Power Controllers

G3PX

CSM_G3PX_DS_E_2_1

■ Single-phase Models





EUN Series

AC Power Controllers with Phase-control System Allow Precise Temperature Control Models with Base-up and Soft-start Functions

EH Series

Phase Control System Makes It Possible to Detect Single Heater Open Circuit (EH Series) and Multiple Heater Open Circuits (EHN Series)

EC Series

Optimum Devices for Controlling Input Power for Pure Metal Heater, and Incorporating Overcurrent Detecting and Single Heater Open Circuit Detecting Functions

- OMRON's unique design and carefully-selected materials made it possible to produce a compact and lightweight Power Controller.
- Replaceable, easy-to-install Power Device Cartridge assures ease of maintenance.
- Detecting component failures and operating errors.
- Certified by UL and CSA.

⚠ **Refer to *Safety Precautions for All Power Controllers*.**

Model Number Structure

■ Model Number Legend

G3PX-□□□□-□
1 2 3 4 5 6

1. **Basic Model Name**
   G3PX: Power Controller
2. **Rated Load Power Supply Voltage**
   2: 100/110 VAC and 200/230 VAC
3. **Rated Load Current**
   20: 20 A
   40: 40 A
   60: 60 A
4. **Number of Phases**
   E: Single
5. **Functions**
   UN: Simple models
   H: Single heater open circuit detection function
   HN: Multiple heater open circuit detection function
   C: Constant-current function
6. **CT Unit Type**

Note: Refer to *CT Unit* on page 4.

G3PX Cartridge

G32X-□□
1 2 3

1. Basic Model Type
G32X: Accessory for G3PX
2. Basic Model Name
A: Power Device Cartridge
3. Rated Load Current
20: 20 A
40: 40 A
60: 60 A

CT Unit

G32X-□□□
1 2 3 4

1. Basic Model Type
G32X: Accessory for G3PX
2. Basic Model Name
CT: CT Unit
3. Length of Lead Wires
03: 30 cm
10: 100 cm
4. Series
Blank: Series for single heater open circuit detection
HN: Series for multiple heater open circuit detection
C: Series for constant current

Variable Resistor

G32X-□
1 2

1. Basic Model Type
G32X: Accessory for G3PX
2. Basic Model Name
V3K: 3-kΩ Variable Resistor
V2K: 2-kΩ Variable Resistor

Ordering Information

■ List of Models

EUN Series

Phase	Applicable load	Level indicator	Base-up function (See note.)	Soft-start time	Carry current	Rated voltage	Model
Single	Resistive load Heater (e.g., alloy heater or halogen lamp) (See note 2.)	Yes	Yes	Approx. 0.5 to 10 s	20 A	100/110 VAC 200/220 VAC	G3PX-220EUN
					40 A		G3PX-240EUN
					60 A		G3PX-260EUN

Note: 1. The base-up output with a 0-mA temperature controller output (i.e. the temperature controller is OFF) differs from that with a 4-mA temperature controller output. Refer the *Base-up Characteristics* on page 7.

2. Contact your OMRON representative for applications to transformer loads.

EH Series

Phase	Applicable load	Level indicator	Single heater open circuit detection	Multiple heater open circuit detection	Carry current	Rated voltage	Model (See note 1.)
Single	Resistive load Heater (e.g., alloy heater or halogen lamp) (See note 3.)	Yes	Yes	No	20 A	100/110 VAC 200/220 VAC	G3PX-220EH-CT03
							G3PX-220EH-CT10
					40 A		G3PX-240EH-CT03
							G3PX-240EH-CT10
					60 A		G3PX-260EH-CT03
							G3PX-260EH-CT10
			Yes (See note 2.)	Yes	20 A		G3PX-220EHN-CT03
							G3PX-220EHN-CT10
					40 A		G3PX-240EHN-CT03
							G3PX-240EHN-CT10
					60 A		G3PX-260EHN-CT03
							G3PX-260EHN-CT10

Note: 1. EH- and EHN-series models are provided with a CT incorporating 30- or 100-cm-long lead wires and Power Device Cartridge. When ordering, specify the length of the lead wires by adding a code to the model number as shown below.
G3PX-2□0EH-CT03: CT with 30-cm-long lead wires
G3PX-2□0EH-CT10: CT with 100-cm-long lead wires

2. Adjusts the multiple heater open circuit detection sensitivity of EHN-series models. Enables single heater open circuit detection in control of a maximum of five heaters.

3. Contact your OMRON representative for applications to transformer loads.

EC Series

Phase	Applicable load	Level indicator	Constant-current function	Single heater open circuit detection	Carry current	Rated voltage	Model (See note.)
Single	Resistive load Heater (e.g., alloy heater, pure metal heater, or halogen lamp) (See note 3.)	Yes	Yes	Yes	20 A	100/110 VAC 200/220 VAC	G3PX-220EC-CT03
							G3PX-220EC-CT10
					40 A		G3PX-240EC-CT03
							G3PX-240EC-CT10
					60 A		G3PX-260EC-CT03
							G3PX-260EC-CT10

Note: 1. EC-series models are provided with a CT Unit with lead wires (30- or 100- cm in length). When ordering, specify the length of the lead wires by adding a code to the model number as shown below.
G3PX-2□0EC-CT03: CT with 30-cm-long lead wires
G3PX-2□0EC-CT10: CT with 100-cm-long lead wires

2. A CT Unit and Power Device Cartridge are provided with the Power Controller.

3. Contact your OMRON representative for applications to transformer loads.

■ Accessories (Order Separately)

CT Unit

Name	Length of lead wires	Solderless terminals	Applicable models	Model
CT Unit	30 cm	Yes	G3PX-2□□EH	G32X-CT03
	100 cm			G32X-CT10
	30 cm		G3PX-2□□EHN	G32X-CT03HN
	100 cm			G32X-CT10HN
	30 cm		G3PX-2□□EC	G32X-CT03C
	100 cm			G32X-CT10C

Power Device Cartridge

Name	Carry current	Applicable models	Model
Power Device Cartridge	20 A	G3PX-220E□□	G32X-A20
	40 A	G3PX-240E□□	G32X-A40
	60 A	G3PX-260E□□	G32X-A60

Note: The G32X-A is a dedicated Power Device Cartridge for the G3PX.
Refer to *Replacement Parts* on page 15.

Specifications

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

Control

Item		G3PX-220EUN/240EUN/260EUN	G3PX-220EH/240EH/260EH	G3PX-220EHN/240EHN/260EHN	G3PX-220EC/240EC/260EC
Rated voltage		100/110, 200/230 VAC			
Frequency		50/60 Hz (See note 1.)			
Input signal for control	**External main setting (See note 2.)**	2 kΩ (type B, 2 W min.)	3 kΩ (type B, 2 W min.)	2 kΩ (type B, 2 W min.)	
	Current input	4 to 20 mA (at 1 to 5 VDC) (Input impedance: 250Ω) (See note 3.)			
	Voltage ON/OFF input	5 to 24 VDC (Input impedance: approx. 20 kΩ)			
	External duty setting	3 kΩ (type B)			
Relay output for alarm		---	SPDT: 8 A at 250 VAC/30 VDC		

Note: 1. 50/60 Hz (no selector required) (EUN Series)
Terminals 18 and 19 of EHN/EC-series models must be open when the supply frequency is 50 Hz. These terminals must be short-circuited when the supply frequency is 60 Hz.
2. Use the G32X-V2K 2-kΩ Variable Resistor for external main setting on EUN, EC, and EHN (G32X-V3K 3-kΩ for EN-series models).
3. Input 4 to 20 mA or 1 to 5 VDC linear input to the 4 to 20 mA current input terminal.

Output

Model	Applicable load			
	Rated load voltage	**Load current**	**Inrush current**	**Number of phases**
G3PX-220E□ **G3PX-220E□N**	100/110, 200/220 VAC (50/60 Hz)	1 to 20 A (at 40°C) (See note.)	220 A (60 Hz, 1 cycle)	Single
G3PX-240E□ **G3PX-240E□N**		1 to 40 A (at 40°C) (See note.)	440 A (60 Hz, 1 cycle)	
G3PX-260E□ **G3PX-260E□N**		1 to 60 A (at 40°C) (See note.)	440 A (60 Hz, 1 cycle)	

Note: The G3PX-2□□EHN (model with multiple heater open circuit detecting function) and G3PX-2□□EC (constant-current model) require 20% min. of the rated current to detect a short mode failure. EC-series models detect an open mode failure if the load current has dropped to 80% of the rated value. A short mode failure will be detected if the current has risen to 20% of the rated value.

■ Characteristics

EU/EH Series

Item	G3PX-220EUN/ 240EUN/260EUN	G3PX-220EH/240EH/260EH	G3PX-220EHN/ 240EHN/260EHN
Operating voltage range	±10%		
Operating frequency range	±1 Hz		
Output voltage adjustable range	0% to 95%		
Internal duty setting range	0% to 100%	10% to 100% (See note 1.)	0% to 100%
External duty setting range	0% to 100%	10% to 100% (See note 1.)	0% to 100%
Start-up time (See note 2.)	Approx. 0.5 to 10 s (See note 3.)	Approx. 0.1 to 1 s (See note 3.)	Approx. 0.5 to 10 s (See note 3.)
Base-up range	0% to 90%	---	
Multiple heater open circuit detection	---		20% max. (See note 4.)
Min. phase detection	---	Approx. 1/6 π	
Min. phase setting	---	---	Approx. 1/6 π
Min. load current for ON error detecting	---	1 A	30% max. of rated current (See note 5.)
Abnormality detection time	---	0.1 s max.	1 s max.
Voltage drop with output ON	1.6 V max. (RMS)		
Leakage current	10 mA max. at 100/110 VAC, 20 mA max. at 200/220 VAC		
Insulation resistance	100 MΩ min. (at 500 VDC)		
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min.		
Vibration resistance	Malfunction: 10 to 55 to 10 Hz, 100 m/s^2		
Shock resistance	Malfunction: 300 m/s^2		
Ambient temperature	Operating: –25°C to 65°C (with no icing or condensation) Storage: –10°C to 55°C (with no icing or condensation)		
Ambient humidity	Operating: 45% to 85%		
Weight	G3PX-220EUN: approx. 1.1 kg G3PX-240EUN: approx. 1.4 kg G3PX-260EUN: approx. 1.7 kg	G3PX-220EH: approx. 1.1 kg G3PX-240EH: approx. 1.4 kg G3PX-260EH: approx. 1.7 kg	G3PX-220EHN: approx. 1.2 kg G3PX-240EHN: approx. 1.5 kg G3PX-260EHN: approx. 1.8 kg

Note: 1. Duty setting does not complete to the OFF state (i.e. 10% remains).

2. The start-up time is factory-set to 1 s on the EH Series, approx. 0.5 s on the EHN and EC Series.

3. This is the initial start-up time with a 100% duty setting.

4. Detection is effective when the set current is reduced by 20% or more.

5. The minimum set value in the G3PX-220EHN is 6 A. If a lower value is required, increase the number of wiring turns around the CT.

EC Series

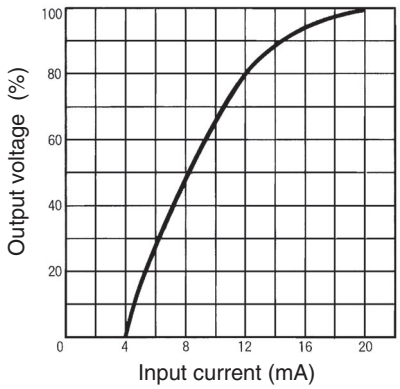
Item	G3PX-220EC	G3PX-240EC	G3PX-260EC
Operating voltage range	±10%		
Operating frequency range	±1 Hz		
Output voltage adjustable range	0% to 95%		
Internal duty setting range	0% to 100%		
External duty setting range	0% to 100%		
Start-up time	Approx. 0.5 to 10 s		
Min. load current for ON error detecting	20% max. of rated current		
Current limit range	0% to 100%		
Excess current detection	Peak current of 110 A within 1 cycle	Peak current of 220 A within 1 cycle	Peak current of 330 A within 1 cycle
Constant current	±3% max. with 10-time increment of load value ±3% max. with ±10% change of voltage		
Abnormality detection time	1 s max.		
Voltage drop with output ON	1.6 V max. (RMS)		
Leakage current	10 mA max. at 100/110 VAC, 20 mA max. at 200/220 VAC		
Insulation resistance	100 MΩ min. (at 500 VDC)		
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min.		
Vibration resistance	Malfunction: 10 to 55 to 10 Hz, 100 m/s^2		
Shock resistance	Malfunction: 300 m/s^2		
Ambient temperature	Operating: –25°C to 65°C (with no icing or condensation) Storage: –10°C to 55°C (with no icing or condensation)		
Ambient humidity	Operating: 45% to 85%		
Weight	G3PX-220EC: approx. 1.1 kg G3PX-240EC: approx. 1.4 kg G3PX-260EC: approx. 1.7 kg		

Engineering Data

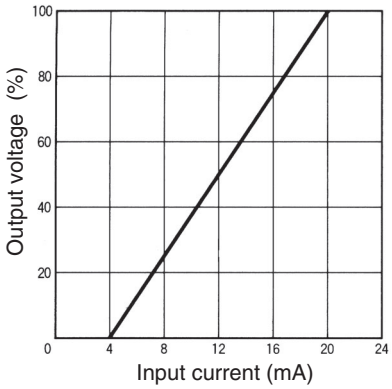
The following data is for an ambient temperature of 25°C.

Output Characteristics

G3PX-EUN/EH/EHN Models

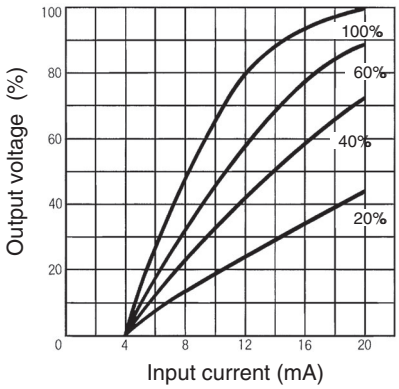


G3PX-EC Models



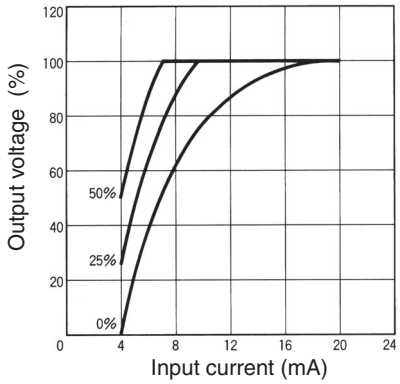
Duty Setting

G3PX-EUN/EH/EHN Models



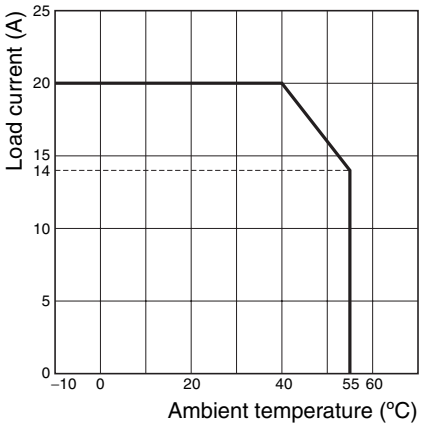
Base-up Characteristics

G3PX-2□0EUN Models

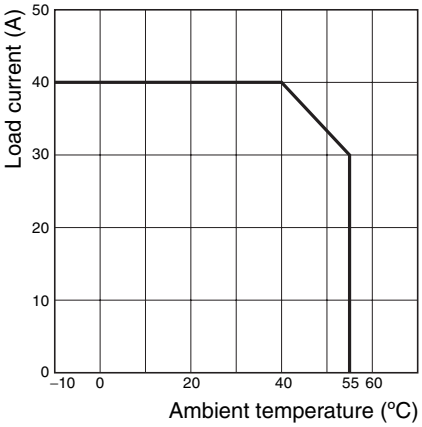


Load Current vs. Ambient Temperature

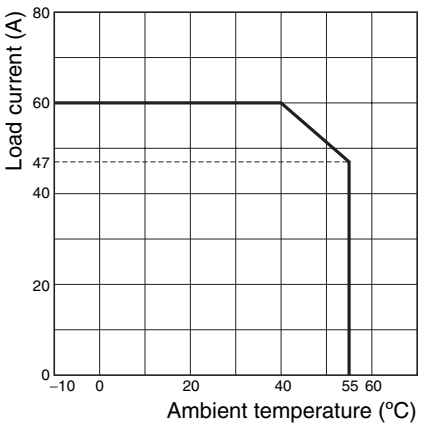
G3PX-220E□ Models

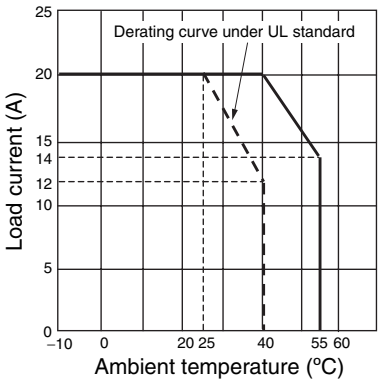


G3PX-240E□ Models

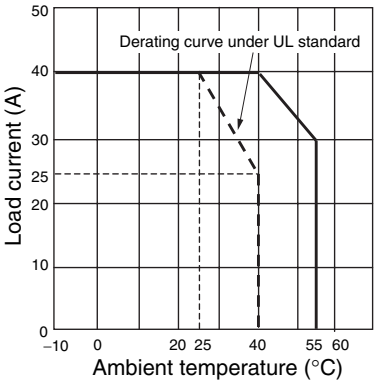


G3PX-260E□ Models

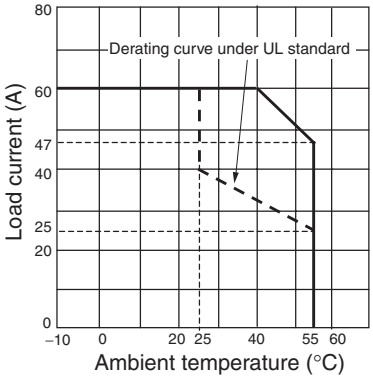




Note: Please use proper ventilation and cooling.



Note: Please use proper ventilation and cooling.

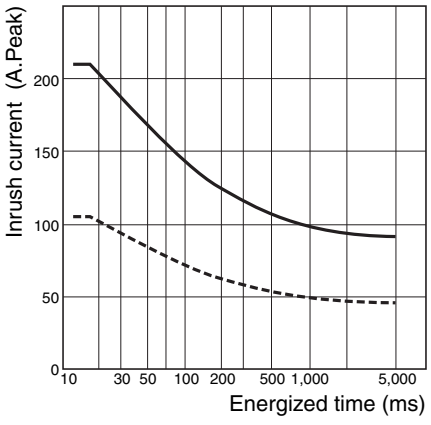


Note: 1. Please use proper ventilation and cooling.

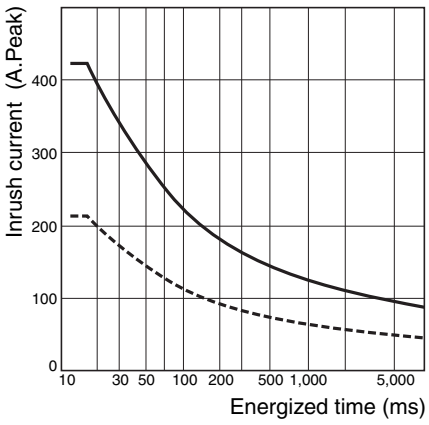
2. Please note that derating curve above 40 A is applicable under the UL standard only with forced air cooling by fan.

One Cycle Surge Current: Non-repetitive

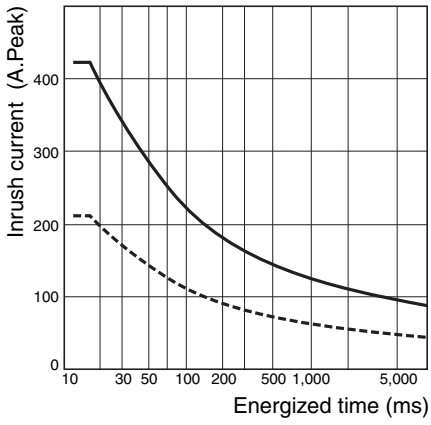
G3PX-220E□ Models



G3PX-240E□ Models



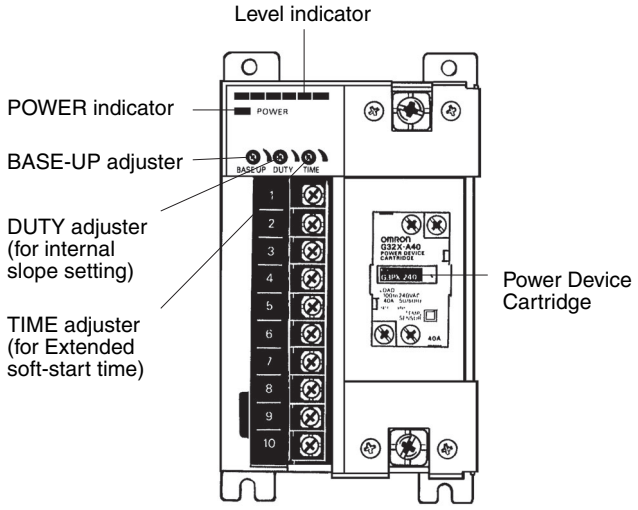
G3PX-260E□ Models



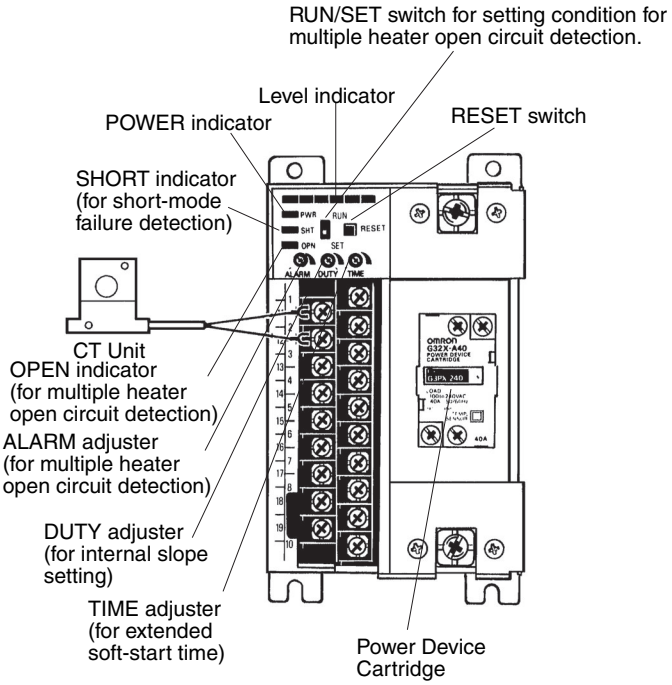
Note: The above are possible on condition that the G3PX is in non-repetitive operation. If the G3PX is in repetitive operation, reduce the applied current to half.

Nomenclature

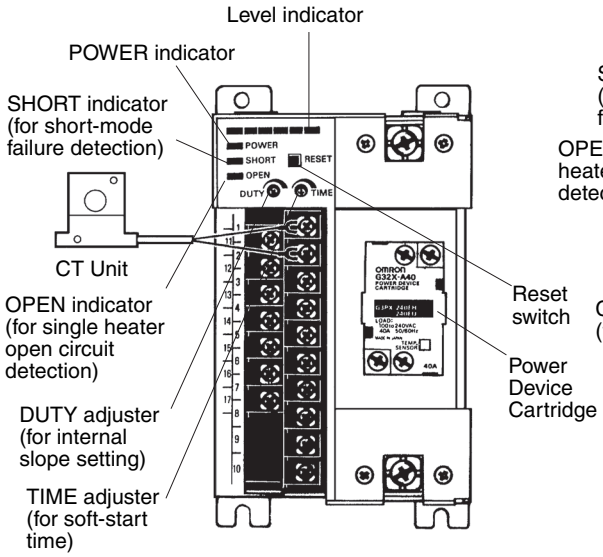
Single-function Model (EUN-series Model)
G3PX-2□0EUN



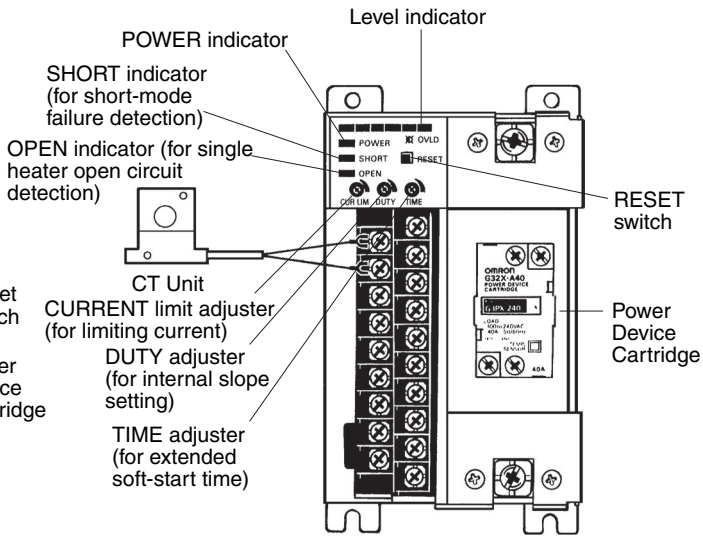
Multiple Heater Open Circuit Detection (EHN-series Model)
G3PX-2□0EHN-CT□□



Single Heater Open Circuit Detection (EH-series Model)
G3PX-2□0EH-CT□□



Constant-current Model (EC-series Model)
G3PX-2□0EC-CT□□



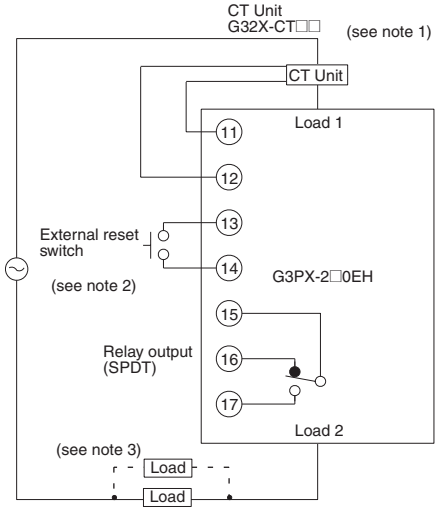
Operation

■ Error Detecting Function

Wiring

Single-phase Models

All G3PX-2□0EH/EHN/EC-series models incorporate terminals 11 and 12 for the CT Unit, 13 and 14 for the external reset switch, and 16 and 17 for relay output as well as power/input terminals 1 through 10.



Note: 1. Connect either the black or white lead wire of the CT Unit to terminal 11 and the other lead wire to terminal 12. The G3PX will malfunction if you do not connect the CT Unit to the G3PX.
2. The rated current and voltage of G3PX models when reset are as follows:
EH-series models: 12 mA at 12 VDC
EHN- and EC-series models: 1 mA at 12 VDC
3. For more than one heater.

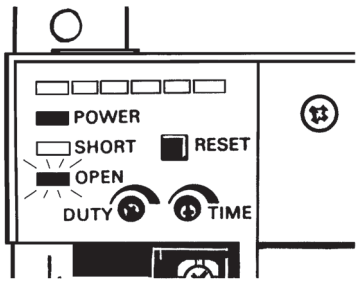
Output

Single-phase Models

The following illustrations show the condition of the G3PX LED indicators when the G3PX detects heater open circuit, a short-mode failure (ON failure of components), or overcurrent (EC-series constant-current models only). The indicator and relay output signals are reset with the internal or external reset switch provided that the error condition has been remedied.

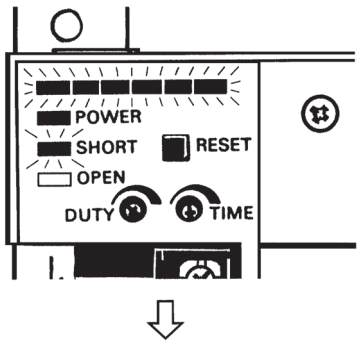
1. When EH/EHN/EC-series models detect single or multiple heater open circuit, the OPEN indicator is lit and the SPDT relay output is ON.

Note: When the G3PX detects heater open circuit, the Level indicator will be OFF regardless of the G3PX input condition. The red OPEN indicator will be lit. EHN-series models, however, will continue operating with level indication.

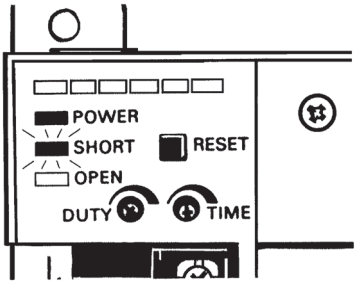


2. When EH/EHN/EC-series models detect a short-mode failure, the SHORT indicator is lit and the SPDT relay output is ON.

With continuous load current.

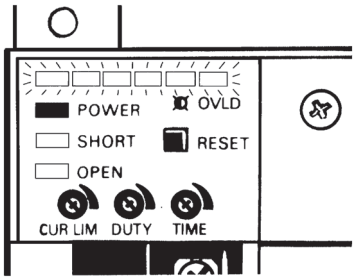


With load current shut off.



Note: When the G3PX detects a short-mode failure, all LEDs of the Level indicator and red SHORT indicator are lit. When you use a breaker to disconnect the load with the relay output, all LEDs of the Level indicator will be OFF regardless of the input to the G3PX.

3. When EC-series models detect an overcurrent, the Level indicator will flash and the SPDT relay output is ON. The input signal will be shut off.



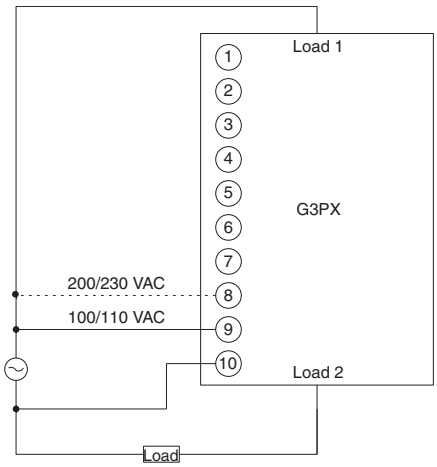
Note: When resetting, leave power supply terminals 10 to 9 or 8 ON.

■ Wiring

Main Circuit

Single-phase Models

The following illustrations show connection examples:



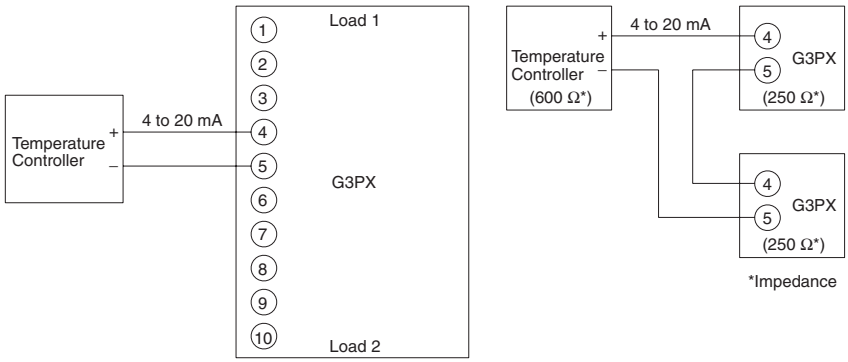
Note: Use a single power supply for the G3PX and the load.

Setting Circuit

Analog Control

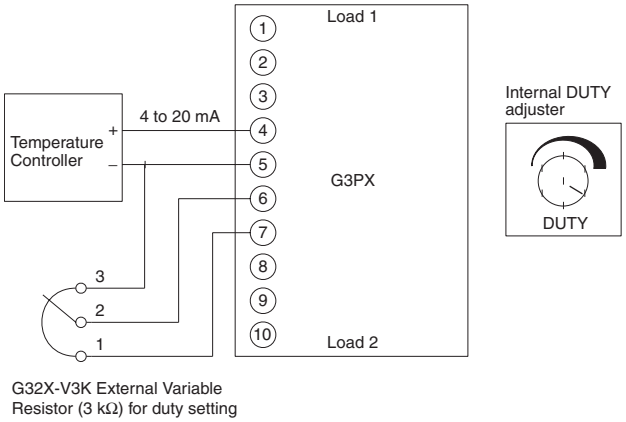
Single-phase Models

1. A Temperature Controller with an output of 4 to 20 mA is used to control the G3PX.



Note: Two G3PX models can be connected in series to OMRON's single Temperature Controller (with an internal impedance of 600 Ω) with a current output.

2. A Temperature Controller with an output of 4 to 20 mA is used with the G3PX to change the duty.



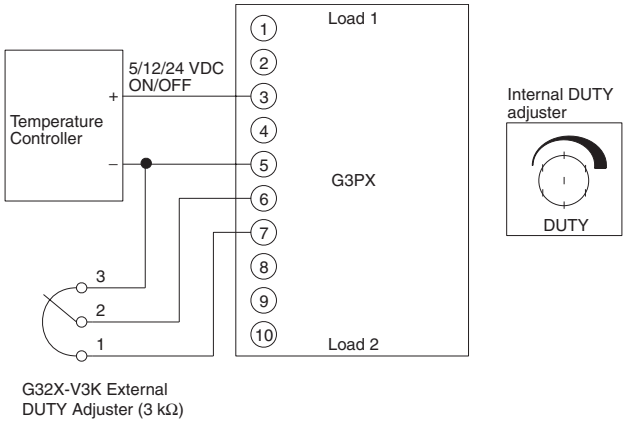
G32X-V3K External Variable Resistor (3 kΩ) for duty setting

Note: You can change the duty with the external or internal ramp adjuster.

ON/OFF Control

Single-phase Models

1. A Temperature Controller is used to change the duty of G3PX.

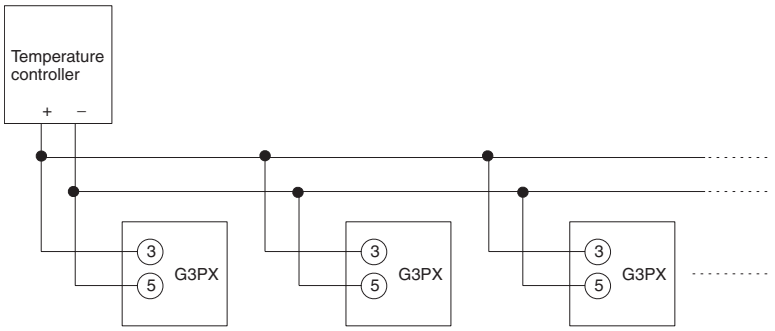


Note: You can change the duty with the external or internal variable resistor.

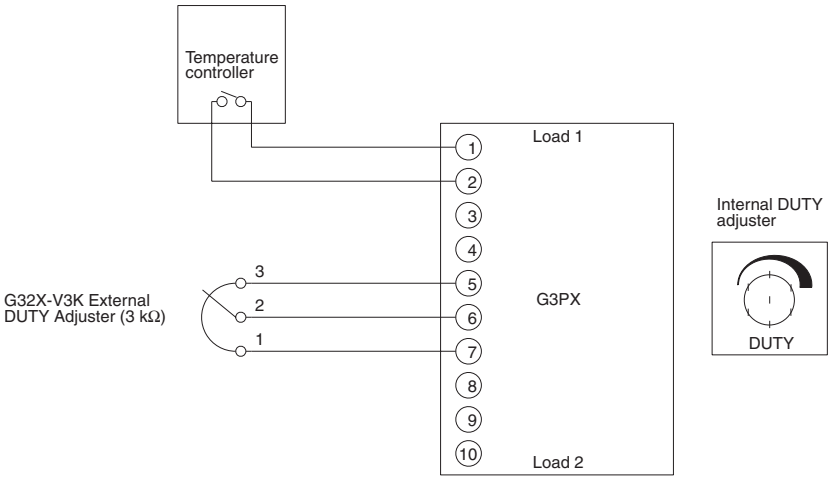
2. A Temperature Controller (with a voltage output) is used to control several G3PXs.

Temperature Controller specifications	No. of G3PX
E5□K: 40 mA at 12 V	20 sets
E5□N: 20 mA at 12 V	20 sets
20 mA at 5 V	20 sets
10 mA at 5 V	20 sets

Connection Example

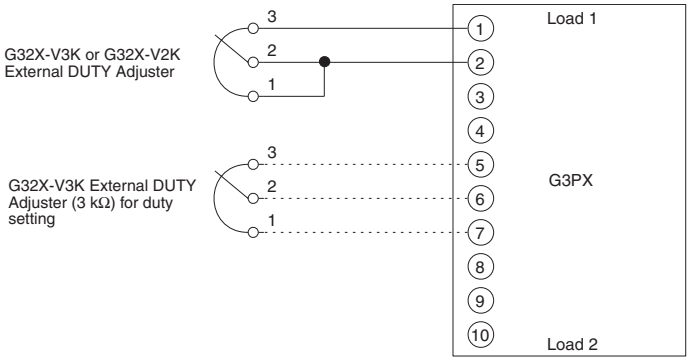


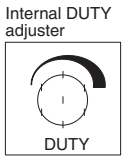
3. A Temperature Controller (with a relay output) is used to vary the duty of G3PX.



Manual Control

Single-phase Models

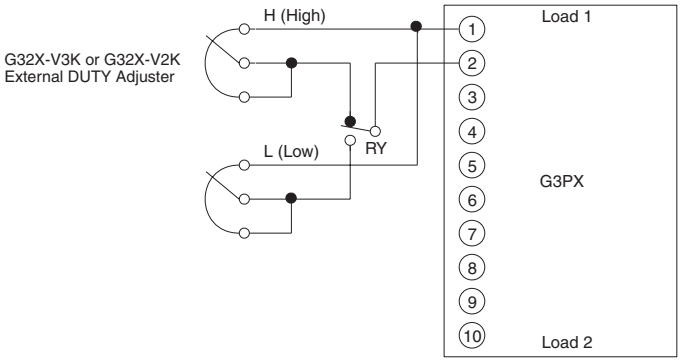




Note: Delicate duty adjustment is possible with the external or internal resistor. Use a right DUTY adjuster (2- or 3-kΩ type) according to the G3PX model as follows:
G32K-V3K (3 kΩ) for EH-series models
G32X-V2K (2 kΩ) for EUN-, EHN-, and EC-series models

Two-position Control

Single-phase Models



Note: 1. A temperature controller with relay output or a single relay can be used with the G3PX in two-position (high-and low-position) control, in which case the relay contact current is 30 mA at 12 VDC with the External DUTY Adjuster set to 0 Ω.

2. Use a right DUTY adjuster (2- or 3-kΩ type) according to the G3PX model as follows:
G32X-V3K (3 kW) for EH-series models
G32X-V21K (2 kW) for EUN-, EHN-, and EC-series models.

■ Setting of Base-up Output (G3PX-2□0EUN Series)

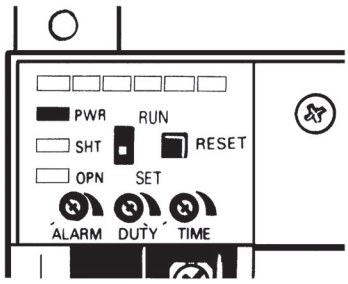
The base-up output can be adjusted with the base-up adjuster knob. It is also possible to control the base-up output for the full scale of 4 to 20-mA input current by adjusting the duty adjuster. Refer to *Engineering Data* on page 7 for the base-up characteristics.

■ G3PX-2□0EHN Series (Multiple Heater Open Circuit Detection Model)

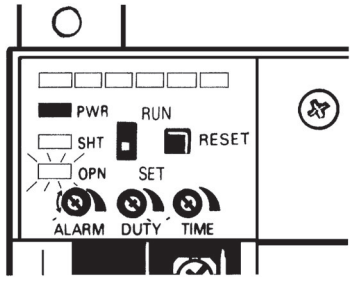
Setting

1. Use the G32X-CT□□HN CT Unit and make sure that the G3PX is wired correctly.

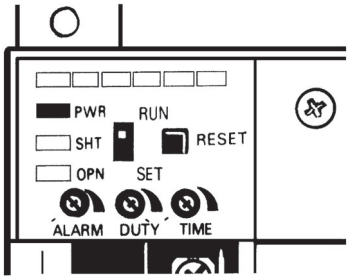
2. The G3PX initially set is shown in the following illustration.
Make sure that the RUN/SET switch has been set to SET.
Make sure that the DUTY adjuster has been turned clockwise to the maximum.



3. Adjust the sensitivity.
Turn the ALARM adjuster and set to the position where the OPEN indicator is lit. Stop turning the ALARM adjuster as soon as the indicator is lit to complete the setting.



4. Set the RUN/SET switch to RUN.
When all settings have been finished, the OPEN indicator is OFF.



Note: 1. The G3PX can control any part of the phase as long as the controlled phase is approximately 1/6π or more in width.

2. Be sure to prepare terminals 18 and 19 corresponding to the supply frequency of 50 Hz or 60 Hz. Otherwise, a setting error will result in a malfunction regardless of the RUN/SET switch setting.
When the error has occurred, turn the ALARM adjuster counterclockwise to the minimum setting, reset the G3PX, and readjust.

■ Replacement Parts

G32X-A Power Device Cartridge

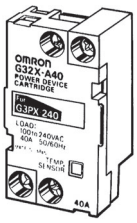
The temperature indicator will be lit in red if the power element is damaged. If the power element is damaged due to overcurrent or other reasons, the power element and its peripheral parts can be replaced.
The power element and its peripheral parts can be replaced without disconnecting the wires of the G3PX.
Improve the heat radiation of the G3PX before replacing the Cartridge.
The temperature indicator will not be lit in red if the G3PX has overcurrent due to load short-circuiting or other reasons over a short time.

Appearance

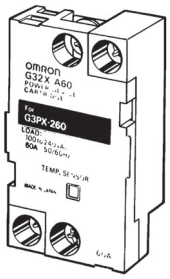
G32X-A20



G32X-A40



G32X-A60



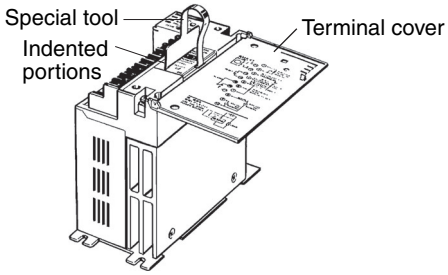
Replacement of G32X-A20 Power Device Cartridge

Use the special tool (provided) to extract the Cartridge for replacement with a new one.

Extraction

Follow the procedures below to dismount the Power Device Cartridge from the G3PX.

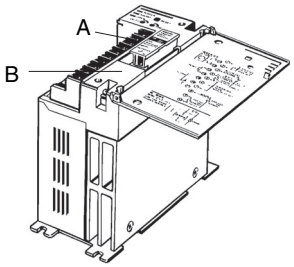
1. Switch off the power.
2. Remove the terminal cover.
3. Hook the tool on the indented portions of the Power Device Cartridge as shown in the illustration below and pull up the Power Device Cartridge vertically.



Mounting

The procedures for mounting the Power Device Cartridge are as follows:

1. Apply silicone grease (provided with the G32X-A) to the entire surface of the heat sink.
2. Make sure there is no dust or pieces of wire on the heat sinks of the G32X-A or the G3PX.
3. Insert the Cartridge into the opening of the G3PX so that the letters on the Cartridge and those on the G3PX are in the same direction and sides A and B are even.



4. Attach the terminal cover.
5. Switch on the power and check the G3PX to be sure it works properly.

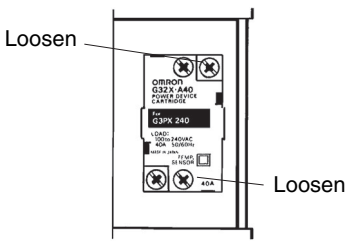
G32X-A40/60

The G32X-A40 and G32X-A60 are secured with screws.

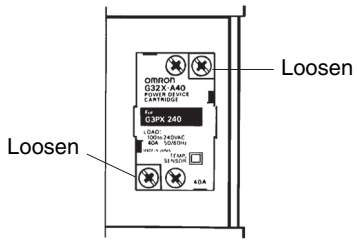
Extraction

The procedures for dismounting the Power Device Cartridge are as follows:

1. Switch off the G3PX.
2. Remove the terminal cover.
3. Be sure to turn off the G3PX and loosen the screws located in the upper center and lower center. These screws are connected to terminals 1 and 2.



4. Loosen the screws on both corners.



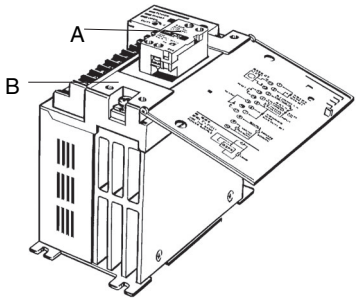
5. Hold the indented part of both corners to dismount the Cartridge.

Mounting

1. Apply silicone grease (provided with the G32X-A) to the entire surface of the heat sink.

2. Make sure there is no dust or pieces of wire on the heat sinks of the G32X-A or the G3PX.

3. Insert the Cartridge into the opening of the G3PX so that the letters on the Cartridge and those on the G3PX are in the same direction and sides A and B are even.



4. Tighten the screws on both corners with a tightening torque of 0.59 to 0.78 N·m.

5. Tighten the center screws of the G3PX with a tightening torque of 0.59 to 0.78 N·m.

6. Attach the terminal cover.

7. Switch on the power and check the G3PX to be sure it works properly.

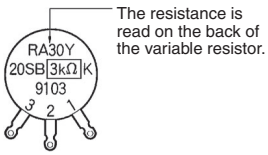
■ External Variable Resistor

The G32X-V3K and G32X-V2K are provided with a set consisting of adjuster, knob, and nameplate.

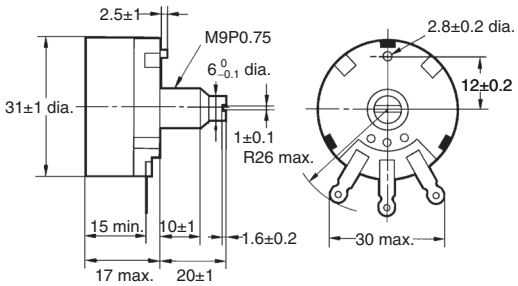
Resistive value (See note 1.)	Model
3 kΩ	G32X-V3K (See note 2.)
2 kΩ	G32X-V2K

Note: 1. The G32X-V3K is equivalent to the conventional G32X-VR.

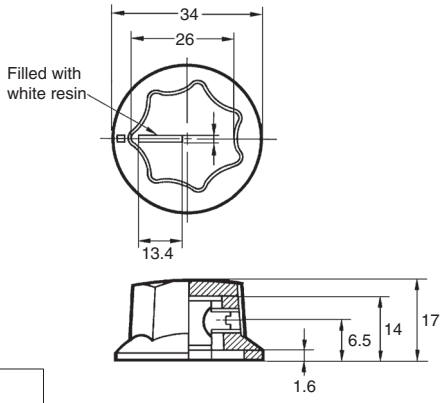
2. Resistive Value



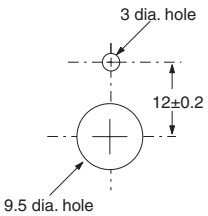
External DUTY Adjuster



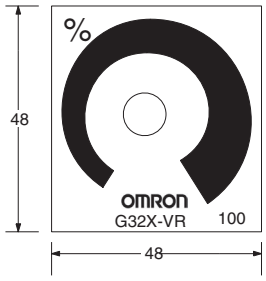
Knob



Mounting Holes



Nameplate

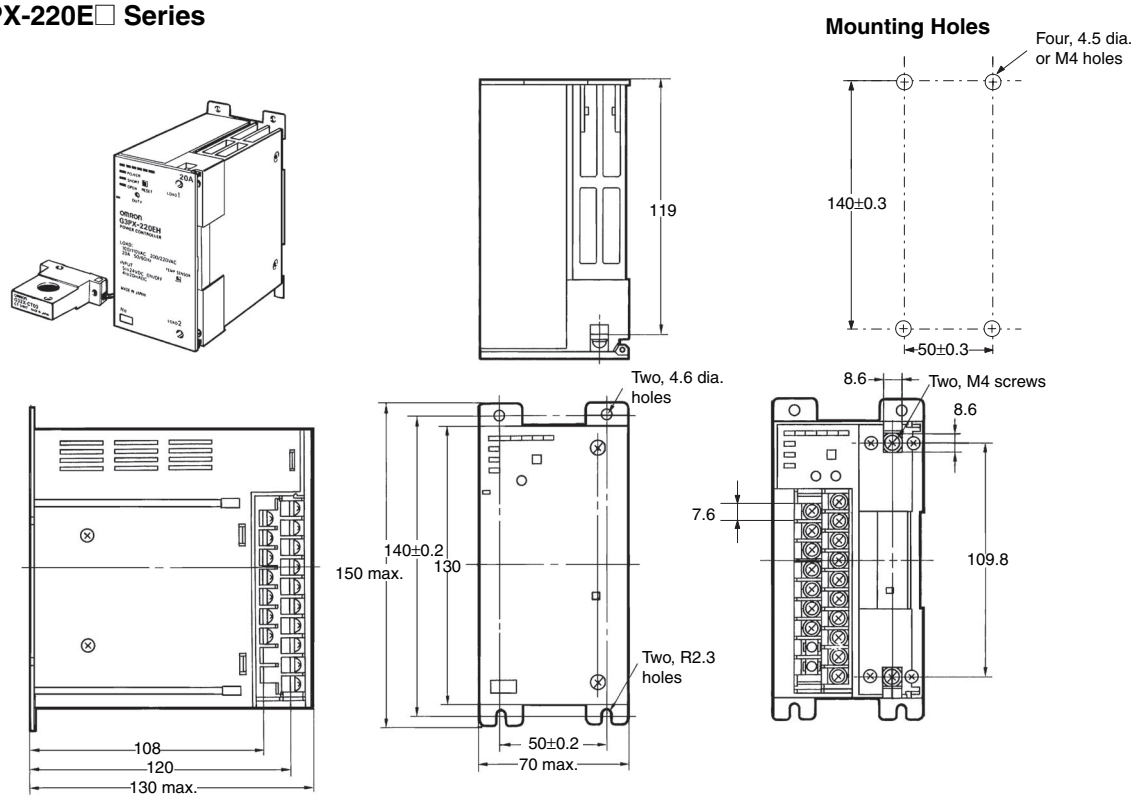


Dimensions

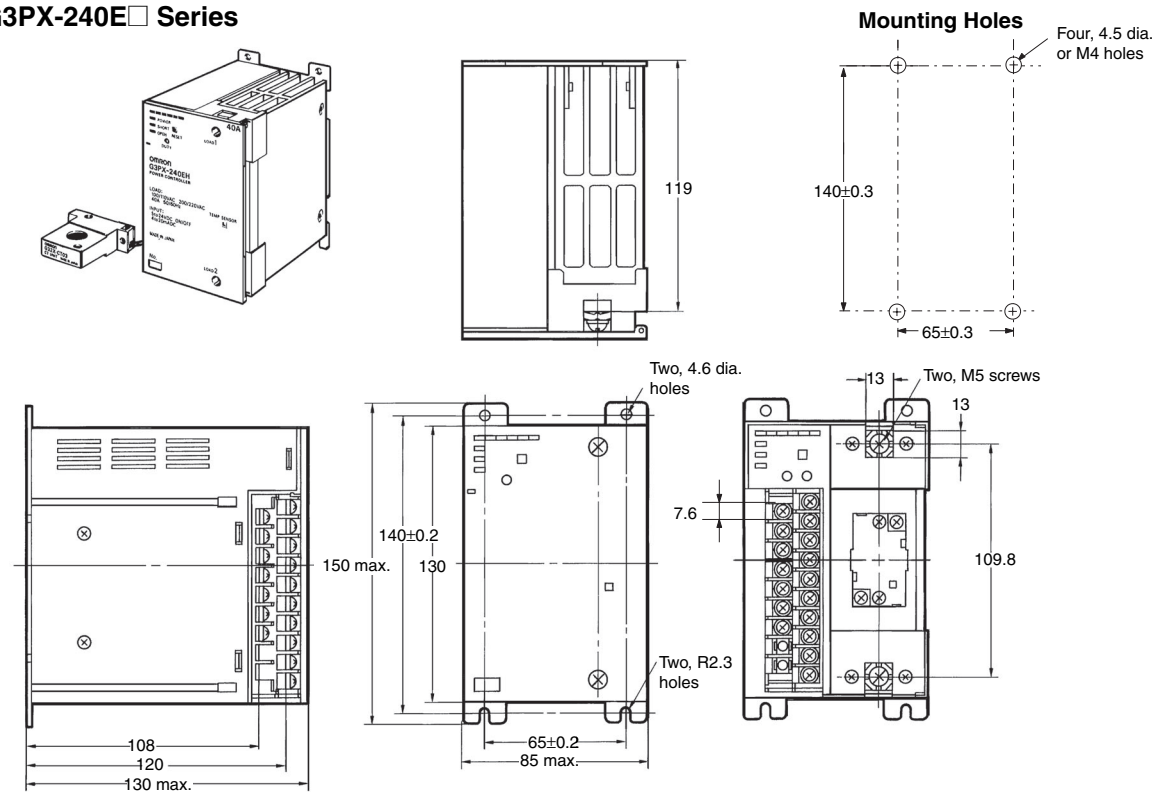
Note: All units are in millimeters unless otherwise indicated.

■ Single-phase Models

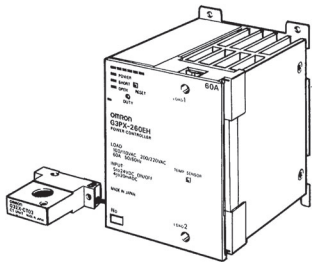
G3PX-220E□ Series

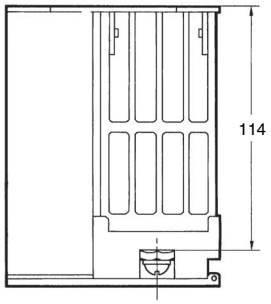


G3PX-240E□ Series

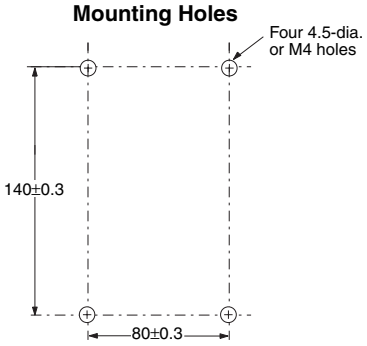


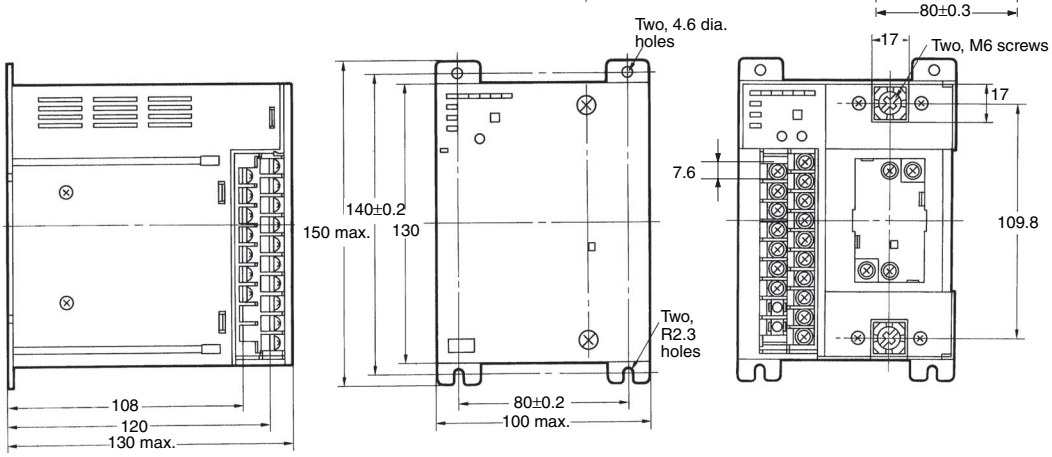
G3PX-260E□ Series



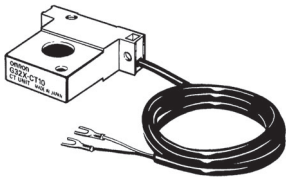


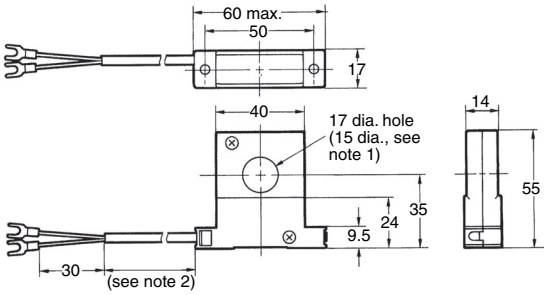
Mounting Holes



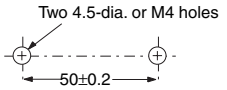


G32X-CT03□ Series
G32X-CT10□ Series





Mounting Holes



Note: 1. Color of the hole
EH Series: Black
EHN Series: White
EC Series: Light gray
The size of the hole of CT Units for EC- and EHN-series models is 15 dia.

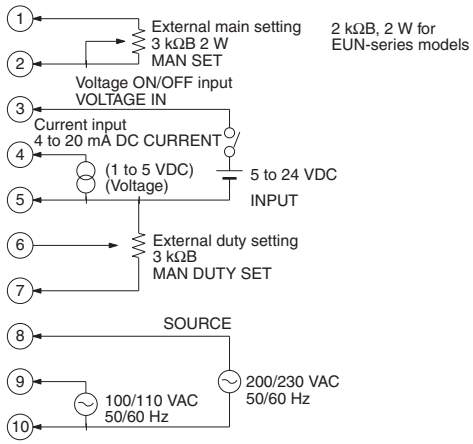
2. The G32X-CT03□ incorporates 30-cm solderless terminals and the G32X-CT10□ incorporates 100-cm solderless terminals.

Installation

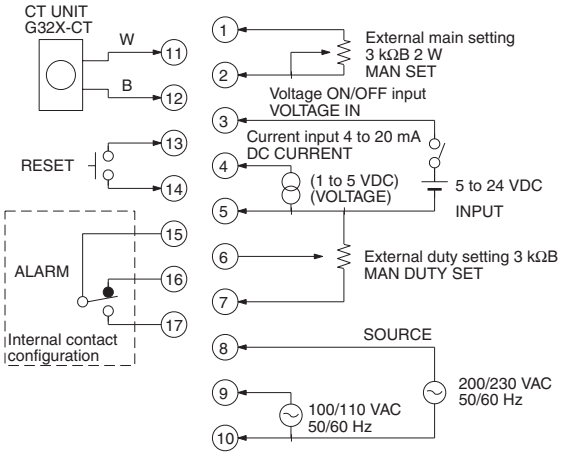
■ Terminal Arrangement

Single-phase Models

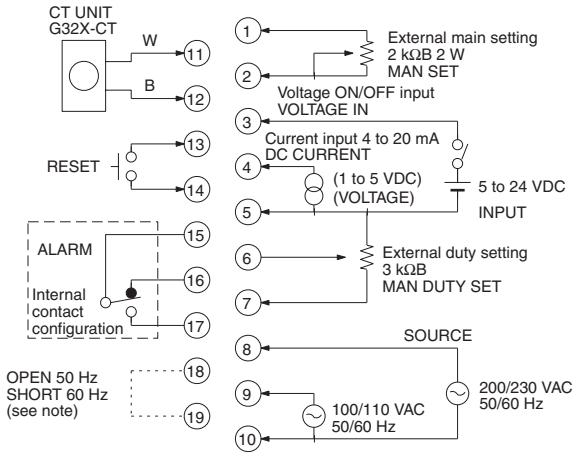
G3PX-220EUN
G3PX-240EUN
G3PX-260EUN



G3PX-220EH
G3PX-240EH
G3PX-260EH



G3PX-220EHN/220EC
G3PX-240EHN/240EC
G3PX-260EHN/260EC



Note: Open the terminals for 50 Hz or short-circuit the terminals for 60 Hz. When the product is shipped, the terminals are short-circuited using a short-circuiting bar to set to 60 Hz. When using at 50 Hz, remove the short-circuiting bar.

Safety Precautions

■ Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunction, or undesirable effect on product performance.

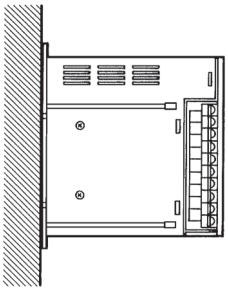
Load

Only resistive loads can be connected to the G3PX. Contact your OMRON representatives if it is necessary to connect inductive or transformer loads.

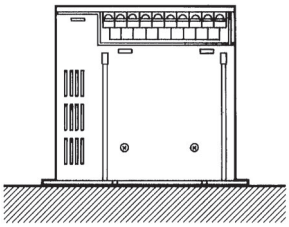
Mounting

Pay utmost attention when mounting the G3PX so that the G3PX will not fall thus resulting in injury.

Vertical Mounting

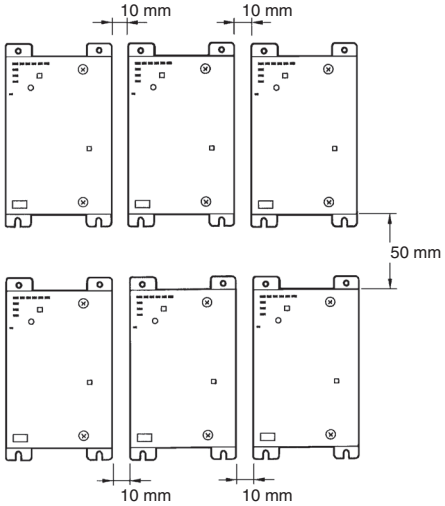


Horizontal Mounting



Note: In the case of flat mounting, the 30% derating of the load current is required.

Close Mounting Example (Single-phase Models)



Note: Make sure that there is a space of at least 50 mm vertically and at least 10 mm horizontally between adjacent single-phase models.

Wiring

Make sure that the lead wires are thick enough according to the current.

Be sure to turn off power to the G3PX when wiring. The G3PX has current leakage although the G3PX is turned off if the power supply is connected to the G3PX, which may give an electric shock.

Do not wire power lines or high-tension lines along with the lines of the G3PX in the same conduit, otherwise the G3PX may be damaged or malfunction due to induction. Be sure to wire the lines of the G3PX separated from power lines or high-tension lines or laid in an exclusive, shielded conduit.

Tightening Torque

Apply the following tightening torque.
Output terminal:
20-A model: 1.47 N·m
40-A model: 2.45 N·m
60-A model: 4.12 N·m
Terminal block:
Single-phase model: 0.98 N·m
Be sure to protect the terminals with the protective cover after wiring.

Wiring for Error Detection

If a contactor is employed and operated with the relay output signal of the G3PX for error detection, make sure that the G3PX is closer to the power supply than the contactor.

Instruments

Instrument	Remarks
Thermal type	Available
Digital type displaying root-mean-square values	
Moving-iron type	
Rectifier type	Not available (not precise enough)
Multimeter	
Digital multimeter	

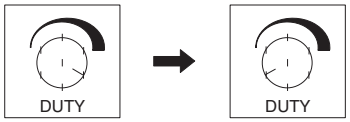
The instruments are used for displaying root-mean-square voltage and current values of the AC circuitry.

Operation Monitoring

The level indicator just indicates the phase of the load and it is not highly precise.

Ramp Setting

There is a decrease in ramp if the internal DUTY adjuster is turned counterclockwise.



100% 10%

If the External DUTY Adjuster is used, set the Internal DUTY Adjuster to 100%.

CT Unit

The CT Unit varies with the G3PX-series model. Use the following CT Units in combination with the G3PX models.

G3PX-2□0EH Series: G32X-CT□□
G3PX-2□0EHN Series: G32X-CT□□HN
G3PX-2□0EC Series: G32X-CT□□C

If any of the following models is used and the actual load current is 50% of the maximum rated load current or lower, increase the number of turns of the wire around the CT Unit.
G3PX-20EHN Series (multi-heater open circuit detective models)
G3PX-20EC Series (constant current)

For example, make two turns if the actual load current is 50% of the maximum rated load current and four turns if the actual load current is 25% of the maximum rated load current.

If the G3PX is a constant current model, do not increase the number of turns of the wire around the CT Unit excessively, otherwise the overcurrent detective function may operate by mistake.

External DUTY Adjuster

Use the External DUTY Adjuster with a resistance of 2 kΩ or that with a resistance of 3 kΩ according to the G3PX-series model in use. Refer to the following combinations.
G3PX-2□EH Series: G32X-V3K (3 kΩ)
G3PX-2□0EUN Series
G3PX-2□0EC Series

Base-up Function

If the model in use has the model number suffix “EUN,” the base-up function is available.

The base-up output of the G3PX with a temperature controller output of 0 mA (i.e., the temperature controller is turned off) and that of the G3PX with a temperature controller output of 4 mA are different from each other.

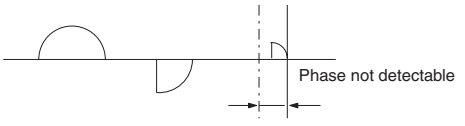
Power Device Cartridge

Do not apply power to the G3PX with the Power Device Cartridge dismounted.

Heater Open Circuit Detection

EH and EHN Models

The heater open circuit detective function is not available for detecting the phase less than the following.



G3PX-20EH Series: π/8 or less
G3PX-20EHN Series: Approx. π/6 or less

Power Supply

Single-phase Models Only

Do not apply 200 V to the 100-V terminals, otherwise the thermal fuse of the built-in transformer will be blown and the G3PX will not operate.

Others

It is not possible to use three single-phase models for three-phase load control.

If three-phase power supply is used for single-phase models operating in parallel, make sure that the two phases supplied to all the single-phase models are the same.

Troubleshooting

Check the following if the G3PX does not operate or has difficulty in temperature control.

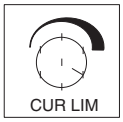
- The load does not turn on with 100% input.

  Check the default internal ramp setting.



Make sure that the adjuster is set to the farthest clockwise position.

Also check the current limit adjuster if the G3PX is a constant DC model.



- The G3PX does not operate or is in abnormal operation.

  Make sure that all input terminals are connected properly with no mistakes in polarity.

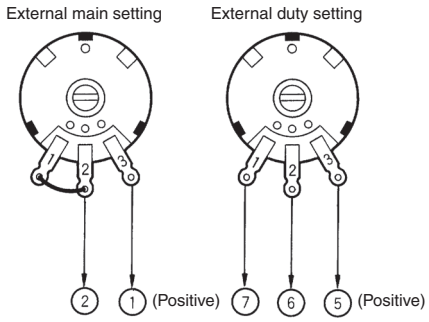
  Make sure that the internal DUTY adjuster is not set to the farthest clockwise position.

  Make sure that the frequency used by the G3PX (i.e., 50 or 60 Hz) is set properly. (This applies to the EC, and EHN models.)

- The G3PX malfunctions if the external adjusters are turned.

  Make sure that the numbers on the external adjusters coincide with the corresponding terminal numbers on the G3PX.

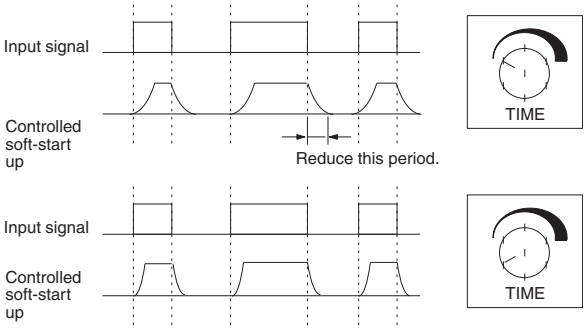
  Make sure that the 2-kΩ and 3-kΩ DUTY adjusters are connected correctly.



Note: 1, 2, 3, 5, 6, and 7 are terminal numbers of the G3PX.

- Temperature control with a Voltage-output Temperature Controller is not smooth.

  Make sure that the controlled soft-start up/down time has been adjusted properly. If not, turn the TIME adjuster counterclockwise to the minimum setting to reduce the controlled start-up/down time.



- The Level indicator is not OFF with a 0% input signal (G3PX-2□0EUN Series).

  Make sure that the BASE UP adjuster has been turned counterclockwise to the minimum setting.



Make sure that the adjuster is turned counterclockwise to the minimum setting.

- The OPEN indicator of a multiple heater open circuit detection model is lit at the initial stage (G3PX-2□0EHN Series).

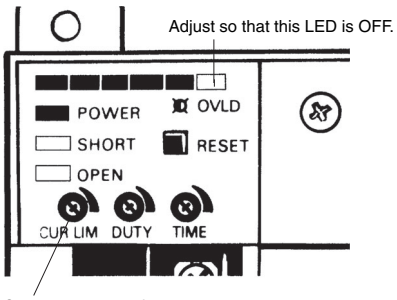
  Make sure that the initial settings are OK. If not, readjust the G3PX.
  Make sure that terminals 18 and 19 are open if the supply frequency is 50 Hz. These terminals must be short-circuited if the supply frequency is 60 Hz.

  Make sure that the load current is large enough.

- The Level indicator LEDs of a constant-current model are all lit and no power control operation is possible.

  Make sure that the load current is large enough.

  Countermeasure 1: Adjust the CUR LIM adjuster so that the LED on the farthest right of the Level indicator is OFF.

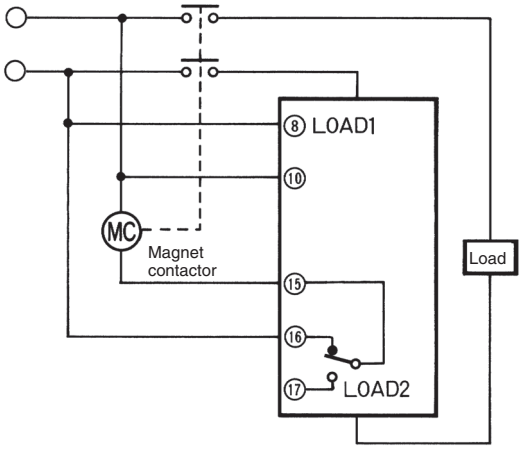


  Countermeasure 2: When the supply current is less than 50%, increase the number of turns. When the supply current is 50% of the rated current, the wires must be coiled twice on the CT Unit. When the supply current is 25% of the rated current, the wires must be coiled three to four times on the CT Unit.

- No reset will be performed even if the RESET button is pressed. Check whether the RESET button is pressed while there is nothing input into to power supply terminals 8 and 10 or 9 and 10 of the G3PX.

  Be sure to press the RESET button with power supplied to the G3PX.

The following wiring will be required if the breaker or contactor connected between the power supply and the G3PX is operated by the relay output of the G3PX.



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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2008.11

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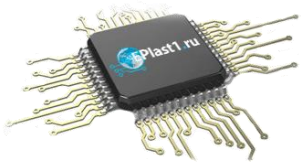
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