



kintech
engineering



DATASHEET

THIES FIRST CLASS

WIND VANE (TMR)

The Thies First Class wind vane (TMR version) is one of the most common wind vanes used in wind resource assessment to determine the wind direction.

4.3151.10.173

4.3151.00.173(heated)

4.3150.X0.173

THIES FIRST CLASS TMR | WIND VANE

DESCRIPTION

The Thies First Class wind vane wind (TMR – Tunnel Magneto Resistance) serves for the detection of the horizontal wind direction and is one of the most common sensors used in the industry for wind resource assessment.

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 very negative impact on the total wind farm power output.

Special characteristics:

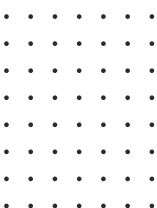
- High level of measuring accuracy and resolution
- High damping ratio at a small delay distance
- Low starting threshold

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

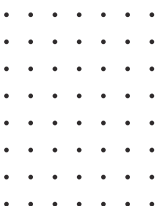
Wind resource assessment, solar resource assessment, site calibration, power performance studies, solar monitoring and meteorology.



FEATURES

Technical Data

| | |
|--|---|
| Measuring range | 0...360° |
| Measuring accuracy | 1° |
| Survival speed | 85 m/s up to 30 minutes |
| Permissible ambient conditions for operation | -50...+80 °C All occurring situations of r.h. including dew moistening |
| Electrical outputs resolution analogue (10 bit) | 0...5 V at 1 kΩ |
| 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 ω_0 = 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 temperature. 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 electronics (galvanic isolation) 4.3151.x0.173 | 12...24 VDC ca. 4.5 mA + Iout |
| Electrical supply for heating | Voltage: 24 V AC/DC, 45...65 Hz (galvanic isolation from the housing) Capacity: 25 W |
| Connection | 8-pole plug connection for shielded cable in the shaft |
| Weight | ca. 0.7 kg |
| Protection | IP 55 (DIN 40050) |



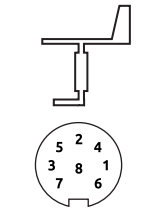

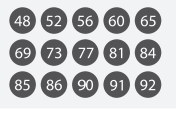


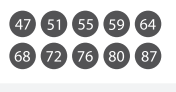


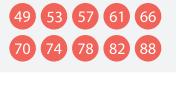


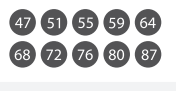






THIES FIRST CLASS TMR | WIND VANE

CABLE RECOMMENDATION

Signal cable up to 150m: **4x0.5 mm² + shield**. For longer cable, please consult sensor manufacturer.

Heating cable cross-section should be calculated based on the power system requirements (Volts and Amps) and the cable length. Please use a wire sizing tool for selecting the most suitable cable.

SENSOR WIRING TABLE

| Sensor Model | Sensor Pin | | Kintech Cable Colors | | Orbit 360 | | | EOL Zenith | | |
|---|-------------|---|---|----------------|-----------------------------------|---|--------|---------------|---|--|
| | | | | | Section | Terminal | Type | Section | Terminal | |
|  <p>Base sensor view / Soldering connector view.</p> | 1 | Signal |  | White | Analog Channels |  | Signal | DIR |  | |
| | 2 | GND |  | Brown | Analog Channels |  | (-) | Analog Inputs |  | |
| | 3 | Us (+) |  | Green | Analog Channels |  | * (+) | BAT |  | |
| | 4 | | | Do not connect | | | | | | |
| | 5 | | | Do not connect | | | | | | |
| | 6 | Reference |  | Yellow | Analog Channels |  | (-) | Analog Inputs |  | |
| | | Shield |  | Yellow Green | Power Input |  | | BAT |  | |
| | 7 | Heating (+) |  | Brown | Independent power supply 24 AC/DC | | | | | |
| 8 | Heating (-) |  | Blue | | | | | | | |

Note:

Data logger hardware version < 3, (+) = Bat+ with current limited (12mA). Only 1 sensor must be powered on each output terminal.
Data logger hardware version ≥ 3, (+) = Bat+ with current limited (50mA). Only 1 sensor must be powered on each output terminal.

REQUIRED DATA LOGGER VERSION

Minimum data logger required: **ORBIT 360 BASIC PLUS**.

Minimum **firmware** required: **any**

HOW TO CONFIGURE IN ATLAS

Start Atlas and open the data logger you are working on. Now go to *Site settings* and scroll down to the *Channels* section and select the following type and model:

- Group: Analog channels
- Sensor Type: Windvane
- Sensor Model: **Output 0-5V: Thies TMR / K360V**

Important! Please make sure you are working with the latest version of Atlas. To check for new updates click the *Check for updates* button in the left-hand menu located in the main dashboard.



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HOW TO CONFIGURE THIS SENSOR ON SITE

We recommend performing the entire sensor configuration using Atlas at the office before installing sensors onsite. Once the sensor is correctly setup in Atlas, use the *Upload settings* tool, to upload the sensor configuration to the data logger.

In case you are already on site and need to configure the sensor directly on the data logger, follow these steps:

1. Turn on the data logger.
2. Using the keypad on the data logger, navigate the menu until you see *Sensor model*, then click the “right arrow” on the keypad.
3. Now scroll down to the channel you are going to connect the sensor to, and click the “right arrow” on the keypad.
4. Now click “Set” on the keypad and scroll up in the menu to set the sensor model type according to the table here below. Once you have found the correct sensor model, click the “right arrow” key twice to select it and save.
5. Click the “left arrow” several times to go back to the main menu.

| Data logger model | Firmware version | Sensor model type on data logger | | |
|-------------------|------------------|----------------------------------|--------|------------------|
| | | Magnitude | Number | Name |
| ORBIT 360 | any | Wind direction | 18 | VANE Output 0-5V |
| EOL ZENITH | any | Wind direction | 08 | Output 0-5V |

HOW TO CONFIGURE IN EOL MANAGER

Open EOL Manager and go to *Settings* of the data logger you are working on. Open the *Inputs* tab and select the following type and model:

- Group: Wind Vanes / Analog Inputs
- Sensor Type: Windvane
- Sensor Model: **Output 0-5V**



Last modified: 03.04.2023