

# Power Amplifier

## Type EEA-PAM-513-A; 14 Design For KCG-3, 10 Series Proportional Pressure Control Valves

### General Description

The power amplifier has five voltage inputs (one inverting) and a current input for 0-20 mA. The “set minimum” and “gain” adjustments allow the amplifier to be easily tuned to the proportional pressure control valve. The ramp potentiometer on the front panel simultaneously adjusts the output acceleration and deceleration. The ramp function is normally enabled; it can be permanently disabled by an external wire link, or selectively enabled/disabled using a remotely located switch.

Monitor points on the front panel allow measurement of the conditioned command input signal (after set minimum, gain and ramp functions) and of the solenoid current. The latter is scaled to give 1 volt per ampere.

### Features

- User-friendly front panel with all the necessary adjustments, LEDs and monitor points
- Electronic overload protection with automatic reset
- Pulse width modulation for high efficiency
- Ramp function generator for control of pressure increase and decrease rates
- 24V DC power supply
- Either current or voltage input signals
- Standard input and output signals

### New 14-design Features

- Wider supply voltage range plus increased tolerance to ripple
  - Low supply voltage protection
  - Additional monitor points on edge connector
- Gain re-positioned in circuitry to give:
- Ramp setting unaffected by gain adjustment
  - Constant trigger voltage for deadband compensation

### Front Panel

#### LEDs

- [1] 24V supply voltage, green
- [2] 15V control voltage, green
- [3] Solenoid output enabled, yellow
- [4] Solenoid output overload, red
- [5] Current output to solenoid, yellow

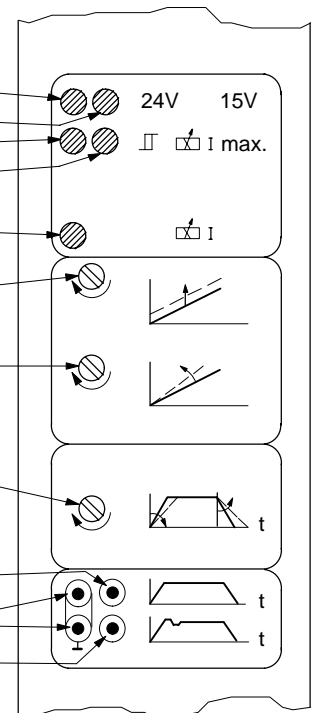
#### Potentiometers

- [6] Set minimum
- [7] Gain
- [9] Ramp setting

#### Monitor points ▲

- [11] Conditioned command signal
- [12] Common ground
- [13] Solenoid current

▲  $\varnothing 2$  (0.0787 dia.) sockets



**Warning:** Electromagnetic Compatibility (EMC)  
The European Community directives for electromagnetic compatibility (EMC) do not apply to this product

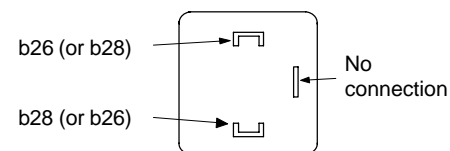
## Operating Data

Power requirements		24V DC nominal x 40W Maximum voltage range: 20 - 34V (including ripple) <4V. pk.-to-pk. ripple Reverse polarity protected Amplifier shuts down below 19V
Output voltages for control	z22 z2 and b2	+15V x 50 mA; ripple <50 mV pk-to-pk ± 10V (± 1%) x 5 mA
Command signal inputs		
Voltage inputs:		
Direct-voltage pins	b8, b6, z8, b10	
Inverting-voltage pin	z10	
Voltage range		0 to 10V
Input impedance		47 kΩ
Current input:		
Current pin	z6	
Current range		0 to 20 mA
Input impedance		100Ω
Power drive, pulse-width modulated (PWM):		
Maximum solenoid current		1,8A, short-circuit protected
Dither		Factory-set
Set minimum pressure control:		
Factory setting		Zero solenoid current
Adjustment		0 to 1,0A solenoid current
Gain control:		
Factory setting		Max. pressure at 10V command signal
Adjustment		0,06 A/V to 0,18 A/V
Ramp time adjustment:		
Factory setting		Minimum (20 ms approx.)
One adjustment for increasing and decreasing pressure		20 ms to 2s with "set minimum" at zero
Overload detection, factory set		Automatic reset when fault removed
Drive enable/disable:	z24	
Enable (power available to solenoid)		+10V to +30V (>6 kΩ)
Disable (no power to solenoid)		Open circuit or up to 0,8V to z24
Ramps enable/disable:	b12, b20	
Enable (valve switching rate limited by ramp potentiometer)		Open circuit between b20 and b12
Disable (fastest valve switching; ramp circuit bypassed)		Connect b20 to b12
Command signal monitor points:	front panel and b18	
Output impedance		0 to 10V full scale. Command signal conditioned by "set minimum", gain and ramp function settings. 10 kΩ; short-circuit protected
Solenoid current monitor points:	front panel and z18	
Output impedance		1 V/A solenoid current 10 kΩ; short-circuit protected
Drive output status indicator:	z12	
Drive enabled		>+6V
Drive disabled		<-6V

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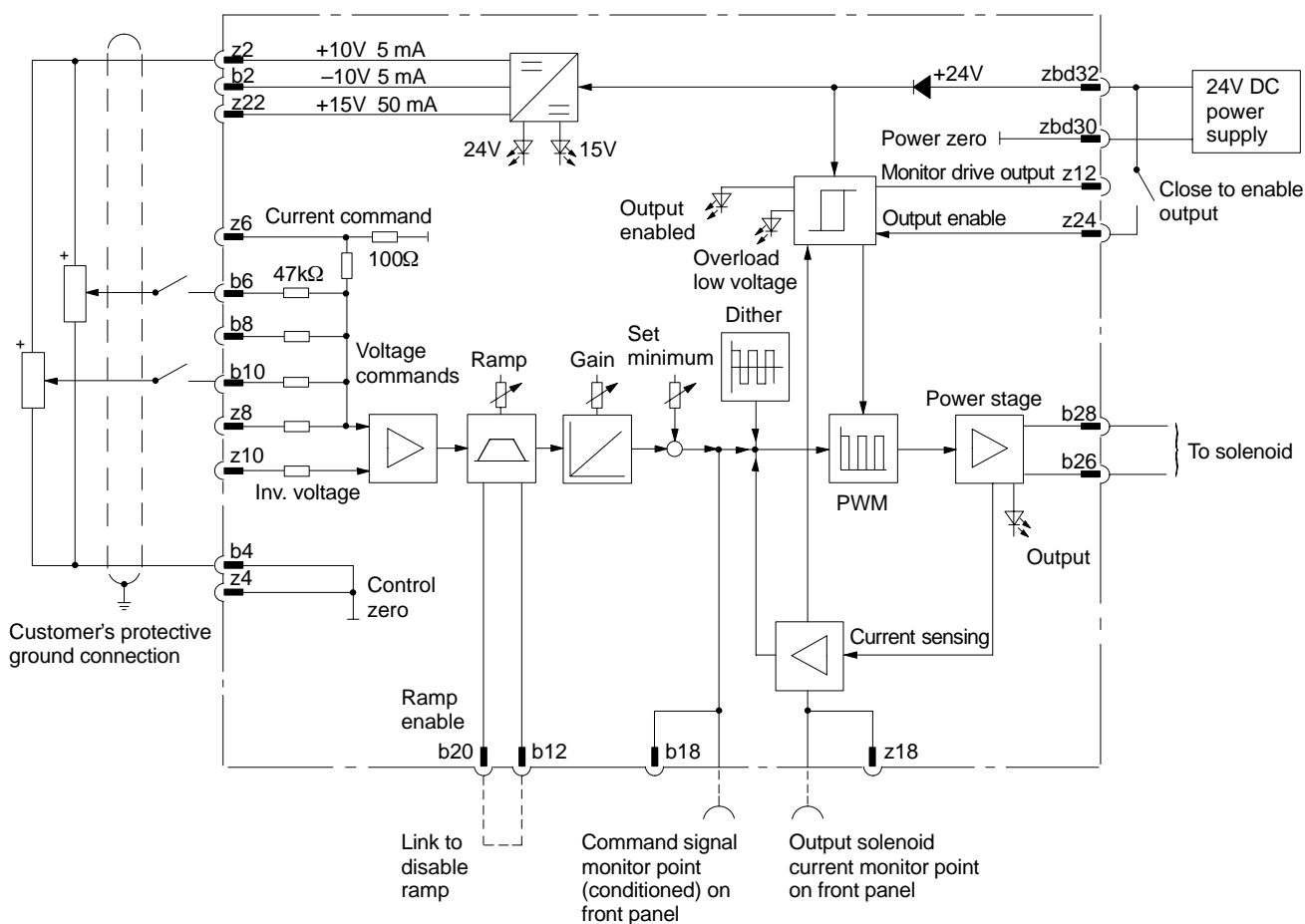
Ambient temperature range	0 to 50°C (32 to 122°F)
Edge connectors	DIN 41612 F48 male type on the board. Mating connector can be F32 or F48 female type.
Mass	200g (0.44 lb)
Installation recommendations leaflet for electronic amplifiers	ML-9046
Supporting products:	
Power unit	EHA-PSU-704-A/B-10
Portable test equipment	EHA-TEQ-700-A-20
Cardholder (F32)	Part no. 02-104807
Edge connector (F48)	Part no. 508178

### Solenoid Connections



Note: Connections *not* polarity sensitive.

## Circuit and Connections



Note: Connect all shields/screens at card end only.

# Installation Dimensions in mm (inches)

Plug-in Unit of 3U Height, to IEC 297

3rd angle projection

