# Series E3P

## Three-Phase Output to 75A 600Vac DC Control

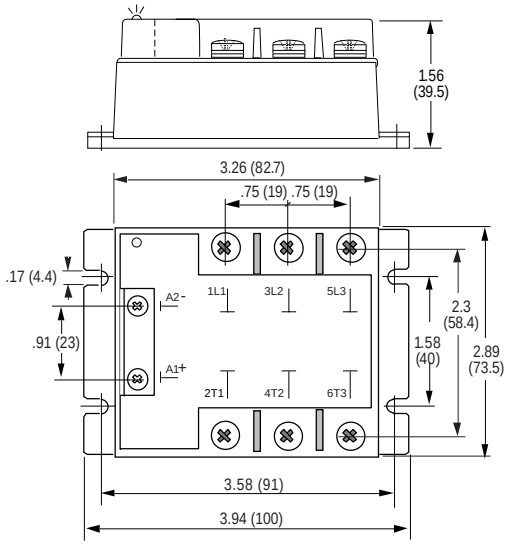
| Part Number | Description |
|---|---|
| E3P48R50-16 | 50A, 520 Vac |
| E3P48D50-16 | 50A, 520 Vac |
| E3P48D75-16 | 75A, 520 Vac |
| E3P48D12 | 12A, 600 Vac |
| E3P48D25 | 25A, 600 Vac |
| E3P48D50 | 50A, 600 Vac |
| E3P48A50 | 50A, 600 Vac |
| E3P48D75 | 75A, 600 Vac |

### Part Number Explanation

| E3P | 48 | R | 50 | -16 |
|---|---|---|---|---|
| *Series* | *Line Voltage[1]* | *Switch Type[2]* | *Output Current - Amps* | *Options[3]* |

NOTES
1) Line Voltage (nominal): 48 = 480 Vac
2) Switch Type: R = Random turn-on; D = Zero cross turn-on;
A = AC control, Zero cross turn-on
3) Options: -16 = MOV

### MECHANICAL SPECIFICATION




WEIGHT: 13.05 oz. (370g)

*Figure 1 — E3P relays; dimensions in inches (mm)*

### FEATURES/BENEFITS

- Three-phase output
- AC or DC control
- Internal output protection
- Control LED on all models
- Designed for all types of loads
- Excellent thermal performance
- Tight zero-cross window for low EMI
- High immunity to surges

### DESCRIPTION

The Series E3P three-phase relays are designed for all types of loads. The design incorporates a thyristor output. Control status LED is a standard on all models. Output protection is provided internally on certain models. The Series E3P utilizes optical isolation to protect the control from load transients. High current models are excellent for motor control.

### APPLICATIONS

- Heating control
- Motor control
- Uninterruptible power supplies
- Light dimmers
- Three-phase industrial and process control
- On/Off controls of AC equipment

### APPROVALS

Series E3P relays are pending UL recognition.

### TYPICAL APPLICATION

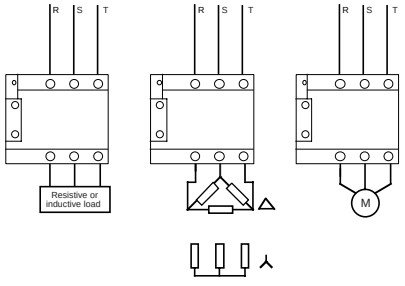



*Figure 2 — E3P relays*

## INPUT (CONTROL) SPECIFICATION

| | Input Type | Min | Max | Units |
|---|---|---|---|---|
| Control Range | | | | |
| E3P | R/D | 8.5 | 30 | Vdc |
| E3P | A | 90 | 240 | Vdc |
| Input Current Range | | | | |
| E3P | R/D | 10 | 45 | mA |
| E3P | A | 4 | 11 | mA |
| Must Turn-Off Voltage | | | | |
| All relays | | | 4 | Vdc |
| Input Resistance (Typical) | | | | |
| E3P | R/D | | 620 | Ohms |
| E3P | A | | 21 | KOhms |
| Reverse Voltage Protection | | | | |
| E3P | R/D | | 30 | V |
| E3P | A | | NA | |

## CONTROL CHARACTERISTIC

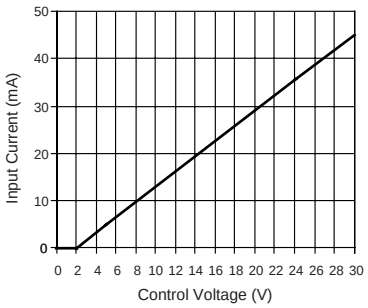



*Figure 3a — All E3P relays except E3P48A50*

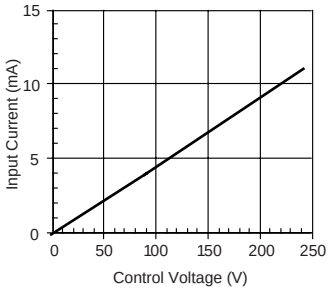



*Figure 3b — E3P48A50*

## BLOCK DIAGRAM

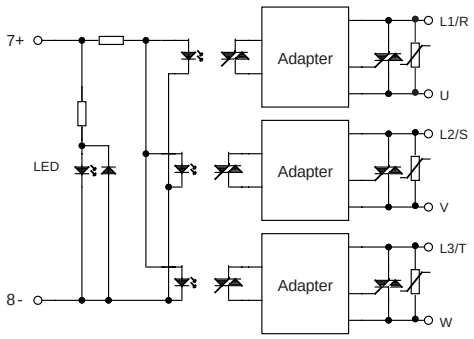



*Figure 4a — E3P48R50-16*

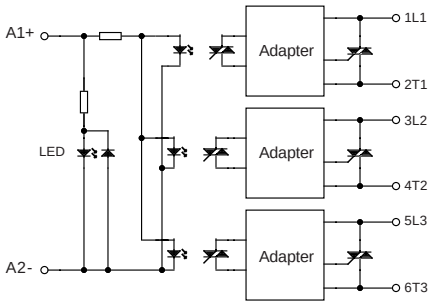



*Figure 4b — E3P48D relays*

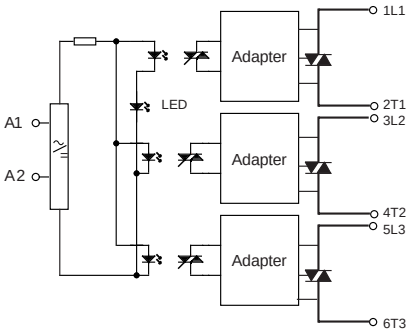



*Figure 4c — E3P48A50*

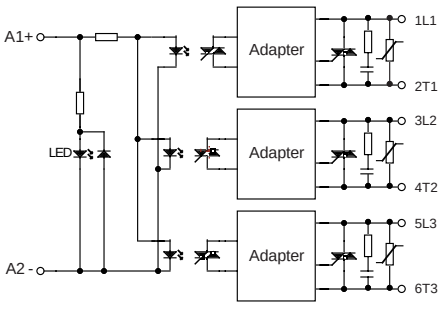



*Figure 4d — E3P48DXX-16*

## OUTPUT (LOAD) SPECIFICATION

| | Min | Max | Units |
|---|---|---|---|
| Operating Range | | | |
| E3P48XXX-16 | 24 | 520 | Vrms |
| E3P48 | 24 | 600 | Vrms |
| Peak Voltage | | | |
| All relays | | 1200 | Vpeak |
| Minimum Load Current | | | |
| All relays | 5 | | mA |
| Inductive Load Current | | | |
| E3P with -16 option 50A output | | 12 | Arms |
| E3P with -16 option 75A output | | 16 | Arms |
| Maximum Surge Current Rating (Non-Repetitive) | | | |
| 12A output | | 120 | A |
| 25A output | | 230 | A |
| 50A output | | 550 | A |
| 75A output | | 1000 | A |
| On-State Voltage Drop | | | |
| All relays output current | | 1.4 | V |
| Zero Cross Window (Typical) | | | |
| E3P48DXX-16 | | 12 | V |
| E3P48 | | 24 | V |
| E3P48R | | NA | |
| Off-State Leakage Current (60Hz) | | | |
| E3P48DXX-16 | | 5 | mA |
| All other relays | | 1 | mA |
| Turn-On Time (60 Hz) | | | |
| E3P48R | | 0.1 | ms |
| All other relays | | 8.3 | ms |
| Turn-Off Time (60 Hz) | | | |
| All relays | | 8.3 | ms |
| Off-State dv/dt | | | |
| All relays | | 500 | V/μs |

## OUTPUT (LOAD) SPECIFICATION (Continued)

| | Min | Max | Units |
|---|---|---|---|
| Maximum di/dt (Non-Repetitive) | | | |
| All relays | | 50 | A/μs |
| Operating Frequency Range | | | |
| All relays | 10 | 440 | Hz |
| $I^2t$ for Match Fusing (<8.3ms) | | | |
| 12A output | | 72 | $A^2S$ |
| 25A output | | 265 | $A^2S$ |
| 50A output | | 1500 | $A^2S$ |
| 75A output | | 5000 | $A^2S$ |

## ENVIRONMENTAL SPECIFICATION

| | Min | Max | Units |
|---|---|---|---|
| Operating Temperature | –40 | 100 | °C |
| Storage Temperature | –40 | 100 | °C |
| Input-Output Isolation | 4000 | | Vrms |
| Output-Case Isolation | | | |
| E3P48D12 | 2500 | | Vrms |
| E3P48D25 | 2500 | | Vrms |
| All other relays | 3300 | | Vrms |

## THERMAL CHARACTERISTICS

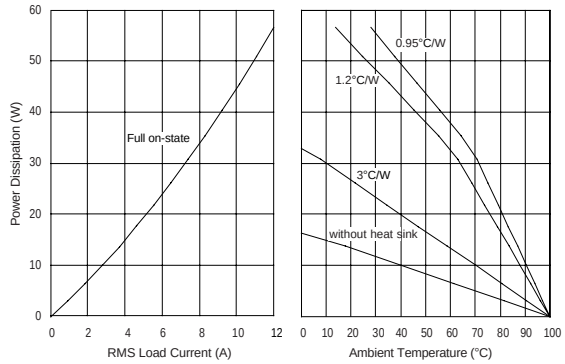



*Figure 5a — 12A output*

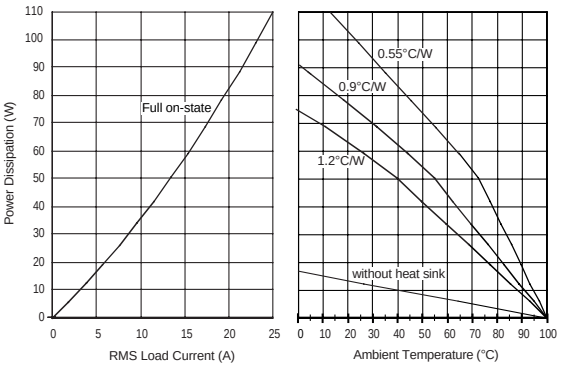



*Figure 5b — 25A output*

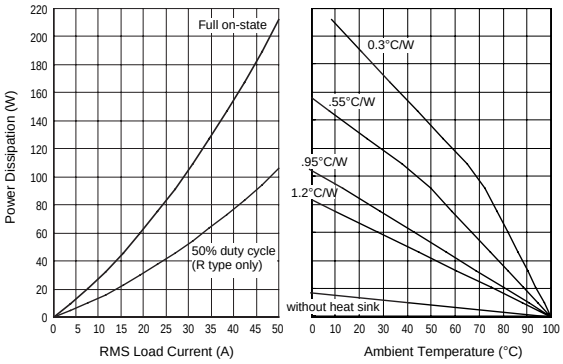



*Figure 5c — 50A output*

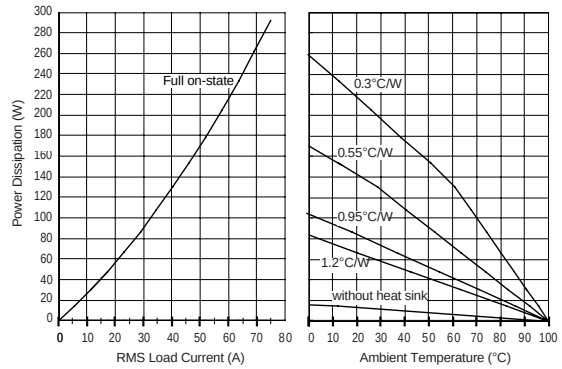



*Figure 5d — 75A output*

## SURGE CURRENT

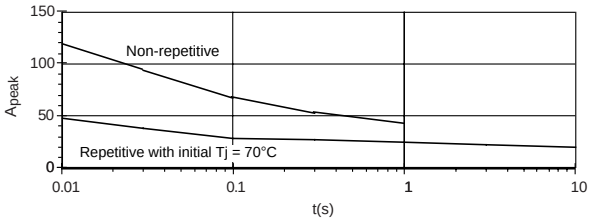



*Figure 6a — 12A output*

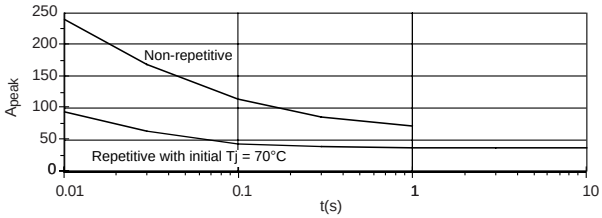



*Figure 6b — 25A output*

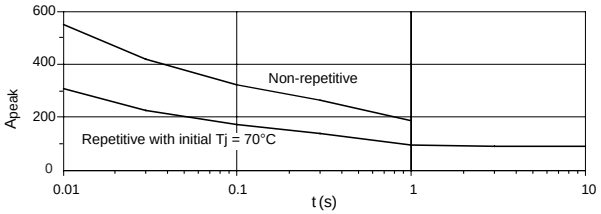



*Figure 6c — 50A output*

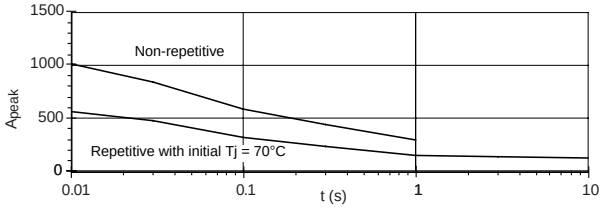



*Figure 6d — 75A output*

NOTES:
1. Electrical specifications at 25°C unless otherwise specified.
2. For 800Hz applications, contact factory.
3. For additional/custom options, contact factory.