

33 43502B01 Product Specification



33 43502B01

CE Thes

These devices meet the requirements of the EMC Directive 89/336/EEC. Compliance with the following standards is confirmed: EN 55 011 (VDE 0875, part 11, 1992) Group 1, class A, disturbance voltage Group 1, class B, disturbance voltage Group 1, class B, disturbance radiation IEC 801-3, 1984 (VDE 0843, part 3, 1983) Test severity level 3 IEC 801-4,draft (VDE 0843, part 4, 1987) Test severity level 2 IEC 801-5 (VDE 0843, part 5, 1992) Test severity level 3



Dimensions (mm)

Type 33 43502B01 (5) Upper edge of proportional solenoid

		 Casing Cover turned by 180° (folded open) Potentiometer dither frequency TP 1 = Test point 1 TP 2 = Test point 2 Screw for attaching to proportional solenoid Fuse TR 5 F 2 A Setpoint with bridge B 1: 0 10V without bridge B 1: 0 15V o Setpoint signal with R = 500 Ohms and bridge B1: 0 20 mA Potentiometer ramp decline time t_{up} Potentiometer base current I_{min} Potentiometer maximum current I_{max} Terminal 1: 0V U_B (oparating) Terminal 2: 0V potentiometer Terminal 3: Desired-value input (potentiometer slider) Terminal 5: Operating voltage U_B
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Controller / amplifier for proportional solenoids

The controller / amplifier is designed to control a proportional solenoid with constant current. The unit can be directly moun-ted to solenoids having DIN 43650 connectors. The principal elements of the regulator are: voltage stabilization, linear ramp former for positive and negative ramp, fuse elements and chopped power output stage (f = 240...400 Hz). The dither frequency can be adjusted by the potentiometer [®], the base current with $\mathrm{I}_{\mathrm{min}}$, the maximum current with I_{max} , the ramp raise time with t_{up} and the ramp decline time t_{down}. The emergency STOP function is achieved by interrupting the operating voltage.

Design variants

Type 33 435 02B01 Operating voltage U_B:18...32V

Subject to alteration.

Please observe ordering data!

Technical data

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Operating voltage U _B ¹)	1832 V	
Residual ripple	<u>≤</u> 10%	
Maximum output current ²)	2.4 A	
Temperature drift	$\leq \pm 1\%$ of I_{max}	
Voltage dependency	$\leq \pm 0.5\%$ of Imax	
Base current (adjustable) Imin	02A	
Max. current (adjustable) Imax	lmin + 0 2.4 A	
Fuse	TR 5 F 2 A	
Dither frequency (adjutable)	240 400 Hz	
Stabilized voltage (terminal 4)	15V + 0.6V	
Maximum loadability	$< 5 \text{ m}\Delta$	
Setpoint signal (terminal 3)	$\frac{3}{10}$ 15//0 10/	
Ontional	0100/0100	
Pamp rise and decline time	020 MA	
(apparetly adjustable) related to		
(Separativ adjustable) related to	0170	
desired-value signal 0max.	U.I7 S	
	desired-value	
- .	signal = 0max.	
lemperature range	-20°C +70°C	
Connection for series terminal		
(via Pg11)	5-pole	
Connecting cross-section	1.5 mm ² fine wire	
Type of protection	IP65	
Basic setting		
I _{min}	0A	
I _{max}	2.4 A	
$t_{up} = t_{down}$	< 0.1 s	
Dither frequency	400 Hz	
1) Direct connection to battery or mains unit necessary.		

1. Mounting and Connecting Instructions

1.1 Supply voltage Device B01:18 ... 32 V. Smoothed d.c. voltage with residual ripple ≤10%. This is achieved with bridgerectified voltage and a capacitor circuited parallel to the supply voltage Recommended values: 2200 μ F/40 V to I_{max} = 1.2A $4700 \,\mu\text{F}/40 \,\text{V}$ to $I_{\text{max}} = 2.6 \,\text{A}$ CAUTION: Overvoltage will damage the current regulator

- 1.2 It is necessary to connect the supply line directly to the battery or mains.
- 1.3 Shielded cable must be used if the length exceeds 3 m. One and of the shield must be connected to terminal 2
- 1.4 The lines must not be wired parallel to power lines.

1.5 The input voltage at terminal 3 must not become negative. A negative voltage causes faulty reactions and destroys the current regulator.

2 Setting Instructions For all subsequent settings the potentiometer "dither frequency" (8) must be turned to the maximum of 400 Hz (anti-clockwise). It is recommanded to measure the currents as described under 3.4.

- 2.1 Adjust the base current potentiometer I_{min} (18) 1. Adjust desired value to zero. 2. Turn potentiometer I_{max} clockwise until the desired magnitude (pressure or quantity) is reached.
- 2.2 Adjust maximum current potentiometer I_{max} (19) 1. Adjust desired value to maximum value. 2. Turn potentiometer I_{max} anti-clock-wise until the desired hydraulic magnitude is reached.

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- 2.3 Ramp rise time and decline time potentiometer t_{up} (17) and t_{down} (16) Turn the potentiometer to adjust the shift time in such a manner that the desired transient response is achieved.
- 2.4 Adjust the dither frequency by means of potentiometer (8) "dither frequency". Turn potentiometer counter-wise until the hydraulic system starts to oscilate.

CAUTION: Check the entire current range.

Trouble-shooting

3

- 3.1 Measuring the operating voltage Device B01: +18 ... 32 V. Between terminal 5 and terminal 1.
- 3.2 Measuring the internal, stabilized voltage +15V. Between terminal 4 and terminal 1 or 2.
- 3.3 Measuring the desired input signal

With bridge 1 (13): 0... +10V or without bridge 1 (13): 0... +15 V. At terminal 3 and terminal 2. By current measurement 0... 20 mA.

In front of terminal 3.

- 3.4 Measuring the current in the excitation winding of the solenoid, as voltage drop via the measuring resistance. Test point 1(9) negative potential; test point 2 (10) positive potential. A voltage drop of 100 mV equals 0.5 A. **IMPORTANT:** The current can only be measured if the voltage regulator is mounted on the solenoid.
- 3.5 Constant-current regulation The desired maximum current can only be achieved as long as the following condition is provided:

$$I_{M} = \frac{U_{B} - U_{R}}{R_{E}}$$

- $I_{M} = desired maximum$ current
- U_o = current root-meansquare operating voltage
- $U_{c} = \max$ voltage drop on controller = 2 V
- R_{E} = current resistance of excitation winding

Connection of setpoint inputs





Terminal assignment

Terminal 2: 0 V potentiometer

Terminal 4: + potentiometer

Terminal 1: 0 V U_B

Terminal 3: Setpoint

(potentiometer slider)

Terminal 5: U_R





External setpoint-signal

- Setpoint
- \odot U_{desired-value} = 0...10V with bridge $U_{\text{desired-value}} = 0...10V$ without bridge

③ Desired value_{frame} 0V



With several potentiometers

CAUTION: The total resistance of all connected potentiometers must be more than 5 kOhm

② without bridge



With current input 1 Input current 0...20 mA

② with bridge R_M = 500 Ohm - 1/4 W



2 controllers for 4/3 way proportional valve ② with bridge

④ Joy Stick Type 33 250 04D51/D52

Ordering data Spare Parts

Controller / amplifier Type: 33 435 Size: 02B01 Operating voltage U_B: 18 ... 32 V Fuse Mat.-No. 420 504 Short-circuiting plug mat.-No. 414 654 PG 11 screw joint Mat.-No. 412 047 Flat seal Mat.-No. 604 791

5 ... 20kOhm without bridge