

# Analogue amplifier modules

**RE 29741/02.06**  
Replaces: 02.03

1/4

## Types VT 11029 and VT 11030

Series 1X



H5348\_d

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## Features

- Suitable for controlling a proportional solenoid
- Differential input
- Clocked output stage
- Ramp generator with adjustable ramp time
- Adjustable current regulator
- Reverse polarity protection for voltage supply
- Voltage supply indicated by LED

## Ordering code

VT 110\_\_ -1X/ \*

Amplifier modules for controlling a proportional solenoid

### Clock-pulse frequency:

- 100 Hz (for hydraulic pumps) = 29
- 200 Hz (for proportional valves; e. g. type DBET) = 30

Series 10 to 19 = 1X  
(10 to 19: unchanged technical data and pin assignment)

Further details in clear text

## Functional description

These amplifier modules are suitable for controlling a proportional solenoid. They are to be snapped onto carrier rails according to EN 60715. The electrical connection is made by means of screw terminals. The modules are powered by 24 VDC.

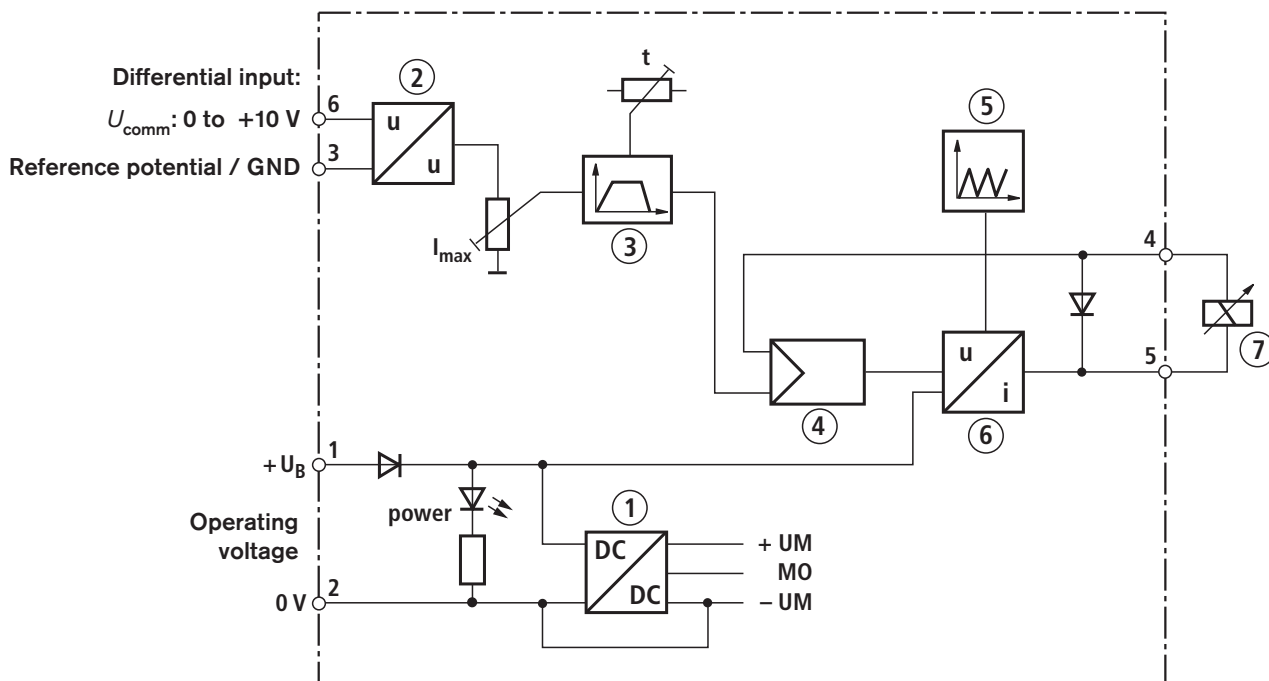
The solenoid current (actual value) is measured and compared with the externally provided command value. Any occurring difference between the actual and command value, caused, e.g., by changes in the solenoid temperature or the operating voltage, are balanced.

The following values can be adjusted from outside by means of

assigned trimming potentiometers:

- Ramp time 50 ms to 5 s
- Gradient of the output characteristic curve (adjustment range from  $I_V$  to  $I_{max}$ )

## Block circuit diagram / pin assignment



- |                          |                         |
|--------------------------|-------------------------|
| 1 Power supply unit      | 5 Clock-pulse generator |
| 2 Differential amplifier | 6 Output stage          |
| 3 Ramp generator         | 7 Proportional solenoid |
| 4 Current regulator      |                         |

## Technical Data (For applications outside these parameters, please consult us!)

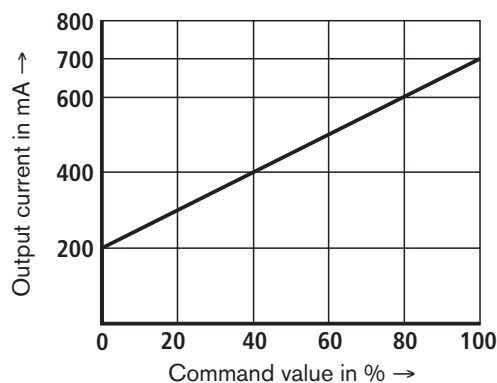
Operating voltage	$U_O$	24 VDC +40 % -10 %
Operating range:		
– Upper limit value	$u_O(t)_{\max}$	35 V
– Lower limit value	$u_O(t)_{\min}$	21 V
Power consumption	$P_{S\max}$	20 VA
Current consumption	$I_{\max}$	0.85 A
Fuse	$I_S$	Electronic short-circuit monitoring of the solenoid
Inputs:		
– Command value (differential input)	$U_{\text{comm}}$	0 to +10 V; $R_i$ approx. 10 k $\Omega$
Adjustment ranges:		
– Output current	$I$	$I_V$ to $I_{\max}$
– Ramp time	$t$	approx. 50 ms to approx. 5 s
Outputs:		
– Solenoid current/ -resistance		
• with VT 11029	$I_{\max}$	700 mA; $R_{(20)} = 19.5 \Omega$
• with VT 11030	$I_{\max}$	800 mA; $R_{(20)} = 19.5 \Omega$
– Biasing current		
• with VT 11029	$I_B$	200 mA
• with VT 11030	$I_B$	100 mA
– Clock-pulse frequency of output stage		
• with VT 11029	$f$	100 Hz $\pm$ 15 %
• with VT 11030	$f$	200 Hz $\pm$ 15 %
Type of connection		6 Screw terminals
Type of mounting		Carrier rails TH 35/7.5 to EN 60715
Type of protection		IP 20 to EN 60529
Dimensions (W x H x D)		25 x 79 x 85.5 mm
Permissible operating temperature range	$\vartheta$	0 to +50 °C
Storage temperature range	$\vartheta$	-25 to +85 °C
Weight	$m$	0.13 kg

### Note!

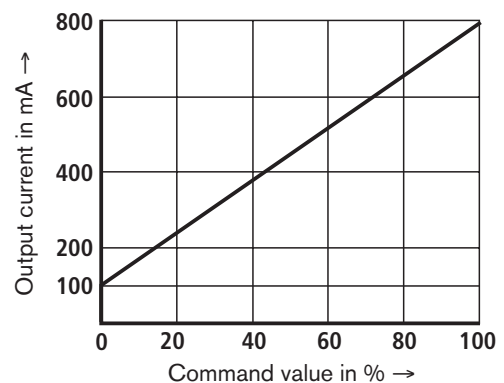
For details regarding **environment simulation tests** in the field of EMC (electromagnetic compatibility), climate and mechanical stress, see RE 30306-U (declaration on environmental compatibility).

## Output characteristic curves

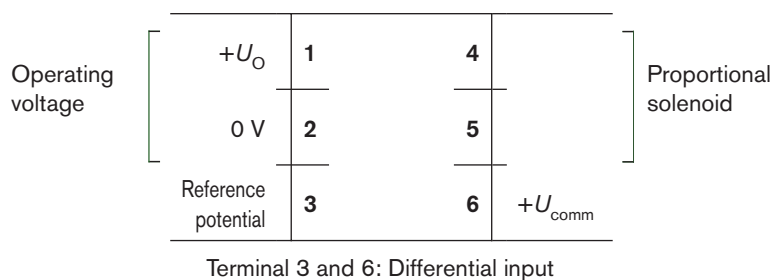
VT 11029



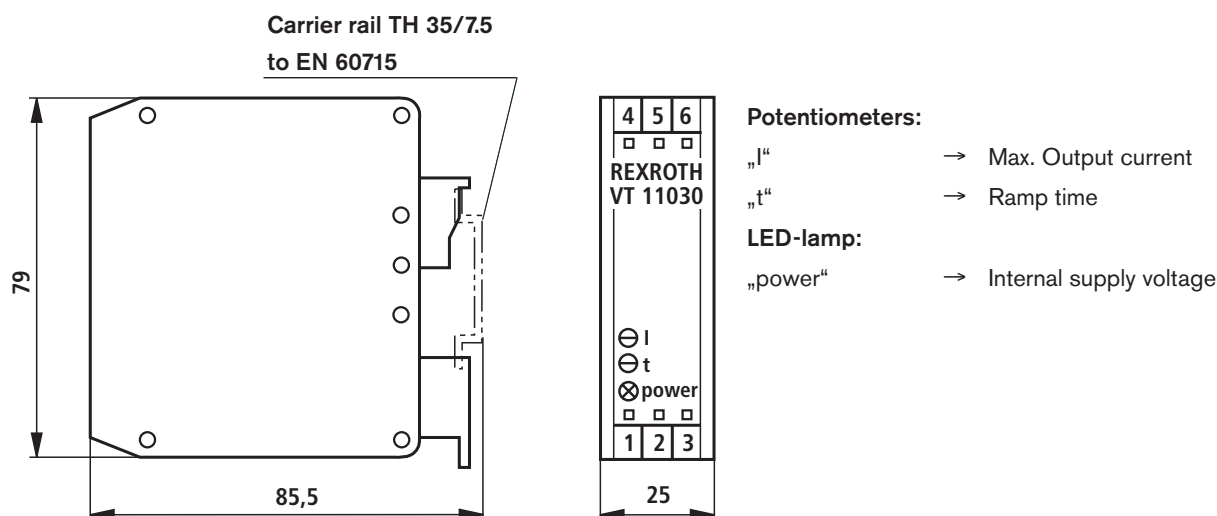
VT 11030



## Terminal assignment



## Unit dimensions (Dimensions in mm)



## Engineering / maintenance notes / supplementary information

- The amplifier module may only be wired when disconnected from the power supply!
- The distance to radio equipment must be sufficiently large ( $\gg 1$  m)!
- Command value cables must always be shielded and **not** laid near power cables; shield solenoid cables!
- Do not use free-wheeling diodes in the solenoid cables!
- In the case of heavy fluctuations in the operating voltage, it may become necessary to install an external smoothing capacitor having a capacitance of at least 2200  $\mu$ F.  
Recommendation: Capacitor module type VT 11073 (see RE 29750); sufficient for up to 3 amplifier modules