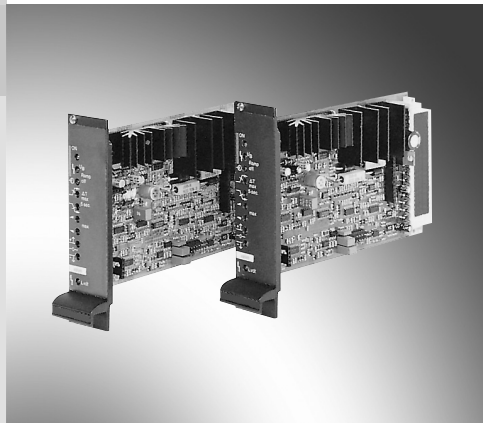
Rexroth
Bosch Group

Electric amplifiers

RE 30048/08.12 1/6
Replaces: 03.12

Type VT-VRPA2-5...-1X/V0/RTP



Component series 1X

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Features

- Suitable for controlling direct operated high-response valves
- Analog amplifiers in Europe format for installation in 19" racks
- Ramp generator that can be switched off
- Compensation step
- Controlled output stage
- Enable input
- Inputs and outputs short-circuit-proof
- External ramp switch-off
- Adjustment possibilities
  - Zero point valve
  - Sensitivity
  - Ramp times
- Cable break detection for actual value cable
- Position control with PID behavior

Notice:

The photo shows an example configuration.
The delivered product differs from the figure.

Ordering code, accessories

VT-	V	R	P	A	2 –	–1X/V0/RTP

Hydraulic component
For valves with electric feedback **= R**

Valve type
High-response valve **= P**

Control
Analog **= A**

Output stages
2 output stages per valve **= 2**

Option
RTP = Ramp function can be set manually

Customer version
V0 = Catalog version

Component series 10 to 19
1X = (10 to 19: Unchanged technical data and pin assignment)

Serial number for types
527 = Size 6
537 = Size 10

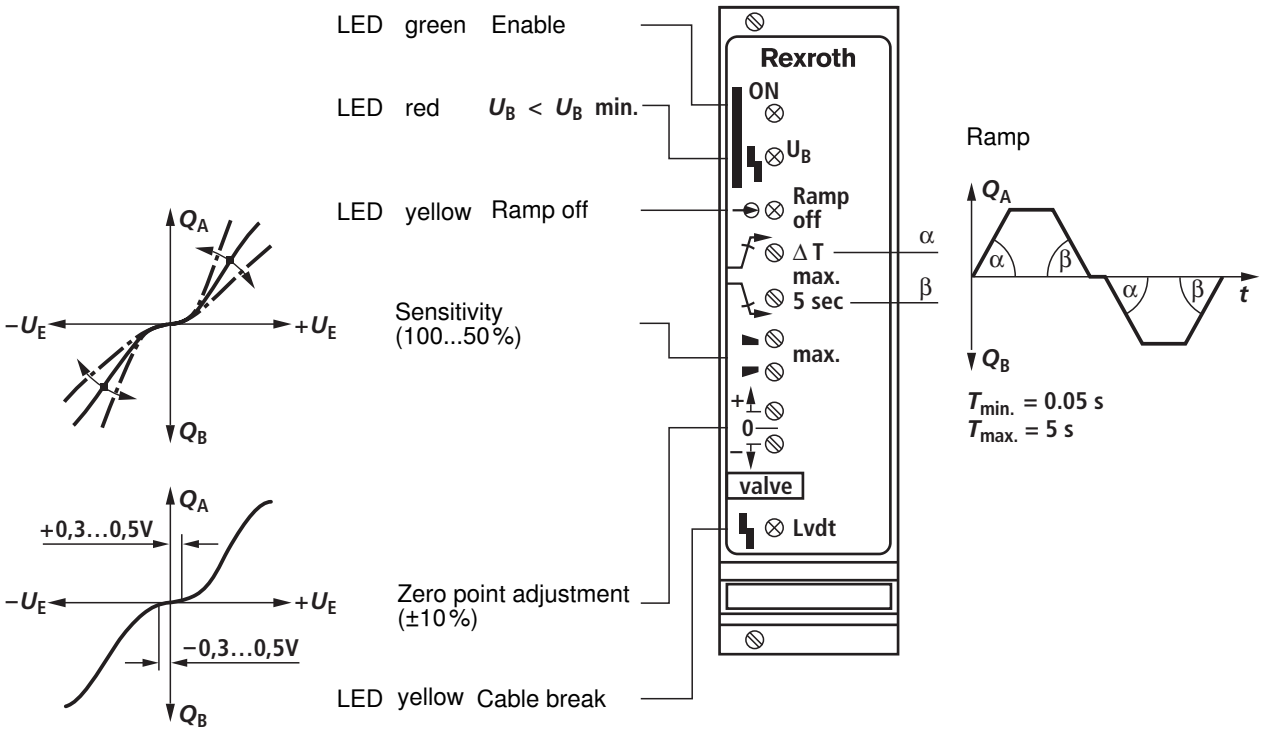
Preferred types

Amplifier type	Material number	For high-response valves with electric position feedback and positive overlap
VT-VRPA2-527-10/V0/RTP	0811405119	4WRP 6...S-1X...
VT-VRPA2-537-10/V0/RTP	0811405120	4WRP 10...S-1X...

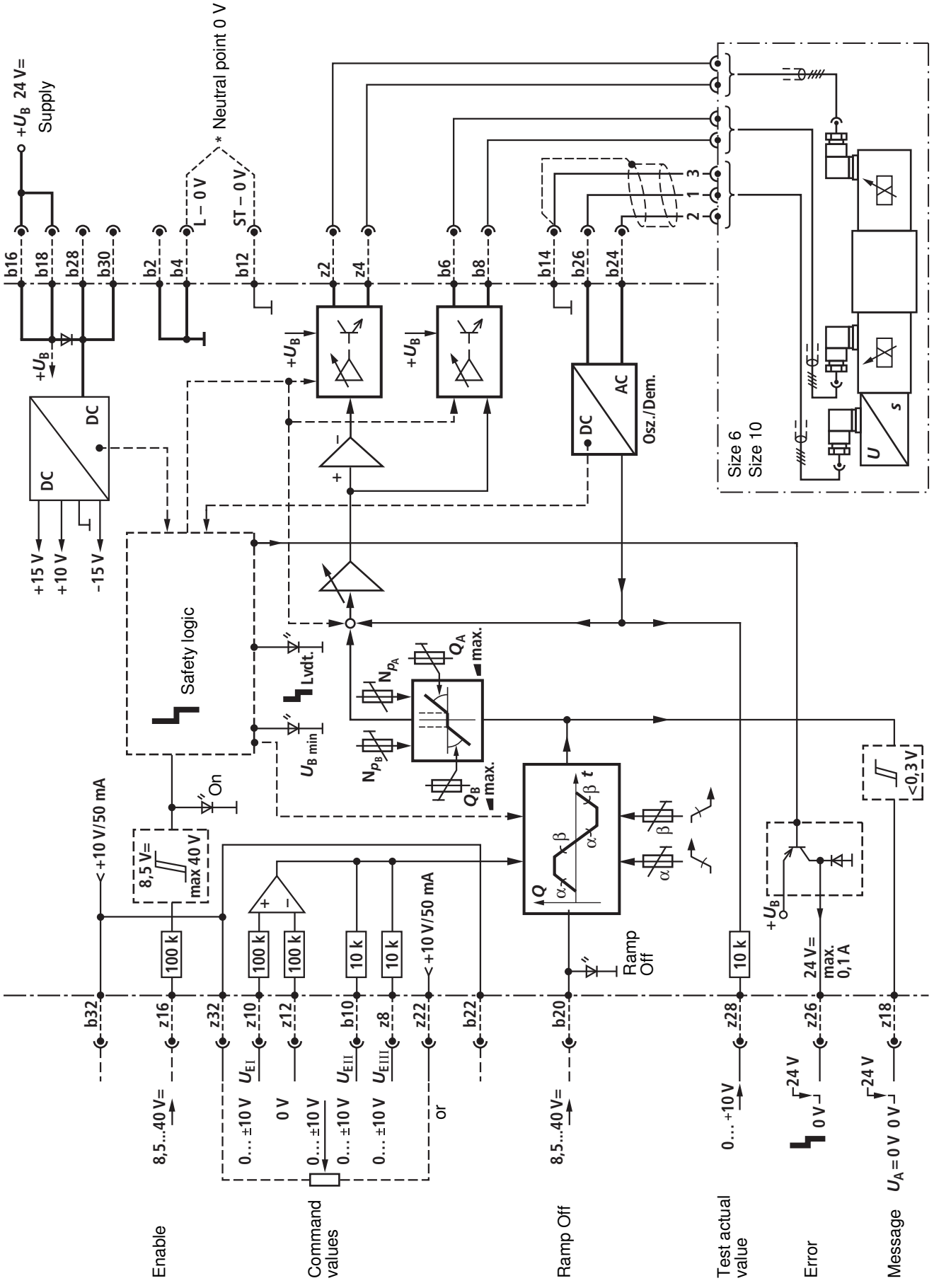
Suitable card holder:

– Open card holder VT 3002-1-2X/32F
(see data sheet 29928).
Only for control cabinet installation!

Front plate



Block diagram with pin assignment



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

Supply voltage U_B at b16/b18 and b2/b4		Nominal 24 V = Battery voltage 21...40 V, Rectified alternating voltage U_{eff} = 21...28 V (one-phase, full-wave rectifier)	
Smoothing capacitor, separately at b16 – b4		Recommendation: Capacitor module VT 11110 (see data sheet 30750) (only necessary if the ripple of U_B > 10 %)	
Solenoid, max.	A/VA	**2.7/25 (size 6)**	**3.7/50 (size 10)**
Current consumption	A	1.5	2.5
		The current consumption may increase with min. U_B and extreme cable length to the control solenoid	
Power consumption (typical)	W	35	60
Input signal (command value)		0...±10 V optionally at b10, z8, z10, z12, z14/b14 summing (R_i = 100 kΩ)	
Signal source		Potentiometer 10 kΩ Supply with +10 V from b32 (50 mA) –10 V from z22 (50 mA) or external signal source	
Actual value feedback		Osci b26	Test point z28 [1]
	0 811 405 119	10.2 V_{eff}/7.8 kHz	0...±10 V =
	0 811 405 120	10.2 V_{eff}/7.8 kHz	0...±10 V =
Enable output stage		At z16, U = 8.5...40 V, R_i = 100 kΩ, LED (green) on front plate lights up	
Ramp OFF		At b20, U = 8.5...40 V	
Solenoid output		Output stage to the solenoid Signal to the positional transducer Supply voltage for potentiometer	
Cable lengths between amplifier and valve		Solenoid cable: to 20 m 1.5 mm² 20 to 50 m 2.5 mm² Position transducer: Max. 50 m with 100 pF/m Supply 1.5 mm²	
Special features		Cable break protection for actual value cable, Position control with PID behavior, Pulsed output stage, Fast energization and fast deletion for short actuating times, Ramps with quadrant recognition, Compensation of the dead zone in central valve position, Ramp that can be switched off	
Adjustment via trimming potentiometer		Zero point N_{PA} and N_{PB} Sensitivity Q_A and Q_B Ramps for accelerations and braking t = 0.05...5 sec	
LED displays		green: Enable ON red: $U_B < U_{B\,min.}$ (approx. 21 V) yellow: Ramp OFF yellow: Cable break actual value	
Error message – Cable break actual value – U_B too low – ±15 V stabilization		z22: Open collector output to +U_B Max. 100 mA; no error: +U_B	
Circuit board format	mm	(100 x 160 x approx. 35) / (W x L x H) Europe format with front plate 7 TE	
Plug-in connection		Connector DIN 41612 – F32	
Ambient temperature	°C	0...+70	
Storage temperature range	°C	–20...+70	
Weight	m	0.35 kg	

Notice:
Power zero b2 and control zero b12 or b14 or z28 must be separately led to the central ground (neutral point).

[1] Values for potentiometers in end position (cw) and for "zero potentiometer" in central position.

Use of ramps

Information for the use of ramps

Ramp ON, if b20 open.

Ramp OFF, if b22 connected to b22 or U = 8.5...40 V at b20.

With **Ramp OFF, Enable OFF** or **Cable break,** any ramp started before will be canceled. Transition to the signal end value is effected by means of a step.

Quadrant recognition A

When passing through the central position, the direction of movement of the valve spool remains the same, however the cylinder changes its direction. So that the acceleration values for both directions of movement remain the same, the ramp is switched by means of quadrant recognition when the valve passes from one quadrant to the next.

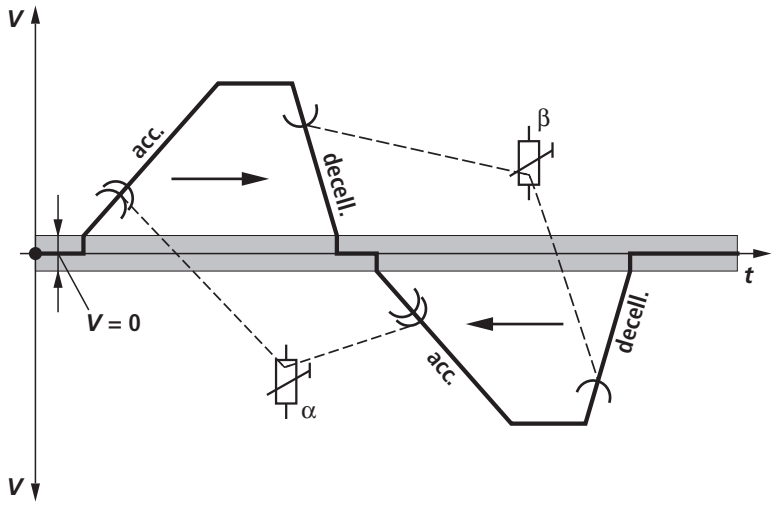
Compensation of the dead zone in central valve position B

The positive overlap of ±20 % of the spool travel is skipped by means of an electronic compensation circuit in the range ±15 % of the spool travel.

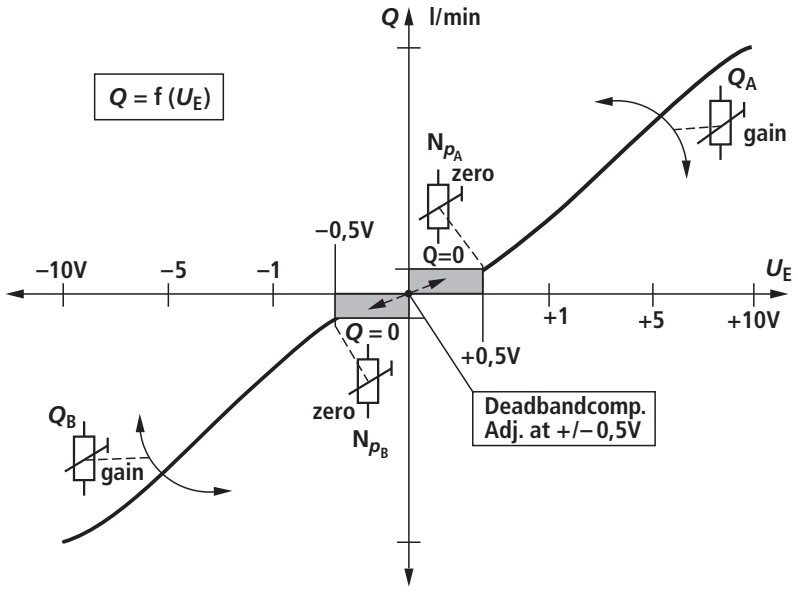
Zero point calibration

For the calibration, a small command value (U_E = 0.3...0.5 V) must be specified in order to ensure that the dead zone has been left.

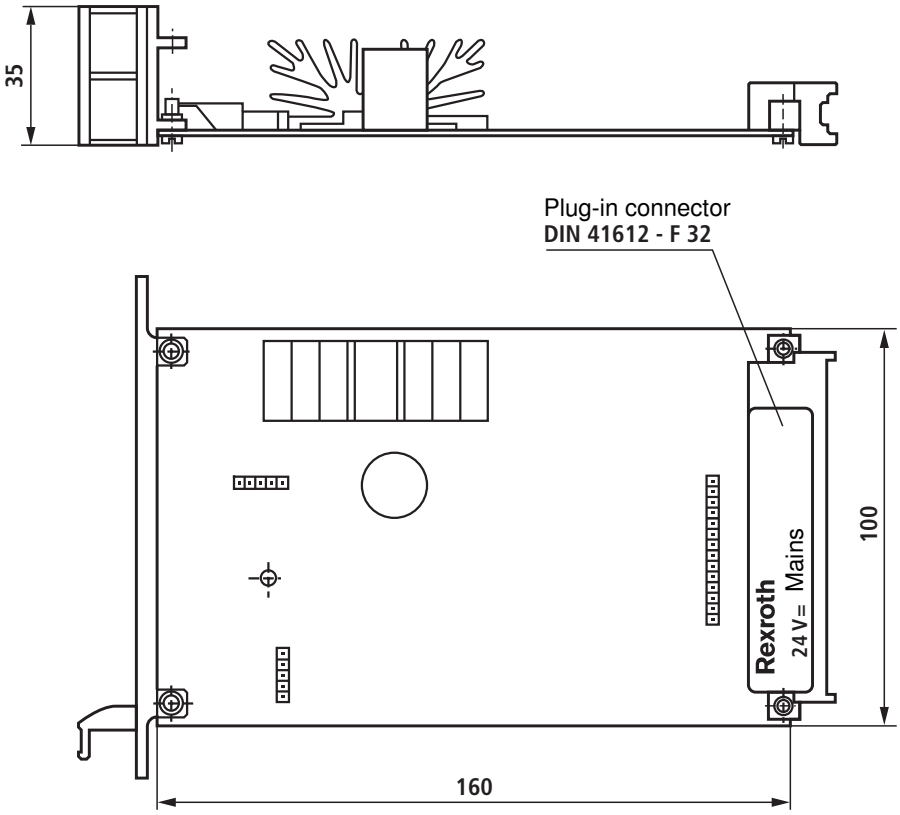
A



B



Unit dimensions (dimensions in mm)



Project planning / maintenance instructions / additional information

- The amplifier card may only be unplugged and plugged when de-energized.
- The distance to aerial lines, radios and radar systems must be sufficient (> 1 m).
- Do not lay solenoid and signal lines near power cables.
- For signal lines and solenoid conductors, we recommend using shielded cables.
  The cable shield must be connected to the control cabinet extensively and as short as possible.
- The valve solenoid must not be connected to free-wheeling diodes or other protective circuits.
- The cable lengths and cross-sections specified on page 4 must be complied with.

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Notes

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