A permanent supply in any environment – today and in the future
High-performance power supply – fit for digitalisation
Let's connect.

Power supplies

Weidmüller

Make the most of high savings potential and increased efficiency

PROtop power supplies – efficient and sustainable

Production processes constantly need to be made more efficient. As well as performance, energy efficiency and sustainability are also playing an increasingly important role in cutting-edge industry. PROtop power supplies combine excellent performance data with exemplary sustainability, which has a positive impact on the productivity of the entire production facility.

- Sustained reduction in energy costs thanks to improved efficiency
- Increased system availability thanks to long service life and high MTBF values
- Extremely space-saving design types for high functional density

PROtop can achieve significant savings compared to conventional power supply units. Its increased efficiency saves an average of 50 kWh per day in a medium-sized production facility with approx. 100 PROtop power supplies working in three-shift operation. This adds up to over 15,000 kWh a year and also improves the facility's carbon footprint. The service life, which is twice as long as that of standard power supplies, also sustainably reduces the costs of repurchase and exchange.

Optimally suited to the automotive industry thanks to a reliable supply and sustainable energy savings: three-phase PROtop power supplies have an efficiency level of up to 95.3% and an MTBF value of over 1,000,000 hours.

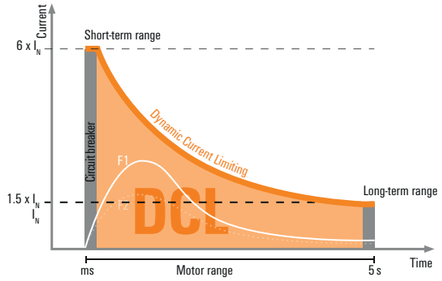
Perfect for the food industry thanks to complete data transparency: communication-capable PROtop power supplies can be easily integrated into control systems and are particularly space-saving.

Sustainable and innovative device concept

- Optimum efficiency levels (up to 95.3 %) for sustainable energy savings
- High MTBF values (> 1,000,000 h) for permanently high system availability
- Direct parallel switching without diode modules thanks to integrated ORing MOSFETs for reduced system costs

Outstanding peak load reserves

- High dynamic range thanks to unique DCL (dynamic current limiting) technology
- Continuous peak load reserves from millisecond to second range
- Ideal for reliably triggering circuit breakers or for powerful motor starts
- With additional short circuit cut-off for improved cable protection thanks to DCL



Highly future-proof

- Complete data transparency through to the cloud
- Remote controllability for integration into machine control systems
- CANopen and IO-Link communication protocols

Compact dimensions and maximum flexibility

- Up to 40% space savings for increased functional density within the control cabinet
- Wide range of uses thanks to various operating modes
- Variable connection options thanks to plug-in terminals, with time-saving PUSH IN connection system or traditional screw system

Reliable, powerful, efficient and communication-capable

PROtop: the future-proof high-end power supply

Communication-capable components form the basis of networked production and can be used to exploit the potential of Industry 4.0. They can record product and status-oriented data, as well as machine-internal measured values and energy parameters, and store them in a cloud. Based on the evaluated data, new services can be established for the optimisation and diagnosis of production processes or for energy management. All devices should therefore be networked as quickly as possible and connected to a cloud.

Communication-capable with retrofit solution

PROtop can be retrofitted with a communication module for the requirements of tomorrow. This retrofit solution is simply connected to the PROtop power supply and allows for the transmission of process data to the higher-level control system. This networks the power supply to other components within the system. The solution is remote-controllable and is integrated into a system's condition monitoring system.

Process optimisation with condition monitoring

Condition monitoring allows for comprehensive process optimisation, such as reduced power consumption or the systematic planning of maintenance work. This considerably increases the functional reliability and efficiency of an extremely wide range of systems – in food and packaging systems with high hygiene requirements or in hard-to-access wind power installations in offshore wind parks.

The benefits of the PROtop communication module

- Simple integration of process data into the higher-level control system for improved condition monitoring
- New solutions such as voltage tracking or load cut-off thanks to remote control capability
- Simpler commissioning thanks to automatic parameterisation via machine control and minimal maintenance work

The combination of automation and digitization

Future-proof Industry 4.0 solutions from Weidmüller

Digitalisation

- Combination of automation and digitalisation in order to optimise production output
- Leading edge thanks to data-based business models such as applicationspecific Analytics solutions for the detection of anomalies and Predictive Maintenance

www.industrial-analytics.weidmueller.com

Automation

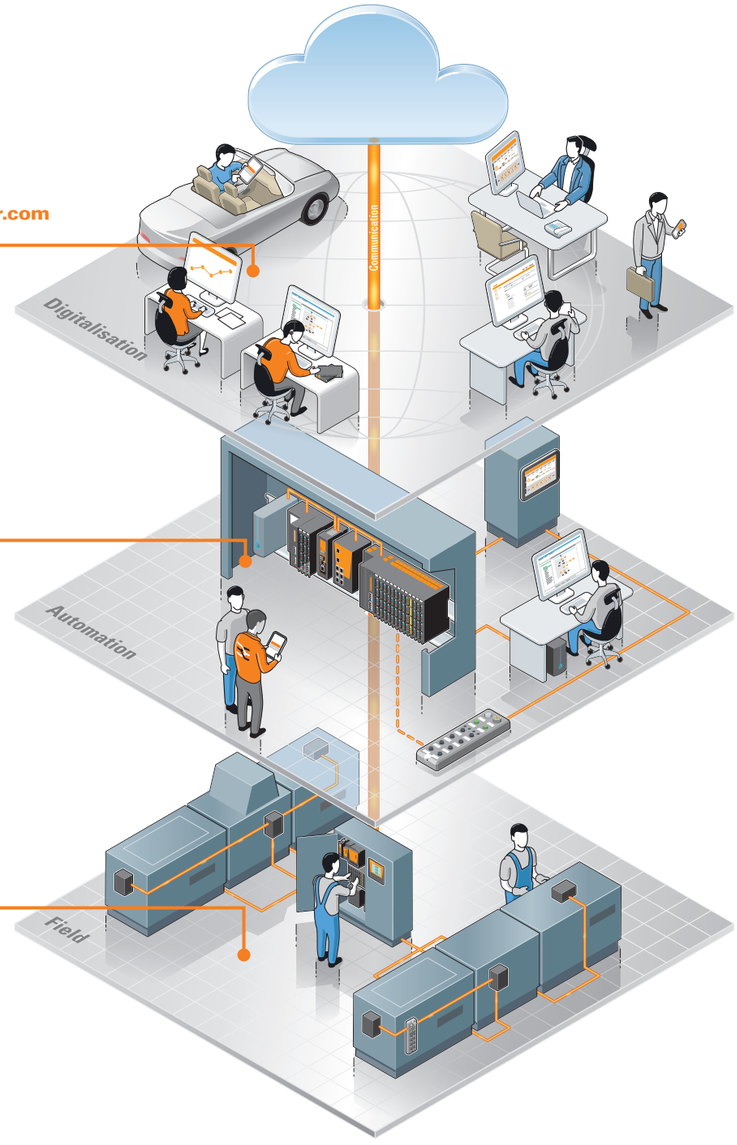
- Open, platform-independent automation toolbox u-mation
- Optimally tailored components u-control, u-create, u-remote and u-view for customised automation solutions

www.u-mation.com

Field

- Communication-capable components such as PROtop for the quick provision of process data for intelligent networking of machines and IT systems

www.weidmueller.com/protop



Direct parallel connection option without diode modules

Integrated ORing MOSFETs increase efficiency

ORing MOSFETs

Innovative elements such as the integrated ORing MOSFETs set new standards in the field of power supply units. These elements reduce system costs and increase system availability.

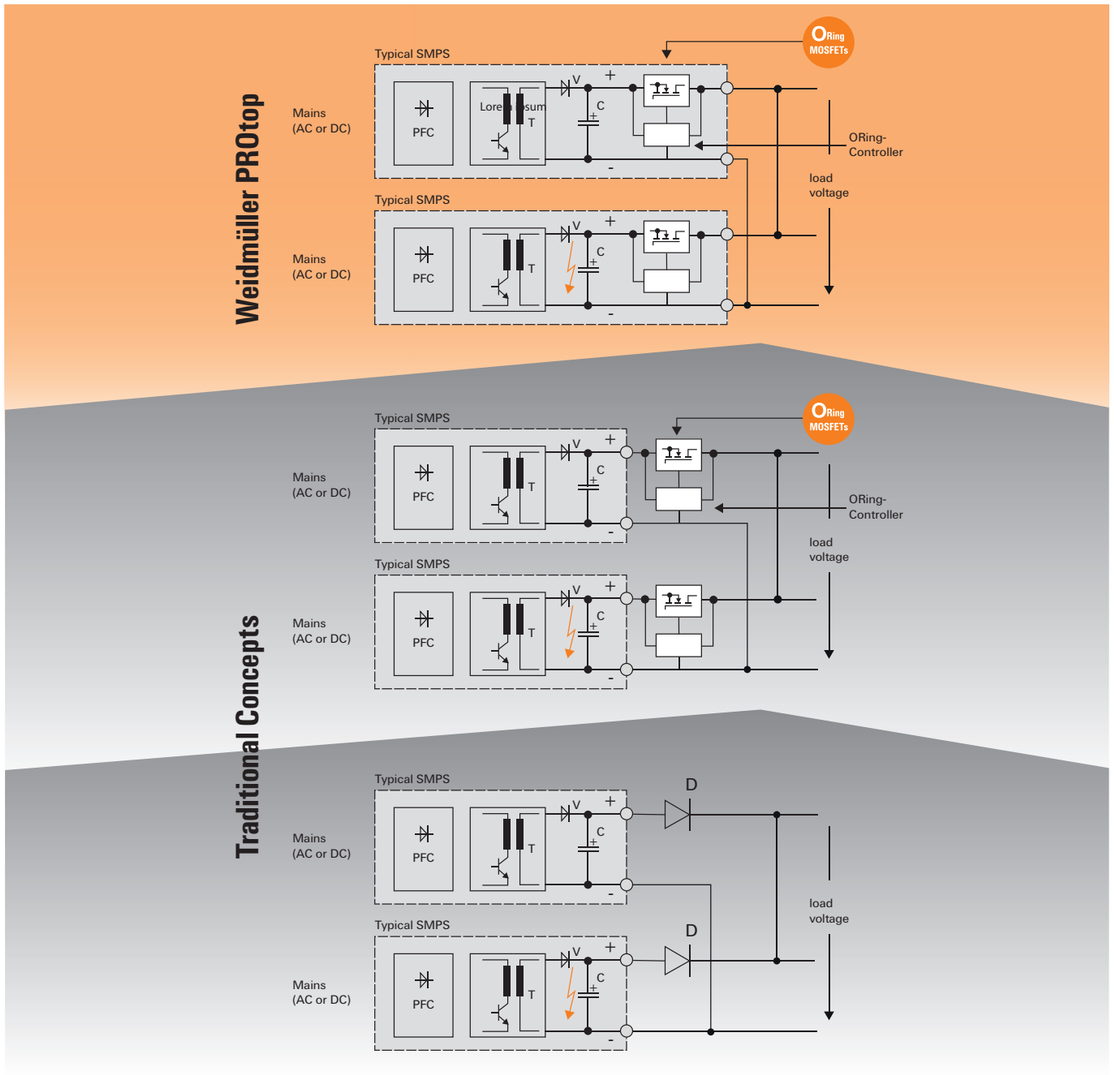
Conventional redundancy concepts require additional redundancy or diode modules with high space requirements and large power losses. Newer systems with MOSFET transistors reduce power loss to approx. 10% but still take up a lot of space in the control cabinet.

The integrated ORing MOSFETs in PROtop provide high power with minimal dimensions and do not require any additional assembly or wiring work. This reduces system costs and saves space in the control cabinet. The parallel operation option makes current sharing easier and guarantees maximum long-term stability.

The benefits of integrated ORing MOSFETs

- Accelerated build-up of a redundant power supply
- No additional redundancy or diode modules
- Reduced space requirements
- Lower system costs
- Increased system availability

PROtop guarantees maximum supply reliability for continuous operation systems in particular. This is achieved thanks to the reliable redundant power supply, the long-term stability as a result of the parallel connection option with ORing MOSFETs and the corrosion-proof protective coating on the PCBs.



Simpler build-up, improved performance: systems with traditional diode and redundancy modules compared to PROtop power supply systems with future-proof ORing technology.

Topic	With ORing technology	Traditional concepts
Long-term stability	good to excellent thanks to parallel mode	bad to medium due to cable resistances
current balancing @ factory settings (e.g. @ 24 V DC	no (thanks to parallel operating mode)	yes, fine adjustment due to cable resistances
Number of components	2 x PSU (power supply units)	2 x PSU + redundancy module
Wiring	optimised	additional cables for power and signals
Space requirement	optimised	20–40% more
Power loss	reduced to a minimum	significantly higher
System costs	optimised	higher
N+1 redundancy / more than 2 PSU	yes	no

The ORing technology in the PROtop power supplies improves performance and reduces system costs.

Outstanding peak load reserves thanks to DCL technology

PROtop meets the highest demands

DCL

High-end power supplies need to perform efficiently and reliably even in challenging industrial environments. This requires high power reserves, a long service life and optimal protection against surge voltage, vibration and extreme temperatures.

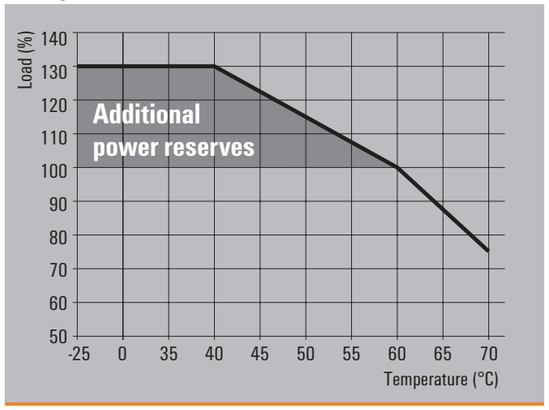
PROtop power supplies have a particularly robust network input level and are not sensitive to mechanical influences. This guarantees reliable operation even in challenging conditions such as those in wind power installations.

Thanks to the future-oriented DCL (dynamic current limiting) technology, high pulse reserves are available at all times. The resulting dynamic range can be used for the reliable triggering of circuit breakers or for powerful motor starts. At a motor's starting torque, for example, approx. 300% power reserve will be available for approx. 100 ms, and 150% for approx. 5 s. For reliable tripping of line circuit breakers, even 600% is available for 15 ms.

The benefits of DCL technology

- Reliable triggering of circuit breakers
- Dynamic and powerful motor starts
- Additional power reserves

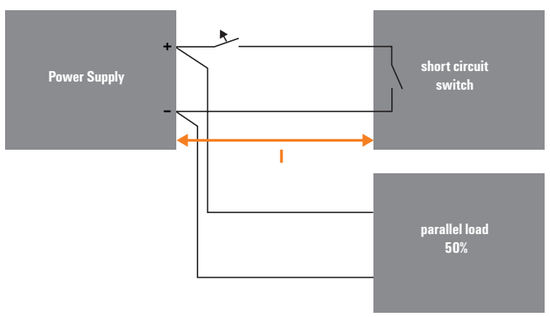
Derating curve



Economical and reliable supply even in extreme conditions: single-phase PROtop versions with innovative DCL technology for permanently reliable operation – even at –40 °C

DCL – project planning table showing the maximum cable lengths for selective fuse triggering

Cable cross-section/mm²			0.75	1.0	1.5	2.5	4.0	6.0	10.0
PRO TOP1 72 W 24 V 3 A with DCL technology									
Cable length with circuit breaker	B2	/m	19	25	36.5	62	–	–	–
PRO TOP1 120 W 24 V 5 A with DCL technology									
Cable length with circuit breaker	C2	/m	3.5	4.5	6.5	11	–	–	–
PRO TOP1 240 W 24 V 10 A with DCL technology									
Cable length with circuit breaker	C2	/m	11	15	21.5	36.5	–	–	–
Cable length with circuit breaker	C4	/m	4	5	7.5	13	–	–	–
Cable length with circuit breaker	B6	/m	7	9.5	13.5	23	–	–	–
PRO TOP1 120 W 12 V 10 A with DCL technology									
Cable length with circuit breaker	C2	/m	3	4	5.5	9.5	–	–	–
Cable length with circuit breaker	B6	/m	2.5	3.5	5	9	–	–	–
PRO TOP1 480 W 24 V 20 A with DCL technology									
Cable length with circuit breaker	C2	/m	12	16.5	23.5	40	63	≤ 95	–
Cable length with circuit breaker	C4	/m	8	10.5	15.5	25.5	42	64	–
Cable length with circuit breaker	C6	/m	3.5	4.5	7	12	18	29	–
Cable length with circuit breaker	B6	/m	11	14.5	21	35	55	≤ 85	–
Cable length with circuit breaker	B10	/m	–	7.5	11	19	29.5	44	–
Cable length with circuit breaker	B16	/m	–	–	5	8.5	13	20	–
PRO TOP1 960 W 24 V 40 A with DCL technology									
Cable length with circuit breaker	C2	/m	12.5	16.5	23	39	63	≤ 95	≤ 160
Cable length with circuit breaker	C4	/m	8	11	15.5	26.5	42	64	≤ 105
Cable length with circuit breaker	C6	/m	4	5.5	8	13.5	21.5	33	57.5
Cable length with circuit breaker	C10	/m	–	3	4.5	7.5	12	18	33
Cable length with circuit breaker	C13	/m	–	–	2.5	4	6.5	9.5	17
Cable length with circuit breaker	B6	/m	11	14.5	21	35	57	≤ 80	≤ 140
Cable length with circuit breaker	B10	/m	–	7.5	11	19	30	46	≤ 75
Cable length with circuit breaker	B16	/m	–	–	5.5	9.5	15	24	42
Cable length with circuit breaker	B20	/m	–	–	–	6	9.5	15	24
Cable length with circuit breaker	B25	/m	–	–	–	4.5	7.5	11	20
PRO TOP1 480 W 48 V 10 A with DCL technology									
Cable length with circuit breaker	C2	/m	30	40	58	≤ 95	≤ 155	≤ 235	–
Cable length with circuit breaker	C4	/m	13	20	27	49	61	105	–
Cable length with circuit breaker	B6	/m	20	30	40	67	≤ 110	≤ 170	–
PRO TOP1 960 W 48 V 20 A with DCL technology									
Cable length with circuit breaker	C2	/m	29	39	58	≤ 95	≤ 310	≤ 470	≤ 400
Cable length with circuit breaker	C4	/m	15.5	21	29	50	81	≤ 240	≤ 210
Cable length with circuit breaker	C6	/m	5.5	8	11	20	31	48	≤ 80
Cable length with circuit breaker	B2	/m	68	91	≤ 130	≤ 220	≤ 350	≤ 530	≤ 915
Cable length with circuit breaker	B4	/m	35	45	68	≤ 110	≤ 180	≤ 275	≤ 470
Cable length with circuit breaker	B6	/m	21	29	40	68	≤ 110	≤ 165	≤ 290
Cable length with circuit breaker	B10	/m	8.5	12.5	17	29	46	70	< 120



The distance between the Power Supply and the load (l) is measured under real conditions.

The following parameters are the basis of measurement:

- Siemens circuit-breaker (5SY61xx-x)
- The short circuit generated by a semiconductor switch
- In addition to the short circuit current, the Power Supply provides half of the nominal current for a parallel connected load

(Status: April 2018)

Intelligent protection of DC loads

topGUARD load monitoring system with communication via IO-LINK

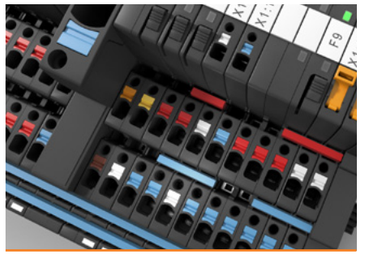
Modern machines and plants require load monitoring systems capable of communication. The IO-Link-capable load monitoring system topGUARD offers remote control options, full data transparency, and reliable protection of the 24 V system voltage.

topGUARD is an outstanding supplement to the IO-LINK-capable PROtop power supplies for innovative power management systems. It saves space and time during device installation through an innovative approach to integrated distribution of potential. Parameterisation, control and provision of all operating data are carried out via the plug-in module of the IO-Link module and integrating an IODD file. The module can be used for PROtop power supplies as well as for topGUARD load monitoring.

Your special advantages

- Data transparency and remote control due to IO-Link
- Maximal flexibility thanks to a modular system
- Voltage-adaptive load monitoring according to Class 2
- Time and cost savings due to an integrated distribution of potential
- Simple migration from maxGUARD to topGUARD

IO-LINK capable
The IO-Link-capable load monitoring system topGUARD offers remote control options, provides operating data for optimal condition monitoring, and enables entirely new control solutions.



Integrated distribution of potential
The integrated distribution of potential, well known from the maxGUARD concept, takes up significantly less space and saves valuable time during installation.

Modular and innovative
The modular concept enables custom-fit solutions. The first of its kind, voltage-adaptive class 2 load monitoring allows the continued use of 18 to 30 V DC operating voltage.

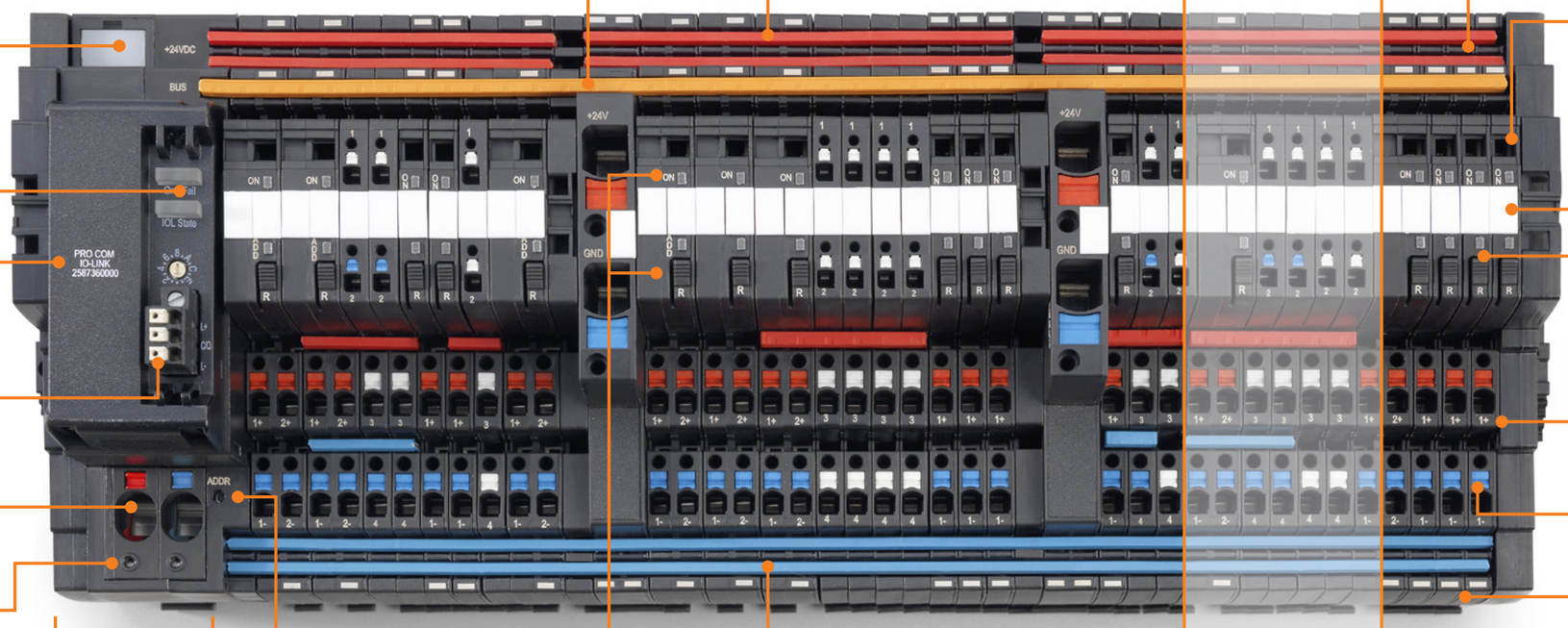
Intelligent load monitoring and potential distribution

topGUARD – control voltage distribution on a new level

- Pluggable IO-LINK communication module
- Full channel monitoring: ON/OFF, Triggered, Fault
- Access to all channel currents and output voltages
- Programmable tripping current and free selection of characteristic curves
- Remote access to all load monitoring: ON/OFF; Reset
- Pre-selectable switch-on delay, alarm and early warning values
- Modular and flexible with 3 load monitoring types: 1-6 A (6.1 mm), 4-12 A
- (12.2 mm), 1-4 A class 2 (6.1 mm)
- Extended temperature range: -25...+70°C

topGUARD – with the advantages of the maxGUARD concept

- Innovative integrated potential distribution
- Extremely space-saving 6.1 mm pitch
- Modular concept saves unused fuse channels
- Service-friendly and expandable at any time



ESG marker in 8x13.5 mm
For station labelling

LEDs for station status

Pluggable IO-LINK module

Pluggable connector
with mounting flange for
fast but reliable IO-LINK
connection

16 mm² connections for
station power feed up to 40 A

Test openings
For quick system checks

Active power-feed module for
station management

Button for
station addressing

Station bus

Main channel: plus

LED gr/rd for ON/OFF
LED ye for Auto/Manual

Main channel: minus

Station expansion made simple by dual shaft channels for plus, minus and station bus

Additional WS x/6 markers for marking the tripping current

WS x/6 or endless markers for quick application of the equipment label

2 mm test sockets on all connection elements allow easy access to all potentials during troubleshooting

Unique marking of the connection terminal

Coloured pusher for easy potential tracking
Red - active load monitoring output (plus)
White - distribution potential (fused plus)
Blue – general minus

Marking of dual contacts for expansion purposes by means of transverse bridges

Save space and time, and avoid wiring errors – thanks to the innovative maxGUARD concept. Fast and easy duplication of load circuit connections through the use of precisely fitting potential distributors and ready-made bridges.

PROtop power supplies at a glance

- DCL technology
- MTBF > 1,000,000 h.
- ORing MOSFETs
- Reserve capacity: 130% continuous current up to 40 °C
- Potential-free relay contact (NO contact)
- Short-term reserve capacity: 150% for 5 s ≤60 °C
- Digital 24 V DC IO port
- OVC = III acc. to EN 50178
- Output voltage: 22.5...28.8 V DC
- Protection class: I, with PE connection
- Status indicators (LEDs): green/red and yellow
- Protection class: IP20
- DIP switch short-circuit operating mode: continuous short-circuit current/shut-off
- Emitted interference: class B acc. to EN 55032
- DIP switch: single/parallel operation

Single-phase PROtop power supplies in standard design

- For connection to AC or DC systems: 85...277 V AC / 80...410 V DC
- 12 / 24 / 48 V versions in performance classes 72 W to 960 W
- Time-saving PUSH IN connection system

Description	Input voltage range/ overvoltage category	Rated voltage	Rated current	DCL peak load reserves	Connection system	Efficiency in %	Width in mm	Temperature range	Approvals	Field devices (internal)	External control cabinets	Machinery and plant engineering	Simple process applications	Process applications	Energy applications	Order No.
PRO TOP1 120W 12V 10A	85...277 V AC (300 V AC / 15 s) 80...410 V DC	12 V	10 A	40 A / 15 ms	PUSH IN	Typ. 90%	35	–25 ... +70°C	TÜV cULus C1D2	●		●	●		●	2466910000
PRO TOP1 72W 24V 3A		24 V	3 A	12 A / 15 ms	PUSH IN	Typ. 89%	35			●		●	●		●	2466850000
PRO TOP1 120W 24V 5A			5 A	30 A / 15 ms	PUSH IN	Typ. 91%	35			●		●	●		●	2466870000
PRO TOP1 240W 24V 10A			10 A	60 A / 15 ms	PUSH IN	Typ. 92%	39			●		●	●		●	2466880000
PRO TOP1 480W 24V 20A			20 A	100 A / 15 ms	PUSH IN	Typ. 93%	68			●		●	●		●	2466890000
PRO TOP1 960W 24V 40A			40 A	160 A / 15 ms	PUSH IN	Typ. 94%	124			●		●	●		●	2466900000
PRO TOP1 480W 48V 10A		48 V	10 A	50 A / 15 ms	PUSH IN	Typ. 93%	68			●		●	●		●	2467030000
PRO TOP1 960W 48V 20A			20 A	80 A / 15 ms	PUSH IN	Typ. 94%	124			●		●	●		●	2466920000
PRO TOP1 120W 12V 10A F		Versions with additional screw flange for increased mechanical requirements				Typ. 90%	39			●		●	●		●	2569000000
PRO TOP1 72W 24V 3A F						Typ. 89%	35			●		●	●		●	2568970000
PRO TOP1 120W 24V 5A F						Typ. 91%	35			●		●	●		●	2568980000
PRO TOP1 240W 24V 10A F						Typ. 92%	39			●		●	●		●	2568990000

Three-phase PROtop power supplies in standard design

- For connection to AC or DC systems: 3x320...575 V AC / 450...800 V DC
- 24 V and 48 V versions in performance classes 120 W to 960 W
- Optimum efficiency levels (up to 95.3%) for sustainable energy savings

Description	Input voltage range/ overvoltage category	Rated voltage	Rated current	DCL peak load reserves	Connection system	Efficiency in %	Width in mm	Temperature range	Approvals	Field devices (internal)	External control cabinets	Machinery and plant engineering	Simple process applications	Process applications	Energy applications	Order No.
PRO TOP3 120W 24V 5A	3 x 320...575 V AC 2 x 360...575 V AC 450...800 V DC	24 V	5 A	30 A / 15 ms	PUSH IN	Typ. 89%	39	–25... +70°C	TÜV cULus C1D2	●		●	●		●	2467060000
PRO TOP3 240W 24V 10A			10 A	60 A / 15 ms	PUSH IN	Typ. 93%	50			●		●	●		●	2467080000
PRO TOP3 480W 24V 20A			20 A	100 A / 15 ms	PUSH IN	Typ. 94%	68			●		●	●		●	2467100000
PRO TOP3 960W 24V 40A			40 A	160 A / 15 ms	PUSH IN	Typ. 95.3%	89			●		●	●		●	2467120000
PRO TOP3 480W 48V 10A		48 V	10 A	50 A / 15 ms	PUSH IN	Typ. 94%	68			●		●	●		●	2467150000
PRO TOP3 960W 48V 20A			20 A	80 A / 15 ms	PUSH IN	Typ. 95.3%	89			●		●	●		●	2467170000

Single-phase PROtop power supplies with PCB protective coating

- Extended operating temperature range of –40 to +70°C for use under extreme conditions
- PCB protective coating for increased corrosion protection in harsh environments
- 480 W and 960 W versions with DC output plug for easier "hot swapping"

Description	Input voltage range/ overvoltage category	Rated voltage	Rated current	DCL peak load reserves	Connection system	Efficiency in %	Width in mm	Temperature range	Approvals	Field devices (internal)	External control cabinets	Machinery and plant engineering	Simple process applications	Process applications	Energy applications	Order No.
PRO TOP1 120W 12V 10A EX	85...277 V AC (300 V AC / 15 s) 80...410 V DC	12 V	10 A	40 A / 15 ms	Screw	Typ. 90%	39	–40... +70°C	TÜV cULus C1D2 ATEX IECEX	●			●	●	●	2467020000
PRO TOP1 72W 24V 3A CO		24 V	3 A	12 A / 15 ms	Screw	Typ. 89%	35			●			●	●	●	2466970000
PRO TOP1 120W 24V 5A EX			5 A	30 A / 15 ms	Screw	Typ. 91%	35			●			●	●	●	2466980000
PRO TOP1 240W 24V 10A EX			10 A	60 A / 15 ms	Screw	Typ. 92%	39			●			●	●	●	2466990000
PRO TOP1 480W 24V 20A EX			20 A	100 A / 15 ms	Screw	Typ. 93%	68			●			●	●	●	2467000000
PRO TOP1 960W 24V 40A EX			40 A	160 A / 15 ms	Screw	Typ. 94%	139			●			●	●	●	2467010000
PRO TOP1 480W 48V 10A EX		48 V	10 A	60 A / 15 ms	Screw	Typ. 93%	68			●			●	●	●	2467040000
PRO TOP1 960W 48V 20A CO			20 A	80 A / 15 ms	Screw	Typ. 94%	139			●			●	●	●	2467050000

topGUARD articles

- IO-Link-capable load monitoring
- Integrated potential distributor
- Modular overall system

Description	Qty.	Order No.
Supply module: TGD FIM-C	1	2625000000
Load monitoring: TGD ELM-6	1	2624980000
Load monitoring: TGD ELM-12	1	2624990000
Load monitoring: TGD ELM-4 CL2	1	2656670000

Accessories for PROtop power supplies

- Attachable CANopen communication module

- Attachable IO-LINK communication module

Description	Qty.	Order No.
PRO COM CAN OPEN	1	2467320000
PRO CAB SUBD-RJ45 0.5 M	1	2578530000
PRO CAB SUBD-RJ45 1.0 M	1	2578550000
PRO CAB SUBD-RJ45 2.5 M	1	2578560000
PRO TOP BRACKETS	1	2575900000
PRO COM IO-LINK	1	2587360000

Weidmüller – Your partner in 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 Industrial Connectivity.

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