*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
- 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
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

<table>
<thead>
<tr>
<th>DC Voltage</th>
<th>Impedance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 VDC</td>
<td>22KΩ</td>
</tr>
<tr>
<td>or slide wire</td>
<td></td>
</tr>
<tr>
<td>0-16 VDC</td>
<td>22KΩ</td>
</tr>
<tr>
<td>3-10 VDC</td>
<td>1KΩ</td>
</tr>
<tr>
<td>5-7 VDC</td>
<td>22KΩ</td>
</tr>
<tr>
<td>5-10 VDC</td>
<td>22KΩ</td>
</tr>
<tr>
<td>6-9 VDC</td>
<td>22KΩ</td>
</tr>
<tr>
<td>1-5 VDC</td>
<td>10KΩ</td>
</tr>
</tbody>
</table>

• DC current

<table>
<thead>
<tr>
<th>mA</th>
<th>Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>1KΩ</td>
</tr>
<tr>
<td>1-5</td>
<td>1KΩ</td>
</tr>
<tr>
<td>2-12</td>
<td>1.5KΩ</td>
</tr>
<tr>
<td>4-20</td>
<td>27Ω</td>
</tr>
<tr>
<td>4-20</td>
<td>470Ω</td>
</tr>
</tbody>
</table>

• Thermistor
  1.7KΩ or 2.2KΩ

• 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 ±10%, 120/208/240/277/480VAC
  (600VAC, consult factory)

Power Dissipation (Watts)

• 1.5 watts/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

• Pt fuses provided, integral with D01S and D32S
• dv/dt 200V/μsec. 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

<table>
<thead>
<tr>
<th>Amps</th>
<th>1f/D01S</th>
<th>3f, 2 leg/D32S</th>
<th>3f, 4 wire/D34S</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>6 (2.7)</td>
<td>8 (3.6)</td>
<td>12 (5.4)</td>
</tr>
<tr>
<td>30</td>
<td>6 (2.7)</td>
<td>8 (3.6)</td>
<td>12 (5.4)</td>
</tr>
<tr>
<td>50</td>
<td>6 (2.7)</td>
<td>8 (3.6)</td>
<td>12 (5.4)</td>
</tr>
</tbody>
</table>

Options

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

Wiring Example

```
+ 5 Volt

Input Command

Command +

Signal -

Internal Jumper

Branch Circuit Breaker

Positive Overtemp

Cutout

Note: PTC Fuse Mounted on Power Control

Typical DPAC-01-240-12 552
```

EVA Rating of Total Load Must
Not Exceed EVA Rating of DPAC
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
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 (270Q)
563 = 4-20 mA (500Q)
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 #)

<table>
<thead>
<tr>
<th>Amps</th>
<th>120</th>
<th>208</th>
<th>240</th>
<th>277</th>
<th>480</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>30</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>50</td>
<td>6</td>
<td>10</td>
<td>12</td>
<td>13</td>
<td>24</td>
</tr>
</tbody>
</table>

3 Phase KW Chart

(Use KW values to complete the model #)

<table>
<thead>
<tr>
<th>Part #</th>
<th>Amps</th>
<th>Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Leg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuse Kit</td>
<td>208</td>
<td>240</td>
</tr>
<tr>
<td>3LF-10</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>3LF-20</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>3LF-30</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>3LF-50</td>
<td>50</td>
<td>18</td>
</tr>
</tbody>
</table>

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