E3P2G Series

Three-Phase Output up to 75A, 600 Vac
DC Control Solid-State Relay

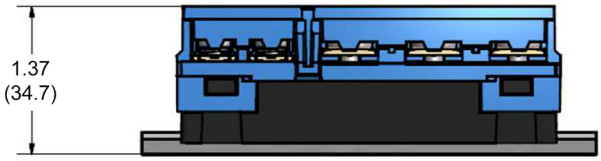
Part Number	Description
E3P2G48D25	25A, 600 Vac
E3P2G48D50	50A, 600 Vac
E3P2G48D75	75A, 600 Vac
E3P2G48D75-16	75A, 520 Vac

Part Number Explanation

E3P2G — *Series*
48 — *Line Voltage*[1]
D — *Switch Type*[2]
75 — *Output Current*[3]
-16 — *Feature*[4]

NOTES
1) Line Voltage (nominal): 48 = 480 Vac
2) Switch Type: D = Zero-cross turn-on
3) Output Current: 25 = 25Amps, 50 = 50 Amps, 75 = 75Amps
4) Features: -16 = RC+VDR

Mechanical Specification



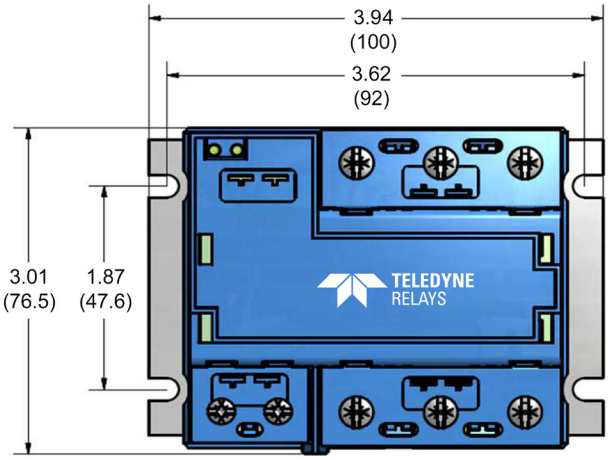


Figure 1 — *Outline dimensions in inches (mm)*

Housing Material — *PA 6 UL94VO*
Base Plate — *Tin plated Aluminum*

FEATURES / BENEFITS

- Three-phase power output
- Direct Copper Bonding
- Internal Over-Voltage protection
- Input Control LED
- Built in IP20 protection with flaps
- Excellent thermal performance
- Designed too IEC/ EN60947-4-3.
- High immunity to surges

DESCRIPTION

The E3P2G series, three-phase solid state relay is the 2nd generation of the discontinued E3P series. The new design incorporates a high efficiency back-to-back thyristor with direct copper bonding for a longer lifetime expectancy. Over-Voltage protection is provided internally with TVS diodes for the input and output. Additionally our -16 model is designed with an RC snubber and VDR for greater protection to the output to handle all types of loads. The industrial SSR utilizes optical isolation to protect the control from load transients for each phase and has tight zero-cross window for low EMI. A control status LED are standard on all models.

APPLICATIONS

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

APPROVALS

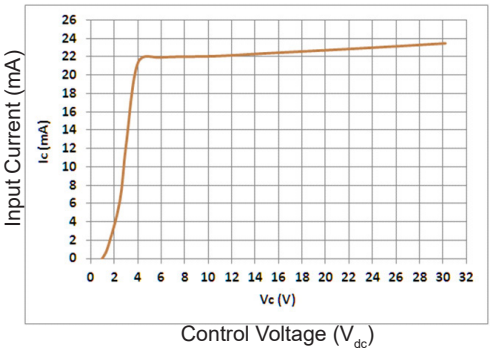
Conformity to IEC947-4-3
UL Pending

Downloaded from Arrow.com.

INPUT (CONTROL) SPECIFICATION

	Min	Typ.	Max	Units
Control Voltage	4		30	Vdc
Control Current			25	mA
Must Turn-Off Voltage	2			Vdc
Input Resistance		Current Regulator		Ω
Reverse Voltage Protection		30		V

CONTROL CHARACTERISTIC



OUTPUT (LOAD) SPECIFICATION

	Min	Typ.	Max	Units
Operating Voltage Range (+/- 10%)				
E3P2G48DXX	24	400	600	V_{rms}
E3P2G48D75-16	24	400	520	V_{rms}
Peak Voltage				
E3P2G48D25			1200	V_{peak}
E3P2G48D50			1200	V_{peak}
E3P2G48D75			1200	V_{peak}
E3P2G48D75-16			1600	V_{peak}
Latching Voltage				
All relays			10	V
Load Current Range (@40 °C)[1]				
25A output current	.005		25	A_{rms}
50A output current	.005	42	50	A_{rms}
75A output current	.005	54	75	A_{rms}
Non-Repetitive Overload Current (tp=10ms)				
25A output	320	420		A
50A output	700	750		A
75A output	1100	1200		A
On-State Voltage Drop (@ 25°C)				
E3P2G48D25			0.85	V
All other relays			1	V
On State Dynamic Resistance				
25A output			9.5	mΩ
50A output			7.5	mΩ
75A output			4.5	mΩ
Zero-Cross Window				
E3P2G48D25			35	V
E3P2G48D50		30		V
E3P2G48D75-XX	10			V

Typical Application

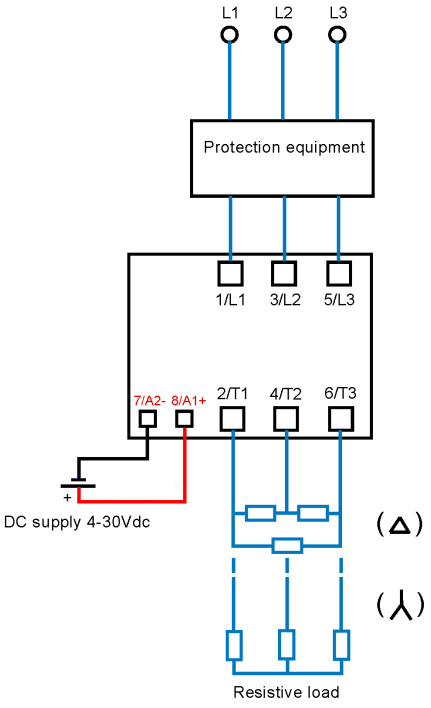


Figure 2 — *Wiring Diagram*

 © 2022 TELEDYNE RELAYS

Downloaded from Arrow.com.

OUTPUT (LOAD) SPECIFICATION (Continued)

	Min	Typ.	Max	Units
Junction-Case Thermal Resistance				
25A output current		0.50		°C/W
50A output current		0.45		°C/W
75A output current		0.30		°C/W
Off-State Leakage Current (50 Hz)				
All relays			1	mA
Turn-On Time (50 Hz)				
All relays		10		ms
Turn-Off Time (50 Hz)				
All relays		10		ms
Off-State dv/dt				
All relays	500			V/µs
Maximum di/dt (Non-Repetitive)				
All relays			50	A/µs
Operating Frequency Range				
All relays	0.1	50-60	400	Hz
I^2t for Match Fusing (<10ms)				
25A output	512	882		A^2s
50A output	2450	2800		A^2s
75A output	6000	7200		A^2s

ENVIRONMENTAL SPECIFICATION

	Min	Typ.	Max	Units
Operating Temperature				
E3P2G48DXX	-40		100	°C
E3P2G48D75-16	-40		85	°C
Storage Temperature[2]				
All relays	-40		125	°C
Input-Ouput Isolation		4000		V_{rms}
Output-Case Isolation		4000		V_{rms}
Isolation Resistance (@500V_{dc})		1000		MΩ
Vibration (IEC60068-2-6)[3]		1.5		mm
Shock (IEC60068-2-6)	30		50	g's
Protection Level		IP20		
Relative Humidity	40		85	%
Weight		200		g

Notes
[1]With Heatsink
[2]10-150Hz, double amplitude
[3]No icing, no condensation

BLOCK DIAGRAMS

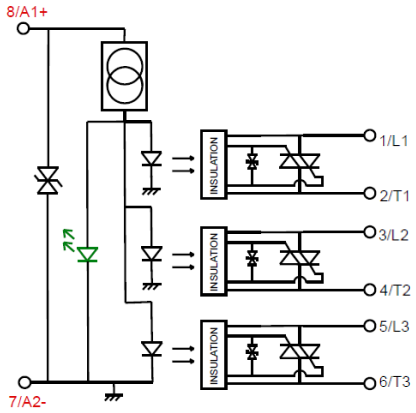


Figure 4a — *E3P2G48DXX*

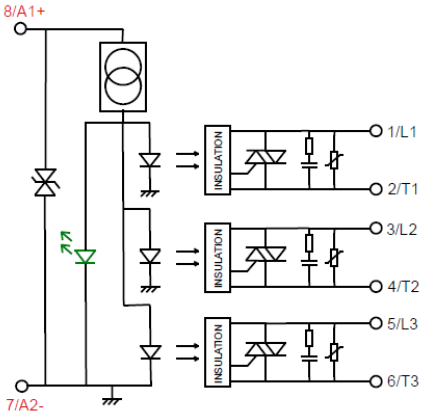


Figure 4b — *E3P2G48DXX-16*

Downloaded from Arrow.com.

THERMAL CHARACTERISTICS

Figure 5a — *25A output*

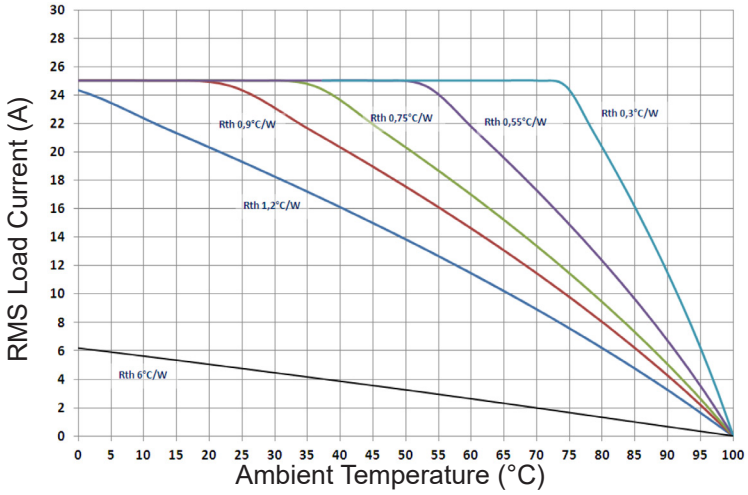


Figure 5b — *50A output*

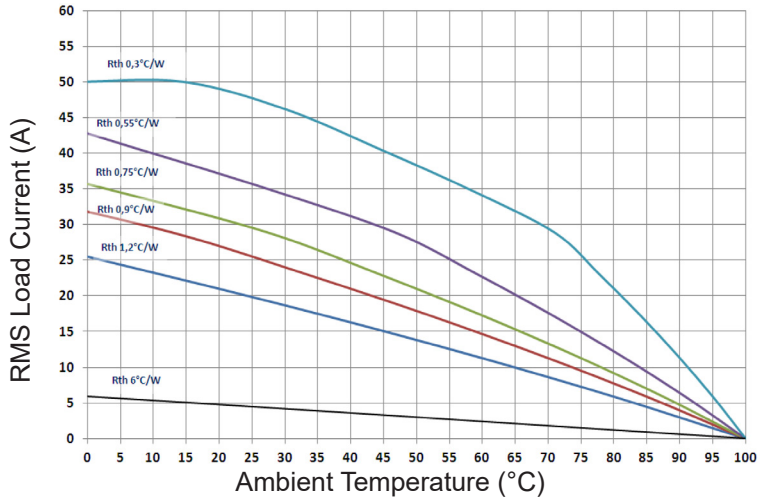
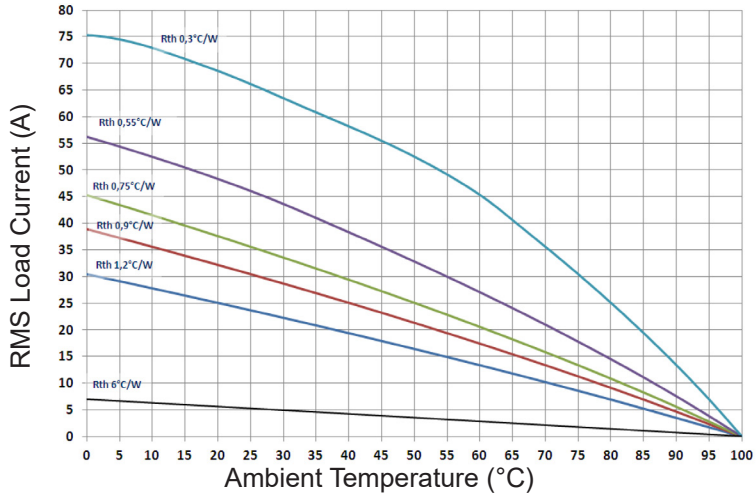


Figure 5c — *75A output*



 © 2022 TELEDYNE RELAYS

Downloaded from Arrow.com.

SURGE CURRENT

Curve Definitions
1:Non Repetative - is given without voltage reapplied .This curve is used to define the protection (fuses).
2: Repetative - is given for inrush current with initial Tj = 70°C. In normal operation, this curve musn't be exceeded. Caution, frequent over load currents will decrease the life expectancy of the SSR.

Figure 6a— *25A output*

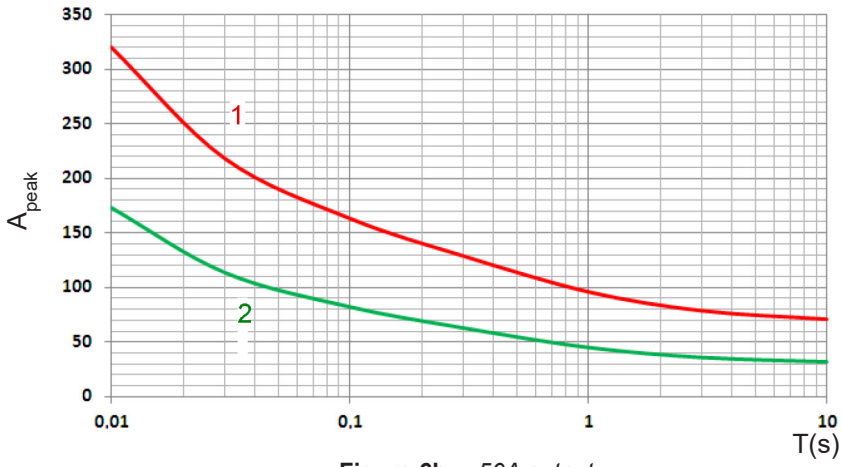


Figure 6b— *50A output*

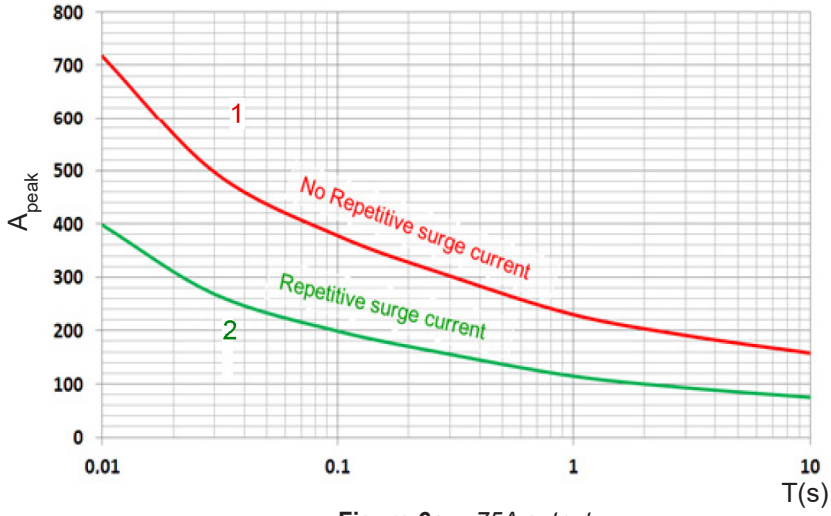
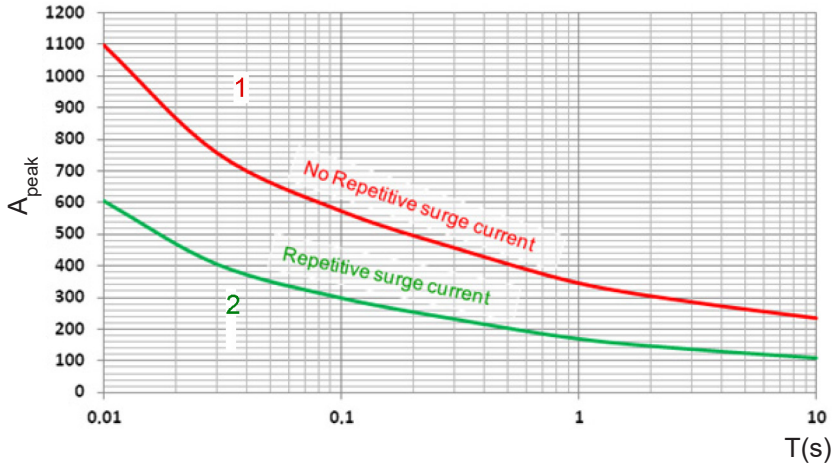


Figure 6c— *75A output*

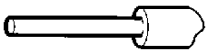
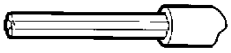
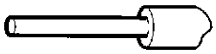
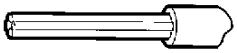


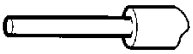
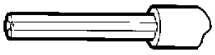
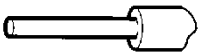
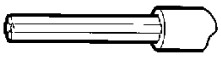
Downloaded from Arrow.com.

CONNECTIONS

Direct connection with wires with or without ferrules

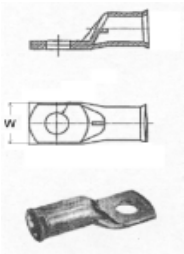
With ring terminals

Control Wiring				
Number of wires				Screwdriver type
1		2		
SOLID (No ferrule)	FINE STRANDED (With ferrule)	SOLID (No ferrule)	FINE STRANDED (With ferrule)	POZIDRIV 2
				
AWG18 -- AWG14 0.75 -- 2.5 mm²	AWG18 -- AWG14 0.75 -- 2.5 mm²	AWG18 -- AWG14 0.75 -- 2.5 mm²	AWG18 -- AWG14 0.75 -- 2.5 mm²	Recommended tightening torque for M4 screw: Min 1.2 / Typ 1.5 / Max 2 N.M

Power Wiring				
Number of wires				Screwdriver type
1		2		
SOLID (No ferrule)	FINE STRANDED (With ferrule)	SOLID (No ferrule)	FINE STRANDED (With ferrule)	POZIDRIV 2
				
AWG16 -- AWG8 1.5 -- 10 mm²	AWG16 -- AWG8 1.5 -- 10 mm²	AWG16 -- AWG8 1.5 -- 10 mm²	AWG16 -- AWG8 1.5 -- 10 mm²	Recommended tightening torque for M5 screw: Min 2 / Typ 2.4 / Max 3 N.M

Power with ring terminal

W max =12.6mm
AWG6 (16 mm²)
AWG4 (25 mm²)
AWG2 /AWG3 (35mm²)
AWG0 /AWG1 (50mm²)



IP20 flaps

Flaps are delivered mounted on the relay. Marking labels are available for mounting on flaps.

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE © 2022 TELEDYNE RELAYS

Downloaded from Arrow.com.