DESCRIPTION

This instrument in its present design was developed by Frankenberger and provides continuous measurement of the air temperature with high accuracy. The design of the instrument essentially eliminates the effects of wind and radiation. Outdoor measurement, even at high altitudes -e.g. for detection of inversion layers- is possible.

OPERATING PRINCIPLE

Inside the downward inclined radiation shield tube a platinum resistance thermometer is mounted. This sensor is a hard glass encased Pt 100 Ω resistance.

The sensor can be connected by means of a 3-wire or 4-wire supply system (see connection plan page 3). This way measurement over long distance can be carried out without the line resistance falsifying the result. The resistance thermometer is continuously aspirated by a ventilating system providing an air flow of about 3.5 m/s.

DESIGN OF THE INSTRUMENT

(Refer to dimension sketch)
The glass resistance thermometer (2) is cast in a plastic tube which is fastened to the suction tube (1) by a cap screw (3). Hereby the sensor can be exchanged easily without any additional tools. The standard sensor is equipped with 5 m of shielded cable 4 x 0.5 mm² (longer cables may be supplied upon request!).

A plug connection is available, alternatively.

In order to provide protection against radiation, the sensor is shielded by two concentric brass tubes (4) which are chrome-plated. These tubes are insulated against the shaft and against each other by plastic rings. The radial blower in the upper part of this unit draws in the air stream through the shield tube and the vertical pipe (5). The velocity of air flow remain sufficiently constant even at higher wind speeds of the ambient atmosphere, so that no error due to wind occurs. Above the clamping position (6) (plastic bushing) the vertical pipe may be disconnected by loosening the cap screw and thereby separating the unit into an upper and lower part.

The upper part (7) consists of the blower motor (8) with a fan rotor (9) which is protected by a bell-shaped housing of anodized and varnished aluminium sheet metal (10) also holding the electric socket (11) for the current supply.

For permanent installation the bracket (12) is to be used.

A 5 m long 3 x 0.75 mm² connection cable for the blower is part of the delivery.

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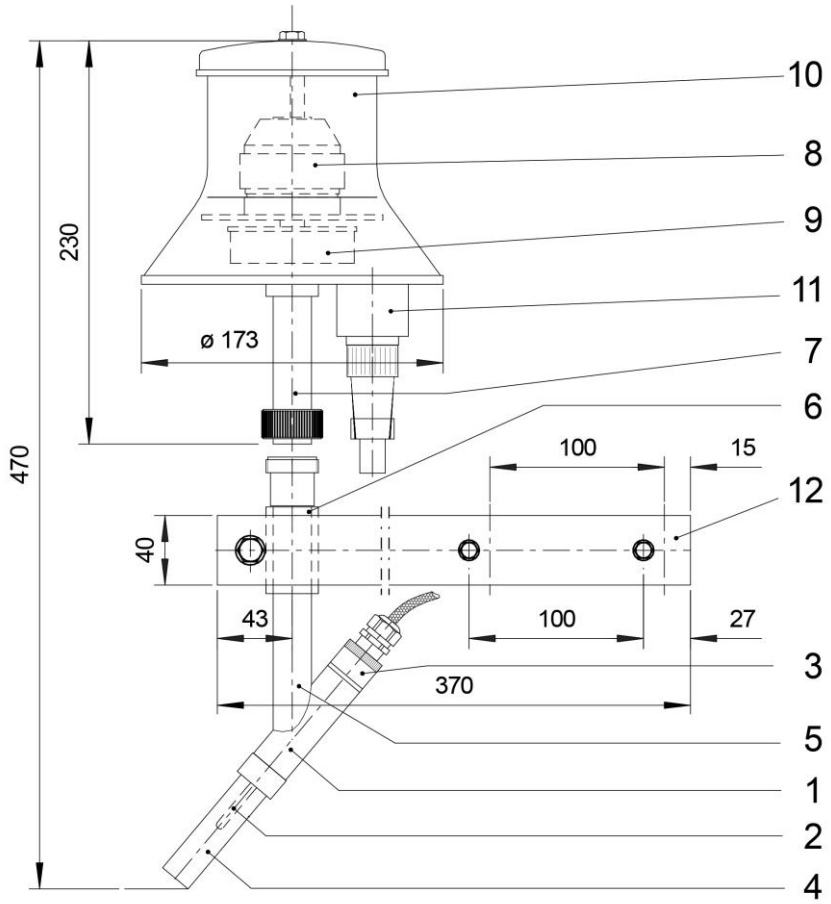
DIMENSION SKETCH



TECHNICAL DATA

SENSOR *

2010. - 000:	Pt 100 according to DIN 60751 B, 1/3 Tolerance
2010. - 100:	Pt 100 according to DIN 60751 B, 1/6 Tolerance
2010. - 200:	Pt 100 according to DIN 60751 B, 1/10 Tolerance

ACCURACY

2010. - 000:	±0,1 °C at 0 °C (1/3 Tolerance)
2010. - 100:	±0,05 °C at 0 °C (1/6 Tolerance)
2010. - 200:	±0,03 °C at 0 °C (1/10 Tolerance)

*) other sensors may be supplied upon request.

TECHNICAL DATA

POWER CONSUMPTION

24 VAC-Version:	approx. 110 mA
12 VDC-Version:	approx. 80 mA
230 VAC-Version:	approx. 160 mA
24 VDC-Version:	approx. 92 mA

GENERAL

Measuring range:	-35 … +45 °C
Ambient temperature range:	-50 … +60 °C
Ventilation speed:	approx. 3.5 m/s
Weight:	approx. 2.4 kg
Connection:	Ventilation with plug connection, plastic, protection IP 67 Sensor (see ordering code), metal, protection IP 65

ORDERING CODE

ELECTRICALLY ASPIRATED THERMOMETER

Version	24 V AC	**2010.1000**
Version	12 V DC	**2010.2000**
Version	230 V AC	**2010.3000**
Version	24 V DC	**2010.4000**
Sensor 1/3 Tolerance		**. 000**
Sensor 1/6 Tolerance		**. 100**
Sensor 1/10 Tolerance		**. 200**
with plug connection		**. 10**
		2010.

OPERATING INSTRUCTIONS

INSTALLATION

The bracket has two pairs of screw-on holes ∅ 10 mm for optional use. The instrument itself is clamped tight with a 30 mm screw fitting the hole at split end of the bracket. After connecting the measuring cable and the power cable - the unit is ready for use

MAINTENANCE

Depending on the degree of pollution in the ambient atmosphere a regular cleaning in shorter or longer periods is necessary. This applies mainly to the radiation shield tubes and the glass sensor.

The 230 VAC-motor in the upper-(blower) part is equipped with encased ball bearings of stainless steel, filled with a permanent lubricant.

After a period of uninterrupted operation for about 2 years the bearings should be checked for smooth running and should possibly be replaced. It is evident that under extreme environmental conditions (dust, corrosive gases etc.) the maintenance periods must be shortened, or under good conditions may be extended. In order to replace the ball bearings the motor is removed from the upper-(blower)-part, the top cover plate is pried up. Stator and rotor may now be disassembled, after removing the lock ring from the shaft, and the bearings can be pressed out. Re- assembly in reverse order.

DC-motors are equipped with an electronic commutation. In case of a defect the complete motor has to be replaced.

ASSEMBLY INSTRUCTIONS, PLUG

1. Slide parts 1, 2, 3 and 4 on conductor.

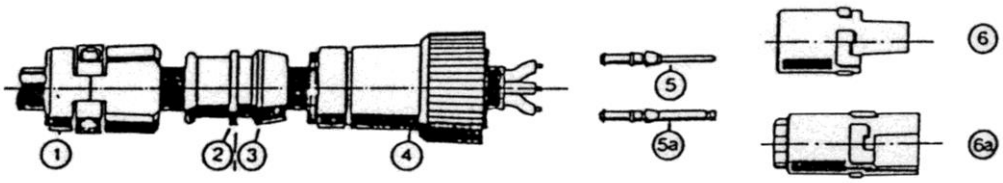
2. Strip the individual wires for a length of 7 mm and solder them to contacts (5) respectively (5a)

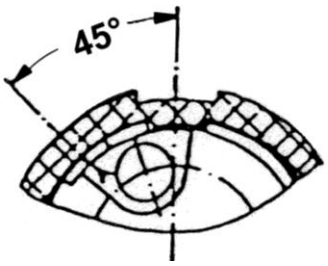
3. Press contacts into contact insert (6) respectively (6a). Pay attention that the contact clip locks in its correct position.

4. Place contact insert into the shell (4). Pay attention to correct initial position (see sketch below). Press contact insert in axial direction against the spring in the shell and lock it by a 45° clockwise turn. This can be carried out by means of the insert-counterpart (used in the sensor's socket) or a round-nose pliers.

5. Tighten clamping nut (1) with rubber part and ring (2, 3) and make sure that the conductor is well sealed.

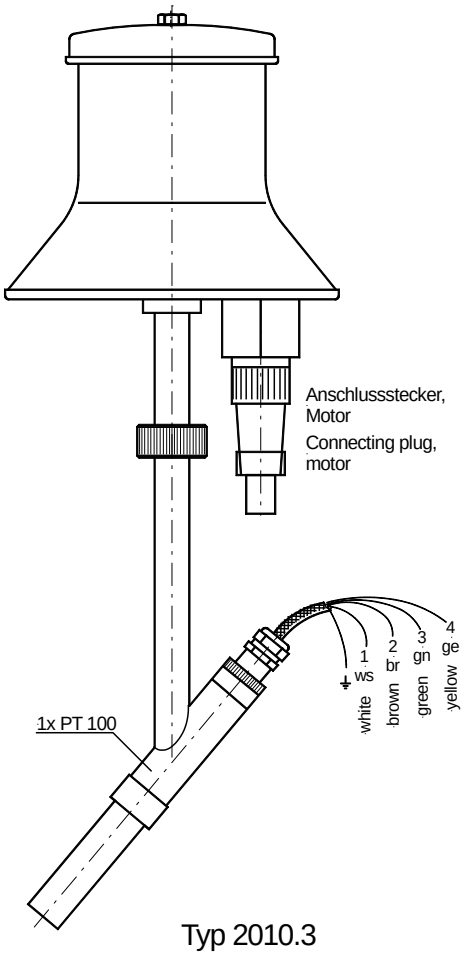
6. Check connection.
In case the plug does not fit into the socket, correct position of the contact insert has to be checked!



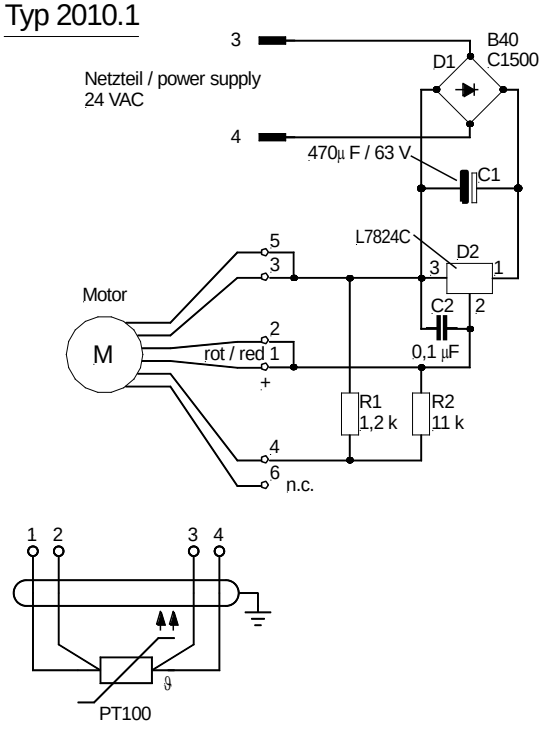


Initial position of the
Contact insert (6, 6a)
In the shell (4)

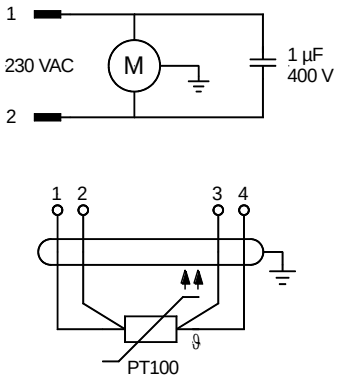
CONNECTION PLAN



Typ 2010.1



Typ 2010.3



Typ 2010.2/2010.4