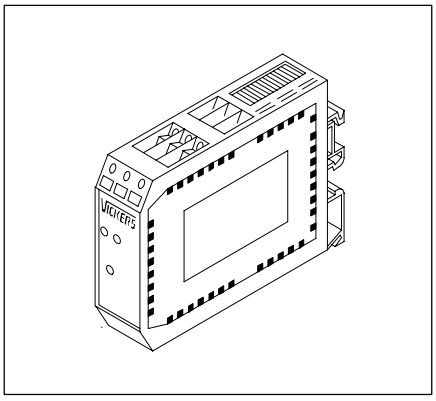
Vickers®

Servo Valves

Power Amplifier for Servo Valves

EHA-PAM-291-A-20



General Description

The EHA-PAM-291-A-20 power amplifier is designed for controlling Vickers SM4 servo-valves, or other servo-valves up to 200 mA max. current.

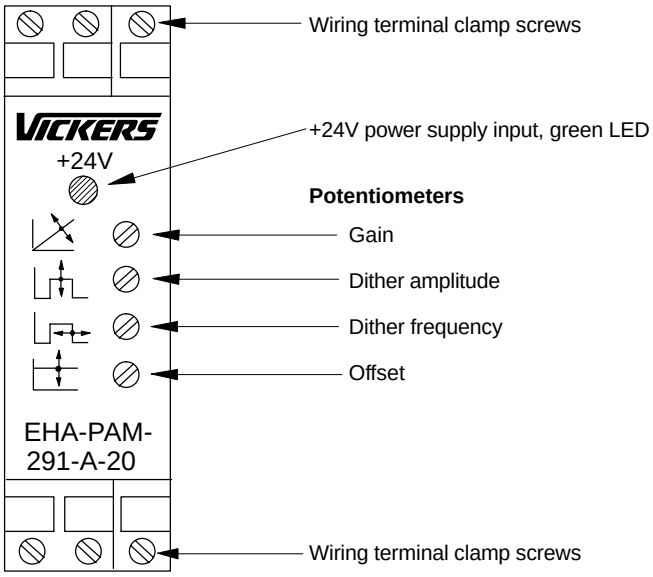
Gain, offset and dither (frequency and amplitude) are adjustable by potentiometers mounted in the front panel. An externally switched, 24V “drive enable” signal is used to switch the power drive on and off.

The amplifier is packaged as a “snap-on” control module for mounting into control cabinets using mounting rails to DIN EN 50022 or DIN EN 50035.

Features and Benefits

- LED shows when 24V power supply is present
- Two test terminals allow dither amplitude and gain setting (output current) to be measured, simplifying start-up and fault finding
- Output stage is short circuit protected
- “Drive enable/disable” controlled by external signal
- Uni-polar voltage input; bi-polar current output

Front Panel; Actual Size



This product has been designed and tested to meet specific standards outlined in the European Electromagnetic Compatibility Directive (EMC) 89/336/EEC, amended by 91/263/EEC, 92/31/EEC and 93/68/EEC, article 5. For instructions on installation requirements to achieve effective protection levels, see this leaflet and the Installation Wiring Practices for Vickers Electronic Products leaflet 2468. Wiring practices relevant to this Directive are indicated by ⚠ Electromagnetic Compatibility (EMC).

Operating Data

Power supply	24V DC nominal (18 to 36V DC), 7W max. Ripple pk-to-pk ≤ $4V_{pp}$
Differential input signal	0 to ± 10V (R_i = 47 kOhm) (overload capacity up to max. ± 25V)
Maximum output current	± 200 mA (± 300 mA at min. supply voltage)
Gain: Adjustment range Factory setting	 1 to 40 mA/V 4 mA/V
Offset: Adjustment range Factory setting	 + 40 to – 40 mA output current 0 mA
Drive enable Drive disable	12 to 36V (R_i = 4,7 kOhm) < 8V, or open circuit
Dither amplitude: Adjustment range Factory setting Dither frequency: Adjustment range Factory setting	 0 to 20% 4% 150 to 500 Hz 400 Hz
Linearity	< 0,5%
Temperature coefficient	< 0,05% per °C (0.03% per °F)
–3 dB frequency response	> 1,5 kHz
Test terminals (E and F measured against D): E: output current F: dither	 1V = 500 mA 1V = 2,5% amplitude
Wiring recommendations, all connections	0,5 to 2,5 mm^2 (22 to 12 AWG)
Housing material	Polyamid 6.6
Protection	IEC 529 class IP20
Vibration: Vickers environmental specification	 Class I level 2 (IEC 68-2-6)
Electromagnetic compatibility (EMC): Emission Immunity	IEC 529 class IP20 EN 50081-2 EN 50082-2
Ambient temperature range: Operational Storage	 0° to +50°C (+32° to +122°F) –25° to +85°C (–13° to +185°F)
Mass	0,11 kg (0.24 lb)

Adjustments

Gain
Output current/input voltage ratio is increased by turning the potentiometer clockwise; decreased by turning counter-clockwise.

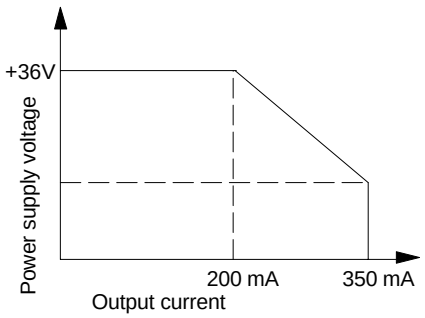
Dither Amplitude
The dither amplitude is measured as a percentage of the maximum value. Increase by turning the potentiometer clockwise; decrease by turning counter-clockwise.

Dither Frequency
Increase by turning the potentiometer clockwise; decrease by turning counter-clockwise.

Offset
Turn the potentiometer clockwise to obtain a negative offset of output current; counter-clockwise for a positive offset.

Operating Range

If the required output current is above 200 mA and the load resistance is below 50 Ohm, the power supply voltage must be reduced in accordance with characteristics shown.

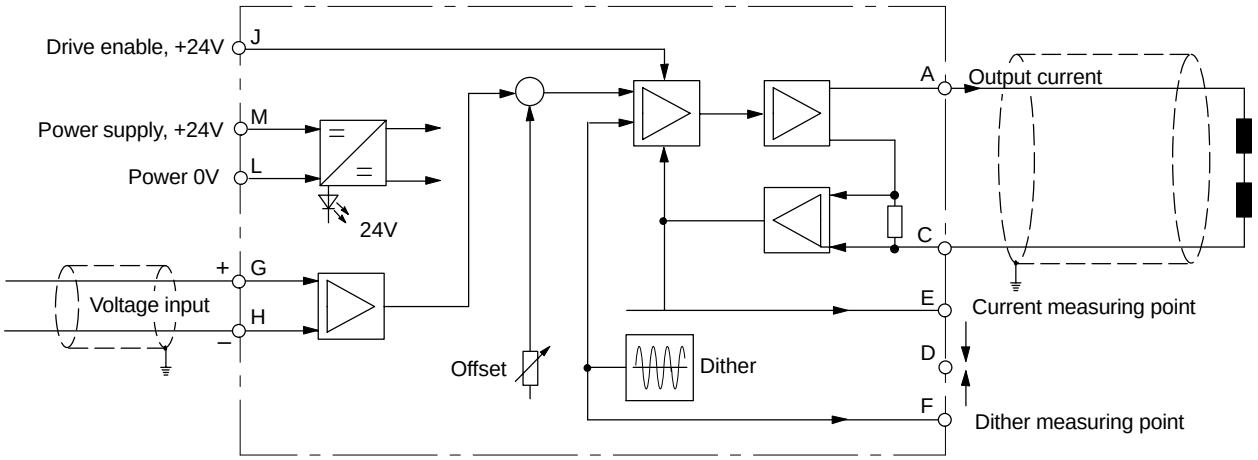


Warning: *Electromagnetic Compatibility (EMC)*

It is necessary to ensure that the unit is wired up in accordance with the connection arrangements shown in this leaflet. For effective protection, the user's electrical cabinet, the valve subplate or manifold and the cable screens should be connected to efficient ground points. The metal 7-pin connector part no. 934939 should be used for the integral amplifier.

In all cases, both valve and cable should be kept as far away as possible from any source of electromagnetic radiation such as cables carrying heavy current, relays and certain kinds of portable radio transmitters, etc. Difficult environments could mean that extra screening may be necessary to avoid the interference.

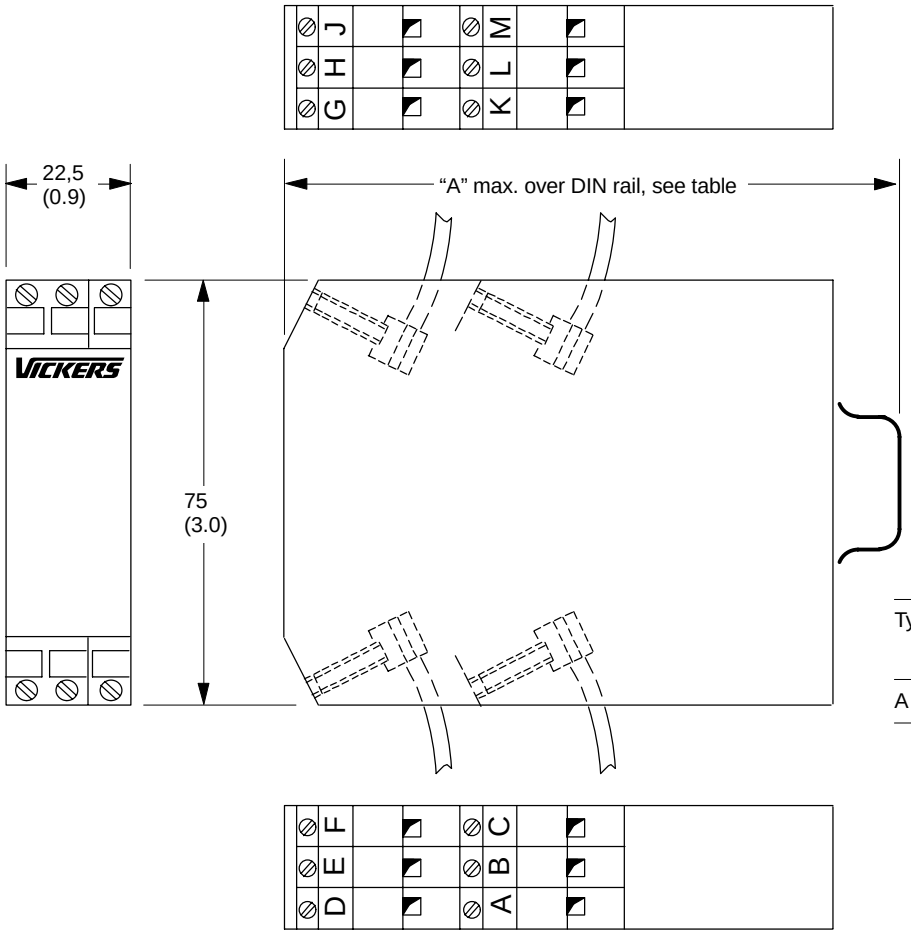
Electrical Block Diagram



Customer's protective ground connection.

Installation Dimensions in mm (inches)

3rd angle projection



Type	TS1	TS3	TS4/5
A	107 (4.22)	102 (4.01)	109,5 (4.32)