

Single-phase Power Controller G3PW

High-precision Control with Easy Setup

- Precise heater burnout detection.
- Set value and present value monitoring with indicators.
- Phase control or optimum cycle control.
- RS-485 communications to set manipulated variables and monitor load current.
- Total run time monitoring.
- Output modes for phase control: proportional to phase angle (same as G3PX), proportional to voltage, proportional to square voltage, and constant-current control.
- Application with various loads: constant load resistance, variable load resistance.
- Certified for CE and pending for UL.



NEW

Model Number Structure

Model Number Legend

G3PW-A2□□**E**□-□-□□□□

1 2 3 4 5 6 7 8

1. Basic model

G3PW: Power Controller

2. Degree of protection

A: Panel-mounting/Closed wallmounting

3. Voltage class

2: 200 VAC

4. Maximum rated current

20: 20 A

45: 45 A

60: 60 A

5. Power supply type

E: Single-phase power supply

6. Current control

U: Standard Model (no constant-current control)

C: Constant-current Model

7. Control terminal block

C: Screwless clamp terminal block

S: Terminal block with small slotted screws

8. RS-485 communications

Blank: Communications not supported.

FLK: Communications supported.

Ordering Information

List of Models

Number of phases	Control terminal block	Type	Capacity	Heater burn-out detection	Communications	Model number		
Single-phase	Screwless clamp terminal block	Standard	20 A	No	No	G3PW-A220EU-C		
			45 A			G3PW-A245EU-C		
			60 A			G3PW-A260EU-C		
		Constant current	20 A			Yes	Yes	G3PW-A220EC-C-FLK
			45 A					G3PW-A245EC-C-FLK
			60 A					G3PW-A260EC-C-FLK
	Terminal block with small slotted screws	Standard	20 A	No	No			G3PW-A220EU-S
			45 A					G3PW-A245EU-S
			60 A					G3PW-A260EU-S
		Constant current	20 A			Yes	Yes	G3PW-A220EC-S-FLK
			45 A					G3PW-A245EC-S-FLK
			60 A					G3PW-A260EC-S-FLK

Accessories (Order Separately)

Name	Resistive value	Display	Model
External Variable Resistor	2 kΩ	202	G32X-V2K

G3PW

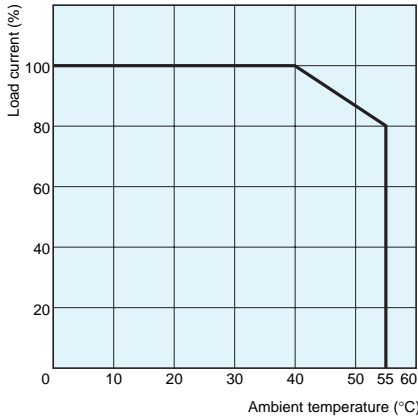
Item		Model	Standard Models	Constant-current Models
			G3PW-A2□□EU-□	G3PW-A2□□EC-□-FLK
Alarm outputs	Number of alarm outputs	2 alarm outputs <ul style="list-style-type: none"> Alarm output 1: ALARM1 (caution) Alarm output 2: ALARM2 (warning) Open-collector outputs		
	Maximum operating voltage	30 VDC		
	Maximum load current	50 mA		
	Maximum residual voltage	1.5 V		
	Maximum leakage current	0.4 mA		
Serial communications		---	One RS-485 port: CompoWay/F slave function (See note.) Note: Connection is possible to a Basic Unit in an EJ1 Modular Temperature Controller. Parameters can be set and monitored from the CX-Thermo Support Software running on a computer that is connected to the EJ1 End Unit.	
Overcurrent detection		---	Rated current × 120% min., within 250 cycles	
SSR failure detection		An error is detected within 3 seconds after an SSR failure. <ul style="list-style-type: none"> Phase angle range for SSR short-circuit failure detection: 0% to 72% Phase angle range for SSR open failure detection: 28% to 100% 		
Power supply frequency error		Not within 47 to 63 Hz		
Leakage current		10 mA max. (100/110 VAC), 20 mA max. (200/220 VAC)		
Insulation resistance		100 MΩ min. (at 500 VDC)		
Dielectric strength		2,500 VAC at 50/60 Hz for 1 min between charged parts and noncharged parts		
Vibration resistance		10 to 55 to 10 Hz, 100 m/s ²		
Shock resistance		300 m/s ²		
Ambient operating temperature		-15°C to 55°C (with no icing or condensation)		
Ambient operating humidity		5% to 95%		
Storage temperature		-25°C to 65°C (with no icing or condensation)		
Weight		G3PW-A220E□-□-□□□: 1.0 kg max. G3PW-A245E□-□-□□□: 1.9 kg max. G3PW-A260E□-□-□□□: 1.9 kg max.		
Applicable Standards	Safety Standards (pending)	UL508 CSA C22.2 No.14 EN60947-4-3 (pollution degree 2, overvoltage category II) IEC60947-4-3 (pollution degree 2, overvoltage category II)		
	EMC Directives (pending)	EMI EN60947-1 EN60947-4-3 EMS EN60947-1 EN60947-4-3		

Recommended Fuses

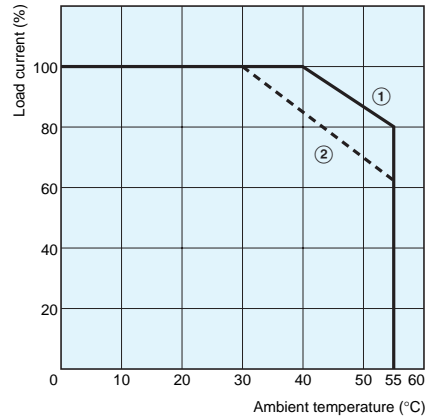
	Super-rapid Fuse (Fuji Electric)		Fuse Holder (Fuji Electric)
	Fast-acting fuses	For 20 A	CR6L-20/UL
For 45 A		CR6L-50/UL	
For 60 A		CR6L-75/UL	CMS-5
Time-delay fuses	250 VAC, 2 A		

Ambient Temperature

Current and Temperature Characteristics G3PW-A220E□/A245E□



G3PW-A260E□

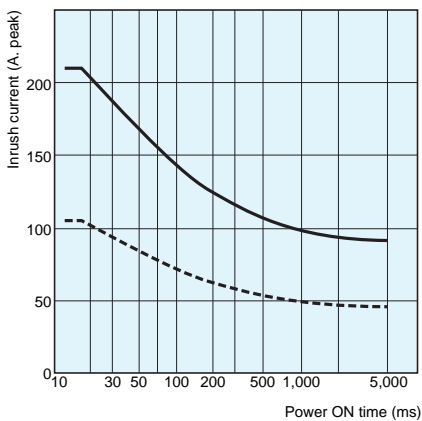


- ①: Installation with 20 mm between Power Controllers
- ②: Close mounting

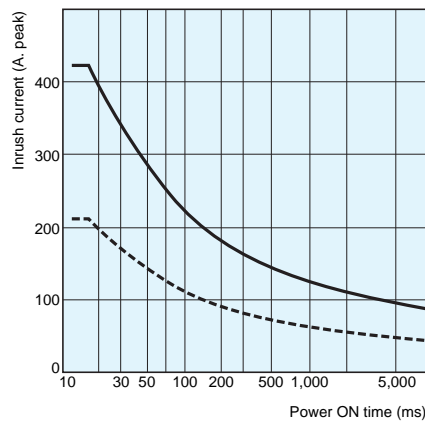
- Note:**
- The ambient operating temperature range is -15 to 55°C , but take the following considerations into account. When the ambient temperature exceeds 40°C , reduce the maximum load current as shown below.
 - At least 20 mm must be provided on the left and right sides of the G3PW-A260E□. If you must use side-by-side mounting, then reduce the maximum load current when the ambient temperature is over 30°C .
 - Certification for safety standards was obtained with a mounting interval of 20 mm.
 - Leave sufficient space for ventilation.
 - Do not install the Power Controller above devices that generate significant amounts of heat, such as heaters, transformers, and high-capacity resistors.
 - If the ambient temperature reaches 55°C or higher, install an air conditioner to lower the temperature.

Resistance to Inrush Current

G3PW-A220E□



G3PW-A245E□/G3PW-A260E□

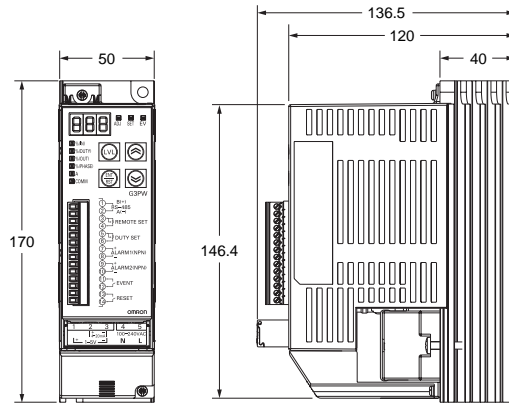


- Note:** The solid lines in the graphs show the non-repetitive resistance to inrush current. For repetitive inrush current, keep the inrush current below the values shown by the dotted lines.

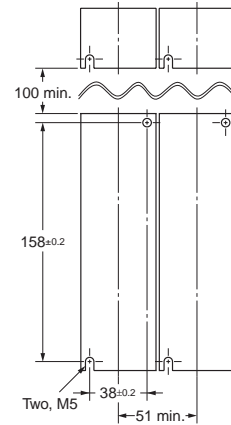
G3PW

20-A Models with Terminal Block with Small Slotted Screws

G3PW-A220EU-S
G3PW-A220EC-S-FLK

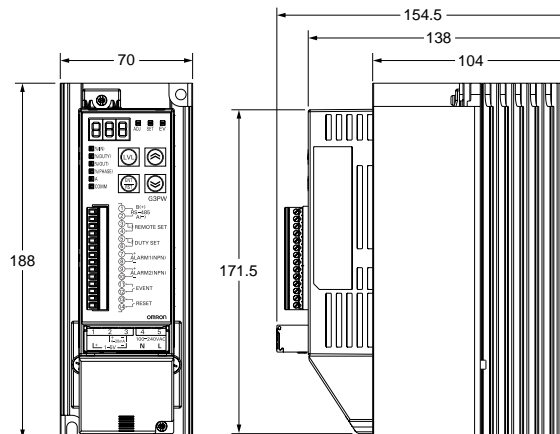


Mounting Hole Dimensions



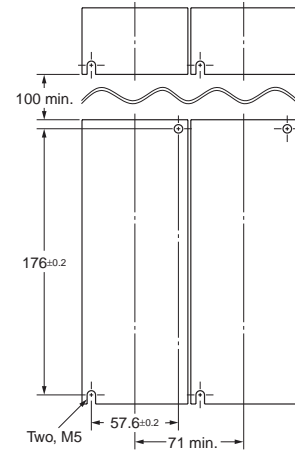
45/60-A Models with Terminal Block with Small Slotted Screws

G3PW-A245EU-S
G3PW-A260EU-S
G3PW-A245EC-S-FLK
G3PW-A260EC-S-FLK

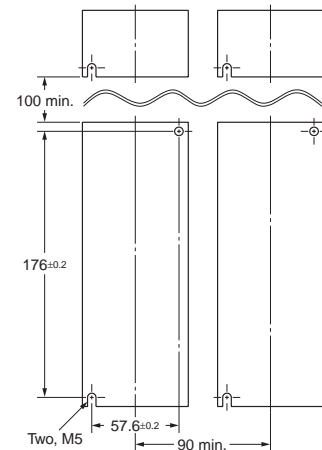


Mounting Hole Dimensions

G3PW-A245EU-S
G3PW-A245EC-S-FLK



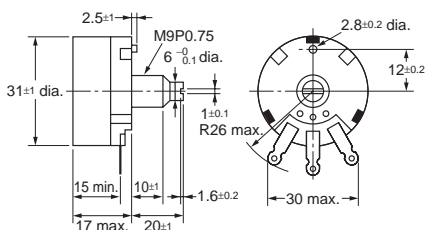
G3PW-A260EU-S
G3PW-A260EC-S-FLK



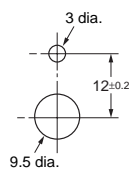
Accessories (Order Separately)

External Variable Resistor

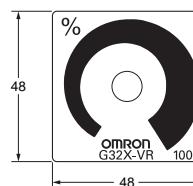
G32X-V2K



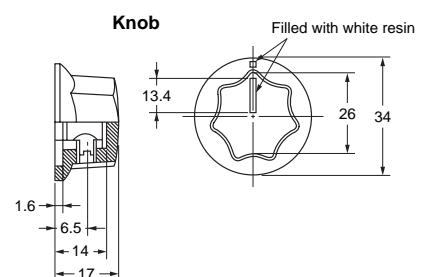
Mounting Holes



Nameplate



Knob



Precautions for Safe Use

Installation Environment

- Use the Power Controller within the rated ambient temperature and humidity ranges.
- If multiple Power Controllers are installed side-by-side or vertically, the heat that is generated will cause the internal temperatures of the Power Controllers to rise and will shorten their service life. In these kinds of installations, take suitable measures, such as installing fans for forced cooling.
- The Power Controller is designed for indoor use only. Also, do not use the Power Controller in the following environments.
 - Locations subject to water, oil, or chemicals
 - Locations subject to direct sunlight
 - Locations where dust or corrosive gases (in particular, sulfuric or ammonia gas) are present
 - Locations subject to extreme temperature changes
 - Locations where icing or condensation may occur
 - Locations subject to excessive shocks or vibration
 - Locations subject to direct heat radiated from heating devices

Installation and Wiring

- When installing the Power Controller, always securely tighten the top mounting screws first. When removing the Power Controller, always remove the bottom mounting screws first.
- Take safety measures, such as wearing safety shoes, in case the Power Controller falls.
- Touch the Power Controller only after first touching a grounded metal object to discharge any static electricity from your body.
- Always ground the Power Controller to 100 Ω or less. There are no ground terminals provided, so use the heat sink mounting screws as ground terminals.
- Check the terminal number and polarity for each input before connecting it.
- Use copper twisted wire in the sizes specified in this Instruction Sheet.
- Use insulated crimp terminals with insulation sleeves. If using crimp terminals that are not insulated, cover them with insulation sleeves. Also, use terminals of the sizes specified in this Instruction Sheet.
- Insert connectors all the way.
- Do not connect anything to unused terminals.

Safety Measures and Checking

- Install a switch or circuit breaker so that the operator can immediately turn OFF the power, and provide a suitable display.
- Apply the power supply voltage through the contacts of a switch, relay, or similar device so it reaches the rated voltage within 2 s. If the power supply voltage is increased gradually, the power supply may not be reset or outputs may malfunction.
- Use a power supply voltage, input voltage, input current, and load within the specifications and rated ranges for the Power Controller.
- Use a load that draws a current at the maximum output that is within the rated current range of the Power Controller. If the current drawn by the load is not within the rated current range, malfunction or fire may occur.
- Make sure that the protective cover is attached to the load terminal block before using the Power Controller. Failure to do so may damage internal components due to mechanical stress.

Preventing Inductive Noise

- Allow as much space as possible between the Power Controller and devices that generate powerful high frequencies (high-frequency welders, high-frequency sewing machines, etc.) or surge.
- Keep the signal lines that connect to the Power Controller's terminal block away from power cables carrying high voltages or large currents. Also, do not wire power lines together with or parallel to Power Controller wiring. Using shielded cables and using separate conduits or ducts is recommended.
- Attach a surge suppressor or noise filter to peripheral devices that generate noise (in particular, motors, transformers, solenoids, magnetic coils or other equipment that have an inductance component).
- When a noise filter is used at the power supply, first check the voltage or current, and attach the noise filter as close as possible to the Power Controller.

Cleaning

- Do not use paint thinner or similar chemical to clean with. Use commercially available standard grade alcohol.

Storage

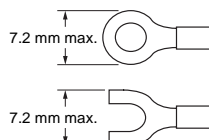
- Store the Power Controller within the rated ambient temperature.

Command Input and Power Supply Wire Sizes

Model	Recommended wire diameter	Tightening torque	Terminal screws
All models	AWG 18 to 14	0.8 to 1.0 N·m	M3.5

Recommended Crimp Terminals

Always use the following crimp terminals (for M3.5) to wire to the command input and power supply terminals.



Wiring the Control Terminal Block

Recommended Wire Sizes and Connection Method

G3PW-A2□□E□-S (Models with terminal blocks with small slotted screws)

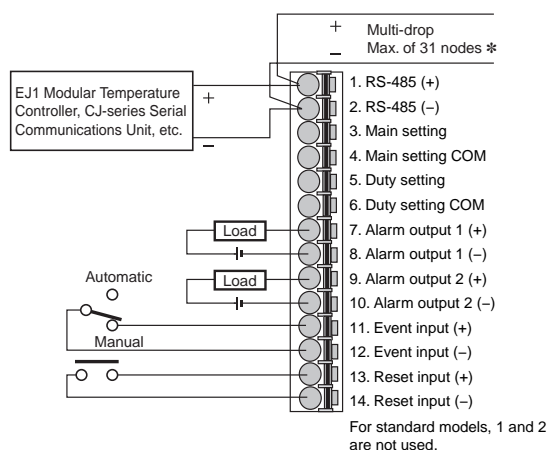
G3PW-A2□□E□-C (Models with screwless clamp terminal block)

Wire Sizes for Control Terminals (Models with Small Slotted or Screwless Clamp Terminals)

Model	Recommended wire diameter	Tightening torque	Terminal screws
All models	AWG 26 to 16	0.22 N·m	M2

- Use copper AWG 26 to 16 twisted-pair cable when connecting the wires directly.
- Strip the wire sheathing for the following lengths, according to the connector type.
 - Small slotted terminals: 7 mm
 - Screwless clamp terminals: 9 mm
- When using twisted wires, it is recommended that you attach a ferrule with an insulating cover that conforms to DIN 46228-4 and connect the ferrule to the terminal.
- Use shielded twisted-pair wires for RS-485 communications wires. A maximum of 500 m total of wiring can be used.

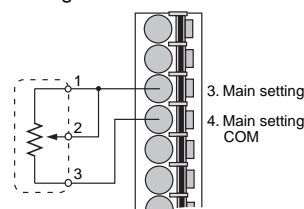
Terminal Names



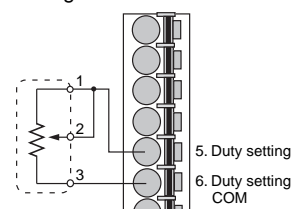
* A terminator must be connected at each end of the RS-485 transmission path. The terminators must be at least 54 Ω combined.

Wiring Inputs for External Settings

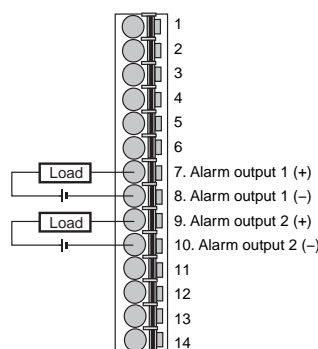
- Wiring to Adjust the Main Setting
Use a G32X-V2K Variable Resistor to adjust the main setting.



- Wiring to Adjust the Duty Setting
Use a G32X-V2K Variable Resistor to adjust the duty setting.



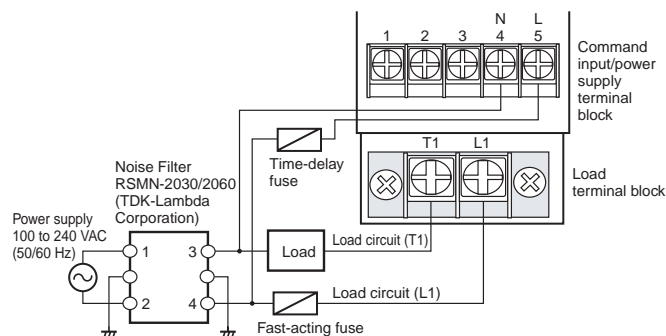
Alarm Outputs



Output status	Open collector
Number of outputs	2
Maximum operating voltage	30 VDC
Maximum load current	50 mA
Maximum residual voltage	1.5 V
Maximum leakage current	0.4 mA

Wiring an External Noise Filter

Always insert a noise filter in the power supply lines to the G3PW.



Grounding

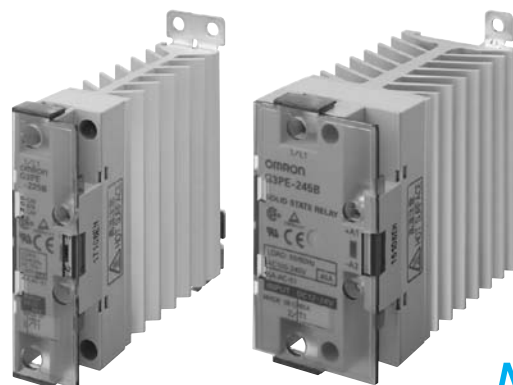
Always ground the Power Controller to 100 Ω or less. There are no ground terminals provided, so use the heat sink mounting screws as ground terminals.

Solid State Relays for Heaters

Single-phase G3PE

Compact, Slim-profile SSRs with Heat Sinks. Models with No Zero Cross for a Wide Range of Applications.

- RoHS compliant.
- Models also available with no zero cross
- Improved surge dielectric strength for output circuits.
- Compact with a slim profile.
- Mount to DIN Track or with screws.
- Certification pending for UL, CSA, and EN (TÜV certification).



△ CE

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Solid State Contactors for Heaters

Three-phase G3PE

Compact, Slim-profile SSRs with Heat Sinks. Solid State Contactors for Three-phase Heaters Reduced Installation Work with DIN Track Mounting.

- RoHS compliant.
- Improved surge dielectric strength for output circuits.
- Slim design with 3-phase output and built-in heat sinks.
- DIN Track mounting types and screw mounting types are available.
All DIN Track mounting types mount to DIN Track (applicable DIN Track: TR35-15Fe (IEC 60715)).
- Certification pending for UL, CSA, and EN (TÜV certification).



△ CE

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Warranty and Application Considerations

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

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In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

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Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

Take all necessary steps to determine the suitability of the product for the systems, machines, and equipment with which it will be used.

Know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Disclaimers

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON *Warranty and Limitations of Liability*.

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons. Consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.