kintech engineering

DATASHEET

THIES FIRST CLASS

WIND VANE (POTENTIOMETER)

The Thies First Class wind vane is used to determine the horizontal component of the wind direction and is one of the most common wind vanes used in wind resource assessment

THIES FIRST CLASS POTENTIOMETER | WIND VANE

DESCRIPTION

The Thies First Class wind vane is designed for the acquisition of the horizontal component of the wind direction. Having accurate wind direction data is a very important part of any wind development project. Studies show that even small wind direction measurement errors can have a dramatic negative impact on the total wind farm power output.

Features:

- High level of measuring accuracy and resolution
- High damping ratio at a small delay distance
- Low starting threshold
- Magnetic coupling, which is free of hysteresis and wear, situated between the axis of vane and potentiometer

Electronic protective circuit both for limiting the current and to protect against erroneous connection (model 4.3151.x0.110 and 4.3151.x0.012). The outer parts of the instrument are made of corrosion-resistant anodized aluminum, and stainless steel with highly effective labyrinth gaskets and O-rings protecting the sensitive parts inside the instrument against humidity and dust.

Heated version: The Thies First Class wind vane can be supplied in a heated version to improve performance under cold climate conditions.

Note: Given the impact incorrect wind direction measurements have, the recently updated IEC61400.12.1 (2017) now requires complete assessment of wind direction measurement uncertainties. By adding a Geovane to your wind measurement campaign (in combination with either a Thies First Class or a Thies Compact wind vane) you are guaranteed to get the most accurate wind direction data available on the market.

APPLICATIONS

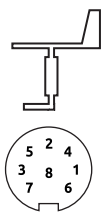
Wind resource assessment, solar resource assessment, site calibration, power performance studies, solar monitoring and meteorology.

THIES FIRST CLASS POTENTIOMETER | WIND VANE

FEATURES

Technical Data	
Measuring range	0…360°
Measuring accuracy	0.25% (1°)
Survival speed	85 m/s up to 30 minutes (w/o damages)
Permissible ambient conditions for operation	-50...+80 °C All occurring situations of r.h. including dew moistening
Electrical output 4.3151.x0.212 4.3151.x0.210	 2 kΩ Potentiometer 10 kΩ Potentiometer
Electrical output 4.3151.x0.012 4.3151.x0.110	With electronic protective circuit which circuit avoids an overloading of the potentiometer in case of erroneous connection and on transition 0° → 360° The protective circuit represents a nominal series R=50 Ω. However it limits the short-circuit-current on transition from 0° → 360 ° (and vice versa) to ≤1 mA at Pot=10 kΩ and ≤2 mA at Pot=2 kΩ
Linearity	0.25% (1°)
Starting threshold	<0.5 m/s at 10° amplitude (acc. to ASTM D 5366-96) <0.2 m/s at 90° amplitude (acc. to VDI 3786 Part 2)
Delay distance	<1.8 m (acc. to ASTM D 536696)
Damping ratio	D>0.3 (acc. to ASTM D 536696)
Quality factor	K>1 D = damping ratio ω0 = angular frequency of undamped oscillation p = air density u = wind speed
Heating	Surface temperature of housing neck >0 °C at 20 m/s up to –10 °C air tempera-ture. At 10 m/s up to –20 °C using the THIES icing standard 012002 on the housing neck heating regulated with temperature sensor
Electrical supply for potentiometer at 4.3151.x0.210 / 212	Voltage Us: 0...30 VDC Please maintain a supply current of maximum 20mA – short circuit at the North point (galvanic isolation from the housing) Current: ≤Supply voltage/Potentiometer resistance
Electrical supply for potentiometer with electronic protective circuit at 4.3151.x0.012 / 110	Voltage Us: 4 VDC...42 VDC (galvanic isolation from the housing) Current: ≤Supply voltage/Potentiometer resistance ≤1 mA at transition 0° → 360° and 360° → 0° equipped with 10 kΩ Pot ≤2 mA at transition 0° → 360° and 360° → 0° equipped with 2 kΩ Pot Serial R=50 Ω (representative)
Electrical supply for heating 4.3151.00.x1x	Voltage: 24 V AC/DC, 45…65 Hz (galvanic isolation from the housing) Capacity: 25 W
Weight	ca. 0.7 kg
Protection	IP 55 (DIN 40050)

SENSOR WIRING TABLE

Sensor Model	Sensor Pin		Kintech Cable Colors		Orbit 360			EOL Zenith	
					Section	Terminal	Type	Section	Terminal
	1	Signal	○	White	Analog Channels	48 52 56 60 65 69 73 77 81 84 85 86 90 91 92	Signal	DIR Analog Inputs	SIG SIG 1 2 3 4 5
	2	GND	●	Brown	Analog Channels	47 51 55 59 64 68 72 76 80 87	(-)	DIR Analog Inputs	− − − −
	3	Us (+)	●	Green	Analog Channels	50 54 58 62	*5п	DIR Analog Inputs	*+ + *+ +
	4		Do not connect						
	5		Do not connect						
	6		Do not connect						
4.3151.x0.x1x	Shield		◐	Yellow Green	Power Input	⏚		BAT	⏚
	7	Heating (+)	●	Brown	Independent power supply 24 AC/DC				
	8	Heating (-)	●	Blue					

Note 1: *Base sensor view / Soldering connector view.*
*5п, + + = *Pulsating 5V with current limited (4mA). Only 1 sensor must be powered.*

Note 2:
4.3151.x0.x12 (2 kΩ)
4.3151.x0.x10 (10 kΩ)

HOW TO CONFIGURE IN ATLAS

Open Atlas and go to the data logger you are working on. Scroll to the “channels” section and select the following type and model:

- Group: Analog channels
- Sensor Type: Windvane
- Sensor Model (10k): **THIES 10K / NRG 200P**
- Sensor Model (2k): **THIES 2K**

HOW TO CONFIGURE IN EOL MANAGER

Open EOL Manager and go to the data logger you are working on. Open the “inputs” tab and select the following type and model:

- Group: Wind Vanes / Analog Inputs
- Type: Windvane
- Model (10k): **NRG 200P / THIES 10K**
- Model (2k): **THIES 2K**

Last modified: 11.11.2019