

Photovoltaic tracker

TR/V1/R or TR/V1/K



1 row
of modules

An improved version of the photovoltaic tracker!

- ▷ Vertical arrangement of the modules in a single row
- ▷ Reduced component count and optimized price
- ▷ Lower profiles to increase system security



Photovoltaic tracker **ENERGY5**

The **Energy5 photovoltaic tracker** is a single axis, fully unmanned system that follows the sun. It allows **modules to be mounted in a single row up to a maximum length of 98 m.**

It stands out with **yields up to 30% higher** than still PV structures. Exceptional efficiency of the solar system is ensured by the **sun-tracking feature**, which aligns the PV modules optimally to the direction of sunrays.

The system is controlled through an astronomical clock, while the system security is provided by smart **sensors and a weather station** that measures wind strength and direction. When the critical values are exceeded, the system automatically forces the panels into the preferred **safe position**.

The Energy5 tracking system **is also equipped with snowfall or rainfall sensors**. When heavy precipitation is detected, the trackers go into automatic snow removal / panel cleaning mode and angle the structures to allow snow to slide off or the structures to be cleaned.



PHOTOVOLTAIC TRACKER SYSTEM SPECIFICATION:

Material	black steel with Magnelis® coating or galvanized steel
Number of module rows	1
Layout	vertical
Incline	+/- 60°
Maximum tilt of the tracker in the north-south direction	4°
Fixing method	driven in / concrete
Maximum system length	98 m* *depending on module dimensions
Guarantee	up to 25 years guarantee for perforation
Adapted to bifacial modules	yes
Minimum module-to-ground clearance	400 mm

▶ ALL SYSTEM FEATURES:



sun tracking system



3D Backtracking - minimize row shading



snow removal and module cleaning



emergency power system



additional feature: 24/7 monitoring application

BACKTRACKING <

REDUCED ROW SHADING

The 3D Backtracking algorithm calculates the tilt of the panels so as to prevent shadowing of subsequent rows of modules. The feature allows the panels to rotate to a position where the cast shadow is shorter and misses the next row - this guarantees the explicit performance of the tracking system.



▶ 24/7 MONITORING APP

The app allows customers to get a complete picture of the variables present in trackers. The system sends alarms and email alerts so that variables such as:



battery level



peak motor current



wind speed



axis lock, communication, motor overload



The **tracker is controlled** automatically by an algorithm based on the Astronomical Almanac and **sensors monitoring weather conditions**.

Key features:

- 3D Backtracking algorithm,
- wind and snow protection,
- cleaning configuration,
- encrypted wireless mesh network,
- controlled locally via smartphone app with Bluetooth connectivity,
- integrated 3-axis accelerometer for accurate tilt measurement,
- smart alignment - configurable tilt reduction based on wind strength and direction,
- night mode allowing to define the panel tilt during the night,
- remote firmware update,
- IEC, UL certified.



Photo. Example of a control unit

The control unit ensures safe and economical operation of the tracking system. It is equipped with power supply, motor controller, communication systems and a computing unit.

TCUs are fully customizable in terms of input type, motor use, communication mode and length of operation. The main idea is that each customer can pursue their strategy of using a tracking system thanks to one of our models.

The control unit is available in various power configurations:

- power supply from existing PV installations (optional back-up battery),
- self-powered with internal lithium battery (requires special photovoltaic charging module),
- AC power supply (mains).



Network CONTROL UNIT

The **network control unit** is a gateway between the tracking system network and the SCADA system, which can monitor and control the tracking system on site. The NCU can **detect high winds and snow using peripheral sensors** connected to the amplifier I/O unit or the Suntrack™ RSU. Typical NCU tasks include determining if the wind reaches a preset threshold, setting the tracking system components to the desired position and triggering snow alarms when the limit is exceeded.

Alarms sent by the RSU or sensor inputs read by the I/O board are processed by the network control unit (NCU) via wired or wireless communication.

Key features:

- wide range of operating temperatures,
- UPS online management feature,
- universal mains input range,
- IEC, UL certified,
- encrypted wireless mesh network,
- remote control capability,
- 3D Backtracking algorithm,
- wind and snow protection,
- field cleaning position feature,
- remote firmware update,
- optional expandable Ethernet input array for peripheral sensors,
- optional fan heater for extended low temperatures,
- Ethernet network connection, switch with RJ45 or fiber port.

Available photovoltaic tracker variants:

- **TR/V1/R** (vertical arrangement of modules in 1 row, radio control),
- **TR/V1/K** (vertical arrangement of modules in 1 row, wired control),
- **TR/V2/R** (vertical arrangement of modules in 2 rows, radio control),
- **TR/V2/K** (vertical arrangement of modules in 2 rows, wired control).



Photo. Example of a network control unit



ENERGY5 SP. Z O.O.

ul. Ziejkowa 5
09-500 Gostynin
Poland

NIP: 971-072-32-96
KRS: 0000569204

biuro@energy5.pl
phone: +48 (24) 235 40 79

EXPORT SALES DIRECTOR

Jacek Lipowski
phone: +48 694 923 357
jlipowski@energy5.pl