DC Microgrids

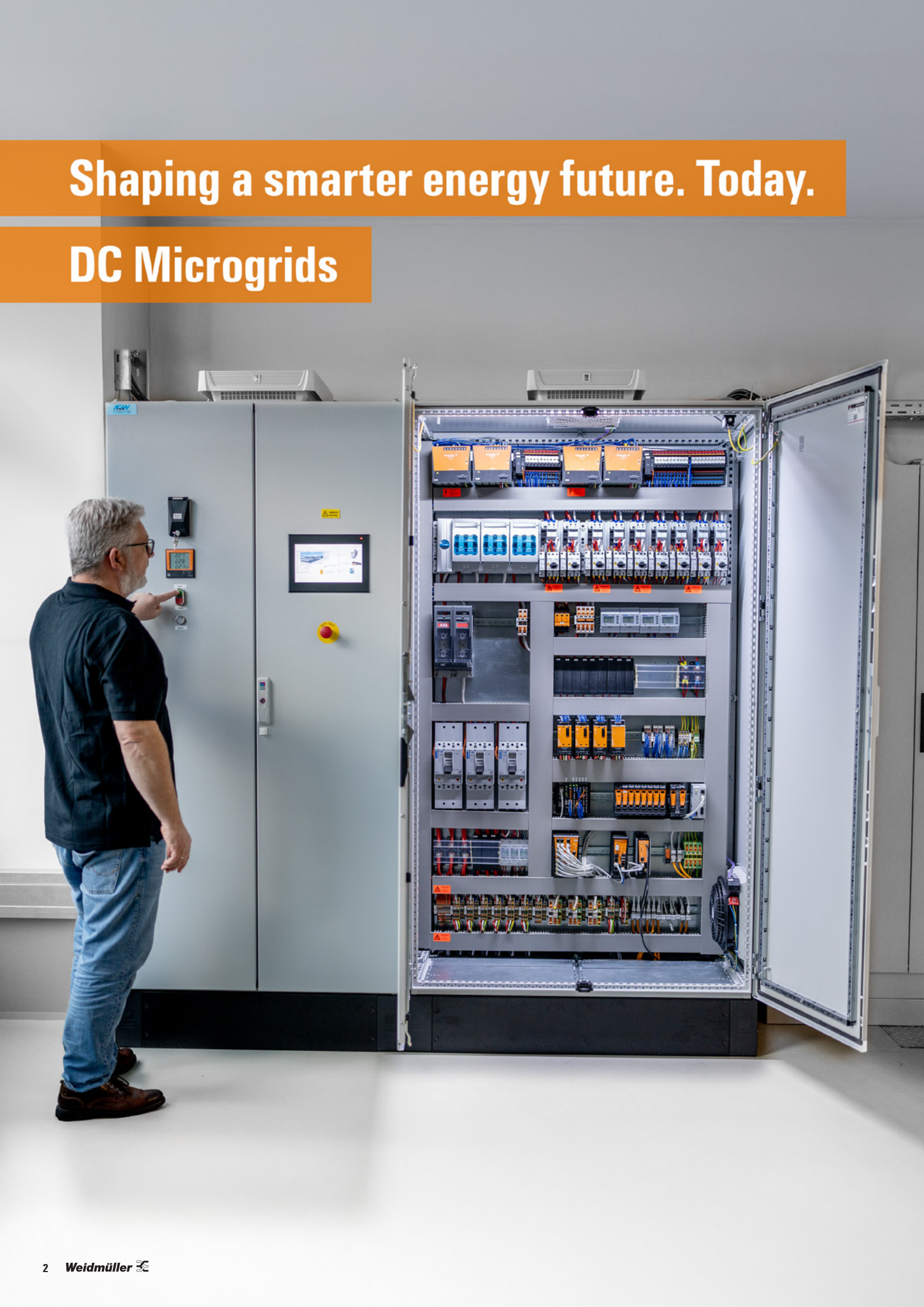
Optimizing energy efficiency and grid stability

Solutions for DC architectures

Weidmüller

Shaping a smarter energy future. Today.

DC Microgrids



DC Microgrids

DC Microgrids

Higher energy efficiency and grid quality thanks to direct current

The use of direct current in microgrids is establishing itself as a transformative technology and a path to climate neutrality. The technology significantly reduces energy consumption in industrial plants or buildings. It prevents peak loads and allows power to be utilised for other consumers directly, safely and in high quality by means of recuperation, e.g. through braking or lowering energy. At the same time, it enables the seamless integration of new energy sources.

Another key advantage of DC grids is the significantly improved grid quality and the associated higher security of supply compared to conventional AC grids.

As a founding member of the ODCA (Open DC Alliance) and an active stakeholder in the initial projects DC-INDUSTRIE and DC-INDUSTRIE 2, we are pioneers in the industrial application of DC grids. We already offer a comprehensive portfolio of solutions and components that enable the implementation and commissioning of DC grids.

ODCA direct current by zvei

For further information, technical specifications or additional services, please visit our website:
www.weidmueller.com/dc-microgrids

Potentials of industrial DC power distribution

Energy efficiency
Lower conversion and transport losses, use of recuperation, direct use of renewable energy sources as well as peak power reduction through the use of suitable storage systems.

Grid stability
No need for additional investments for grid filtering and compensation, support for existing grids and prevention and reduction of production losses due to grid disturbances.

Resource efficiency
Reduction of copper consumption for cables and lower equipment costs and space savings through the elimination of power electronics.

Industrial smart DC grid
Infrastructure for intelligent control of energy flows, offering advantages in energy purchasing and support for modular machine concepts.

DC Microgrids in various applications

Direct current technology for a sustainable industry

DC Microgrids can demonstrably improve energy efficiency in various applications in industrial plants and buildings. Machines, robots, ventilation, lifting and conveyor belt applications stand to benefit in particular from the utilisation of braking and sinking energy. This can measurably reduce energy consumption by up to 10% and the feed-in power by up to 80%. With integrated storage, peak loads can be reduced by up to 50%.

Automotive & Robotics

Intralogistics

Machine and factory automation

Building

DC-Microgrid at a glance
Modular. Efficient. Networked.

From generation to storage to supply: A DC Microgrid is an independent grid that is connected to the public AC supply grid and contains various DC sectors, i.e. typical more than one machine. The simplified bidirectionality of DC current make functions such as recuperation possible. This improves the energy efficiency and flexibility of the overall system.

AC Grid

Converter AC-DC
Power feed-in and conversion

Convert, protect and distribute energy flows
Conversion of both AC to DC and DC to DC voltages, secure and controlled precharging of capacities and distribution in the control cabinet and in the field.

Energy storage
Energy from recuperation, for example, can be stored and supplied to other consumers directly, safely and in high quality.

Integration of new energy sources
Conversion-optimised integration of PV or wind energy

E-mobility
Integration of efficient charging concepts and dynamic load management

Energy Storage

New Energy

Charging Infrastructure

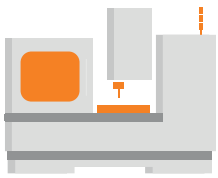
DC

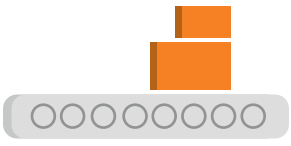
Processing Machines

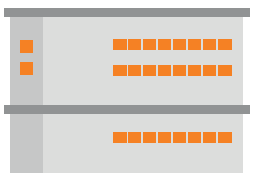
Robotics

Intralogistics

Building







Applications
Machines and devices in industrial plants and commercial buildings with active drive systems, e.g. for production, conveying and ventilation, all benefit from DC Microgrids.

DC ready – Industrial standard for the power network of the future

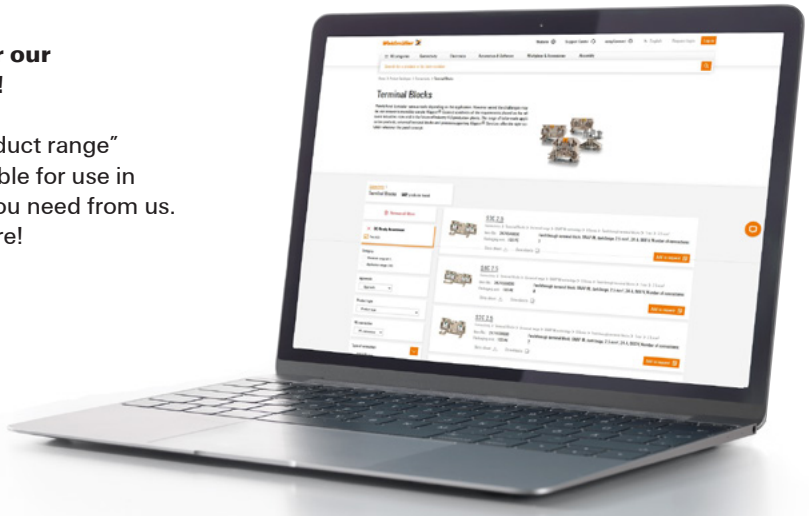
Weidmüller solutions for industrial DC applications – in accordance with VDE SPEC 90037

At Weidmüller, DC ready stands for components, systems and solutions prepared for use in industrial DC networks (DC microgrids). They meet the technical requirements for planning, installation and safe operation – from power feed-in to distribution to fuse protection.
VDE SPEC 90037 serves as a central reference document for DC planning. It provides a comprehensive description of DC networks, defines voltage ranges, explains protective mechanisms and addresses specific component requirements. Particularly in an area where few standards have been established, it is an important point of orientation for planners, installers and end users.
Our DC ready products and solutions meet exactly these requirements – safely and practically, in compliance with relevant standards.

Learn more about VDE SPEC 90037
with a free download (English):
https://www.vde.com/en/working-areas/standards/spec/vde-spec-publications

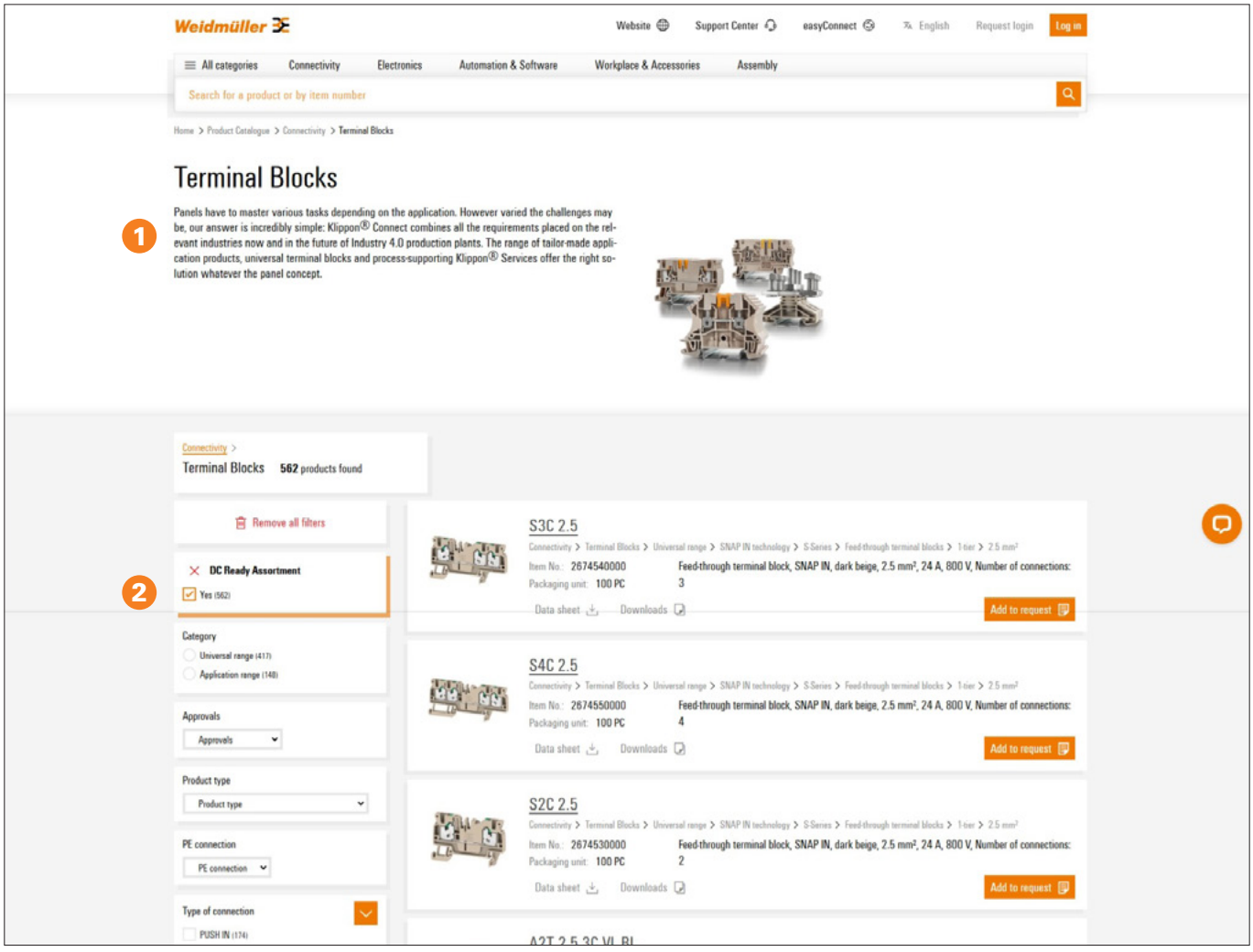
Visit our online shop, and discover our complete DC ready product range!

You can use our special “DC ready product range” filter to easily display all products suitable for use in DC microgrids. You’ll find everything you need from us. Discover now, and help shape the future!



Our online shop is available at the following link:
eshop.weidmueller.com

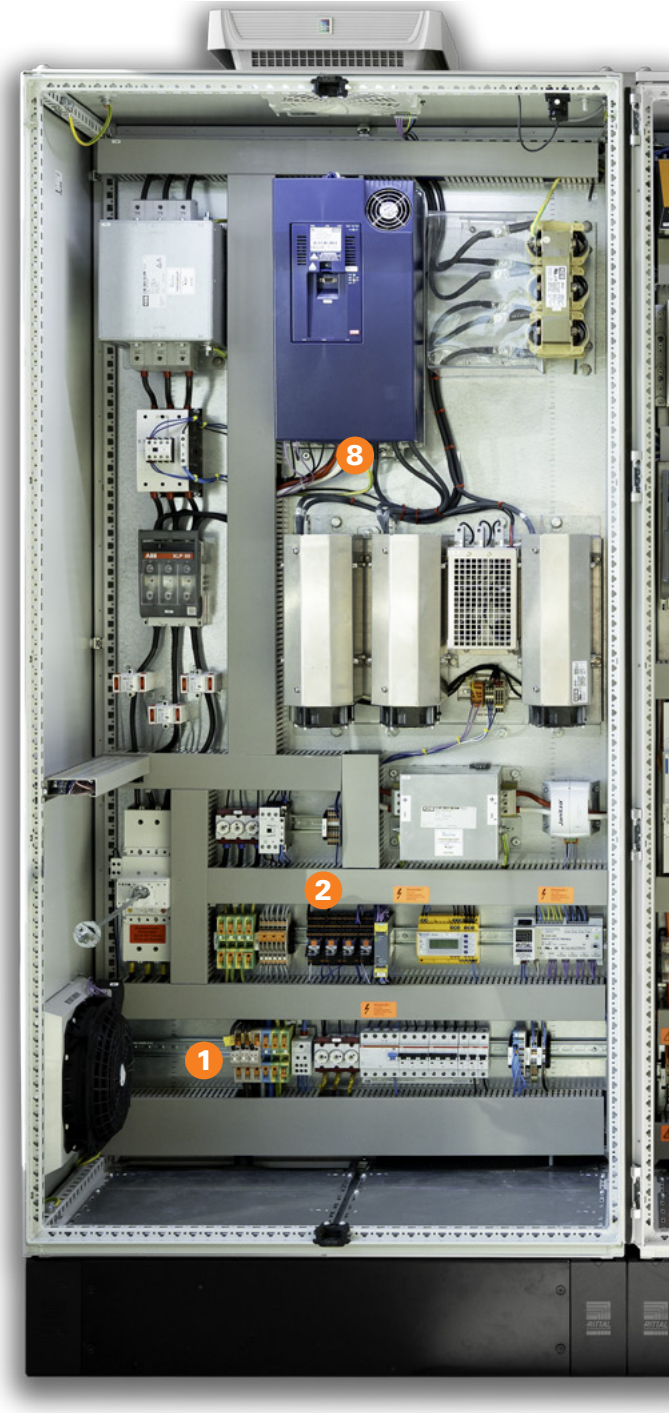
1. **Select the product area, for instance terminal blocks**
2. **Select the “DC ready product range” filter**



Our products, solutions and services for DC Microgrids

Fields of application for centralised DC power distribution and processing

We offer a comprehensive portfolio of solutions and components for the implementation and commissioning of DC Microgrids. This includes secure connectivity, solutions for power distribution and monitoring energy flows and decentralised automation tasks. We're **DC ready.** How about you?



1 Connectivity – Klippon® Connect terminal blocks
Terminal blocks with the SNAP IN or PUSH IN connection system fulfil the requirements of AC and DC rated voltages up to 1000 V for wiring to the feed-in and distribution to the functional areas.

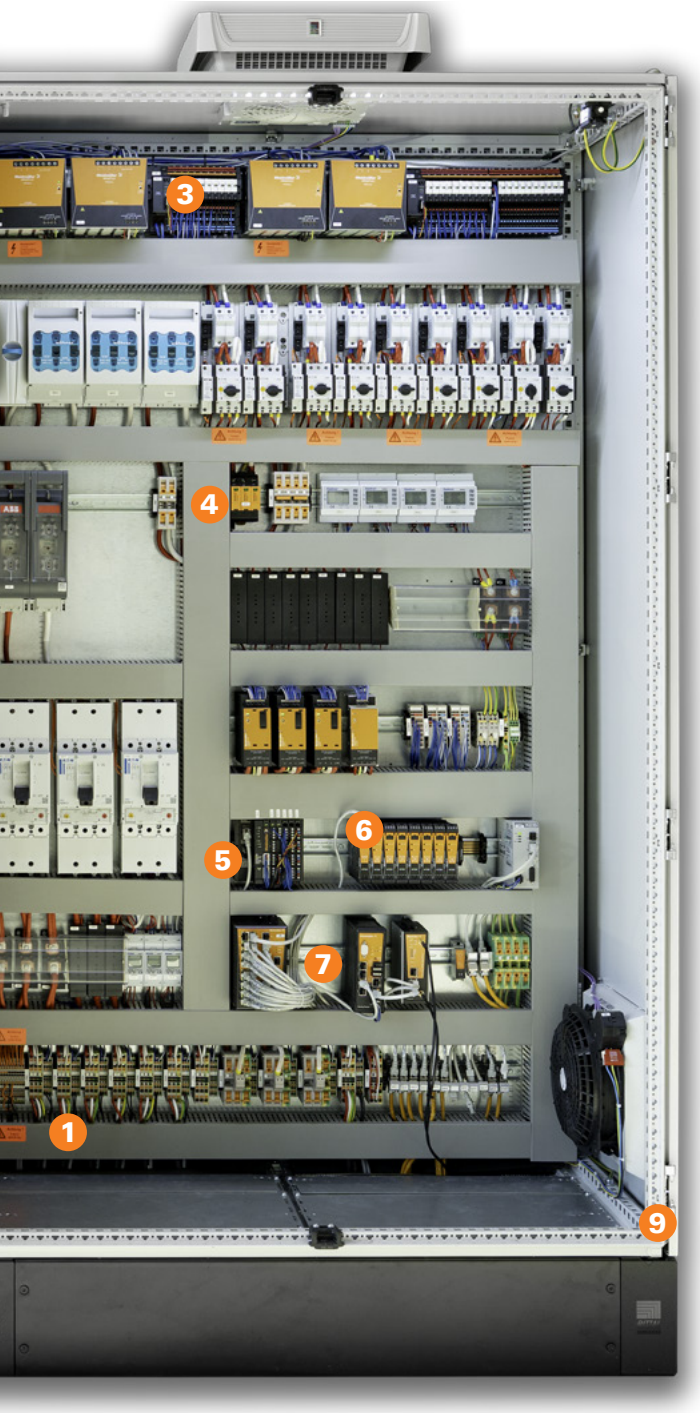
2 Relays and solid-state relays
Switching, separating, amplifying, or multiplying: relay modules and solid-state relays perform many different tasks in industrial applications.

3 Power supplies
Our switched-mode power supplies in the three performance classes PROtop, PROmax and PROeco offer a high degree of safety and easily withstand harsh industrial environments. They can be operated on both AC and DC networks.

4 VARITECTOR lightning and surge protection
Lightning and surge protection devices that conform to the standards of DIN VDE 0100-443 and -534 for mandatory surge protection in building infrastructures.

5 Automation and software
Optimise your automation processes – Easy and IoT ready

DC ready



6 Isolating amplifier and measuring transducer
ACT20 signal inverters and current transducers measure and monitor direct and alternating currents in a wide range of industrial zones. They can be used, for instance, to control the power flows for DC networks, which require continuous power calculation based on a DC sector current and voltage measurement.

7 Media converters and protocol gateways
Our media converters and protocol gateways ensure smooth communication between all network participants and are also especially convenient and economical.

8 OMNIMATE® PCB terminal blocks and plug-in connectors
OMNIMATE® Power: the secure AC and DC connection with PCB terminal blocks, PCB connectors and feed-through terminals fulfil the requirements of AC and DC rated voltages up to 1000 V.

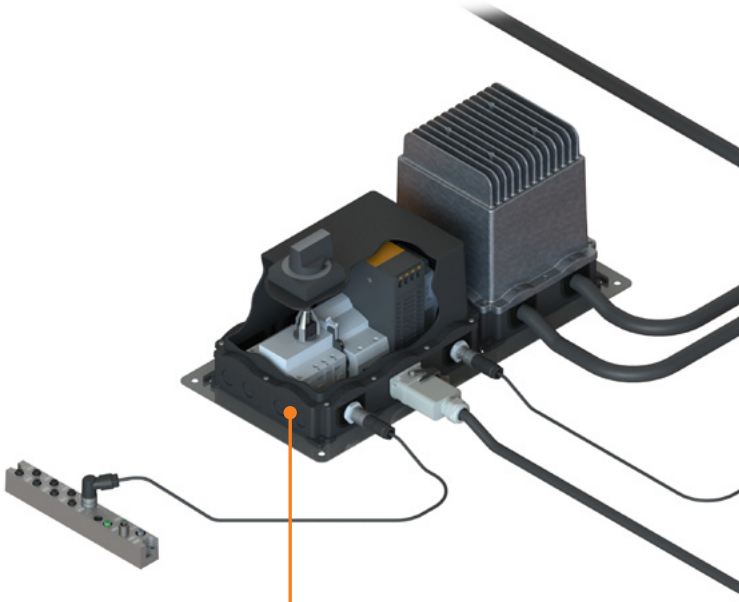
9 RockStar® heavy-duty connectors
RockStar®heavy-duty connectors ensure the safe and reliable transmission of power, signals and data in industrial environments, both inside the control cabinet and outside in the field. Locks for selected plug-in connectors fulfil the requirements of the VDE SPEC 90037 up to level 3, i.e. allowing extended deliberate unlocking with a standard specialist tool.

Workshop & Accessories
Practical advantages for optimised work processes. Professional tools, printing solutions, markers, industrial luminaires and accessories for the highest demands.

Solve decentralised automation tasks economically.
Function-orientated solutions with FieldPower® for DC Microgrids

Simple system planning, fast and error-free installation and reliable operation of widely branched, modular systems are also possible for DC Microgrids with our proven FieldPower® system.
In addition to established control cabinet functions such as feeding, switching, protecting and monitoring, the controlled precharging of sectors and secure decentralised power distribution in the field are also possible.

With FieldPower® and our DC ready portfolio, we develop custom-tailored solutions alongside you for your decentralised power distribution. Please contact us for more details.

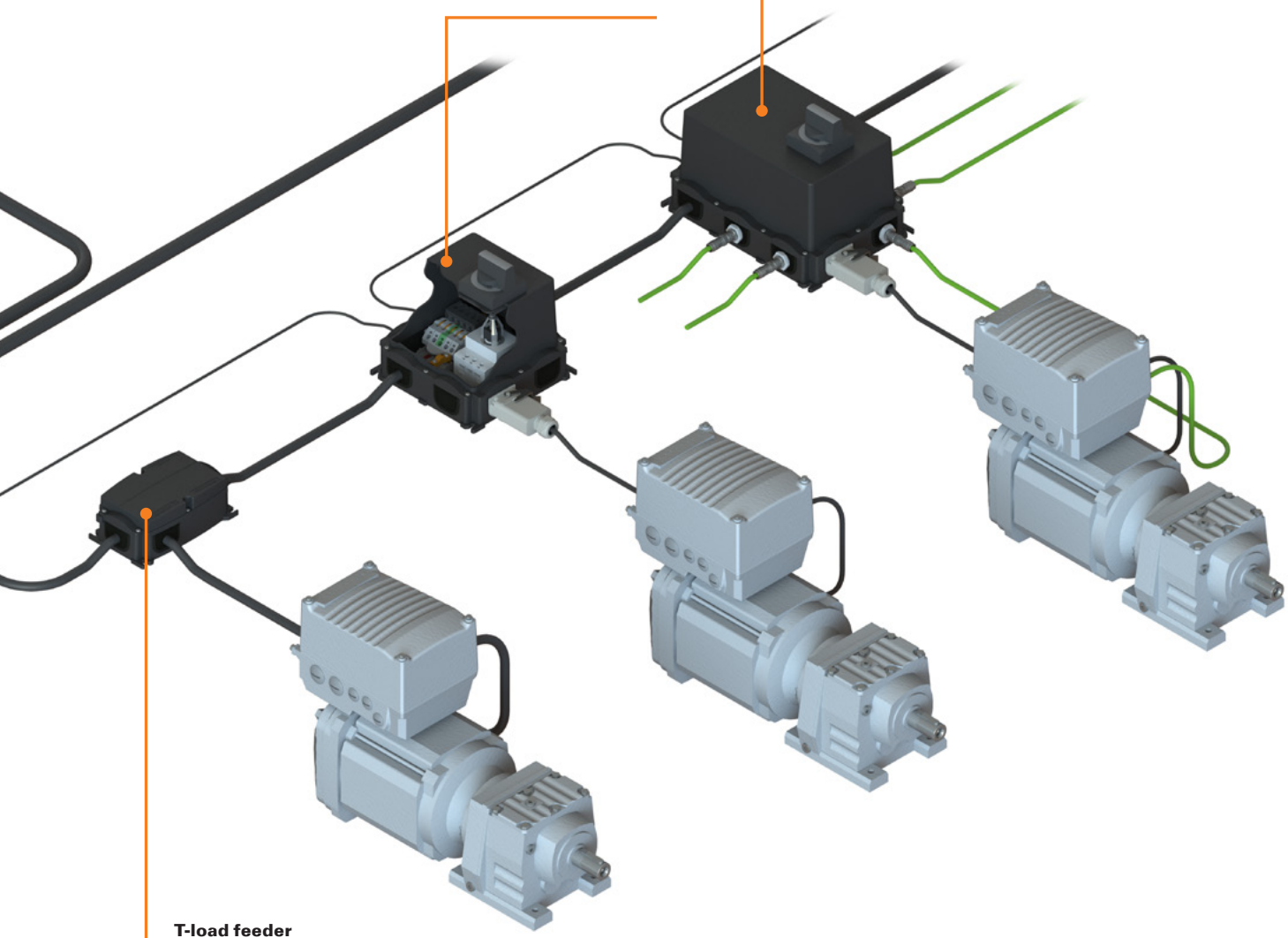


Sector feed box
DC bus distributor 16 mm² and sector feed 6 mm² with precharging, bridging, short-circuit & line protection and load disconnection, optionally with DCDC converter 24 V DC for auxiliary power supply

For further information, technical specifications or additional services, please visit our website:
www.weidmueller.com/fieldpower

T-load feeder
DC bus in 6 mm², branch to 2.5 mm² with line protection and load disconnection and ETH switch

T-load feeder
DC bus in 6 mm², branch to 2.5 mm² with line protection and load disconnection



T-load feeder
DC bus in 6 mm², branch to 6 mm²

Testing and safe disconnection

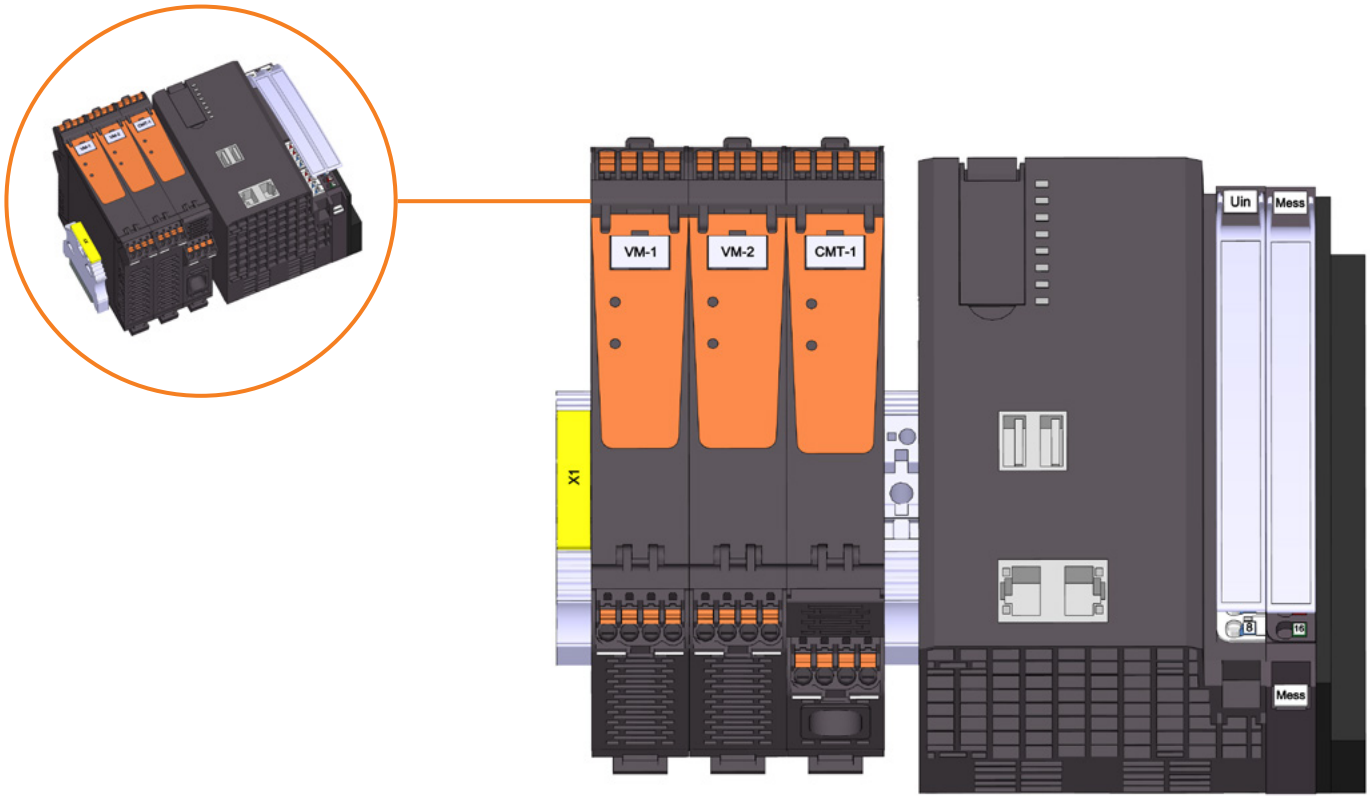
Two-pole voltage tester for safety-relevant DC voltages up to 1,500 V

Size isn't everything. That is why we have made our new generation of two-pole voltage testers even more compact and powerful. In addition to their proven functions, they offer a range of innovative features. The VT Digi Pro now makes it possible to test up to 1,000 V AC and 1.500 V DC. It not only measures voltage, rotating field, and continuity, but also frequency and resistance. And best of all: the tester can also be operated with one hand. So you always have everything under control.

Type	Version	Qty	Order No.
VT DIGI PRO	Testing tools, 2-pole voltage tester type 1152	1	9918870000

Shaping a smarter energy future. Today.
DC energy solutions with suitably combined products

Controlling the power flow in a DC microgrid is important in order to reduce the feed-in power and plan energy availability. With the combination of current transducer, signal converter (voltage measurement) and the u-control, the power flows of the DC sectors are under control. The addition of parameters such as PV forecast and electricity price from the exchange ensures highly economical operation of the application.



Parts list application

Type	Version	Qty	Order No.
ACT20P-CMT-60-A0-RC-P	Current-measuring transducer, Limit value monitoring, Input : 0...40/50/60 A, Analogue output, Relay output, Current-carrying cable in feed-through hole	1	1510290000
ACT20P-VM-A0-P	Analogue isolating amplifier, Input : AC/DC voltage, 0...600 V DC, 0...440 V AC, Output : 0-10 V, 0(4)-20 mA, Signal converter/isolator	2	7760054360
UC20-M3000	Controller, IP20, AutomationController	1	2839150000
UR20-4AI-UI-16	Remote I/O module, IP20, 4-channel, Analog signals, Input, Current/Voltage, 16 Bit	1	1315620000
UR20 EB ACC BK	End bracket	1	1346610000

Isolating amplifier and measuring transducer

ACT20 signal inverters and current transducers measure and monitor direct and alternating currents in a wide range of industrial zones. Thanks to their effective value measurement, they can detect both sinusoidal and distorted alternating currents, along with direct currents. For direct currents, the direction of flow of the current can also be determined via rapid averaging.
They can be used, for instance, to control the power flows for DC networks, which require continuous power calculation based on a DC sector current and voltage measurement. In addition, such sections of the DC network can also be monitored for unbalance via measurements of phase voltages as well as voltages after PE. Unbalance monitoring can indicate defective equipment, preventing accelerated ageing of other devices due to increased load on the insulation.

Nutzen Sie für weitere Produkte, Informationen, technische Angaben oder auch zusätzliche Services unsere Website:
www.weidmueller.com/as-product-overview

ACT20P – Signal converter and process monitoring for industrial applications

Type	Version	Qty	Order No.
ACT20P-VM-AO-P	Signal converter/insulator, Input: AC/DC voltage, 0...600 V DC, 0...440 V AC, Output: 0-10 V, 0(4)-20 mA, Signal converter/isolator	1	**7760054360**
ACT20P-CMT-10-AO-RC-P	Current-measuring transducer, Limit value monitoring, Input : 0...5/10 A, Analogue output, Relay output, Current-carrying cable in feed-through hole	1	**1510330000**
ACT20P-CMT-30-AO-RC-P	Current-measuring transducer, Limit value monitoring, Input : 0...20/25/30 A, Analogue output, Relay output, Current-carrying cable in feed-through hole	1	**1510320000**
ACT20P-CMT-60-AO-RC-P	Current-measuring transducer, Limit value monitoring, Input: 0...40/50/60 A, Analogue output, Relay output, Current-carrying cable in feed-through hole	1	**1510290000**

ACT20C – Network-compatible current measuring transducers

Type	Version	Qty	Order No.
ACT20C-GTW-100-MTCP-S	Gateway for ACT20C station, Configurable, Modbus TCP/IP, Distributes supply voltage to rail bus	1	**1510370000**
ACT20C-CMT-10-AO-RC-S	Current-measuring transducer, Input : 0...5/10 A, Output : 0(4)-20 mA, 0-10 V, Relay	1	**1510240000**
ACT20C-CMT-60-AO-RC-S	Current-measuring transducer, Input : 0...40/50/60 A, Output : 0(4)-20 mA, 0-10 V, Relay	1	**1510420000**
ACT20C-LBT-10	Bus termination terminal for ACT20C station, Input : 0...40/50/60 A, Output : Pulse	1	**1510340000**

Power supplies and electronic load monitoring

Our product families offer multiple advantages.
The three power classes and various system accessories have a modular design and thus offer customised solutions. With our power supply components, you can find exactly the product you need. Our switched-mode power supplies in the three performance classes PROtop, PROmax and PROeco offer a high degree of safety and easily withstand harsh industrial environments. They can be operated on both AC and DC networks.

For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/powermanagement

Load monitoring topGUARD with communication

Type	Version	Qty	Order No.
TGD FIM-C	Supply module	1	2625000000
TGD ELM-12	Electronic load monitoring	1	2624990000
TGD ELM-6	Electronic load monitoring	1	2624980000
TGD ELM-4 CL2	Electronic load monitoring	1	2656670000

Load monitoring maxGUARD without communication

Type	Version	Qty	Order No.
AMG DIS	Potential distributor	10	2123050000
AMG MD	Potential distributor	10	2122930000
AMG OD	Potential distributor	10	2122910000
AMG PD	Potential distributor	10	2122920000

Communication modules

Type	Version	Qty	Order No.
PRO COM IO-LINK	Communication module	1	2587360000
PRO COM CAN OPEN	Communication module	1	2467320000

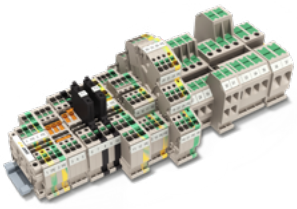
Terminal blocks – Klippon® Connect: The perfect solution for your DC microgrid

Our Klippon® Connect terminal blocks are the ideal choice for use in DC microgrids. DC microgrids work with a voltage of up to 800 V. This voltage can be applied by all standard terminals above a rated cross-section of 2.5 mm². That means our terminals are DC ready, and offer the flexibility and robust design you need for your DC microgrid projects.

For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/terminal-blocks

Feed-through terminal blocks (S-series)

Type	Version	Qty	Order No.
SL2C 6	Feed-through terminal block, SNAP IN, dark beige, 6 mm², 41 A, 1000 V, Number of connections: 2	50	3037380000
SL3C 6	Feed-through terminal block, SNAP IN, dark beige, 6 mm², 41 A, 1000 V, Number of connections: 3	50	3037410000
SL4C 6	Feed-through terminal block, SNAP IN, dark beige, 6 mm², 41 A, 1000 V, Number of connections: 4	50	3037440000
SL2C 10	Feed-through terminal block, SNAP IN, dark beige, 10 mm², 57 A, 1000 V, Number of connections: 2	50	3037500000
S2C 2.5	Feed-through terminal block, SNAP IN, dark beige, 2.5 mm², 24 A, 800 V, Number of connections: 2	100	2674530000
S3C 2.5	Feed-through terminal block, SNAP IN, dark beige, 2.5 mm², 24 A, 800 V, Number of connections: 3	100	2674540000
S4C 2.5	Feed-through terminal block, SNAP IN, dark beige, 2.5 mm², 24 A, 800 V, Number of connections: 4	100	2674550000
S2C 4	Feed-through terminal block, SNAP IN, dark beige, 4 mm², 32 A, 1000 V, Number of connections: 2	50	2874820000
S3C 4	Feed-through terminal block, SNAP IN, dark beige, 4 mm², 32 A, 1000 V, Number of connections: 3	50	2874840000
S4C 4	Feed-through terminal block, SNAP IN, dark beige, 4 mm², 32 A, 1000 V, Number of connections: 4	50	2874860000
S2T 2.5	Multi-tier modular terminal, SNAP IN, dark beige, 2.5 mm², 800 V, 800 V, Number of connections: 4, Number of levels: 2, TS 35, V-0, Wemid	50	2902380000
S2T 2.5 FT-PE	Multi-tier modular terminal, SNAP IN, dark beige, 2.5 mm², 800 V, 800 V, Number of connections: 4, Number of levels: 2, TS 35, V-0, Wemid	50	2902410000
S2T 2.5 N-FT	Multi-tier modular terminal, SNAP IN, dark beige, 2.5 mm², 800 V, 800 V, Number of connections: 4, Number of levels: 2, TS 35, V-0, Wemid	50	2902420000
S2T 2.5 VL	Multi-tier modular terminal, SNAP IN, dark beige, 2.5 mm², 800 V, 800 V, Number of connections: 4, Number of levels: 2, TS 35, V-0, Wemid	50	2902430000



Feed-through terminal blocks (A-series)

Type	Version	Qty	Order No.
A4C 2.5	Feed-through terminal, PUSH IN, 2.5 mm², 800 V, 24 A, dark beige	100	1521690000
A4C 4	Feed-through terminal, PUSH IN, 4 mm², 800 V, 32 A, dark beige	50	2051500000
A4C 6	Feed-through terminal, PUSH IN, 6 mm², 800 V, 41 A, dark beige	50	2881450000
A3C 10	Feed-through terminal, PUSH IN, 10 mm², 1000 V, 57 A, dark beige	25	2490520000
A3C 16	Feed-through terminal, PUSH IN, 16 mm², 1000 V, 76 A, dark beige	20	2494090000
A2C 35	Feed-through terminal, PUSH IN, 35 mm², 1000 V, 125 A, dark beige	10	2551510000
A2C 35 BL	Feed-through terminal, PUSH IN, 35 mm², 1000 V, 125 A, blue	10	2552090000
A2C 35 PE	PE terminal, PUSH IN, 35 mm², 1000 V, Green/yellow	10	2551520000
AAC 35 2X6	Auxiliary connection (terminal), 6 mm², Number of connections: 2	5	2583090000
AAC 35 2X6 BL	Auxiliary connection (terminal), 6 mm², Number of connections: 2	5	2583170000
AAC 35 2X6 GN-YL	Auxiliary connection (terminal), 6 mm², Number of connections: 2	5	2583180000
A2C 50/70	Feed-through terminal, PUSH IN, 50 mm², 1000 V, 150 A, dark beige	5	2663250000
A2C 50/70 BL	Feed-through terminal, PUSH IN, 50 mm², 1000 V, 150 A, blue	5	2663260000
A2C 50/70 PE	PE terminal, PUSH IN, 50 mm², Green/yellow	5	2663280000
AAC 50-185 2X10	Auxiliary connection (terminal), 10 mm², Number of connections: 2	5	2663420000
AAC 50-185 2X10 BL	Auxiliary connection (terminal), 10 mm², Number of connections: 2	5	2663430000
AAC 50-185 2X10 GN-YL	Auxiliary connection (terminal), 10 mm², Number of connections: 2	5	2663440000
A2C 95/120	Feed-through terminal, PUSH IN, 95 mm², 1000 V, 232 A, dark beige	5	2694060000
A2C 95/120 BL	Feed-through terminal, PUSH IN, 95 mm², 1000 V, 232 A, blue	5	2694070000
A2C 95/120 PE	PE terminal, PUSH IN, 95 mm², 1000 V, Green/yellow	5	2694090000
A2C 150/185	Feed-through terminal, PUSH IN, 150 mm², 1000 V, 309 A, dark beige	5	2728700000
A2C 150/185 BL	Feed-through terminal, PUSH IN, 150 mm², 1000 V, 309 A, blue	5	2728710000

Power feed-in terminal blocks

Type	Version	Qty	Order No.
ALO 16	Supply terminal, PUSH IN, 16 mm², 800 V, 76 A, dark beige	20	**2502280000**
ALO 6	Supply terminal, PUSH IN, 6 mm², 800 V, 41 A, dark beige	20	**1991780000**
AWPD 35 4X10 BL	Potential distributor terminal, Screw connection, blue, 35 mm², 110 A, 1000 V, Number of connections: 5, Number of levels: 1	20	**2860570000**
AWPD 35 4X10 BL	Potential distributor terminal, Screw connection, blue, 35 mm², 110 A, 1000 V, Number of connections: 5, Number of levels: 1	20	**2860570000**
AWPD 35 4X10 FE	Potential distributor terminal, Screw connection, black/yellow, 35 mm², 110 A, 1000 V, Number of connections: 5, Number of levels: 1	20	**2924990000**
AWPD 35 4X6/6X2.5	Potential distributor terminal, Screw connection, dark beige, 35 mm², 110 A, 1000 V, Number of connections: 11, Number of levels: 1	20	**2728620000**
AWPD 35 4X6/6X2.5 BL	Potential distributor terminal, Screw connection, blue, 35 mm², 110 A, 1000 V, Number of connections: 11, Number of levels: 1	20	**2860560000**
AWPD 35 4X6/6X2.5 FE	Potential distributor terminal, Screw connection, black/yellow, 35 mm², 110 A, 1000 V, Number of connections: 11, Number of levels: 1	20	**2924980000**
WSI 4/2	Fuse terminal, Screw connection, black, 4 mm², 10 A, 500 V, Number of connections: 2, Number of levels: 1, TS 35, TS 32	25	**1880430000**

Heavy duty connectors – Rockstar®

Rockstar® offers a safe and powerful plug-in connector for high-voltage applications in 650 V voltage ranges – ideal for industrial DC networks. DC hybrid lines (650 V and 24 V) can also be connected. With a robust design, modular flexibility and simple installation, they deliver maximum operational reliability and efficiency

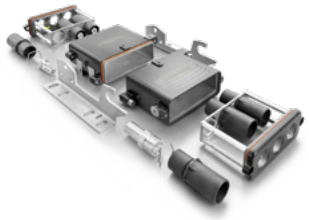
- Safely connect high currents and voltages
- Use DC hybrid lines for decentralised drives
- Resistance to environmental influences and mechanical loads
- Modular and adaptable
- Fast & secure installation
- Lock stages 2 to 3

Trust in proven connection quality for the power supply of the future – with RockStar® plug-in connectors from Weidmüller!

For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/rockstar

RockStar® HighPower: the modular 550 A connector

Type	Version	Qty	Order No.
300 A, 150 mm², plug housing			
HDC IP68 HP 24B TO	HDC enclosures, Size: 8, Protection degree: IP68, IP69K, IP68 (in plugged condition), Plug housing, Clamping yoke connection, Standard	1	**1079930000**
HDC HP 550 M 150	HDC insert, Pin, Crimp connection, Size: 550	1	**1119110000**
HDC 24B HP550 MPL3 TYP1	HDC insert, Number of poles: 3, Size: 8	1	**1103720000**
HDC IP68 24B MD 3M32	HDC enclosures, Size: 8, Protection degree: IP68, IP69K, IP68 (in plugged condition), Cover, Clamping yoke connection, Standard, Size of cable entries: M 32	1	**1119980000**
VGM32-MS68 15-25 BG	Heavy-duty connectors, Accessories, Cable glands, Brass, nickel-plated	25	**1193610000**
300 A, 150 mm², surface-mounted housing			
HDC IP68 HP 24B A	HDC enclosures, Size: 8, Protection degree: IP68, IP69K, IP68 (in plugged condition), Bulkhead housing, Clamping yoke connection, Standard	1	**1120040000**
HDC HP 550 F 150	HDC insert, Female, Crimp connection, Size: 550	1	**1079830000**
HDC 24B HP550 MPL3 TYP2	HDC insert, Number of poles: 3, Size: 8	1	**1103780000**
Note	HDC connector / surface-mounted housings 16 to 35 mm² are also DC ready		



Size HQ – up to 40 A

Type	Version	Qty	Order No.
HQ4/2 variant 1 for (3G6 +2x2.5) cable			
HDC HQM TOLU 1PG21	HDC enclosures, Size: HQ, Protection degree: IP65 (in plugged condition), Cable entry from top, Plug housing, Side-locking clamp on lower side, Standard, Size of cable entries: PG 21	1	**1003080000**
VG 21 HQ MS68 14-18	Heavy-duty connectors, Accessories, Cable glands, Brass, nickel-plated	1	**1016110000**
HDC HQ 4/2 FC	HDC insert, Female, 690 V, 40 A, Number of poles: 6, Crimp connection, Size: HQ	1	**1003160000**
HDC-C-HD-BM2.5AG	Heavy-duty connectors, Crimp contact, HD, HDD, HQ, MixMate, Female, Conductor cross-section, max.: 2.5, turned, Copper alloy	100	**1651610000**
HDC C HX BM6.0AG	Heavy-duty connectors, Crimp contact, MixMate, Female, Conductor cross-section, max.: 6, turned, Copper alloy	25	**1002980000**
HDC HQ 4/2 MC	HDC insert, Male, 690 V, 40 A, Number of poles: 6, Crimp connection, Size: HQ	1	**1003170000**
HDC-C-HD-SM2.5AG	Heavy-duty connectors, Crimp contact, HD, HDD, HQ, MixMate, Male, Conductor cross-section, max.: 2.5, turned, Copper alloy	100	**1651560000**
HDC C HX SM6.0AG	Heavy-duty connectors, Crimp contact, MixMate, Male, Conductor cross-section, max.: 6, turned, Copper alloy	25	**1002940000**
HDC HQP ALU CS	HDC enclosures, Size: HQ, Protection degree: IP65 (in plugged condition), Bulkhead housing, Side-locking clamp on lower side, Standard, lockable: Yes	1	**1354950000**
BG ARGH HQP ALU PT6 CS	Adapter, Field Power® sealing insert, HQ adapter, IP65, with corresponding enclosure, Polycarbonate, glass fibre reinforced, lockable: Yes	1	**1532210000**
HDC HQ DC-LOCKLEV 3	HDC - Extension set HQ bracket for lockable surface-mounted housings, extension of the locking level to level 3 (VDE Spec 90037), especially for DC microgrids	1	**3103570000**
HQ4/2 variant-2 for 3G6 cable			
HDC HQM TOLU 1PG21	HDC enclosures, Size: HQ, Protection degree: IP65 (in plugged condition), Cable entry from top, Plug housing, Side-locking clamp on lower side, Standard, Size of cable entries: PG 21	1	**1003080000**
VG 21 HQ MS68 14-18	Heavy-duty connectors, Accessories, Cable glands, Brass, nickel-plated	1	**1016110000**
HDC HQ 4/2 FC	HDC insert, Female, 690 V, 40 A, Number of poles: 6, Crimp connection, Size: HQ	1	**1003160000**
HDC C HX BM6.0AG	Heavy-duty connectors, Crimp contact, MixMate, Female, Conductor cross-section, max.: 6, turned, Copper alloy	25	**1002980000**
HDC HQ 4/2 MC	HDC insert, Male, 690 V, 40 A, Number of poles: 6, Crimp connection, Size: HQ	1	**1003170000**
HDC C HX SM6.0AG	Heavy-duty connectors, Crimp contact, MixMate, Male, Conductor cross-section, max.: 6, turned, Copper alloy	25	**1002940000**
HDC HQP ALU CS	HDC enclosures, Size: HQ, Protection degree: IP65 (in plugged condition), Bulkhead housing, Side-locking clamp on lower side, Standard, lockable: Yes	1	**1354950000**
BG ARGH HQP ALU PT6 CS	Adapter, Field Power® sealing insert, HQ adapter, IP65, with corresponding enclosure, Polycarbonate, glass fibre reinforced, lockable: Yes	1	**1532210000**
HDC HQ DC-LOCKLEV 3	HDC - Extension set HQ bracket for lockable surface-mounted housings, extension of the locking level to level 3 (VDE Spec 90037), especially for DC microgrids	1	**3103570000**

Lightning and Surge Protection

DC microgrids are a key component of future power networks. However, these systems are also susceptible to direct lightning strikes and voltage surges, meaning they require a well-designed protection concept. It is essential to protect the sensitive electronics used in these systems. Surge voltages often exceed the dielectric strength of installed electronic components, threatening their integrity. In addition, network-related voltage peaks can damage electronic components.
Implementing a comprehensive, end-to-end surge protection concept is essential to avoid costly repairs and downtime. This approach protects the entire system, guaranteeing the resilience and durability of DC microgrids against unforeseeable external factors.

For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/surge-protection

Lightning and Surge Protection

Type	Version	Qty	Order No.
VPU DC II 3 R 500/40	Surge protection 500 V DC	1	**3136610000***
VPU DC II 3 R 1000/40	Surge protection 1000 V DC	1	**3136620000***
VPU DC II 3 R 1500/40	Surge protection 1500 V DC	1	**3136630000***
PU DC II EV 3 R 1000/40	Surge protection 1000 V DC	1	**3136640000***
Note	* available Q4 – 2025		

Q4 2025

Relay modules and solid-state relays – Klippon®

Relay

Whether switching, isolating, amplifying or multiplying: relays perform a wide range of different tasks in DC microgrids. Our worldwide unique all-round offer combines maximum relay variety with matching accessories and first-class service. We provide high-quality products that have been thought out down to the smallest detail, combined with comprehensive support from product selection to modern data services.

For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/klipponrelay

PSSR half-axle contactor

Type	Version	Qty	Order No.
Solid-state contactor for switching loads up to 1000 V DC 15 A (17.8 mm wide)			
PSSRN K 24VDC 1D K 1000VDC 15A	Power solid-state relay, solid-state contactor, rated control voltage: 4.5...32 V DC , rated switching voltage: 20.4...1000 V DC (IEC), continuous current: 15 A	1	**2986930000**

CUBESERIES – Relay modules

Type	Version	Qty	Order No.
CRM miniature industrial relay modules (from 27 mm width)			
CRM40024	CUBESERIES, relay, number of contacts: 4, changeover contact AgNi, rated control voltage: 24 V DC, continuous current: 7 A, Plug connection, test button available: No	10	**3052940000**
CRM40024T	CUBESERIES, relay, number of contacts: 4, changeover contact AgNi, rated control voltage: 24 V DC, continuous current: 7 A, Plug connection, Test button available: Yes	10	**3053010000**
CSM P 4CO	CUBESERIES, relay socket, number of contacts: 4, changeover contact, continuous current: 8 A, PUSH IN	10	**3053140000**
CSM S 4CO	CUBESERIES, relay socket, number of contacts: 4, changeover contact, continuous current: 6 A, screw connection	10	**3053160000**
CXM CLIP P	CUBESERIES, mounting bracket	10	**3053240000**
CRI miniature industrial relay modules (16 mm width)			
CRI20024	CUBESERIES, relay, number of contacts: 2, changeover contact AgNi, rated control voltage: 24 V DC, continuous current: 8 A, Plug connection, Test button available: No	10	**3052430000**
CRI20024T	CUBESERIES, relay, number of contacts: 2, changeover contact AgNi, rated control voltage: 24 V DC, continuous current: 8 A, Plug connection, test button available: Yes	10	**3052510000**
CSI P 2CO	CUBESERIES, relay socket, number of contacts: 2, changeover contact, continuous current: 8 A, PUSH IN	10	**3052570000**
CSI S 2CO	CUBESERIES, relay socket, number of contacts: 2, changeover contact, continuous current: 8 A, screw connection	10	**3052590000**
CXI CLIP P	CUBESERIES, mounting bracket	10	**3052710000**

CUBESERIES – Relay modules

Type	Version	Qty	Order No.
Relay modules with forcibly guided contacts (12.8 mm width)			
TRP 24VUC 2CO FG	TERMSERIES, Relay coupler with forcibly guided contacts, Number of contacts: 2, Changeover contact, forcibly guided (EN 61810-3 type B) AgNi, Rated control voltage: 24 V UC ±10 %, Continuous current: 6 A, PUSH IN, Test button available: No	5	**2706430000**
TRS 24VUC 2CO FG	TERMSERIES, Relay coupler with forcibly guided contacts, Number of contacts: 2, Changeover contact, forcibly guided (EN 61810-3 type B) AgNi, Rated control voltage: 24 V UC ±10 %, Continuous current: 6 A, Screw connection, Test button available: No	5	**2706290000**

SAFESERIES – Safety relays

Type	Version	Qty	Order No.
2-channel emergency stop safety relay			
SCS 24VDC P2SIL3ES	SAFESERIES, safety relay, 24 V DC ±15 %, 24 VDC +15 % -10 % with autostart, 35 mA, 5, SIL 3, DIN EN 61508, EN ISO 13849-1 (PLe)	1	**1319280000**
Note	For a contact extension of the 2-channel safety relay, look in the eshop for the SAFESERIES Contact Extension with forcibly guided contacts in the contact versions 2 NO + 2 NC, 3 NO + 1 NC, 4 NO + 2 NC, 3 NO + 3 NC and 5 NO + 1 NC		

Solutions for Photovoltaic Systems

Renewable energy sources like photovoltaics can be integrated into DC microgrids simply and highly efficiently, making them a key sector in power generation. The PV sector is integrated into the DC network via a DC/DC converter to adapt the voltage level. We offer an extensive range of PV combiner boxes, surge protection devices, connectors, tools and components for PV installation between the module and DC/DC converter.

For more information about our photovoltaics product range, please see section B of this catalogue.

For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/pv-solutions

DC generator combiner boxes with fuses

Type	Version	Qty	Order No.
PVN DC 3IF 3O 1MPP SPD1R WM4 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, WM4C	1	**2683070000**
PVN DC 3IF 3O 1MPP SW SPD1R WM4 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, Switch disconnector, WM4C	1	**2683090000**
PVN DC 3IF 3O 1MPP SPD1R CG 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, Cable gland	1	**2683030000**
PVN DC 3IF 3O 1MPP SW SPD1R CG 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, Switch disconnector, Cable gland	1	**2683050000**
PVN1M1I6SXF3V101TXPX10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 6 Inputs / 6 Outputs per MPP, With fuse holder, Surge protection I / II, WM4C	1	**2737440000**
PVN1M1I6S0F3V101TXPX10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 6 Inputs / 6 Outputs per MPP, With fuse holder, Surge protection I / II, Switch disconnector, WM4C	1	**2737480000**
PVN1M1I6SXF3V100TXPX10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 6 Inputs / 6 Outputs per MPP, With fuse holder, Surge protection I / II, Cable gland	1	**2737520000**
PVN1M1I6S0F3V100TXPX10	Photovoltaics, Combiner Box, PV Next, 1000 V, 1 MPP, 6 Inputs / 6 Outputs per MPP, With fuse holder, Surge protection I / II, Switch disconnector, Cable gland	1	**2737530000**
PVN DC 3IF 3O 2MPP SPD1R WM4 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 2 MPP's, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, WM4C	1	**2683080000**
PVN DC 3IF 3O 2MPP SW SPD1R WM4 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 2 MPP's, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, Switch disconnector, WM4C	1	**2683100000**
PVN DC 3IF 3O 2MPP SPD1R CG 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 2 MPP's, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, Cable gland	1	**2683040000**
PVN DC 3IF 3O 2MPP SW SPD1R CG 10	Photovoltaics, Combiner Box, PV Next, 1000 V, 2 MPP's, 3 Inputs / 3 Outputs per MPP, With fuse holder, Surge protection I / II, Switch disconnector, Cable gland	1	**2683060000**
Note	Simple selection via the Weidmüller product selector: www.weidmueller.com/pvselektor		

Fireman Switch

Type	Version	Qty	Order No.
PVN DC 2I 1O 1MPP RD WM4 11	Photovoltaics, Combiner Box, Fireman's switch, PV Next, 1 MPP, 2 Inputs / 1 Output per MPP, Remote disconnector, WM4C, 1100 V	1	**2778860000**
PVN DC 2I 1O 1MPP RD CG 11	Photovoltaics, Combiner Box, Fireman's switch, PV Next, 1 MPP, 2 Inputs / 1 Output per MPP, Remote disconnector, Cable gland, 1100 V	1	**2778850000**
PVC DC 2I 1O 2MPP RD SPD1R EVO 11	Photovoltaics, Combiner Box, Fireman's switch, PV Next, 1100 V, 2 MPP's, 2 Inputs / 1 Output per MPP, Surge protection I / II, Remote disconnector, MC4-Evo 2	1	**8000098970**
PVN DC 2I 1O 2MPP RD WM4 11	Photovoltaics, Combiner Box, Fireman's switch, PV Next, 2 MPP's, 2 Inputs / 1 Output per MPP, Remote disconnector, WM4C, 1100 V	1	**2778880000**
PVN DC 2I 1O 2MPP RD CG 11	Photovoltaics, Combiner Box, Fireman's switch, PV Next, 2 MPP's, 2 Inputs / 1 Output per MPP, Remote disconnector, Cable gland, 1100 V	1	**2778870000**

PV Cable Harnessing

Type	Version	Qty	Order No.
Y-Connector Cables			
PVHYW-XXW+XX06W+15	Photovoltaics, Y-Connector Cable, 1x WM4 C Male, 2x WM4 C Female, 6mm², 1500 V	1	**2814180000**
PVHYW+XXW-XX06W-15	Photovoltaics, Y-Connector Cable, 1x WM4 C Female, 2x WM4 C Male, 6mm², 1500 V	1	**2814190000**
PVHYM-XXW+XX06M+15	Photovoltaics, Y-Connector Cable, 1x MC4 Male, 1x WM4 C Female, 1x MC4 Female, 6mm², 1000 V	1	**2814200000**
PVHYM+XXW-XX06M-15	Photovoltaics, Y-Connector Cable, 1x MC4 Female, 1x WM4 C Male, 1x MC4 Male, 6mm², 1000 V	1	**2814210000**
PVHYW-XXPXXX06W+15	Photovoltaics, Y-Connector Cable, 1x WM4 C Male, 1x Partly stripped cable end, 1x WM4 C Female, 6mm², 1500 V	1	**2814220000**
X-Connector Cables			
PVHXW-W-W+XX06W+15	Photovoltaics, X-Connector Cable, 2x WM4 C Male, 2x WM4 C Female, 6mm², 1500 V	1	**2814240000**
PVHXW+W+W-XX06W-15	Photovoltaics, X-Connector Cable, 2x WM4 C Female, 2x WM4 C Male, 6mm², 1500 V	1	**2814250000**
PVHXM-M-W+XX06M+15	Photovoltaics, X-Connector Cable, 2x MC4 Male, 1x WM4 C Female, 1x MC4 Female, 6mm², 1000 V	1	**2814260000**
PVHXM+M+W-XX06M-15	Photovoltaics, X-Connector Cable, 2x MC4 Female, 1x WM4 C Male, 1x MC4 Male, 6mm², 1000 V	1	**2814270000**
PVHXW-W-PXXX06W+15	Photovoltaics, X-Connector Cable, 2x WM4 C Male, 1x Partly stripped cable end, 1x WM4 C Female, 6mm², 1500 V	1	**2814280000**
PVHXW+W+PXXX06M-15	Photovoltaics, X-Connector Cable, 2x WM4 C Female, 1x Partly stripped cable end, 1x WM4 C Male, 6mm², 1500 V	1	**2814290000**

PV Cable Harnessing

Type	Version	Qty	Order No.
Field connectors			
PV-STICK SET	Photovoltaics, Plug-in connector	1	**1422030000**
PV-STICK- VPE50	Photovoltaics, Plug-in connector	50	**1303500000**
PV-STICK+ VPE50	Photovoltaics, Plug-in connector	50	**1303460000**

Fuses with holder

Type	Version	Qty	Order No.
FUSEHOLDER WSFH 10X38 1KV	Photovoltaics, Fuse holder, 1000 V, 10x38, 1 String, Without LED	10	**2827940000**
FUSE 10X38 1A 1000 VDC GPV	Photovoltaics, Cartridge fuse, 1000 V, 10x38, gPV, 1 A	10	**2783160000**
FUSEHOLDER WSFH 10X85 1K5V	Photovoltaics, Fuse holder, 1500 V, 10x85	10	**4000002613**
FUSE WSFL 10X85 15A 1K5V GPV	Photovoltaics, Cartridge fuse, 1500 V, 10x85, gPV, 15 A	50	**4000002597**
FUSEHOLDER WSFH 22X58 1K5V 80A	Photovoltaics, Fuse holder, 1500 V, 22x58, Without LED	6	**4000003740**
FUSE WSFL 22X58 30A 1K5V GPV	Photovoltaik, Schmelzsicherungseinsatz, 1500 V, 22x58, gPV, 30 A	10	**2873880000**

Powerful PCB connectors for DC microgrids

Our OMNIMATE Power portfolio offers compact designs, high current-carrying capacity, and reliable contact technology – ideal for modern DC applications. Developed for efficiency, safety and durability in challenging DC infrastructures.

Plug-in connectors have to guarantee high power and current capacity, low power loss and secure contacting. Protection against electric arcs and misconnection, as well as high mechanical and thermal durability, are also essential (locking stages 2 to 3).

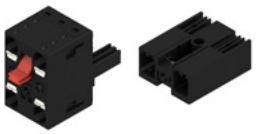
For further products, information, technical specifications or additional services, please visit our website:
www.weidmueller.com/omnimate

OMNIMATE® Power IT – 6 mm² PCB connectors

Type	Version	Qty	Order No.
BVZ 7.62IT/02/180MF SN BK BX	6 mm² connector	52	1156710000
SV 7.62IT/02/90MF2 3.5SN BK BX SO	6 mm² header	78	1156540000
SV 7.62IT/02/270MF2 3.5SN BK BX SO	6 mm² header	78	1156490000

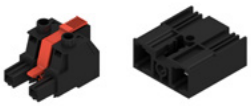
OMNIMATE® Power HP – 6mm² PCB connectors

Type	Version	Qty	Order No.
BVDF 7.62HP/02/180MF2 SN BK BX	6 mm² connector	39	2720550000
SV 7.62HP/02/90MF2 3.5SN BK BX	6 mm² header	78	1048390000
SV 7.62HP/02/180MF2 3.5SN BK BX	6 mm² header	78	1048350000
SV 7.62HP/02/270MF2 3.5SN BK BX	6 mm² header	78	1048370000



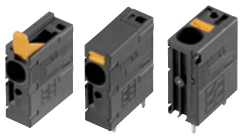
OMNIMATE® Power IT – 16 mm² PCB connectors

Type	Version	Qty	Order No.
BUZ 10.16IT/02/180MF AG BK BX	16 mm² connector	30	1156600000
SU 10.16IT/02/90MF2 3.5AG BK BX SO	16 mm² header	60	1156650000
SU 10.16IT/02/270MF2 3.5AG BK BX SO	16 mm² header	60	1157310000



OMNIMATE® Power – 6 mm² PCB terminals

Type	Version	Qty	Order No.
LLF 7.50/01/90 5.0SN BK BX	6 mm² terminal	200	2471520000
LLFS 7.50/01/90 5.0SN BK BX	6 mm² terminal	200	2473420000
LLFS 7.50/01/180 5.0SN BK BX	6 mm² terminal	200	2491110000



OMNIMATE® Power – 6 mm² PCB terminals

Type	Version	Qty	Order No.
LUFS 10.00/01/90 5.0SN BK BX	16 mm² terminal	50	2500560000
LUFS 10.00/01/180 5.0SN BK BX	16 mm² terminal	50	2491810000
LUF 15.00/02/90V 5.0SN BK BX	16 mm² terminal	40	2492000000
LUFS 15.00/02/180V 5.0SN BK BX	16 mm² terminal	40	2491820000
LUFS 15.00/02/90V 5.0SN BK BX	16 mm² terminal	40	2499440000

OMNIMATE® Power – Powerbus

Type	Version	Qty	Order No.
PB-CON 160 S/02/90RFSF AG BK BX	DC Powerbus	20	2594720000
PB-FEED 160 100/02RF AG BK BX	DC Powerbus	10	2595180000
PB-LINK 160 50/02RF AG BK BX	DC Powerbus	20	2595540000

Explanation of locking stages

1 Basic protection

Requirement: separate a plug-in connection by disconnecting the plug-in connector without lock.
Typical applications: inside devices, PCB connectors, Schuko plugs
When is this required? In applications where accidental disconnection leads to downtimes, but not hazardous situations, this stage provides basic safety without increased maintenance requirements.
Our solution: plug-in connectors with mechanical resistance.

2 By hand

Requirement: disconnect a plug-in connection through purposeful manual unlocking (such as a securing bracket or knurled nut)
Typical applications: classic power distributions on or outside the control cabinet
When is this required? In applications where purposeful disconnection is required to avoid accidental interruptions, this stage offers additional safety.
Our solution: plug-in connectors with integrated bracket closure / bracket lock, push-pull plug-in connectors

3 Standard tool

Requirement: disconnect a plug-in connection via release from a standard tool (such as a screwdriver)
Typical applications: inside industrial systems and robotic cells, railway engineering, intralogistics
When is this required? Protects against unauthorised or accidental disconnection in areas with increased safety requirements.
Our solution: plug-in connectors with screw plug locking, device connector with screw-in central flange locking

4 Key

Requirement: disconnect a plug-in connection via release through an authorised key (such as lockable safety bracket, NFC) or a special tool
Typical applications: inside industrial systems and robotic cells, railway engineering, intralogistics
When is this required? In areas with increased safety regulations or the possibility of access by untrained personnel, this stage protects against unauthorised and uncontrolled disconnection.
Our solution: plug-in connectors with key and lock or electronic release function.

5a Signal control

Requirement: disconnect a plug-in connection via automatic release by authorised opening (voltage measurement in control cabinet) through a signal to a plug-in connector
Typical applications: automated industrial systems, DC microgrids, maintenance systems with remote release
When is this required? Prevents disconnection under load, increases operational reliability and protects personnel and systems. Especially in areas accessible to the public and system-critical components (such as frequency converters outside of a robotic cell)
Our solution: Intelligent plug-in connectors with controller interfaces and electronic locking mechanism. Ensure absence of voltage through a built-in LED (safety rule 3).

5b Auto-nomous release

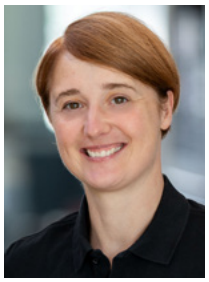
Requirement: disconnect a plug-in connection via automatic release by authorised opening (voltage measurement in control cabinet).
Typical applications: automated industrial systems, DC microgrids, maintenance systems with remote release
When is this required? Allows for safe maintenance and prevents unauthorised disconnection through an automated release system. Especially in areas accessible to the public and system-critical components (such as frequency converters outside of a robotic cell)
Our solution: Intelligent plug-in connectors with voltage measurement module and electronic locking mechanism. Ensure absence of voltage through a built-in LED (safety rule 3).

DC Innovation Hub at the Weidmüller Academy

Where innovation meets application: direct current solutions for continuous operation

Weidmüller is setting a forward-thinking standard with its new DC Innovation Hub in Detmold, designed to bridge technological innovation and hands-on training. The DC Innovation Hub is aimed equally at customers, users, and partners, providing a space where they can explore and test direct current technologies through pilot projects. This hub impresses with its holistic approach: Weidmüller integrates applications, products, innovations, and training solutions, creating a seamless transition from technology to practical use in everyday working life.

As a pioneer in direct current (DC) technology, Weidmüller has made this project a priority. Over the coming years, the DC Microgrid at the Detmold site will be gradually expanded to fully leverage the benefits of DC technology: higher energy efficiency due to reduced conversion losses, lower peak loads, the efficient integration of renewable energies such as photovoltaics, and ultimately, improved grid stability.



»By integrating DC technologies, we not only create modern learning environments but also empower our trainees and employees to actively shape the future of energy supply. Our goal is to tightly intertwine innovation and practice, thereby making a crucial contribution to the industry of tomorrow.«

Romina Kehl, Head of Education at Weidmüller

Clear Objective: A Platform for Synergies and Future-Focused Growth

With the DC Innovation Hub, Weidmüller aims to create a central platform where all stakeholders in the field of DC networks can come together—encompassing training, development, and practical application for customers. The focus is on planning, designing, and implementing the entire DC network. In this way, Weidmüller aims to provide users and customers well-grounded guidance on DC applications.

Beyond the technological advantages of a DC Microgrid, such as increased energy efficiency and network quality, the primary goal has been to create a space that fosters the exchange of ideas, collaborative development of new technologies, and practical implementation of solutions. By integrating both existing and future Weidmüller technologies, synergies are created, and innovation processes are accelerated, benefiting employees and customers alike. Weidmüller sees itself as a technological driver in the field of DC Microgrids and aims to establish these as the primary energy grids of the future. The company places particular emphasis on a holistic approach that puts applications, products, and innovations directly into practice.

The design of the DC network at the Weidmüller Academy began with a comprehensive energy analysis of the existing AC infrastructure.

We want to bring the knowledge we accumulate here through training, maintenance, and development directly to our customers as solutions.

Olaf Grünberg, DC Project Manager at Weidmüller

The scope of Weidmüller's DC Microgrid at the Detmold site is impressive: "We are capable of supplying a DC grid with 150 kW here," explains Grünberg, adding, "We identified the peak load of the machines on site by putting all our equipment into operation. We identified the peak load of the machines on site by putting all our equipment into operation. This resulted in a demand of 130 kW—equivalent to that of a well-utilised medium-sized company." Over the next three years, the DC Microgrid will be expanded incrementally, with continuous focus on infrastructure and the integration of energy consumers as well as sources such as photovoltaic systems and energy storage.

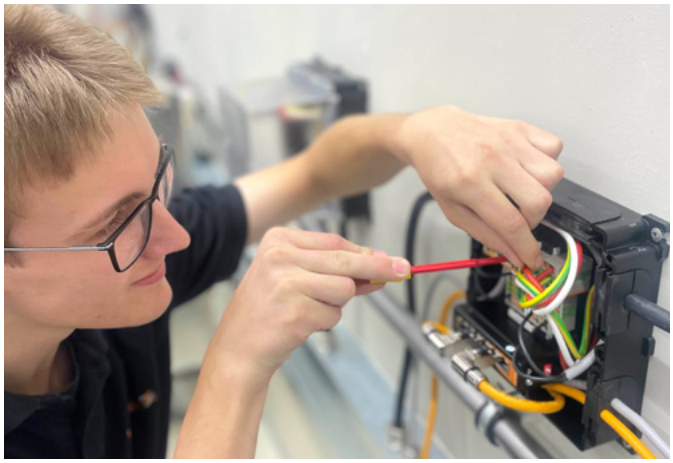
Precise Planning as the Foundation for a Safe and Efficient DC Network

The foundation of DC technology is the so-called System Description, developed in close collaboration with industry partners and application-based research. This description serves as a specific guideline for the operation of DC Microgrids and is intended to become a standard in the future. Given the unique aspects of DC technology, particularly concerning personnel and equipment safety, security plays a central role in planning and implementation.

The design of the DC Microgrid at the Weidmüller Academy began with a comprehensive energy analysis of the existing AC infrastructure, based on current operations and potential scenarios. Based on these insights, Weidmüller's DC experts conducted a machine analysis and developed a conversion plan to ensure that the Academy's current machinery is suitable for the transition to DC. In close coordination with the local energy supplier, a specification was created and tenders prepared. Simultaneously, the sector planning was developed, and the cabinet builder and installation partner was deeply involved through technical onboarding.

Reliable Integration: Detailed Installation of the DC Infrastructure

The new infrastructure was installed in close coordination, with technical onboarding provided by the cabinet builder and the installation partner. Weidmüller partnered with AGW Elektrotechnik from Georgsmarienhütte as a reliable integration partner to ensure smooth execution. The focus of the work was on installing the boxes and infrastructure in the field and translating sector planning into practical infrastructure. Both the line distribution and the junction boxes were successfully implemented.



Installing infrastructure (junction boxes) in the field

A central element was the direct integration of high-powered devices such as photovoltaic systems, storage systems, and electric vehicles into the DC bus. For this integration, two special cabinets were installed: one for AC input and AC/DC rectification. This cabinet filters and rectifies the incoming alternating current from the energy supplier to provide clean direct current and handle application currents (common mode). The second cabinet is responsible for power distribution within the system.

Weidmüller was able to rely on its comprehensive portfolio of standard components and specific DC solutions that are “DC ready” and meet VDE standards and the quasi-standard of the DC System Description. These components were carefully selected and tested to meet the safety and reliability requirements of DC Microgrids.

Protection, distribution, and power supply, together with precharging, measurement technology, and precise power flow control, were essential steps to ensure smooth operation. Following a successful electrical inspection and approval, the new infrastructure was commissioned at the Weidmüller Academy on schedule.

IDC Microgrid 1.0: The Future of Energy Supply at Weidmüller

The first phase of the DC Microgrid, now implemented as a fully operational direct current grid, is in place at the Weidmüller Academy. Nine DC sectors, each with a capacity of 13 kW, now power the machines in the training workshop facility. In the coming years, the entire workshop will be converted to DC technology to integrate all relevant machines into the grid. These developments feed directly into the training and educational programmes of the Detmold-based family business.

However, the DC Innovation Hub represents more than just technological progress; it also provides customers and users with the opportunity to experience the potential uses and applications of DC technology—including pilot projects and testing for their own applications. With this future-focused initiative, Weidmüller strengthens its role as a pioneer in energy supply, actively involves customers and partners, and bolsters the skills of its employees to tackle the challenges of tomorrow.

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