

Electric amplifiers

RE 30044/02.12**1/8**

Replaces: 11.02

Type VT-VRPA1-527-2X/V0/RTS-2STV

Component series 2X

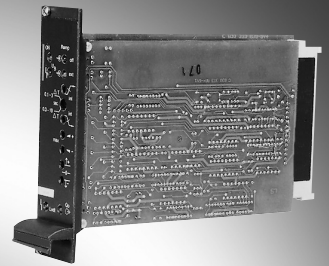


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Features

- | | |
|-------------|---|
| Page | |
| 1 | – Suitable for controlling directional control valves, pilot operated, with positive overlap |
| 2 | – Amplifier with additional electronics (daughter card) |
| 2 | – Analog amplifiers in Europe format for installation in 19" racks |
| 3 | – Controlled output stage |
| 4 | – Enable input |
| 5 | – Outputs short-circuit-proof |
| 6 | – Adjustment possibilities – Zero point valve |
| 6 | – Cable break detection for actual value cable |
| | – Position control with PID behavior |
| 7 | – Ramp function <ul style="list-style-type: none">• External voltage-controlled ramp setting via differential inputs• Ramp function that can be switched off |

Notice:

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

Ordering code, accessories

VT-

V

R

P

A

1-527-2X/V0/RTS-2STV

Hydraulic component

For valves with electrical feedback

Valve type

Directional control valve

Control

Analog

= R

= P

= A

Option

Directional control valve, pilot operated

RTS = Ramp function

Customer version

Catalog version

Component series 20 to 29

(20 to 29: Unchanged technical data and pin assignment)

Serial number for types

Pilot control valve size 6

RTS-2STV =

V0 =

2X =

527 =

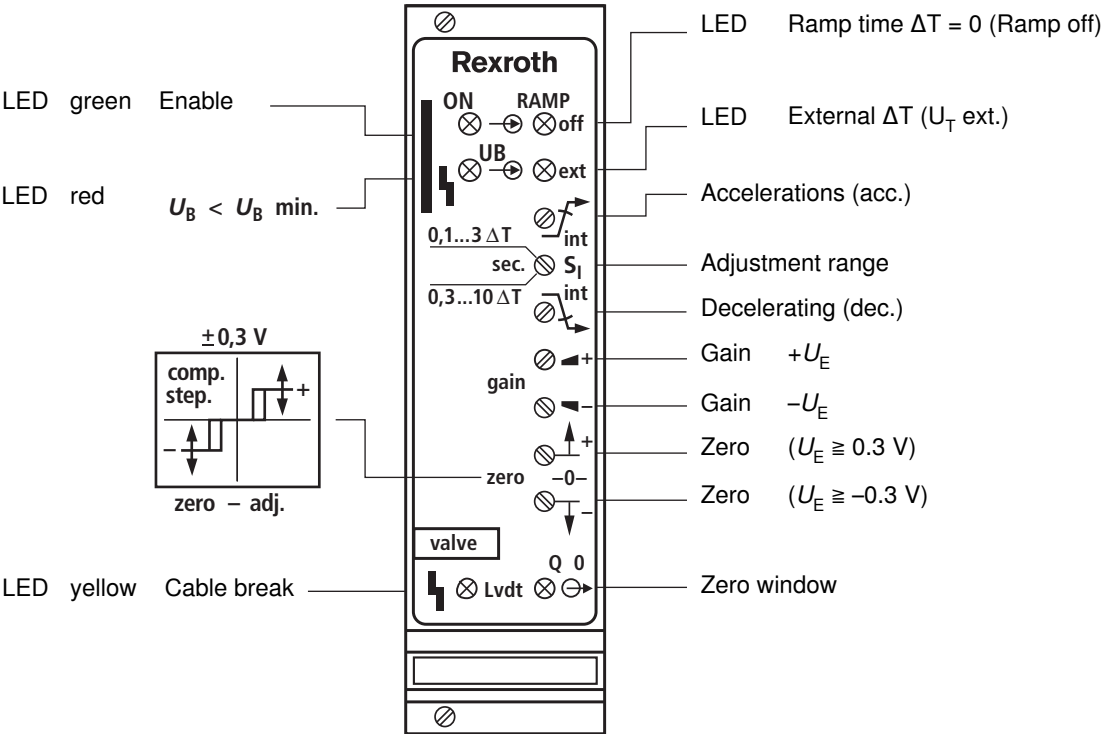
Preferred types

Amplifier type	Material number	For directional control valves, pilot operated, with electrical position feedback and positive overlap
VT-VRPA1-527-20/V0/RTS-2STV	0811405073	4WRL 10...35 E/W...-3X...

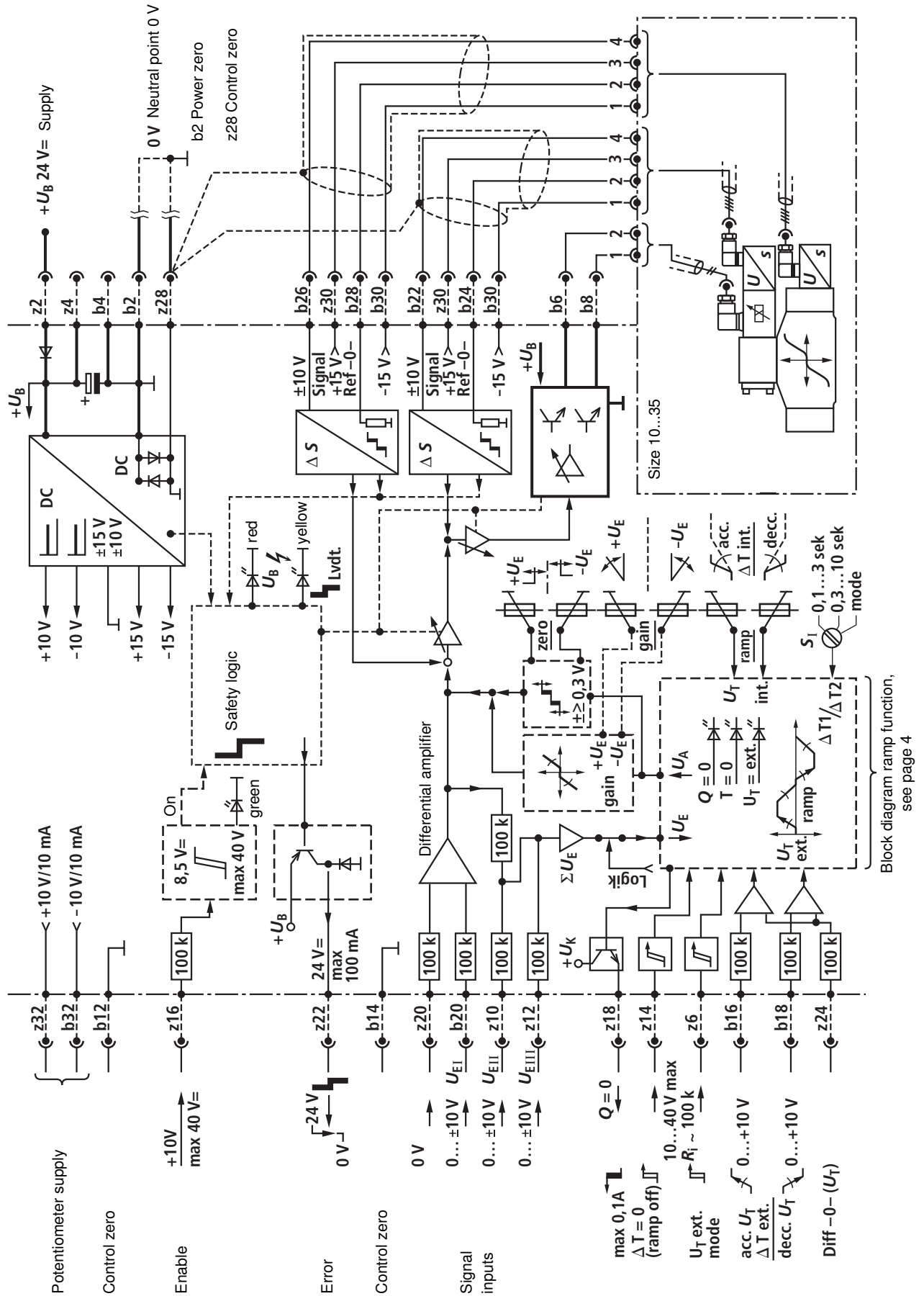
Suitable card holder:

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

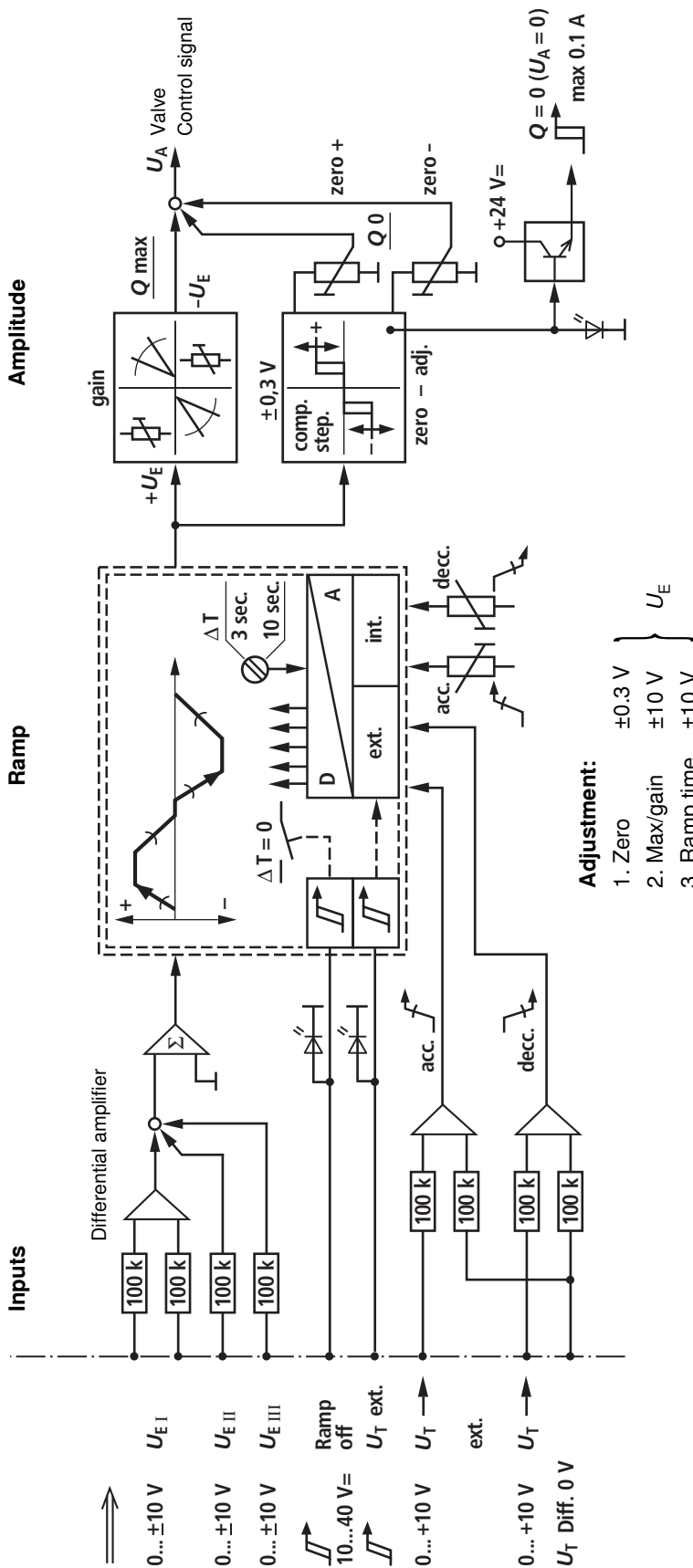
Front plate



Block diagram with pin assignment



Block diagram ramp function



Functions of the daughter ramp card

- Three command value inputs $U_{E I}$ Differential input $(b20 = 0 \dots \pm 10 \text{ V}, z20 = 0 \text{ V})$
- $U_{E II}$ Referred to control zero (z10)
- $U_{E III}$ With summing effect (z12)
- Selection of internal and external ramp time setting via control input $U_{T \text{ ext.}}$ (z6), LED display on front plate
- Ramp increase time can be set by means of switch at front plate in $\Delta T 0.1 \dots 3 \text{ sec.}$ or $\Delta T 0.3 \dots 10 \text{ sec.}$
- Connection and shut-off of the ramp function via control input Ramp off (z14), LED display of operating mode on the front plate
- Internal ramp time setting via potentiometer on the front plate Acceleration - Deceleration
- External ramp time setting via voltage-controlled differential inputs U_T Acceleration (b16) - Deceleration (b18)
- Signal output "Ramp timeout" in case of $U_E = 0$ (z18; open collector output to $+U_A$) LED display on front plate
- Setting: Sensitivity Q_A/Q_B - Limitations in the range $100 \dots 50\% Q_{\text{max.}}$
- Automatic quadrant recognition in the transmission of the valve from one quadrant to the other one - thus only one setting potentiometer and/or one control voltage for the ramp time specification for acceleration and deceleration each.

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

Supply voltage U_B at z2 – b2		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 z2 – b2		Recommendation: Capacitor module VT 11110 (see data sheet 30750) (only necessary if the ripple of $U_B > 10\%$)
Valve solenoid, max.	A/VA	2.7/40 (pilot control valve size 6)
Current consumption, max.	A	1.5 The current consumption may increase with min. U_B and extreme cable length to the control solenoid
Power consumption (typical)	W	37
Input signal (command value)		b20: 0...±10 V z20: 0...±10 V } Differential amplifier ($R_i = 100$ kΩ)
Signal source		Potentiometer 10 kΩ Supply with ±10 V from b32, z32 (10 mA) or external signal source
Enable output stage		At z16, $U = 8.5...40$ V, $R_i = 100$ kΩ, LED (green) on front plate lights up
Position transducer	Supply	b30: -15 V z30: +15 V
Pilot control valve	Actual value signal	b22: 0...±10 V
	Actual value reference	b24
Main stage	Actual value signal	b26: 0...±10 V
	Actual value reference	b28
Solenoid output b6 – b8	I_{max}	Clocked current controller 2.7 A
Cable lengths between amplifier and valve		Solenoid cable: to 20 m 1.5 mm ² 20 to 60 m 2.5 mm ² Position transducer: 4 x 0.5 mm ² (shielded)
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, Short-circuit-proof outputs
Adjustment		Zero point via trimming potentiometer ±5 %
LED displays		green: Enable yellow: Cable break actual value red: Undervoltage (U_B too low)
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	0.44 kg

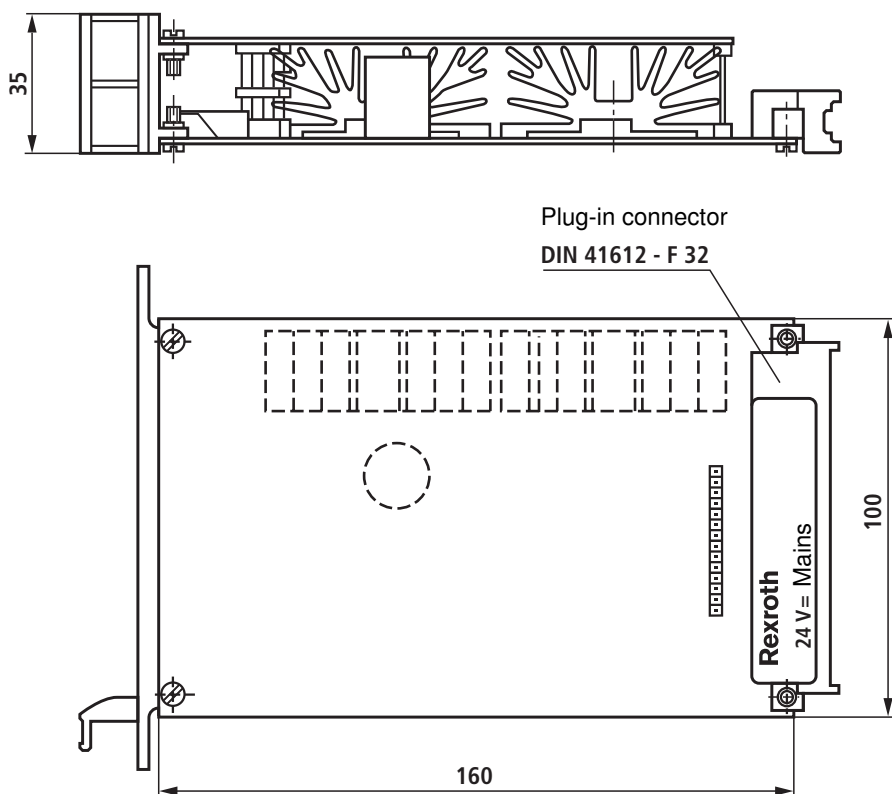
Notice:

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

Setting information

1. Before setting the ramps "Acceleration/Deceleration", you must first of all align $Q = 0$ and $Q_{\max.}$.
For that purpose, the ramp function can be switched on or off.
2. Q_0 is to be set in case of $0 \text{ V} = U_E$.
 $Q_{\max.}$ is to be set in case of $\pm 10 \text{ V} = U_E$.
3. Zero point calibration: For the calibration, a small command value ($U_E = 0.3 \dots 0.5 \text{ V}$) must be specified in order to ensure that the dead zone has been left.
4. Now, by means of command value changes $0 \rightarrow 0 + U_E$ and $+U_E \rightarrow 0$, you can set the desired ramp behavior
Prerequisite: **No command at z14.**

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 5 must be complied with.

Notes
