Wind Transmitter

for tunnel application

Instruction for use 4.3308.10.000

1. General Information

The wind transmitter is used to measure directional air currents in tunnels, ducts etc.. Within a velocity range of 0,3...20 m/s, wind can be measured in both forward and backward directions and the rate of revolution of the propeller can be converted into electrical signals.

2. Construction

A tube containing the measuring sensor which determines wind velocity is attached to a sturdy wall mounting. A low-inertia, 4-blade propeller made of polypropylene detects the wind flowing through the tube in both forward and backward direction. The axis of the propeller runs in ball bearings and has a slotted disk which is scanned opto-electronically. The pulses are formed in the integrated electronic system; their frequency is proportional to the wind velocity.

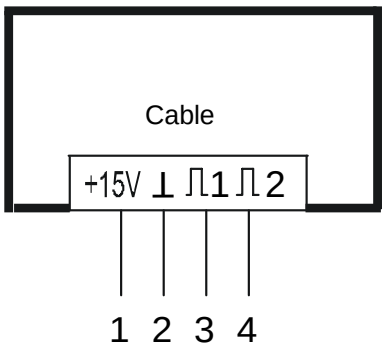
In order to be able to determine the direction of rotation of the propeller, the slotted disk is scanned by two opto-electronic reflex heads which are arranged such that the pulses supplied are in phase quadrature to each other.

The outer parts are made of corrosion-resistant materials and have a protective coat of varnish. Labyrinth seals and o-rings protect the sensitive components inside the measurement sensor.

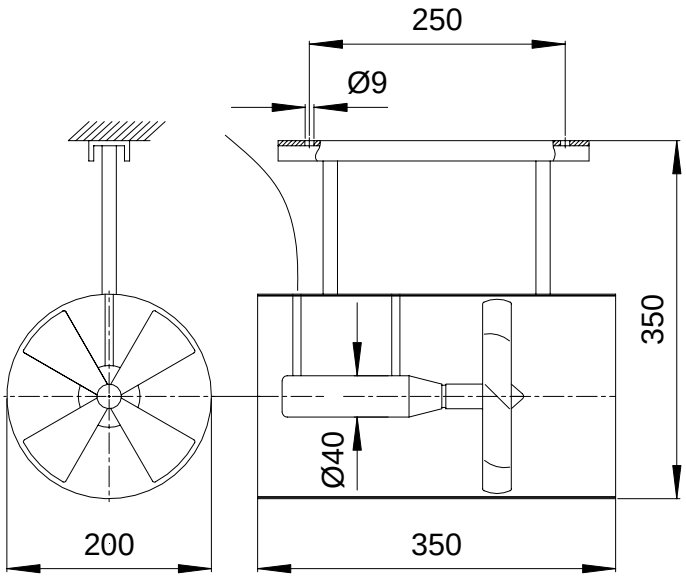
3. Technical Data

Measuring range	0,3...20 m/s	
Starting speed	0,3 m/s	
Type of propeller	4-blade polypropylene	
Dimension of propeller	Ø 180 mm, 290 mm pitch (360°)	
Ambient temperature	-20...+70°C, ice free	
Scanning sensor	opto-electronic, reflex head	
	6 pulse/ rotation	
Electrical output	forwards	0 ... 410 Hz (0,3...20 m/s)
	backwards	0 ... 418 Hz (0,3...20 m/s)
Accuracy	± 0,2 m/s	
Characteristic	forwards	V = f * 0,04832 + 0,149
	backwards	V = f * 0,04747 + 0,145
Power supply voltage	15 V DC (10...16 V) ca. 15 mA	
Signal level	high 15 V (> 11 V), low 0 V (< 4 V)	
Cable	LiYY 4 x 0,22 mm², 3 m long, free of halogen, flame adverse	
Weight	5 kg	
Protection	IP 64	

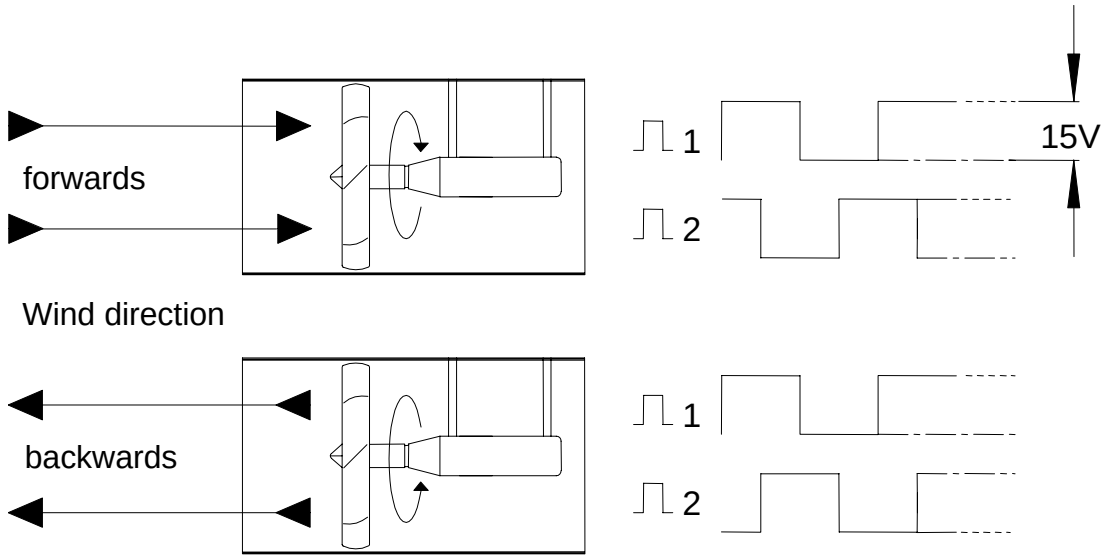
4. Connection diagram



Dimensions



Phase relationship of the signal



5. Maintenance

Heavy pollution can cause the slits of the measuring sensor between the rotating and stationary parts to clog. Thus, it is important to remove such accumulated dirt from the instrument. If the starting torque is higher or if the propeller no longer rotates at all, this is due to wear and tear on the ball bearings of the propeller axis. In this case, it would be advisable to return the instrument to the factory for repairs.

6. Accessories (optionally available)

Digital-Analog-Transducer TW

The Digital-Analog-Transducer TW is used in conjunction with the Wind Transmitter to detect the wind speed and it direction (for example in a tunnel) and to emit standard electrical signals.

There are two analogue outputs available on the Digital-Analog-Transducer TW for this :

1. Wind speed with determination of direction by offset of the electrical output.
2. Wind speed without direction.

In addition, the wind speed is signalised by 2 relays (forward-reverse relays).

For optimal system adjustment, the following setting are possible on the Digital-Analog-Transducer TW. They can be set with the code switch:

1. Measuring range, relative to the analogue outputs.
2. Delay time to smooth the analogue signals.
3. Relay time delay to suppress switching processes during brief turbulences.

Technical Data

Measuring range	: 5 ; 10 ; 20 ; 30 ; 40 ; 50 m/s (mean value)
Time of integration	: : 0 ... ca. 240 s (0 T ... 10 T), codable
Relays switching delay	: 1,5 ... 45 s , codable
Relays load	: max. 2000 VA / 250 V AC / 8 A AC
Signal input	: 2 x rectangular signal (phase shifted) Amplitude 12 ... 15 V
Analogue output	: output 1, direction dependent (for ex. 0 ... 10 ... 20 mA = -20 ... 0 ... 20 m/s) output 2, direction independent (for ex. 0 ... 20 mA = 0 ... 20 m/s)
Ambient temperature	: 0 ... + 40 °C
Power supply voltage	: 230 V AC
Protection	: IP 65 (wall mounting case)
Weight	: 0,25 kg resp. 0,65 kg

Order information

Model : **Digital-Analog-Transducer TW**

Order- No. : **4.3348 .xx .xxx**

Model

...**00**...	Wall mounting case
...**10**...	PC-board

Electrical output

....**040**	0 ... 20 mA (500 Ω)
....**041**	4 ... 20 mA (500 Ω)
....**060**	0 ... 1 V
....**061**	0 ... 10 V

Dimensions

Dimensions : 200 x 120 x 75 (LxBxD)
Boring template : 100 x 88 ; 4 x Ø 4,5
Screwing : 3 x Pg 9

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