



33 40301B00





33 40301 B00 Product Specification

Current controller with ramp generator for proportional solenoids

The current controller is designed to control a proportional constant current solenoid.

The main components of the controller are a voltage controller, a linear ramp generator for ramp up and ramp down, a dither oscillator, a LED, and a chopped output stage (short circuit and earth contact proof). The dither amplitude, the initial current Imin, the maximum current I_{max} , the ramp up time and the ramp down time can be adjusted by means of the corresponding potentiometers. An emergency stop function is accomplished by supplying < 2 V voltage to the terminal T 1-6 or by shorting the terminal to earth.

Attention! The ramp function is disabled when switching the emergency stop function on and off. The LED lights up when the current controller is ready for operation and flashes in case of a short circuit or excessive excitation current.

Subject to design modifications.

Please note ordering data!

Technical data

Operating voltage U_0 Residual ripple Output current max. Initial current (adjustable) Maximum current (adjustable) Dither frequency (optional) Dither amplitude (adjustable) Stabilized voltage U_{St} Max. loading Setpoint signal (optional) with $R_V = 250$ Ohm	832 V < 10% 2.4 A 01.6 A I_{min} + 02.4 A 65/130 Hz 0750 mA 5 V \pm 0.2 V < 10 mA 05 V 020 mA 010 V 015 V
Ramp up/down time (separately adjustable) based on setpoint signal	
Connection: terminal Cross-section	80 ms4 s 2 x 3-pole 2.5 mm ² fine wire
Flat blade connectors 6.3 x 0.8/2.8 x 0.8 Protection type	3 IP 00

1 Mounting and connection

1.1 Supply voltage 8...32 V Smoothed DC voltage with residual ripple < 10%. This is accomplished with bridge-rectified voltage with a capacitor that is connected in parallel to the supply voltage. Approximate values: 2200 mF/40 V up to I_{max} = 1.2 A 4700 mF/40 V up to I_{max} = 2.4 A Attention: Overvoltage

causes damage to the current controller. 1.2 The supply line is to be

- connected directly to the battery or to the power pack.
- 1.3 If the connecting cable is longer than 3 m, a screened cable is to be used.
- 1.4 The lines are not to be laid parallel to mains power lines.
- 1.5 The external setpoint voltage is not to turn negative. Negative voltage causes malfunctions of and damage to the current controller.

2 Set-up

When performing adjustments at a later date, the dither amplitude potentiometer is to be turned anti-clockwise into zero position.

To enhance adjustment, the current in the excitation winding should be measured (see 3.4).

- 2.1 Setting the initial current Potentiometer I_{min}
 1. Set the setpoint to zero.
 2. Turn the I_{min} potentiometer clockwise until the desired value (pressure or quantity) has been reached.
- 2.2 Setting the maximum current Potentiometer I_{max}
 1. Set the setpoint to the maximum value.
 2. Turn the I_{max} potentiometer clockwise until the desired
- hydraulic value has been reached.2.3 Setting the ramp up and ramp down time
 - Turn the potentiometers to set the adjusting time in such a way that the desired ramp up or down rate is obtained when the setpoint is changed.

2.4 Setting the dither amplitude and dither frequency 1. Select the dither frequency according to the size of the solenoid and valve: with jumper J 1: 130 Hz; without jumper J 1: 65 Hz 2. Set the dither frequency to approx. 0.4 x I_{max} by means of the setpoint potentiometer. 3. Measure the current in the excitation winding (see 3.4). 4. Turn the potentiometer clockwise until the hydraulic system starts to oscillate or the current has increased by a maximum of 0.01 A.

3 Troubleshooting

- 3.1 Measure the operating voltage 8...32 V between plug P 1, T 1-3 or T 1-4 (0 V) and plug P 2.
- 3.2 Measure the internal stabilized voltage +5 V between terminals T 1-3 and T 1-2.
- 3.3 Measure the setpoint input signal between terminals T 1-3 and T 1-1.
 3.4 Select the appropriate
- 3.4 Select the appropriate setpoint voltage range: with jumper J 3-1: 0...5 V with jumper J 3-2: 0...10 V with jumper J 3-3: 0...15 V

3.5 Measure the current in the excitation winding of the solenoid as voltage drop above the measuring resistance, using test point 2 as minus potential and test point 1 as plus potential. A voltage drop of 100 mV corresponds to a current value of 0.5 A.
Important: The current can

only be measured if a current controller is connected with the solenoid.

3.6 Constant current control The desired maximum current can only be kept constant as long as the following condition is fulfilled:

$$I_{M} \leq \frac{U_{O} - U_{C}}{R_{E}}$$

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



CE

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

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