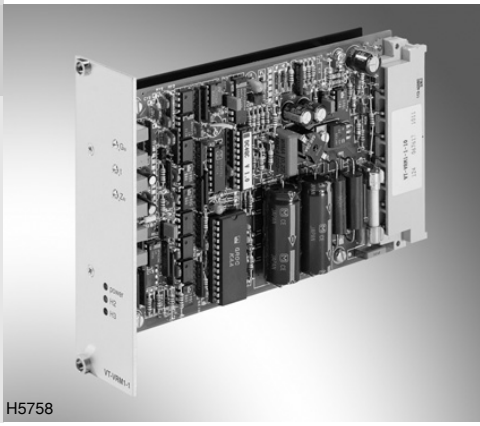
Rexroth
Bosch Group

Electrical amplifier for controlling DC motor-actuated pressure control valves with electrical feedback

RE 30405/04.08 1/6

Type VT-VRM1-1



Component series 1X

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Features

The amplifier card is used for controlling DC motor-actuated pressure control valves with electrical feedback (DBGx...1X, DRG...1X).

- PWM output stage with 4-quadrant operation
- Rotary angle controller of actual value potentiometer
- Differential input for command value provision
- Enable circuit
- Command value inversion
- DC/DC converter
- Offset adjustment for command value
- Command value attenuation
- Ramp generator
- LED indicator lamps:
  power
  H2 for maximum current indication
  H3 for fault and missing enable

Ordering code

Type VT-VRM1-1-1X
Material number: R900067617

Accessories (can be ordered separately)

Card holder:

– VT 3002-1-2X/15H, Material number: R900209648

Power supply unit:

– VT-NE30-2X, Material number: R901082348

Technical data (for applications outside these parameters, please consult us!)

Operating voltage	U_B	24 VDC –20 % +40 % Residual ripple content: 8 %
Current consumption	I (idle) I_{max}	0.2 A 6 A
Inputs		
Command value	U	0 V to +10 V (R_i > 100 kΩ)
Actual value	U	0 V to +15 V
Enable	U	log 0: 0 to 3 V log 1: 10 to 30 V
Invert (command value inversion)	U	log 0: 0 to 3 V log 1: 10 to 30 V
Adjustment ranges		
Offset adjustment for command value		0 to 50 %
Command value attenuation		20 to 100 %
Ramp time	t	40 ms to 1.6 s
Note: Valve can be overcontrolled. Before adjusting the offset, turn the command value attenuator to minimum and apply a command value of 0 V!		
Outputs		
Motor connection – Maximum output current – Minimum motor inductivity	 I_{max} L_{min}	 8 A 1 mH
Auxiliary voltage for potentiometer connection	U	15 V, 30 mA
Type of connection		15-pin male connector, DIN 41615, form H
Card dimensions		Euro-card 100 x 160 mm, DIN 41494
Front panel dimensions		
Height		3 HE
Width soldering side		3 TE
Width component side		5 TE (1 TE = 5,08 mm)
Permissible ambient temperature	T	0° to 45°C (temperature of output stages is monitored)
Weight	m	0.4 kg

Technical data (for applications outside these parameters, please consult us!)

Basic settings of potentiometers

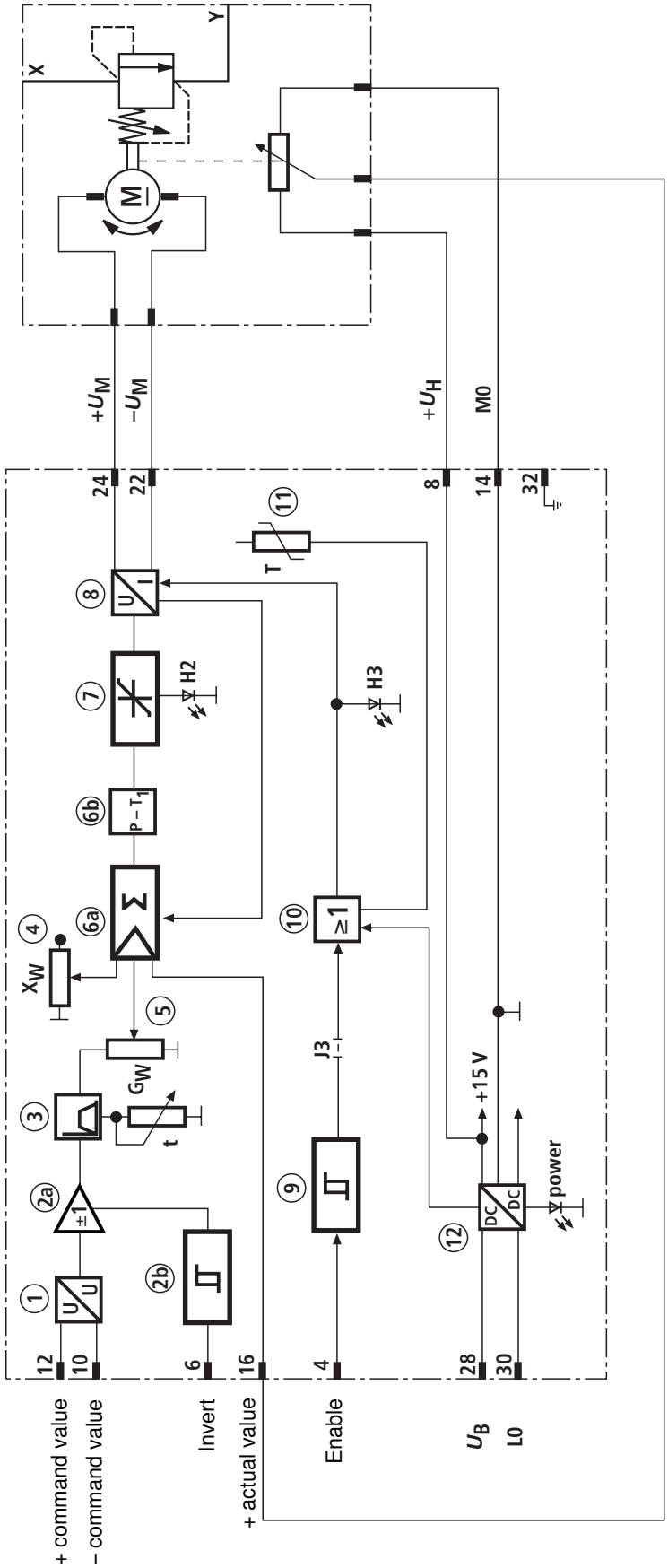
Item	Comp. names	Description (lettering on printed-circuit board)	Setting	Front panel designation
1	P1	n_{max} (command value attenuator)	Right-hand limit stop (maximum)	G_w
2	P2	t_{int} (ramp time)	Left-hand limit stop (minimum)	t
3	P3	n_{offs} (zero point)	Right-hand limit stop (minimum)	Z_x
4	P4	X_p (controller adjustment)	Right-hand limit stop	
5	P5	I_xR	Left-hand limit stop	
6	P6	I_A (current limitation)	Right-hand limit stop (no current limitation)	

Jumper settings

The jumpers are firmly pre-set and must not be changed. This information is provided purely for checking purposes.

Jumper	Factory setting	Remark
J1	Open	Not available
J2	Plugged between jumper pins 2 and 3	Differential input activated
J3	Plugged	Controller and output stage enable
J4	Plugged between jumper pins 1 and 2	Position controller activated
J5	Open	Armature voltage regulation deactivated

Block circuit diagram



1 Differential input
2 Command value inversion
3 Ramp generator
4 Zero point potentiometer
5 Command value attenuator
6 Rotary angle controller
7 Maximum current limitation
8 Clocked and regulated motor current outpupt stage
9 Enable input
10 Output stage enable circuit
11 Temperature sensor
12 Internal power supply

Electrical connection

Connector pinout of amplifier card			Connector pinout of valve	
Pin	**Designation**	**Value**	**DBG...1X**	**DRG...1X**
4	Enable OFF	0 V < U < 3 V		
	ON	10 V < U < 30 V		
6	Invert OFF	0 V < U < 3 V		
	ON	10 V < U < 30 V		
8	+15 V		3	3
10	–command value	Reference potential	⏚	⏚
12	+command value	0 V < U < 10 V		
14	M0/0 V		1	1
16	+actual value		2	2
18	I_{Mmax}	n.c.		
20		n.c.		
22	$-U_{Motor}$		5	5
24	$+U_{Motor}$		6	6
26		n.c.		
28	$+U_B$	24 VDC		
30	L0/ground	0 V		
32	GND	GND/ground		

Installation and connection

- Connection according to block circuit diagram and table above
  Incorrect connection (polarity reversal) can destroy the device !
- Shield command value, control and actual value cables / connect shield on one end - only to Pin 14
- Shield motor cable / connect shield on one end to system ground and to Pin 32
- Connect L0 on power supply unit to system ground