

Technical information

Electronic current limiter

ESB 10.2



Brief description	ESB 10.2
	Ultra-compact electronic DC current limiter with two channels for selective disconnection of overloaded current paths

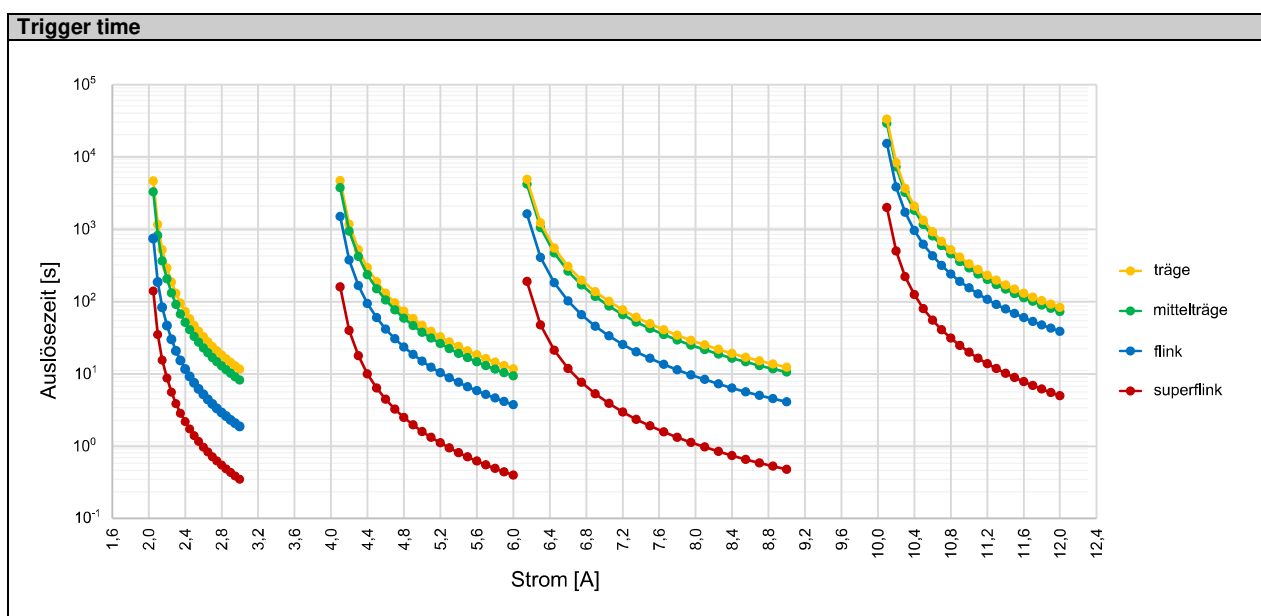
Features	
	Two independent channels per device
	up to 10A per channel
	4 tripping currents and 4 tripping characteristics $\Rightarrow$ 16 device types in one
	Signaling and resetting via led-out contacts
	Automatic reset after 20s (max. 3x in a row)
	Classic circuit breaker construction

Technical data	
Input voltage	Nominal voltage: 10-31 VDC
Input current	Max. 20 A
Trigger levels	2A / 4A / 6A / 10A per channel <i>user adjustable via front keys or USB</i>
Active current limitation	$1,5 \times I_N$ (2A / 4A / 6A), $1,2 \times I_N$ (10A)
Tripping characteristics (see tripping time)	superfast nimble medium yield sluggish <i>adjustable via USB</i>
Waiting time after switching off a channel	20 s (overload / short circuit)
Wire resistance	$< 25\text{m}\Omega$
Efficiency	$> 98,5\%$
Power dissipation	$< 5,5\text{ W}$
Standby power	$< 1\text{ W}$
Maximum capacitive load	$> 40.000\mu\text{F}$ (per channel at 24 VCD)
Return current	No limitation on reverse currents from the load to the source

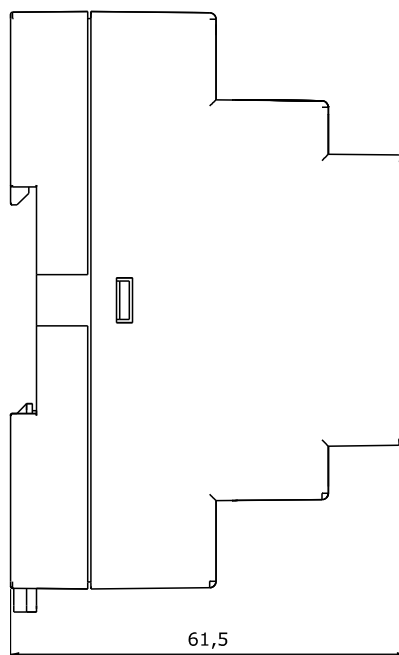
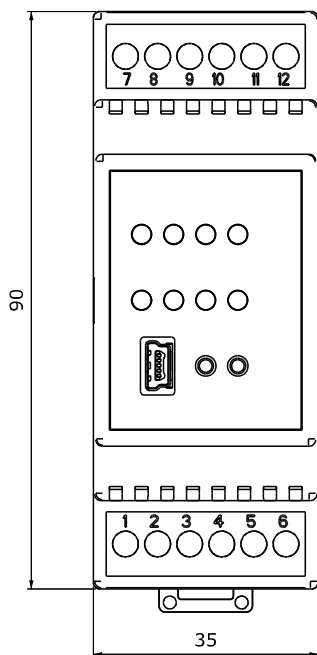
Protection	
Required backup	Not required, integrated failover
Internal fuse	15ADC (per output channel)
Overvoltage protection	> 33V
Safety standard	EN60950 (Reference), EN50178 (Reference)
Overvoltage category	EN50178 I
Pollution level	IEC60664-1 2
Protection class	Class II
EMC emission	EN55011 (CISPR11) Class B, EN55022 (CISPR22) Class B
EMC immunity	Complies EN61000-4-2 Level 3, EN61000-4-3 Level 3, EN61000-4-4 Level 2, EN61000-4-5 Level 1, EN61000-4-11 Level 2
Protection level	EN60529 IP20
Vibration sinusoidal	IEC 60068-2-6 (5-17.8Hz: ±1.6mm; 17.8-500Hz: 2G 2h / Axis (X,Y,Z))
Shock	IEC 60068-2-27 (30G 6ms, 20G 11ms; 3 shocks / direction, 18 shocks in total)

Environmental conditions	
Working temperature and humidity	-40°C to +70°C at 5 - 95% relative humidity, non-condensing
Storage temperature	-40°C to +80°C at 5 - 95% relative humidity, non-condensing
Derating	No derating

Displays / front buttons	
Status signals	Per channel 4 LEDs (see function / description of the terminals). OK: one LED of the channel is on >90% load: one LED of the channel flashes (2Hz) Triggered: all LEDs of the channel are flashing
Setting	Press SET key of both channels until LEDs flash Press SET key of the relevant channel to set current Press SET key of both channels until LEDs light up continuously
Enable / Disable	Hold down the SET key of the relevant channel for 5s
Resetting	Press the SET key of the triggered channel (possible at the earliest 20s after triggering)



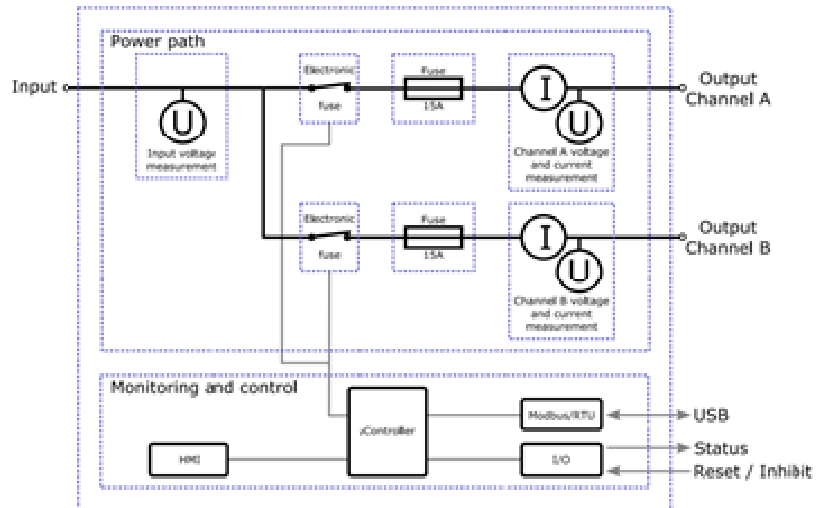
Weight, dimensions, material



Dimensions W x H x D in mm	35 x 90 x 61,5
Weight in kg	0,1
Housing material	Plastic, flame retardant UL94V-0

Function / description of the terminals	
Connecting terminals	2,5mm ² , Screw type (24-12AWG)
	
Input	(1/2) INPUT + (3/4) INPUT -
Output A	(8) OUT A + (7) OUT A -
Output B	(12) OUT B + (11) OUT B -
Status	(10) STATUS + <i>Collector</i> (9) STATUS - <i>Emitter</i> <i>Optocoupler Open Collector, max. 30VDC 50mA</i>
Resetting	(6) RESET + (5) RESET - <i>Optocoupler, 5-30VDC 20mA</i>

ESB 10.2 technical examination



No.	Addition
1	The installed terminals can handle a maximum current of approx. 12A. Therefore, the input terminal must always be approached twice for plus and minus. For safety, the input terminals are bridged internally on the board.
2	The minus (-) is bridged at the ESB 10.2 (no interruption by components)
3	Pressing for Reset or Set (switching the power), has a similar key-press time (3-5sec)
4	The programming mode cannot be locked
5	Reset function given (programmable) Rearm function, rising or falling edge adjustable via software
6	Relay function given (programmable) Inhibit function, rising or falling edge adjustable via software
7	Automatic reactivation after overload given (not needed), is deactivated by default
8	In the event of an overcurrent, channel A switches off. Does this have an influence on channel B? Or vice versa? No, see Fig. 1 and 2
9	To use the input signal, an external voltage can be connected or to use the input voltage, the minus contact (-) for the input signal must be connected to the negative contact of the input
10	Status request is made via an optocoupler, which must be connected in the negative line
11	For channel A and B, an oscilloscope was used to check whether a voltage dip / shutdown during a switching operation is a switching operation is excluded. (reactivate via signal input)→ No, see Fig. 3



Examples fuse connection

