# 33 43310A00 Product Specification



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33 43310A00

Single-phase over-excitation rectifier

This single-phase over-excitation rectifiers specified below are designed to increase the attractive force, to reduce the **attraction time** of actuating solenoids, to reduce the **coupling** and **disconnection times** of clutches and brakes and to reduce the **power consumption** of clutches, brakes and actuating solenoids.

In order to increase the attractive force of actuating solenoids, the coil is overexcited during the overexcitation time applying a full wave rectified voltage. Afterwards, the rectifier changes over to the selected holding voltage, that shouldn't be higher than the specified nominal voltage of the solenoid. To lower the power consumption the nominal voltage of the solenoid should be not lower than the overxcitation voltage to achieve the nominal attractive force. The holding voltage can be adjusted depending of the dimensioning of the solenoid to a lower value than nominal. Owing to this

power saving effect the switch off time will be reduced without the necessity of DC-side switching due to the lower magnetic energy.

An integrated **protective circuit** allows DC side switching, thus reducing fall times, coupling times and disconnection times. The integrated compensation of input voltage changes provides a better stabilized output voltage. The rectifier is designed for **powerless** switching on and off. Due to their compact plastic housing, these rectifiers can be mounted on top hat rails in switch cabinets. Plug-in screw terminals ensure simple installation.

### CE

These products meet the requirements of EMC Directive 89/336/EEC. Compliance with the following standards is confirmed: EN 55011 (VDE 0875, part 11, 1992) Group 1, class A, disturbance voltage Group 1, class B, disturbance radiation EN 61000-4-3 (1997) severity level 3 EN 61000-4-4 (1996) severity level 3

EN 61000-4-5 (1996) severity level 3

The products comply with the Low Voltage Directive 73/23/EEC.

### Compliance with the following standards is confirmed: HD625.1 S1 (1996) EN60529 (1991)

The products are considered components in the sense of the **Machinery Directive** 

**98/37/EEC** and are not to be used until the machine in which they are to be incorporated is declared to conform to the requirements of the EC Directives.

# Technical data

Туре 33 433	10A00
Postifier type	Full wave rectifier with
Recimer type	synchronous switched
Input voltage	380 - 415 VAC ± 10%
Frequency	40 – 60 Hz
Output voltage	
Overexcitation	338 - 370 VDC
Holding voltage adjustable at	40 – 240 VDC
50 Hz	
Maximum output current	
with overexcitation	6 ADC
holding current	3 ADC
Overexcitation time adjustable	0,15 – 3 s
Min. recovery time	100 ms
Required relay output for	15 mA / 400 VAC potential
powerless switching	seperated
Fuse: Fine wire fuse 6.3 x 32	T4/400V
delayed	14/4001
Connection	8-pole plug in screw
Connection	terminals, 2,5 mm <sup>2</sup> fine wire
Ambient temperature	0 – 70 °C
	See diagram 2 for derating
Protection as per EN 60529	IP 00

### Block diagram



Specification subject to change without notice. Please observe ordering data!

# Operating range



### Diagram 1: Permissible maximum switch frequency Rectifiers installed in switch cabinets with a minimum distance of 30 mm to adjacent units.

$$f_{s} = \frac{I_{Hmax}^{2} - I_{H}^{2} * ED}{(I_{oe}^{2} - I_{H}^{2}) * t_{oe}} \quad I_{Hm}^{f_{s}}$$

max. switch frequency max. holding current (See nax technical data) adjusted holding current Duty cycle Over-excitation current

IOE Over-excitation time toE

Formula 1: Permissible maximum switch frequency

### Permissible operating temperature



Admissible current load at ambient temperature Diagram 2: 1 distance between 2 devices minimum 30 mm

2 distance between 2 devices below 30 mm

# Dimensions (mm)



Factory settings

Туре 33 433	Overexcitation time t <sub>OE</sub> [s]	Holding voltage V [VDC]
	Nominal value	Nominal value
10A00	$1,2\pm0,2$	115 ±3

overloading.

cycle.

load

Attention!

The maximum switching

the basis of formula 1.

frequency can be determined on

The over-excitation time should

be lower than 80% of the duty

Ongoing DC-side switching

excitation mode isn't allowed

due to a possible damage of the

The holding voltage adjustment

should be done with connected

To use the powerless switching

feature a potential free relais

the terminals are internal

contact is necessary because

connected with the AC input.

when operating in over-

protection circuit.

# Application hints

The technical data apply to rectifiers installed in switch cabinets with a minimum distance of 30 mm to adjacent units. In case the distance to other components is less than 30 mm, the power consumption must be reduced by 20%. The rectifier operates as bridge rectifier during the selected over-excitation time and subsequently reduces the output voltage to the selected holding voltage by phase shift control. It is crucial to ensure that the total power consumption does not exceed the rated power of the connected unit. The rectifier must only be used

within the limits shown in diagram 1 in order to avoid



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