The models 1022 and 1025 are phase-angle SCR power controllers for use in single phase applications. The controllers are similar except for command signals. The 1022 accepts 0-5 Vdc, 0-10 Vdc or potentiometer. The 1025 accepts 4-20 mA.

Both controllers control the RMS voltage to the load proportional to the command signal, independent of line voltage changes of +10/-15%.

The command signal is electrically isolated from the line and load voltage.
**ADVANTAGES**

Size of enclosure and panel space are reduced.

Provides slow application of power, reducing inrush (surge) currents. Prevents nuisance fuse blowing and circuit breaker tripping.

Missing cycle detection prevents transformer saturation or damage due to power interruptions.

Light emitting diode (LED) provides visual indication of controller operation.

Eliminates potential ground loops. Provides safe operation with inexpensive, non-isolated process controllers.

Provides a stable control loop because RMS load voltage is proportional to command signal and is not affected by line voltage variations.

No de-rating required below 55°C.

**BENEFITS**

Valuable space is saved, enclosure costs are reduced.

Controllers may be used to operate transformer loads or loads that have a low cold resistance such as lamps.

Prevents surge currents often seen in inductive or variable resistance loads.

Provides an easily understood means to troubleshoot by inexperienced personnel.

Reduces down-time.

A less costly, more reliable means to achieve good process control.

Product quality remains constant.

Improves reliability and provides long life operation.

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**PHASE ANGLE OPERATION**

Diagram showing phase angle operation with line 1, line 2, AC supply, load voltage, load, and SCR “On” time.
**Control Mode**
Single phase, Phase-Angle control of RMS load voltage.

<table>
<thead>
<tr>
<th>Command Signal</th>
<th>Power Circuit</th>
<th>Operating Voltage</th>
<th>Ambient Temperature</th>
<th>Humidity</th>
<th>Isolation</th>
<th>Linearity</th>
<th>Control Range</th>
<th>Soft Start and Missing Cycle Detection</th>
<th>dV/dT and MOV Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1022; 0-5 Vdc, 0-10 Vdc or potentiometer. Impedance: 100K</td>
<td>Inverse parallel silicon controlled rectifier (SCRs)</td>
<td>120, 240, 480 or 575 Vac (+10%, -15%) 50/60 Hertz</td>
<td>Operating: 0° to 55°C (32 to 131°F) Storage: -40° to 80°C (-40 to 176°F)</td>
<td>0 to 90%, non-condensing.</td>
<td>Isolation between power circuit, command signal and ground is greater than 2500 volts RMS.</td>
<td>The RMS load voltage is linear within 2% of span of the command signal.</td>
<td>0 to 97% of supply voltage.</td>
<td>On startup or after momentary power interruptions, the SCR conduction angle (SCR “on” time) is set to zero and then allowed to ramp to the desired value. This prevents surge currents often seen in inductive or variable resistance loads.</td>
<td>200 volts/usec minimum dv/dt snubber circuit and an MOV are used to protect against high frequency transients (dv/dt) and voltage spikes.</td>
</tr>
<tr>
<td>Model 1025; 4-20 mA Impedance: 300W</td>
<td></td>
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</tr>
</tbody>
</table>

**Power Circuit**
Inverse parallel silicon controlled rectifier (SCRs)

**Operating Voltage**
120, 240, 480 or 575 Vac (+10%, -15%) 50/60 Hertz

**Ambient Temperature**
Operating: 0° to 55°C (32 to 131°F) Storage: -40° to 80°C (-40 to 176°F)

**Humidity**
0 to 90%, non-condensing.

**Isolation**
Isolation between power circuit, command signal and ground is greater than 2500 volts RMS.

**Linearity**
The RMS load voltage is linear within 2% of span of the command signal.

**Control Range**
0 to 97% of supply voltage.

**Soft Start and Missing Cycle Detection**
On startup or after momentary power interruptions, the SCR conduction angle (SCR “on” time) is set to zero and then allowed to ramp to the desired value. This prevents surge currents often seen in inductive or variable resistance loads.

**dV/dT and MOV Protection Zero and Span Adjustment**
200 volts/usec minimum dv/dt snubber circuit and an MOV are used to protect against high frequency transients (dv/dt) and voltage spikes.

**Mounting**
20% of span.

**Diagnostic Indicator**
Vertical surface with fins vertical. Because heatsinks are electrically isolated, units may be mounted adjacent to each other.

**Heat Dissipation**
The intensity of the LED is proportional to the command signal.

**Physical**
1.2 watts per amp.

**Current Rating**
Weight; 10 thru 40 Amp; 2lbs, 70 Amp; 12 lbs
Dimensions: Refer to installation drawing

<table>
<thead>
<tr>
<th>Model</th>
<th>Continuous RMS amps</th>
<th>Surge Current (amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Peak 1 Cycle</td>
</tr>
<tr>
<td>1022/25-XX-10</td>
<td>10</td>
<td>120</td>
</tr>
<tr>
<td>1022/25-XX-20</td>
<td>20</td>
<td>250</td>
</tr>
<tr>
<td>1022/25-XX-30</td>
<td>30</td>
<td>625</td>
</tr>
<tr>
<td>1022/25-XX-40</td>
<td>40</td>
<td>1000</td>
</tr>
<tr>
<td>1022/25-XX-70</td>
<td>70</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Approximate Shipping Weight and Box Size**
10-40A 3 Lbs 7-5-5” Box Size
70A 14-14-10” Box Size
INSTALLATION DRAWINGS

10 - 40 AMPS

70 AMPS

ELECTRICAL CONNECTIONS

Model 1022

Model 1025

Transformer supplied with controller

CONTROL CONCEPTS

ORDERING INFO

Specify Model: 1022 - XX - XX
1022 or 1025

Specify Voltage: 12 = 120 Vac, 24 = 240 Vac, 48 = 480 Vac

Specify Current: 10, 20, 30, 40, 70 Amp

ABOUT US

Control Concepts, Inc. has the expertise to meet your specific industrial power control needs with a full range of standard and custom SCR power controllers and signal conditioners. All Control Concepts products are covered by a limited two year warranty.

Call us for more information and assistance.

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