

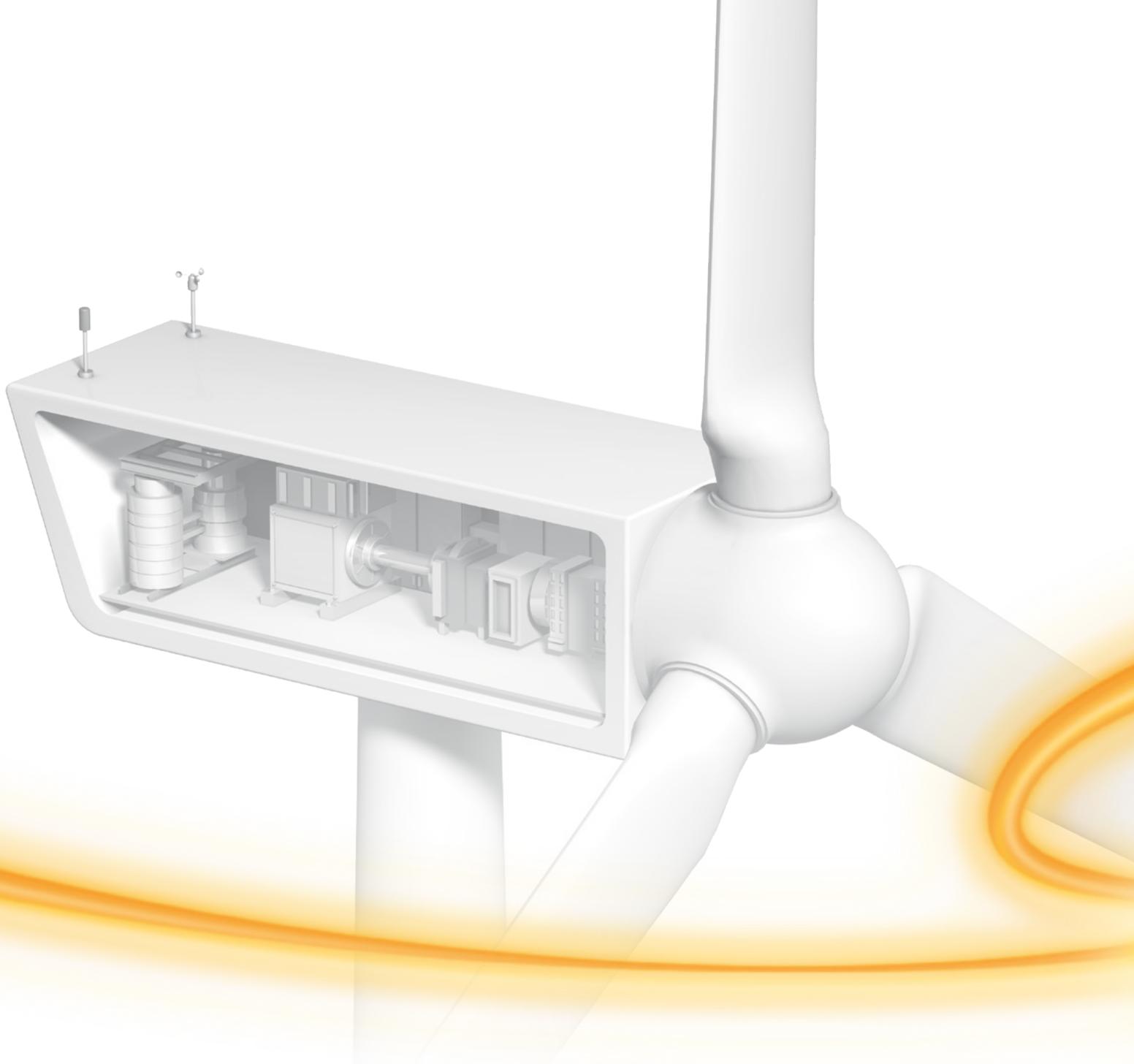
Wind Solutions

**Your Partner from Connectivity to Data Analysis**

High-performance Products for your Wind Turbine



**Weidmüller** 



**4 Surge protection**

**8 Relay modules and solid-state relays**

**12 High-performance power supplies**





Our all-round solutions for  
maximising system availability

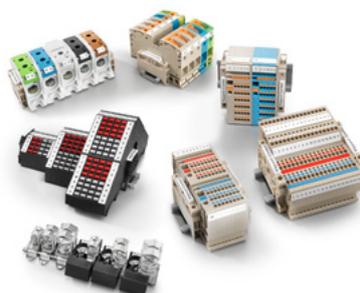
In 2020, about 133 billion kWh of electricity was generated by wind turbines, while annual production in 2018 was 110 billion kWh. This is a growth of over 20 % in the past two years and shows the enormous potential and increasing demand of wind energy.

The wind industry is one of the most demanding industries in terms of system availability and operational reliability. Wind farms can be located in regions with very moderate environmental conditions but even in challenging areas up to 5000 m altitude or offshore. In addition to that, the product performance must fit to the specific location within a wind turbine. Weidmüller's broad product portfolio offers the perfect components for every application to operate your wind turbines even more reliable

## 16 Field wiring and service interfaces



## 18 Terminal blocks



## 22 Industrial Ethernet



# Maximising system availability

## Reliable and future-proof protection

The continuous increase in limit values within the standards, put great emphasis on the need for all-round, reliable surge protection. In response to these growing requirements the VPU, VSPC and VSSC lightning and surge protection series offer standard exceeding protection for all kinds of applications. Based on a combined varistor gas discharge technology the VPU series is a future orientated series of products that protect your energy grid and power supply at the highest level. However, you will not just be protecting your plant, but also your planning processes. Conformity with standards for at least five years means that you can minimise your planning iteration steps and the redesigns associated with them.

Many intelligent product features help installers during installation and maintenance specialists during their servicing of the lightning and surge protection system. Equipped in this way, the VPU series provides a long-lasting, safe and future-proof lightning and surge protection solution for your system.

Our pluggable VSPC surge protection is characterised by the highest protective functions with compact dimensions. The arrestors of the modules can be removed, measured or exchanged during running operation impedance-neutral – without interrupting the measuring circuit. These features make this product the ideal secure protection mechanism for interfaces within instrumentation and control circuits.



# VARITECTOR Lightning and Surge Protection

## Solutions for wind energy generation

### Protection for energy systems VPU I, VPU II and VPU III



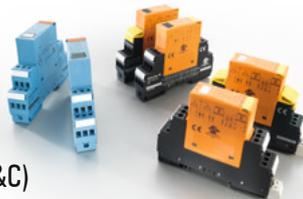
Surge protection products effectively reduce the interference coupling that can occur from transient surge voltages, even significantly below the limits prescribed by insulation coordination according to EN 60664-3/DIN VDE 0110-3.

### Protection for energy systems VPU II ASI



All products of the VPU AC series have optical signaling. Variants with a pre-warning display enable uninterrupted protection. The remote signaling output indicates the pre-warning status.

### Protection for instrumentation and control (I&C) VSPC & VSSC



Overvoltage coupling along the conductor path may disturb or destroy sensitive signal inputs. It is important to provide protection in the immediate vicinity of I&C devices. Weidmüller's broad product range for the I&C sector offers products in a two-piece, pluggable design and modular terminals for tension clamp or screw connection.

### Protection for data interfaces VDATA, VSPC & VSSC



"Data transmission" is the transfer of characters, numbers, statuses and measurements, between different, decentralised units. "Decentralised units" are controls, computers, measurement sensors and actuators. Appropriate overvoltage protection is essential for such sensitive areas.



Visit our website for more information  
[www.weidmueller.com/lightning-and-surge-protection](http://www.weidmueller.com/lightning-and-surge-protection)

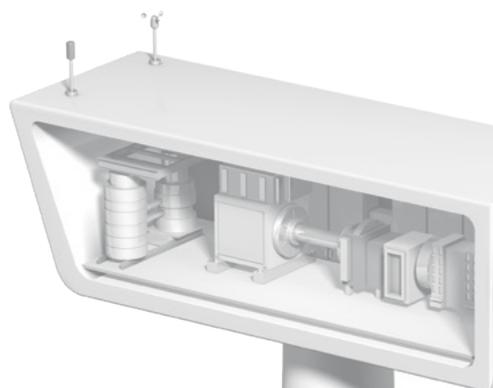
### Advantage Status Indication (ASI)

The VPU AC II Y series is equipped with ASI – Advanced Status Indication technology. The yellow status signal indicates that the product is approaching its performance limit due to frequent overvoltages. Your system is still protected because the arrester units are redundant with two varistors. If a varistor fails, full protection is still available. This status window and at the remote signaling contact. Only when showing the red status the arrester is completely disconnected from the power grid.



## Application area

### Surge protection



### Nacelle

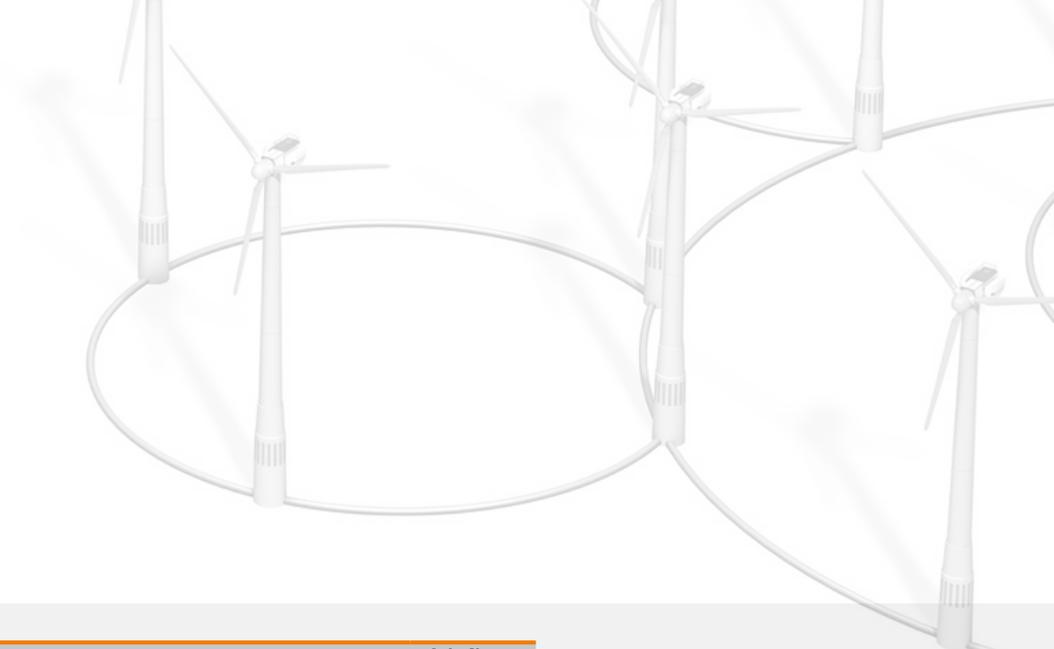
The nacelle unit of a wind turbine contains multiple systems that require dedicated protection concepts. Generator lines need to be protected with powerful 400/690 V protection units e.g. with a three-pole 400/690 V VPU type I and II classified protection unit. Sensor box equipment requires power line protection for 230 V supply as well as signalling and data line protection e.g. for the incoming signals from the weather station. VPU 300 V power components, VSPC for measurement signals and VDATA for ethernet lines ensures that the equipment is safely protected.

### Hub

The hub contains the sensitive electronics of the pitch control systems. Malfunction of these systems could cause a total breakdown of the turbine. Protection concepts for the power supply, monitoring systems and data communication systems have to ensure a complete protection and system availability. VPU 300 V, VSPC and VDATA deliver total protection solutions for these kind of elements.

### Bottom box

The bottom box equipment is connected to the top box equipment via long wires dependent upon the turbine type. This requires protection of power lines as well as signal lines at both ends. The same is true for the power lines between generator and inverter. VPU 400/690 V products and VSPC protect the lines reliably and if needed, with real time status monitoring included.



Hub and nacelle



Type	Order No.
VPU AC II 1+1 R 300/50	2591070000
VSPC 4SL 24VAC R	8951600000
VSPC BASE 4SL FG R	8951760000
VDATA CAT 6	1348590000



Type	Order No.
VPU AC II 1+1 R 300/50 Y	2639340000



Type	Order No.
VSPC 4SL 24VAC R	8951600000
VSPC BASE 4SL FG R	8951760000
VSPC 2SL 24VAC R	8951640000
VSPC BASE 2SL FG R	8951780000



Nacelle and tower



Type	Order No.
VPU AC II 3 R 350/50	2591110000



Type	Order No.
VSPC 4SL 24VAC R	8951600000
VSPC BASE 4SL FG R	8951760000



Type	Order No.
VPU II 1 1000V/40kA AC	1473440000
VPU II 1 R 1000V/40kA AC	2811930000



Tower base



Type	Order No.
VPU AC II 3 R 300/50 Y	2639330000



Type	Order No.
VPU AC I 3+1 R 440/25 LCF	2619260000



Type	Order No.
VPU AC I 3+1 R 440/25 LCF	2619260000
VPU AC II 3 R 750/35	2591320000



Exemplary selection of products

## Availability at the highest stage

### Reliable and future-proof switching

Whether switching, separating, amplifying or multiplying: Relays perform a multitude of different tasks in industrial applications - including in the wind industry. Optimizing the control cabinet infrastructure plays a decisive role in this. In response to these growing demands, Weidmüller offers a relay portfolio with decades of technical expertise combined with comprehensive understanding of the wind market.

Klippon® Relay offers high-quality relay modules and solid-state relays that meet wind turbines requirements. Thanks to PUSH IN technology, our relays can be installed easily, quickly and conveniently, resulting in a significant reduction in wiring time. In addition, the TERMSERIES product range offers multi-voltage inputs with an input voltage range of 24 - 230 V UC, which reduces the width of your stock.

Our relay range offer special designed relays with a special contact design to reliably switch LED lights. This for sure includes our 48 V DC tower lighting solutions from Weidmueller.

At the same time, the high vibration requirements for wind turbines are also met. Thus equipped, the Klippon® Relay series offers a durable, safe and quality-proof solution for the control cabinets of your wind turbine.



# Best application fit

## Tailored solutions based on standard products

### Modular 6 mm relay modules

#### TERMSERIES



- pluggable relays and solid-state relays
- easy replacement in a modular system
- large illuminated ejection lever as status LED
- integrated marker holder

### Relays with extra high vibration resistancy

#### MCZ-TRAK



- tested according to DIN EN 50155
- special requirements for:
  - operating voltage
  - temperature range
  - shock and vibration resistance

### High-quality universal relays

#### D-SERIES



- relays for the separation of input and output signals in industrial automation
- pre-assembled KITS consisting of relay socket and retaining clip
- tailor-made accessories from cross-connections to marker

All Weidmüller KITS  
(complete modules) are  
function- and insulation-tested

### Selection guide for electro-mechanical relay modules

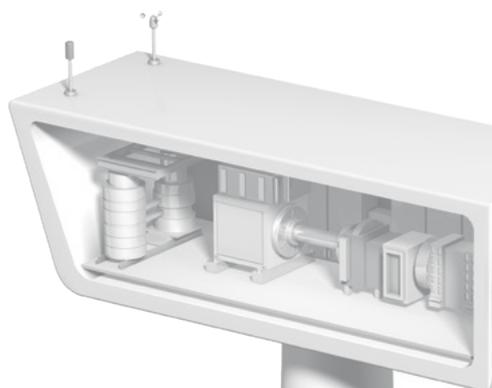


Our **digital selection** guide will assist you to find the right relay for safe and reliable switching of special loads.  
[www.weidmueller.com/relayselector](http://www.weidmueller.com/relayselector)



## Application area

### Relays



### Nacelle

The nacelle of a wind turbine contains several systems and control cabinets, which are equipped with relays. These are switching units for condition monitoring systems or the top box for general functions, to name just two of the many systems inside the nacelle. In some turbines, the converter is also located in the nacelle, this depends on the tower type. TERMSERIES relays and solid-state relays deliver space-saving products as switching amplifiers or for signal interlocking. Furthermore, for reliable switching of LED lights.

### Hub

The hub contains a rotor blade heater that can be controlled by our BLADEcontrol® condition monitoring system. Furthermore, the hydraulic or electric pitch system for rotor blade adjustment is located in the hub. Relays and solid-state relays as reliable switching amplifiers for contactors and valves and for signal insulation between different boxes ensure highest system availability on the smallest place. TERMSERIES relays and solid-state relays deliver a wide range of products for these kinds of applications.

### Tower base

The tower base contains the switching unit for the ventilation of the plant, the feed-in box for the interior lighting of the tower and various control units. Depending on tower type, the tower base also contains the inverter. This requires relays for signal insulation and contact multiplying to insulate or interlock between the different systems. RIDERSERIES and D-SERIES offer relays with multiple channels and wiring optimized sockets with vibration-resistant and fast PUSH IN connections.



Hub and nacelle



Type	Order No.
TRP 24VDC 1CO	2618000000
TRP 24VDC 1CO AU	2618110000
TRP 24-230VUC 1CO ED2	2663010000
MCZ R 48...110Vdc 1CO TRAK	8713910000
MCZ R 48...110VDC 1CO AU TRAK	8790500000

Type	Order No.
TOP 24VDC 230VAC1A	2618420000
TOP 24VDC 24VDC2A	2618720000
TOP 24-230VUC 24VDC2A ED2	2663080000

Type	Order No.
TRP 24VDC 1CO	2618000000



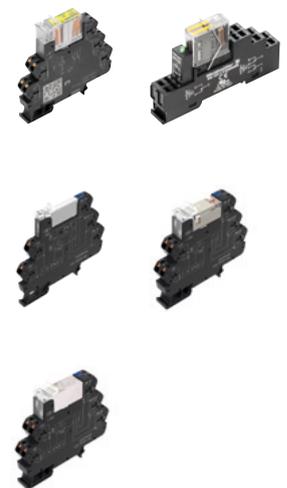
Nacelle and tower



Type	Order No.
TRP 24VUC 2CO FG	2706430000
RCIKITZ 24VDC 2CO LD/FG	1218390000

Type	Order No.
TRP 24VDC 1CO	2618000000
TRP 24VDC 1CO 16A	2618100000
TRP 24VDC 1NO HC	2618090000
TRP 24-230VUC 1NO HC ED2	2663130000
TRP 24-230VUC 2CO ED2	2663040000
TRP 24VDC 2CO	2618400000

Type	Order No.
TRP 24VDC 1NO HCP	2617930000
TRP 24-230VUC 1NO HCP ED2	2663140000

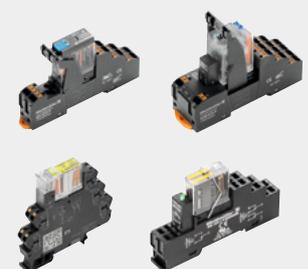


Tower base



Type	Order No.
DRIKITP 24VDC 2CO LD/PB	2576190000
DRMKITP 24VDC 4CO LD/PB	2576140000

Type	Order No.
TRP 24VUC 2CO FG	2706430000
RCIKITZ 24VDC 2CO LD/FG	1218390000



Exemplary selection of products

# Switch-mode power supply units

Large product assortment – Tailored solutions for optimal fit.

The PROtop series is made for harsh environments, long lifetimes & high reliability. For instance is the PROtop providing guaranteed operating data at -40°C continuous operating and a very high vibration resistance. The new DCL technology for reliably tripping of circuit breaker is just as mandatory as the integrated ORing MOSFET for direct parallel connection or the optional plug-on communication modules for data monitoring or remote control.

Our PROmax series is a very good choice for moderate environmental conditions and provides a start-up temperature of -40°C. Even this series has a perfectly balanced and robust design for the use in wind mills and can withstand ambient temperature of up to 70°C.

The combination of load monitoring elements and potential distribution terminals saves up to 50 % space and up to 20% time with wiring work, while the flexible compatibility of numerous single-channel and four-channel variations optimises material costs. maxGUARD offers you the benefits of a modular, highly flexible system that can be optimally adapted to any application.



# High-performance power supplies

## Maximum power for all environments

### Innovative power supply units PROtop



- optimum efficiency levels (up to 95.3 %) for sustainable energy savings
- high dynamic range thanks to unique DCL technology
- communication modules for condition monitoring
- direct parallel connection through integrated ORing MOSFETs
- wide range of approvals

### Powerful supply unit PROmax



- reliably copes with continuous overload of up to 20% or short-term peak loads of 300%
- safe operation with high power reserves up to 60 °C and start-up at -40 °C
- capable of handling continuous overload or transient peak loads with ease
- suitable for confined spaces thanks to their low width

### Intelligent electronic load monitoring maxGUARD



- modular, highly flexible system that can be optimally adapted to any application
- potential distributors with a 6.1 mm pitch ensure space-savings of up to 50 % on the rail
- time savings of up to 20 % due to unique cross-connectors between load monitoring and potential distribution terminals
- extreme ease of service during commissioning and maintenance
- practical disconnecting lever for simple galvanic isolation of the load circuit

### High performance and compact design PRObas



- Compact design with flexible mounting (DIN rail or wall)
- High efficiency up to 95%
- -25 bis +70°C wide operating temperature range (Start-Up at -40°C)
- International approvals (cULus, NEC Class2 and cCSAus)

## Application area

### Power supplies



### Nacelle and Hub

The nacelle and the hub of a wind turbine contains several systems and control cabinets, where our power supply solutions can find place. Whether the supply of the valve control from the electro-hydraulic pitch system or the supply voltage for the control of the wind turbine. What matters here is a reliable voltage supply that can meet the harsh conditions such as large temperature changes and vibrations in a wind turbine. No matter whether you need 24 V DC for the control system or 600 V DC for the back-up system of the pitch control, our solutions for the power supply offer the right components for every case.

### Bottom base

The bottom base of the wind turbine contains the power supply for the tower lighting and the bottom box. Light up your wind turbine reliably with our 24 V DC and 48 V DC power supplies. Our PROtop Com takes over the power supply and also enables communication between top and bottom box.



Type PROtop	Order No.
1-phase	
PRO TOP1 120W 24V 5A	2466870000
PRO TOP1 240W 24V 10A	2466880000
PRO TOP1 480W 24V 20A	2466890000
3-phase	
PRO TOP3 120W 24V 5A	2467060000
PRO TOP3 240W 24V 10A	2467080000
PRO TOP3 480W 24V 20A	2467100000



All variants are also available with protective circuit board for continuous low temperatures of -40 °C. Special mounting brackets allow vibration resistance up to 4 g.

Type PROmax	Order No.
1-phase	
PRO MAX 120W 24V 5A	1478110000
PRO MAX 240W 24V 10A	1478130000
PRO MAX 480W 24V 20A	1478140000
3-phase	
PRO MAX3 120W 24V 5A	1478170000
PRO MAX3 240W 24V 10A	1478180000
PRO MAX3 480W 24V 20A	1478190000



Type PRObas	Order No.
PRO BAS 30W 24V 1.3A	2838500000
PRO BAS 30W 12V 2.6A	2838510000
PRO BAS 30W 5V 6A	2838400000
PRO BAS 60W 24V 2.5A	2838410000
PRO BAS 60W 12V 5A	2838420000
PRO BAS 90W 24V 3.8A	2838430000
PRO BAS 120W 24V 5A	2838440000
PRO BAS 120W 12V 10A	2838450000
PRO BAS 240W 24V 10A	2838460000
PRO BAS 240W 48V 5A	2838470000
PRO BAS 480W 24V 20A	2838480000
PRO BAS 480W 48V 10A	2838490000



Type maxGUARD	Order No.
AMG FIM-0	2081870000
AMG FIM-C	2081880000
AMG EP KIT	2500760000
AMG ELM-6	2080360000
AMG ELM-12	2080410000
AMG ELM-1F	2080420000
AMG ELM-2F	2080480000
AMG ELM-4F	2080490000
AMG ELM-6F	2080500000
AMG ELM-8F	2080600000
AMG ELM-10F	2080650000
AMG OD	2122910000
AMG PD	2122920000
AMG MD	2122930000
AMG XMD	2122940000
AMG PP	2123000000



Here is an extract from the comprehensive maxGUARD portfolio



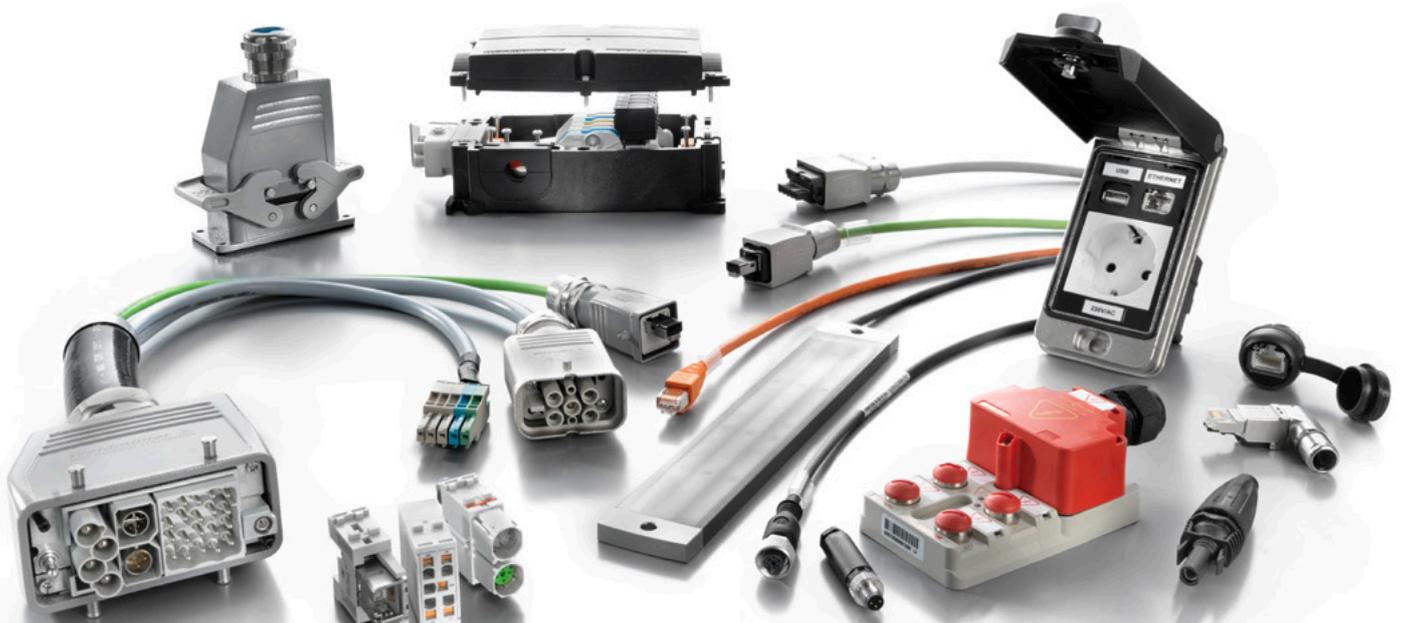
Type PRO COM	Order No.
PRO COM CAN OPEN	2467320000
PRO COM IO-LINK	2587360000



## Protected connections

### The right connection for your wind turbines

Whether circular connectors for signal processing between sensor and controller or heavy duty connectors with IP67 for power transmission, Weidmüller offers appropriate connection solutions for the supply of power, signals, and data between nacelle and the bottom box of your wind turbines. Our offer does not end with the production of the connector, but is complemented by our demand-oriented assembly services. In this way, we help to easily master even complex cabling tasks and are the best partner for implementing complete connection solutions, from individual connectors to cabling concepts to smart solutions for your turbines.



## Product range

Well conceived connections increase your Efficiency

### Heavy duty connectors

RockStar®



- nine insert families in up to twelve sizes
- safe transmission of currents up to 35 amps and voltages up to 830 volts
- reliable signal transmission at packing densities up to 216 poles
- screw, tension spring, crimp, axial, PUSH IN, and SNAP IN connection

### Round connectors

SAI



- all relevant circular connectors for industrial applications
  - M8/M12 connectors
  - M12 power connectors
  - M23 connectors
  - 7/8" connectors
- shielded and non-shielded versions
- straight or angled
- easy handling
- different codings

### Service interfaces

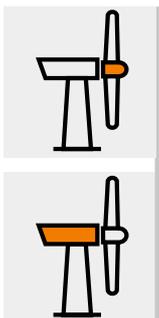
FrontCom® Vario



- 100 % compatible to market standard
- RJ45 inserts according to latest Cat. 6<sub>A</sub> standard
- clear identification thanks to large labelling surfaces
- optional shielding via frame's earthing screw for data and signal inputs
- various closing mechanisms, e.g. with knob or genuine security lock

# Application area

## Field wiring



### M12 power connector

[www.weidmueller.com/m12-power](http://www.weidmueller.com/m12-power)

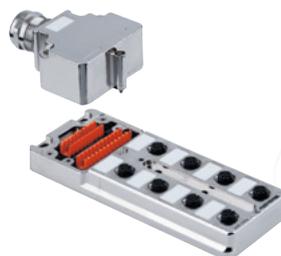
M12 cables with 360° shielding, over molded connectors, oil-and salt spray resistant cables, shielded connectors with fast mounting technology, Metal distributors which provided a quick and safety connection through their plug ability



### M12 Signal shielded cables

[www.weidmueller.com/m12-signal](http://www.weidmueller.com/m12-signal)

Field attachable connectors with tension clamp, screw termination, crimp and IDC technology, available in shielded and non-shielded versions, straight or angled and in different codings.



### M12 metal distributor

[www.weidmueller.com/m12-metal-distributor](http://www.weidmueller.com/m12-metal-distributor)

M12 metal distribution boxes for applications that require complete shielding from the sensors to the control. Available in 4- and 8-way versions.





### EMC housing

[www.weidmueller.com/emc-housing](http://www.weidmueller.com/emc-housing)

The RockStar® IP65 EMC enclosures are ideal for use in the harshest environmental conditions and provide protection against electromagnetic interference. High-quality die-cast aluminum makes them particularly impact-resistant and corrosion-resistant (also for offshore use), yet compact and lightweight.



### Heavy duty inserts

[www.weidmueller.com/fixed-pole-inserts](http://www.weidmueller.com/fixed-pole-inserts)

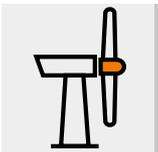
No matter which interface you want to implement, our inserts ensure reliable electrical function. We offer nine insert families in up to twelve size.



### Modular HDCs

[www.weidmueller.com/modular-hdc](http://www.weidmueller.com/modular-hdc)

The modular connector system solves space problems by offering increased functionality with a reduced installation space. Configure frames, modules, contacts, and accessories in our online configurator.



### Patch cable

[www.weidmueller.com/patch-cable](http://www.weidmueller.com/patch-cable)

The modular connector system solves space problems by offering increased functionality with a reduced installation space. Configure frames, modules, contacts, and accessories in our online configurator.



### IP20 DIN rail outlets

[www.weidmueller.com/mounting-rail-outlets](http://www.weidmueller.com/mounting-rail-outlets)

Electrical cabinet components, IP20 for copper and fibre optic cable.



### Service interfaces

[www.weidmueller.com/service-interfaces](http://www.weidmueller.com/service-interfaces)

Our modular service interface FrontCom® Vario offers the perfect combination of single or double frame, communication, and power inserts as well as the ideal insert plate



# Klippon® Connect terminal blocks

## Connection solutions for maximum availability and security

The global demand for energy is growing. At the same time, the energy industry faces the challenge of integrating renewable energies for nationwide supply. It is therefore essential to combine maximum security of supply with maximum innovative strength in order to meet the requirements of the future.

To this end, the industry relies on electrical connection solutions that ensure high availability and future-proofing. Klippon® Connect terminal blocks cover all these requirements and are at home in all areas of the energy industry. Whether conventional and regenerative generation, transmission over long distances, distribution to end users or integration in building technology. In the broad product portfolio, you will find the right solution for every application. Klippon® Connect can be flexibly adapted down to the component level and, with comprehensive certifications, guarantees maximum safety for operators, personnel and users.

### Application specific products

We offer ideal solutions for the specific wiring challenges in your wind turbine – with innovative features and unique solutions.

### Functional integration

Our product portfolio is optimally adapted to the requirements of the wind industry and focuses on functionality.

### Durable reliability

Our products are designed to ensure safety and operating efficiency for the whole lifetime of your equipment.



# Connection Technology

Increase efficiency in installation without compromising on safety

## Screw connection with stud technology



- Designed for voltage ranges up to 4,000 V and currents up to 700 A
- Extensive portfolio of one and two stud terminals
- Safe operation due to cover profiles or hinged hoods (snap-on/screwable)
- Materials comply with fire prevention regulations acc. to DIN EN 45545
- Simple handling – all that is required is a torque wrench

## Screw connection with clamping yoke technology



- Quick installation as the products are delivered with open clamping yoke
- Small „W-Compact“ module for space saving installation in the cabinet
- Protection against incorrect conductor entry
- Clippable and removable from the terminal rail in either direction
- Protection against incorrect conductor entry

## Spring connection with SNAP IN technology



- Intuitive operation of the SNAP IN technology
- Low insertion forces due to simple insertion of the stripped conductor
- Quick and easy connection even without wire end ferrule

## Spring connection with PUSH IN technology



- Release of conductor without any tool
- Flexible mounting foot for compensation of different terminal rail dimensions
- Clear differentiation of functional areas
- Slim design for large amount of cabinet space
- Vibration-resistant and gas-tight connection with copper power rails and stainless steel spring



QUICK



SIMPLE



SAFE



READY-TO-ROBOT

# Application area

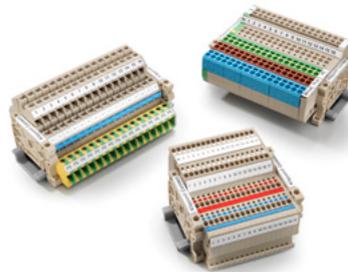
## Terminal blocks



### Control voltage distribution

[www.weidmueller.com/control-voltage-distribution](http://www.weidmueller.com/control-voltage-distribution)

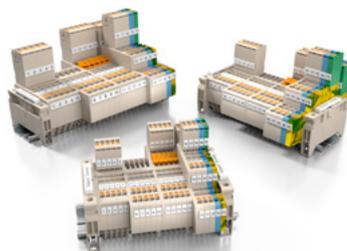
- easy modification and expandability
- space saving due to six conductor connection options per terminal block
- avoidance of incorrect wiring due to pushers



### Signal wiring

[www.weidmueller.com/signal-wiring](http://www.weidmueller.com/signal-wiring)

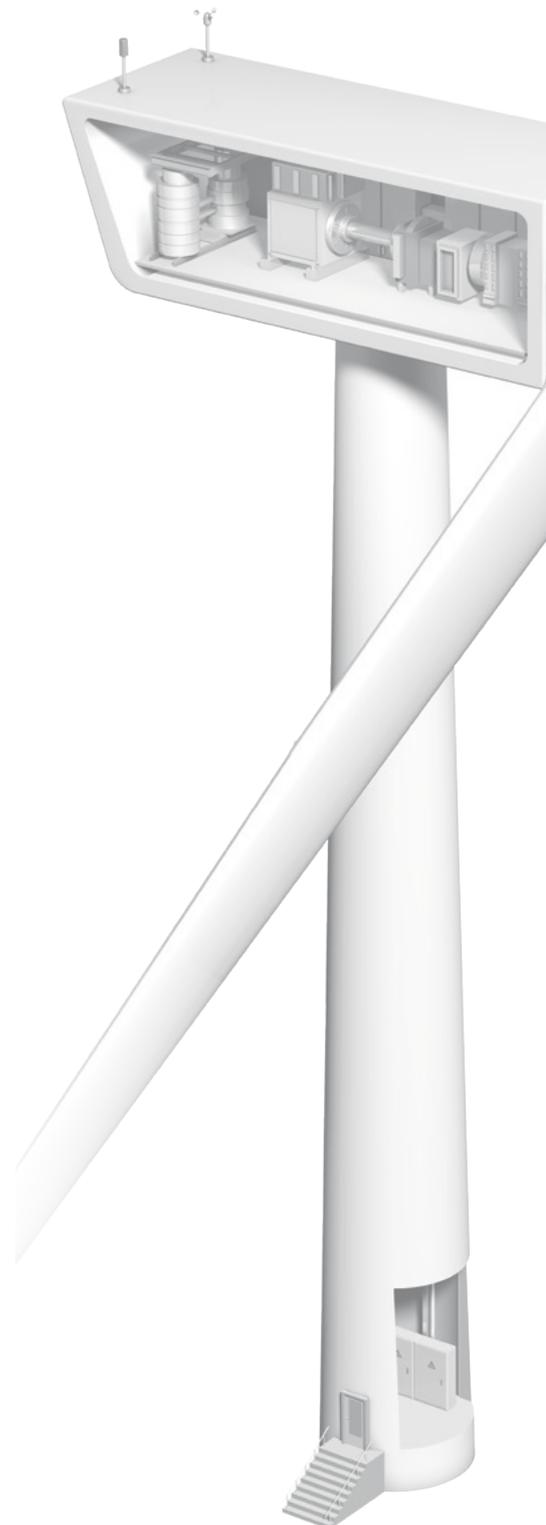
- structuring and grouping of signals in a very confined space
- test options at every terminal point
- up to four different potentials on one terminal with only 3.5 mm width

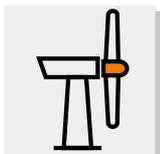


### Pluggable terminal blocks

[www.weidmueller.com/pluggable-terminal-blocks](http://www.weidmueller.com/pluggable-terminal-blocks)

- cover for protection against contamination and for maximum finger safety
- strain relief for protection against mechanical strain
- locking elements for highest vibration safety





### Shielding and earthing

[www.weidmueller.com/shielding-and-earthing](http://www.weidmueller.com/shielding-and-earthing)

- self-adjusting shield contact
- tool-free operability
- quick and easy assembly



### Power distribution

[www.weidmueller.com/power-distribution](http://www.weidmueller.com/power-distribution)

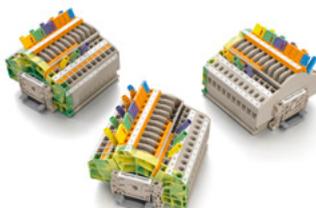
- connection of aluminum and copper conductors with different cross sections
- mounting directly or on top hat rails
- power supply or monitoring connection



### Power feed-in

[www.weidmueller.com/power-feed-in](http://www.weidmueller.com/power-feed-in)

- Power feed-in
- best connections in standard as well as compact design
- uniform design reduces space requirements and accessories needed



### Instrument transformer wiring

[www.weidmueller.com/instrument-transformer-wiring](http://www.weidmueller.com/instrument-transformer-wiring)

- safe current and voltage transformer wiring
- integrated forced short-circuit mechanism
- cross-connection channel upstream and downstream of the disconnection point

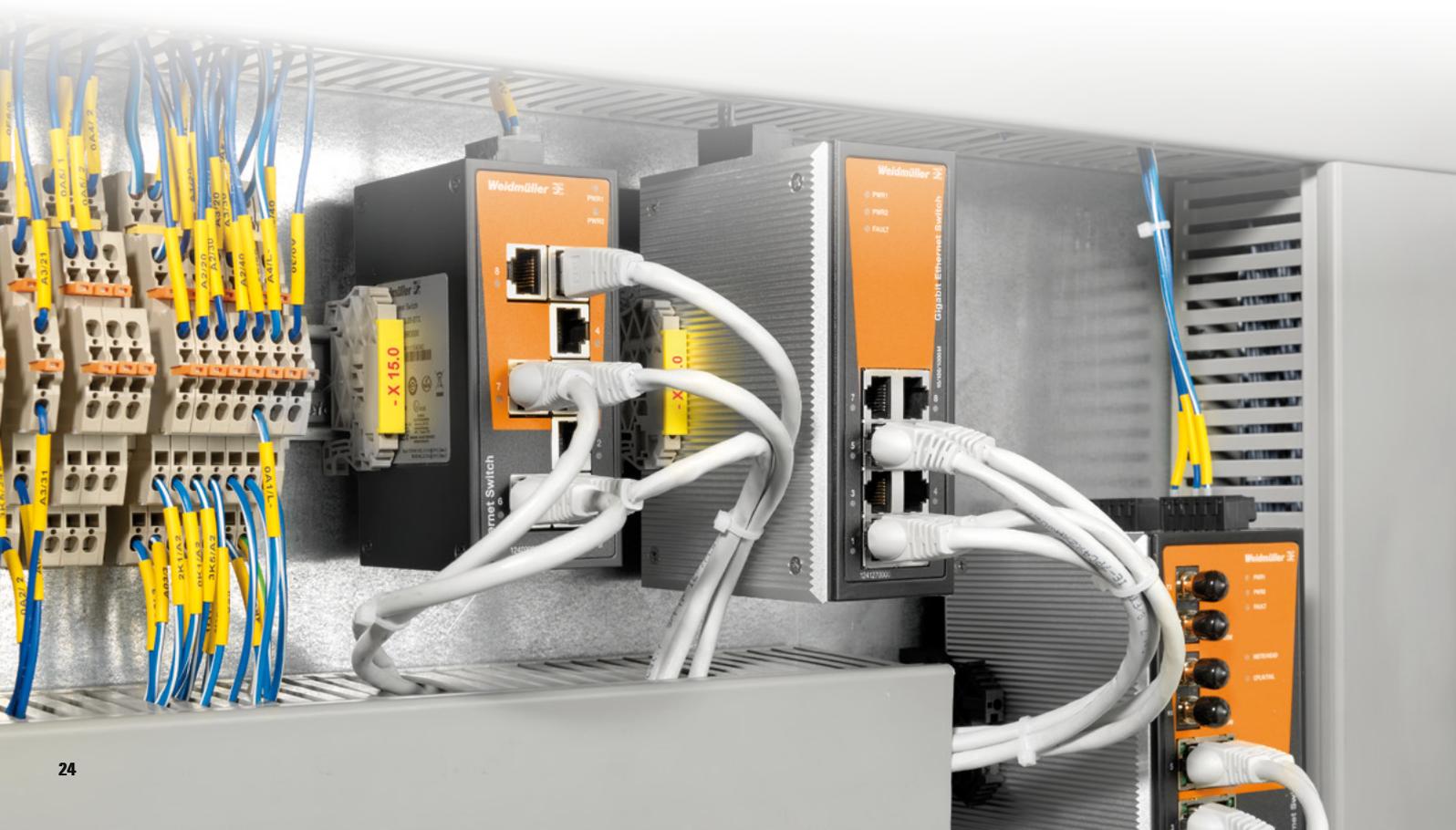
# Industrial Ethernet

## Safe communication inside the turbines and your park network

Weidmüller Industrial Ethernet components are the perfect link for data communication between devices in Wind industry. All our products have an extended operating temperature range and extremely high MTBF times what make them capable to withstand the harsh environmental conditions that can be found in Wind farms.

Weidmüller's wide portfolio includes compact plug-and-play unmanaged switches for the top of the turbine to collect all the necessary information from different devices and transmit it to the base of the tower. We provide high flexibility in the number and type of ports including SFP slots for fiber optic connections (both multi and single mode) and PoE variants. Complementary, our managed switches are the perfect choice for the base of the tower as they allow redundant communication topologies to be arranged between the different wind turbines of a farm, ensuring an uninterrupted data transmission with extremely low recovery times. If any serial device has to be integrated in the Ethernet communication network of the wind farm, the right solution can be easily found in our complete family of Media Converters.

Weidmüller routers bring also important benefits as, together with our u-link cloud service, can be the secure entrance door to wind farms located in remote areas (possibility of cellular connection via 4G LTE). Security and simplicity are the key features of our remote access solution based on VPN connections.



# Industrial Ethernet

Transfer industrial data reliably and flexibly between your turbines and park network

## Unmanaged Switches EcoLine



- unmanaged switches with extended operating temperature range (-40 to 75°C) and rugged case (IP30)
- ideal products to communicate the Nacelle with the base of the tower if no redundant path is required
- wide variety of models (Fast and Gigabit Ethernet) with different port arrangements, including several fiber optic variants
- available PoE variants if powered devices have to be used (ex: IP cameras for surveillance system)
- specific "lockable" switch to ensure safety to maintenance personell (7508001602)
  - Easily disconnects communication with a key
  - No possibility to control anything from SCADA if a maintenance operator is working at the Nacelle (safety)

## Managed Switches AdvancedLine



- managed switches with extended operating temperature range (-40 to 75°C), rugged case (IP30), alarm relay and redundant power input
- wide variety of models with different port arrangements, including several fiber optic variants
- specific Lite-Managed models perfectly suited for the usual network requirements to connect Wind Turbines
  - 4 x RJ-45 ports and 2 x FO SC ports (single or multi mode)
  - support redundant topologies (RSTP / ORING / OCHAIN)
  - support VLANs (port based)
  - cost effective product
- additional models with more ports / features and higher speed if required
  - up to 24 ports full Gigabit
  - up to 4 or 8 fiber optic ports
  - SFP slots for flexibility in fiber optic connections

## Industrial Security Router



- industrial security router with extended operating temperature range (-20 to 70°C) and rugged case (IP20)
- easy integration of subnets with identical IP address ranges through 1:1 NAT
- increased network security through stateful inspection firewall, IP/Port- forwarding and network segmentation
- wide variety of models (Fast and Gigabit Ethernet) with different port arrangements
- reliable internet connection, even without on-site internet access, thanks to integrated 4G/LTE cellular modem

## Application area

### Industrial Ethernet



### Nacelle and hub

Controls in the various applications of a wind turbine require secure data transfer in a secure plant network. Weidmüller's Industrial Ethernet Switches organize the communication and priority of the data and forward it to the main control system of the wind turbine. The broad product portfolio in the area of IE communication includes managed or unmanaged switches based on copper or fiber optic cables. The extensive router portfolio enables secure connections to and from the turbine network.

Many of the IE products meet the extreme requirements in the wind sector such as temperature, climate change, vibration and shock in your wind turbine and ensure trouble-free and reliable communication.

### Tower base

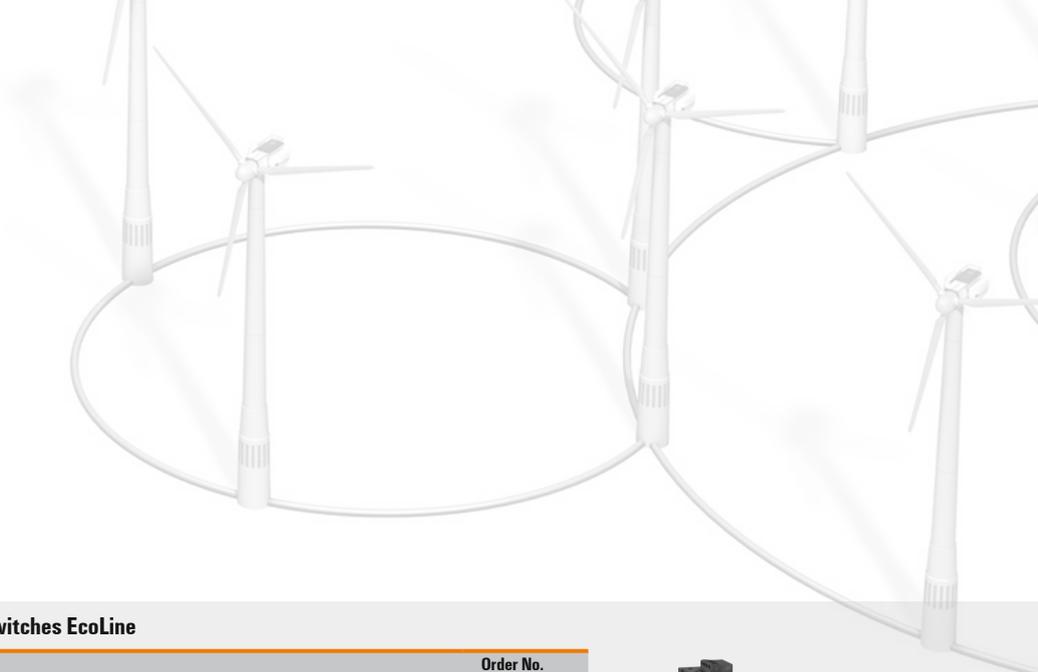
The plant network extends from the nacelle via the hub to the tower base, so that all communication-capable products can also be integrated in the tower base. Copper-based communication (nacelle/hub), can be converted to fiber-optic communication to safely bridge longer distances. For data communication over longer distances, the Weidmüller IE portfolio offers the right products with their switches and fiber optic interfaces. In this application, too, the routers provide secure access out of or into the plant network.

Weidmüller's IE products with their standardized interfaces thus also offer communication in the park network with the highest data security requirements.

### Park communication

Weidmüller also offers a comprehensive IE portfolio outside the WTG, i.e. in the park network, so that communication from the park server to the pitch control is ensured. Weidmüller's universal IE portfolio with defined interfaces and extensive technical features provide the basis for secure communication even under special climatic conditions.

Managed switches improve network availability through redundancies and control mechanisms. In demanding park networks, they also enable network diagnostics.



Hub and nacelle



### Unmanaged Switches EcoLine

Type	Order No.
IE-SW-EL05-5TX	2682130000
IE-SW-EL08-8TX	2682140000
IE-SW-EL16-16TX	2682150000
IE-SW-EL18-16TX-2GC	2682200000
IE-SW-EL05-5GT	2682210000
IE-SW-EL08-8GT-MINI	2705000000
IE-SW-EL10-8GT-2GESFP	2682240000
IE-SW-EL06-4PoE-2SC	2682390000
IE-SW-EL10-8GTPoE-2GESFP	2682410000
IE-INJ-EL02-2GTPoE	2682440000



### Serial/Ethernet Converters

Type	Order No.
IE-CST-2TX-1RS232/485	1285830000
IE-CST-2TX-2RS232/485	1285840000

Nacelle and tower



### Managed Switches AdvancedLine

Type	Order No.
IE-SW-AL05LM-5TX	2682250000
IE-SW-AL06LM-4TX-2SC	2682260000
IE-SW-AL06LM-4TX-2SCS	2682270000
IE-SW-AL08M-8TX	2682280000
IE-SW-AL24M-24TX	2682320000
IE-SW-AL10M-8TX-2GC	2740420000
IE-SW-AL18M-16TX-2GC	2682330000
IE-SW-AL08M-8GT	2682350000
IE-SW-AL14M-12GT-2GESFP	2682360000
IE-SW-AL24M-16GT-8GESFP	2682370000



Tower base



### Industrial Security Routers

Type	Order No.
IE-SR-4TX	2751270000
IE-SR-4TX-LTE/4G-EU	2751280000
IE-SR-4TX-LTE/4G-USEMEA	2739630000



### u-link Service

Remote Access for Maintenance (VPN connection)  
 Data Storage for IIoT (Beta service)  
 No IT knowledge required (all users can benefit)  
 Different available Licenses depending on required service and number of devices  
 Available Entry/Evaluation licenses free of charge

### Industrial Security WLAN

Type	Order No.
IE-WLT-BL-AP-CL-EU	2536650000
IE-WLT-BL-AP-CL-US	2536670000



**NOTE: Selected list of articles shown but much larger available number of products in our online catalogue!**



## Wind Solutions

Operate wind turbines more efficiently  
with our tailored solutions for maximum profitability

Nowadays, the wind industry energy sector is faced with the challenge of meeting growing profitability requirements. Turbine manufacturers are continuously seeking possibilities to reduce the LCOE (levelized cost of energy). Weidmüller meets this demand with reliable components and customised solutions to cut down the capital and operational expenditures. Further trends are condition monitoring systems and data driven business models like Data Analytics. In these fields of automation and digitalisation Weidmüller is able to provide tried and tested solutions to reduce downtimes and increase yield.

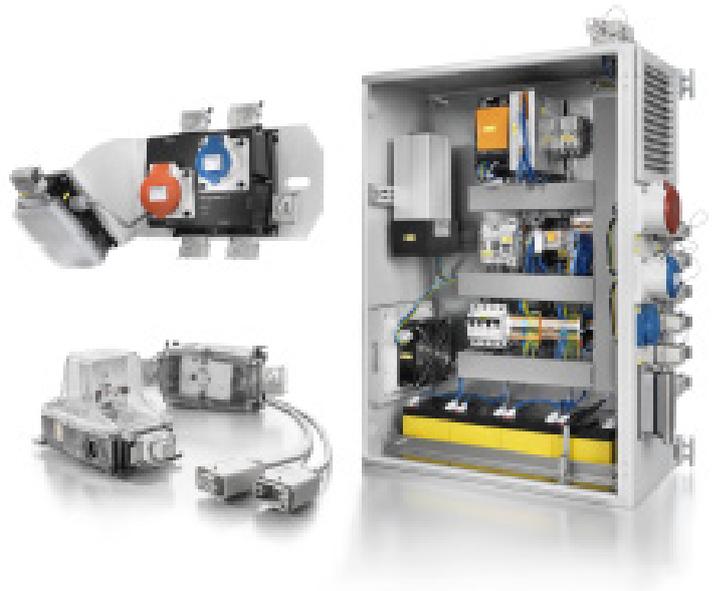


## Get the most out of your system

**BLADEcontrol®** – more transparency for maximum return

BLADEcontrol® is the pioneer in rotor blade monitoring. The well-known condition monitoring system increases turbine availability, reduces downtimes, and ensures optimum efficiency. With broad knowledge and many years of experience in the wind power industry, we bring transparency to your plant to increase cost efficiency, revenue, and plant safety. In this way, you improve efficiency and reduce your risks in the long term.

Find out now when retrofitting BLADEcontrol® for ice detection will pay off for you.  
Continue to the ROI calculator: [www.weidmueller.com/roi\\_calculator](http://www.weidmueller.com/roi_calculator)



## LED Solutions

Our smart combination of lighting and power for more efficiency in your systems

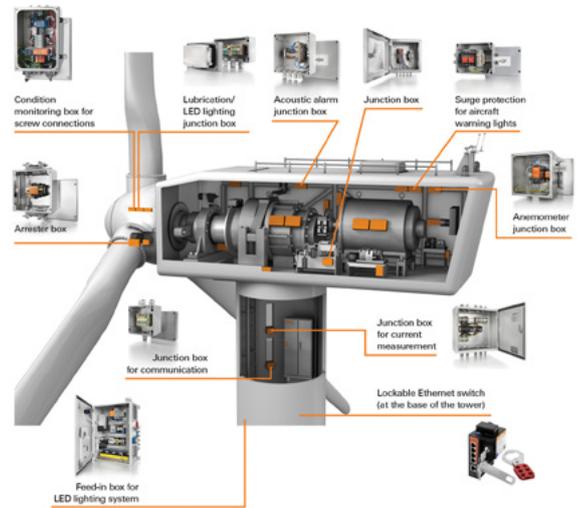
As a supplier of wind power systems, you are under ever-increasing pressure from your competitors. This is why you need to design your latest wind turbines to deliver as much success as possible. The aim is to achieve maximum system efficiency for minimum acquisition and overall operating costs. At the same time, your customers demand reliable and sustainable cost-effective solutions.



## Data acquisition Industrial IoT

### Highest performance of system-relevant components

Industrial IoT condition monitoring based on the management of multiple sensor data - from acquisition to communication, storage and visualization. We provide custom-assembled solutions of the best quality for the highest performance of system-relevant components (e.g. the gear unit). This offers the possibility of lifetime estimations as well as demand-based maintenance, with which our solutions allow you to significantly improve the performance of your systems, while also reducing operating, maintenance and downtime costs.



## From the initial idea through to data analysis

### We combine your and our strengths for the best results

With our diversified product portfolio, we can offer you complete hardware and software solutions. This enables us to keep an overview of the costs and offer you tangible benefits.

The smart combination of consultation, application expertise and industry know how is our key to finding a custom-fit solution for your application. When working with you, it is important to us that we provide open system interfaces to integrate you into the development process in the best possible way and combine your and our strengths for the best results.



## Individually assembled enclosure solutions

### Tailor-made assembly options for different environmental conditions

Assembled housing solutions are being used in more and more production areas within industrial applications in order to reduce the manufacturing depth and save on production costs. And the same applies for the production of modern wind power plants. We provide custom-assembled solutions of the highest quality for connection to the supply system, control systems, a range of testing and service units, and protection and safety equipment. These allow you to significantly improve the performance, durability, and service friendliness of your systems while also reducing assembly costs.



## Condition monitoring for screw connections

Detect anomalies and deviations in your screw connections Our condition monitoring systems provide the relevant information early and reliable

During the life time of a wind turbine, screw connections suffer from dynamic forces which can result in cracks, damages and breakages. For a safe and reliable operation of the wind turbine, every single screw must be intact. The screw monitoring systems from Weidmüller provide a necessary information about the condition of each screw at the rotor blade or tower segment connection.

### Evaluation Unit



- Customized housing for every type of wind turbine
- Simple integration into the wind turbine, e.g. as retrofit
- Turnkey solution consisting of sensors, signal evaluation and suitable interfaces

### Sensors

#### TwinCap



- Protection class IP68 for outdoor use
- Quick mounting and demounting via magnets
- Low wiring effort due to series connection
- Integrated LED for visual detection of damaged nuts



Follow us on



#weidmuellerwind

## **Weidmüller – Your partner in Smart Industrial Connectivity**

As experienced experts we support our customers and partners around the world with products, solutions and services in the industrial environment of power, signal and data. We are at home in their industries and markets and know the technological challenges of tomorrow. We are therefore continuously developing innovative, sustainable and useful solutions for their individual needs. Together we set standards in Smart Industrial Connectivity.

We cannot guarantee that there are no mistakes in the publications or software provided by us to the customer for the purpose of making orders. We try our best to quickly correct errors in our printed media.

All orders are based on our general terms of delivery, which can be reviewed on the websites of our group companies where you place your order. On demand we can also send the general terms of delivery to you.

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