

# Analogue amplifier modules

**RE 29737/03.06**  
Replaces: 07.02

1/4

## Types VT 11011 and VT 11012

Series 1X



H5983\_d

### Table of contents

Contents	Page
Ordering code	1
Features	1
Functional description	2
Block circuit diagram / pin assignment	2
Output characteristic curve	2
Technical Data	3
Terminal assignment	3
Unit dimensions	4
Engineering / maintenance notes / supplementary information	4

### Features

- Suitable for controlling proportional valves without electrical position feedback (see ordering code)
- Differential input  $\pm 10$  V
- 2 clocked output stages
- Time ramp (adjustable)
- Current regulator (adjustable)
- Reverse polarity protection
- Indication of voltage supply by LED

### Ordering code

VT 110_ _ -1X/ *		Further details in clear text
Amplifier modules for controlling proportional valves:		
– Types .WRZ (from series 7X), 3DREP 6 (from series 2X) and 4WRA 6 (series 1X)	= 11	
– Type 4WRA 10 (series 1X)	= 12	
Series 10 to 19 (10 to 19: unchanged technical data and pin assignment)	= 1X	

### Functional description

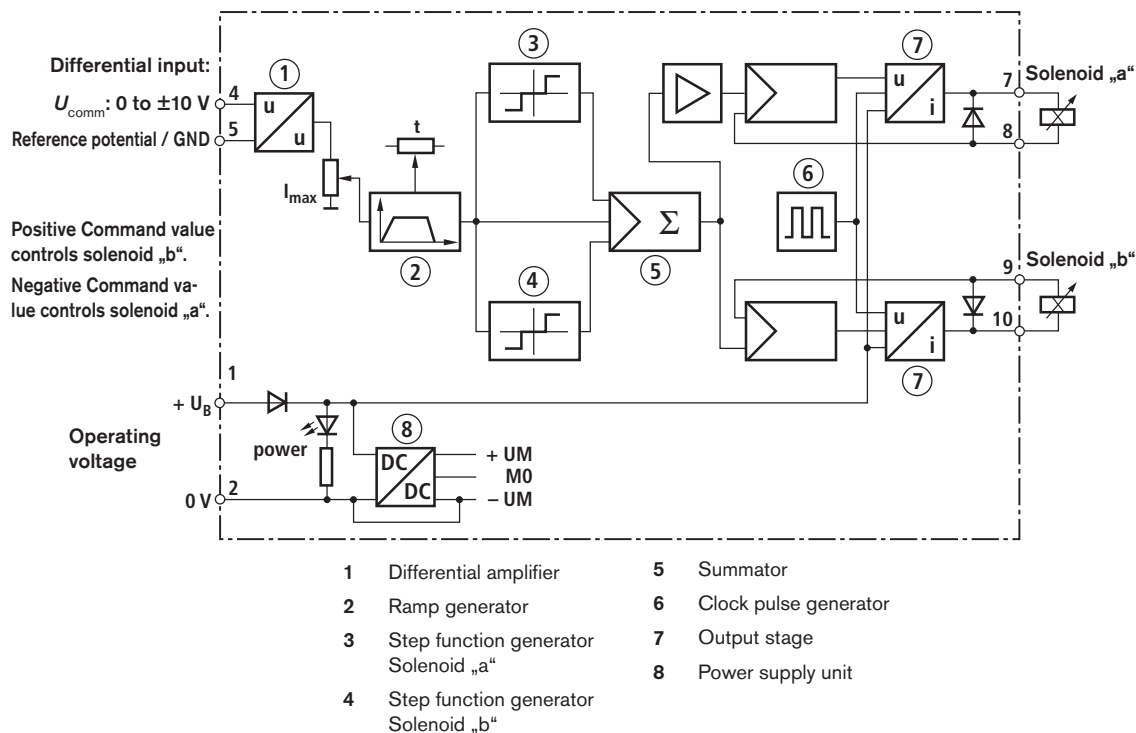
The amplifier modules are to be snapped on to top hat rails to DIN 60715. The electrical connection is made by means of screw terminals. The modules are operated with 24 VDC voltage.

Each amplifier module includes the electronics for controlling two proportional solenoids. Depending on the command value polarity, solenoid "a" or "b" is controlled. The solenoid current (actual value) is measured and compared with the command value provided externally. Any differences between the actual and the command value caused, for example, by changes in the solenoid temperature or the operating voltage, are corrected.

The following parameters can be adjusted from outside using a trimming potentiometer:

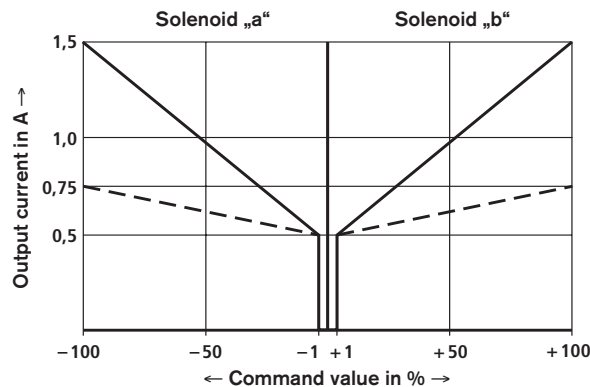
- Ramp time from 50 ms to 5 s
- Gradient of the output characteristic curve (adjustment range  $I_{max}$  from 0.75 A to 1.5 A)

### Block circuit diagram / pin assignment




### Output characteristic curve

VT 11011 and VT 11012



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

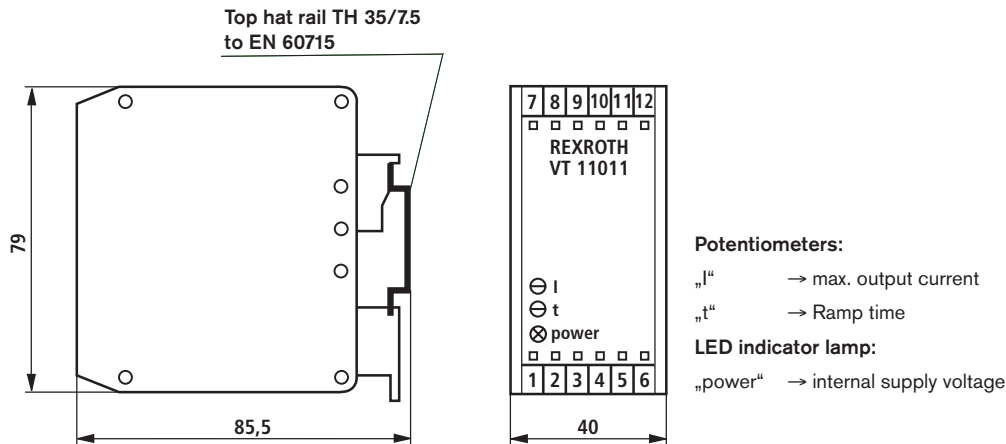
Operating voltage	$U_0$	24 VDC
Operating range:		
– Upper limit value	$u_0(t)_{\max}$	35 V
– Lower limit value	$u_0(t)_{\min}$	21 V
Power consumption	$P_{S \max}$	36 VA
Current consumption	$I_{\max}$	1.5 A
Fuse		Electronic short-circuit protection of solenoid cables with automatic reclosing
Inputs:		
– Command value (differential input)	$U_{\text{comm}}$	0 to $\pm 10$ V; $R_i$ approx. 10 k $\Omega$
Adjustment ranges:		
– Output current	$I$	0.75 A to $I_{\max}$
– Ramp time	$t$	approx. 50 ms to approx. 5 s
Outputs:		
– Solenoid current / resistance		
• VT 11011 for 4WRA 6 (series 1X)	$I_{\max}$	1.5 A; $R_{(20)} = 5.4 \Omega$
for .WRZ (series 7X) and 3DREP 6 (series 7X)	$I_{\max}$	1.5 A; $R_{(20)} = 4.8 \Omega$
• VT 11012 for 4WRA10 (series 1X)	$I_{\max}$	1.5 A; $R_{(20)} = 5.4 \Omega$
– Clock-pulse frequency of the output stage		
• VT 11011	$f$	170 Hz $\pm 15$ %
• VT 11012	$f$	100 Hz $\pm 15$ %
Type of connection		12 screw terminals
Type of mounting		Top hat rail TH 35-7.5 to EN 60715
Type of protection		IP 20 to EN 60529
Dimensions (W x H x D)		40 x 79 x 85.5 mm
Permissible operating temperature range	$\vartheta$	0 to +50 °C
Storage temperature range	$\vartheta$	–25 to +85 °C
Weight	$m$	0.14 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).

**Terminal assignment**

Operating voltage	$+U_0$	1	7	Proportional-solenoid „a“	
	0 V	2	8		
	n.c.	3	9		
Differential input	$\pm U_{\text{comm}}$	4	10	Proportional-solenoid „b“	
	Reference potential	5	11		n.c.
	n.c.	6	12		n.c.

**Unit dimensions** (dimensions in mm)**Engineering / maintenance notes / supplementary information**

- The amplifier module may only be wired when disconnected from the power supply!
- In the case of continuous operation of several adjacent modules and at an ambient temperature higher than 40 °C the modules must be installed with a minimum distance of 20 mm !
- Ensure a sufficient distance to radio equipment (>> 1 m)!
- Shield command value cables, do **not** lay them near power cables; shield solenoid cables!
- Do not use free-wheeling diodes in solenoid cables!
- In the case of heavily fluctuating operating voltage, it may in some cases be required to install an external smoothing capacitor having a capacitance of at least 2200 µF.  
Recommendation: Capacitor module VT 11073 (see RE 29750); sufficient for up to 3 amplifier modules
- When passing on the **command value signal**, **both inputs of the differential amplifier** must be activated or deactivated **simultaneously!**  
Recommendation: When switching the command value off, connect both inputs to ground or a comparable reference potential.

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