

Electric Drives
and Controls

Hydraulics

Linear Motion and
Assembly Technologies

Pneumatics

Service

Rexroth
Bosch Group

Electric amplifiers

RE 30044/02.12
Replaces: 11.02

1/8

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

Component series 2X

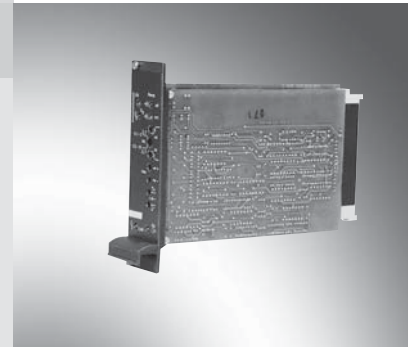


Table of contents

Contents

Features	1
Ordering code, accessories	2
Front plate	2
Block diagram with pin assignment	3
Block diagram ramp function	4
Technical data	5
Setting information	6
Unit dimensions	6
Project planning / maintenance instructions / additional information	7

Features

Page	– Suitable for controlling directional control valves, pilot operated, with positive overlap
1	
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
	• 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
<p>Hydraulic component For valves with electrical feedback = R</p> <p>Valve type Directional control valve = P</p> <p>Control Analog = A</p> <p>Option RTS-2STV = Directional control valve, pilot operated RTS = Ramp function</p> <p>Customer version Catalog version</p> <p>V0 =</p> <p>2X = Component series 20 to 29 (20 to 29: Unchanged technical data and pin assignment)</p> <p>527 = Serial number for types Pilot control valve size 6</p>									

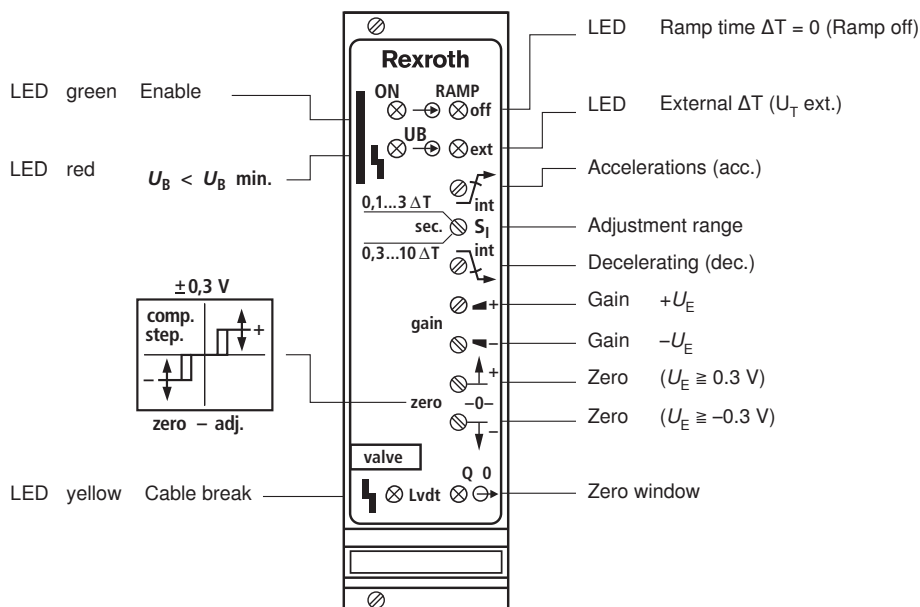
Preferred types

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...

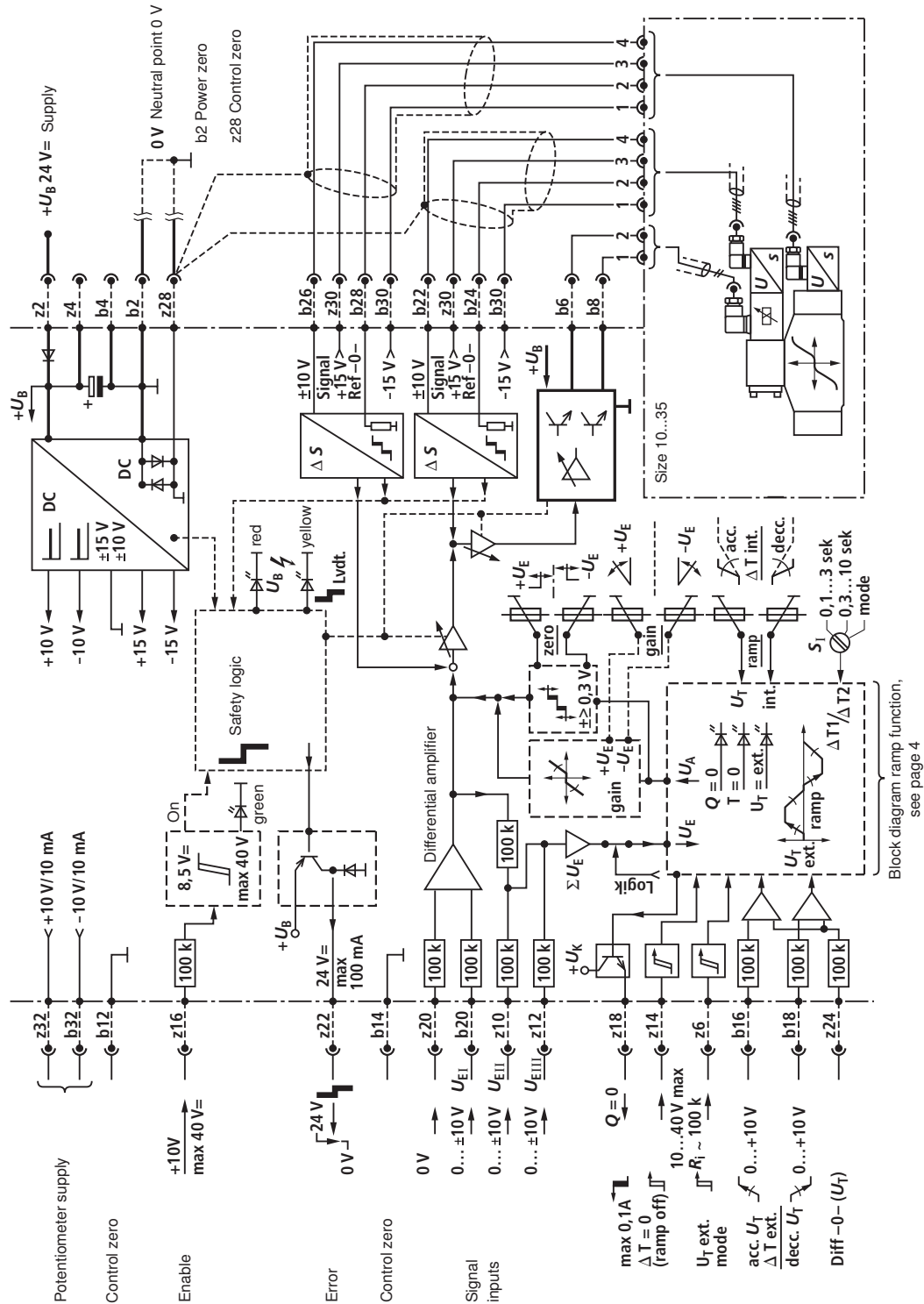
Suitable card holder:

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

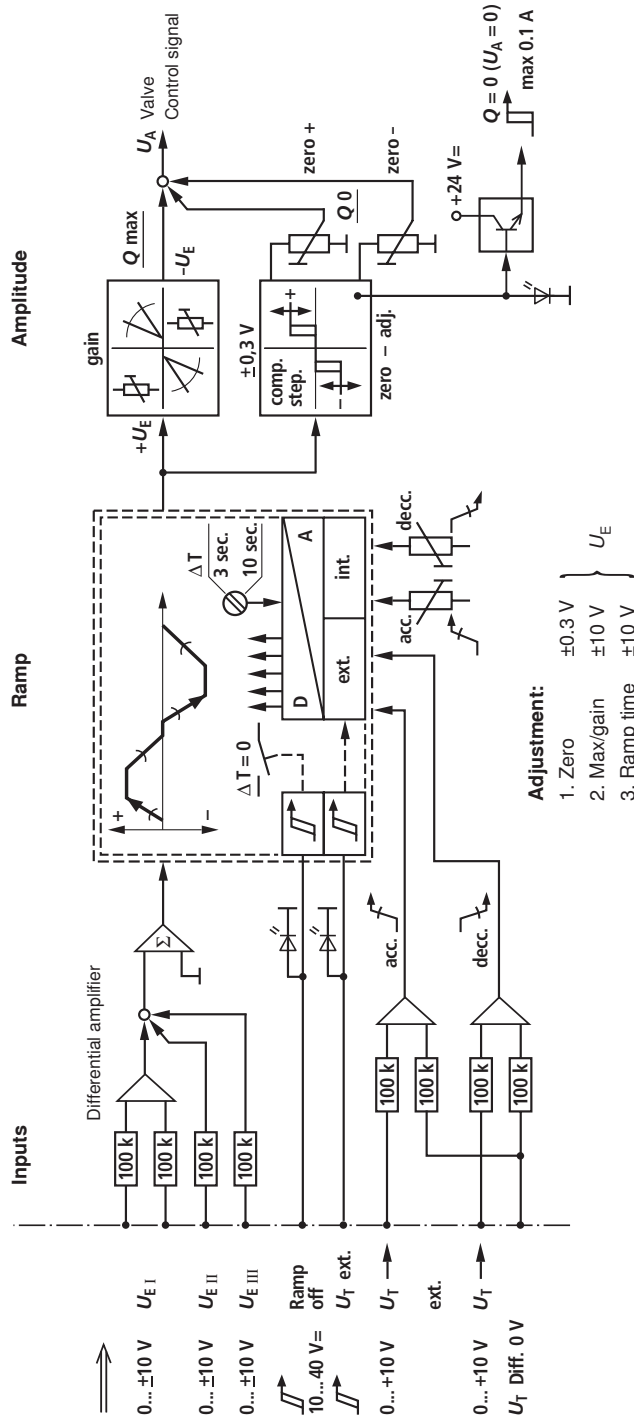
Front plate



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...±10 V, z20 = 0 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 $U_{T ext.}$ (z6), LED display on front plate
- Ramp increase time can be set by means of switch at front plate in ΔT 0.1...3 sec. or ΔT 0.3...10 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...50% Q_{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.

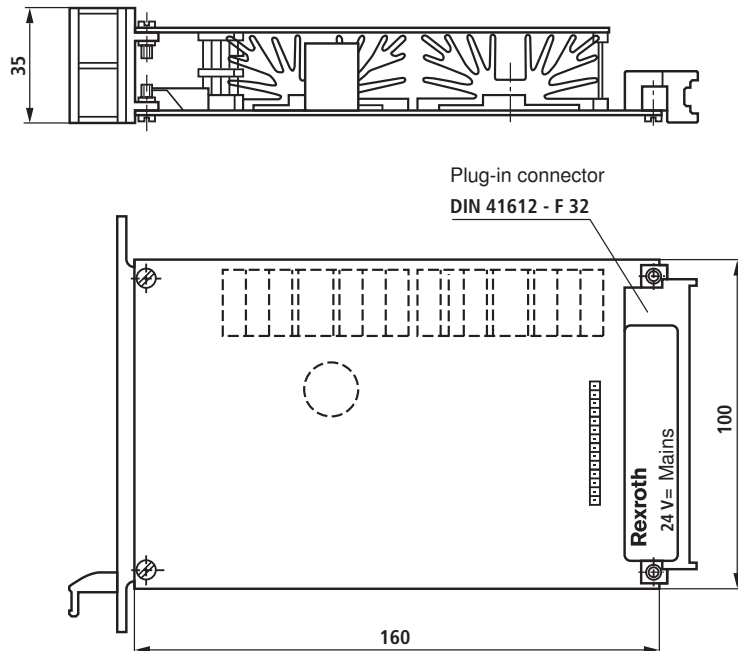
Technical data (For applications outside these parameters, please consult us!)

Supply voltage U_B at z2 – b2		Nominal 24 V =, Battery voltage 21...40 V, Rectified alternating voltage $U_{\text{eff}} = 21...28$ 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

- 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.
- Q_0 is to be set in case of $0 V = U_E$.
 Q_{max} is to be set in case of $\pm 10 V = U_E$.
- 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.
- 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

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent. The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.