

interface
Solutions for the Control Cabinet
Catalog 2018





▲ Plant II, Rodezstraße in Bamberg



▲ Company headquarters in Bamberg



▲ STOCKO main plant in Wuppertal

wieland group

AT HOME ALL OVER THE WORLD

Wieland Electric GmbH is a medium-sized family-run electrical and electronics company headquartered in Bamberg. Founded in 1910, Wieland is one of the pioneers of electrical connection technology.

This family business with its international outlook is a market leader in pluggable installation technology for functional buildings, with subsidiaries worldwide and production lines not only in Bamberg but also in the Czech Republic and China.

The Wieland Group, which has included STOCKO Contact GmbH & Co. KG since 1998, is therefore represented in over 70 countries and employs some 2,200 people.

Solutions for

 ***Building technology***

 ***Wind power***

 ***Machine building***

 ***Lighting technology***

 ***Heating, ventilation, air conditioning***



Wieland at a glance

Our range of products and services for your industry



Product portfolio

- Electronic and electrical engineering for the control cabinet
- Safety technology
- Network and fieldbus systems
- Energy bus systems for industry and buildings
- Connectors up to protection rating IP6X
- Building automation
- PCB terminals and plug connectors
- Sensor/actuator cabling



Industries

- Machine building
- Construction machines & cranes
- Buildings and lighting
- Logistics
- Power engineering
- Renewable energy sources
- Heating and air conditioning systems



Business services

- Pre-assembly and wiring
- Product labeling service
- Integrated solutions in distributors
- Customized solutions
- On-site project support
- Optimization of decentralized, pluggable installation solutions
- Certified machine safety tests



Safety training

- Software validation
- CSE Certified Safety Engineer
- Basic principles and standards of functional safety
- Modification of old machinery and major changes
- Design of safety functions and calculation with Sistema
- Machinery Directive, liability issues, and CE Declarations of Conformity



Software/configuration tools

- **wieplan** CLICK2BUY, configuration of terminal strips with online ordering function
- **wieprint**, marking system for DIN rail terminal blocks
- **revos** configurator for connectors
- **gesis**[®]PLAN for building installation
- **podis**[®]PLAN for configuring the **podis**[®] energy bus system
- **samos**[®]PLAN6, programming tool for **samos**[®]PRO COMPACT
- **hmi**PLAN, visualization software for HMI touch panels



Why Wieland?

- Standardized industrial solutions
- Customized solutions
- Support for your project
- Broad product portfolio
- Products usable worldwide due to international licenses
- Group-wide observance of human rights, including at suppliers
- Eco-friendly production



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contacts
are
green.



interface

Signal processing throughout your **control system**, with our **connectivity solutions**

Versatility for every application

Wherever current flows and signals are processed, the unique strengths of Wieland Electric **interface** products shine through. Thanks to a broad range of relays, power supplies and overvoltage protection devices, as well as **interface** and analog modules, your application will also become a real all-rounder. Send all the right signals with our interface technology and innovative DIN rail terminal blocks.



Applications:

- Machine building
- Process control
- Transportation & material handling
- Automotive industry
- Power distribution
- Petrochemical
- Food industry
- Manufacturing engineering

Signal processing

throughout your control system with



| networking |

wienet Network switches, WLAN access points and VPN routers in the age of Industry 4.0

Please order our new catalog „Industrial Communication“ Order No. 0801.1



| supply |

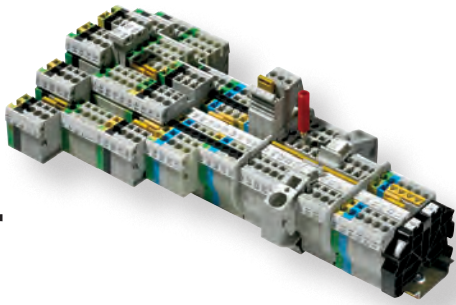
wipos power supplies including single-phase and three-phase devices for DIN rail mounting in almost any application



| coupling |

flare relays for floating coupling of control functions. Analog isolation amplifier **cores** for secure coupling.

our



connectivity solutions



| control |

ricos FLEX, the modular and compact I/O fieldbus system, which can be combined and used very flexible. Timer and multi-function relays **flare** TIME for simple to highly complex control tasks



| protection |

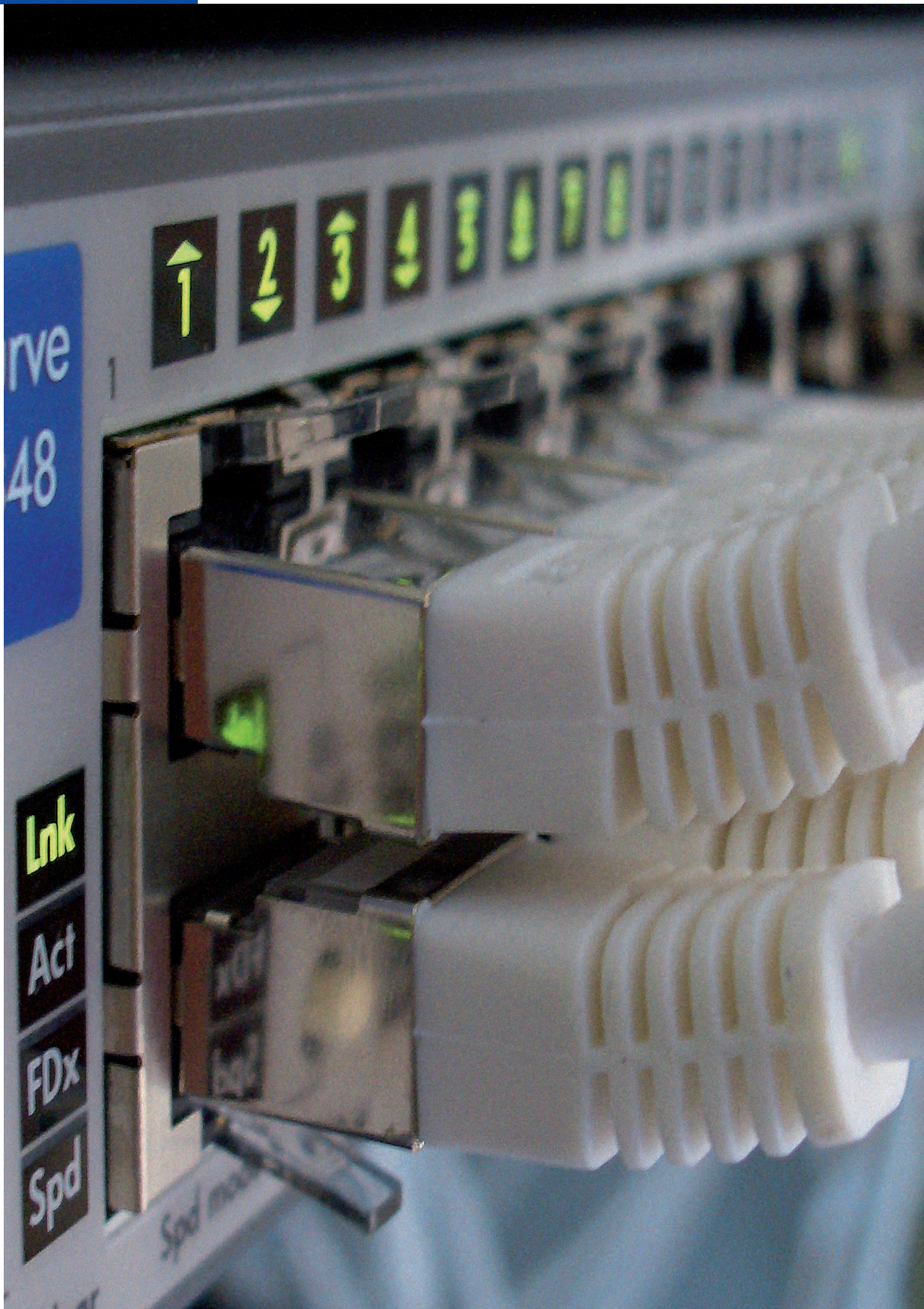
wietap overvoltage protection devices for guaranteed highest system availability and device protection



| measuring and monitoring |

Electronic measuring and monitoring relays **flare** CONTROL for all monitoring and communicating tasks in machines and systems





Industrial network technology for various applications

Well equipped for increasing digitization of your systems

Modern machines and systems are placing increasing demands on the performance capability of the communication networks used. More and more data belonging to devices within a network are stored on a server for analysis. This server tends to be located in the cloud. With the **wienet** product family you can organise data traffic within your Ethernet network and also check the data allowed to leave the network. Prioritization of the data packets and a fail-safe hardware platform play a key role in this. All the devices within the **wienet** product family have a robust design and are ideal for use in an industrial environment. With the new **wienet** HMI panels you never lose sight of your process and can intervene to control it via the touch user interface.

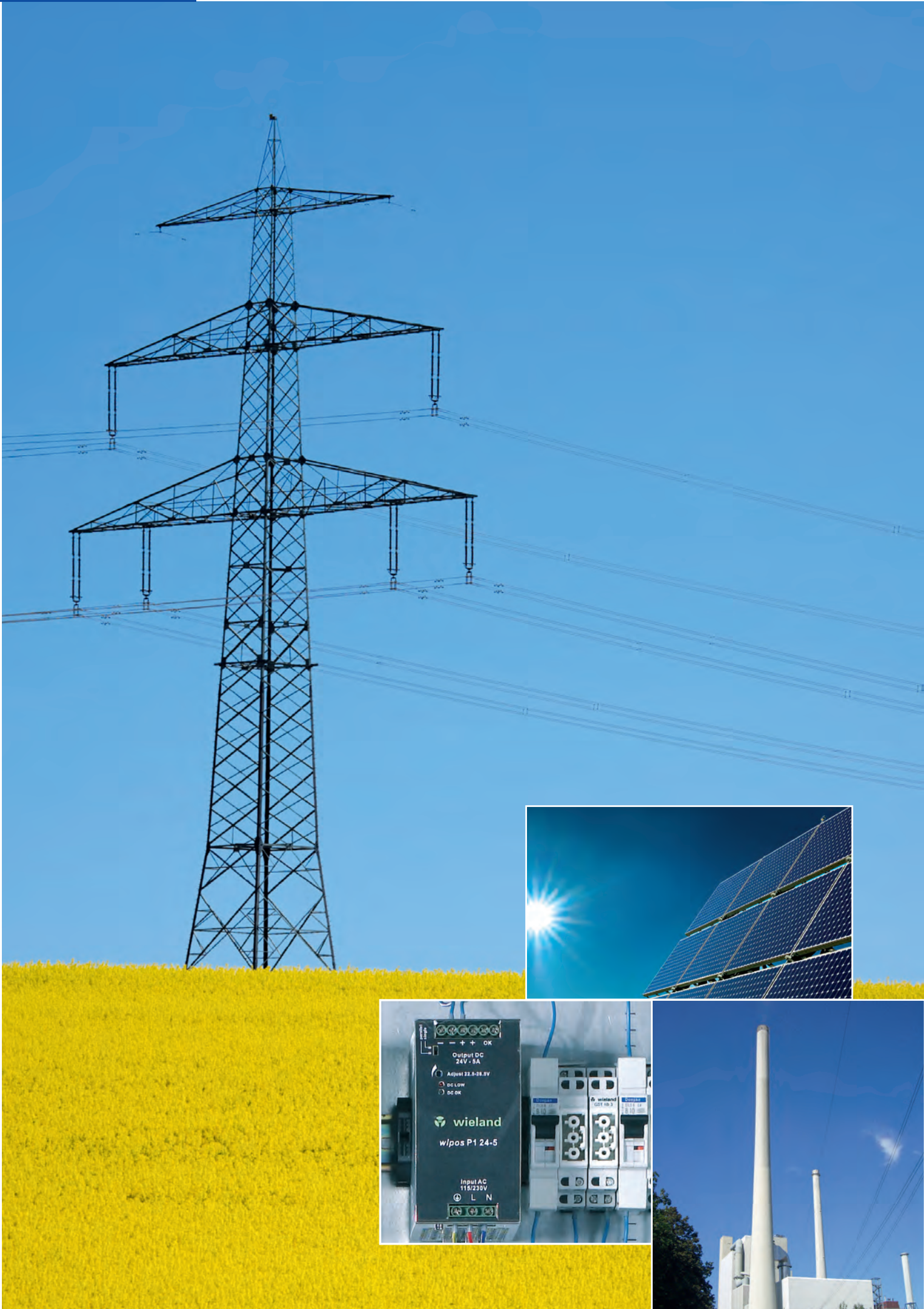
Advantages and features:

- Almost every device has a redundant power supply for maximum availability
- Power over Ethernet (PoE) – full power for your devices with just one Ethernet cable
- Copper, LWL, WLAN or mobile communication as a transmission medium
- VPN router for secure data transmission from the network
- VPN service solutions
- Access point for wireless access to your devices
- Support for industrial automation protocols, such as PROFINET, Ethernet IP, and Modbus TCP
- Wide operating temperature range
- HMI panels for human-machine communication



Please order our special catalog "Industrial Communication" Order No. 0801.1. You will find all necessary information about our **wienet** switches and routers.















wipos Power supply units

Pure Power. No-Frills.

Power supplies perform a central function in the control cabinet. Their reliability affects the availability of the machine or the process to a great degree. That is why a robust and proven design is very important for a power supply unit. There are no unnecessary frills with the **wipos** family. Instead, these power supply units score with their fundamental features.

wipos satisfies your requirements in the significant disciplines:

 100% power up to 60°C	 Can be connected in parallel (from 5 A) to increase power and redundancy
 Automatic or wide-input voltage range for worldwide use	 High operational reliability due to long hold-up times >30 ms
 PFC-technology for high functional reliability	 Compensation of voltage drops via adjustable output voltage
 Outdoor installation possible due to wide temperature range	 Easy to commission via LED diagnosis
 Active monitoring with signalling contact	 For mounting on DIN Rail TS 35 / TS 32

Additional features of **wipos** PS1/3

- Durable in harsh environments
- Compact design
- 120% power boost for 10 s
- Full output during 2-phase operation
- Lloyds Register Ship Approval (LR)



wipos P1 Modules

Power supply *wipos* P1 24-1.25 P1 24-2.5



Type	Part No.	Part No.
wipos P1 24-1.25	81.000.6110.0	
wipos P1 24-2.5		81.000.6120.0
Technical Data		
Input voltage	85 – 264 V AC, 90 – 375 V DC	
PFC	not necessary	not necessary
Hold up time	> 30 ms at 230 V	> 30 ms at 230 V
Output voltage	24 – 28 V	24 – 28 V
Output current	1.25 A	2.5 A
Parallel operation	no	no
In series connectable	yes	yes
Temperature range	-40 ... +70 °C	-40 ... +70 °C
Derating	> 60 °C	> 60 °C
Signal contact	yes	yes
Dimensions (mm) W x H x D	40.5 x 90 x 114	40.5 x 90 x 114
Weight	290 g	360 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24–14)	0.2 – 2.5 mm ² (AWG 24–14)
Efficiency	83 – 86 %	86 – 89 %
Approvals	CE UL 1310 Class 2 HAZ. Class I Div.2	CE UL 1310 Class 2 HAZ. Class I Div.2

Power supply *wipos* P1 24-3.8 P1 24-5



Type	Part No.	Part No.
wipos P1 24-3.8	81.000.6135.0	
wipos P1 24-5		81.000.6130.0
Technical Data		
Input voltage	115/230V AC auto, 210 – 375V DC	
PFC	yes	yes
Hold up time	> 30 ms at 230 V	> 30 ms at 230 V
Output voltage	22.5 – 28 V	22.5 – 28.5 V
Output current	3.8 A	5 A
Parallel operation	no	yes (up to 3)
In series connectable	yes	yes
Temperature range	-35 ... +70 °C	-35 ... +70 °C
Derating	> 60 °C	> 60 °C
Signal contact	yes	yes
Dimensions (mm) W x H x D	64 x 124.5 x 123.6	64 x 124.5 x 123.6
Weight	920 g	920 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.5 – 6 mm ² (AWG 22–10)	0.5 – 6 mm ² (AWG 22–10)
Efficiency	83 – 85 %	84 – 86 %
Approvals	CE UL 1310 Class 2 HAZ. Class I Div.2	CE HAZ. Class I Div.2

Power supply *wipos* P1 24-10 P1 24-20



Type	Part No.	Part No.
wipos P1 24-10	81.000.6140.0	
wipos P1 24-20		81.000.6150.0
Technical Data		
Input voltage	115/230V AC auto, 210–375V DC	115/230V AC auto 120–370V DC
PFC	yes	yes
Hold up time	> 30 ms at 230 V	> 30 ms at 230 V
Output voltage	22.5 – 28.5 V	22.5 – 28.5 V
Output current	10 A	20 A
Parallel operation	yes (up to 3)	yes (up to 3)
In series connectable	yes	yes
Temperature range	-40 ... +70 °C	-40 ... +70 °C
Derating	> 60 °C	> 55 °C
Signal contact	yes	yes
Dimensions (mm) W x H x D	83.5 x 124.5 x 123.6	175.5 x 124.5 x 123.6
Weight	1300 g	1920 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.5 – 6 mm ² (AWG 22–10)	0.5 – 6 mm ² (AWG 22–10)
Efficiency	87 – 89 %	86 – 89 %
Approvals	CE HAZ. Class I Div.2	CE HAZ. Class I Div.2

wipos P1 Modules

Power supply *wipos* P1 12-5



Type	Part No.
wipos P1 12-5	81.000.6132.0
Technical Data	
Input voltage	85 – 264 V AC, 90 – 375 V DC
PFC	not necessary
Hold up time	> 30 ms at 230 V
Output voltage	12 – 14 V
Output current	5 A
Parallel operation	no
In series connectable	yes
Temperature range	-40 ... +70 °C
Derating	>61 °C
Signal contact	no
Dimensions (mm) W x H x D	40.5 x 90 x 114
Weight	340 g
Type of connectors	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 14)
Efficiency	86 %
Approvals	CE HAZ. Class I Div.2

Power supply *wipos* P1 12-10



Type	Part No.
wipos P1 12-10	81.000.6142.0
Technical Data	
Input voltage	115/230V AC auto, 210 – 375 V DC
PFC	not necessary
Hold up time	> 30 ms at 230 V
Output voltage	11,4 – 14,5 V
Output current	10 A
Parallel operation	yes (up to 3)
In series connectable	yes
Temperature range	-35 ... +70 °C
Derating	>61 °C
Signal contact	no
Dimensions (mm) W x H x D	64 x 124.5 x 123.6
Weight	920 g
Type of connectors	Screw terminal
Connector size	0.5 – 6 mm ² (AWG 22 – 10)
Efficiency	84 %
Approvals	CE HAZ. Class I Div.2

Power supply *wipos* P1 48-5



Type	Part No.
wipos P1 48-5	81.000.6134.0
Technical Data	
Input voltage	115/230 V AC auto, 210 – 375 V DC
PFC	not necessary
Hold up time	>30 ms at 230 V
Output voltage	47 – 56 V
Output current	5 A
Parallel operation	yes (up to 3)
In series connectable	yes
Temperature range	-40 ... +70 °C
Derating	>61 °C
Signal contact	no
Dimensions (mm) W x H x D	83.5 x 124.5 x 123.6
Weight	1380 g
Type of connectors	Screw terminal
Connector size	0.5 – 6 mm ² solid/fine str. (AWG 22 – 10)
Efficiency	90 %
Approvals	CE HAZ. Class I Div.2

wipos P3 Modules

Power supply *wipos* P3 24-5 P3 24-10



Type	Part No.	Part No.
wipos P3 24-5	81.000.6160.0	
wipos P3 24-10		81.000.6170.0
Technical Data		
Input voltage	340 – 575VAC 480 – 820VDC	340 – 575VAC 480 – 820VDC
PFC	yes (0.55)	yes (0.6)
Hold up time	20 ms	20 ms
Output voltage	22.5 – 28.5 V	22.5 – 28.5 V
Output current	5A	10A
Parallel operation	yes (up to 2)	yes (up to 2)
In series connectable	yes	yes
Temperature range	-40 ... +70 °C	-40 ... +70 °C
Derating	> 60 °C	> 60 °C
Signal contact	yes	yes
Dimensions (mm) W x H x D	75 x 124 x 119	89 x 124 x 119
Weight	800 g	1100 g
Type of connectors	Screw terminal	Screw terminal
Connector size	to 6 mm ² (AWG 10)	to 6 mm ² (AWG 10)
Efficiency	88 – 90 %	88 – 90 %
Approvals	CE HAZ. Class I Div.2	CE HAZ. Class I Div.2

Power supply *wipos* P3 24-20



Type	Part No.
wipos P3 24-20	81.000.6180.0
Technical Data	
Input voltage	340 – 575VAC 480 – 820VDC
PFC	yes (0.7)
Hold up time	20 ms
Output voltage	22.5 – 28.5V
Output current	20A
Parallel operation	yes (up to 2)
In series connectable	yes
Temperature range	-30 ... +70 °C
Derating	> 60 °C
Signal contact	yes
Dimensions (mm) W x H x D	150 x 124 x 119
Weight	1750 g
Type of connectors	Screw terminal
Connector size	to 6 mm ² (AWG 10)
Efficiency	88 – 90 %
Approvals	CE HAZ. Class I Div.2

Power supply *wipos* P3 24-40



Type	Part No.
wipos P3 24-40	81.000.6190.0
Technical Data	
Input voltage	340 – 575VAC 480 – 820VDC
PFC	yes (0.7)
Hold up time	15 ms
Output voltage	22.5 – 28.5 V
Output current	40 A
Parallel operation	yes (up to 2)
In series connectable	yes
Temperature range	-40 ... +70 °C
Derating	>60 °C
Signal contact	yes
Dimensions (mm) W x H x D	276 x 127 x 119
Weight	3200 g
Type of connectors	Screw terminal
Connector size	to 6 mm ² (AWG 10)/ output to 16 mm ² (AWG 6)
Efficiency	90 – 92 %
Approvals	CE HAZ. Class I Div.2

wipos Modules

Redundancy module *wipos* R20



Type	Part No.
wipos R20	81.000.6200.0
Technical Data	
Input voltage	21 – 28 V DC
Input current	20 A (in total)
Output current	20 A
Typical voltage drop	0.5 V
Temperature range	-40 ... +70 °C
Signal contact	one each for channel A and B
Signal contact	1 A at 30 V DC
Display/Relay OK	Input voltage 20...30 V (+/-5 %)
Display/Relay fail	Input voltage <20 V or >30 V (+/-5 %)
Dimensions (mm) W x H x D	54 x 90 x 114
Weight	210 g
Type of connectors	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24–12)
Connector size for signal contacts	0.2 – 1.5 mm ² (AWG 24–14)
Approvals	CE

Fusing module *wipos* FM 4-10



Type	Part No.
wipos FM 4-10	81.000.6210.0
Technical Data	
Input voltage	18 – 30 V
Output current via all 4 fuses	40 A max.
Output voltage	24 V (equivalent to input voltage)
Number of fusing circuits	4
Nominal current of fuse	max. 10 A (check power losses of fuse)
Fuses	4 x G-fuse holder 5 x 20 mm
LED	one per fuse, LED lights when fuse is broken
Alarm contact	yes
Temperature range	0 ... +60 °C
Dimensions (mm) W x H x D	48 x 96 x 68
Mounting type	DIN rail mounting
Weight	110 g
Type of connectors	Screw terminal
Connector size input	10 mm ² (AWG 8)
Connector size output	up to 4 mm ² (AWG 12) solid, 2.5 mm ² (AWG 14) fine-stranded
Approvals	CE

Uninterrupted power supply *wipos* UPS 24-30



Type	Part No.
wipos UPS 24-30	81.000.6220.0
Technical Data	
Rated input voltage U_{IN}	24 V DC
Input current	max. 35 A
Rated output voltage U_{OUT}	24 V DC
Output current I_{OUT}	max. 30 A
Output voltage (battery mode)	18.7 – 28.0 V
Output current (battery mode)	max. 30 A
Temperature range	-40 ... +70 °C
Derating	> 51 °C
Signal contact mains or battery current	yes
Signal contact discharge battery	yes
Signal contact broken battery	yes
Battery type	Lead-acid or lead-gel
Battery size	2 ... 12 Ah / 2 x 12 V
Dimensions (mm) W x H x D	54 x 90 x 114
Weight	370 g
Type of connectors	Screw terminal
Connector size	0.2–4 mm ² (AWG 24–12)
Approvals	CE



wipos PS1 Modules in compact design

Power supply **wipos**
PS1 24-1.25
PS1 24-2.5



Type	Part No.	Part No.
wipos PS1 24-1.25	81.000.6510.0	
wipos PS1 24-2.5		81.000.6520.0
Technical Data		
Input voltage	85 – 264 V AC, 90 – 350 V DC	
PFC	–	–
Hold up time	> 154 ms bei 230 V	> 129 ms bei 230 V
Output voltage	21.6 - 27.6	21.6 - 27.6
Output current	1.25 A (Power Boost 120 %)	2.5 A (Power Boost 120 %)
Parallel operation	yes	yes
In series connectable	yes	yes
Temperature range	-40 ... +70 °C	-40 ... +70 °C
Derating	> 60 °C	> 60 °C
Dimensions (mm) W x H x D	32 x 90 x 90	32 x 90 x 110
Weight	195 g	260 g
Type of connectors	Screw terminal	Screw terminal
Connector size Input	0.25 – 2.5 mm ² (AWG 24 – 14)	0.35 – 2.5 mm ² (AWG 22 – 14)
Connector size Output	0.35 – 2.5 mm ² (AWG 22 – 14)	0.5 – 2.5 mm ² (AWG 22 – 14)
Efficiency	86%	88%
Approvals	CE HAZ.LOC.	

Power supply **wipos**
PS1 24-5



Type	Part No.	Part No.
wipos PS1 24-5	81.000.6530.0	
Technical Data		
Input voltage	85 – 264 V AC, 90 – 350 V DC	
PFC	yes	
Hold up time	> 42 ms at 230 V	
Output voltage	21.6 - 27.6	
Output current	5 A (Power Boost 120 %)	
Parallel operation	yes	
In series connectable	yes	
Temperature range	-40 ... +70 °C	
Derating	> 60 °C	
Dimensions (mm) W x H x D	40 x 125 x 122.2	
Weight	620 g	
Type of connectors	Screw terminal	
Connector size Input	0.35 – 4 mm ² (AWG 22 – 12)	
Connector size Output	0.35 – 4 mm ² (AWG 22 – 12)	
Efficiency	89%	
Approvals	CE HAZ.LOC.	

Power supply **wipos**
PS1 24-10
PS1 24-20



Type	Part No.	Part No.
wipos PS1 24-10	81.000.6540.0	
wipos PS1 24-20		81.000.6550.0
Technical Data		
Input voltage	85 – 264 V AC, 90 – 350 V DC	
PFC	ja	ja
Hold up time	> 44 ms at 230 V	> 50 ms at 230 V
Output voltage	21.6 - 27.6	21.6 - 27.6
Output current	10 A (Power Boost 120 %)	20 A (Power Boost 120 %)
Parallel operation	yes	yes
In series connectable	yes	yes
Temperature range	-40 ... +70 °C	-40 ... +70 °C
Derating	> 60 °C	> 60 °C
Dimensions (mm) W x H x D	60 x 125 x 150	95 x 125 x 150
Weight	900 g	1500 g
Type of connectors	Screw terminal	Screw terminal
Connector size Input	0.5 – 4 mm ² (AWG 22 – 12)	1.5 – 4 mm ² (AWG 16 – 12)
Connector size Output	2.5 – 4 mm ² (AWG 14 – 12)	4 mm ² (AWG 12)
Efficiency	92%	93%
Approvals	CE HAZ.LOC.	

Special voltages on demand
Connector size fine stranded

wipos PS3 Modules in compact design

Power supply **wipos**
PS3 24-5
PS3 24-10



Type	Part No.	Part No.
wipos PS3 24-5	81.000.6560.0	
wipos PS3 24-10		81.000.6570.0
Technical Data		
Input voltage	320 – 576 V AC, 450 – 810 V DC	
PFC	–	
Hold up time	> 30 ms at 400 V	> 20 ms at 400 V
Output voltage	22.5 -29.5	
Output current	5 A (Power Boost 6A)	10 A (Power Boost 12A)
Parallel operation	yes	yes
In series connectable	yes	yes
Temperature range	-40 ... +70 °C	
Derating	> 60 °C	
Dimensions (mm) W x H x D	40 x 125 x 122.2	60 x 125 x 150
Weight	700 g	1000 g
Type of connectors	Screw terminal	
Connector size Input	0.35 – 4 mm ² (AWG 22 – 12)	0.35 – 4 mm ² (AWG 22 – 12)
Connector size Output	0.75 – 4 mm ² (AWG 18 – 12)	2.5 – 4 mm ² (AWG 14 – 12)
Efficiency	89%	
Approvals	CE HAZ.LOC. R	

Power supply **wipos**
PS3 24-20



Type	Part No.
wipos PS3 24-20	81.000.6580.0
Technical Data	
Input voltage	320 – 576 V AC, 450 – 810 V DC
PFC	–
Hold up time	> 20 ms at 400 V
Output voltage	22.5 -29.5
Output current	20 A (Power Boost 24A)
Parallel operation	yes
In series connectable	yes
Temperature range	-40 ... +70 °C
Derating	> 60 °C
Dimensions (mm) W x H x D	95 x 125 x 150
Weight	1600 g
Type of connectors	Screw terminal
Connector size Input	0.5 – 4 mm ² (AWG 20 – 12)
Connector size Output	4 mm ² (AWG 12)
Efficiency	91%
Approvals	CE HAZ.LOC. R

Power supply **wipos**
PS3 24-40



Type	Part No.
wipos PS3 24-40	81.000.6590.0
Technical Data	
Input voltage	320 – 576 V AC
PFC	–
Hold up time	> 20 ms at 400 V
Output voltage	22.5 - 29.5
Output current	40 A (Power Boost 48A)
Parallel operation	yes
In series connectable	yes
Temperature range	-40 ... +70 °C
Derating	> 60 °C
Dimensions (mm) W x H x D	135 x 125 x 180
Weight	2700 g
Type of connectors	Screw terminal
Connector size Input	1.5 – 16 mm ² (AWG 16 – 6)
Connector size Output	10 - 16 mm ² (AWG 8 - 6)
Efficiency	91%
Approvals	CE HAZ.LOC. R



wipos PB1 Modules

Power supply *wipos* PB1 5-1.5 PB1 5-3



Type	Part No.	Part No.
wipos PB1 5-1.5	81.000.6321.0	
wipos PB1 5-3		81.000.6331.0
Technical Data		
Input voltage	90 – 264 V AC, 120 – 375 V DC	90 – 264 V AC, 120 – 375 V DC
PFC	not necessary	not necessary
Hold up time	> 30 ms at 230 V	> 80 ms at 230 V
Output voltage	5 V	5 – 5.5 V
Output current	1.5 A	3 A
Temperature range	-40 ... +70 °C	-40 ... +70 °C
Derating	> 61 °C	> 61 °C
LED display	yes	yes
Dimensions W x H x D	18 x 91 x 57	35 x 91 x 57
Installation dimensions	for junction boxes and flat control panels	for junction boxes and flat control panels
Mounting type	DIN rail mounting	DIN rail mounting
Weight	65 g	130 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 14)	0.2 – 2.5 mm ² (AWG 24 – 14)
Efficiency	74 %	82 %
Approvals	CE UL 1310 Class 2 Haz. Class I Div.2	CE UL 1310 Class 2

Power supply *wipos* PB1 12-0.83 PB1 24-0.42



Type	Part No.	Part No.
wipos PB1 12-0.83	81.000.6302.0	
wipos PB1 24-0.42		81.000.6300.0
Technical Data		
Input voltage	90 – 264 V AC, 120 – 375 V DC	90 – 264 V AC, 120 – 375 V DC
PFC	not necessary	not necessary
Hold up time	> 30 ms at 230 V	> 30 ms at 230 V
Output voltage	12 V	24 – 28 V
Output current	0.83 A	0.42 A
Temperature range	-40 ... +70 °C	-25 ... +70 °C
Derating	> 61 °C: 100 %, 70 °C: 75 %	> 60 °C
LED display	yes	yes
Dimensions W x H x D	18 x 91 x 57	18 x 91 x 57
Installation dimensions	for junction boxes and flat control panels	for junction boxes and flat control panels
Mounting type	DIN rail mounting	DIN rail mounting
Weight	65 g	65 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 14)	0.2 – 2.5 mm ² (AWG 24 – 14)
Efficiency	78 %	80 %
Approvals	CE Haz. Class I Div.2	CE UL 1310 Class 2 Haz. Class I Div.2

Power supply *wipos* PB1 12-2 PB1 24-1



Type	Part No.	Part No.
wipos PB1 12-2	81.000.6322.0	
wipos PB1 24-1		81.000.6310.0
Technical Data		
Input voltage	90 – 264 V AC, 120 – 375 V DC	90 – 264 V AC, 120 – 375 V DC
PFC	not necessary	not necessary
Hold up time	> 80 ms at 230 V	> 80 ms at 230 V
Output voltage	12 – 14 V	24 – 28 V
Output current	2 A	1 A
Temperature range	-40 ... +70 °C	-25 ... +70 °C
Derating	> 61 °C: 100 %, 70 °C: 75 %	> 60 °C
LED display	yes	yes
Dimensions W x H x D	35 x 91 x 57	35 x 91 x 57
Installation dimensions	for junction boxes and flat control panels	for junction boxes and flat control panels
Mounting type	DIN rail mounting	DIN rail mounting
Weight	130 g	130 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24 – 14)	0.2 – 2.5 mm ² (AWG 24 – 14)
Efficiency	84 %	85 %
Approvals	CE UL 1310 Class 2	CE UL 1310 Class 2

wipos PB1 Modules

Power supply *wipos* PB1 12-2.75 PB1 24-1.5



Type	Part No.	Part No.
wipos PB1 12-2.75	81.000.6332.0	
wipos PB1 24-1.5		81.000.6320.0
Technical Data		
Input voltage	90 – 264 V AC, 120 – 375 V DC	90 – 264 V AC, 120 – 375 V DC
PFC	not necessary	not necessary
Hold up time	> 60 ms at 230 V	> 100 ms at 230 V
Output voltage	12 – 14 V	24 – 28 V
Output current	2.75 A	1.5 A
Temperature range	-40 ... +70 °C	-25 ... +70 °C
Derating	> 56 °C	> 56 °C
LED display	yes	yes
Dimensions (mm) W x H x D	53 x 91 x 57	53 x 91 x 57
Installation dimensions	for junction boxes and flat control panels	for junction boxes and flat control panels
Mounting type	DIN rail mounting	DIN rail mounting
Weight	250 g	190 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24–14)	0.2 – 2.5 mm ² (AWG 24–14)
Efficiency	84 %	84 %
Approvals	CE UL 1310 Class 2	CE UL 1310 Class 2

Power supply *wipos* PB1 12-4.5 PB1 24-2.5

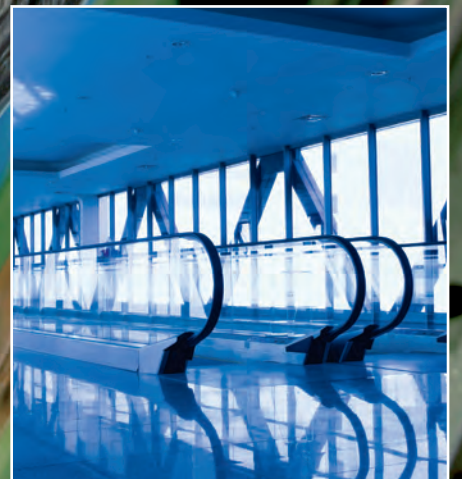


Type	Part No.	Part No.
wipos PB1 12-4.5	81.000.6342.0	
wipos PB1 24-2.5		81.000.6330.0
Technical Data		
Input voltage	90 – 264 V AC, 120 – 375 V DC	90 – 264 V AC, 120 – 375 V DC
PFC	not necessary	not necessary
Hold up time	> 60 ms at 230 V	> 60 ms at 230 V
Output voltage	12 – 14 V	24 – 28 V
Output current	4,5 A	2.5 A
Temperature range	-40 ... +70 °C	-25 ... +70 °C
Derating	> 56 °C	> 60 °C
LED display	ja	yes
Dimensions (mm) W x H x D	71 x 91 x 57	71 x 91 x 57
Installation dimensions	for junction boxes and flat control panels	for junction boxes and flat control panels
Mounting type	DIN rail mounting	DIN rail mounting and screw connection
Weight	250 g	250 g
Type of connectors	Screw terminal	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24–14)	0.2 – 2.5 mm ² (AWG 24–14)
Efficiency	84 %	86 %
Approvals	CE UL 1310 Class 2 Haz. Class I Div.2	CE UL 1310 Class 2 Haz. Class I Div.2

Power supply *wipos* PB1 24-4.2



Type	Part No.
wipos PB1 24-4.2	81.000.6340.0
Technical Data	
Input voltage	90 – 264 V AC, 120 – 375 V DC
PFC	not necessary
Hold up time	> 60 ms at 230 V
Output voltage	24 – 28 V
Output current	4.2 A
Temperature range	-40 ... +70 °C
Derating	> 60 °C
LED display	yes
Dimensions (mm) W x H x D	90 x 91 x 57
Installation dimensions	for junction boxes and flat control panels
Mounting type	DIN rail mounting and screw connection
Weight	380 g
Type of connectors	Screw terminal
Connector size	0.2 – 2.5 mm ² (AWG 24–14)
Efficiency	89 %
Approvals	CE Haz. Class I Div.2



Coupling relays

The safe way to achieve a perfect interface in process applications.

In the microchip age of bits and bytes, one might assume that there is no place left for electro-mechanical relays. Far from it!

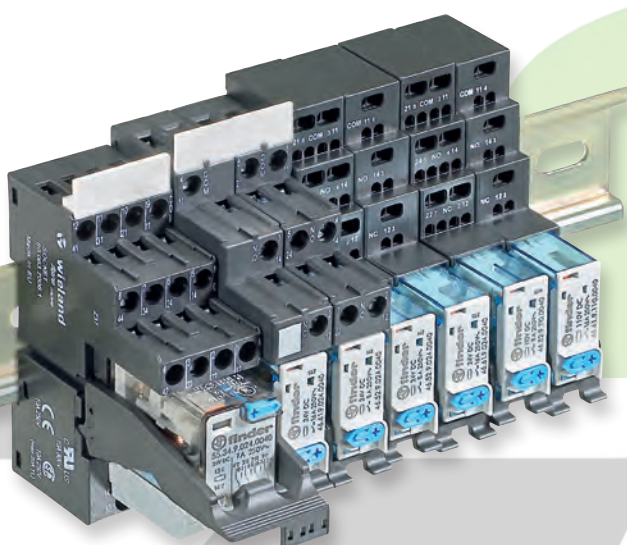
In control, transportation and production technology, coupling relays have been reliably accomplishing important tasks for years, and continue to do so.

Together with control systems, they offer numerous possibilities of making your application even safer and less sensitive to disturbances.



Advantages:

- Safe galvanic separation
- Pluggable and compact solutions
- Mounts directly onto a 35-mm DIN rail
- Optional gold-plated contacts
- Screw clamp and tension spring termination
- Display and EMI suppression modules
- Also suitable for railway applications acc. to EN 50155



Coupling relays

flare MOVE

- Pluggable coupling relay
- Overall width 6.2 mm
- Screw terminals
- 1 change-over contact 6A



Description	Part No.	Std. Pack	Part No.	Std. Pack
flare MOVE	AgSnO₂		AgSnO₂ + gold (5μ)	
12V Relay module DC	80.010.4501.0	10	80.010.4501.1	10
12V Relay module AC/DC	80.010.4521.0	10	80.010.4521.1	10
24V Relay module DC	80.010.4502.0	10	80.010.4502.1	10
24V Relay module AC/DC spring clamp con.	80.010.4622.0	10		
24V Relay module AC/DC	80.010.4522.0	10	80.010.4522.1	10
115V Relay module AC/DC	80.010.4525.0	10	80.010.4525.1	10
230V Relay module AC/DC	80.010.4526.0	10	80.010.4526.1	10
Comb-shaped jumper 20pol. max 36A	80.063.4029.1	10		
Marking plate BM SF38	80.063.4129.3	1		
Replacement relay and socket	Information on request			
Technical data				
Maximum switching voltage	400 V AC			
Maximum switching current	6 A AC/DC			
Maximum starting current	10 A			
Mechanical life	1 x 10 ⁷			
Electrical life up to 230 V AC / 6A	6 x 10 ⁴			
Isolation voltage of input / output	4 kV eff			
Connectable via pluggable jumper	20 modules			
Wire range fine-stranded/solid	0.14 - 1.5 mm ² (AWG 26 - 16) / 0.5 - 2.5 mm ² (AWG 22 - 14)			
Degree of protection / Mounting rail	IP 20 / TS35			
Dimensions (mm) W x H x D	6.2 x 88 x 76			
Ambient temperature	0 ... +50 °C			
Approvals	CE TÜV			

flare MOVE

- Pluggable coupling relay
- Overall width 15.8 mm
- Screw terminals
- 1 change-over contact 16A
- 2 change-over contacts 8A



Description	Part No.	Std. Pack	Part No.	Std. Pack
flare MOVE	1 change-over contact		2 change-over contacts	
12V Relay module DC	80.010.4901.3	10	80.010.5501.2	10
24V Relay module DC	80.010.4902.3	10	80.010.5102.2	10
24V Relay module AC	80.010.4912.3	10		
115V Relay module AC	80.010.4915.3	10	80.010.5315.2	10
230V Relay module AC	80.010.4916.3	10	80.010.5316.2	10
Comb-shaped jumper 8pol. for A1, A2 max 10A	80.063.5029.2	10		
Marking tag BZ SF-48	80.063.5029.3	10		
Replacement relay	Information on request			
Technical data				
Maximum switching voltage	400 V AC		250 V AC	
Maximum switching current	16 A / (10 A up to 12 V)		8 A / (10 A up to 12 V)	
Maximum starting current	30 A / (20 A up to 12 V)		15 A	
Mechanical life DC / AC	2 x 10 ⁷ / 1 x 10 ⁷		2 x 10 ⁷	
Electrical life AC 1	2 x 10 ⁵ / 1 x 10 ⁵		1 x 10 ⁵	
Isolation voltage of input / output	4 kV			
Connectable via pluggable jumper	8 modules			
Wire range fine-stranded/solid	0.25 - 4 mm ² (AWG 24 - 12) / 0.25 - 6 mm ² (AWG 24 - 10)			
Degree of protection / Mounting rail	IP 20 / TS35			
Dimensions (mm) W x H x D	15.8 x 78.6 x 76			
Ambient temperature	-40 ... +70 °C			
Approvals	CE TÜV			

Coupling relays

flare MOVE MR

- Pluggable coupling relay
- Robust pins
- Switching position is indicated mechanically
- Lockable test button
- For railway application accord. to EN 50 155
- Overall width 15.8 mm
- Screw terminals
- 1 change-over contact 16A
- 2 change-over contacts 8A



Description	Part No.	Std. Pack	Part No.	Std. Pack
flare MOVE MR	1 change-over contact		2 change-over contacts	
24V Relay module DC	80.010.6002.2	10	80.010.6032.2	10
24V Relay module DC with gold (5µm)	80.010.6002.3	10	80.010.6032.3	
Replacement relay	Information on request			
Comb-shaped jumper 8 pole for A1, A2 max 10A	80.063.5029.2	10		
Marking plate BM MR-4C	80.063.6029.3	10		
Technical data				
Maximum switching voltage	440 V AC		440 V AC	
Maximum switching current	16 A		8 A	
Maximum starting current	25 A		15 A	
Mechanical life	1 x 10 ⁷		1 x 10 ⁷	
Electrical life AC 1	1 x 10 ⁵		1 x 10 ⁵	
Isolation voltage of input / output	6 kV			
Wire range fine-stranded/solid	0.25 - 4 mm ² (AWG 24-12) / 0.25 - 6 mm ² (AWG 24-10)			
Degree of protection / Mounting rail	IP 20 / TS35			
Dimensions (mm) W x H x D	15.8 x 82.9 x 68.1			
Ambient temperature	-40...+70 °C (>12A max 50 °C)		-40... +70 °C	
Approvals	CE TÜV			

flare MOVE MR

- Pluggable coupling relay
- Robust pins
- Switching position is indicated mechanically
- Lockable test button
- For railway application accord. to EN 50 155
- Overall width 15.8 mm
- Cage clamp
- 1 change-over contact 16A
- 2 change-over contacts 8A



Description	Part No.	Std. Pack	Part No.	Std. Pack
flare MOVE MR	1 change-over contact		2 change-over contacts	
24V Relay module DC	80.010.6102.2	10	80.010.6132.2	10
24V Relay module DC with gold (5µm)	80.010.6102.3	10	80.010.6132.3	10
Replacement relay	Information on request			
Marking plate BM MR-4C	80.063.6029.3	10		
Technical data				
Maximum switching voltage	400 V AC		400 V AC	
Maximum switching current	16 A		8 A	
Maximum starting current	25 A		15 A	
Mechanical life	1 x 10 ⁷		1 x 10 ⁷	
Electrical life AC 1	1 x 10 ⁵		1 x 10 ⁵	
Isolation voltage of input / output	6 kV			
Wire range fine-stranded/solid	0.2 - 1.5 mm ² (AWG 24-16)			
Degree of protection / Mounting rail	IP 20 / TS35			
Dimensions (mm) W x H x D	15.8 x 82.9 x 68.1			
Ambient temperature	-25...+70 °C (>12A max 50 °C)		-25... +70 °C	
Approvals	CE TÜV			






flare MOVE MR






- Pluggable coupling relay
- Robust pins
- Switching position is indicated mechanically
- Lockable test button
- For railway application accord. to EN 50 155
- Overall width 27 mm
- Screw terminals
- 4 change-over contacts 7A



Description	Part No.	Std. Pack
flare MOVE MR	4 change-over contact	
24V Relay module DC	80.010.5702.2	10
Replacement relay	Information on request	
Technical data		
Maximum switching voltage	250 V AC	
Maximum switching current	7 A	
Maximum starting current	15 A	
Mechanical life	2 x 10 ⁷	
Electrical life AC 1	1.5 x 10 ⁵	
Isolation voltage of input / output	3.6 kV	
Wire range fine-stranded/solid	0.25 - 4 mm ² (AWG 24-12) / 0.25 - 6 mm ² (AWG 24-10)	
Degree of protection / Mounting rail	IP 20 / TS35	
Dimensions (mm) W x H x D	27 x 76 x 86.9	
Ambient temperature	-40... +70 °C	
Approvals	CE TÜV	

Coupling relays

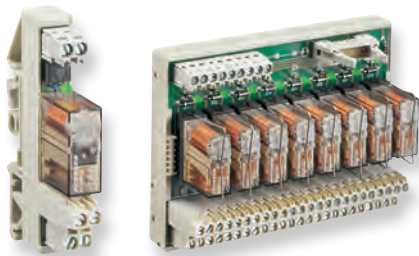
<p>flare</p> <ul style="list-style-type: none"> • Compact coupling relay • Overall width 6.2 mm • Screw terminals/ Cage clamp • 1 change-over contact 6 A 	Description		Part No.	Std. Pack	Part No.	Std. Pack	
	flare		Screw terminal		Cage clamp		
	12V Relay module DC				80.010.4106.0	10	
	24V Relay module DC		80.010.4000.0	10	80.010.4100.0	10	
	115V Relay module AC				80.010.4131.0	10	
	230V Relay module AC				80.010.4141.0	10	
	Pluggable jumper max 2A		Z8.000.0200.8	10			
	Jumper for potential distribution red		Z8.000.0202.3	5			
	Jumper for potential distribution blue		Z8.000.0202.4	5			
	Endcaps for jumper, red		Z8.000.0202.1	20			
	Endcaps for jumper, blue		Z8.000.0202.2	20			
	8 digit marking tag, unmarked, 60 pcs.		Z4.242.5153.0	10			
	Technical data						
	Maximum switching voltage		250 V AC / 300 V DC				
Maximum switching current		6 A AC / 2A DC					
Maximum starting current		10 A					
Mechanical life		1 x 10 ⁷					
Electrical life up to 230V AC / 6A		8 x 10 ⁴					
Isolation voltage of input / output		4 kV _{eff}					
Connectable via pluggable jumper		50 modules					
Wire range fine-stranded/solid		0.5 - 2.5 mm ² (AWG 22 - 14) /		0.25 - 1.5 mm ² (AWG 24 - 16) /			
		0.25 - 4 mm ² (AWG 24 - 12)		0.25 - 2.5 mm ² (AWG 24 - 14)			
Degree of protection / Mounting rail		IP 20 / TS35					
Dimensions (mm) W x H x D		6.2 x 89 x 70					
Ambient temperature		0 ... +60 °C					
Approvals		CE    					

<p>flare</p> <ul style="list-style-type: none"> • Compact coupling relay • Overall width 6.2 mm / 12.4 (2 change-over contacts) • Screw terminals/ Cage clamp • Special Type 	Description		Part No.	Std. Pack	Part No.	Std. Pack	
	flare		Screw terminal		Cage clamp		
	24V Relay module AC/DC		80.010.4005.0	10	80.010.4105.0	10	
	1 change-over contact DC 48V 20mA with gold (3µm)						
	24V Relay module DC				80.010.4103.0	5	
	2 change-over contact AC 250V 6A AC/DC 300 V 2A DC						
	24V Knife edge disconnect relay AC/DC				80.010.4120.0	10	
	1 change-over contact AC 250V 6A / DC 300 V 2 A						
	24V HAND-0-AUTO-Relay				80.010.4101.0	10	
	1 normally open contact AC 250V 6A / DC 300V 2A						
	Technical data						
	Mechanical life		2 x 10 ⁷				
	Electrical life up to 230V AC / 6A		6 x 10 ⁴				
	Isolation voltage of input / output		4 kV _{eff}				
Connectable via pluggable jumper		50 modules					
Wire range fine-stranded/solid		0.5 - 2.5 mm ² (AWG 22 - 14) /		0.25 - 1.5 mm ² (AWG 24 - 16) /			
		0.25 - 4 mm ² (AWG 24 - 12)		0.25 - 2.5 mm ² (AWG 24 - 14)			
Degree of protection / Mounting rail		IP 20 / TS35					
Dimensions (mm) W x H x D		6.2 x 89 x 70 / 12.4 x 89 x 70 (2 change-over contacts)					
Ambient temperature		0 ... +60 °C 6 mm ²					
Approvals		CE    					

Coupling relays

Relay output modules

- Pluggable coupling relay
- Screw terminals
- 1 change-over contact / 2 change-over contacts
- 1 relay up to 16 relays
- 5 A switching capacity per output
- 12 V and 24 V

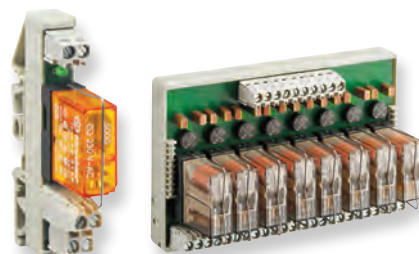


Description	Part No.	Std. Pack	Part No.	Std. Pack
Relay output modules	1 change-over contact		2 change-over contacts	
12V Module AC/DC 1 relay	87.220.7553.0	10		
24V Module DC 4 relay positive switching	87.220.1853.0	1	87.220.4753.3	1
24V Module DC 4 relay negative switching	87.221.5553.0	1		
24V Module DC 8 relay positive switching	87.220.1953.3	1	87.220.4853.3	1
24V Module DC 16 relay positive switching	87.220.2253.3	1		
Replacement relay	Z8.000.0056.9	10	Z8.000.0035.5	10

Technical data	
Maximum switching voltage	250 V AC/DC
Maximum switching current	5 A AC/DC
Maximum starting current	8 A AC/DC
Mechanical life	3 x 10 ⁷
Electrical life 230V AC / 5A	6 x 10 ⁵
Isolation voltage of input / output	4 kV
Wire range fine-stranded/solid	0.25 - 2.5 mm ² (AWG 24–14) / 0.5 - 4 mm ² (AWG 22–12)
Mounting rail	TS 35 / TS 32
Dimensions (mm) W x H x D	1 relay: 12.5 x 80 x 58.3 4/8/16 relay: 70/128/280 x 80 x 71
Ambient temperature	-25 ... +50 °C (Derating)
Approvals	CE

Relay output modules

- Pluggable coupling relay
- Screw terminals
- 1 change-over contact 4 A / 2 change-over contacts 5 A
- 1 relay up to 8 relays
- 115 V and 230 V AC/DC



Description	Part No.	Std. Pack	Part No.	Std. Pack
Relay output modules	1 change-over contact		2 change-over contacts	
230 V Module AC/DC 1 relay	80.010.0011.0	10	80.010.1100.0	5
115 V Module AC/DC 4 relay	80.010.1102.0	1	80.010.1104.0	1
115 V Module AC/DC 8 relay	80.010.1110.0	1	80.010.1112.0	1
230 V Module AC/DC 4 relay	80.010.1106.0	1	80.010.1108.0	1
230 V Module AC/DC 8 relay	80.010.1114.0	1	80.010.1116.0	1
Replacement relay	Z8.000.0181.0	10	Z8.000.0176.2	10

Technical data	
Maximum switching voltage	250 V AC/DC
Maximum switching current	4 A AC/DC 5 A AC/DC
Maximum starting current	6 A AC/DC 6 A AC/DC
Mechanical life	3 x 10 ⁷
Electrical life 230V AC/nominal current	1.5 x 10 ⁶
Isolation voltage of input / output	4 kV
Wire range fine-stranded/solid	0.25 - 2.5 mm ² (AWG 24–14) / 0.5 - 4 mm ² (AWG 22–12)
Mounting rail	TS 35 / TS 32
Dimensions (mm) W x H x D	1 relay: 12.5 x 80 x 70 4/8 relay: 70/128 x 80 x 71
Ambient temperature	-40 ... +50 °C (Derating)
Approvals	CE

Coupling relays

Relay system

- Bridgeable relay system
- Screw terminals
- 1 normally open contact/
1 change-over contact
- 24 V AC/DC



Description	Part No.	Std. Pack	Part No.	Std. Pack
Relay system			Output	
24V Module AC/DC 1 normally open contact	80.010.0005.0	10	80.010.0007.0	10
24V Module AC/DC 1 change-over contact	80.010.0008.0	10	80.010.0009.0	10
Pluggable jumper max. 0.5A	Z8.000.0103.4	10		
Technical data				
Maximum switching voltage	250 V AC/DC		48 V DC (10 µm gold)	
Maximum switching current	5 A AC/DC		20 mA	
Maximum starting current	8 A AC/DC			
Mechanical life	3 x 10 ⁷		3 x 10 ⁷	
Electrical life (up to nominal rating)	2.5 x 10 ⁵		3 x 10 ⁶	
Isolation voltage of input / output	4 kV			
Wire range fine-stranded/solid	0.5 - 2.5 mm ² (AWG 22-14) / 0.5 - 4 mm ² (AWG 22-12)			
Mounting rail	TS 35 / TS 32			
Dimensions (mm) W x H x D	12.5 x 80 x 60			
Ambient temperature	-25 ... +50 °C (Derating up to 65 °C)			
Approvals	CE G5 U= SF			

Relay system

- Bridgeable relay system
- Screw terminals
- 2 change-over contacts 5 A
- 24 V AC/DC



Description	Part No.	Std. Pack	Part No.	Std. Pack
Relay system			Output	
24V Module AC/DC 2 change-over contacts	80.010.1003.0	5	80.010.1002.0	5
Pluggable jumper max. 0.5 A	Z8.000.0103.4	10		
Technical data				
Maximum switching voltage	250 V AC/DC		48 V DC (10 µm gold)	
Maximum switching current	5 A AC/DC		20 mA	
Maximum starting current	6 A AC/DC			
Mechanical life	3 x 10 ⁷		3 x 10 ⁷	
Electrical life (up to nominal rating)	2.5 x 10 ⁵		3 x 10 ⁶	
Isolation voltage of input / output	4 kV			
Wire range fine-stranded/solid	0.5 - 2.5 mm ² (AWG 22-14) / 0.5 - 4 mm ² (AWG 22-12)			
Mounting rail	TS 35 / TS 32			
Dimensions (mm) W x H x D	22.5 x 80 x 60			
Ambient temperature	-25 ... +50 °C			
Approvals	CE G5 U= SF			

Relay system

- Bridgeable relay system
- Screw terminals
- 1 change-over contact 16 A
- 24 V AC/DC



Description	Part No.	Std. Pack
Relay system		
24 V Module AC/DC 1 change-over contact	80.010.0010.0	5
Pluggable jumper max. 0.5 A	Z8.000.0103.4	10
Technical data		
Maximum switching voltage	250 V AC/DC	
Maximum switching current	16 A AC/DC	
Maximum starting current	16 A AC/DC	
Mechanical life	3 x 10 ⁷	
Electrical life (up to nominal rating)	1.8 x 10 ⁵	
Isolation voltage of input / output	4 kV	
Wire range fine-stranded/solid	0.5 - 2.5 mm ² (AWG 22-14) / 0.5 - 4 mm ² (AWG 22-12)	
Mounting rail	TS 35 / TS 32	
Dimensions (mm) W x H x D	22.5 x 80 x 60	
Ambient temperature	-25 ... +50 °C (Derating up to 65 °C)	
Approvals	CE G5 U= SF	

Solid-State relays

flare

- Compact solid-state relay
- Overall width 6.2 mm
- Spring cage clamp
- Output 48 V DC



Description	Part No.	Std. Pack	Part No.	Std. Pack
flare	Output 0,5 A		Output 2 A	
24 V Module DC / Output 48 V	80.020.4100.0	10	80.020.4101.0	10
115 V Module AC/DC / Output 48 V	80.020.4102.0	10		
230 V Module AC/DC / Output 48 V	80.020.4103.0	10		
Pluggable jumper max 2 A	Z8.000.0200.8	10		
8 digit marking tag, unmarked, 60 pcs.	Z4.242.5153.0	10		
Technical data				
Maximum switching voltage	48 V DC (4,4...53 V DC)			
Maximum switching current	0.5 A		2 A	
Min. switching current	0.1 mA		1 mA	
Isolation voltage of input / output	3.75 kV			
Connectable via pluggable jumper	50 modules			
Wire range fine-stranded/solid	0.25 - 1.5 (AWG 24 - 16) / 0.25 - 2.5 mm ² (AWG 24 - 14)			
Degree of protection / Mounting rail	IP 20 / TS35			
Dimensions (mm) W x H x D	6.2 x 89 x 70			
Ambient temperature	0 ... +50 °C (Derating)			
Approvals	CE UL CS Ex			

flare

- Compact solid-state relay
- Overall width 6.2 mm
- Spring cage clamp
- Output 230 V AC



Description	Part No.	Std. Pack
flare	Output 0,5 A	
24V Module DC / Output 230 V AC	80.020.4150.0	10
Pluggable jumper max 2 A	Z8.000.0200.8	10
8 digit marking tag, unmarked, 60 pcs.	Z4.242.5153.0	10
Technical data		
Maximum switching voltage	250 V AC	
Maximum switching current	0.5 A	
Min. switching current	0.1 mA	
Isolation voltage of input / output	2.5 kV	
Connectable via pluggable jumper	50 modules	
Wire range fine-stranded/solid	0.25 - 1.5 mm ² (AWG 24 - 16) / 0.25 - 2.5 mm ² (AWG 24 - 14)	
Degree of protection / Mounting rail	IP 20 / TS35	
Dimensions (mm) W x H x D	6.2 x 89 x 70	
Ambient temperature	0 ... +50 °C (Derating)	
Approvals	CE UL CS Ex	

Solid-state relay

- Bridgeable
- Screw terminals
- Output 60 V DC



Description	Part No.	Std. Pack
Solid-State-Relay	Output 5 A	
24 V Module DC / Output 48 V	80.020.2004.0	10
Pluggable jumper	Z8.000.0103.4	10
Technical data		
Maximum switching voltage	60 V DC (3...60 V)	
Maximum switching current	5 A DC (Derating)	
Min. switching current	20 mA	
Isolation voltage of input / output	4 kV	
Connectable via pluggable jumper	20 modules	
Wire range fine-stranded/solid	0.5 - 2.5 mm ² (AWG 22 - 14) / 0.5 - 4 mm ² (AWG 22 - 12)	
Mounting rail	TS 35 / TS 32	
Dimensions (mm) W x H x D	12.5 x 80 x 59	
Ambient temperature	-20 ... +50 °C (Derating)	
Approvals	CE UL Ex	

Solid-state relay

- Bridgeable
- Screw terminals
- Output 250 V AC



Description	Part No.	Std. Pack	Part No.	Std. Pack
Solid-State-Relay	Output 4 A		Output 6 A	
24 V Module DC / Output 250 V AC	80.020.2001.0	10	80.020.0004.0	10
Pluggable jumper	Z8.000.0103.4	10		
Technical data				
Maximum switching voltage	280 V AC (48...280 V)			
Maximum switching current	4 A		6 A	
Min. switching current	60 mA			
Isolation voltage of input / output	4 kV			
Connectable via pluggable jumper	20 modules			
Wire range fine-stranded/solid	0.5 - 2.5 mm ² (AWG 22 - 14) / 0.5 - 4 mm ² (AWG 22 - 12)			
Mounting rail	TS 35 / TS 32			
Dimensions (mm) W x H x D	12.5 x 80 x 56		25.6 x 80 x 70	
Ambient temperature	-25 ... +50 °C (Derating)			
Approvals	CE UL Ex			

Passive interface

Always the right connection

Control signals are carried from prefabricated cable harnesses to terminal connections.

Interface modules make the connection between electronic and electrical components within the control panel.

The use of Wieland interface modules provides the following benefits for system wiring:

Advantages:

- Simple process which saves time during design and calculation
- Rapid wiring, commissioning and trouble shooting due to clear cabling and pole designations
- Reduction of wiring errors
- Space savings due to high density terminations
- The interface modules are standardly fitted with a mounting foot for DIN / EN mounting rails TS 35 or TS 32.

D-SUB connector to screw terminal





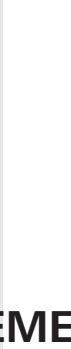


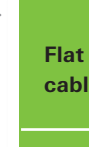
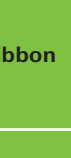


- Height: 80 mm



Type	No. of poles	With (mm)	Part No.	Std. Pack
D-Sub female connector				
Buchse D-Sub9	9	38,7	87.200.2200.3	1
Buchse D-Sub15	15	48,2	87.200.2201.3	1
Buchse D-Sub25	25	74,0	87.200.2202.3	1
Buchse D-Sub37	37	106,0	87.200.2203.3	1
D-Sub male connector				
Stecker D-Sub9	9	38,7	87.200.2205.3	1
Stecker D-Sub15	15	48,2	87.200.2206.3	1
Stecker D-Sub25	25	74,0	87.200.2207.3	1
Stecker D-Sub37	37	106,0	87.200.2208.3	1
Technical Data				
Maximum nominal voltage	60 V AC / 75 V DC			
Maximum nominal current	1.5 A			
Wire range	15 A			
fine stranded	0.5 – 2.5 mm ²			
solid	0.5 – 4 mm ²			
Ambient temperature	0 ... +50 °C			
Installation of mounting rail	TS 35 or TS 32			
Standard/specifications	VDE 0110b Gr.2			
Terminal strip X2	Type 8191E (x poles)			






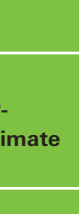
Customized Solutions

INPUT

Flat ribbon cable	
D-sub	
Screw terminal	
Spring terminal	
VG strips	
AMP-Metrimate	
Flat-pin connector	
Pluggable terminal	
RJ45	
GST 18	
High-current terminal	



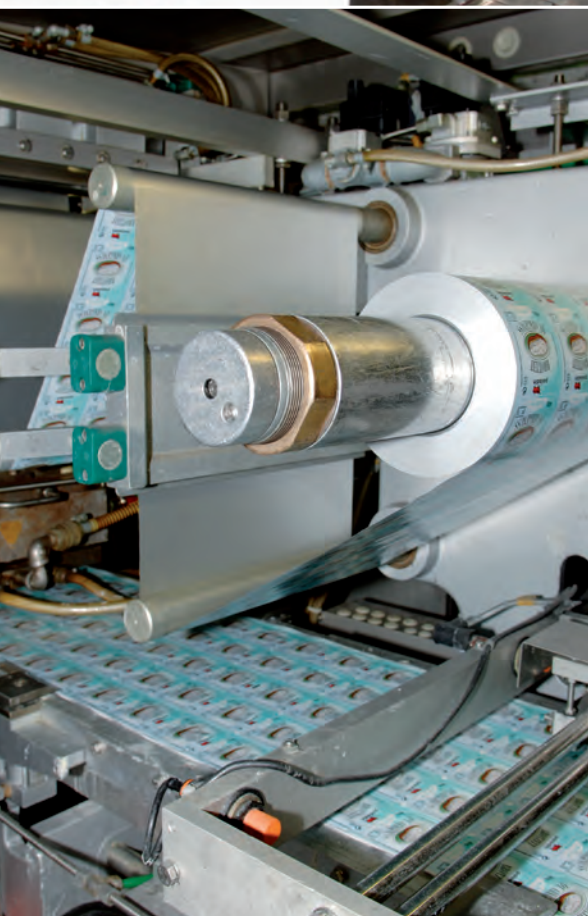
IMPLEMENTATION

LED	
Relay	
Optocoupler	
1 to 1	
Semiconductor-relay	
Function	
Fuses	

OUTPUT

Flat ribbon cable	
D-sub	
Screw terminal	
Spring terminal	
VG strips	
AMP-Metrimate	
Flat-pin connector	
Pluggable terminal	
RJ45	
GST 18	
High-current terminal	





Analog Isolation Amplifier

flexible & precise

Analog isolation amplifier of the **cores** series

The **cores** series convinces with flexible use in process and industrial automation.

They ensure a defined separation of measurement and process signals from the control system. And it protects against voltage drops.

Analogue isolation amplifiers also convert signals into standardized signal levels.

cores combines a highly precise signal conversion with a very small housing and fulfils actual demands for such products.

The Advantages:

- Digital conversion (up to 16 Bit)
- Highest accuracy (0.1 %) and linearity
- Fastest reaction time (from 11 ms)
- 3 or 4 way galvanic isolation
- High isolation voltage
- Compact housing (also as thin as 6.2 mm)
- Universal functions settable
- Wide temperature range



Analog Isolation Amplifier

cores C1 UI-B

- Analog Isolation Amplifier
- 3 way isolation
- Input: voltage / current, output: voltage / current
- High accuracy by digital conversion
- Width 6.2 mm
- Spring clamp connection
- Wide temperature range



Type	Part No.
cores C1 UI-B	82.003.0110.0
Technical data	
Input range (adjustable)	0/1 ... 5 V DC or 0/2 ... 10 V DC 0/4 ... 20 mA DC
Output range (adjustable)	0/1 ... 5 V DC or 0/2 ... 10 V DC 0/4 ... 20 mA DC or 20 ... 4/0 mA DC active or passive
Galvanic isolation	yes, 3 way isolation
Isolation voltage	1500 V AC
Accuracy	<0.1%, 14 Bit resolution
Supply voltage range	19.2 ... 30 V DC
Power consumption	max. 500 mW
Connection type	Spring clamp
Wire range solid/fine-stranded	0.2 - 2.5 mm ² (AWG 24-14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	6.2 x 93.1 x 102.5
Temperature range	-20 ... +65 °C
Approvals (pending)	CE

cores C1 PT-B

- Analog Isolation Amplifier
- 3 way isolation
- Input: PT 100, output: voltage / current
- High accuracy by digital conversion
- Width 6.2 mm
- Spring clamp connection
- Wide temperature range



Type	Part No.
cores C1 PT-B	82.003.0120.0
Technical data	
Input range (adjustable)	PT100 with 2-, 3- or 4 wire connection -150 ... +650 °C
Output range (adjustable)	0/1 ... 5 V DC or 0 ... 10 V; 10 ... 0 V DC 0/4 ... 20 mA DC or 20 ... 4/0 mA DC
Galvanic isolation	yes, 3 way isolation
Isolation voltage	1500 V AC
Accuracy	<0.1%, 14 Bit resolution
Supply voltage range	19.2 ... 30 V DC
Power consumption	max. 500 mW
Connection type	Spring clamp
Wire range solid/fine-stranded	0.2 - 2.5 mm ² (AWG 24-14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	6.2 x 93.1 x 102.5
Temperature range	-20 ... +65 °C
Approvals (pending)	CE

cores C1 TC-B

- Analog Isolation Amplifier
- 3 way isolation
- Input: thermo coupler, output: voltage / current
- High accuracy by digital conversion
- Width 6.2 mm
- Spring clamp connection
- Wide temperature range



Type	Part No.
cores C1 TC-B	82.003.0130.0
Technical data	
Input range (adjustable)	Types of thermo coupler: J, K, E, N, S, R, B, T
Output range (adjustable)	0/1 ... 5 V DC oder 0 ... 10 V DC 0/4 ... 20 mA DC oder 20 ... 4/0 mA DC
Galvanic isolation	yes, 3 way isolation
Isolation voltage	1500 V AC
Accuracy	<0.1%, 14 Bit resolution
Supply voltage range	19.2 ... 30 V DC
Power consumption	max. 500 mW
Connection type	Spring clamp
Wire range solid/fine-stranded	0.2 - 2.5 mm ² (AWG 24-14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	6.2 x 93.1 x 102.5
Temperature range	-20 ... +65 °C
Approvals (pending)	CE

Analog Isolation Amplifier

cores C2 UI-A

- Analog Isolation Amplifier
- 3 way isolation
- Input: current, output: current
- High accuracy by digital conversion
- Width 17.5 mm
- Screw clamp pluggable
- Wide temperature range



Type	Part No.
cores C2 UI-A	82.003.0210.0
Technical data	
Input range (adjustable)	0 ... 20 mA DC active or passive
Output range (adjustable)	0 ... 20 mA DC active or passive
Galvanic isolation	yes, 3 way isolation
Isolation voltage	1500 V AC
Accuracy	<0.1%
Reaction time	<40 ms
Supply voltage range	9 ... 40 V DC, 19 ... 28 V AC
Power consumption	max. 2.5 W
Connection type	Screw clamp pluggable
Wire range solid/fine-stranded	0.14 - 2.5 mm ² (AWG 26 - 14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	17.5 x 100 x 112
Temperature range	-20 ... +60 °C
Approvals (pending)	CE

cores C2 M-A / cores C2 MB-A

- Analog Isolation Amplifier
- 3 way isolation
- Input: voltage, current, thermo coupler, potentiometer, output: voltage, current
- High accuracy by digital conversion
- Width 17.5 mm
- Screw clamp pluggable
- Wide temperature range



Type	Part No.	Part No.
cores C2 M-A	82.003.0200.0	
cores C2 MB-A		82.003.0201.0
Technical data		
Input range (adjustable)	75 mV ... 20 V in 9 ranges (bipolar); 0 ... 20 mA (bipolar) J,K,R,S,T,B,E,N Thermo coupler; Pt100, Pt500, Pt1000, Ni100. 3 or 4 wire; 500 Ohm ... 10 kOhm Potentiometer; 500 Ohm ... 25 kOhm Rheostat	
Output range (adjustable)	0 (4) ... 20 mA, 0 ... 5 V, -20 ... +20 mA 0 ... 10 V, 1 ... 5 V, 2 ... 10 V -10 ... +10 V	
Galvanic isolation	yes, 3 way isolation	
Isolation voltage	1500 V AC	
Accuracy	<0.1%, 12 or 16 Bit resolution	
Reaction time	<35 ms (12 Bit), <140 ms (16 Bit) < 40 ms	
Supply voltage range	10...40 V DC, 19...28 V AC	9...40 V DC, 19...28 V AC
Power consumption	max. 2.5 W	max. 2 W
Connection type	Screw clamp pluggable	
Wire range solid/fine-stranded	0.14 - 2.5 mm ² (AWG 26 - 14)	
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)	
Dimensions (mm) W x H x D	17.5 x 100 x 112	
Temperature range	-10 ... +60 °C	
Approvals (pending)	CE	CE

Configuration software can be downloaded from our homepage under service / software.

cores C2 M2-A

- Analog Isolation Amplifier
- 4 way isolation
- 2 analogue outputs
- Input: voltage, current, thermo coupler, potentiometer, output: voltage, current
- High accuracy by digital conversion
- Width 17.5 mm
- Screw clamp pluggable
- Wide temperature range



Type	Part No.
cores C2 M2-A	82.003.0250.0
Technical data	
Input range (adjustable)	0 ... +10V; 0 ... 20mA active or passive; J, K, R, S, T, B, E, N Thermo coupler; Pt100, Pt500, Pt1000, Ni100. 2, 3, 4 wire; 1 ... 100 kOhm Potentiometer; 500 Ohm ... 25 kOhm Rheostat
Output range (adjustable)	0 ... 20 mA or 4 ... 20 mA active or passive 0 ... +10 V
Galvanic isolation	yes, 4 way isolation
Isolation voltage	1500 V AC
Accuracy	<0.1%, 14 Bit resolution
Reaction time	<11 ms
Supply voltage range	10 ... 40 V DC, 19 ... 28 V AC
Power consumption	max. 2 W
Connection type	Screw clamp pluggable
Wire range solid/fine-stranded	0.14 - 2.5 mm ² (AWG 26 - 14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	17.5 x 100 x 112
Temperature range	-10 ... +65 °C
Approvals (pending)	CE

Configuration software can be downloaded from our homepage under service / software.



I/O fieldbus system

Economical, compact and modular

In **ricos** FLEX, Wieland Electric is offering a continuous fieldbus concept for the interchange of data between controller and field periphery. The modular I/O nodes are installed decentrally, close to the machine, and networked via the fieldbus. A broad range of I/O modules process the various actuator/sensor signals. Diverse diagnostic functions permit a significant reduction in machine standstill times.



Advantages:

- Cost-efficiency through a highly modular design
- 2 to 8-channel modules
- Narrow module width of 12.9 mm
- Up to 64 modules can be connected to each bus coupler
- Spring tension connection terminals
- Very fast reaction time
- Individual channel inscription



High-performance rear wall bus

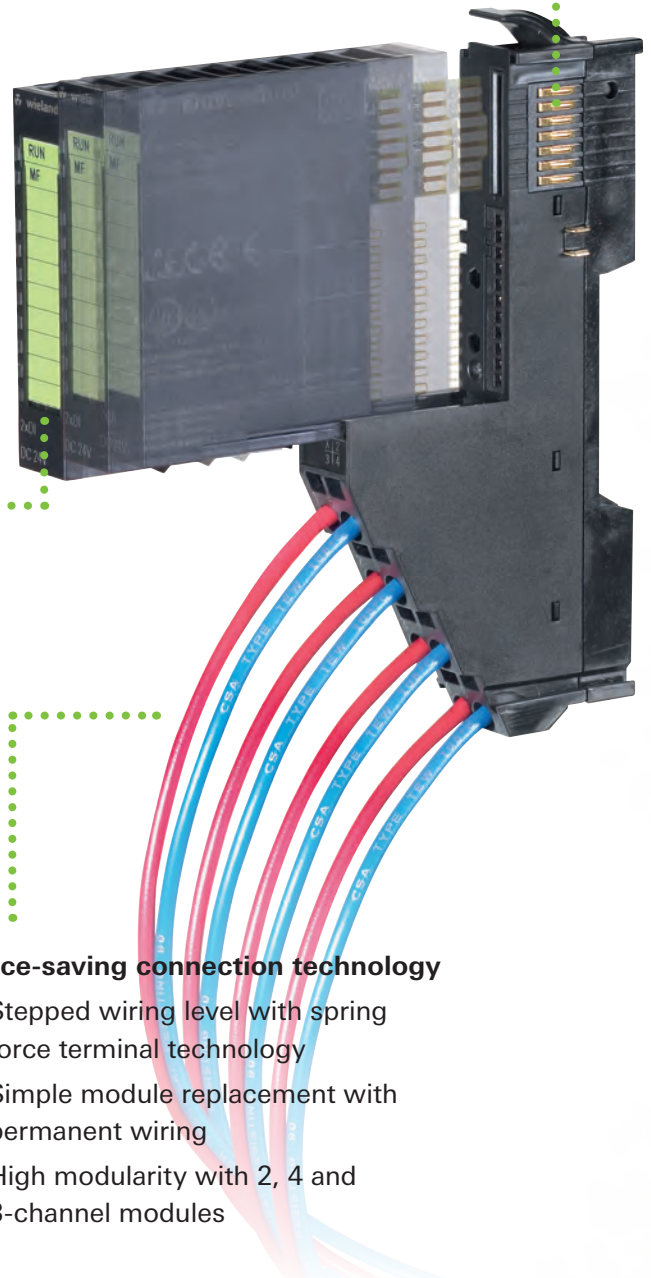
- 48 Mbit/s transmission speed
- Very fast reaction time of up to 20 µs
- One connection module for all application modules

Easy to assemble/service

- Simplest assembly thanks to secure sliding mechanism
- Module protection through coding
- Service-friendly combination of connection module and application module
- Recommendation: top hat rail mounting (TS 35 x 15)



Clearly arranged status and diagnostic displays with direct channel assignment for fast troubleshooting.



Space-saving connection technology

- Stepped wiring level with spring force terminal technology
- Simple module replacement with permanent wiring
- High modularity with 2, 4 and 8-channel modules

Inscription strips for individual marking of each channel.



ricos FLEX

Can be combined and used for any application.

ricos FLEX is a module and extremely compact I/O system. It can be combined and used with any PLC and any IPC.

ricos FLEX combines high functionality with an intelligent housing concept in an extremely compact design.

ricos FLEX is highly compact and precisely, matched, bit by bit, to the requirements of the application concerned.

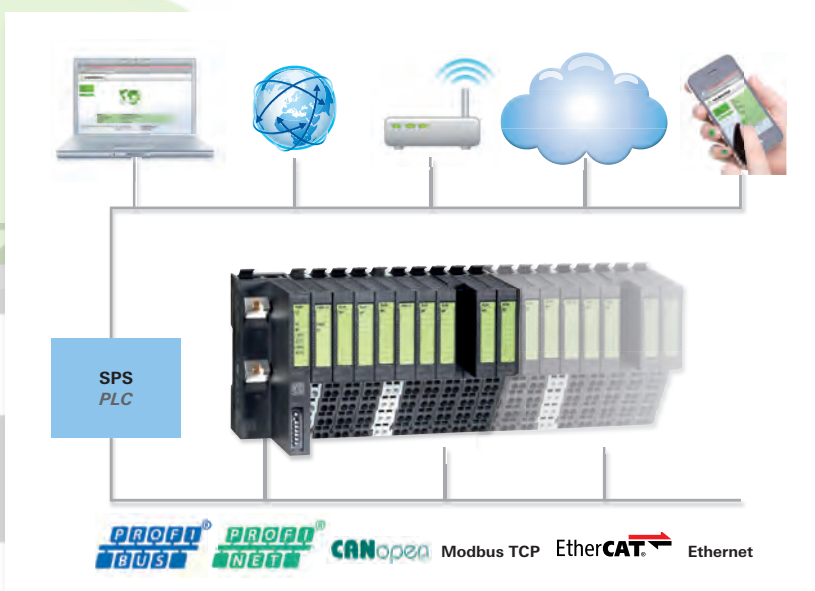
All bus couplers support up to 64 user modules. One module unit comprises a connection module and an electronic module, which are connected by means of a slide and click mechanism.

The connection module combines terminals, mounting for the electronic module and the **ricos** FLEX rear wall bus connector.

So for servicing, only the electronic module is replaced by simply pulling out the connection module – the wiring and mounting on the 25 mm DIN profile rail remain intact.

The spring force terminals arranged step-wise on the connection module permit fast, clearly arranged and safe wiring.

The integrated status LEDs and the inscription strips on the front of the electronic modules guarantee channel-specific, clear assignment and readability of the channel statuses.



Bus coupler

ricos FLEX BC DP

- Bus coupler Profibus DP-V1 Slave
- 244 byte input and 244 byte output data
- 64 assemblies per assembly carrier



Type	Part No.
ricos FLEX BC DP	83.036.1000.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current	0.95 A
Number of subscribers	125
Subscriber address	1 – 125
Baud rate	9.6 kbit/s - 12 Mbit/s
Address range for inputs	max. 244 bytes
Address range for outputs	max. 244 bytes
Fieldbus connection	9-pole sub-D socket
Fieldbus	Profibus DP to EN50170
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	48.5 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	155 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	CE

ricos FLEX BC CANopen

- Bus coupler CANopen Slave
- 16 RX and 16 TX PDOs
- 2 SDOs
- PDO linking
- PDO Mapping: fixed
- 64 assemblies per assembly carrier



Type	Part No.
ricos FLEX BC CANopen	83.036.1020.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current	0.95 A
Number of subscribers	127
Subscriber address	1 – 127
Baud rate	10 kBaud - 1 MBaud
Address range for inputs	max. 128 bytes
Address range for outputs	max. 128 bytes
Fieldbus connection	9-pole sub-D plug
Fieldbus	CANopen
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	48.5 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	155 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	CE

ricos FLEX BC MODBUS

- Bus coupler MODBUS TCP Slave
- I/O configuration via the fieldbus
- 64 assemblies per assembly carrier



Type	Part No.
ricos FLEX BC MODBUS	83.036.1040.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current	0.95 A
Fieldbus connection	RJ45 / Ethernet 10/100 MBit
Fieldbus	MODBUS-TCP
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	48.5 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	155 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	CE

Bus coupler

ricos FLEX BC PROFINET

- Bus coupler PROFINET I/O Slave
- Transmission rate 100 MBit/s
- 64 assemblies per assembly carrier



Type	Part No.
ricos FLEX BC PROFINET	83.036.1010.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current	0.95 A
Baud rate	100 Mbit/s
Address range for inputs	512 bytes
Address range for outputs	512 bytes
Fieldbus connection	2 x RJ45 / Ethernet 100 MBit
Fieldbus	PROFINET-IO
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	48.5 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	155 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE

ricos FLEX BC EtherNet/IP

- Bus coupler EtherNet/IP
- 1 KB input and 1 KB output data
- 64 assemblies per assembly carrier



Type	Part No.
ricos FLEX BC EtherNet/IP	83.036.1050.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current	0.95 A
Baud rate	10/100 Mbit
Address range for inputs	max. 1KB
Address range for outputs	max. 1KB
Fieldbus connection	RJ45
Fieldbus	EtherNet/IP
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	48.5 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	155 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE

ricos FLEX BC EtherCAT

- Bus coupler EtherCAT
- 512 Byte input and 512 Byte output data
- 64 assemblies per assembly carrier



Type	Part No.
ricos FLEX BC EtherCAT	83.036.1060.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current	0.95 A
Number of participants	max. 65535
Baud rate	100 Mbit/s
Address range for inputs	max. 512 Byte
Address range for outputs	max. 512 Byte
Fieldbus connection	2 x RJ45
Fieldbus	EtherCAT
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	48.5 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	155 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE



Expansion modules

ricos FLEX potential distributor

- Potential distributor
- For distributing 24 V DC and 0 V potentials



Type	Part No.
ricos FLEX PV 8xDC24V	83.036.0000.0
ricos FLEX PV 8xDC0V	83.036.0010.0
ricos FLEX PV 4xDC24V 4xDC0V	83.036.0020.0
Technical data	
Number of terminals	8 x 24 V DC 8 x 0 V DC 4 x 24 VDC; 4 x 0 V DC
Max. terminal voltage	30 V DC 0 V DC 30 V DC
Max. terminal current	10 A
Max. total current per module	10 A
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	12.9 x 109 x 52.5
Mounting method	Top hat rail mounting
Weight	50 g
Terminal type	Spring clamp
Terminal cross-section	0,08 – 1.5 mm ²
Approvals	UL CE

ricos FLEX power module

- Potential distributor
- Supply voltage 24 V DC, 10 A
- Reverse polarity protection
- Overvoltage protection



Type	Part No.
ricos FLEX PW DC 24V	83.036.0030.0
ricos FLEX PW 24V/5V	83.036.0040.0
Technical data	
Input voltage	20.4...28.8 V DC
Output voltage	24 V
Output current	10 A 4 A
Reverse polarity protection	yes
Overvoltage protection	36 V
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	12.9 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	60 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE

ricos FLEX digital input module

- Digital input module
- 2 / 4 / 8 inputs



Type	Part No.
ricos FLEX 2xDI DC24V	83.036.2100.0
ricos FLEX 4xDI DC24V	83.036.2200.0
ricos FLEX 8xDI DC24V	83.036.2300.0
Technical data	
Input voltage	20.4...28.8 V DC
Input current with signal 1	3 mA
Number of inputs	2 4 8
Switching level "0"	0...5 V DC
Switching level "1"	15...28,8 V DC
Channel status (high)	LED (green)
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	12.9 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	60 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE

Expansion modules

ricos FLEX digital output module

- Digital output module
- 2 / 4 / 8 outputs
- 2 relay outputs 30 V DC / 230 V AC; 3 A



Type	Part No.
ricos FLEX 2xDO DC24V 0,5A	83.036.3100.0
ricos FLEX 2xDO DC24V 2A	83.036.3110.0
ricos FLEX 2xDO DC30V 3A RELAY	83.036.3150.0
ricos FLEX 4xDO DC24V 0,5A	83.036.3200.0
ricos FLEX 4xDO DC24V 2A	83.036.3210.0
ricos FLEX 8xDO DC24V 0,5A	83.036.3300.0

Technical data	
Output voltage	20,4...28,8 V DC 30 V DC/ 230 V AC (Relay)
Output current with signal 1	0,5 A (2/4/8 DO), 2 A (2/4 DO), 3 A (Relay)
Number of outputs	2 2 2 x RELAY 4 4 8
Output protection	Short circuit and overload protection
Channel status (high)	LED (green)
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	12.9 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	60 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE

ricos FLEX analog input module

- Analog input module
- 4 inputs, 12 bit
- 4 wire, isolated



Type	Part No.
ricos FLEX 4xAI 12BIT 0...10V	83.036.4200.0
ricos FLEX 4xAI 12BIT 0(4)...20mA	83.036.4240.0
ricos FLEX 4xAI 12BIT -10V...+10V	83.036.4210.0
ricos FLEX 4xAI 16BIT R ,RTD	83.036.4261.0

Technical data	
Number of inputs	4 4 4 4
Measuring ranges	0...10 V 0(4)...20 mA -10 V...+10 V RTD,PT100
Auflösung in Bit	12 12 12 16
Conversion time	1.15 ms, all channels
Module status	LED (green)
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	12.9 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	60 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE

ricos FLEX analog output module

- Analog output module
- 4 outputs, 12 bit



Type	Part No.
ricos FLEX 4xAO 12BIT 0...10V	83.036.5200.0
ricos FLEX 4xAO 12BIT 0(4)...20mA	83.036.5220.0
ricos FLEX 4xAO 12BIT -10V...+10V	83.036.5210.0

Technical data	
Number of outputs	4 4 4
Measuring ranges	0...10 V 0(4)...20 mA -10 V...+10 V
Resolution in bits	12
Conversion time	2 ms, all channels
Module status	LED (green)
Temperature range	0 ... +60 °C
Dimensions WxHxD (mm)	12.9 x 109 x 76.5
Mounting method	Top hat rail mounting
Weight	60 g
Terminal type	Spring clamp
Terminal cross-section	0.08 – 1.5 mm ²
Approvals	UL CE





Timers

Always up to the minute

The electronic relays are ideally suited for standard, monitoring and control tasks in order to control function processes down to the second. Depending on the application, multiple-voltage and multi-functional relays are available.

Decades of timer know-how are packed into a completely new, highly miniaturized generation of timers just 22.5 mm wide. Although the end of the timer has been being predicted for years now, as the PLC has spread, high quality timers with well thought-out designs and universal application will continue to be needed in industrial automation.



Timers remain crucial – in less complex series machines, in later modifications, everywhere where other solutions would result in unnecessary engineering and hardware costs. For these applications Wieland offers a range of timers that provides everything you need. These devices unite diverse features with an efficiency that permits the fullest profitability – from procurement and warehousing through application and operation, and finally to disposal.



Multiple-voltage ergonomic and mobile

flare TIME series of timer relays

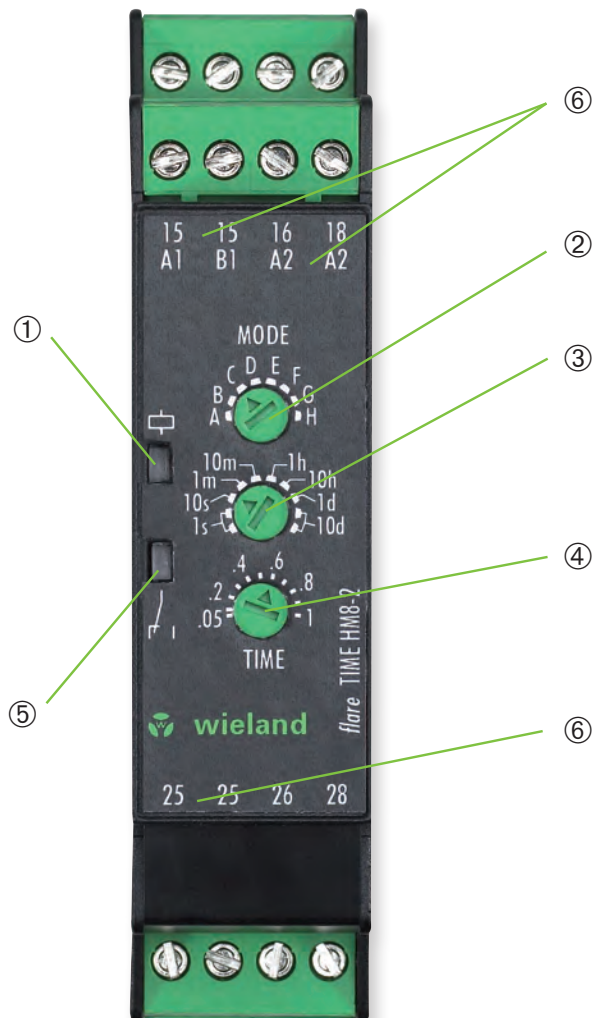
Our **flare** TIME family features universal application in the industrial automation sector. Up to 8 functions in just one relay cover all of your requirements and reduce inventory costs as well. Existing production processes can be easily expanded thanks to our **flare** TIME timer relay series, without incurring additional engineering and hardware costs. Our timer relays can be used in bakery machines, industrial washing machines, elevators and escalators, access controls and much more.

Features:

- Ambient temperatures from -25 °C to +60 °C
- Very high interference voltage resistance
- Output relays correspond to utilization category AC-15 and DC-13

The advantages:

- ① Power LED with progress display
- ② Function setting
- ③ Time range setting
- ④ Clear time setting
- ⑤ LED as status indicator of the change-over contact
- ⑥ Double connection points internally connected (HM series)





Electronic timer and switching relays for DIN rails



Electronic timer and switching relays for panel mounting



! Further products and technical details can be found at www.wieland-electric.com in our e-catalog.

Electronic timer and switching relays for DIN rails multifunction

Description		flare TIME HM8-2-A	flare TIME HM8-2U-A	flare TIME HM8-2P-A	flare TIME HM8-2PS-A	flare TIME HM5-1-A	flare TIME M8-2	flare TIME M8-1	flare TIME M4-2	flare TIME M4-1	flare TIME-S
Part no.		81.020.0104.0	81.020.0105.0	81.020.0134.0	81.020.0135.0	81.020.0100.0	81.020.0003.0	81.020.0002.0	81.020.0001.0	81.020.0000.0	81.020.4100.0
Model	Multi-function	•	•	•	•	•	•	•	•	•	
	Multi-range	•	•	•	•	•	•	•	•	•	•
Function											
Timer relays	ON-delay	•	•	•	•	•	•	•	•	•	•
	OFF-delay	•	•	•	•		•	•			•
	ON-delay- and OFF-delay, symmetrical	•		•	•		•	•			
Interval ON relay	Interval ON	•	•	•	•	•	•	•	•	•	•
	Single shot 0.5 sec (rising edge)		•								
	Interval OFF		•								
	Interval ON and Interval OFF	•		•	•		•	•			
Repeat cycle timer	OFF start, symmetrical and selectable	•		•	•	•	•	•	•	•	•
	ON start, symmetrical and selectable	•		•	•	•	•	•	•	•	•
Watchdog	Cyclical signal monitoring		•								
Pulse relay	Pulse relay, ON-delay, Pulse output	•		•	•	•	•	•	•	•	
	Change relaystate (rising edge)		•								
	Invert relay state (rising edge)		•								
Contacts	Delayed changeover	2	1	2	1	1	2 ¹⁾	1	2 ¹⁾	1	1
	Immediate changeover		1		1		1 ¹⁾		1 ¹⁾		
Rated Voltage	Multi-voltage AC/DC 24 to 230 (240) V	•	•	•	•	•	•	•	•	•	
Special Features	Remote potentiometer connection			•	•						
	Double connection points (internally connected) for trough cabling	•	•	•	•	•					
	Digital (D) or analog (A) settings	A	A	A	A	A	A	A	A	A	
Housing	Surface mounting 22.5 mm	•	•	•	•	•	•	•	•	•	

1) = 1 delayed and 1 immediate changeover or 2 delayed changeovers, adjustable



Electronic timer and switching relays for DIN rails

flare TIME M

- Multi-function timer
- Multi-range time
- Wide input voltage range 20.4 ... 264 V AC/DC
- 4 or 8 selectable time functions
- 1 or 2 change-over contacts 5 A



Type	Part No.
flare TIME M4-1 (4 time functions / 1 contact)	81.020.0000.0
flare TIME M4-2 (4 time functions / 2 contacts)	81.020.0001.0
flare TIME M8-1 (8 time functions / 1 contact)	81.020.0002.0
flare TIME M8-2 (8 time functions / 2 contacts)	81.020.0003.0

Technical data	
Input voltage range	20,4 ... 264 V AC/DC
Time range	0.1 s ... 1200 h
Time functions	4 or 8
Number of change-over contacts	1 or 2
Maximum switching current	5 A
Mechanical life time	10 x 10 ⁶
Electrical life time AC1	0.1 x 10 ⁶
Isolation voltage of input/output	2 kV
Connection clamps	Screw clamp
Wire range fine-stranded/solid	0.14 - 2.5 mm ² (AWG 26 - 14)
Degree of protection / mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 89.4 x 100
Operation temperature range	-20 ... +55 °C
Approvals	CE

flare TIME HM

- Multi-function timer
- Multi-range time
- Wide input voltage range 20.4 ... 264 V AC/DC
- 5 or 8 selectable time functions
- Pluggable clamps
- Wide temperature range
- 1/2 change-over contacts 5 A; HM8-2PS-A 1 delayed, 1 immediate changeover



Type	Part No.
flare TIME HM5-1-A (5 time functions / 1 contact)	81.020.0100.0
flare TIME HM8-2-A (8 time functions / 2 contacts)	81.020.0104.0
flare TIME HM8-2U-A (4 time- / 4 special functions / 2 contacts)	81.020.0105.0
flare TIME HM8-2P-A (with remote control connection)	81.020.0134.0
flare TIME HM8-2PS-A (with remote control connection)	81.020.0135.0

Technical data	
Input voltage range	20,4 ... 264 V AC/DC
Time range	0.05 s ... 240 h
Time functions	5 or 8
Number of change-over contacts	1 or 2
Maximum switching current	5 A
Mechanical life time	20 x 10 ⁶
Electrical life time AC1	0.1 x 10 ⁶
Isolation voltage of input/output	2 kV
Connection clamps	Pluggable screw clamp
Wire range fine-stranded/solid	0.2 - 2.5 mm ² (AWG 24 - 14)
Degree of protection / mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 96.5 x 91.5
Operation temperature range	-40 ... +60 °C
Approvals	CE

Accessoires	
Remote control	F0.000.0031.9

flare TIME TWIN-1

- Multi-range repeat cycle timer
- Multi-range time
- ON- or OFF-start settable
- Time ON and OFF separate adjustable
- Wide input voltage range 20.4 ... 264 V AC/DC
- 1 change-over contacts 5 A



Type	Part No.
flare TIME TWIN-1	81.020.0011.0

Technical data	
Input voltage range	20,4 ... 264 V AC/DC
Time range	0.1 s ... 1200 h
Time functions	ON- or OFF-start
Number of change-over contacts	1
Maximum switching current	5 A
Mechanical life time	10 x 10 ⁶
Electrical life time AC1	0.1 x 10 ⁶
Isolation voltage of input/output	2 kV
Connection clamps	Screw clamp
Wire range fine-stranded/solid	0.14 - 2.5 mm ² (AWG 26 - 14)
Degree of protection / mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 89.4 x 100
Operation temperature range	-20 ... +55 °C
Approvals	CE



Electronic timer and switching relays for DIN rails

flare TIME OFF-1

- OFF delayed timer
- No auxiliary voltage necessary
- 2 time ranges settable
- 1 change-over contacts 5 A



Type	Part No.
flare TIME OFF-1	81.020.0010.0
Technical data	
Input voltage range	170 ... 264 V AC
Time range	1 ... 120 s
Time functions	OFF delay
Number of change-over contacts	1
Maximum switching current	5 A
Mechanical life time	10 x 10 ⁶
Electrical life time AC1	0.1 x 10 ⁶
Isolation voltage of input/output	2 kV
Connection clamps	Screw clamp
Wire range fine-stranded/solid	0.14 - 2.5 mm ² (AWG 26-14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 89.4 x 100
Operation temperature range	-20 ... +55 °C
Approvals	CE

flare TIMER-S

- Multi-function timer
- Spring clamp
- 1 change-over contact 6 A
- ON-delay and OFF-delay
- One shot and flashing



Type	Part No.
flare TIMER-S-250V6A	81.020.4100.0
Technical data	
Input voltage range	24 V DC +25%/-20%
Time range	0.1 ... 300 s
Number of change-over contacts	1
Maximum switching current	6 A
Mechanical life time	2 x 10 ⁷
Electrical life time at 24 V DC / 2 A	0.6 x 10 ⁶
Electrical life time at 230 V AC / 6 A	0.8 x 10 ⁵
Isolation voltage of input/output	4 kV
Connection clamps	Spring clamp
Wire range fine-stranded/solid	0.25 - 1.5 mm ² (AWG 24-16) / 0.25 - 2.5 mm ² (AWG 24-14)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	6.2 x 89 x 70mm
Operation temperature range	0 ... +50 °C
Approvals	

Electronic time relay for front panel mounting

flare TIME FM15-1

- Multi-function timer
- High-contrast color display
- 15 time functions
- Front panel mounting 48 x 48 mm
- Wide temperature range
- 1 change-over contact 5 A



Type	Part No.	Part No.
flare TIME FM15-1 (24 V)	81.020.0020.0	
flare TIME FM15-1 (230 V)		81.020.0021.0
Technical data		
Input voltage range	4.5...30 V DC	85...264 V AC/DC
Time range	0.001 s ... 999 h	
Time functions	15	
Number of change-over contacts	1	
Maximum switching current	5A	
Mechanical life time	10 x 106	
Electrical life time AC1	0.1 x 106	
Isolation voltage of input/output	2 kV	
Connection clamps	Screw clamp	
Wire range fine-stranded/solid	0.14 - 2,5 mm ² (AWG 26 - 14)	
Degree of protection	IP20 / IP 66 (optional)	
Dimensions (mm) W x H x D	48 x 48 x 65	48 x 48 x 85,5
Operation temperature range	-10 ... +55 °C	
Approvals	CE	

flare TIME FM6-2

- Multi-function timer
- 7-segment display, red
- 6 selectable functions
- Front panel mounting 72 x 72 mm
- Simple operation with the push/rotary button
- 2 change-over contacts, potential-free



Type	Part No.
flare TIME FM6-2	81.020.0025.0
Technical data	
Supply voltage	90 to 265 V AC/DC
Configurable time ranges	hh:mm / mm : ss
Setting ranges	0:01 to 99:59 hours / 0:01 to 99:59 minutes
Time functions	ON delay, OFF delay, Interval ON, Interval OFF, impulse generator starting with break, impulse generator starting with impulse
Behavior in case of voltage failure	Time retentivity (settable)
Number of changeover contacts	2
Switching capacity	max. 250 V AC, 5 A
Service life	> 100,000 switching cycles
Insulation voltage	Input / output / supply: 2 kV
Electrical isolation	All inputs, outputs and supply voltage
IP rating front / rear	IP54 / IP20
Housing front/panel cutout dimensions	72 x 72 mm / 68 x 68 mm
Operating temperature range	-25 ... +60°C
Conformity	EN 61812-1:2012
Approvals	CE





Measuring & control

precise and safe

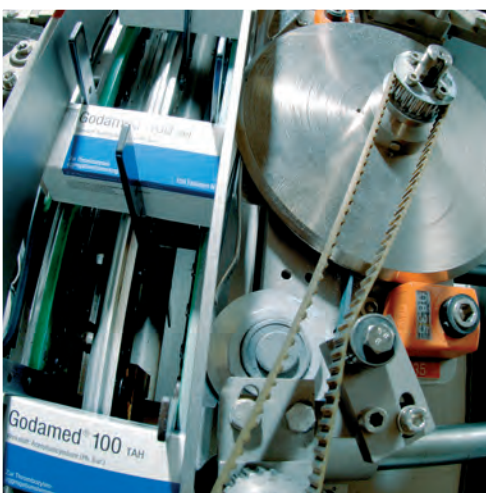
Always live

Electronic measuring and monitoring relays for measuring input values such as current, voltage, 3-phases, cos phi, temperature. They carry out both simple and complex monitoring in machines and systems.



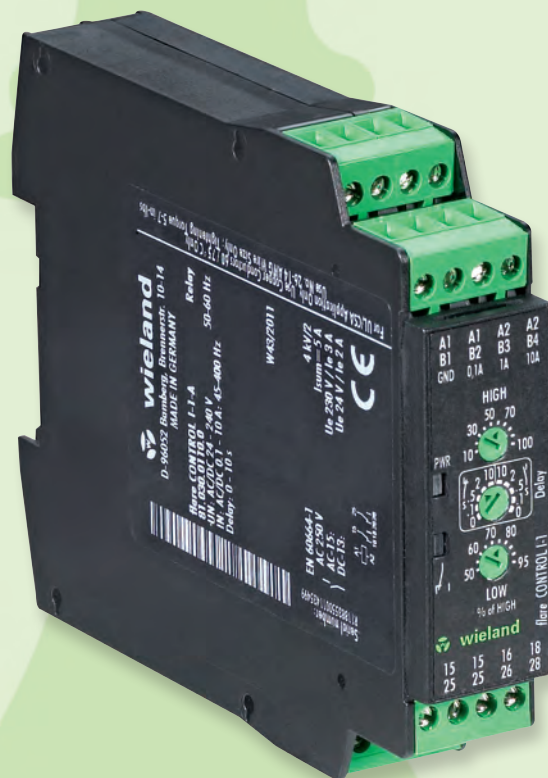
Features:

- The optimum device for every monitoring task
- Voltage, current, phase sequence, phase error, temperature or cos phi
- Broad temperature range
- Gold-plated switching contacts for maximum operational reliability



Benefits

- Upper and lower threshold separately adjustable
- 3 measuring ranges (single phase)
- Closed circuit or operating circuit principle
- Time delay 0 ... 10 s adjustable
- Wide input voltage range 20.4 ... 264 V AC/DC
- Width 22.5 mm
- Pluggable screw clamps
- Wide temperature range



Multi-functional measuring relay

economical & flexible

Measuring relays **flare** CONTROL

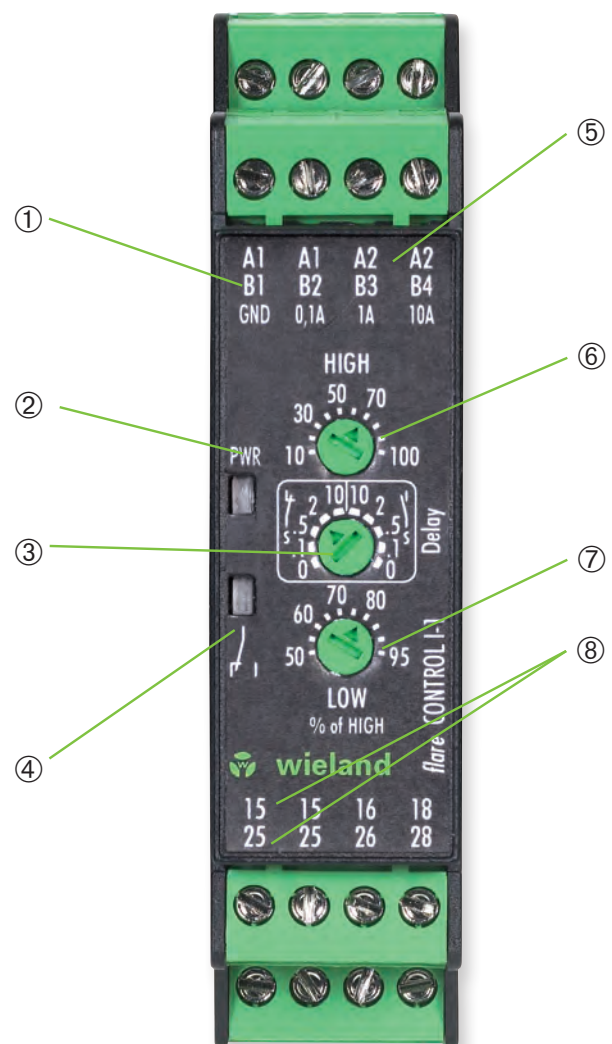
The product family **flare** CONTROL convinces by the universal use in industrial automation.

All functions required for measuring relays are combined in one device. Only one type for current and voltage measurement is necessary.

This simplifies engineering and reduces stock.

Features:

- ① 3 measuring ranges in one device
- ② Power LED
- ③ Adjustable for closed circuit or operating circuit principle
In additional also time delay for exceeding the threshold
- ④ LED for exceedance of the threshold value
- ⑤ One terminal for supply voltage
- ⑥ Upper threshold in percent of measuring range
- ⑦ Lower threshold in percent of upper threshold
- ⑧ 2 changeover contacts simultaneously switching, one changeover contact output per terminal



Measuring relay

flare CONTROL U-1-A | UL-1-A

- Multi-function measuring relay
- Upper and lower threshold separately adjustable
- 3 measurement ranges (single phase)
- Signal shape DC and sinus
- Closed circuit or operating circuit principle
- Response delay at threshold exceedance/ undercut adjustable
- Wide input voltage range 20.4 ... 264 V AC/DC
- Width 22.5 mm
- Pluggable screw clamps
- Wide temperature range
- 2 change-over contacts 5 A



Type	Part No.
Threshold exceedance	
flare CONTROL U-1-A	81.030.0100.0
Threshold undercut	
flare CONTROL UL-1-A	81.030.0101.0
Technical data	
Measuring ranges	5 / 50 / 300 V
Upper threshold U-1-A UL-1-A	10...100 % of measuring range
Lower threshold U-1-A	50 ... 95 % of upper threshold
Lower threshold UL-1-A	10...100 % of measuring range
Signal shape	DC and sinus
Nominal frequency of measured signal at AC	45 ... 400 Hz
Nominal power	app. 2 W / 4 VA
Supply voltage range	20.4 ... 264 V AC/DC
Galvanic isolation toward supply	Yes
Functions	Closed circuit or operating circuit principle
Time delay adjustable	0 / 0.1 / 0.5 / 2 / 10 s
Number of change-over contacts	2 (simultaneously switching)
Maximum switching current	5 A
Mechanical life time	20 x 10 ⁶
Electrical life time AC1	0.1 x 10 ⁶
Isolation voltage of input/output	2 kV
Connection clamps	Pluggable screw clamp
Wire range fine-stranded/solid	0.2 - 2.5 mm ² (AWG 24 - 14)
Degree of protection / mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 96.5 x 114
Operation temperature range	-25 ... +55 °C
Approvals U-1-A UL-1-A	CE CE

flare CONTROL I-1-A | IL-1-A

- Multi-function measuring relay
- Upper and lower threshold separately adjustable
- 3 measuring ranges (single phase)
- Signal shape DC and sinus
- Closed circuit or operating circuit principle
- Response delay at threshold exceedance/ undercut adjustable
- Wide input voltage range 20,4 ... 264 V AC/DC
- Width 22.5 mm
- Pluggable screw clamps
- Wide temperature range
- 2 change-over contacts 5 A



Type	Part No.
Threshold exceedance	
flare CONTROL I-1-A	81.030.0110.0
Threshold undercut	
flare CONTROL IL-1-A	81.030.0111.0
Technical data	
Measuring ranges	0,1 / 1 / 10 A
Upper threshold I-1-A IL-1-A	10...100 % of measuring range
Lower threshold I-1-A	50 ... 95 % of upper threshold
Lower threshold IL-1-A	10...100 % of measuring range
Signal shape	DC and sinus
Nominal frequency of measured signal at AC	45 ... 400 Hz
Nominal power	ca. 2 W / 4 VA
Supply voltage range	20.4 ... 264 V AC/DC
Galvanic isolation toward supply	Yes
Functions	Closed circuit or operating circuit principle
Time delay adjustable	0 / 0.1 / 0.5 / 2 / 10 s
Number of change-over contacts	2 (simultaneously switching)
Maximum switching current	5 A
Mechanical life time	20 x 10 ⁶
Electrical life time AC1	0.1 x 10 ⁶
Isolation voltage of input/output	2 kV
Connection clamps	Pluggable screw clamp
Wire range fine-stranded/solid	0.2 - 2.5 mm ² (AWG 24 - 14)
Degree of protection / mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 96.5 x 114
Operation temperature range	-25 ... +55 °C
Approvals I-1-A IL-1-A	CE CE

Monitoring relay

flare CONTROL P3-L

- 3 phase monitoring relay
- Detection for loss of one or more phases
- Detection of wrong phase sequence
- Closed circuit principle
- Width 22.5 mm
- 2 change-over contacts 5 A



Type	Part No.
flare CONTROL P3-L	81.030.0020.1
Technical data	
Supply voltage range	200 ... 480 V AC
Detection time	max. 0.1 s
Number of change-over contacts	2
Maximum switching current	5 A
Mechanical life time	10 x 10 ⁶
Electrical life time AC1	0.05 x 10 ⁶
Connection clamps	Screw clamp
Wire range fine-stranded/solid	0.14 - 4 mm ² (AWG 26-12)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 100 x 100
Operation temperature range	-20 ... +60°C
Approvals	CE

flare CONTROL P3-LTN

- 3 phase monitoring relay
- 3 or 4 wire monitoring
- Detection for loss of one or more phases
- Detection of wrong phase sequence
- Adjustable asymmetry trigger 3 wire
- Closed circuit principle
- Supports worldwide mains systems (adjustable)
- Width 22,5 mm
- 1 change-over contacts 5 A



Type	Part No.
flare CONTROL P3-LTN	81.030.0021.1
Technical data	
Supply voltage 3 phase / 3 wire	380, 400, 415, 480 V AC
Supply voltage 3 phase / 4 wire	220, 230, 240, 277 V AC
Detection range for asymmetry	2 ... 22 %
Detection time at asymmetry	0.1 ... 30 s
Number of change-over contacts	1
Maximum switching current	5 A
Mechanical life time	10 x 10 ⁶
Electrical life time AC1	0.05 x 10 ⁶
Connection clamps	Screw clamp
Wire range fine-stranded/solid	0.14 - 4 mm ² (AWG 26-12)
Degree of protection / Mounting rail	IP 20 / TS 35 (EN60715)
Dimensions (mm) W x H x D	22.5 x 100 x 100
Operation temperature range	-20 ... +60 °C
Approvals	CE





wietap Overvoltage protection

Important information on overvoltage

The necessity of overvoltage protection on machines and systems as well as for building technology is ever increasing. The potential danger of damage and even complete destruction posed to valuable electronic components or even complete production systems, computer systems or communication systems by sudden overvoltage from the grid, or direct lightning strikes has mobilized not just insurance companies. Well-advised users also know the importance of protecting their electrical devices, plants and systems both sufficiently and reliably against this danger, and the overall advantage of increasing their system availability.



Overvoltage protection modules

Overvoltage protection modules come in three type categories which designate their capacity to absorb overvoltage energy. Type 1 arresters can divert the largest amount of energy to ground (PE). The ideal installation location for these devices is at the building's main supply. In this configuration the impulse energy is considerably weakened, if it moves downstream into the installation. In sub-panels and control cabinets, this surplus energy is reduced further by type 2 and 3 arresters, thus maintaining the survival of the protected devices.



Table 1

LEMP protection for buildings with electrical and electronic systems according to IEC 62305-4 (DIN EN 62305-4, DIN 0185-305-4)

Lightning protection zones

- | | |
|--------------------|--|
| LPZ 0 _A | At risk from direct lightning strikes, impulse currents up to the full lightning current and through the full lightning field. |
| LPZ 0 _B | Protected against direct lightning strike. At risk from impulse currents up to partial lightning currents and through the full lightning field. |
| LPZ 1 | Impulse currents further limited by current division and SPDs at the zone limits. In most cases, the lightning field is attenuated by shields. |
| LPZ 2 | Impulse currents further limited by current division and SPDs at the zone limits. In most cases, the lightning field is attenuated by local shields. |



Playing it safe with **overvoltage protection**

Very short response time and high discharge capacity

With its considerably expanded **wietap** product range, Wieland Electric offers comprehensive solutions for overvoltage protection in control cabinets and sub panels of machines and buildings, as well as for photovoltaic systems. The components, which are modular and DIN rail mountable, range from the ready-to-connect 3-phase combi-arrester **wietap V M** for the main distribution, to the overvoltage protection module **wietap G M** for sub panels, up to the overvoltage module **wietap R M** intended for the control cabinet or constructed into the equipment.

All components are designed for application temperatures from -40 to 80 °C and have a high discharge capacity. Devices are also available with a remote signaling contact.

Properties of wietap:

- Electrically coordinated product family
- Highest discharge capacity up to 100 kA
- No tripping of fuses thanks to follow current limitation
- Latching pluggable protection modules
- Vibration and shock tested acc. to EN 60068-2
- Visual function & defect display for every path
- Modules replaceable without tools
- Can also be used in front of vertical power meter



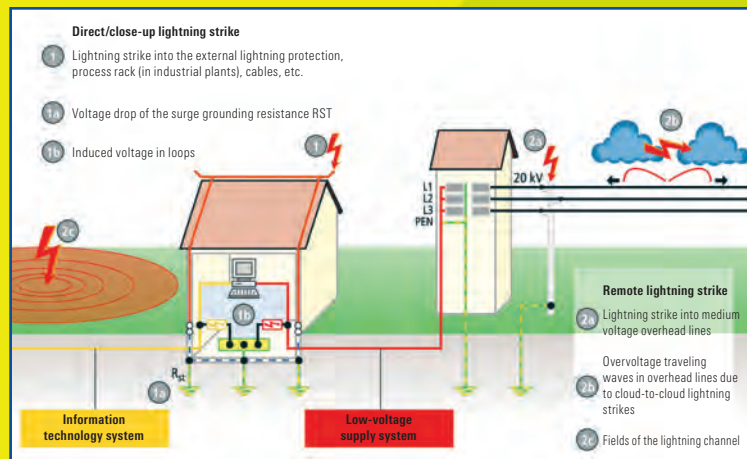
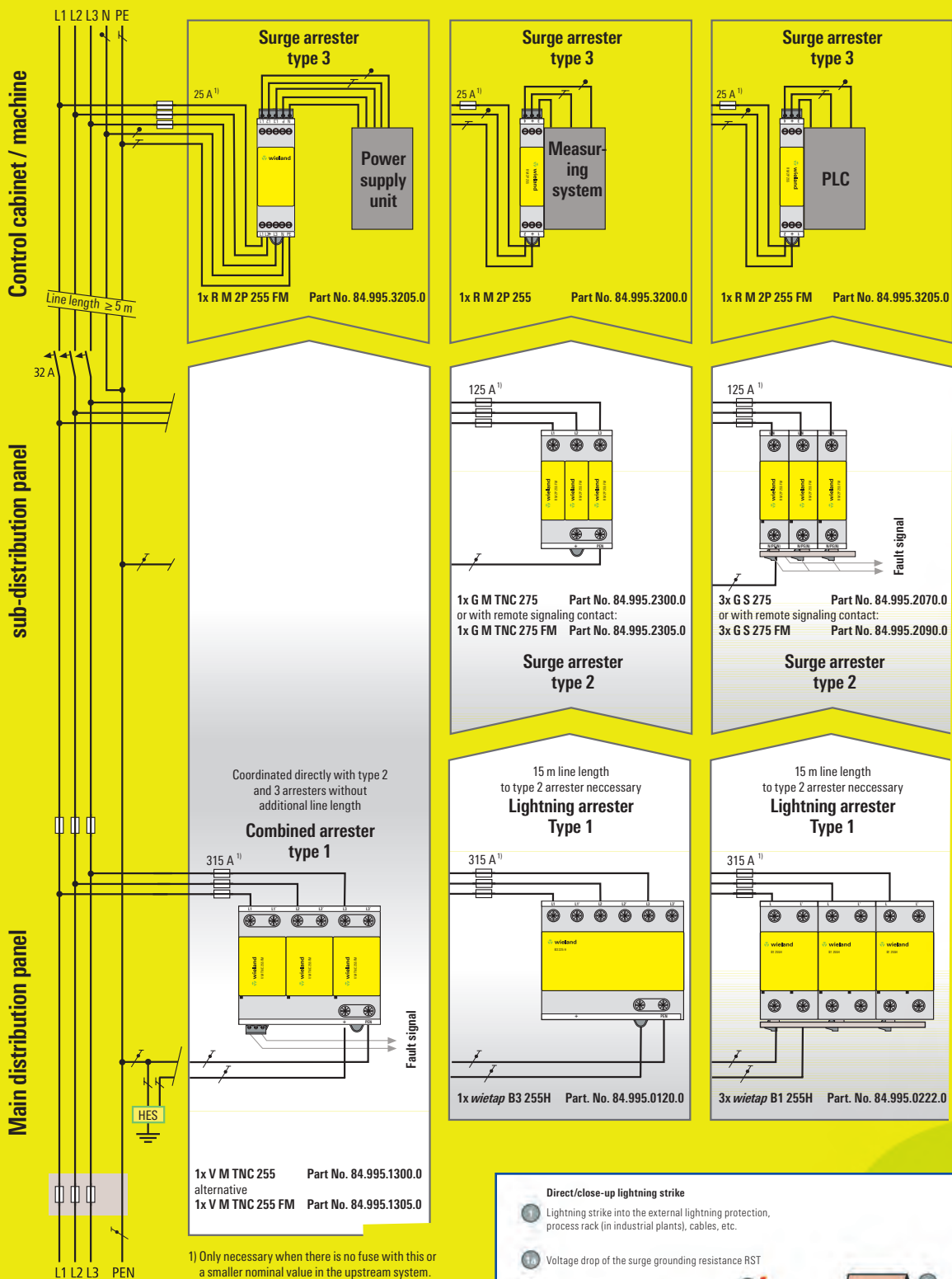


Figure 1

Overvoltage protection

The zone concept for lightning protection

The **zone concept for lightning protection** enables planners, builders and owners to plan, implement and monitor protective measures. All relevant devices, plants and systems can thus be protected reliably at economically justifiable costs.

Direct or close-up lightning strikes are lightning strikes into the lightning protection system of a building, in close proximity to it, or into the electrically conductive systems implemented in the building (e.g. low-voltage supply, telecommunications, control lines). (Fig. 1)

Remote lightning strikes are lightning strikes that occur far away from the object to be protected as well as lightning strikes into the medium voltage overhead system or in close proximity to it, or lightning discharge from cloud to cloud (Fig. 1: cases 2a, 2b and 2c).

In addition to a lightning protection system in the building, additional measures for an overvoltage protection of electrical and electronic systems are required in order to **safeguard the continuous availability** of complex power engineering and IT systems even in the case of a direct lightning strike. It is important to consider all the causes for over-voltages.

The zone concept for **lightning protection** as described in IEC 62305-4 (DIN EN 62305-4, DIN 0185-305-4) applies accordingly (Fig. 3). It divides a building into different risk zones. The relevant protective measures can then be derived for each zone, especially the devices and components for lightning and overvoltage protection.

The zones for lightning protection are defined as described in Table 1.

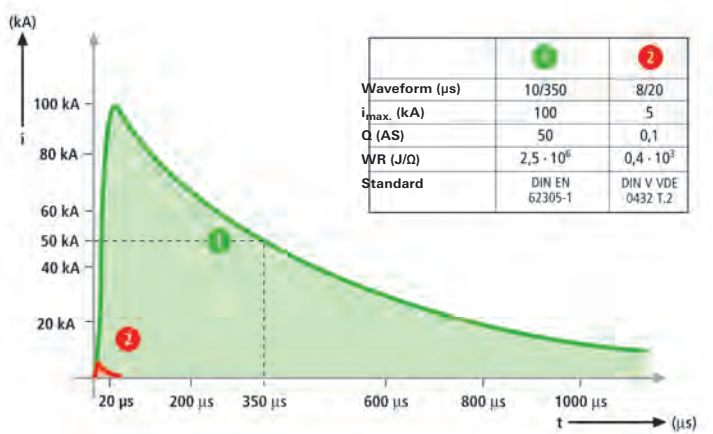


Figure 2: 1 Peak current for testing of lightning arresters
2 Peak current for testing of surge arresters

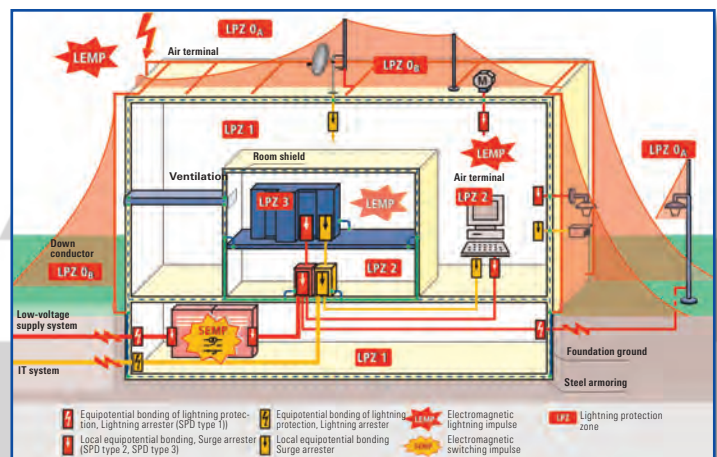


Figure 3: EMC-oriented zone concept for lightning protection

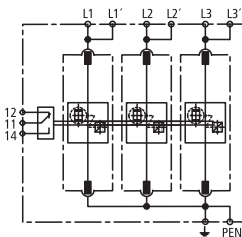


Three-phase combined arrester, type 1 (2, 3)

For protection of the building main supply

wietap V M TNC 255 (FM)

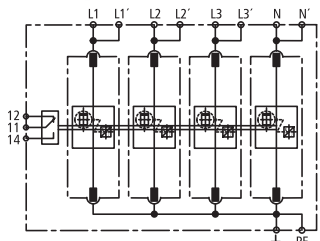
- Combined arrester, type 1
- For TN-C-systems
- With pluggable protection modules
- Max. system availability due to follow current limitation
- Switch-off selective for 20 A gL/gG fuses up to 50 kA_{eff} short-circuit current
- Discharge capacity up to 75 kA (10/350)
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap V M TNC 255	84.995.1300.0
wietap V M TNC 255 FM	84.995.1305.0
Replacement module L1, L2, L3 against \neq	84.995.1001.0
Power network	TN-C
SPD accord. to EN 61643-11 / IEC 61643-11	Type 1 + Typ 2 / Class I + Class II
Energy-coordinated protective function to the end device $\leq 5m$	Type 1 + Type 2 + Type 3
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [U _C]	255 V (50 / 60 Hz)
Lightn. impulse current (10/350) [L1+L2+L3-PEN] [I _{total}]	75 kA
Lightn. impulse current (10/350) [L-PEN] [I _{imp}]	25 kA
Nominal discharge current (8/20) [I _n]	25 / 75 kA
Protection level [U _p]	≤ 1.5 kV
Follow current extinguishing capability AC [I _{fr}]	50 kA _{eff}
Limitation of follow current / selectivity	Non-tripping of a 20 A gL/gG fuse up to 50 kA _{eff} (prosp.)
Operating time [t _a]	≤ 100 ns
Max. pre-fusing (L) up to I _k = 50 kA _{eff}	315 A gG
Max. pre-fusing (L) up to I _k = 100 kA _{eff}	315 A gL/gG
Max. pre-fusing (L-L)	125 A gG
TOV-voltage [U _T] – characteristic	440 V / 120 min. – withstand
Temperature range (Parallel wiring) [T _{up}]	-40 ... +80 °C
Temperature range (Through wiring) [T _{us}]	-40 ... +60 °C
Function/failure indication	green / red
Wire range (L1, L1', L2, L2', L3, L3', PEN, \neq) [min.]	10 mm ² (AWG 8) solid/fine-stranded
Wire range (L1, L2, L3, PEN) [max.]	50 mm ² (AWG 1) stranded/35 mm ² (AWG 2) fine-stranded
Wire range (L1', L2', L3', \neq) [max.]	35 mm ² (AWG 2) stranded/25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	6 TE, DIN 43880 (108 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded
Approvals	CE

wietap V M TNS 255 (FM)

- Combined arrester Type 1
- For TN-S-systems
- With pluggable protection modules
- Max. system availability due to follow current limitation
- Switch-off selective for 20 A gL/gG fuses up to 50 kA_{eff} short-circuit current
- Discharge capacity up to 100 kA (10/350)
- Function/failure indication according to VDE 0100-534 (valid since March 2009)
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



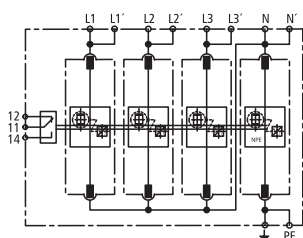
Type	Part No.
wietap V M TNS 255	84.995.1400.0
wietap V M TNS 255 FM	84.995.1405.0
Replacement module L1, L2, L3, N against \neq	84.995.1001.0
Power network	TN-S
SPD accord. to EN 61643-11 / IEC 61643-11	Type 1 + Typ 2 / Class I + Class II
Energy-coordinated protective function to the end device $\leq 5m$	Type 1 + Type 2 + Type 3
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [U _C]	264 V (50 / 60 Hz)
Lightn. impulse current (10/350) [L1+L2+L3-PEN] [I _{total}]	100 kA
Lightn. impulse current (10/350) [L, N-PE] [I _{imp}]	25 kA
Nominal discharge current (8/20) [I _n]	25 / 100 kA
Protection level [L, N-PE] [U _p]	≤ 1.5 kV
Follow current extinguishing capability AC [I _{fr}]	50 kA _{eff} / 50 kA _{eff}
Limitation of follow current / selectivity	Non-tripping of a 20 A gL/gG fuse up to 50 kA _{eff} (prosp.)
Operating time [t _a]	≤ 100 ns
Max. pre-fusing (L) up to I _k = 50 kA _{eff}	315 A gL/gG
Max. pre-fusing (L) up to I _k = 100 kA _{eff}	315 A gL/gG
Max. pre-fusing (L-L)	125 A gL/gG
TOV-voltage [L-N] [U _T] – characteristic	440 V / 120 min. – withstand
Temperature range (Parallel wiring) [T _{up}]	-40 ... +80 °C
Temperature range (Through wiring) [T _{us}]	-40 ... +60 °C
Function/failure indication	green / red
Wire range (L1, L1', L2, L2', L3, L3', N, N', PE, \neq) [min.]	10 mm ² (AWG 8) solid/fine-stranded
Wire range (L1, L2, L3, PE, N) [max.]	50 mm ² (AWG 1) stranded/35 mm ² (AWG 2) fine-stranded
Wire range (L1', L2', L3', N', \neq) [max.]	35 mm ² (AWG 2) stranded/25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	8 TE, DIN 43880 (144 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded
Approvals	CE

Three-phase combined arrester, type 1 (2, 3)

For protection of the building main supply

wietap V M TT 255 (FM)

- Combined arrester Type 1
- For TT- and TN-S-systems ("3+1" circuits)
- With pluggable protection modules
- Max. system availability due to follow current limitation
- Switch-off selective for 20 A gL/gG fuses up to 50 kA_{eff} short-circuit current
- Discharge capacity up to 100 kA (10/350)
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap V M TT 255	84.995.1310.0
wietap V M TT 255 FM	84.995.1315.0
Replacement module L1, L2, L3 against N	84.995.1001.0
Replacement module N against PE	84.995.1100.0
Power network	TT and TN-S
SPD according to EN 61643-11 / IEC 61643-11	Type 1 + Type 2 / Class I + Class II
Energy-coordinated protective function to the end device $\leq 5m$	Type 1 + Type 2 + Type 3
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [L-N] [U _C]	264 V (50 / 60 Hz)
Maximum continuous voltage AC [N-PE] [U _C (N-PE)]	255 V (50 / 60 Hz)
Lightn. impulse current (10/350) [L1+L2+L3 +N-PE] [I _{total}]	100 kA
Lightn. impulse current (10/350) [L-N] [I _{imp}]	25 kA
Lightn. impulse current (10/350) [N-PE] [I _{imp}]	100 kA
Nominal discharge current (8/20) [I _n]	25 / 100 kA
Protection level [L-N, N-PE] [U _p]	≤ 1.5 kV
Follow current extinguishing capability [L-N]/[N-PE] AC [I _n]	50 kA _{eff} / 100 A _{eff}
Limitation of follow current / selectivity	Non-tripping of a 20 A gL/gG fuse up to 50 kA _{eff} (prosp.)
Operating time [t _Δ]	≤ 100 ns
Max. pre-fusing (L) up to I _k = 50 kA _{eff}	315 A gG
Max. pre-fusing (L) up to I _k = 100 kA _{eff}	315 A gL/gG
Max. pre-fusing (L-L')	125 A gL/gG
TOV-voltage [L-N] [U _T] – characteristic	440 V / 120 min. – withstand
TOV-voltage [N-PE] [U _T] – characteristic	1200 V / 200 ms – withstand
Temperature range (Parallel wiring) [T _{up}]	-40 ... +80 °C
Temperature range (Through wiring) [T _{us}]	-40 ... +60 °C
Function/failure indication	green / red
Wire range (L1, L1', L2, L2', L3, L3', N, N', PE, PE) [min.]	10 mm ² (AWG 8) solid/fine-stranded
Wire range (L1, L2, L3, N, PE) [max.]	50 mm ² (AWG 1) stranded/35 mm ² (AWG 2) fine-stranded
Wire range (L1', L2', L3', N, PE) [max.]	35 mm ² (AWG 2) stranded/25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	8 TE, DIN 43880 (144 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded
Approvals	CE

Replacement module for wietap VM devices

wietap V MOD 255

Network spark gap protection module for all L – PE ; L – N and for wietap V M TNS 255 (FM) N – PE



wietap V MOD NPE 100

Network spark gap protection module for wietap V M TT 255 (FM) N – PE



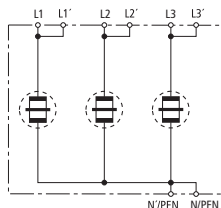
Type	Part No.
wietap V MOD 255	84.995.1001.0
wietap V MOD NPE 100	84.995.1100.0

3-phase lightning arrester, type 1

For protection of the building main supply

wietap B3 255H

- Lightning arrester, type 1
- For all systems (in connection with **wietap** GPM 255 if required)
- High limitation of follow current
- 50 kA discharge capacity per pole
- High insulation resistance; can therefore also be placed in front of the meter
- Double terminals for V connection



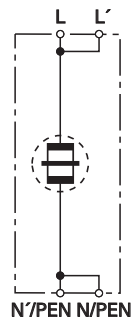
Type	Part No.
wietap B3 255H	84.995.0120.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 1 / Class I
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	255 V (50 / 60 Hz)
Lightn. impulse current (10/350) [L-N/PEN] [I _{imp}]	50 kA
Lightn. impulse current (10/350) [L1+L2+L3-N/PEN] [I _{total}]	100 kA
Protection level [U _p]	≤ 4 kV
Follow current extinguishing capability AC [I _r]	50 kA _{eff}
Limitation of follow current / selectivity	Non-tripping of a 35 A gL/gG fuse up to 50 kA _{eff} (prosp.)
Operating time [t _A]	≤ 100 ns
Max. pre-fusing bis IK = 50 kA _{eff} (t _a ≤ 0,2 s)	500 A gG
Max. pre-fusing bis IK = 50 kA _{eff} (t _a ≤ 5 s)	315 A gG
Max. pre-fusing bei IK > 50 kA _{eff}	200 A gG
Max. pre-fusing (L-L')	125 A gG
TOV-voltage [U _T] – characteristic	440 V / 120 min. – withstand
Temperature range (Parallel wiring) [T _{UP}]	-40 ... +80 °C
Temperature range (Through wiring) [T _{US}]	-40 ... +60 °C
Wire range (L1, L1', L2, L2', L3, L3', N/PEN, N'/PEN)	10 mm ² (AWG 8) solid/fine-stranded
Wire range (L1, L2, L3, N/PEN)	50 mm ² (AWG 1) stranded / 35 mm ² (AWG 2) fine-stranded
Wire range (L1', L2', L3', N'/PEN)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	6 TE, DIN 43880 (108 mm)
Approvals	CE

1-phase lightning arrester, type 1

For the protection of the building main supply

wietap B1 255H

- Lightning arrester, type 1
- For all systems (in connection with **wietap** GPM 255 if required)
- High limitation of follow current
- 50 kA discharge capacity per pole
- High insulation resistance; can therefore also be placed in front of the meter
- Double terminals for V connection



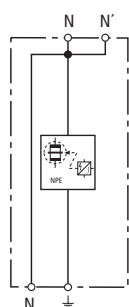
Type	Part No.
wietap B1 255H	84.995.0222.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 1 / Class I
Nominal voltage ac [U _N]	230 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	255 V (50 / 60 Hz)
Lightn. impulse current (10/350) [I _{imp}]	50 kA
Protection level [U _p]	≤ 4 kV
Follow current extinguishing capability AC [I _r]	50 kA _{eff}
Limitation of follow current / selectivity	Non-tripping of a 35 A gL/gG fuse up to 50 kA _{eff} (prosp.)
Operating time [t _A]	≤ 100 ns
Max. pre-fusing bis IK = 50 kA _{eff} (t _a ≤ 0,2 s)	500 A gG
Max. pre-fusing bis IK = 50 kA _{eff} (t _a ≤ 5 s)	315 A gG
Max. pre-fusing bei IK > 50 kA _{eff}	200 A gG
Max. pre-fusing (L-L')	125 A gG
TOV-voltage [U _T] – characteristic	440 V / 120 min. – withstand
Temperature range (Parallel wiring) [T _{UP}]	-40 ... +80 °C
Temperature range (Through wiring) [T _{US}]	-40 ... +60 °C
Wire range (L, L', N/PEN, N'/PEN) [min.]	10 mm ² (AWG 8) solid/fine-stranded
Wire range (L, N/PEN) [max.]	50 mm ² (AWG 1) stranded / 35 mm ² (AWG 2) fine-stranded
Wire range (L', N'/PEN) [max.]	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	2 TE, DIN 43880 (36 mm)
Approvals	CE

N-PE lightning arrester, type 1

For protection of the building main supply

wietap GPM 255

- N-PE lightning arrester, type 1
- In combination with **wietap** B1 255H or **wietap** B3 255H
- 100 kA discharge capacity



Type	Part No.
wietap GPM 255	84.995.0055.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 1 / Class I
Maximum continuous voltage AC [U _c]	255 V
Lightn. impulse current (10/350) [I _{imp}]	100 kA
Protection level [U _p]	≤ 1.5 kV
Follow current extinguishing capability AC [I _{ri}]	100 Aeff
Operating time [t _a]	≤ 100 ns
TOV-voltage – characteristic	1200 V / 200 ms – withstand
Temperature range (Parallel wiring) [T _{UP}]	-40 ... +80 °C
Temperature range (Through wiring) [T _{US}]	-40 ... +60 °C
Function/failure indication	green / red
Wire range (min.)	10 mm ² (AWG 8) solid/fine-stranded
Wire range (max.)	50 mm ² (AWG 1) stranded / 35 mm ² (AWG 2) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	2 TE, DIN 43880 (36 mm)
Approvals	CE

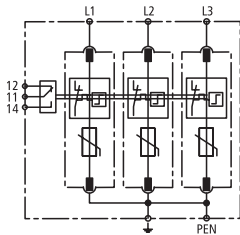


Three-phase combined arrester, type 2

For protection of sub-distributions or the control cabinet main supply

wietap G M TNC 275 (FM)

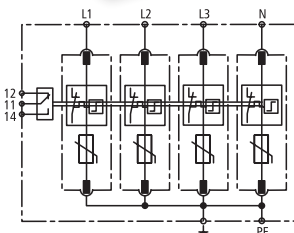
- Surge arrester, type 2
- For TN-C-systems
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap G M TNC 275	84.995.2300.0
wietap G M TNC 275 FM	84.995.2305.0
Replacement module L1, L2, L3 against \oplus	84.995.2010.0
Power network	TN-C
SPD accord. to EN 61643-11 / IEC 61643-11	Type 2 / Class II
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [U _C]	275 V (50 / 60 Hz)
Nominal discharge current (8/20) [I _n]	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA
Protection level [U _P]	≤ 1.5 kV
Protection level at 5 kA [U _P]	≤ 1 kV
Operating time [t _a]	≤ 25 ns
Maximum network overcurrent protection	125 A gG
Short-circuit proof with max. network overcurrent protection	50 kA _{eff}
TOV-voltage [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [U _T] – characteristic	440 V / 120 min. – safe failure
Temperature range [T _U]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	3 TE, DIN 43880 (54 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

wietap G M TNS 275 (FM)

- Surge arrester, type 2
- For TN-S-systems
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



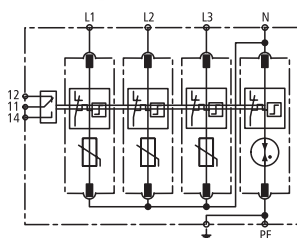
Type	Part No.
wietap G M TNS 275	84.995.2400.0
wietap G M TNS 275 FM	84.995.2405.0
Replacement module L1, L2, L3, N against \oplus	84.995.2010.0
Power network	TN-S
SPD accord. to EN 61643-11 / IEC 61643-11	Type 2 / Class II
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [U _C]	275 V (50 / 60 Hz)
Nominal discharge current (8/20) [I _n]	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA
Protection level [U _P]	≤ 1.5 kV
Protection level at 5 kA [U _P]	≤ 1 kV
Operating time [t _a]	≤ 25 ns
Maximum network overcurrent protection	125 A gG
Short-circuit proof with max. network overcurrent protection	50 kA _{eff}
TOV-voltage [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [U _T] – characteristic	440 V / 120 min. – safe failure
Temperature range [T _U]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	4 TE, DIN 43880 (72 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

Three-phase combined arrester, type 2

For protection of sub-distributions or the control cabinet main supply

wietap G M TT 275 (FM)

- Surge arrester, type 2
- For TT- and TN-S-systems ("3+1" circuits)
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap G M TT 275	84.995.2310.0
wietap G M TT 275 FM	84.995.2315.0
Replacement module L1, L2, L3 against N	84.995.2010.0
Replacement module N against PE	84.995.2050.0
Power network	TT and TN-S (Variante „3+1“)
SPD accord. to EN 61643-11 / IEC 61643-11	Type 2 / Class II
Nominal voltage AC [U _N]	230 / 400 V (50 / 60 Hz)
Maximum continuous voltage AC [L-N] [U _C]	275 V (50 / 60 Hz)
Maximum continuous voltage AC [N-PE] [U _C]	255 V (50 / 60 Hz)
Nominal discharge current (8/20) [I _n]	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA
Lightn. impulse current (10/350) [N-PE] [I _{imp}]	12 kA
Protection level [L-N] [U _p]	≤ 1.5 kV
Protection level [L-N] at 5 kA [U _p]	≤ 1 kV
Protection level [N-PE] [U _p]	≤ 1.5 kV
Follow current extinguishing capability [N-PE] [I _{fr}]	100 A _{eff}
Operating time [L-N] [t _A]	≤ 25 ns
Operating time [N-PE] [t _A]	≤ 100 ns
Maximum network overcurrent protection	125 A gG
Short-circuit proof with network overcurrent protection with 25 A gL/gG	50 kA _{eff}
TOV-voltage [L-N] [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [L-N] [U _T] – characteristic	440 V / 120 min. – safe failure
TOV-voltage [N-PE] [U _T] – characteristic	1200 V / 200 ms – withstand
Temperature range [T _U]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	4 TE, DIN 43880 (72 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

Replacement module for wietap G M devices

wietap G MOD 275

Varistor protection module for all L – PE; L – N and for wietap G M TNS 275 (FM) N – PE



wietap G MOD NPE

Spark gap protection module for N – PE and for wietap G M TT 275 (FM) N – PE



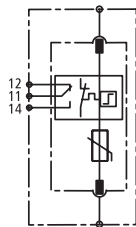
Type	Part No.
wietap G MOD 275	84.995.2010.0
wietap G MOD NPE	84.995.2050.0

Single-phase surge arrester, type 2

For protection of sub-distributions or the control cabinet main supply

wietap G S 275 (FM)

- Surge arrester, type 2
- All-purpose surge arrester
- With pluggable protection modules
- High discharge capacity due to powerful zinc oxid varistor
- High reliability due to arrester monitoring
- Slim design (modular construction) acc. to DIN 43880
- Multi-function connection for conductors and comb rails
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap G S 275	84.995.2070.0
wietap G S 275 FM	84.995.2090.0
Power network	universal
SPD accord. to EN 61643-11 / IEC 61643-11	Type 2 / Class II
Nominal voltage AC [U _N]	230 V (50 / 60 Hz)
Maximum continuous voltage AC [U _C]	275 V (50 / 60 Hz)
Maximum continuous voltage DC [U _C]	350 V
Nominal discharge current (8/20) [I _n]	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA
Protection level [U _P]	≤ 1.5 kV
Protection level at 5 kA [U _P]	≤ 1 kV
Operating time [t _a]	≤ 25 ns
Maximum network overcurrent protection	125 A gG
Short-circuit proof with max. network overcurrent protection	50 kA _{eff}
TOV-voltage [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [U _T] – characteristic	440 V / 120 min. – safe failure
Temperature range [T _U]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	1 TE, DIN 43880 (18 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0,5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

wietap G MOD 275

- Replacement module for wietap G S 275 (FM)



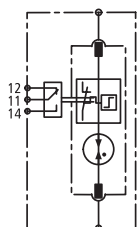
Type	Part No.
wietap G MOD 275	84.995.2010.0

Single-phase surge arrester, type 2

For protection of sub-distributions or the control cabinet main supply

wietap GP C S (FM)

- Surge arrester, type 2
- For use in TT systems in "3+1" and "1+1" circuits acc. to E DIN VDE 0100-534 between neutral conductor N and protective conductor PE
- High discharge capacity
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap GP C S	84.995.2030.0
wietap GP C S FM	84.995.2035.0
Power network	TT
SPD accord. to EN 61643-11 / IEC 61643-11	Type 2 / Class II
Maximum continuous voltage AC [U _c]	255 V (50 / 60 Hz)
Nominal discharge current (8/20) [I _n]	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA
Follow current extinguishing capability [I _{fr}]	100 A _{eff}
Lightn. impulse current (10/350) [I _{imp}]	12 kA
Protection level [U _p]	≤ 1.5 kV
Operating time [t _a]	≤ 100 ns
TOV-voltage [U _T] – characteristic	1200 V / 200 ms – withstand
Temperature range [T _u]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	1 TE, DIN 43880 (18 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC(FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

wietap GP C MOD

- Replacement module for wietap G CS (FM)



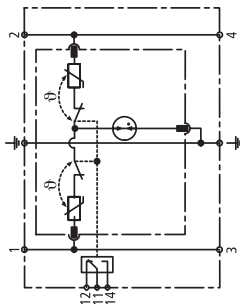
Type	Part No.
wietap GP C MOD	84.995.2060.0

Surge arrester, type 3

For direct load protection in control cabinets or sub-distributions

wietap R M 2P 30 FM wietap R M 2P 255 (FM)

- Surge arrester, type 3
- Two-pole surge arrester
- High discharge capacity due to powerful zinc oxide varistor
- Slim design (modular construction) acc. to DIN 43880
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



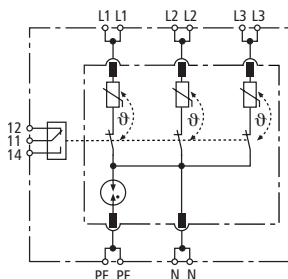
Type	Part No.	Part No.
wietap R M 2P 30 FM		84.995.3206.0
wietap R M 2P 255	84.995.3200.0	
wietap R M 2P 255 FM	84.995.3205.0	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 3 / Class III	Type 3 / Class III
Nominal voltage AC [U _N]	230 V (50/60 Hz)	24 V (50/60 Hz)
Maximum continuous voltage AC [U _C]	255 V (50/60 Hz)	30 V (50/60 Hz)
Maximum continuous voltage DC [U _C]	255 V	30 V
Nominal load current AC [I _N]	25 A	25 A
Nominal discharge current (8/20) [I _n]	3 kA	1 kA
Total discharge current (8/20) [L+N-PE] [I _{total}]	5 kA	2 kA
Combined surge [U _{OC}]	6 kV	2 kV
Combined surge [L+N-PE] [U _{OC total}]	10 kV	4 kV
Protection level [L-N] [U _P]	≤ 1250 V	≤ 180 V
Protection level [L/N-PE] [U _P]	≤ 1500 V	≤ 630 V
Operating time [L-N] [t _d]	≤ 25 ns	≤ 25 ns
Operating time [L/N-PE] [t _d]	≤ 100 ns	≤ 100 ns
Maximum network overcurrent protection	25 A gL/gG oder B 25 A	25 A gL/gG or B 25 A
Short-circuit proof with network overcurrent protection with 25 A gL/gG	6 kA _{rms}	6 kA _{rms}
TOV-voltage		
[L-N] [U _T] – characteristic	335 V / 5 sec. – withstand	--
[L-N] [U _T] – characteristic	440 V / 120 min. – safe failure	--
[L/N-PE] (I) [U _T] – characteristic	335 V / 120 min. – withstand	--
[L/N-PE] (I) [U _T] – characteristic	440 V / 5 sec. – withstand	--
[L+N-PE] (II) [U _T] – characteristic	1200 V + U _{REF} / 200 ms – safe failure	--
Temperature range [T _U]	-40 ... +80 °C	
Function/failure indication	green / red	
Wire range min.	0.5 mm ² (AWG 20) solid/fine-stranded	
Wire range max.	4 mm ² (AWG 12) solid / 2.5 mm ² (AWG 14) fine-stranded	
Mounted on DIN rail acc. to EN 60715	35 mm	
Housing material	Thermoplast, UL 94 V-0	
Degree of protection	IP 20	
Dimensions	1 TE, DIN 43880 (18 mm)	
Remote signaling contacts = Contact Type	Change-over contact	
Switching capacity AC (FM)	250 V/0.5 A	
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A	
Wire range for Remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded	
Approvals	CE	

Surge arrester, type 3

For direct load protection in control cabinets or sub-distributions

wietap R M 4P 255 (FM)

- Surge arrester, type 3
- Four-pole surge arrester
- High discharge capacity due to powerful zinc oxide varistor
- Slim design (modular construction) acc. to DIN 43880
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Optional with remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap R M 4P 255	84.995.3400.0
wietap R M 4P 255 FM	84.995.3405.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 3 / Class III
Nominal voltage AC [U _N]	230 / 400 V (50/60 Hz)
Maximum continuous voltage AC [U _c]	255 / 440 V (50/60 Hz)
Nominal load current AC [I _L]	25 A
Nominal discharge current (8/20) [I _n]	3 kA
Total discharge current (8/20) [L+N-PE] [I _{total}]	8 kA
Combined surge [U _{oc}]	6 kV
Combined surge [L+N-PE] [U _{oc total}]	16 kV
Protection level [L-N] [U _p]	≤ 1000 V
Protection level [L/N-PE] [U _p]	≤ 1500 V
Operating time [L-N] [t _A]	≤ 25 ns
Operating time [L/N-PE] [t _A]	≤ 100 ns
Maximum network overcurrent protection	25 A gL/gG oder B 25 A
Short-circuit proof with network overcurrent protection with 25 A gL/gG	6 kA _{eff}
TOV-voltage [L-N] [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [L-N] [U _T] – characteristic	440 V / 120 min. – safe failure
TOV-voltage [L/N-PE] (I) [U _T] – characteristic	335 V / 120 min. – withstand
TOV-voltage [L/N-PE] (II) [U _T] – characteristic	440 V / 5 sec. – withstand
TOV-voltage [N-PE] (III) [U _T] – characteristic	1200 V / 200 ms – safe failure
Temperature range [T _U]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	0.5 mm ² (AWG 20) solid/fine-stranded
Wire range (max.)	4 mm ² (AWG 12) solid / 2.5 mm ² (AWG 14) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housingwerkstoff	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	2 TE, DIN 43880 (36 mm)
Remote signaling contacts = Contact Type	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded
Approvals	CE

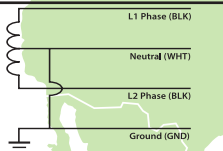
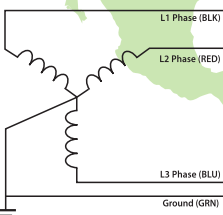
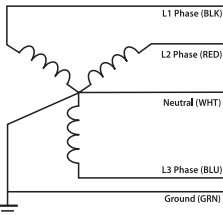
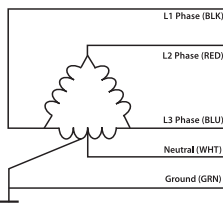
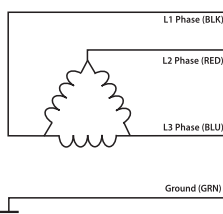
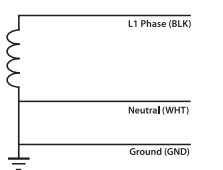
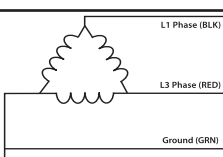
wietap R M MOD 4P 255

- Replacement module for wietap R M 4P 255



Type	Part No.
wietap R M MOD 4P 255	84.995.3020.0

Solutions for Category B for the different mains systems:
Selection Matrix

Circuit	Circuit Voltage Configuration	Used Types	Connected between
	120/240V Split Phase 1Ø 3W + Grnd	wietap G S 150 FM UL wietap G S 150 FM UL	L1 Phase-Grnd L2 Phase-Grnd
	240/480V Split Phase 1Ø 3W + Grnd	wietap G S 320 FM UL wietap G S 320 FM UL	L1 Phase-Grnd L2 Phase-Grnd
	127/254V Split Phase 1Ø 3W + Grnd	wietap G S 150 FM UL wietap G S 150 FM UL	L1 Phase-Grnd L2 Phase-Grnd
	120/208V Wye 3Ø 3W + Grnd	wietap G S 150 FM UL wietap G S 150 FM UL wietap G S 150 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd
	277/480V Wye 3Ø 3W + Grnd	wietap G S 320 FM UL wietap G S 320 FM UL wietap G S 320 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd
	347/600V Wye 3Ø 3W + Grnd	wietap G S 440 FM UL wietap G S 440 FM UL wietap G S 440 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd
	120/208V Wye 3Ø 4W + Grnd	wietap G S 150 FM UL wietap G S 150 FM UL wietap G S 150 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd Neutral-Grnd
	277/480V Wye 3Ø 4W + Grnd	wietap G S 320 FM UL wietap G S 320 FM UL wietap G S 320 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd Neutral-Grnd
	347/600V Wye 3Ø 4W + Grnd	wietap G S 440 FM UL wietap G S 440 FM UL wietap G S 440 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd Neutral-Grnd
	127/220V Wye 3Ø 4W + Grnd	wietap G S 150 FM UL wietap G S 150 FM UL wietap G S 150 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd Neutral-Grnd
	120/240V High Leg Delta - B High	wietap G S 150 FM UL wietap G S 150 FM UL wietap G S 150 FM UL wietap G S 275 FM UL	L1 Phase-Neutral L3 Phase-Neutral Neutral-Grnd L2 Phase-Neutral
	240/480V High Leg Delta - B High	wietap G S 320 FM UL wietap G S 320 FM UL wietap G S 320 FM UL wietap G S 600 FM UL	L1 Phase-Neutral L3 Phase-Neutral Neutral-Grnd L2 Phase-Neutral
	480V Delta 3Ø 3W + Grnd & HRG Wye	wietap G S 600 FM UL wietap G S 600 FM UL wietap G S 600 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd
	240V Delta 3Ø 3W + Grnd	wietap G S 320 FM UL wietap G S 320 FM UL wietap G S 320 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd
	600V Delta 3Ø 3W + Grnd & HRG	wietap G S WE 600 FM UL wietap G S WE 600 FM UL wietap G S WE 600 FM UL	L1 Phase-Grnd L2 Phase-Grnd L3 Phase-Grnd
	120V Single Phase	wietap G S 150 FM UL	L1 Phase-Neutral
	240V Single Phase	wietap G S 320 FM UL	L1 Phase-Neutral
	127V Single Phase	wietap G S 150 FM UL	L1 Phase-Neutral
	254V Single Phase	wietap G S 320 FM UL	L1 Phase-Neutral
	347V Single Phase	wietap G S 440 FM UL	L1 Phase-Neutral
	277V Single Phase	wietap G S 320 FM UL	L1 Phase-Neutral
	480V Single Phase	wietap G S 600 FM UL	L1 Phase-Neutral
600V Single Phase	wietap G S WE 600 FM UL	L1 Phase-Neutral	
	480V B Corner Grnd Delta 3Ø 3W + Grnd	wietap G S 600 FM UL wietap G S 600 FM UL	L1 Phase-Grnd L3 Phase-Grnd
	240V B Corner Grnd Delta 3Ø 3W + Grnd	wietap G S 320 FM UL wietap G S 320 FM UL	L1 Phase-Grnd L3 Phase-Grnd
	600V B Corner Grnd Delta 3Ø 3W + Grnd	wietap G S WE 600 FM UL wietap G S WE 600 FM UL	L1 Phase-Grnd L3 Phase-Grnd

Overvoltage Protection for **North and Central America**

For the North and Central American region OVP modules have to be used with UL or CSA approval. At the same time the voltage levels are different compared to Europe or the Asian region.

For this reason Wieland offers specialized OVP modules. The green marked countries have energy network systems according UL and CSA mains systems and voltage levels.

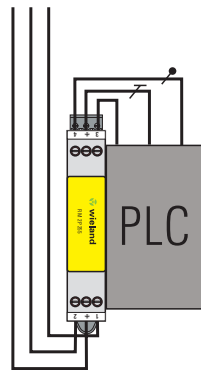
The overvoltage protection according IEEE is defined into 3 different areas:

- **Category C (Class I according IEC):** is mainly used at the feed in point of a building or production site. Mainly at outside termination
- **Category B (Class II according IEC):** this category is often used inside of buildings in main distribution panels or in switch board cabinets of machines
- **Category A (Class III according IEC):** is mainly used for the protection of single devices inside a switch board cabinet

Wieland is offering solutions for inside the building. This means for Category B and Category A.

At Category A applications the arrester is connected up front in series to the device.

The rated voltage of the OVP is selected according the nominal voltage of the device which is connected.



Category A

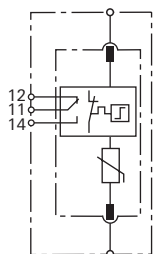


Single-phase surge arrester, category B & A

For protection of sub-distributions or the control cabinet main supply

wietap G S 150 FM UL wietap G S 275 FM UL

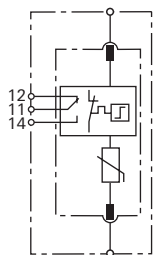
- Surge arrester, type 2, category B
- Multi-purpose surge arrester
- With plug-in protection module
- Thermo Dynamic Control SPD monitoring device
- Small housing
- Operating state/fault indication by indicator flag in window
- With signaling contact (FM)
- Vibration and shock tested according EN 60068-2



Type	Part No.	Part No.
wietap G S 150 FM UL	84.995.2092.1	
wietap G S 275 FM UL		84.995.2090.1
SPD accord. to EN 61643-11/IEC 61643-11	Type 2 / Cat. B / Class II	Type 2 / Cat. B / Class II
Rated voltage AC [U _n]	120 V (50 / 60 Hz)	230 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	150 V (50 / 60 Hz)	275 V (50 / 60 Hz)
Maximum continuous voltage DC [U _c]	200 V	350 V
Rated discharge current [I _n]	15 kA	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA	40 kA
Protection level [U _p]	≤ 0.7 kV	≤ 1.25 kV
Protection level at 5 kA [U _p]	≤ 0.55 kV	≤ 1 kV
Operating time [t _a]	≤ 25 ns	≤ 25 ns
Maximum network overcurrent protection	125 A gG	125 A gG
Short-circuit proof with max. network overcurrent protection	50 kA _{rms}	50 kA _{rms}
TOV-voltage [U _T] – characteristic	175 V/5 sec. – withstand	335 V/5 sec. – withstand
TOV-voltage [U _T] – characteristic	230 V/120 min. – safe failure	440 V/120 min. – safe failure
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C	
Function/failure indication	green / red	
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded	
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded	
Mounted on DIN rail acc. to EN 60715	35 mm	
Housing material	thermoplastic, UL 94 V-0	
Degree of protection	IP 20	
Dimensions	1 mod., DIN 43880	
Remote signaling contacts (FM)	changeover contact	
Switching capacity AC (FM)	250 V/0.5 A	
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A	
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded	
Approvals	CE	

wietap G S 320 FM UL wietap G S 385 FM UL

- Surge arrester, type 2, category B
- Multi-purpose surge arrester
- With plug-in protection module
- Thermo Dynamic Control SPD monitoring device
- Small housing
- Operating state/fault indication by indicator flag in window
- With signaling contact (FM)
- Vibration and shock tested according EN 60068-2



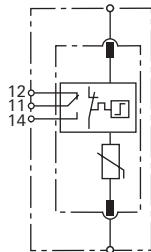
Type	Part No.	Part No.
wietap G S 320 FM UL	84.995.2093.1	
wietap G S 385 FM UL		84.995.2094.1
SPD accord. to EN 61643-11/IEC 61643-11	Type 2 / Cat. B / Class II	Type 2 / Cat. B / Class II
Rated voltage AC [U _n]	230 V (50 / 60 Hz)	230 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	320 V (50 / 60 Hz)	385 V (50 / 60 Hz)
Maximum continuous voltage DC [U _c]	420 V	500 V
Rated discharge current [I _n]	20 kA	20 kA
Max. discharge current (8/20) [I _{max}]	40 kA	40 kA
Protection level [U _p]	≤ 1.5 kV	≤ 1.75 kV
Protection level at 5 kA [U _p]	≤ 1.2 kV	≤ 1.35 kV
Operating time [t _a]	≤ 25 ns	≤ 25 ns
Maximum network overcurrent protection	125 A gG	125 A gG
Short-circuit proof with max. network overcurrent protection	25 kA _{rms}	25 kA _{rms}
TOV-voltage [U _T] – characteristic	335 V/5 sec. – withstand	385 V/5 sec. – withstand
TOV-voltage [U _T] – characteristic	440 V/120 min. – safe failure	440 V/120 min. – safe failure
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C	
Function/failure indication	green / red	
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded	
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded	
Mounted on DIN rail acc. to EN 60715	35 mm	
Housing material	thermoplastic, UL 94 V-0	
Degree of protection	IP 20	
Dimensions	1 mod., DIN 43880	
Remote signaling contacts (FM)	changeover contact	
Switching capacity AC (FM)	250 V/0.5 A	
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A	
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded	
Approvals	CE	

Single-phase surge arrester, category B & A

For protection of sub-distributions or the control cabinet main supply

wietap G S 440 FM UL wietap G S 600 FM UL

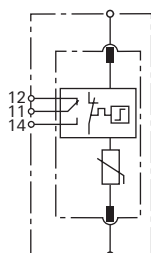
- Surge arrester, type 2, category B
- Multi-purpose surge arrester
- With plug-in protection module
- Thermo Dynamic Control SPD monitoring device
- Small housing
- Operating state/fault indication by indicator flag in window
- With signaling contact (FM)
- Vibration and shock tested according EN 60068-2



Type	Part No.	Part No.
wietap G S 440 FM UL	84.995.2095.1	
wietap G S 600 FM UL		84.995.2096.1
SPD accord. to EN 61643-11/IEC 61643-11	Type 2 / Cat. B / Class II	Type 2 / Cat. B / Class II
Rated voltage AC [U _n]	400 V (50 / 60 Hz)	480 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	440 V (50 / 60 Hz)	600 V (50 / 60 Hz)
Maximum continuous voltage DC [U _c]	585 V	600 V
Rated discharge current [I _n]	20 kA	15 kA
Max. discharge current (8/20) [I _{max}]	40 kA	30 kA
Protection level [U _p]	≤ 2 kV	≤ 2.5 kV
Protection level at 5 kA [U _p]	≤ 1.7 kV	≤ 2 kV
Operating time [t _a]	≤ 25 ns	≤ 25 ns
Maximum network overcurrent protection	125 A gG	100 A gG
Short-circuit proof with max. network overcurrent protection	25 kA _{rms}	25 kA _{rms}
TOV-voltage [U _T] – characteristic	580 V/5 sec. – withstand	700 V/5 sec. – withstand
TOV-voltage [U _T] – characteristic	765 V/120 min. – safe failure	915 V/120 min. – safe failure
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C	
Function/failure indication	green / red	
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded	
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded	
Mounted on DIN rail acc. to EN 60715	35 mm	
Housing material	thermoplastic, UL 94 V-0	
Degree of protection	IP 20	
Dimensions	1 mod., DIN 43880	
Remote signaling contacts (FM)	changeover contact	
Switching capacity AC (FM)	250 V/0.5 A	
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A	
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded	
Approvals	CE, VDE, TÜV	

wietap G S WE 600 FM UL

- Surge arrester, type 2, category B
- Multi-purpose surge arrester
- With plug-in protection module
- Thermo Dynamic Control SPD monitoring device
- Small housing
- Operating state/fault indication by indicator flag in window
- With signaling contact (FM)
- Vibration and shock tested according EN 60068-2



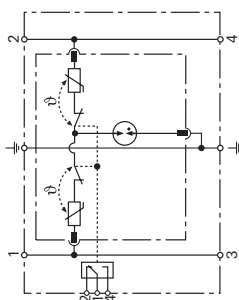
Type	Part No.	Part No.
wietap G S WE 600 FM UL	84.995.2097.1	
SPD accord. to EN 61643-11/IEC 61643-11	Type 2 / Category B / Class II	
Rated voltage AC [U _n]	480 V (50 / 60 Hz)	
Maximum continuous voltage AC [U _c]	600 V (50 / 60 Hz)	
Rated varistor voltage AC [U _{mov}]	750V	
Rated discharge current [I _n]	15 kA	
Max. discharge current (8/20) [I _{max}]	25 kA	
Protection level [U _p]	≤ 3 kV	
Protection level at 5 kA [U _p]	≤ 2.5 kV	
Operating time [t _a]	≤ 25 ns	
Maximum network overcurrent protection	100 A gL/gG	
Short-circuit proof with max. network overcurrent protection	25 kA _{rms}	
TOV-voltage [U _T] – characteristic	900 V / 5 sec. – withstand	
TOV-voltage [U _T] – characteristic	915 V / 120 min. – safe failure	
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C	
Function/failure indication	green / red	
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded	
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded	
Mounted on DIN rail acc. to EN 60715	35 mm	
Housing material	thermoplastic, UL 94 V-0	
Degree of protection	IP 20	
Dimensions	1 mod., DIN 43880	
Remote signaling contacts (FM)	changeover contact	
Switching capacity AC (FM)	250 V/0.5 A	
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A	
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded	
Approvals	CE, VDE, TÜV	

Surge arrester, category A

For direct load protection in control cabinets or sub-distributions

wietap R M 2P 30 FM

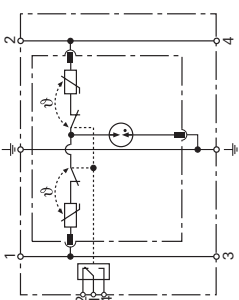
- Surge arrester, type 3
- Two-pole surge arrester
- High discharge capacity due to powerful zinc oxide varistor
- Slim design (modular construction) acc. to DIN 43880
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- With remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap R M 2P 30 FM	84.995.3206.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 3 / Category A / Class III
Rated voltage AC [U _N]	24 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	30 V (50 / 60 Hz)
Maximum continuous voltage DC [U _c]	30 V
Rated current AC [I _n]	25 A
Rated discharge current (8/20) [I _n]	1 kA
Total discharge current (8/20) [L+N-PE] [I _{total}]	2 kA
Combined surge [U _{oc}]	2 kV
Combined surge [L+N-PE] [U _{oc total}]	4 kV
Protection level [L-N] [U _p]	≤ 180 V
Protection level [L/N-PE] [U _p]	≤ 630 V
Operating time [L-N] [t _A]	≤ 25 ns
Operating time [L/N-PE] [t _A]	≤ 100 ns
Maximum network overcurrent protection	25 A gL/gG or B 25 A
Short-circuit proof with network overcurrent protection with 25 A gL/gG	6 kA _{rms}
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C
Function/failure indication	green / red
Wire range (min.)	0.5 mm ² (AWG 20) solid/fine-stranded
Wire range (max.)	4 mm ² (AWG 12) solid / 2.5 mm ² (AWG 14) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	thermoplastic, UL 94 V-0
Degree of protection	IP 20
Dimensions	1 mod., DIN 43880
Remote signaling contacts (FM)	changeover contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded
Approvals	CE

wietap R M 2P 150 FM

- Surge arrester, type 3
- Two-pole surge arrester
- High discharge capacity due to powerful zinc oxide varistor
- Slim design (modular construction) acc. to DIN 43880
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- With remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



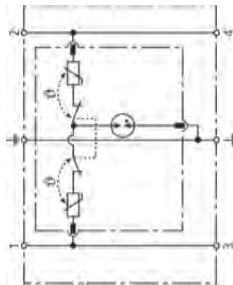
Type	Part No.
wietap R M 2P 150 FM	84.995.3209.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 3 / Category A / Class III
Rated voltage AC [U _N]	120 V (50/60 Hz)
Maximum continuous voltage AC [U _c]	150 V (50/60 Hz)
Maximum continuous voltage DC [U _c]	150 V
Rated current AC [I _n]	25 A
Rated discharge current (8/20) [I _n]	2 kA
Total discharge current (8/20) [L+N-PE] [I _{total}]	4 kA
Combined surge [U _{oc}]	4 kV
Combined surge [L+N-PE] [U _{oc total}]	8 kV
Protection level [L-N] [U _p]	≤ 640 V
Protection level [L/N-PE] [U _p]	≤ 800 V
Operating time [L-N] [t _A]	≤ 25 ns
Operating time [L/N-PE] [t _A]	≤ 100 ns
Maximum network overcurrent protection	25 A gL/gG or B 25 A
Short-circuit proof with network overcurrent protection with 25 A gL/gG	6 kA _{rms}
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C
Function/failure indication	green / red
Wire range (min.)	0.5 mm ² (AWG 20) solid/fine-stranded
Wire range (max.)	4 mm ² (AWG 12) solid / 2.5 mm ² (AWG 14) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	thermoplastic, UL 94 V-0
Degree of protection	IP 20
Dimensions	1 mod., DIN 43880
Remote signaling contacts (FM)	changeover contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

Surge arrester, category A

For direct load protection in control cabinets or sub-distributions

wietap R M 2P 255

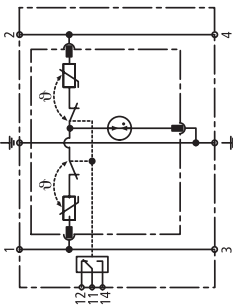
- Surge arrester, type 3
- Two-pole surge arrester
- High discharge capacity due to powerful zinc oxide varistor
- Slim design (modular construction) acc. to DIN 43880
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- Vibration and shock tested acc. to EN 60068-2



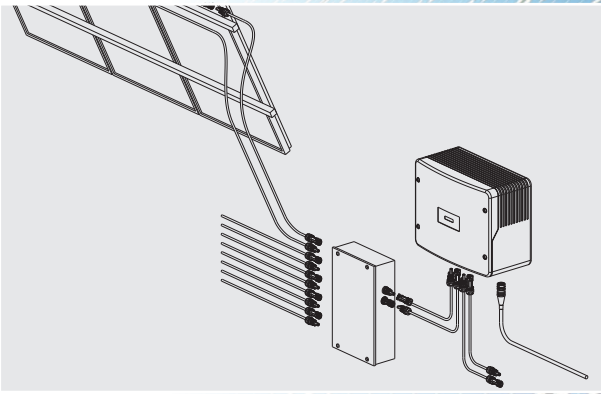
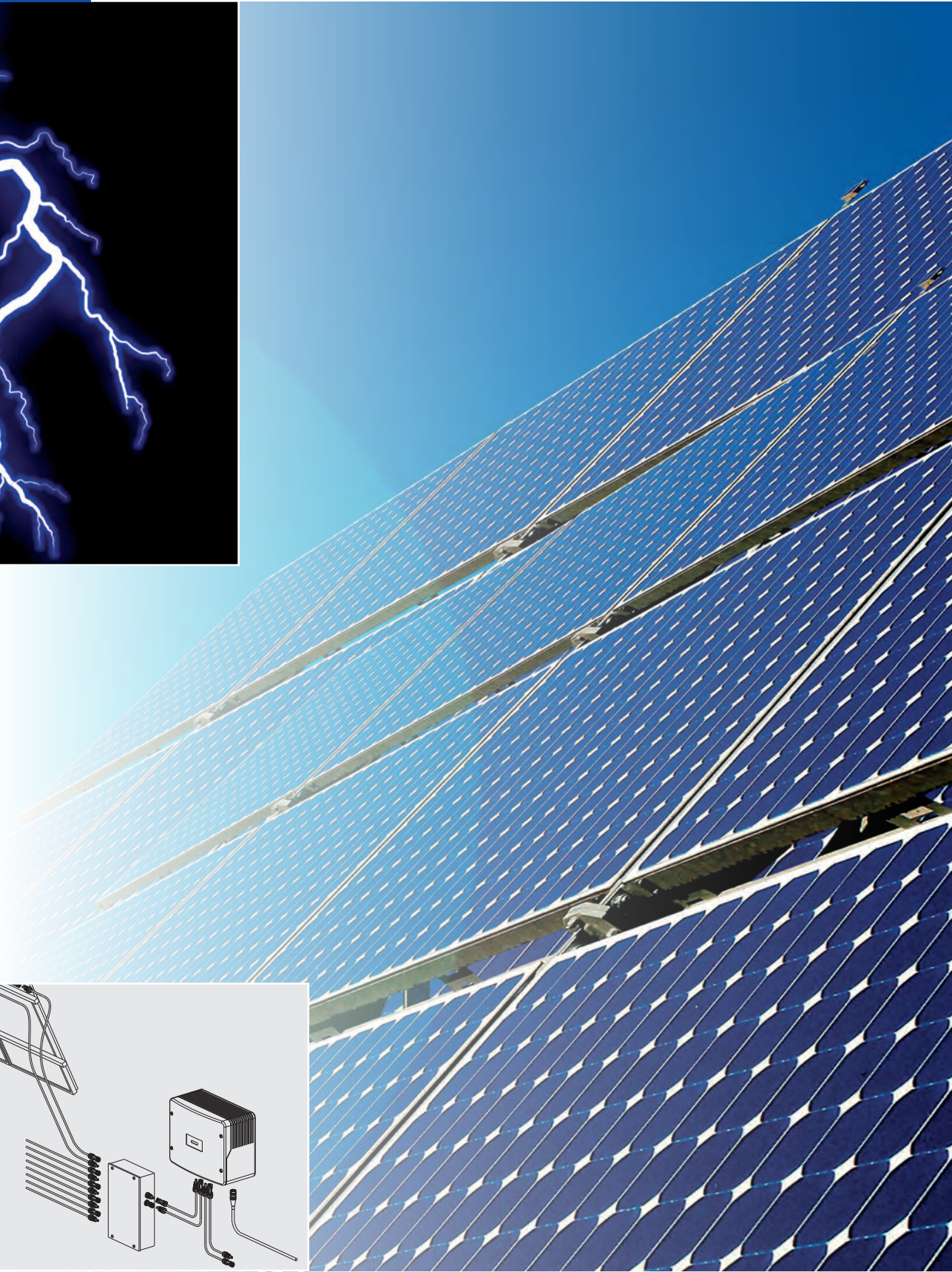
Type	Part No.
wietap R M 2P 255	84.995.3200.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 3 / Category A / Class III
Rated voltage AC [U _N]	230 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	255 V (50 / 60 Hz)
Maximum continuous voltage DC [U _c]	255 V
Rated current AC [I _n]	20 A
Rated discharge current (8/20) [I _n]	3 kA
Total discharge current (8/20) [L+N-PE] [I _{total}]	5 kA
Combined surge [U _{oc}]	6 kV
Combined surge [L+N-PE] [U _{oc total}]	10 kV
Protection level [L-N] [U _p]	≤ 1250 V
Protection level [L/N-PE] [U _p]	≤ 1500 V
Operating time [L-N] [t _A]	≤ 25 ns
Operating time [L/N-PE] [t _A]	≤ 100 ns
Maximum network overcurrent protection	25 A gL/gG or B 25 A
Short-circuit proof with network overcurrent protection with 25 A gL/gG	6 kA _{rms}
TOV-voltage [L-N] [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [L-N] [U _T] – characteristic	440 V / 120 min. – safe failure
TOV-voltage [L/N-PE] (I) [U _T] – characteristic	335 V / 120 min. – withstand
TOV-voltage [L/N-PE] (II) [U _T] – characteristic	440 V / 5 sec. – withstand
TOV-voltage [L+N-PE] (II) [U _T] – characteristic	1200 V + U _{REF} / 200 ms – safe failure
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C
Function/failure indication	green / red
Wire range (min.)	0.5 mm ² (AWG 20) solid/fine-stranded
Wire range (max.)	4 mm ² (AWG 12) solid / 2.5 mm ² (AWG 14) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	thermoplastic, UL 94 V-0
Degree of protection	IP 20
Dimensions	1 mod., DIN 43880
Approvals	CE

wietap R M 2P 255 FM

- Surge arrester, type 3
- Two-pole surge arrester
- High discharge capacity due to powerful zinc oxide varistor
- Slim design (modular construction) acc. to DIN 43880
- With pluggable protection modules
- Function/failure indication according to VDE 0100-534
- With remote signaling contact (FM)
- Vibration and shock tested acc. to EN 60068-2



Type	Part No.
wietap R M 2P 255 FM	84.995.3205.0
Technical Data	
SPD accord. to EN 61643-11 / IEC 61643-11	Type 3 / Category A / Class III
Rated voltage AC [U _N]	230 V (50 / 60 Hz)
Maximum continuous voltage AC [U _c]	255 V (50 / 60 Hz)
Maximum continuous voltage DC [U _c]	255 V
Rated current AC [I _n]	25 A
Rated discharge current (8/20) [I _n]	3 kA
Total discharge current (8/20) [L+N-PE] [I _{total}]	5 kA
Combined surge [U _{oc}]	6 kV
Combined surge [L+N-PE] [U _{oc total}]	10 kV
Protection level [L-N] [U _p]	≤ 1250 V
Protection level [L/N-PE] [U _p]	≤ 1500 V
Operating time [L-N] [t _A]	≤ 25 ns
Operating time [L/N-PE] [t _A]	≤ 100 ns
Maximum network overcurrent protection	25 A gL/gG or B 25 A
Short-circuit proof with network overcurrent protection with 25 A gL/gG	6 kA _{rms}
TOV-voltage [L-N] [U _T] – characteristic	335 V / 5 sec. – withstand
TOV-voltage [L-N] [U _T] – characteristic	440 V / 120 min. – safe failure
TOV-voltage [L/N-PE] (I) [U _T] – characteristic	335 V / 120 min. – withstand
TOV-voltage [L/N-PE] (II) [U _T] – characteristic	440 V / 5 sec. – withstand
TOV-voltage [L+N-PE] (II) [U _T] – characteristic	1200 V + U _{REF} / 200 ms – safe failure
Temperature range [T _U] acc. to UL 1449 3rd edition acc. to EN 61643-11	0... +85 °C -40... +85 °C
Function/failure indication	green / red
Wire range (min.)	0.5 mm ² (AWG 20) solid/fine-stranded
Wire range (max.)	4 mm ² (AWG 12) solid / 2.5 mm ² (AWG 14) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	thermoplastic, UL 94 V-0
Degree of protection	IP 20
Dimensions	1 mod., DIN 43880
Remote signaling contacts (FM)	changeover contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 16) solid/fine-stranded
Approvals	CE



Overvoltage protection for Photovoltaic systems

Photovoltaic systems, abbreviated as PV systems, are a considerable investment that must be protected from failure and damage. As these systems are installed outdoors, they are exposed to the danger of overvoltage from lightning strikes.

Overvoltage protection in the DC circuit with central inverters

The generator circuit (the PV modules) produces a direct current. Connecting the PV modules and arrays in series allows voltages of 1000 V to be reached. This combination with the fact that the generator circuit can continue to supply energy after overvoltage requires sophisticated technology for the overvoltage arrester.

DC overvoltage protection:

The PV/DC overvoltage arresters are specially designed for use in PV systems.

Both the housing technology and the connections are designed for the requirements of a PV systems high voltages and conductor cross-sections. With a width of only 36 or 48mm, the units are easily installed inside distribution panels, requiring the minimum of space.

- High discharge capacity due to powerful zinc-oxide varistor
- No fire hazard caused by permanent electric arc due to combined disconnect and short-circuit facility. Overload indicated in display window
- Signaling contacts for remote monitoring in all remote signaling types

AC overvoltage protection:

On the AC side of the inverters overvoltage protection must also be installed. The arresters listed here are the most commonly used versions.

Suitable units can be found inside the chapters **wietap** IEC and **wietap** UL/CSA.

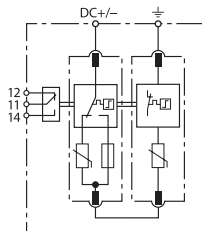


Surge protection for solar modules

To be used in photovoltaic DC circuits

wietap GS PV SCI 600 (FM)

- DC solar arrester for 600 V string voltage
- For DC grounded solar systems
- No fire hazard during overload due to combined disconnection and short-circuit device
- Safe, arc-free replacement of protection modules due to integrated DC fuse
- High discharge capacity
- Function/failure indication
- **wietap** GS PV SCI 600 FM with remote signaling contact (FM)



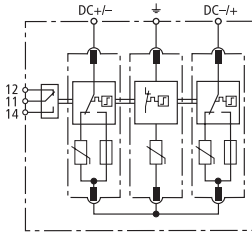
Type	Part No.
wietap GS PV SCI 600	84.995.2550.0
wietap GS PV SCI 600 FM	84.995.2555.0
Technical Data	
Connection between	DC – Grnd
SPD accord. to EN 50539-11	Type 2
Maximum PV voltage [U _{CPV}]	≤ 600 V
Short-circuit resistance (I _{SCPV})	1 kA
Nominal discharge current (8/20) [(DC+/DC-) → PE] [I _n]	12.5 kA
Max. discharge current (8/20) [(DC+/DC-) → PE] [I _{max}]	25 kA
Protection level [U _p]	≤ 2.5 kV
Protection level at 5 kA [U _p]	≤ 2 kV
Operating time [t _A]	≤ 25 ns
Temperature range [T _U]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	2 TE, DIN 43880 (36 mm)
Remote signaling contacts (FM)	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE, VDE, TÜV

Surge protection for solar modules

To be used in photovoltaic DC circuits

wietap GM YPV SCI 600 (FM)

- DC solar arrester for 600 V string voltage
- No fire hazard during overload due to combined disconnection and short-circuit device
- Safe, arc-free replacement of protection modules due to integrated DC fuse
- High discharge capacity
- Function/failure indication
- **wietap** GM YPV SCI 600 FM with remote signaling contact (FM)



Type	Part No.
wietap GM YPV SCI 600	84.995.2511.0
wietap GM YPV SCI 600 FM	84.995.2516.0
Repl. module "+" or "-" against int. neutral point	84.995.2053.0
Repl. module int. neutral point against \oplus	84.995.2010.0
Technical Data	
Connection between	DC+ – Grnd – DC-
SPD accord. to EN 50539-11	Type 2
Maximum PV voltage [U _{CPV}]	≤ 600 V
Short-circuit resistance (I _{SCPV})	1 kA
Total discharge current (8/20) [I _{total}]	40 kA
Nominal discharge current (8/20) [(DC+/DC-) → PE] [I _n]	12.5 kA
Max. discharge current (8/20) [(DC+/DC-) → PE] [I _{max}]	25 kA
Protection level [U _p]	≤ 2.5 kV
Protection level at 5 kA [U _p]	≤ 2 kV
Operating time [t _a]	≤ 25 ns
Temperature range [T _u]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	3 TE, DIN 43880 (54 mm)
Remote signaling contacts (FM)	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

Replacement module for wietap GM YPV SCI 600 (FM)

wietap G MOD PV SCI 300

"+" or "-" against internal neutral point

wietap G MOD PV 300

Internal neutral point against PE

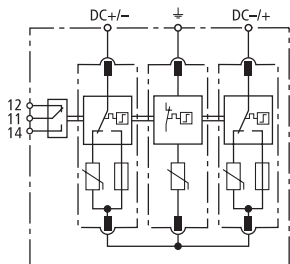
Type	Part No.
wietap G MOD PV SCI 300	84.995.2053.0
wietap G MOD PV 300	84.995.2043.0

Surge protection for solar modules

To be used in photovoltaic DC circuits

wietap GM YPV SCI 1000 (FM)

- DC solar arrester for 1000 V string voltage
- No fire hazard during overload due to combined disconnection and short-circuit device
- Safe, arc-free replacement of protection modules due to integrated DC fuse
- High discharge capacity
- Function/failure indication
- **wietap GM YPV SCI 1000 FM with remote signaling contact (FM)**



Type	Part No.
wietap GM YPV SCI 1000	84.995.2510.0
wietap GM YPV SCI 1000 FM	84.995.2515.0
Repl. module "+" or "-" against int. neutral point	84.995.2051.0
Repl. module int. neutral point against \perp	84.995.2015.0

Technical Data

Connection between	DC+ – Grnd – DC-
SPD accord. to EN 50539-11	Type 2
Maximum PV voltage [U _{CPV}]	≤ 1000 V
Short-circuit resistance [I _{SCPV}]	1 kA
Total discharge current (8/20) [I _{total}]	40 kA
Nominal discharge current (8/20) [(DC+/DC-) → PE] [I _n]	12.5 kA
Max. discharge current (8/20) [(DC+/DC-) → PE] [I _{max}]	25 kA
Protection level [U _p]	≤ 4 kV
Protection level at 5 kA [U _p]	≤ 3.5 kV
Operating time [t _Δ]	≤ 25 ns
Temperature range [T _u]	-40 ... +80 °C
Function/failure indication	green / red
Wire range (min.)	1.5 mm ² (AWG 14) solid/fine-stranded
Wire range (max.)	35 mm ² (AWG 2) stranded / 25 mm ² (AWG 4) fine-stranded
Mounted on DIN rail acc. to EN 60715	35 mm
Housing material	Thermoplast, UL 94 V-0
Degree of protection	IP 20
Dimensions	3 TE, DIN 43880 (54 mm)
Remote signaling contacts (FM)	Change-over contact
Switching capacity AC (FM)	250 V/0.5 A
Switching capacity DC (FM)	250 V/0.1 A; 125 V/0.2 A; 75 V/0.5 A
Wire range for remote signaling terminals	max. 1.5 mm ² (AWG 14) solid/fine-stranded
Approvals	CE

Replacement module for wietap GM YPV SCI 1000 (FM)

wietap G MOD PV SCI 500

"+" or "-" against internal neutral point

wietap G MOD PV 500

Internal neutral point against PE

Type	Part No.
wietap G MOD PV SCI 500	84.995.2051.0
wietap G MOD PV 500	84.995.2041.0

Surge protection for solar modules

To be used in photovoltaic DC circuits

AC arrester on mains for Class 1/2/3



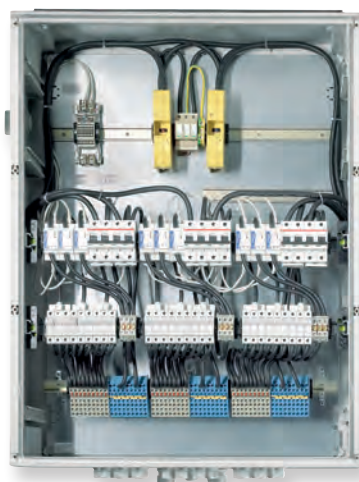
The used arrester type of the AC side is depending on the mains system.

A suitable arrester with the relevant certifications can be found in the previous chapters.

The suitable distribution for your project



AC combiner box



DC combiner box

Housing

Protection	Class II
UV-resistant	yes
Material	polycarbonate
Cable connection	pluggable or gland

Build in components

- Termination points for solar connectors
- Big termination points for inverter connection
- PE connection
- String fusing
- Reverse current diodes
- String monitoring
- Main switch
- Circuit breaker
- Overvoltage protection and many more

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Part number | page

80.010.0005.0	28	80.010.6032.2	25	81.000.6550.0	18	83.036.3300.0	43
80.010.0007.0	28	80.010.6032.3	25	81.000.6560.0	19	83.036.4200.0	43
80.010.0008.0	28	80.010.6102.2	25	81.000.6570.0	19	83.036.4210.0	43
80.010.0009.0	28	80.010.6102.3	25	81.000.6580.0	19	83.036.4240.0	43
80.010.0010.0	28	80.010.6132.2	25	81.000.6590.0	19	83.036.4261.0	43
80.010.0011.0	27	80.010.6132.3	25	81.020.0000.0	49	83.036.5200.0	43
80.010.1002.0	28	80.020.0004.0	29	81.020.0001.0	49	83.036.5210.0	43
80.010.1003.0	28	80.020.2001.0	29	81.020.0002.0	49	83.036.5220.0	43
80.010.1100.0	27	80.020.2004.0	29	81.020.0003.0	49	84.995.0055.0	67
80.010.1102.0	27	80.020.4100.0	29	81.020.0010.0	50	84.995.0120.0	66
80.010.1104.0	27	80.020.4101.0	29	81.020.0011.0	49	84.995.0222.0	66
80.010.1106.0	27	80.020.4102.0	29	81.020.0020.0	51	84.995.1001.0	64
80.010.1108.0	27	80.020.4103.0	29	81.020.0021.0	51	84.995.1001.0	64
80.010.1110.0	27	80.020.4150.0	29	81.020.0025.0	51	84.995.1001.0	65
80.010.1112.0	27	80.063.4029.1	24	81.020.0100.0	49	84.995.1001.0	65
80.010.1114.0	27	80.063.4129.3	24	81.020.0104.0	49	84.995.1100.0	65
80.010.1116.0	27	80.063.5029.2	24	81.020.0105.0	49	84.995.1100.0	65
80.010.4000.0	26	80.063.5029.2	25	81.020.0134.0	49	84.995.1300.0	64
80.010.4005.0	26	80.063.5029.3	24	81.020.0135.0	49	84.995.1305.0	64
80.010.4100.0	26	80.063.6029.3	25	81.020.4100.0	50	84.995.1310.0	65
80.010.4101.0	26	80.063.6029.3	25	81.030.0020.1	57	84.995.1315.0	65
80.010.4103.0	26	81.000.6110.0	14	81.030.0021.1	57	84.995.1400.0	64
80.010.4105.0	26	81.000.6120.0	14	81.030.0100.0	56	84.995.1405.0	64
80.010.4106.0	26	81.000.6130.0	14	81.030.0101.0	56	84.995.2010.0	68
80.010.4120.0	26	81.000.6132.0	15	81.030.0110.0	56	84.995.2010.0	68
80.010.4131.0	26	81.000.6134.0	15	81.030.0111.0	56	84.995.2010.0	69
80.010.4141.0	26	81.000.6135.0	14	82.003.0110.0	34	84.995.2010.0	69
80.010.4501.0	24	81.000.6140.0	14	82.003.0120.0	34	84.995.2010.0	70
80.010.4501.1	24	81.000.6142.0	15	82.003.0130.0	34	84.995.2010.0	83
80.010.4502.0	24	81.000.6150.0	14	82.003.0200.0	35	84.995.2015.0	84
80.010.4502.1	24	81.000.6160.0	16	82.003.0201.0	35	84.995.2030.0	71
80.010.4521.0	24	81.000.6170.0	16	82.003.0210.0	35	84.995.2035.0	71
80.010.4521.1	24	81.000.6180.0	16	82.003.0250.0	35	84.995.2041.0	84
80.010.4522.0	24	81.000.6190.0	16	83.036.0000.0	42	84.995.2043.0	83
80.010.4522.1	24	81.000.6200.0	17	83.036.0010.0	42	84.995.2050.0	69
80.010.4525.0	24	81.000.6210.0	17	83.036.0020.0	42	84.995.2050.0	69
80.010.4525.1	24	81.000.6220.0	17	83.036.0030.0	42	84.995.2051.0	84
80.010.4526.0	24	81.000.6300.0	20	83.036.0040.0	42	84.995.2051.0	84
80.010.4526.1	24	81.000.6302.0	20	83.036.1000.0	40	84.995.2053.0	83
80.010.4622.0	24	81.000.6310.0	20	83.036.1010.0	41	84.995.2053.0	83
80.010.4901.3	24	81.000.6320.0	21	83.036.1020.0	40	84.995.2060.0	71
80.010.4902.3	24	81.000.6321.0	20	83.036.1040.0	40	84.995.2070.0	70
80.010.4912.3	24	81.000.6322.0	20	83.036.1050.0	41	84.995.2090.0	70
80.010.4915.3	24	81.000.6330.0	21	83.036.1060.0	41	84.995.2090.1	76
80.010.4916.3	24	81.000.6331.0	20	83.036.2100.0	42	84.995.2092.1	76
80.010.5102.2	24	81.000.6332.0	21	83.036.2200.0	42	84.995.2093.1	76
80.010.5315.2	24	81.000.6340.0	21	83.036.2300.0	42	84.995.2094.1	76
80.010.5316.2	24	81.000.6342.0	21	83.036.3100.0	43	84.995.2095.1	77
80.010.5501.2	24	81.000.6510.0	18	83.036.3110.0	43	84.995.2096.1	77
80.010.5702.2	25	81.000.6520.0	18	83.036.3150.0	43	84.995.2097.1	77
80.010.6002.2	25	81.000.6530.0	18	83.036.3200.0	43	84.995.2300.0	68
80.010.6002.3	25	81.000.6540.0	18	83.036.3210.0	43	84.995.2305.0	68

84.995.2310.0	69	Z8.000.0202.2	26
84.995.2315.0	69	Z8.000.0202.3	26
84.995.2400.0	68	Z8.000.0202.4	26
84.995.2405.0	68		
84.995.2510.0	84		
84.995.2511.0	83		
84.995.2515.0	84		
84.995.2516.0	83		
84.995.2550.0	82		
84.995.2555.0	82		
84.995.3020.0	73		
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84.995.3209.0	78		
84.995.3400.0	73		
84.995.3405.0	73		
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87.220.2253.3	27		
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Z8.000.0200.8	29		
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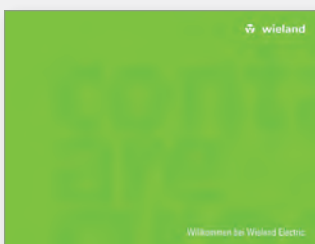


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