



32 x7101B5x

### SLIM COLLECTION

Single-phase overexcitation rectifiers with internal DC side turn-off through voltage detection

The specified rectifiers are designed with time-controlled bridge/half-wave changeover and integral electronic fast turn-off. During start-up, the rectifier module delivers bridge-rectified output voltage for a limited period of time before changing over to half-wave rectification. The built-in voltage sensor ensures that the DC side output voltage is turned off electronically when AC input voltage is removed. Voltage spikes are generated when inductive loads are turned off. These spikes are limited to permissible levels by protective elements installed inside the rectifier.

Owing to its extremely compact design, the rectifier module can be installed in very restricted space. The module features a central bore for screw fixing inside a junction box.

### Technical specifications

<b>Functional principle</b>		Time-controlled changeover from bridge to half-wave rectification					
<b>Fast turn-off</b>		Electronic DC side turn-off through voltage detection					
<b>Ambient temperature</b>		[°C]	-40 ... 85		Derating as specified (60% of output current permissible at 85°C)*		
<b>Connections</b>		<b>Input</b>		2 wires 0.5 mm <sup>2</sup> , fine-wire to UL 1015 (AWG 20)			
		<b>Output</b>		2 terminals 0.2 mm <sup>2</sup> – 0.75 mm <sup>2</sup> (wire type 1)			
<b>Output voltage rated excitation / holding excitation</b>		$U_{out} = 0.890$ (up to -8%) / $0.445 \cdot U_{in}$					
Type	Rated input voltage (40 – 60 Hz) VAC (±10%)	Max. output current Overexcitation / holding current ADC*	Over- excitation time $T_{OE}$ [s] (±30%)*	Pause until ready for restart $T_P$ [s]**	Fast turn-off through voltage detection	Wire colour	Installation
77101B53	100 ... 240	2.0 / 1.0	0.3	0.25	Yes	Black	Central bore for screw fixing M4 Dmax. 4 mm
17101B53	100 ... 240	2.0 / 1.0	0.3	0.25	No	Grey	
77101B50	220 ... 500	1.0 / 0.5	0.3	0.25	Yes	Brown	**** Adhesive pad
17101B50	220 ... 500	1.0 / 0.5	0.3	0.25	No	Blue	

\* See derating diagram (Maximum current load at ambient temperature)

\*\* Max. switching frequency 4000 h<sup>-1</sup>

\*\*\* The overexcitation time may be different at extremely high or low ambient temperatures

\*\*\*\* Max. torque 0.6 N

### CE

#### EMC Directive 2014/30/EU:

Compliance with the following standards is confirmed:

EN 50081-2 (Emission):

EN 55011 (VDE 0875, part 11, 2011)

Group 1, Class A conducted interference

Group 1, Class B radiated interference

EN 61000-6-2 (Immunity):

EN 61000-4-3 (2011)

EN 61000-4-4 (2013) severity level 3

EN 61000-4-5 (2015) severity level 3

#### Low Voltage Directive 2014/35/EU:

Compliance with the following standards is confirmed:

HD 625.1 S1:1996 (VDE 0110) insulation coordination

EN 60529 (2014)

#### Machinery Directive 2006/42/EC:

The products are considered components in the sense of Machinery Directive 2006/42/EC and must not be put into service until the machinery in which they are incorporated has been declared in conformity with the provisions of the EC Directives.

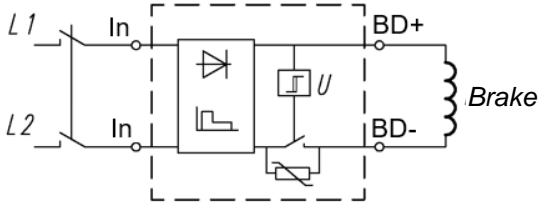
#### ROHS Directive 2011/65/EU:

We hereby declare that the above-mentioned products comply with the requirements of the RoHS Directive 2011/65/EU on the restriction of the usage of certain hazardous substances in electrical and electronic equipment, assigned to equipment category 11

#### Protection:

IP00 to EN 60529

### Connection example: brake motor application



### Connection and operation

The specified overexcitation rectifiers with internal DC side turn-off are designed for use with electromagnetic brakes of electric motors or with other electromagnetic devices characterized by high dynamic performance. They also enable the reduction of losses during holding periods. The technical specifications depend on the connected loads and on their electric and mechanical properties.

If the rectifiers are used on electromagnetic brakes that are operated in parallel with the motor, brake engagement may be significantly delayed in the presence of driving loads when the motor operates in generator mode after turn-off. If the rectifiers are operated at a voltage below the permissible minimum operating voltage, uncontrolled turn-off of the voltage sensor may cause malfunctions or even irreversible damage to power transmission components. The mechanical time constants during brake release or engagement and during switching of the electromagnetic device must be considered. The specification of the maximum switching frequency of the rectifier merely defines a limit value for the dissipated power that can be absorbed by the rectifier. This specification (see table) has been determined based on a minimum recovery time of 0.3 seconds and a holding time of 0.6 seconds. The maximum switching frequency also depends significantly on the inductance of the load. Consequently, the switching frequency needs to be determined for the specific application. Attention: If the switching frequency is not verified for the specific application, irreversible damage to the rectifier or load may occur. Turn-off must take place at holding current since repeated turn-off during overexcitation may cause thermal overloading of the rectifier. Turn-off during overexcitation may affect the required recovery time and the overexcitation time that follows.

### Attention!

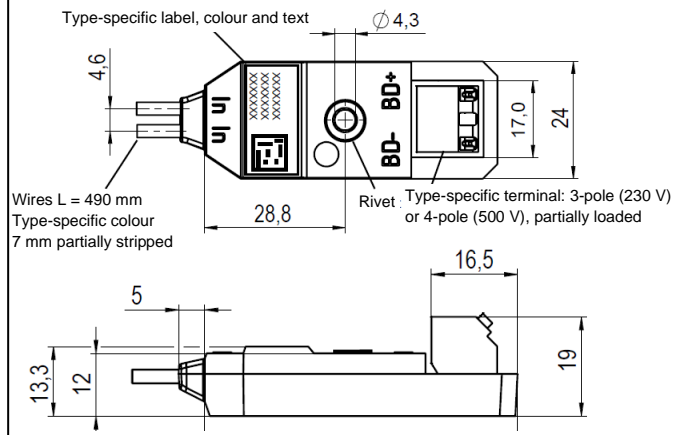
As a rule, the mean power must not exceed the rated power of the connected load at the rated duty cycle.

The mean current load of the rectifier must not exceed the specified rated holding current at the specified ambient temperature. Check that the rectifier pinout is correct. Incorrect connection would cause irreversible rectifier damage. The rectifier is not short-circuit proof. Output short-circuit to ground will destroy the rectifier.

All work must be performed by qualified specialist personnel only. Check that no voltage is present before connecting the rectifier to the power supply. The specifications on the rating plate and the information provided in the circuit diagram or data sheet must be strictly observed.

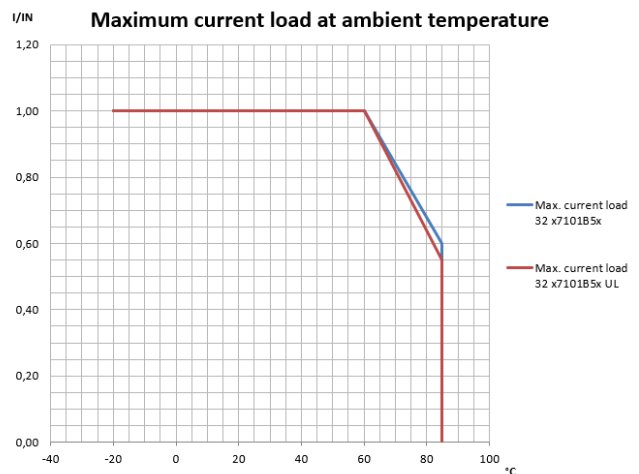
**Subject to change without notice.**

### Housing dimensions (mm) 32 x7101B5x



### Prescribed wire diameters for circuit board terminal

Wire type 1	single-wire
Cross-section [mm <sup>2</sup> ]	0.2 – 0.75
Cross-section [AWG]	18 – 24
Wire type 2	fine-wire
Cross-section [mm <sup>2</sup> ]	0.2 – 0.75
Cross-section [AWG]	18 – 24
Wire type 3	fine-wire with wire end ferrule
Cross-section [mm <sup>2</sup> ]	0.25 – 0.34



### Notes for UL Compliance

- The module must be installed in the motor terminal box or in the control cabinet.
- A pre-fuse corresponding to the cross-section of the connected brake line must be provided, but max. 5A.
- The product is intended to be used under pollution degree 2.

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