

SCR* Power Control For Lower Current Nichrome Heater Elements

*Silicon Controlled Rectifier

The DPAC-S series of SCR power controls is a low current zero crossover device for proportionally controlling AC voltage into a resistive load. It accepts an analog current or voltage command input signal from a temperature control and provides proportional bursts of power. The DPAC-S has a time base of four seconds. Use for both comfort heating applications, as well as small ovens and industrial furnaces. The zero cross circuitry produces a minimum of electric noise (RFI). The unit is available in single phase, three phase—two leg and three phase—four wire for grounded wye applications.

Features

- Zero cross firing
- Available in 10 through 50 amp ratings
- Plug-in range cards
- High voltage SCRs with isolated heat sinks (or enclosure)
- Rugged heat sinks for 50°C ambient operation
- I²t fuses and snubber protection included
- UL recognized
- UL listed when mounted in Watlow/Loyola enclosure

Benefits

- Turns ON at near zero potential minimizing electrical noise (EMI)
- Fits low current applications
- Field changeable range input selection
- Reliable operation in hostile industrial environments; isolated for safety
- Full rating of the power control can be used in industrial applications
- Protect the SCR from voltage or current surges or spikes
- Little additional testing required for UL listing of an OEM panel
- Stand alone UL listed power control



FIRST IN SCR POWER CONTROLS



Specifications

Operation

- Zero cross (burst firing)
- Resistive loads only
- 4 second time base
- Single phase, 1 Pole (1 pair SCRs)
- Three phase, 2 Pole (2 pair SCRs)
- Three phase, 4 wire (3 pair SCRs for grounded wye)

Input

DC Voltage	Input Impedance
0-5 VDC or slide wire	22K Ω
0-16 VDC	22K Ω
3-10 VDC	1K Ω
5-7 VDC	22K Ω
5-10 VDC	22K Ω
6-9 VDC	22K Ω
1-5 VDC	10K Ω
DC current	
0-5 mA	1K Ω
1-5 mA	1K Ω
2-12 mA	1.5K Ω
4-20 mA	270 Ω
4-20 mA	470 Ω
• Thermistor	
1.7K Ω or 2.2K Ω	
• Potentiometer	
Bias and Gain: adjustable command signals	
• Input is isolated by a transformer	

Output

- 120VAC through 480VAC (600VAC, consult factory)
- 1 phase, 3 phase, and 3 phase 4 wire
- 10, 20, 30, and 50 amps

Power

- Frequency 50/60Hz
- Voltage $\pm 10\%$, 120/208/240/277/480VAC (600VAC, consult factory)

Power Dissipation (Watts)

- 1.5watts/amp per controlled leg

Isolation

- Command signal to load 1250VAC minimum

Linearity

- Within 2% of command signal span

OFF State Leakage Current

- 20mA @ 480VAC

SCR Protection

- I²t fuses provided, integral with D01S and D32S
- dv/dt 200V/ μ sec. min.
- MOV and snubber network standard
- 3rd leg fuse kit may be used, but not required, with 3 phase—2 leg models (D32S)

Cooling

- Convection heat sink

Agency Approval

- Panel mount, UL recognized, File #67609, Section 873 Temperature Indicating and Regulating Equipment
- Enclosed version (NEMA 1) UL Listed

Mounting

- Enclosure: Optional NEMA 1 enclosure is available for all DPAC-S controls for UL listing. For D01S order 01-5050; for D32S order 01-5051; for D33S order 01-5057.
- Remote: Heat sink assembly may be remotely mounted through the wall of the panel to place the heat source outside the panel. (Non UL)
- Orientation: Heat sink fins must be vertical

Operating Environment

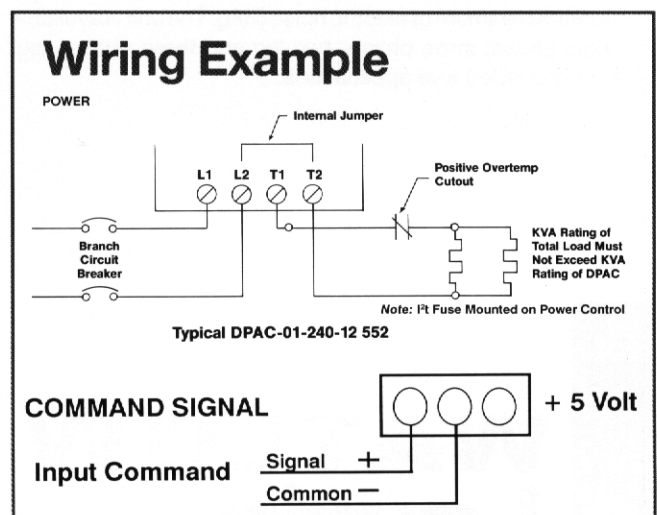
- 32°F to 122°F/0°C to 50°C
- 0 to 90%RH, non-condensing

Weight

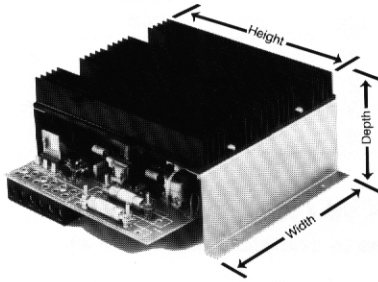
lbs. (kg.)	Phase			
	Amps	1 ϕ /D01S	3 ϕ , 2 leg/D32S	3 ϕ , 4 wire/D34S
20		6 (2.7)	8 (3.6)	12 (5.4)
30		6 (2.7)	8 (3.6)	12 (5.4)
50		6 (2.7)	8 (3.6)	12 (5.4)

Options

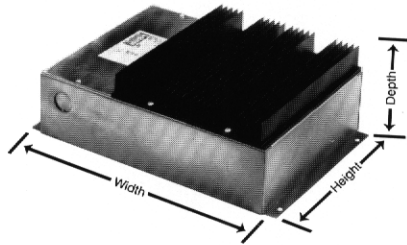
- Manual Control Kit (potentiometer) #08-0161
- Enclosures
01, #01-5050
32, #01-5051
34, #01-5057
- 600VAC operation, consult factory



Case Styles



Style H



Style G

DPAC-S Dimensions

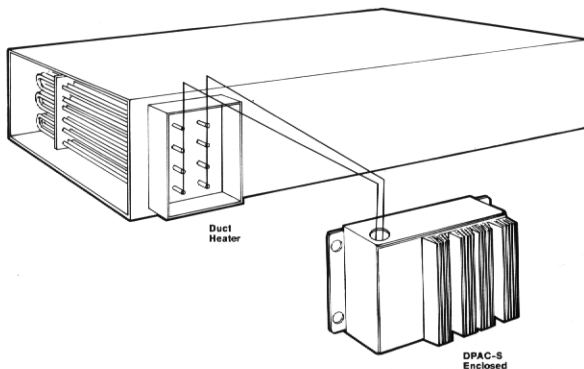
D01S							
Style	Amps	Height (H)		Width (W)		Depth (D)	
		In.	(mm)	In.	(mm)	In.	(mm)
H	20	11.6	294.64	6.8	172.72	5	127
H	30	11.6	294.64	6.8	172.72	5	127
H	50	11.6	294.64	6.8	172.72	5	127

D32S							
Style	Amps	Height (H)		Width (W)		Depth (D)	
		In.	(mm)	In.	(mm)	In.	(mm)
H	20	11.6	294.64	11.3	287	5	127
H	30	11.6	294.64	11.3	287	5	127
H	50	11.6	294.64	11.3	287	5	127

D34S							
Style	Amps	Height (H)		Width (W)		Depth (D)	
		In.	(mm)	In.	(mm)	In.	(mm)
H	20	11.6	294.64	15.8	401.32	5	127
H	30	11.6	294.64	15.8	401.32	5	127
H	50	11.6	294.64	15.8	401.32	5	127

Enclosure							
Style		Height (H)		Width (W)		Depth (D)	
		In.	(mm)	In.	(mm)	In.	(mm)
G	DPAC-1S	11.6	294.64	10.5	266.7	5	127
G	DPAC-3S	11.6	294.64	15	381	5	127
G	DPAC-43S	11.6	294.64	19.5	495.3	5	127

Applications Sketch



Here a DPAC-S power control is switching power to direct heaters in a hot air application rated from 10 to 50 amps. The DPAC-S operates from a temperature control with a 0-5VDC or 4-20mA process control signal.

The DPAC-S can also operate from slide wire feedback or thermistor input.

The DPAC-S mounts in its own enclosure, or it can be chassis mounted for installation in a panel. DPAC-S has UL rating; it is UL recognized in chassis mount versions and UL listed when fully enclosed.

Ordering Information

To order, complete the Model Number (11-12 digits) to the right with the information below.

Category and Details

Power Control Series

DPAC-S = Time proportioning, zero crossover firing power control, UL listed enclosed model, UL recognized chassis mount model, fuse(s) and holder(s) included.

Phase

01 = Single Phase
 32 = Three Phase, 2 leg (Optional 3rd Leg Fuse Kit extra.)
 34 = Three Phase, 4 wire

Operating Voltage

120 = 120VAC
 208 = 208VAC
 240 = 240VAC
 277 = 277VAC
 480 = 480VAC

KW

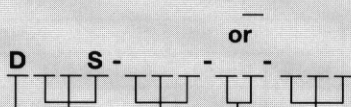
See KW Charts on this page to complete the model #.

Range Card

552 = 0- 5 VDC or Slide Wire
 553 = 0-16 VDC
 554 = 3-10 VDC
 555 = 5- 7 VDC
 556 = 5-10 VDC
 557 = 6- 9 VDC
 558 = 1- 5 VDC
 559 = 0- 5 mA
 560 = 1- 5 mA
 561 = 2-12 mA
 562 = 4-20 mA (270Ω)
 563 = 4-20 mA (500Ω)
 564 = 1.7K Thermistor
 565 = 2.2K Thermistor
 578 = Bias and Gain

Accessories

01-5050 = DPAC-01S Enclosure
 01-5051 = DPAC-03S Enclosure
 01-5057 = DPAC-43S Enclosure
 08-0161 = Manual Control Kit



Single Phase KW Chart

(Use KW values to complete the model #)

Amps	Volts				
	120	208	240	277	480
10	1	2	2	2	4
20	2	4	4	5	9
30	3	6	7	8	14
50	6	10	12	13	24

3 Phase KW Chart

(Use KW values to complete the model #)

Part # 3rd Leg Fuse Kit	Amps	Volts		
		208	240	480
3LF-10	10	3	4	8
3LF-20	20	7	8	16
3LF-30	30	10	12	24
3LF-50	50	18	20	41

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