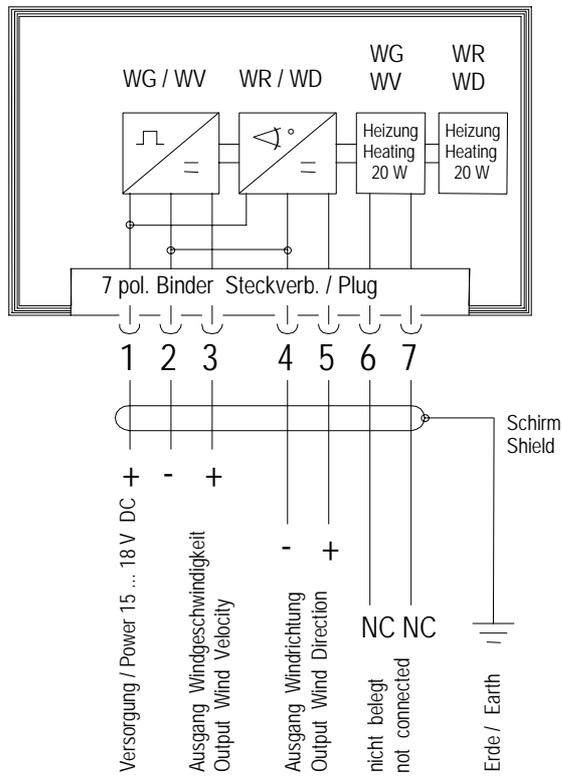
7 Wiring diagram



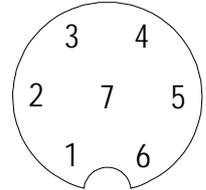
Order-No.

- 4.3324.31.040
- 4.3324.31.041
- 4.3324.31.061
- 4.3324.31.073
- 4.3324.31.640
- 4.3324.31.641
- 4.3324.31.661
- 4.3324.31.673
- 4.3324.31.941

Betrieb ohne Heizung
Operation without Heating



View on the soldered
joint of the coupling
socket



8 Technical Data :

	4.3324.31.040 4.3324.31.041 4.3324.31.061 4.3324.31.073 4.3324.31.640 4.3324.31.641 4.3324.31.661 4.3324.31.673	4.3324.31.941
Wind Speed		
Meas. range	0 ... 50/60 m/s (= mA / V) see models (chapter 1)	0 ... 60 m/s (= 4... 20 mA)
Start-up	0,3 m/s	>0,3 m/s
Accuracy	±0,4 m/s resp. 2,5 % from meas. value	±0,5 m/s resp. 2,5 % from meas. value
Distance constant	5 m	5 m
Wind Direction		
Meas. range	0... 360° (= 4... 20 mA)	0... 360° (= 4... 20 mA)
Start-up	<0,6 m/s at 90° vane move	<1 m/s at 90° vane move
Accuracy	1,5°	1,5°
Resolution	2,5°	2,5°
Damping ratio	0,2 –0,3	0,2 –0,3
General		
Electrical outputs	see models available 0/4... 20 mA (Load resistor ≤500 Ω) 0. .. 5 V (Load resistor ≥1000 Ω) 0... 10 V (Load resistor ≥1000 Ω)	4... 20 mA (Lastwiderstand ≤500Ω)
Max. wind load	60 m/s	75 m/s (max. 30 min.)
Ambient temperature	-35...+80°C	-35...+80°C
Operating voltage with Heating without Heating	24 V DC/AC, ca. 40 W, electronically regulated 15 ...18 V DC	24 V DC/AC, ca. 40 W, electronically regulated 15 ...18 V DC
Protection	IP 55	IP 55
Wind load at 35 m/s	approx. 50 N	approx. 50 N
Mounting	onto mast tube 1 ½", for ex. DIN 2441	onto mast tube 1 ½", for ex. DIN 2441
Connection	7-pole plug connection in the shaft	7-pole plug connection in the shaft
Weight	2,8 kg	2,8 kg
Model	Standard	"Ship version" - short wind vane - reinforced cup star - special ball bearing

9 Dimensions

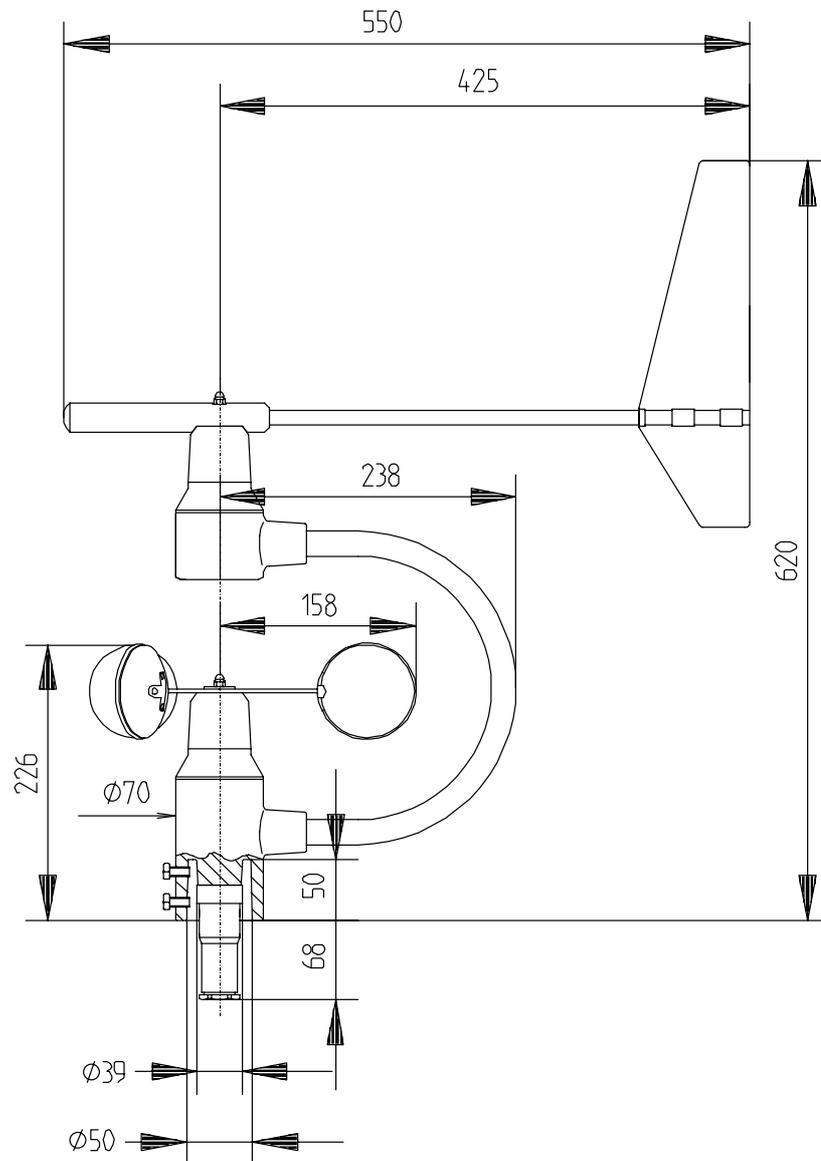


Figure 1: Dimension 4.3324.31.xxx

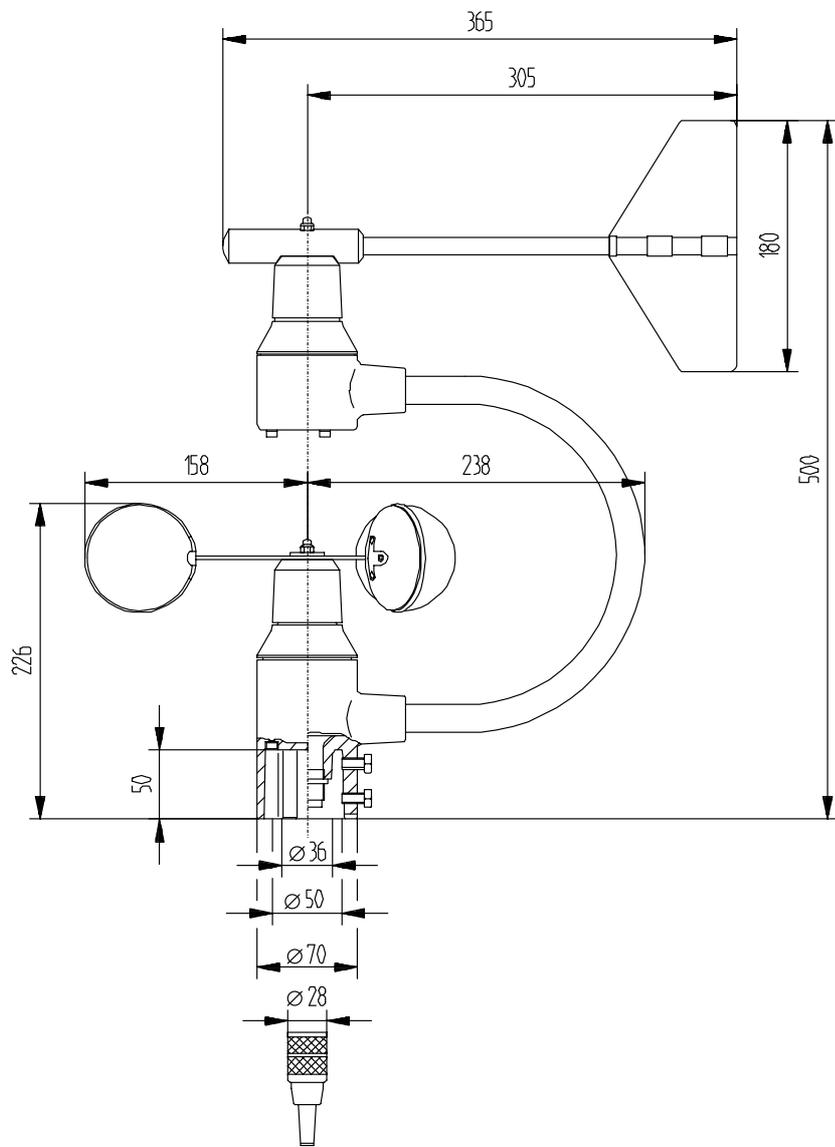


Figure 2: Dimension 4.3324.31.941

10 EC-Declaration of Conformity

Document-No.: 000434

Month: 06 Year: 08

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

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

Description of Product: **Wind Transmitter, Wind Direction Transmitter, Combined Wind Transmitter**

Article No.	4.3125.32.040	4.3125.32.041	4.3125.32.060	4.3125.32.061
	4.3125.32.073	4.3125.32.841		
	4.3303.22.040	4.3303.22.041	4.3303.22.060	4.3303.22.061
	4.3303.22.073	4.3303.22.640	4.3303.22.641	4.3303.22.660
	4.3303.22.661	4.3303.22.673	4.3303.22.841	
	4.3324.31.040	4.3324.31.041	4.3324.31.061	4.3324.31.073
	4.3324.31.640	4.3324.31.641	4.3324.31.661	4.3324.31.673
	4.3324.31.941			

specified technical data in the docume **020853/10/07; 020854/11/07; 020848/10/07**

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

- 2004/108/EC DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
- 2006/95/EC DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to 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)

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

Reference number	Specification
IEC 61000-6-2: 2005	Electromagnetic compatibility Immunity for industrial environment
IEC 61000-6-3: 2006	Electromagnetic compatibility Emission standard for residential, commercial and light industrial environments
IEC 61010-1: 2001	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements

Place: Göttingen

Date: 30.06.2008

Legally binding signature:

issuer:

.....
Wolfgang Behrens, General Manager

.....
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.



ADOLF THIES GmbH & Co. KG

Hauptstraße 76 37083 Göttingen Germany
P.O. Box 3536 + 3541 37025 Göttingen
Phone ++551 79001-0 Fax ++551 79001-65
www.thiesclima.com info@thiesclima.com



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