

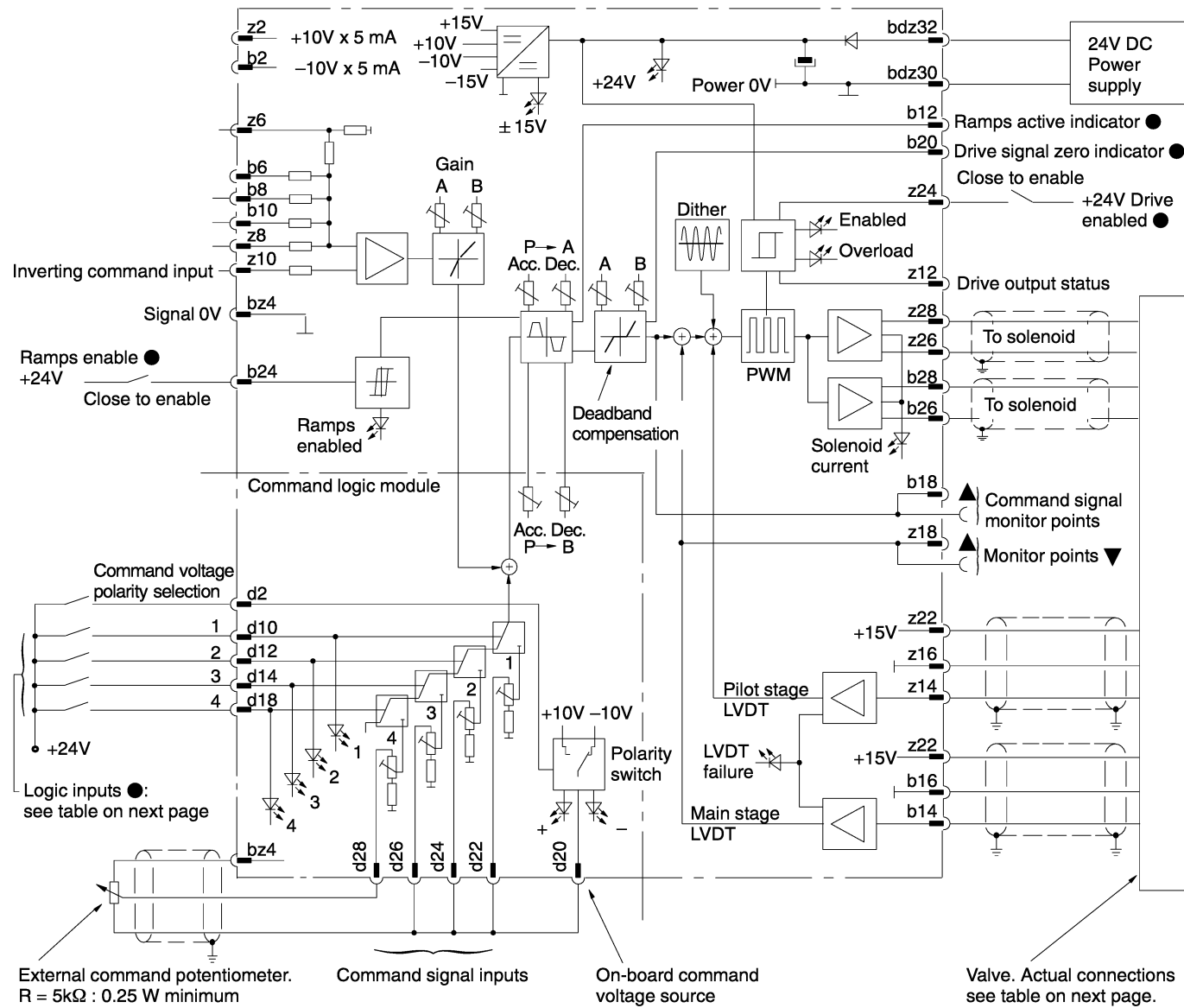
# Circuit and Connections

## EEA-PAM-5\*\*-C-32

Shown with command logic module. Individual ramp adjustments of spool acceleration and deceleration for each direction of movement, are provided. The circuit here includes the essential

characteristics of all amplifiers listed in the "Model Codes" section, two pages back; actual amplifiers omit certain sub-circuits to those connection pins not needed for the valves concerned.

Read circuit in conjunction with that for relevant base amplifier EEA-PAM-5\*\*-A



⊥ Customer's protective ground connection.  
 ▼ Solenoid current for 523/525-C models; LVDT position for all others.  
 ▲ On front panel.  
 ● See under this heading in "Operating Data" table, on previous two pages.

## Logic Selection Inputs

| Logic input pin | Command pot. | Secondary pin | Voltage to pin d2 | Valve flow       |
|-----------------|--------------|---------------|-------------------|------------------|
| d10             | 1            | bdz30         | 0 +24V            | P-A }<br>P-B } ■ |
| d12             | 2            | bdz30         | 0 +24V            | P-A }<br>P-B } ■ |
| d14             | 3            | bdz30         | 0 +24V            | P-A }<br>P-B } ■ |
| d18             | 4            | bdz30         | 0 +24V            | P-A }<br>P-B } ■ |

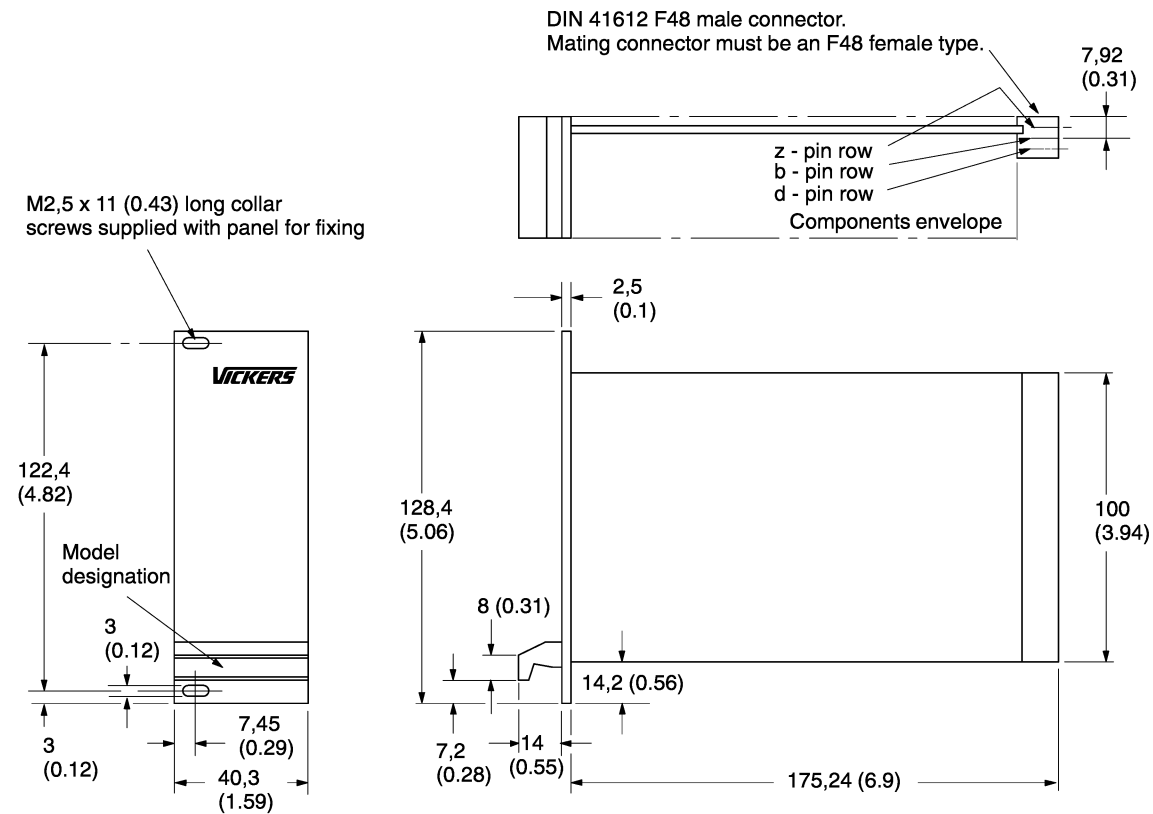
■ In the case of EEA-PAM-523/525-C models, one of these relationships may not apply if two single-solenoid valves are connected.

## Solenoid and LVDT Connections for Proportional Valves

| Amplifier type   | Solenoid with LVDT and/or for flow P to B | Solenoid without LVDT, or on pilot valve | Pilot-stage LVDT, (black plug): |       |       |               | Main-stage LVDT, (gray plug): |       |       |               |
|------------------|---|--|---------------------------------|-------|-------|---------------|-------------------------------|-------|-------|---------------|
|                  |   |  | Pin 1                           | Pin 2 | Pin 3 | Pin 4         | Pin 1                         | Pin 2 | Pin 3 | Pin 4         |
| EEA-PAM-523-C-32 | b26/b28                                   | z26/z28                                  | -                               | -     | -     | Not connected | -                             | -     | -     | Not connected |
| EEA-PAM-525-C-32 | b26/b28                                   | z26/z28                                  | -                               | -     | -     | Not connected | -                             | -     | -     | Not connected |
| EEA-PAM-533-C-32 | b26/b28                                   | z26/z28                                  | -                               | -     | -     | Not connected | b14                           | z22   | b16   | Not connected |
| EEA-PAM-535-C-32 | b26/b28                                   | z26/z28                                  | -                               | -     | -     | Not connected | b14                           | z22   | b16   | Not connected |
| EEA-PAM-561-C-32 | -   | z26/z28                                  | -                               | -     | -     | Not connected | b14                           | z22   | b16   | Not connected |
| EEA-PAM-568-C-32 | -   | z26/z28                                  | -                               | -     | -     | Not connected | b14                           | z22   | b16   | Not connected |

# Installation Dimensions in mm (inches)

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



|   |     |  |
|---|-----|--|
| Alarm output:<br>Set alarm<br>Signal  | z12 | Enable amplifier (on pin z24) when switching power on<br>HIGH when alarm is activated<br>Output = Supply minus 2V<br>I = 50 mA max.<br>LOW when solenoid overload has occurred. (Maintained until reset.)<br>Output = 0 to ±2 volts<br>Output resistance = 50 ohms<br>Disable and re-enable on pin z24 |
| Reset after failure   |     |  |
| Ramps enabled (valve switching rate limited by ramp potentiometers)                                       | b24 | Apply >9,8V to <40V (22 kΩ)  |
| Ramps disabled (fastest valve switching; ramp circuit bypassed)   | b24 | Apply open circuit or up to 4,5V   |
| Ramp active indicator<br>Drive ramping up<br>Drive ramping down<br>Drive not ramping<br>Output resistance | b12 | Output >10V<br>Output <-10V<br>Output 0V (±2V ripple)<br>10 kΩ   |
| Drive signal zero indicator<br>Drive signal at null (within deadband limits)                              | b20 | Output = Supply minus 1,5V<br>I = 50 mA max.   |
| Drive active<br>Output resistance   |     | Output = 0 ±2V<br>50Ω  |
| Ambient temperature range   |     | 0 to 50°C (32 to 122°F)  |
| Storage temperature range   |     | -25 to +85°C (-12 to +185°F)   |
| Edge connectors   |     | DIN 41612 F48 male type on board. Mating connector must be an F48 female type  |
| Installation dimensions and panel display   |     | Dimensions are the same as for the corresponding base amplifier but the panel display is different; see first page   |
| Mass  |     | 0,40 kg (0.88 lb) approx.  |
| Other characteristics   |     | See catalog 2464 for the relevant base amplifier EEA-PAM-5** <b>-A-32</b>  |
| Installation and start-up guidelines (supplied with product)  |     | 9166   |
| Installation wiring requirements for Vickers electronics products   |     | 2468   |
| Application notes (available on request)  |     | 9061   |
| Supporting products:<br>Power unit options<br>Electronic accessories<br>Portable test equipment           |     | See catalogs:<br>2419<br>2460<br>2462 and 2315   |



### Warning: Electromagnetic Compatibility (EMC)

It is necessary to ensure that the valve 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 earth (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.

## Model Codes

| Amplifier model  | For valves           |                               |
|------------------|----------------------|-------------------------------|
| EEA-PAM-523-C-32 | K*G4V-3; KDG5V-5/7/8 | } With type "H"<br>coils only |
| EEA-PAM-525-C-32 | K*G4V-5              |                               |
| EEA-PAM-533-C-32 | KF*G4V-3             |                               |
| EEA-PAM-535-C-32 | KF*G4V-5             |                               |
| EEA-PAM-561-C-32 | KFDG5V-5/7           |                               |
| EEA-PAM-568-C-32 | KFDG5V-8             |                               |

## Operating Data

|  |                                      |  |
|--|--------------------------------------|--|
| Power requirements   |                                      | See appropriate base amplifier, e.g. for EEA-PAM-535-C-32 see EEA-PAM-535-A-32   |
| Control (output) supplies  | z22                                  | +15V for LVDTs only  |
| Output voltages for control:<br>At pin z2<br>At pin b2<br>At pins z2 and b2  |                                      | +10V ( $\pm 1\%$ ) x 5 mA<br>-10V ( $\pm 1\%$ ) x 5 mA<br>Ripple <20 mV pk.-to-pk.<br>Temperature drift <1 mV/°C (<0,5 mV/°F) thru' 0-50°C (32-122°F) range<br>All outputs short-circuit protected   |
| Command signal inputs:<br>Direct-voltage pins<br>Inverting-voltage pin<br>Voltage range<br>Input impedance (voltage)<br>Current pin<br>Current range<br>Input impedance (current)  | b8, b6, z8, b10<br>z10<br><br><br>z6 | $\pm 10V$<br>47 k $\Omega$<br><br>$\pm 20$ mA<br>100 $\Omega$  |
| Command voltage source   | d20                                  | $\pm 10V$ x 10 mA  |
| Command voltage polarity selection:<br>For flow from (main) port P to A▲<br>For flow from (main) port P to B▲<br>Input impedance<br><b>Warning:</b> Loss of signal at pin d2 causes polarity reversal and possible erratic motion.<br>▲ In the case of EEA-PAM-523/525 amplifiers, one of these relationships may not apply if two single-solenoid valves are connected. |                                      | Pin d2 at 0 to +5V<br>Pin d2 at +10 to +40V<br>47 k $\Omega$   |
| Logic inputs:<br>Switch-on voltage<br>Switch-off voltage<br>Input current  | d10, d12, d14 or d18                 | +10 to +40V<br><+5V<br>$\leq 10$ mA  |
| Command voltage inputs:<br>Voltage and source<br>Input impedance<br>External command potentiometer   | d22, d24, d26 and d28                | +10V gives valve flow from port P to B, or -10V gives flow from P to A◆<br>Four 50 k $\Omega$ pots<br>5 k $\Omega$ ; 0,25W minimum<br>Part no. 714127; see catalog 2460<br>◆ Not applicable when using EEA-PAM-523/525 amplifiers to drive two single-solenoid valves. |
| Drive enabled (power available to solenoid)  | z24                                  | Apply >9,8V to <40V (22 k $\Omega$ )   |
| Drive disabled (no power to solenoid)  | z24                                  | Apply open circuit or up to 4,5V   |

Continued on next page

# EAT•N

# Vickers

## Power Amplifiers

Models with Command Logic Module and 4 Ramps  
EEA-PAM-5\*\*-C-32 Series

### General Description

The EEA-PAM-5\*\*-C-32 Eurocards are power amplifiers with a 4-input (demand signal) module and 4-ramp function generator with quadrant detection. The ramp generator allows acceleration and deceleration to be set separately for both directions of movement.

The type of EEA-PAM-5\*\*-C-32 amplifier used depends on the type of proportional valve, see "Model Codes" on next page.

### Features and Benefits

- All features of "A" amplifiers
- 4 adjustable ramp times, 4-quadrant acceleration/deceleration
- 4 adjustable command pre-sets selectable by 24V logic signal
- Polarity of the 10V reference voltage selectable by 24V logic signal

### Front Panel

#### LEDs

- [1] 24V power supply input, green
- [2] ± 15V control supply output, green
- [3] Drive (solenoid) enabled, yellow
- [4] Overload, red
- [5] LVDT failure, red ▼ ▲
- [6] Drive to solenoid, yellow ★

#### Potentiometers

- [7] Deadband compensation, flow from port P to B ◆ ▲
- [8] Deadband compensation, flow from port P to A ◆ ▲
- [9] Gain, flow from port P to B ◆ ▲
- [10] Gain flow from port P to A ◆ ▲

#### LED

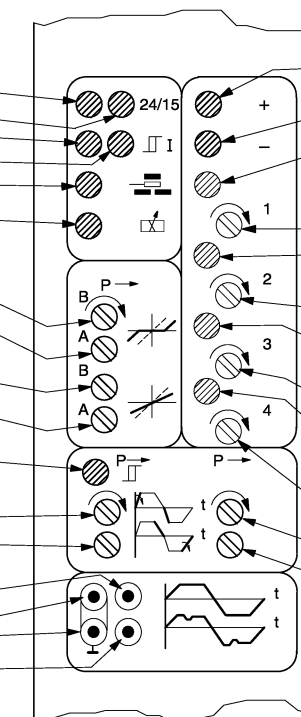
- [11] Ramps enabled, yellow

#### Potentiometers

- [12] Spool acceleration, flow from port P to B ◆ ▲
- [13] Spool deceleration, flow from port P to B ◆ ▲

#### Monitor points

- [14] Conditioned command signal
- [15] Common ground 0V
- [16] ▲ ●



#### LEDs

- [17] Positive input polarity ON, yellow
- [18] Negative input polarity ON, yellow
- [19] Input 1 ON, yellow

#### Potentiometer

- [20] Input 1 adjustment

#### LED

- [21] Input 2 ON, yellow

#### Potentiometer

- [22] Input 2 adjustment

#### LED

- [23] Input 3 ON, yellow

#### Potentiometer

- [24] Input 3 adjustment

#### LED

- [25] Input 4 ON, yellow

#### Potentiometers:

- [26] Input 4 adjustment
- [27] Spool acceleration, flow from port P to A ◆ ▲
- [28] Spool deceleration, flow from port P to A ◆ ▲

Eaton  
14615 Lone Oak Road  
Eden Prairie, MN 55344  
USA  
Tel: 952 937-9800  
Fax: 952 974-7722  
www.hydraulics.eaton.com

Eaton  
20 Rosamond Road  
Footscray  
Victoria 3011  
Australia  
Tel: (61) 3 9319 8222  
Fax: (61) 3 9318 5714

Eaton  
46 New Lane, Havant  
Hampshire PO9 2NB  
England  
Tel: (44) 23 92 486 451  
Fax: (44) 23 92 487 110

# EAT•N | Vickers

© 2002 Eaton Corporation  
All rights reserved  
Printed in USA  
Document No. GB-2473  
July 2002

▼ LED and symbol not on EEA-PAM-523/525 amplifiers.

▲ Main-stage spool in the case of K\*DG5V valves.

● Of solenoid current in the case of EEA-PAM-523/525 models, of spool position for others.

■ Ø2,0 mm (0.0787" dia.) sockets.

★ Indicates drive to whichever solenoid is energized.

◆ In the case of EEA-PAM-523/525 amplifiers, one of these relationships may not apply if two single solenoid valves are connected.

# VICKERS®