Cycle Control Units
G32A-EA

Refer to Safety Precautions for All Power Controllers.

Used in Combination with the G3PA to Enable High-precision Temperature Control

- Use cycle control to achieve power control with little noise.
- Used in combination with the G3PA to connect to single- and three-phase loads.
- Three types of input method available: Internal adjuster, external adjuster, or DC signals from 4 to 20 mA.
- Streamline design. Both DIN track mounting and screw mounting possible.
- Use linking terminals for close mounting of the G3PA.
- Built-in isolation transformer.
- Power supply range: 100 to 240 V.

Model Number Structure

■ Model Number Legend

G32A-EA-US

1 2 3

1. Basic Model Type
G32A: Accessory for G3PA

2. Basic Model Name
EA: Cycle Control Unit

3. Certification
US: Certified by UL and CSA

Ordering Information

■ List of Models

<table>
<thead>
<tr>
<th>Name</th>
<th>Isolation transformer</th>
<th>Rated power supply voltage</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle Control Unit</td>
<td>Yes</td>
<td>100 to 240 VAC</td>
<td>G32A-EA-US</td>
</tr>
</tbody>
</table>

■ Accessories (Order Separately)

External Variable Resistor

<table>
<thead>
<tr>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>G32A-E-VR</td>
</tr>
</tbody>
</table>
Specifications

■ Ratings (at an Ambient Temperature of 25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated power supply current</td>
<td>50 Hz 100 to 240 VAC 40 mA max. 60 Hz 100 to 240 VAC 20 mA max.</td>
</tr>
<tr>
<td>Output signal</td>
<td>20 mA max. at 12 VDC ±15% (at 25°C)</td>
</tr>
<tr>
<td>Input signal</td>
<td>Current signal: 4 to 20 mA (input impedance: 352 Ω)</td>
</tr>
<tr>
<td></td>
<td>Internal adjuster: 50 kΩ (1/4 W)</td>
</tr>
<tr>
<td>Output cycle rate</td>
<td>0 to 100%</td>
</tr>
<tr>
<td>Control cycle</td>
<td>0.2 s</td>
</tr>
<tr>
<td>Number of operable Units</td>
<td>3 G3PA-VD Relays max.</td>
</tr>
</tbody>
</table>

■ Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage range</td>
<td>75 to 264 VAC</td>
</tr>
<tr>
<td>Dielectric strength</td>
<td>1,500 VAC, 50/60 Hz for 1 minute (between AC power supply and input/output terminals)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>100 MΩ max. (at 500 VDC)</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>10 to 55 to 10 Hz, 0.375-mm single amplitude (when mounted to DIN track)</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>300 m/s² (approx. 30 G)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>−30 to 100°C (with no icing or condensation)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>−30 to 80°C (with no icing or condensation)</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>45% to 85%</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 100 g</td>
</tr>
</tbody>
</table>

Engineering Data

Output Cycle Rate vs. Setting Value

![Output Cycle Rate vs. Setting Value](image)

Output Cycle Rate vs. Control Current

![Output Cycle Rate vs. Control Current](image)
Nomenclature

The following diagram shows the terminals, adjusters, and switches on the G32A-EA.

Setting the Input Method

Select external adjuster, internal adjuster, or control current as the input method using the selection switches as shown in the following table.

<table>
<thead>
<tr>
<th>Control method</th>
<th>Input selection slide switches</th>
<th>Note: 1. The input selection slide switches are factory-set to internal adjuster input. Change the setting of the switches for the input method required. 2. When using the internal adjuster, use with the input terminals (C1, C2) in the open state. Internal setting is not possible if there is a Temperature Controller or other device connected to C1 or C2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>External adjuster</td>
<td>[External] [Internal] [VR]</td>
<td>4 to 20 mA</td>
</tr>
<tr>
<td>Internal adjuster</td>
<td>[External] [Internal] [VR]</td>
<td>4 to 20 mA</td>
</tr>
<tr>
<td>Control current</td>
<td>[External] [Internal] [VR]</td>
<td>4 to 20 mA</td>
</tr>
</tbody>
</table>
■ Cycle Control Setting Method

The output cycle rate can be adjusted using the internal or external adjuster. For current control, refer to the Output Cycle Rate vs. Control Current graph on page 2.

Note: When using the internal adjuster or external adjuster, it is necessary to set the input control method in the way described previously.

<table>
<thead>
<tr>
<th>Vs setting</th>
<th>Output cycle rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Vs setting" /></td>
<td><img src="image2" alt="Output cycle rate" /></td>
</tr>
<tr>
<td><img src="image3" alt="Vs setting" /></td>
<td><img src="image4" alt="Output cycle rate" /></td>
</tr>
<tr>
<td><img src="image5" alt="Vs setting" /></td>
<td><img src="image6" alt="Output cycle rate" /></td>
</tr>
<tr>
<td><img src="image7" alt="Vs setting" /></td>
<td><img src="image8" alt="Output cycle rate" /></td>
</tr>
</tbody>
</table>

Note: The resistance is 50 kΩ at 100% and 0 Ω at 0%.

■ Output Power Resolution

When power is controlled using the Cycle Control Unit, the output resolution (minimum variation value) depends on the half cycle of the power supply frequency and the time depends on the power supply frequency. (SSR with zero cross function)

<table>
<thead>
<tr>
<th>Control cycle</th>
<th>Output power resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.2 s</td>
<td>5% (10 ms) 4.2% (8.3 ms)</td>
</tr>
</tbody>
</table>

Control cycle: 0.2 s

■ Cycle Control Method

The power on the load side can be controlled by adjusting the number of cycles within the control cycle of 0.2 s and repeating this control cycle.
Application Examples

High-precision temperature control can be achieved in combination with the G3PA.

1. Control Using Current Input

2. Control Using External Adjuster

3. Control Using Internal Adjuster

Applications 1, 2, and 3 each use a different type of input method and so it is necessary to change the settings of the input selection slide switches. Be sure to change the slide switch settings in accordance with the input method on page 3.

Note: 1. For details of input selection slide switch settings, refer to Setting the Input Method.
2. The above examples are for when a G3PA-VD (except 60-A models) is used at 200 VAC.
3. When performing ON/OFF control for example 2 or 3, do not connect output terminals B1 and B2 on the G32A-EA to input terminals A1 and A2 of the SSR as linking terminals. Rather, connect contacts between these terminals for switching. The current flow is 20 mA max. at 12 VDC.
### External Adjuster

**G32A-E-VR**

The external adjuster, its adjuster knob, and its nameplate, all come in a set (G32A-E-VR).

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#### External Adjuster

(50 kΩ, B Characteristic)

When wiring, connect in the way shown below.

#### Mounting Holes

Less than 3 m

#### Nameplate

Note: Wire the external adjuster at a distance of less than 3 m.

#### Knob

Note: When using the external adjuster for input, be sure to set the input selection slide switches accordingly.
Dimensions

Note: All units are in millimeters unless otherwise indicated.

G32A-EA-US

Without Terminal Cover

With Terminal Cover

Safety Precautions

Refer to Safety Precautions for All Power Controllers.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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