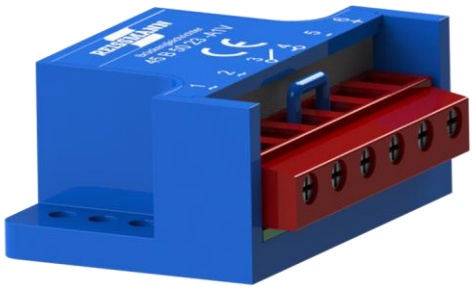
Product Information

Motor and machine protection

Brake rectifier:

Voltage supply to DC operated disc brakes

Type 45...



- Basic information

The type 45 brake rectifier is used to supply DC operated disc brakes on motors where standard release reaction times of the brake are required.

- Application

The current relay is used where an electric machine has to be stopped quickly to prevent danger to people or machinery, e.g:

- Cranes
- Lifts
- Elevating machines
- Machine tools

- General function

The brake rectifier type 45... develops the DC voltage, supply to DC operated disc brakes on motors. All standard brake rectifiers operate as half-wave or full-wave rectifiers. In addition to these there are break rectifiers with boost or with integrated voltage relay.

- Advantages

- The use of avalanche type rectifier diodes gives improved product reliability.
- Compact housing for mounting at the motor terminal block.
- Quick release of electro mechanical brakes, on electric motors, by the use of contact-free switches.
- Minimizes wear on the electromechanical brake.
- 50% energy saving with optimized brake release performance.
- Elimination of AC noise from the brake coil windings.

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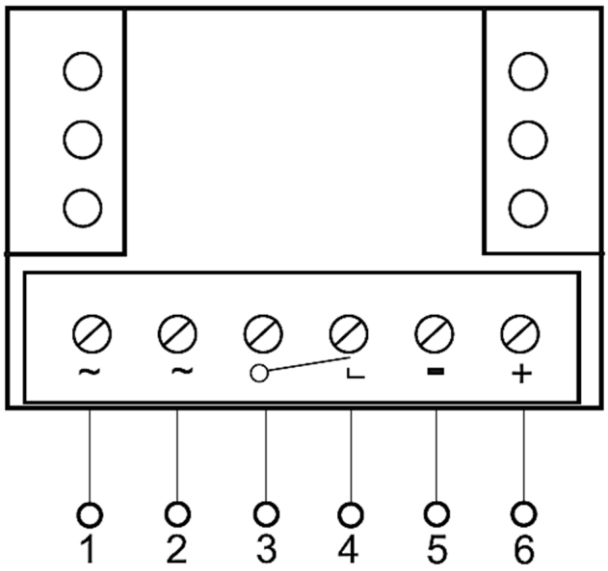
Voltage supply to DC operated disc brakes

Type 45...

Lead pattern:
Design A



- Technical data

Electrical data:

Input voltage Vin:	design F	42...600V AC
	design A, B, C, F, G:	42...500V AC
	design A, B, C, D, F:	42...440V AC
	design A, F:	42...400V AC
	design A, B, E, F:	42...250V AC
Output voltage Ua:	Half-wave rectifier Ue * 0,445V DC	Full-wave rectifier Ue * 0,89V DC

Performance data:

Ambient temperature:	Rated output DC current		
TA + 25°C:	3,0A	2,3A	2,0A
TA + 45°C:	3,0A	1,3A	1,6A
TA + 85°C:	2,1A	no specifications	1,1A
TA + 100°C:	1,65A	no specifications	0,8A
max. surge forward current, t=10ms, sine:	100A	110A	30A
max. repetitive reverse voltage, guarantee by manufacturer:	2000V~	1800V~	1500V~

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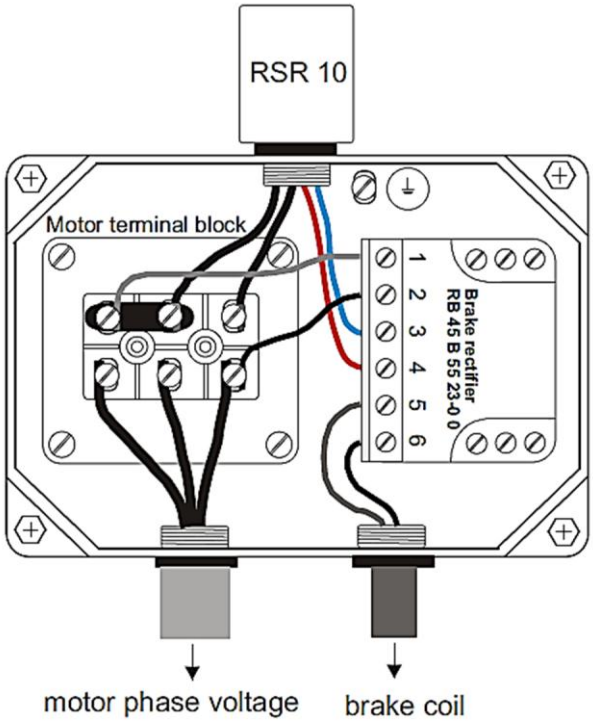
Voltage supply to DC operated disc brakes

Type 45...

Lead pattern:
Brake rectifier, current relay RSR10,
motor terminal block
(Motor: star connection)



Reaction time of mechanical release of the brake at simultaneous switch off in the AC and DC circuits:

Braking torque	Half-wave rectifier	Full-wave rectifier
4 Nm	< 10 ms	< 10 ms
16 Nm	< 15 ms	< 20 ms
32 Nm	< 20 ms	< 25 ms

Rated temperature: 0°C ... + 70°C
Ambient temperature: maximal +85°C
Storage temperature: -40°C ... +75°C

Special design:
Terminals for additional relay contact or electronic current relay RSR 10 - RSR 25 to reduce brake release reaction time.

Optional:
1) Brake rectifier with integrated voltage relay.
2) Brake rectifier unit with boost.

Electrical protection:
Varistor overvoltage protection as a standard feature.

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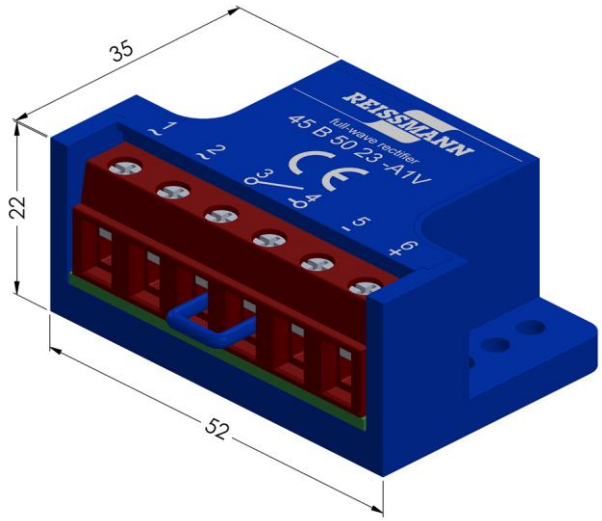
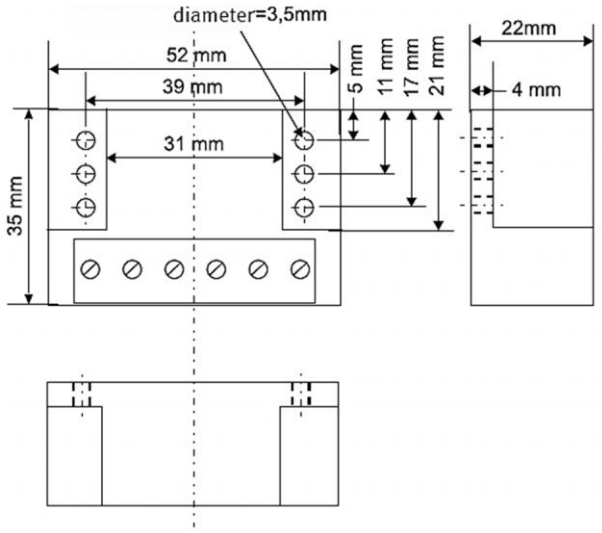
Type 45...

drawing





- Mechanical data

Design: A
housing: plastic/blue

material - DIN-designation	PA 6.6
temperature stability - permanent [°C]	100
temperature stability - transient [°C]	160
melting temperature (DIN 53 736) [°C]	255
dynamic glass transition temperature (DIN 53 736) [°C]	5/50
stability of shape against heat according to ISO-R 75, method A (DIN 63 461) [°C]	100
stability of shape against heat according to ISO-R 75, method B (DIN 63 461) [°C]	>200
heat coefficient (23°C)[W/(K*m)]	0,23
specific heat capacity (23°C) [J/(g*K)]	1,7
coefficient of linear thermal expansion (23°C) [10^{-5}*1/K]	7

protection factor:	IP 20
terminals:	screw type, 7,5 mm pin spacing, terminal size max. 4 mm^2
length x width x height:	52 x 35 x 22 mm, see drawing
mounting:	at motor terminal block with screws or glued
weight:	approx. 35 g

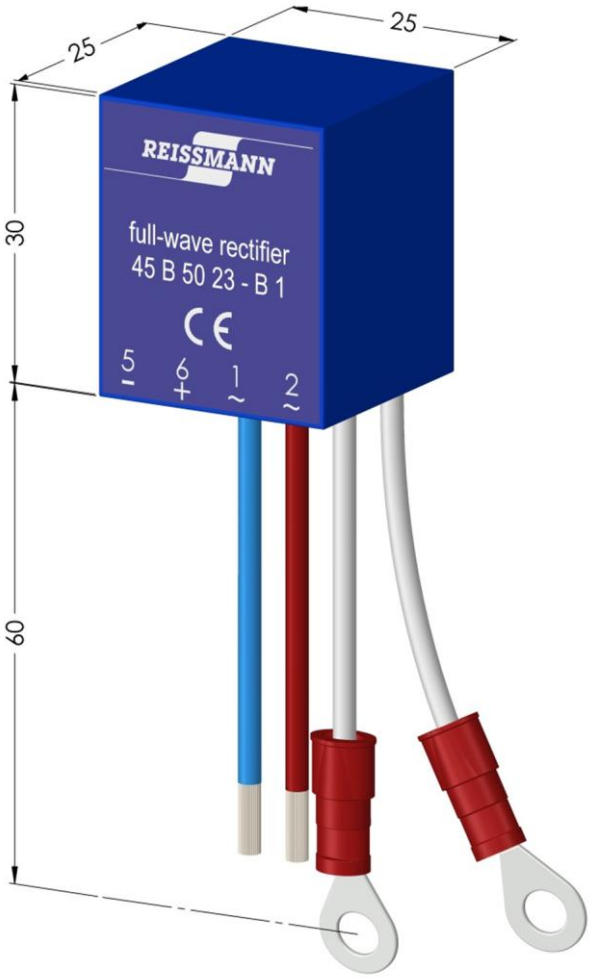
Motor and machine protection

Brake rectifier:

Voltage supply to DC operated disc brakes

Type 45...

drawing



Design: B
housing: plastic/blue

material - DIN-designation	PA 6.6
temperature stability - permanent [°C]	100
temperature stability - transient [°C]	160
melting temperature (DIN 53 736) [°C]	255
dynamic glass transition temperature (DIN 53 736) [°C]	5/50
stability of shape against heat according to ISO-R75, method A (DIN 63 461) [°C]	100
stability of shape against heat according to ISO-R75, method B (DIN 63 461) [°C]	>200
heat-coefficient (23°C)[W/(K*m)]	0,23
specific heat capacity (23°C) [J/(g*K)]	1,7
coefficient of linear thermal expansion (23°C) [10^{-5}*1/K]	7

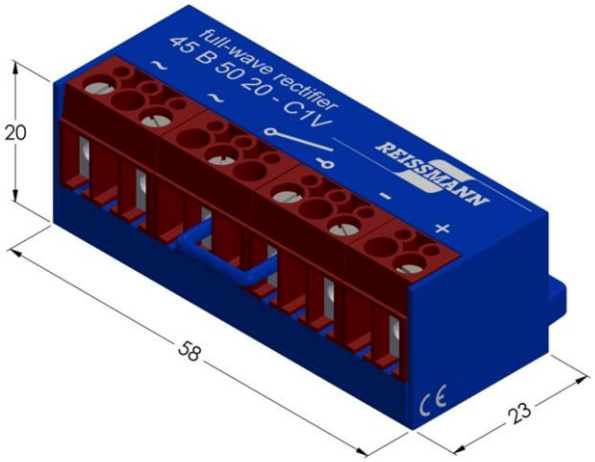
protection factor:	IP 65
terminals:	single wire multi strand with wire-end sleeves / cable terminal
length x width x height:	25 x 25 x 30 mm, see drawing
mounting:	at motor terminal block with screws or glued
weight:	approx. 50 g

Brake rectifier:

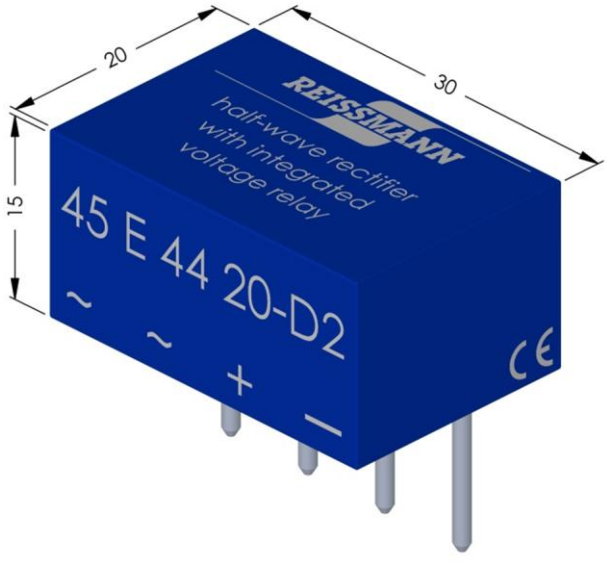
Voltage supply to DC operated disc brakes

Type 45...

drawing



drawing



Design: C
housing: plastic/blue

material - DIN-designation	PA 6.6
temperature stability - permanent [°C]	100
temperature stability - transient [°C]	160
melting temperature (DIN 53 736) [°C]	255
dynamic glass transition temperature (DIN 53 736) [°C]	5/50
stability of shape against heat according to ISO-R75, method A (DIN 63 461) [°C]	100
stability of shape against heat according to ISO-R75, method B (DIN 63 461) [°C]	>200
heat-coefficient (23°C)[W/(K*m)]	0,23
specific heat capacity (23°C) [J/(g*K)]	1,7
coefficient of linear thermal expansion (23°C) [10^{-5}*1/K]	7

protection factor:	IP 20
terminals:	screw type, terminal size max. 4 mm², 10 mm pin spacing
length x width x height:	58 x 23 x 20 mm, see drawing
mounting:	at motor terminal block by gluing
weight:	approx. 35 g

Design: D

housing:	plastic/blue
material:	case of thermo-setting resin, black
option:	Polyamide, PA 6.6
temperature:	transient: +100°C permanent: + 160°C
terminals:	pin type, Ø max. 1,5 mm 6 mm pin spacing, optional 5mm
protection factor:	IP 54
length x width x height:	30 x 20 x 15 mm, see drawing
mounting:	rectifier has pin elements to be fixed to the screw terminal, 6 mm pin spacing
weight:	approx. 20 g

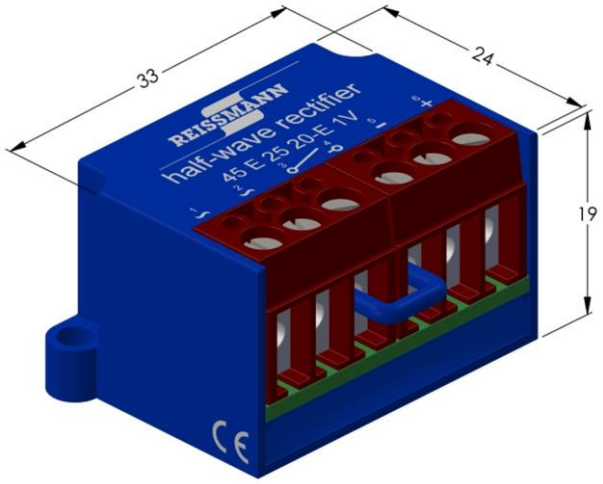
Motor and machine protection

Brake rectifier:

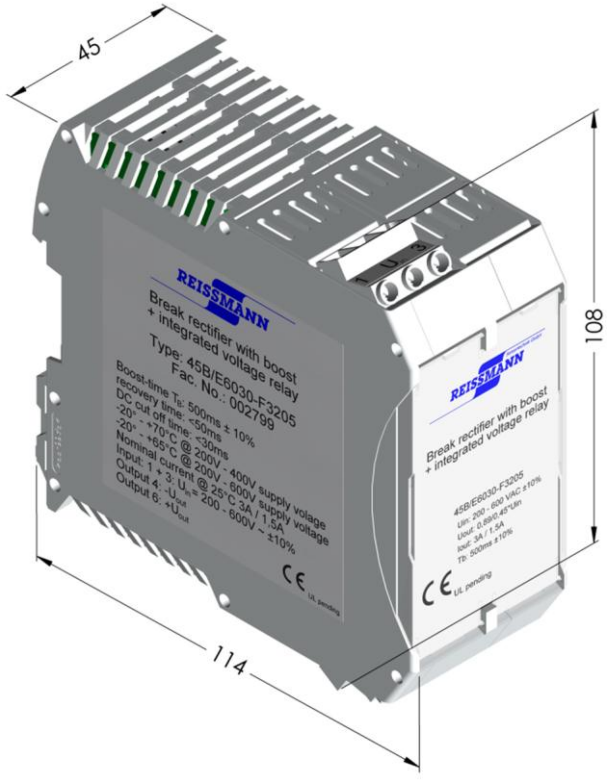
Voltage supply to DC operated disc brakes

Type 45...

drawing



drawing



Design: E

housing:	plastic/blue
material:	Polyamid, PA6.6,
temperature stability:	transient: + 160°C permanent: +100°C
width x height x length:	33 x 19 x 24 mm, see drawing
protection factor:	IP 20
terminals:	screw type, terminal size max. 2.5 mm², 5mm pin spacing
mounting:	at motor terminal block with screws or glued
weight:	approx. 20 g

Design: F

Tempeature stability	box and terminal blocks: Polyamide Plastic grey	cover: Polystyrene
	-40°C...+105°C	+80°C
Burnable according UL 94:	V-0	

weight:	200 g
length x width x height:	114x45x108mm

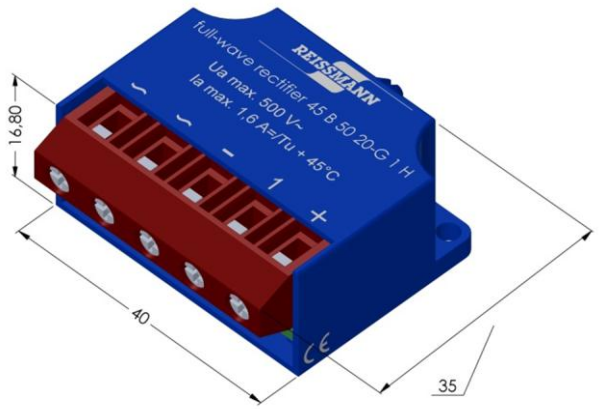
Motor and machine protection

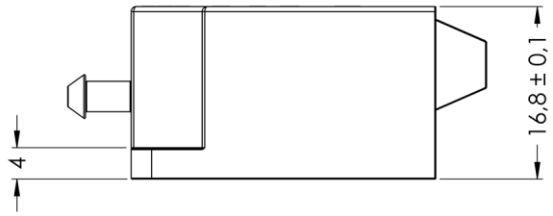
Brake rectifier:

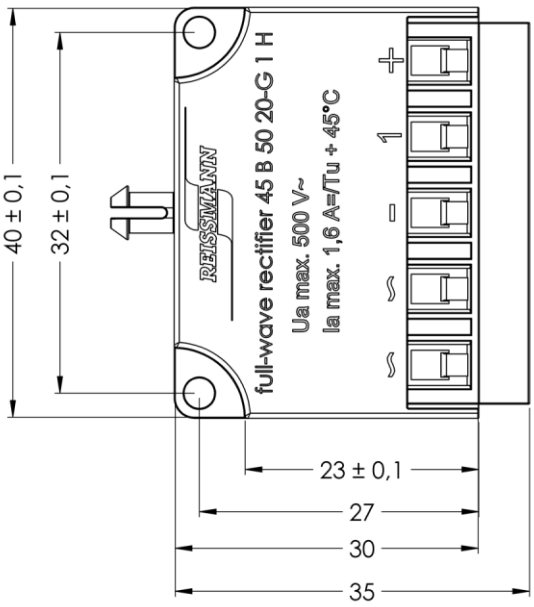
Voltage supply to DC operated disc brakes

Type 45...

drawing







Design: G

housing:	plastic/blue
material:	Polyamid, PA6.6,
temperature stability:	transient: + 160°C permanent: +100°C
length x width x height:	40 x 16,8 x 35 mm, see drawing
protection factor:	IP 20
terminals:	screw type, terminal size max. 2.5 mm², 7.5 mm pin spacing
mounting:	at motor terminal block with screws or clip-on-pin
weight:	approx. 20 g

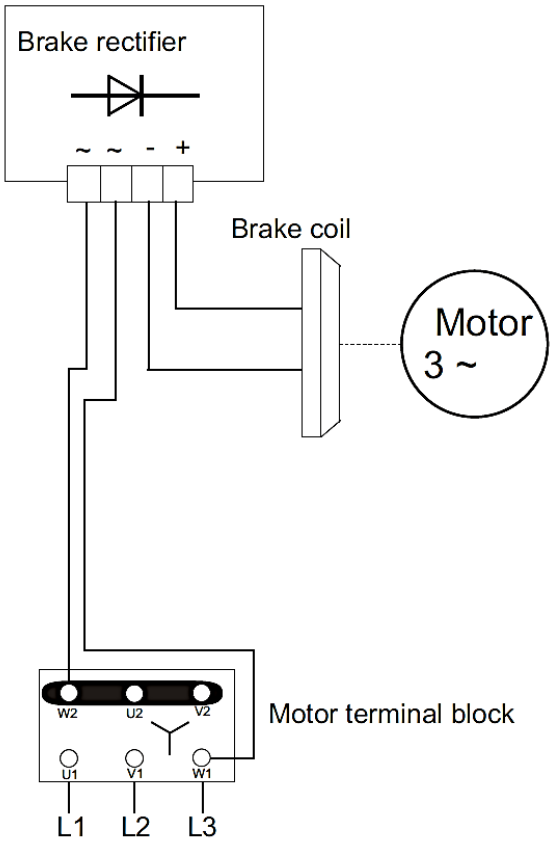
Brake rectifier:

Voltage supply to DC operated disc brakes — Type 45...

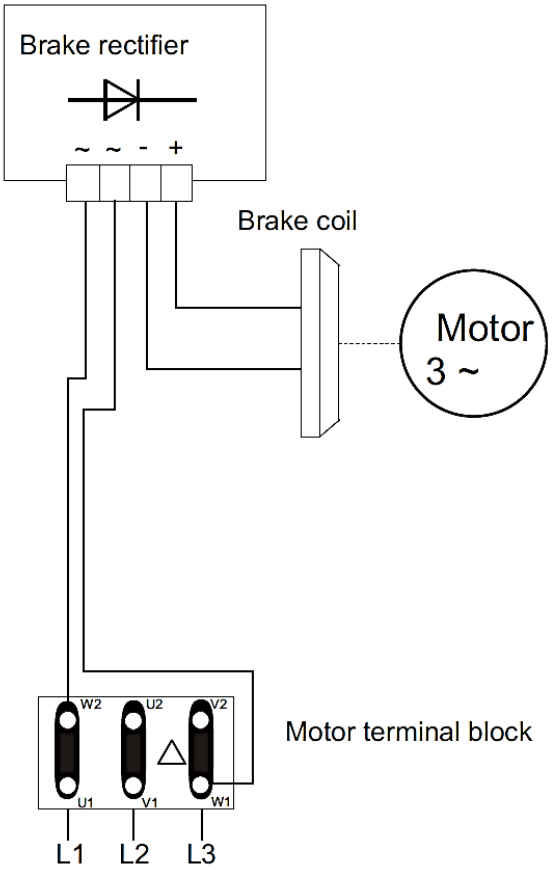
Schematic circuit

Brake rectifier 45 B 50 23-A 1 V, brake coil, motor and motor terminal block

Motor terminal block: star connection



Motor terminal block: delta connection



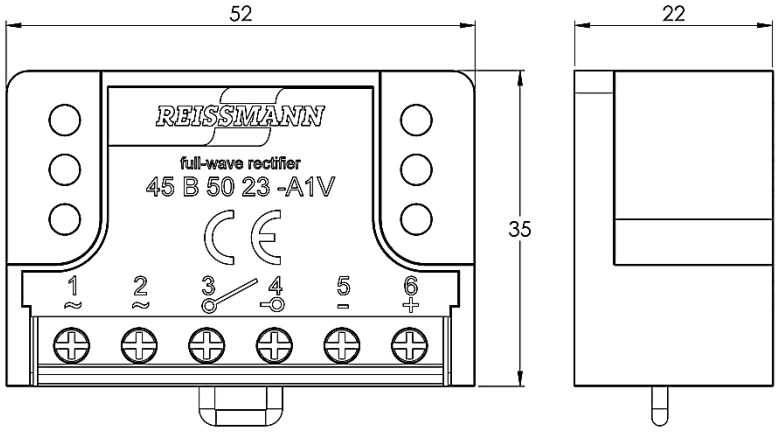
Motor and machine protection

Brake rectifier:

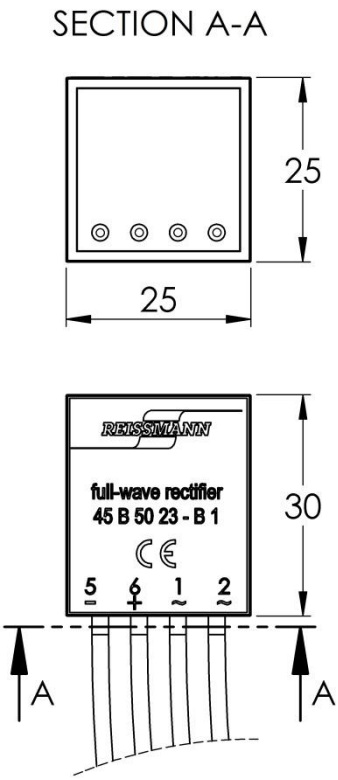
Voltage supply to DC operated disc brakes

Type 45...

- Housing Designs



Design A: L x W x H = 52 x 35 x 22mm



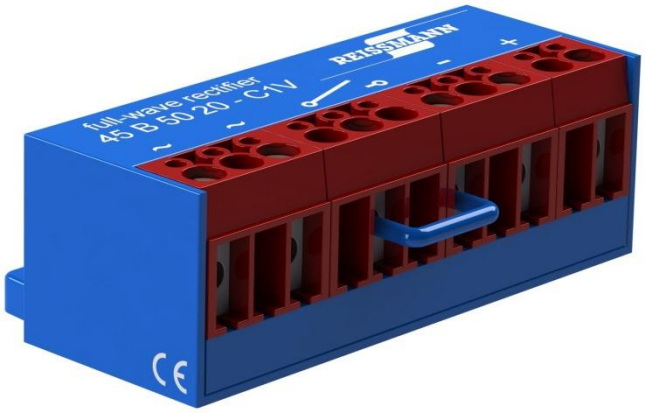
Design B: L x W x H = 25 x 25 x 30 mm

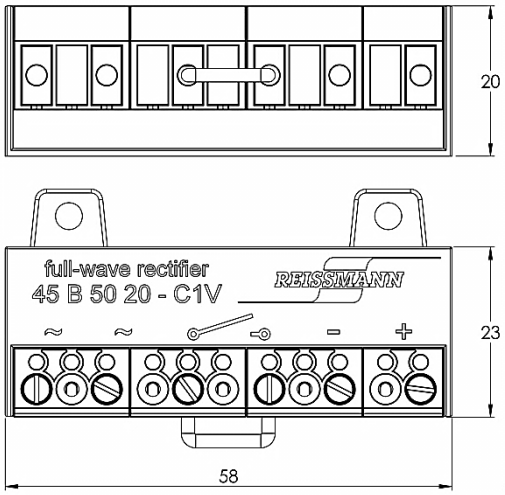
Motor and machine protection

Brake rectifier:

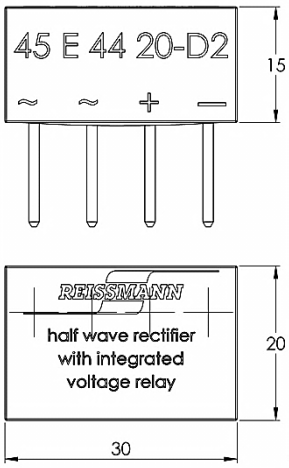
Voltage supply to DC operated disc brakes

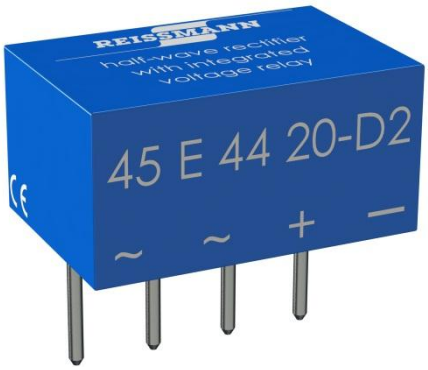
Type 45...



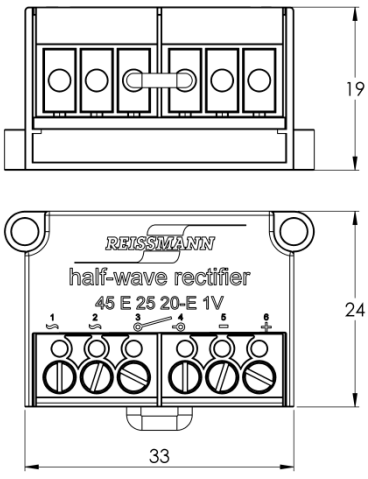


Design C: L x W x H = 58 x 23 x 20 mm





Design D: L x W x H = 30 x 20 x 15 mm



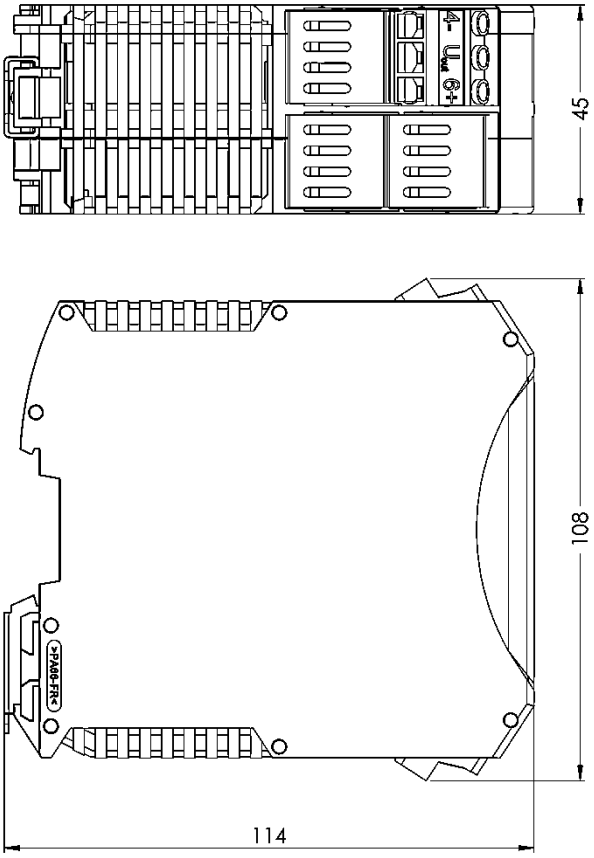
Design E: L x W x H = 33 x 24 x 19 mm

Motor and machine protection

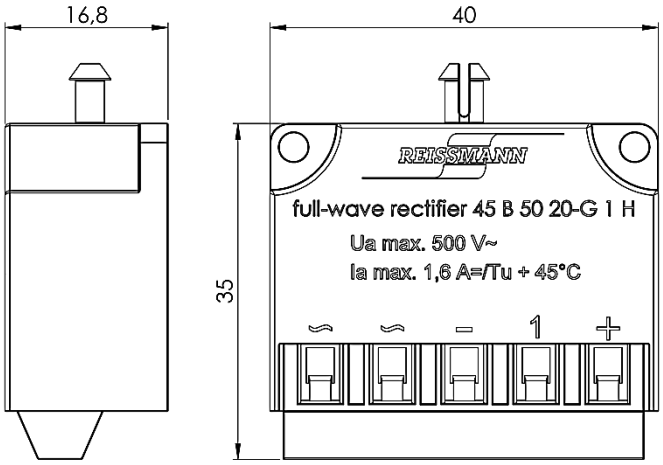
Brake rectifier:

Voltage supply to DC operated disc brakes

Type 45...



Design F: L x W x H = 114 x 45 x 108 mm



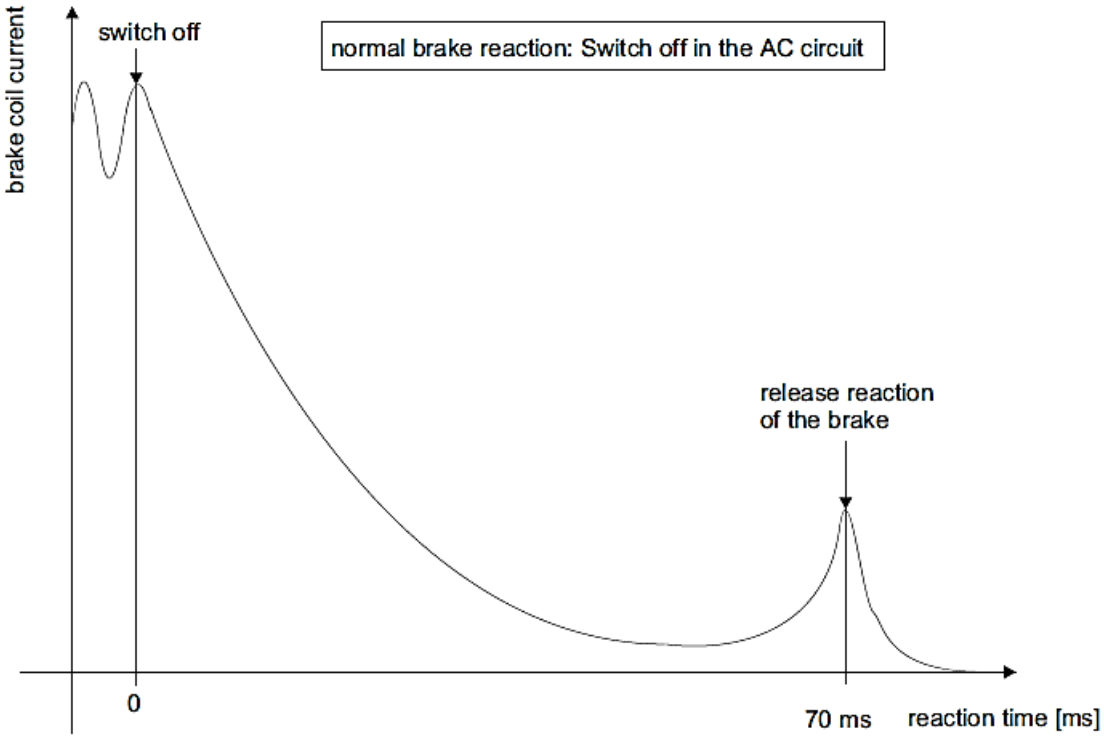
Design G: L x W x H = 40 x 35 x 16,8 mm

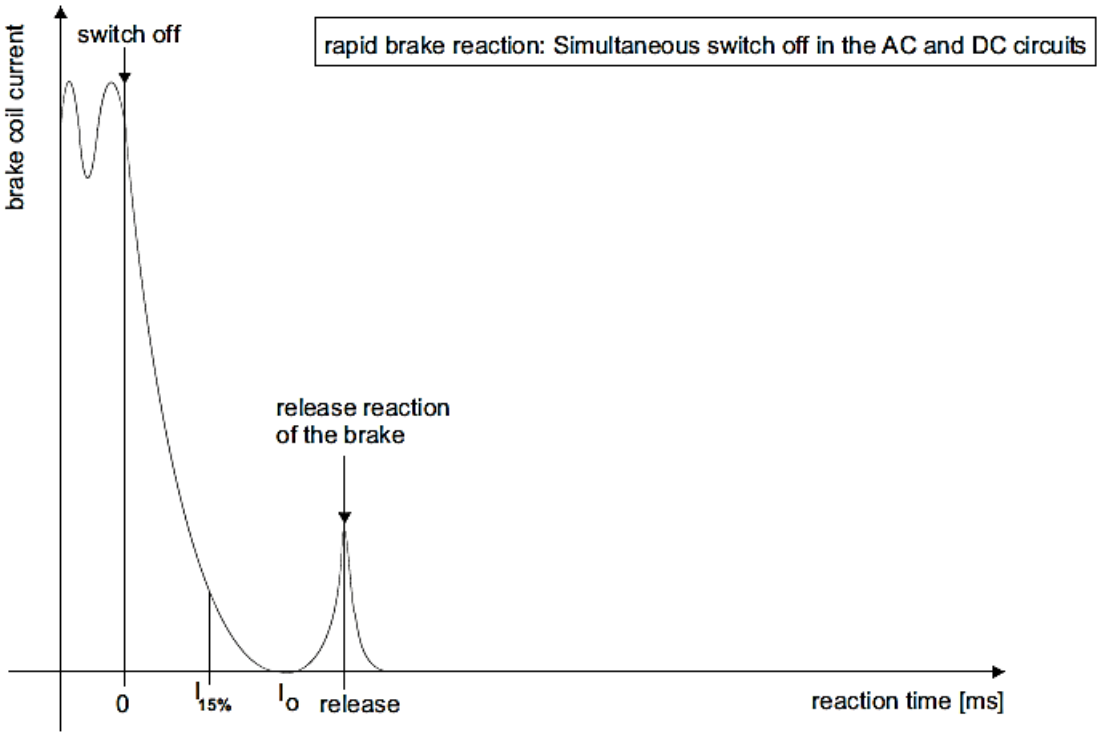
Brake rectifier:

Voltage supply to DC operated disc brakes

Type 45...

Qualitative graph of the brake coil current, when connected to the brake





Motor and machine protection

Brake rectifier:

Voltage supply to DC operated disc brakes

Type 45...

Order nomenclature:

Brake rectifier type:	**45**	**B**	**50**	**23**	**-**	**A**	**1**	**V**

Brake rectifier: Identification

Operation:
B= full-wave
E= half-wave

max. rated input AC voltage:
60 = 600V~ 40 = 400V~
50 = 500V~ 25 = 250V~
44 = 440V~

max. rated output DC current:
30= 3,0A=
23= 2,3A=
20= 2,0A=

Design of case:
A= Standard rectangular case, screw type terminals, 7.5 mm pin spacing, terminals for additional relay contact or electronic current relay
B= Rectangular case, single wire multi strand with wire-end sleeves, option: cable terminal
C= Rectangular case, screw type terminals, 10 mm pin spacing, terminals for additional relay contact or electronic current relay
D= Rectangular case, pin type terminals, 6 mm pin spacing
E= Mini case, screw type terminals, 5 mm pin spacing, terminals for additional relay contact or electronic current relay
F= Rectifier has fixing elements to be fixed to the mounting rail 35 x 7.5 mm or 35 x 15 mm, screw type terminals , width of case: 45 mm
G= Rectangular case, screw type terminals, 7.5mm pin spacing, screw or clip-on pin, terminals for additional relay contact or electronic current relay

Function:
1= Brake rectifier, standard, no special requirements are required in respect of release reaction times of the brake
2= Brake rectifier with integrated voltage relay
3= Brake rectifier unit with boost (Boost time: 1s; different boost times available)

Type of terminal: H = horizontal terminal V = vertical terminal

Motor and machine protection

Brake rectifier:

Voltage supply to DC operated disc brakes

Type 45...

Combinations of case-design, function, rated input voltage and rated output current:
X= Combination is allowed

	Function			max. rated input AC voltage					max. rated output DC current		
Case-design	1	2	3	600V~	500V~	440V~	400V~	250V~	3,0A=	2,3A=	2,0A=
A	X	X	X		X	X	X	X	X	X	X
B	X				X			X		X	X
B		X			X	X					X
C	X				X	X				X	X
D		X				X					X
E	X							X			X
F	X	X	X	X	X	X	X	X	X	X	X
G	X				X						X

Responsibility:
No responsibility will be accepted for thermistors which have not been installed and tested according to the relevant standards as previously listed in our data sheet.
Due to the ongoing research and development program, product specification may be subject to change, at the manufacturers discretion.

For further advice and information contact:

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