

# G3J-T-C

## New Models with AC Power Supply Input and Monitor Output Equivalent to Non-contact SPST-NO Join the G3J-T Series

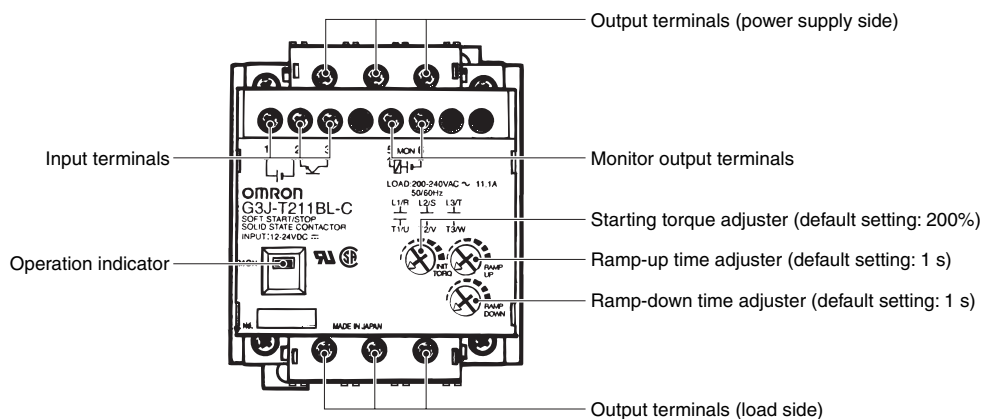
- Limiting the starting current saves energy.
- Certified for UL and CSA.
- Mounts with screws or to DIN Track.
- Compact design with heat sinks (3.7-kW models: 100 × 100 × 130 mm (W × H × D)).
- Built-in snubber circuit and thyristor.
- Built-in operation indicator.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Refer to *Safety Precautions for All Solid State Relays*.

## Appearance



## Ordering Information

### List of Models

| Number of elements | Isolation method   | Rated power supply voltage | Input method                                      | Applicable monitor capacity (AC3) |                | Monitor output      | Model                  |
|--------------------|--------------------|----------------------------|---|-----------------------------------|----------------|---------------------|------------------------|
|                    |                    |                            |   |                                   |                |                     |                        |
| 3                  | Phototriac coupler | 100 to 240 VAC             | No-voltage input (open and short-circuited input) | 3.7 kW (17.4 A)                   | 200 to 220 VAC | AC switching output | G3J-T217BL-C AC100-240 |
|                    |                    |                            |   | 2.2 kW (11.1 A)                   |                |                     | G3J-T211BL-C AC100-240 |
|                    |                    |                            |   | 0.75 kW (4.8 A)                   |                |                     | G3J-T205BL-C AC100-240 |
|                    |                    | 12 to 24 VDC               |   | 3.7 kW (17.4 A)                   |                | DC switching output | G3J-T217BL-C DC12-24   |
|                    |                    |                            |   | 2.2 kW (11.1 A)                   |                |                     | G3J-T211BL-C DC12-24   |
|                    |                    |                            |   | 0.75 kW (4.8 A)                   |                |                     | G3J-T205BL-C DC12-24   |

# Specifications

## ■ Certified Standards

UL 508, CSA 22.2 No. 14

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

### Power Supply

| Item                       | Operating input power supply specifications | AC Model                       | DC Model                     |
|----------------------------|---|--------------------------------|------------------------------|
| Rated power supply voltage |   | 100 to 240 VAC                 | 12 to 24 VDC                 |
| Operating voltage range    |   | 85 to 264 VAC                  | 10.2 to 26.4 VDC             |
| Current consumption        |   | 40 mA max. (at 100 to 240 VAC) | 70 mA max. (at 12 to 24 VDC) |

### Operating (Input) Circuit

#### AC Model

| Input method | No-voltage input | Short-circuiting/opening terminals 3 and 1 or terminals 3 and 2<br>SSR input short-circuited: Maximum impedance of 1 k $\Omega$ , Maximum residual voltage of 1 V<br>SSR input open: Minimum impedance of 100 k $\Omega$<br>Relay input: For minute signals |
|--------------|------------------|---|
|              |                  |   |

#### DC Model

| Input current | 10 mA max. (at 12 to 24 VDC)   |
|---------------|--|
| Input method  | No-voltage input   |
|               | Short-circuiting/opening terminals 3 and 1 or terminals 3 and 2<br>SSR input turned ON: Maximum residual voltage of 2 V between short-circuited terminals<br>SSR input turned OFF: Maximum leakage current of 0.15 mA<br>Relay input: For minute signals |

### Main Circuit (for Both AC and DC Models)

| Item                                   | Model  | G3J-T217BL-C                               | G3J-T211BL-C                      | G3J-T205BL-C                      |
|--|--|--|-----------------------------------|-----------------------------------|
| Rated load voltage                     |  | 200 to 240 VAC                             |                                   |                                   |
| Rated voltage range                    |  | 180 to 264 VAC                             |                                   |                                   |
| Rated carry current (See note 1.)      |  | 17.4 A (at 40°C)                           | 11.1 A (at 40°C)                  | 4.8 A (at 40°C)                   |
| Minimum load current                   |  | 0.5 A                                      |                                   |                                   |
| Inrush current resistance (peak value) |  | 500 A (60 Hz, 1 cycle)                     | 350 A (60 Hz, 1 cycle)            | 150 A (60 Hz, 1 cycle)            |
| Overload resistance                    |  | Refer to <i>Engineering Data</i> on page 5 |                                   |                                   |
| Closed current (effective value)       | AC3  | 174 A                                      | 111 A                             | 48 A                              |
|  | AC4  | 208.8 A                                    | 133.2 A                           | 57.6 A                            |
| Breaking current (effective value)     | AC3  | 139.2 A                                    | 88.8 A                            | 38.4 A                            |
|  | AC4  | 174 A                                      | 111 A                             | 48 A                              |
| Applicable load                        | 3-phase inductive motor (See note 2.) (AC3, AC4, AC53-a) | 200 to 220 VAC<br>3.7 kW (17.4 A)          | 200 to 220 VAC<br>2.2 kW (11.1 A) | 200 to 220 VAC<br>0.75 kW (4.8 A) |
|  | Resistive load (AC1) (See note 3.)                       | 200 to 240 VAC<br>17.4 A                   | 200 to 240 VAC<br>11.1 A          | 200 to 240 VAC<br>4.8 A           |

**Note: 1.** The rated carry load depends on the ambient temperature. For details, refer to the Load Current vs. Ambient Temperature graph in *Engineering Data*.

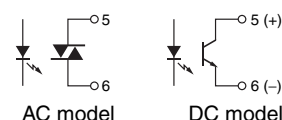
**2.** Satisfies switching test conditions of AC3, AC4, and AC53-a. (Refer to *Engineering Data* on page 5 for the test conditions.)

**3.** Single-phase loads cannot be used.

### Monitor Output

| Item                       | Operating input power supply specifications | AC model (See note.) | DC model (See note.) |
|----------------------------|---|----------------------|----------------------|
| Rated power supply voltage |   | 100 to 240 VAC       | 12 to 24 VDC         |
| Operating voltage range    |   | 85 to 264 VAC        | 10.2 to 26.4 VDC     |
| Rated carry current        |   | 50 mA                | 0.2 A                |
| Minimum load current       |   | 3 mA                 | 3 mA                 |

**Note:** Internal wiring



AC model

DC model

## ■ Characteristics (for Both AC and DC Models)

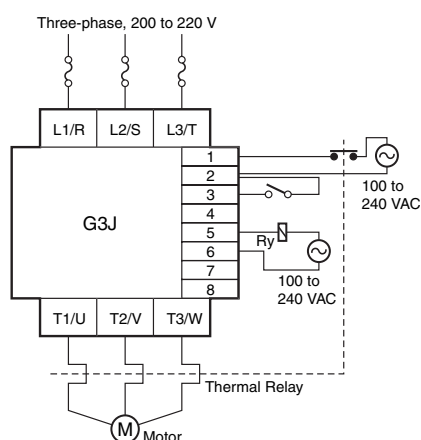
| Item                                      | Model | G3J-T217BL-C  | G3J-T211BL-C  | G3J-T205BL-C  |
|---|-------|---|---------------|---------------|
| Ramp-up time                              |       | Set within a range of approx. 1 to 25 s.  |               |               |
| Ramp-down time                            |       | Set within a range of approx. 1 to 25 s.  |               |               |
| Starting torque (See note 1.)             |       | Set within a range of 200% to 450% In.  |               |               |
| Monitor output operate time (See note 2.) |       | After control signal input: AC model: 300 ms max. (TYP 50 ms), DC model: 50 ms max. |               |               |
| Monitor output release time (See note 2.) |       | After ramp-down time completion (after main circuit current turns OFF): 60 ms max.  |               |               |
| Output ON voltage drop (main circuit)     |       | 1.6 V (RMS) max.  |               |               |
| Output ON voltage drop (monitor output)   |       | AC model: 3.5 VAC max., DC model: 2.0 VDC max.                                      |               |               |
| Leakage current (main circuit)            |       | 10 mA max. (at 200 VAC)   |               |               |
| Leakage current (monitor output)          |       | AC model: 1.5 mA max. (at 200 VAC), DC model: 0.15 mA max. (at 24 VDC)              |               |               |
| Insulation resistance                     |       | 100 MΩ min. (at 500 VDC)  |               |               |
| Dielectric strength                       |       | 2,500 VAC, 60 Hz for 1 min  |               |               |
| Vibration resistance                      |       | 10 to 55 to 10 Hz, 0.75-mm single amplitude (1.5-mm double amplitude)               |               |               |
| Shock resistance                          |       | 294 m/s <sup>2</sup>  |               |               |
| Storage temperature                       |       | -30 to 70°C (with no icing or condensation)   |               |               |
| Ambient operating temperature             |       | -20 to 60°C (with no icing or condensation)   |               |               |
| Ambient operating humidity                |       | 45 to 85 %  |               |               |
| Weight                                    |       | Approx. 890 g   | Approx. 760 g | Approx. 760 g |

- Note:** 1. Provided that the starting torque is 600% In when the motor is started at full voltage.  
2. The monitor output will be ON while load current is flowing to the main circuit.

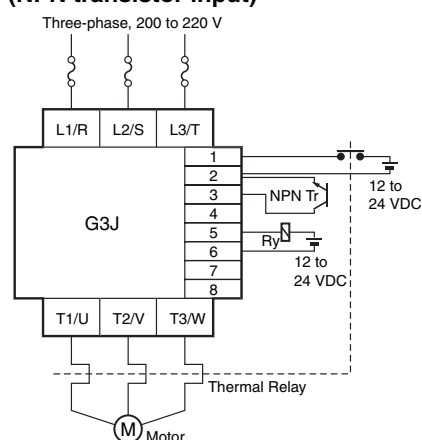
## Connections

### ■ Connection Examples

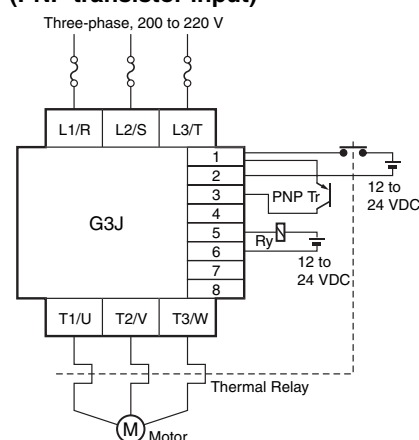
#### AC Model G3J-T□BL-C



#### DC Model G3J-T□BL-C (NPN transistor input)



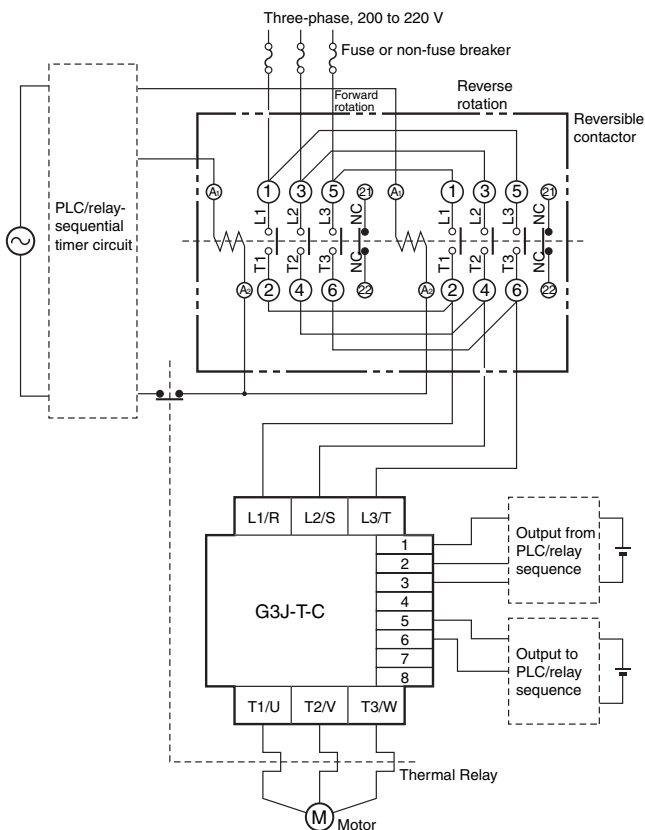
#### (PNP transistor input)



**Note:** Harmonized protection for motor overload is ensured by using a thermal relay. Be sure, however, to install protective devices on the power supply side, such as fuses and non-fuse breakers, as protection against accidents due to short-circuiting.

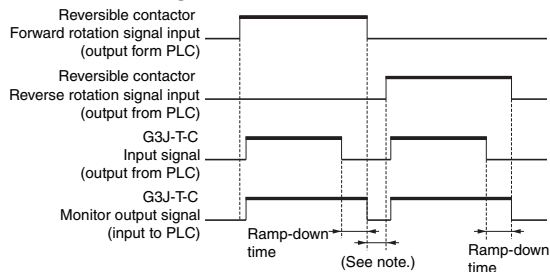
## Example of Forward/Reverse Rotation Using Monitor Output

G3J-T-C



**Note:** Be sure to use a fuse or non-fuse breaker to protect the G3J.

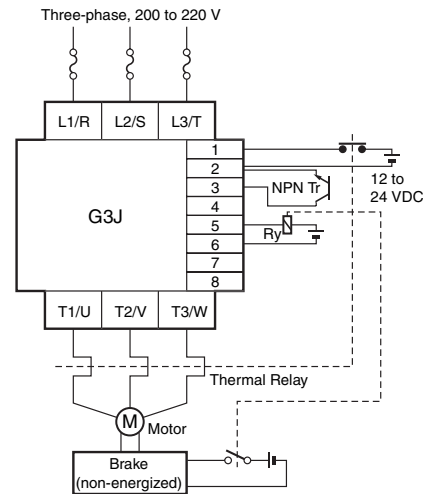
## Time Chart Example



**Note:** Switch between forward and reverse rotation only after the motor rotation has come to a complete stop.

## Monitor Output Usage Example (Motor Stop Hold)

DC Model G3J-T□BL-C



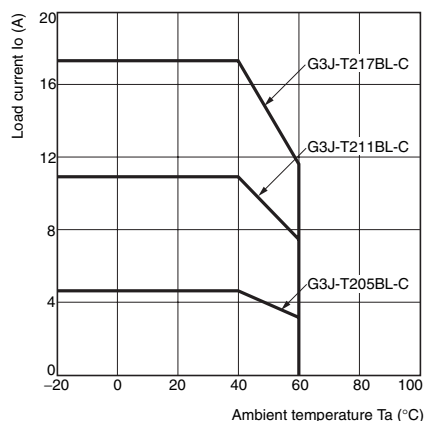
## Monitor Output Applications

- The monitor output will be ON while current is flowing to the main circuit. Use the monitor output, e.g., to switch the operation indicator, or to switch control signals during forward/reverse rotation or when a mechanical brake is used.
- Be sure to use a surge absorber when connecting an inductive load to the monitor output.

**Do not use two G3J-T or G3J-C Contactors together for reversible operation.**

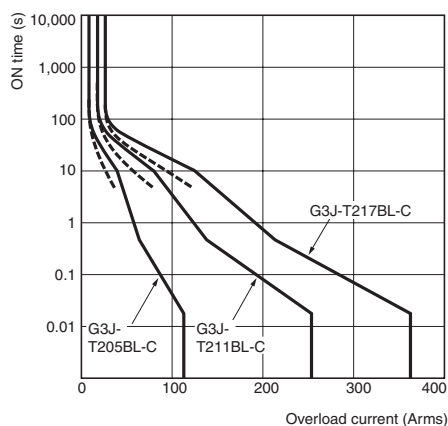
# Engineering Data

## Load Current vs. Ambient Temperature (at Continuous Power)



## Overload Resistance

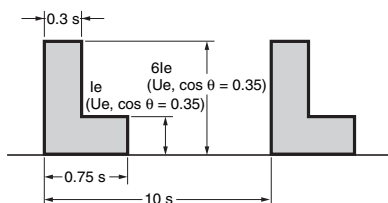
60 Hz, Ta of 25°C, non-repetitive (1/2 max. for repetitive application)



Note: dotted lines are for hot start.

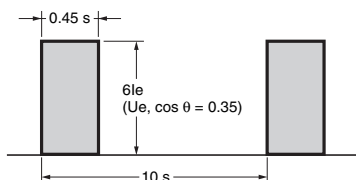
## Switching Frequency Conditions (AC3/AC4/AC53-a)

### AC3 Class (Immediate Start)



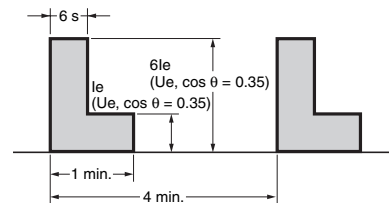
le: Rated carry current  
 Ue: Rated load voltage (200/400 V)  
 Testing for the soft-start model was performed at the following conditions:  
 Ramp-up time = 1 s  
 Starting torque = 450% In  
 Testing for the soft start/stop model was performed at the following conditions:  
 Ramp-up time = 1 s  
 Ramp-down time = 1 s  
 Starting torque = 450% In

### AC4 Class (Inching)



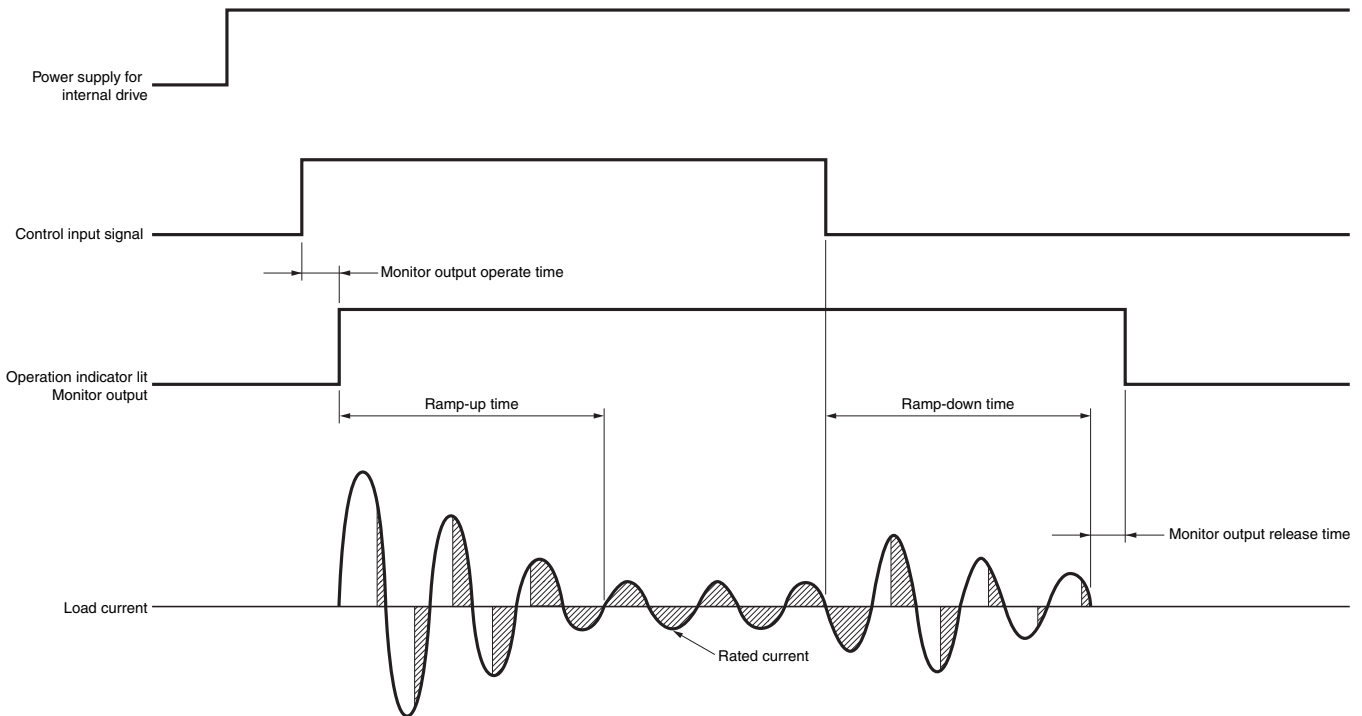
le: Rated carry current  
 Ue: Rated load voltage (200/400 V)  
 Testing for the soft-start model was performed at the following conditions:  
 Ramp-up time = 1 s  
 Starting torque = 450% In  
 Testing for the soft start/stop model was performed at the following conditions:  
 Ramp-up time = 1 s  
 Ramp-down time = 1 s  
 Starting torque = 450% In

### AC53-2: 6-6: 25-15, Actual Load Service Life Test



le: Rated carry current  
 Ue: Rated load voltage (200/400 V)  
 Testing for the soft-start model was performed at the following conditions:  
 Ramp-up time = 1 s  
 Starting torque = 450% In  
 Testing for the soft start/stop model was performed at the following conditions:  
 Ramp-up time = 1 s  
 Ramp-down time = 1 s  
 Starting torque = 450% In

## Time Chart

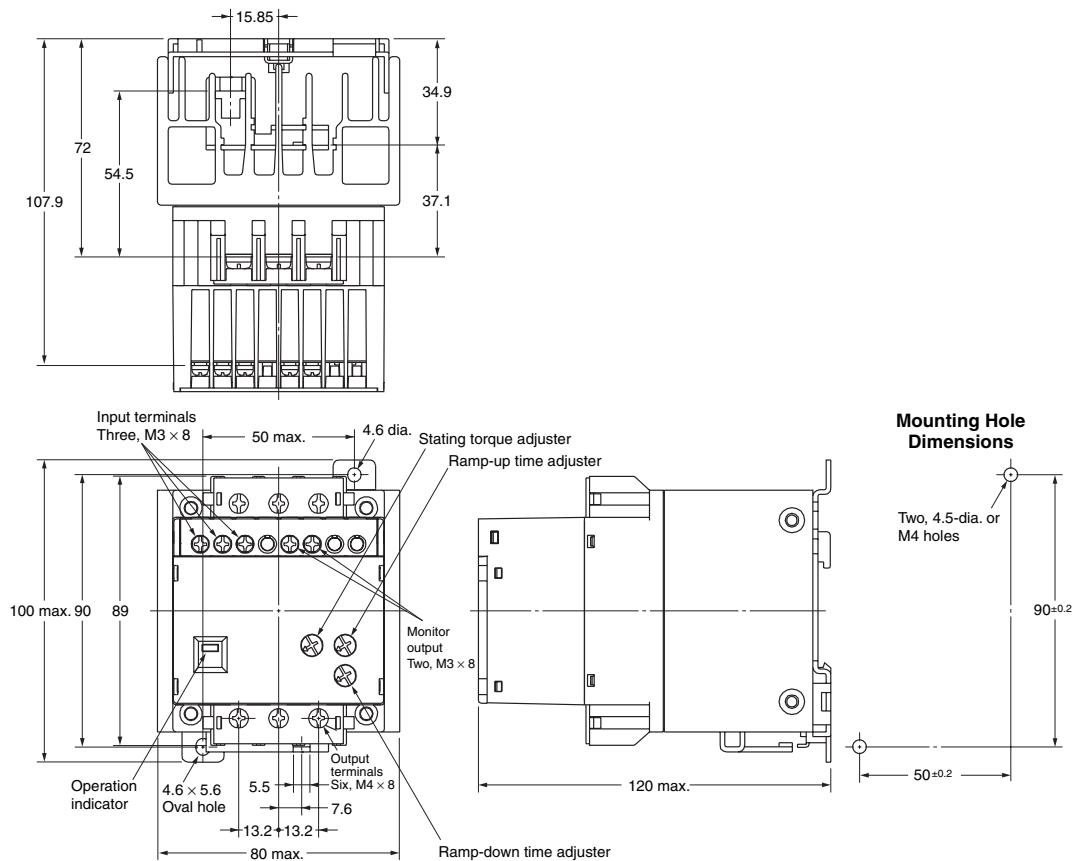
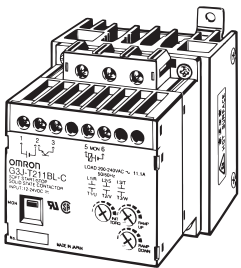


- Note:**
1. The soft-start time and soft-stop time depend on the load characteristics (e.g., inertia and friction factor) in addition to the starting torque, ramp-up time, and ramp-down time. Therefore, the soft-start time or soft-stop time will not increase beyond a certain point if the ramp-up time and ramp-down time are increased.
  2. Due to the soft-stop control characteristics, the load current continues flowing even after the motor stops. Set to the optimum value according to the application.
  3. The operation indicator will light synchronized with the monitor output.

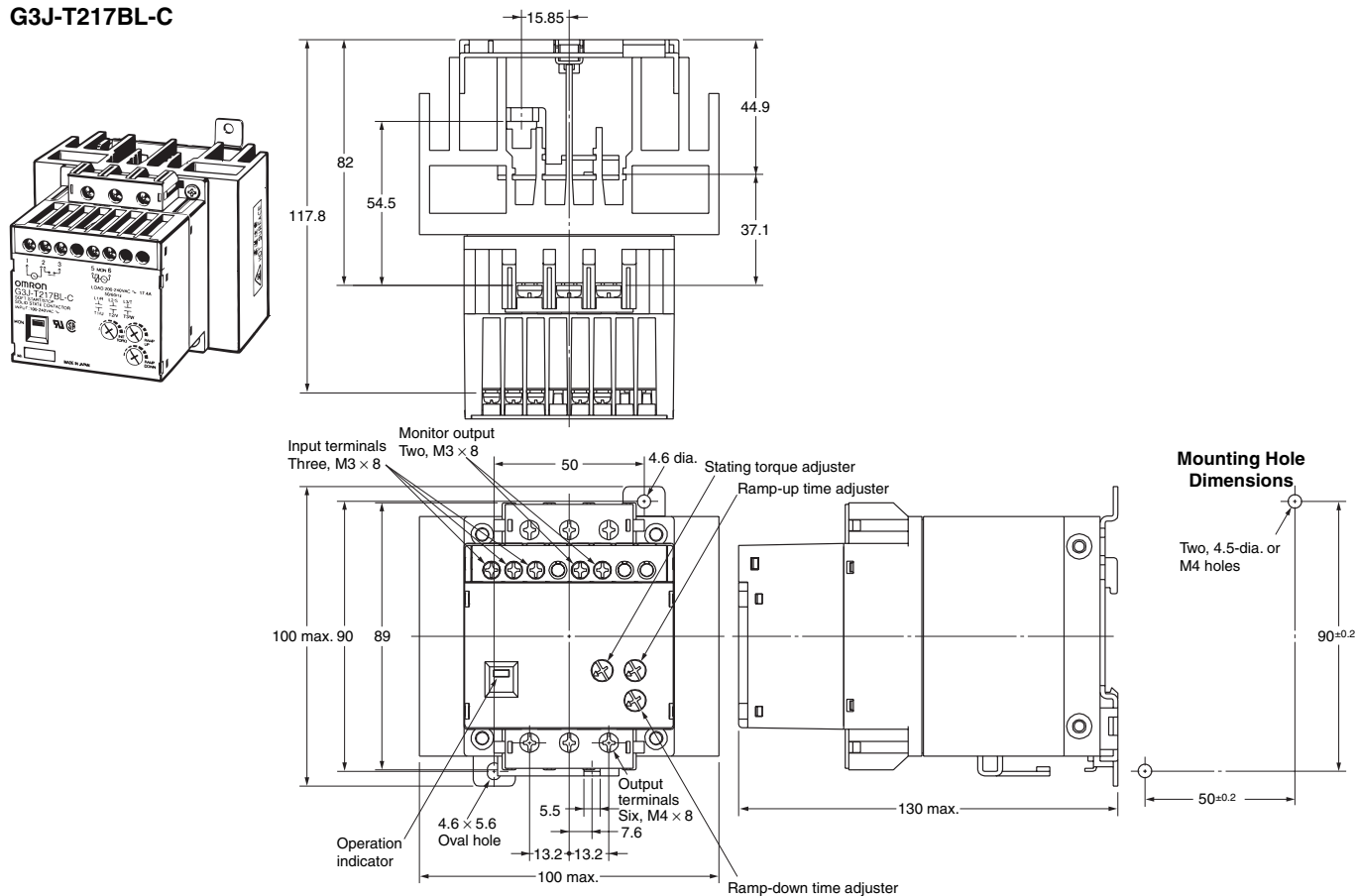
## Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

G3J-T205BL-C  
G3J-T211BL-C



## G3J-T217BL-C



## Safety Precautions

Refer to *Safety Precautions for All Solid State Relays*.

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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