

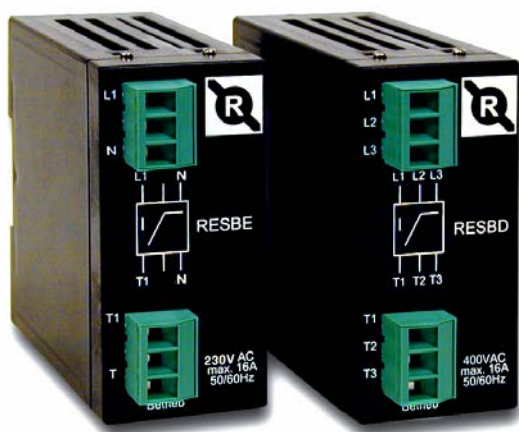


## SINGLE-PHASE AND THREE-PHASE INRUSH CURRENT LIMITERS

### In General:

Transient pulses may occur when switching-on energy consumers. Transient pulses cause undesired triggering of fuse elements. In such cases inrush current limiters are optimal for selective fusing.

Following we state typical energy consumers featuring high inrush currents resp. starting currents.



Consumer	$I_{\text{Ein}} / I_{\text{Dauer}}$ typical	Typical Inrush- resp. Start-up time	Current abating
Transformers <sup>1)</sup> Dynamo sheet core 0,5mm grain-oriented sheet Toroidal core transformer	10-18 fold 15-25 fold 30-50 fold	10-40 ms	rapid
Rectifier incl. filter capacitors <sup>2)</sup>	10-40 fold	5-40 ms	rapid
Contactors	3-10 fold	10-40 ms	rapid
Magnet valves etc.	10-20 fold	0,05-0,2 s	rapid to slow
Filament lamp	10-15 fold	ca. 0,3 s	slow

<sup>1)</sup> Depending on frequency and transformer design (induction). Deviations are possible.

<sup>2)</sup> Depending on total capacity, connections and network impedance. Deviations are possible.

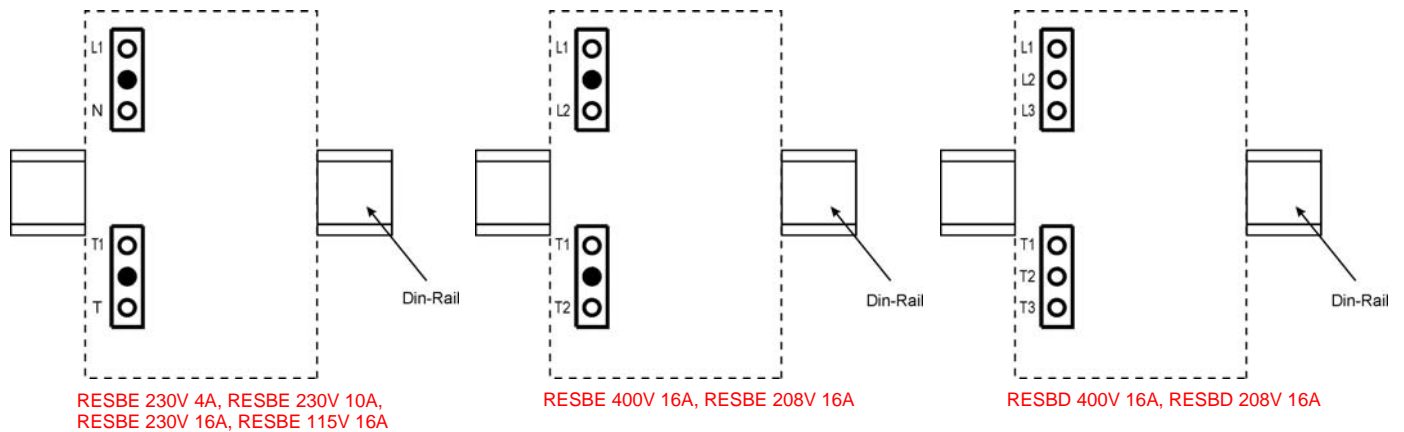
Commercial fuses and circuit breakers may be used when applying our inrush current limiters series RESBE and RESBD.

Series RESBE and RESBD are part of our patent application "Inrush current limit including time controlled second switching element".

To eliminate bridging current rush the effective inrush current limit should be longer than the load on-period. If this is not the case we recommend option "release output" for loads with release input resp. remote input / output.



## Connection picture:



## Technical Data:

ELECTRICAL DATA	RESBE 230V 4A	RESBE 230V 10A	RESBE 230V 16A	RESBE 115V 16A	RESBE 400V 16A	RESBE 208V 16A	RESBD 400V 16A	RESBD 208V 16A
Rated voltage U <sub>rated</sub>	AC 230V	AC 230V	AC 230V	AC 115V	AC 400V	AC 208V	3AC 400V	3AC 208V
Voltage range U <sub>min</sub> -U <sub>max</sub>	AC 195-264V	AC 195-264V	AC 195-264V	AC 85-132V	AC 340-460V	AC 176-240V	3AC 340-460V	3AC 176-240V
Frequency	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz	45-65 Hz
Overvoltage protection	varistor	varistor	varistor	varistor	varistor	varistor	varistors	varistors
Continuous current I <sub>max</sub>	4A	10A	16A	16A	16A	16A	16A	16A
Highest transient pulse typ. (@ Ta=25°C/U <sub>max</sub> )	< 8A < 5ms	< 18A < 5ms	< 36A < 5ms	< 18A < 5ms	< 32A < 5ms	< 32A < 5ms	< 32A < 5ms	< 17A < 5ms
Highest transient pulse typ. (@ Ta=60°C/U <sub>max</sub> )	< 18A < 5ms	< 56A < 5ms	< 104A < 5ms	< 53A < 5ms	< 96A < 5ms	< 96A < 5ms	< 96A < 5ms	< 44A < 5ms
Duration of effective current limit	< 1s	< 1s	< 1s	< 1s	< 1s	< 1s	< 1s	< 1s
Maximum switching rate	30 1/h	30 1/h	30 1/h	30 1/h	30 1/h	30 1/h	30 1/h	30 1/h
Status reports	LED green	LED green	LED green	LED green	LED green	LED green	LED green	LED green
<b>OPERATION DATA</b>								
Protection class comp. EN 60529	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Ambient temperature	0°C to 60°C	0°C to 60°C	0°C to 60°C	0°C to 60°C	0°C to 60°C	0°C to 60°C	0°C to 60°C	0°C to 60°C
Storage temperature	-25°C to +85 °C	-25°C to +85 °C	-25°C to +85 °C	-25°C to +85 °C	-25°C to +85 °C	-25°C to +85 °C	-25°C to +85 °C	-25°C to +85 °C
Cooling	natural convection	natural convection	natural convection	natural convection	natural convection	natural convection	natural convection	natural convection
<b>MECHANICS</b>								
Connection input connector 0,2-4mm <sup>2</sup>	L1-N	L1-N	L1-N	L1-N	L1-L2	L1-L2	L1-L2-L3	L1-L2-L3
Connection output connector 0,2-4mm <sup>2</sup>	T1-T	T1-T	T1-T	T1-T	T1-T2	T1-T2	T1-T2-T3	T1-T2-T3
Fitting on DIN-rail comp. DIN EN 50022	yes	yes	yes	yes	yes	yes	yes	yes
Installation position	any	any	any	any	any	any	any	any
Weight without / with mating connector	225g / 250g	215g / 240g	215g / 240g	215g / 240g	225g / 250g	215g / 240g	235g / 260g	235g / 260g
Measurements in mm with mating connector (W x H x D)	51 x 105 x 127	51 x 105 x 127	51 x 105 x 127	51 x 105 x 127	51 x 105 x 127	51 x 105 x 127	51 x 105 x 127	51 x 105 x 127
Measurements in mm without mating connector (W x H x D)	51 x 105 x 113	51 x 105 x 113	51 x 105 x 113	51 x 105 x 113	51 x 105 x 113	51 x 105 x 113	51 x 105 x 113	51 x 105 x 113
<b>OPTIONS (at a surcharge)</b>								
Release-output to switch-on load	3-30VDC	3-30VDC	3-30VDC	3-30VDC	3-30VDC	3-30VDC	3-30VDC	3-30VDC
Connection release connector 0,14-2mm <sup>2</sup>	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
Other voltages	yes	yes	yes	yes	yes	yes	yes	yes
Other frequencies	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz	16 <sup>2</sup> / <sub>3</sub> -400 Hz
Other currents	yes	yes	yes	yes	yes	yes	yes	yes
Other highest transient pulses	yes	yes	yes	yes	yes	yes	yes	yes
Efficiency, adjustable prior to delivery	0,2-1 s	0,2-1 s	0,2-1 s	0,2-1 s	0,4-1 s	0,2-1 s	0,4-1 s	0,3-1 s