

Electronic amplifier type EV1D

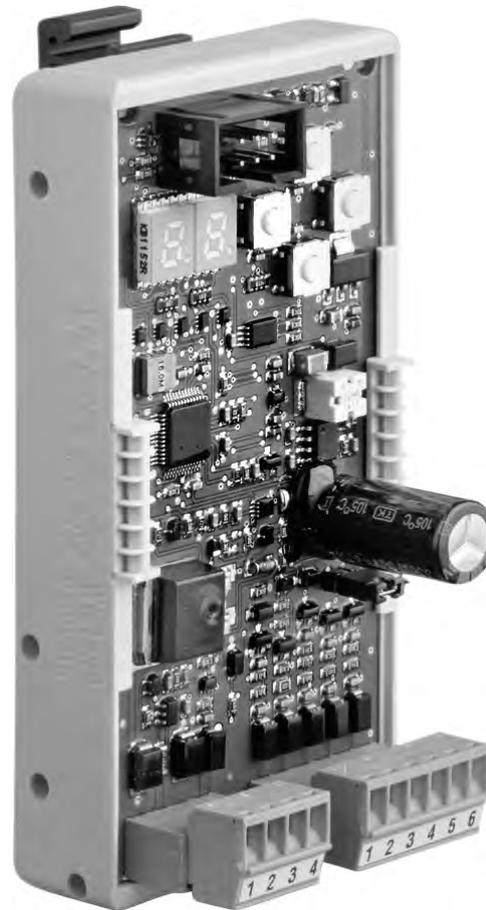
Assembly instructions



Modular construction

Supply voltage U_B : 10...48 V DC

Output current I_A : max. 2 A



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Parameters

1.1 General parameters

Connection leads	• Max. 1.5 mm
Fastening	With a card holder (accessory) on 35 mm standard support rails or 32 mm support rails according to DIN EN 60715
Installation position	Any
Protection class	IP 00 according to DIN EN 60529, VDE 0470-1 or IEC 60529
Ambient temperature	-20°C...+60°C

1.2 Electrical Data

Supply voltage	U_B	10...48 V DC
Output voltage	U_A	$U_B - 0.7$ V DC, pulse-width modulated
Output current	I_A	max. 0...2 A short-circuit proof
Setting range	I_{min}	0...2 A
	I_{max}	0...2 A
		Factory default setting $I_{min} = 0$ A; $I_{max} = 2$ A
Voltage ranges	U_{nom}	Can be optionally set as 0...5 V DC or 0...10 V DC Factory default setting 0...10 V DC
Reference voltage	U_{St}	5 V DC $\pm 4\%$ Nominal volume max. 5 mA (stable voltage for supplying the target value potentiometer)
Enable/disable input		TTL compatible or can be triggered with a contact

1.3 Electro-magnetic compatibility (EMC)

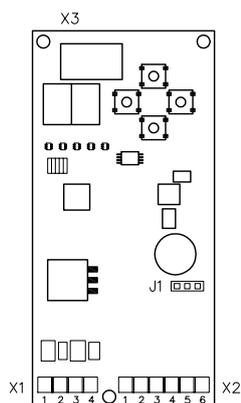
The EMC of the device was tested using an accredited testing laboratory (emitted interference according to DIN EN 61000-6-3 and immunity to interference according to DIN EN 61000-6-2 evaluation criterion "B"). The test set-ups only represent typical use. This EMC testing does not release the user from carrying out adequate prescribed EMC testing of their complete system (according to Directive 2004/108/EC). If the EMC of the complete system must be further amplified, the following measures can be tested and introduced:

- The required smoothing capacitor in accordance with [Chapter 1.2, "Electrical Data"](#) is not only needed to ensure the device functions correctly, but also to guarantee compliance with EMC guidelines (conducted emitted interference).
- The equipment should be installed in a metal cabinet (shielding)
- Supply lines, such as inputs and outputs to and from the device, should be as short as possible. If necessary they should be shielded and twisted in pairs (to reduce the antennae-like effect for increasing the immunity to interference).

2 Dimensions

All dimensions in mm, subject to change.

2.1 Printed circuit board



Proportional amplifier (card) EV1D

- X1 + solenoid
- X2 + solenoid
- X3 Auxiliary inputs, programming interface

Terminal connections:

X1-1	+ solenoid
X1-2	- solenoid
X1-3	0 V power (GND)
X1-4	10-48 V supply voltage
X2-1	Enable/block input
X2-2	5 V output
X2-3	0...5 V / 0...10 V target value input
X2-4	0 V analogue (GND)
X2-5, X2-6, X3	Auxiliary inputs, programming interface

Jumper J1

10 V	5 V

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Installation, operation and maintenance information

3.1 Information on setting

The card is parameterised using four buttons and a two-digit seven-segment display. All operations are performed using the buttons arranged in a square. In accordance with the normal installation position of the card (plug connections at bottom), the buttons are labelled top, bottom, right and left.

Parameters that can be adjusted by the user can be selected by navigating in a menu. These are shown in the display with their (standardised) values and can be modified at the push of a button. Adjusted parameter values are effective immediately once the modification is made, so that the user receives immediate feedback on the effects of the setting.

However, final and permanent adoption requires confirmation (at the push of a button). If this does not take place, the adjustment is aborted after 10 seconds and all settings are as they were prior to the attempted adjustment.

Navigation

The right and left buttons are used to navigate in the menu. The right button is generally used to go deeper into the menu, whereas the left button is used to go up one level (back). The up and down buttons are used to increase and reduce values.

User parameters

Parameter	Designation		min	max	Default	Standardisation
P0	Minimum current	I_{\min}	0	99	0	20 mA/increment
P1	Maximum current	I_{\max}	0	99	50	20 mA/increment
P2	Ramp time, up	T_{up}	1	99	10	100 ms/increment
P3	Ramp time, down	T_{down}	1	99	10	100 ms/increment
P4	Dither amplitude	l	1	99	0	%
P5	Dither frequency (dither period)	f	20 (50)	100 (10)	50 (20)	Hz (ms)



Note

Note that the parameter values can only be modified in discrete steps using the keypad. Conversion factors that match physical values to the respective increments are stated under "Standardisation".

3.2 Setting instructions

Changing the parameters

- ☑ The amplifier is in normal operation.
- 1. Press and hold the "right" button.
- ✓ P0 is shown in the display. The amplifier is now in parameterisation mode.
- 2. Use the "up" and "down" buttons to select a parameter from P0...P4.
- 3. Press the "right" button to select the displayed parameter.
- ✓ The current standardised numerical value of the parameter is displayed. For the meaning of the numerical value and the parameters, see



Note

Modifications are effective immediately once the value is changed. However, permanent adoption of the values must be confirmed first.

- 4. Press the "up" or "down" button to modify the value.
- 5. Press and hold the "right" button to confirm the value.
- ✓ The amplifier acknowledges the adoption of the parameter by briefly displaying the value 0C

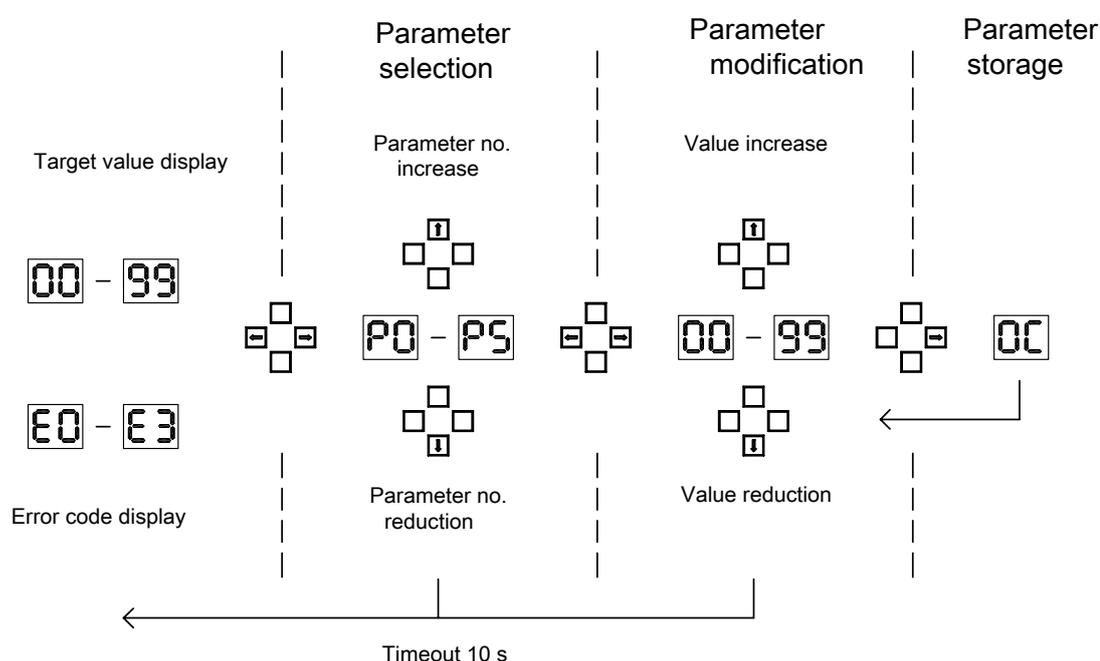


Note

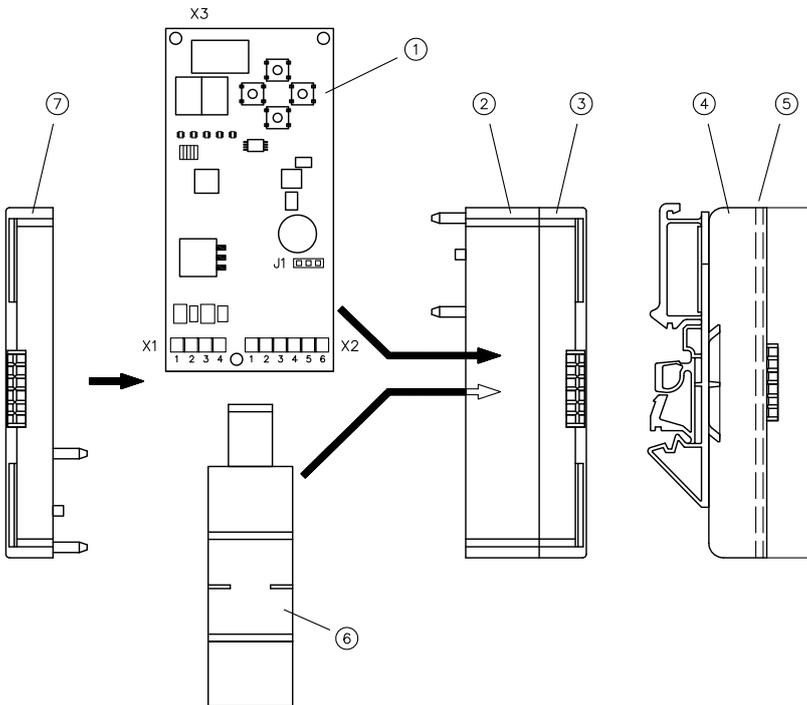
If modified parameters should not be saved, the change can be discarded by pressing the "left" button. The amplifier switches back to normal operation.

Normal operation

Parameterisation mode



3.3 Assembly of the module on the card holder



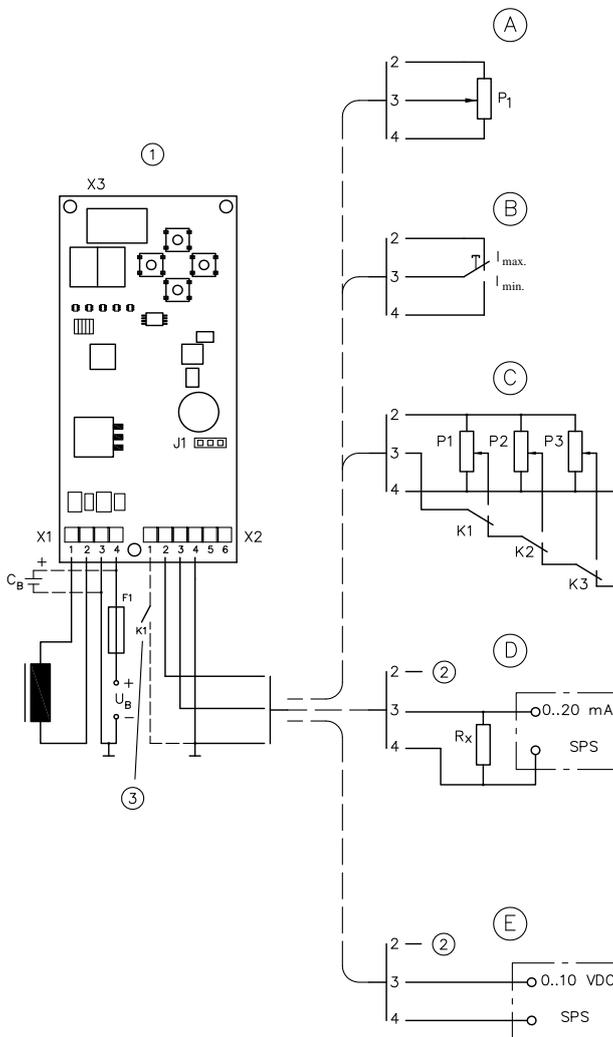
- 1 Board (printed circuit board)
- 2 Centre section
- 3 Side part, right
- 4 Rear guide slot for support rail terminal
- 5 Circumferential location slot for board (printed circuit board)
- 6 Support rail terminal
- 7 Side part, left

Quick guide

1. Fit together the card holder centre section (2) and one of the two side parts (3) or (7).
2. Push the support rail terminal (6) into the rear trapezoidal guide slot (4)
3. Push the printed circuit board (1) into the circumferential location slot (5)
4. Insert the remaining card holder side part (3) or (7)
- ✓ The module is now assembled in the card holder.

4 Typical circuits

4.1 Actuation of hydraulic valves using a proportional solenoid



- 1 Dither frequency
- 2 Not used
- 3 Enable/block

Example A	Operation with external target value potentiometer F1 = medium time-lag fuse; for nominal value see "Setting instructions" in Chapter 3, "Installation, operation and maintenance information" CB = smoothing capacitor P1 = target value potentiometer 10 kΩ, min. 0.1 W Jumper J1 5 V DC
Example B	Operation with target value changeover switch for both configured target values I_{min} and I_{max} F1 = as in example A Jumper J1 5 V DC
Example C	Operation with priority-dependent target value changeover switch for four target values (relay circuit) Functional example: Rapid traverse mode 1 - K 1 → P1 Rapid traverse mode 2 - K 2 → P2 Creep mode - K3 → P3 Stop - K1 → K2 → K3 → ⊥ F1 = as in example A Jumper J1 5 V DC
Example D	Operation with external target value, power source from PLC, CNC or PC Note Pay attention to the maximum load of the power source. F1 = as in example A Rx = 250 Ω/0.5 W Jumper J1 5 V DC
Example E	Jumper J1 10 V DC

Further information

Additional versions

- Proportional amplifier type EV1M3: D 7831/2
- Proportional amplifier type EV22K2: D 7817/1
- CAN node type CAN-IO: D 7845 IO
- Programmable logic valve control with Profibus type PLVC 21: D 7845-21
- Programmable logical valve control type PLVC 41: D 7845-41
- Programmable logic valve control type PLVC 8: D 7845 M

Application

- Proportional directional spool valve, type PSL and PSV size 2: D 7700-2
- Proportional directional spool valve, type PSL, PSM and PSV size 3: D 7700-3
- Proportional directional spool valve, type PSL, PSM and PSV size 5: D 7700-5
- Directional spool valve type NSWP 2: D 7451 N
- Clamping module type NSMD: D 7787
- Directional seated valve type EM and EMP: D 7490/1