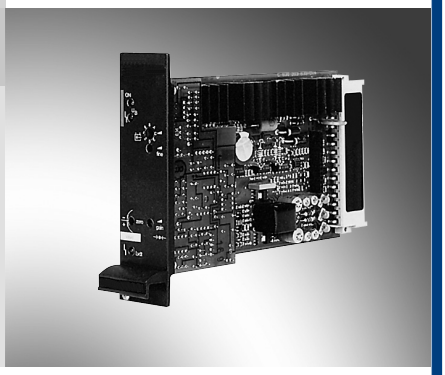
Electric amplifiers

RE 30043/02.12 1/6
Replaces: 11.02

Type VT-VRRA1-527-2X/V0/K40-AGC-2STV



Component series 2X

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Features

- Suitable for controlling pilot operated directional control valves with inflected characteristic curve
- Linearization of inflected valve characteristic curves
- Area adjustment of single rod cylinders
- Analog amplifiers in Europe format for installation in 19" racks
- Controlled output stage
- Enable input
- Outputs short-circuit-proof
- Adjustment possibilities – Zero point valve
- Cable break detection for actual value cable
- Position control with PID behavior
- Gain in the small signal range

Notice:

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

Ordering code, accessories

VT-	V	R	R	A	1	–	527	–2X	/	V0	/	K40-AGC-2STV

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

Valve type
Directional control valve = **R**

Control
Analog = **A**

527 = Serial number for types
Pilot control valve size 6

2X = Component series 20 to 29
(20 to 29: Unchanged technical data and pin assignment)

V0 = Customer version
Catalog version

K40-AGC-2STV = Option
Directional control valve, pilot operated, with 40 % inflection

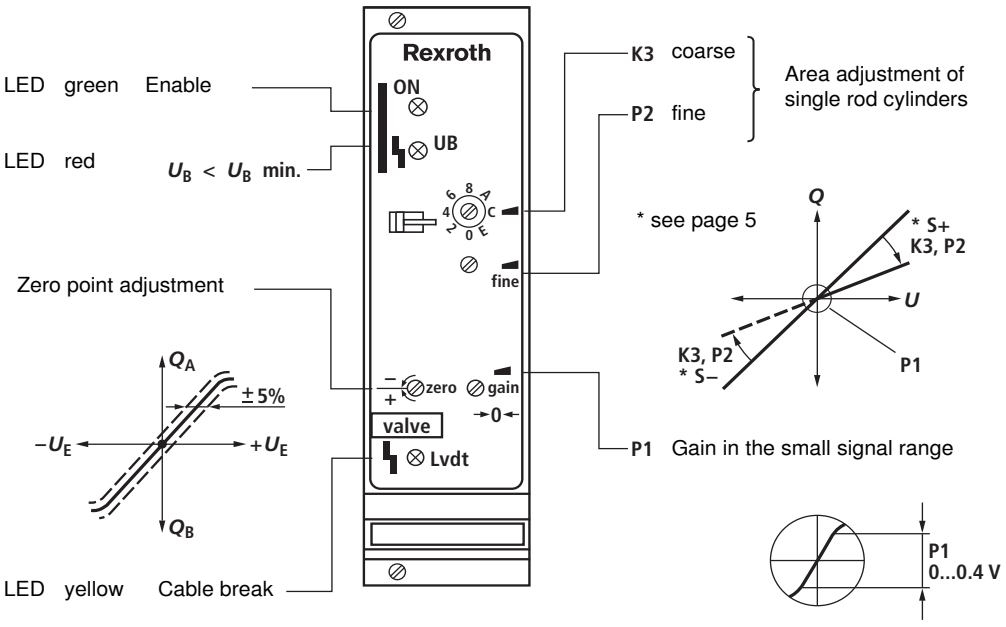
Preferred types

Amplifier type	Material number	For directional control valves, pilot operated, with electrical position feedback and inflected characteristic curve
VT-VRRA1-527-20/V0/K40-AGC-2STV	0811405068	4WRL 10...35 V/V1...P-3X...
		4WRL 10...25 V/V1...P-3X...-750

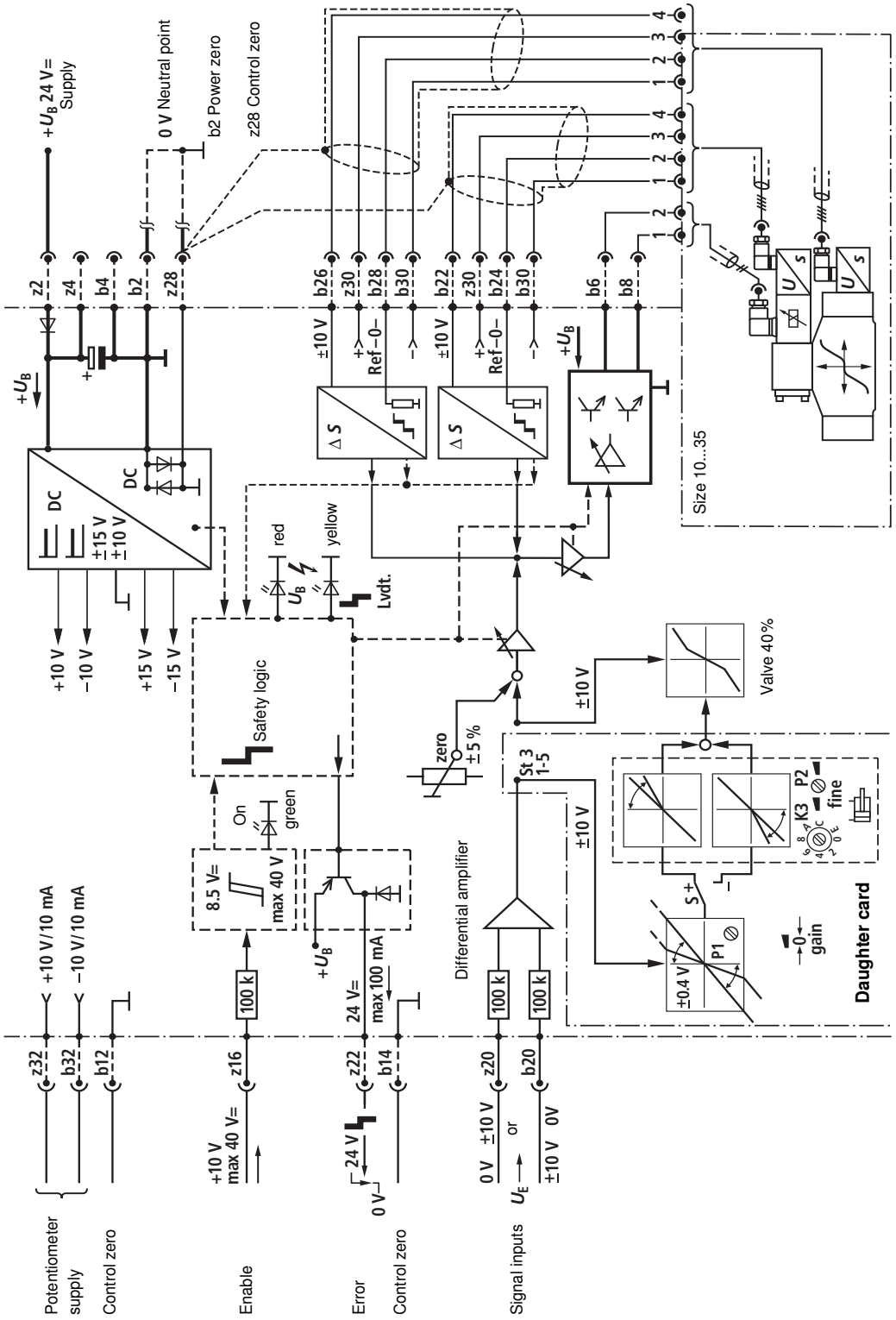
Suitable card holder:

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

Front plate



Block diagram with pin assignment



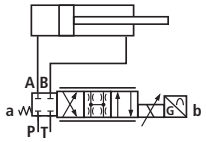
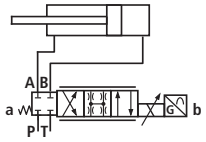
Technical data (For applications outside these parameters, please consult us!)

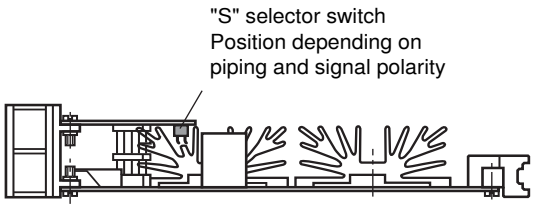
Supply voltage U_B at z2 – b2		Nominal 24 V =, Battery voltage 21…40 V, Rectified alternating voltage U_{eff} = 21...28 V (one-phase, full-wave rectifier)
Smoothing capacitor, separately at z2 – b2		Recommendation: Capacitor module VT 11110 (see data sheet 30750) (only necessary if the ripple of U_B > 10 %)
Valve solenoid, max.	A/VA	**2.7/40 (pilot control valve size 6)**
Current consumption, max.	A	1.7
		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		Clocked current controller
	I_{max}	2.7 A
Cable lengths between amplifier and valve		Solenoid cable: to 20 m 1.5 mm² 20 to 60 m 2.5 mm² Position transducer: 4 x 0.5 mm² (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, Linearization of the inflected flow characteristic curve
Adjustment		Zero point via trimming potentiometer ±5 % Area adjustment of single rod cylinders, Gain in the small signal range
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	0.39 kg

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

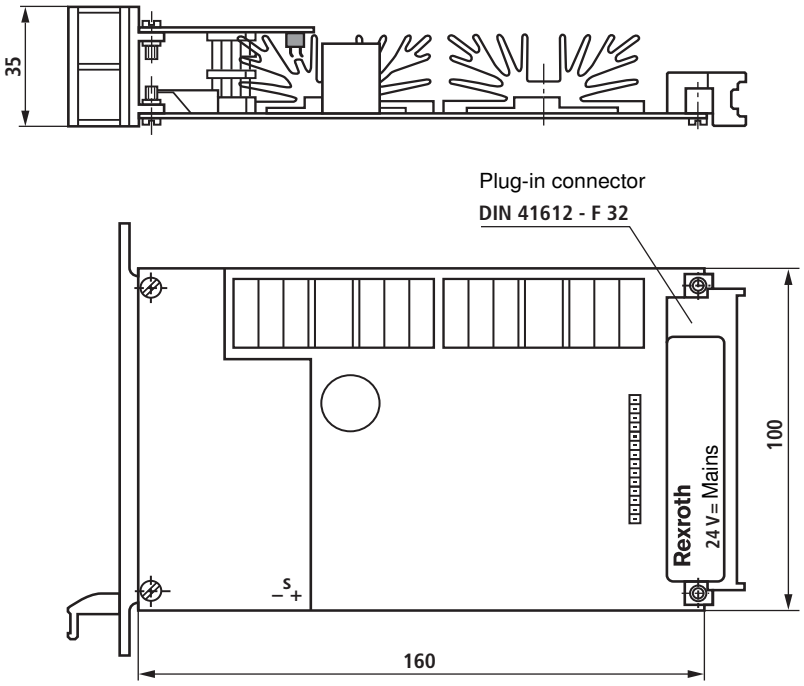
Commissioning

1. Setting the electric and hydraulic zero point using the "zero" potentiometer.
   With closed control loop, the following error displayed by the CNC is then controlled to 0.
2. Adjustment single rod cylinder
   – "S" selector switch setting on daughter card
   – Comparison with direction-dependant command value attenuator with step switch K3 (coarse), with potentiometer P2 (fine).
3. Optimization of the gain in the small signal range with potentiometer P1.

Valve ← → Cylinder	Selector switch
	"S" –
	"S" +



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.