Floatless Level Switch (Plug-in Type)
61F-G□P

CSM_61F-G_P_DS_E_3_1

Compact, Space-saving Plug-in Type Ideal for Pump Panels or Building into Equipment.

- Large switching capacity: 5 A at 220 VAC (resistive load).
- Easy to handle with DIN rail mounting.
- Replace for maintenance without rewiring the socket.

⚠ Refer to *Safety Precautions for Floatless Level Controllers*.

■ Model Number Legend

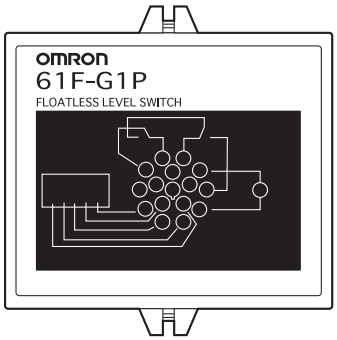
61F-□P□
1 2

1. Control Applications

G1: Automatic water supply with idling prevention or water shortage alarm
G2: Automatic water supply and drainage with abnormal water increase alarm
I: Liquid level indication and alarm

2. Type

Blank: General-purpose
L 2KM: Long-distance (for 2 km)
L 4KM: Long-distance (for 4 km)
H: High-sensitivity
D: Low-sensitivity



■ Ordering Information

Type	General-purpose	Long-distance (for 2 km)	Long-distance (for 4 km)
	Model	Model	Model
G1 models	61F-G1P	61F-G1PL 2K	61F-G1PL 4KM

Type	High-sensitivity	Low-sensitivity
	Model	Model
G1 models	61F-G1PH	61F-G1PD

Type	General-purpose	Long-distance (for 2 km)	Long-distance (for 4 km)
	Model	Model	Model
G2 models	61F-G2P	61F-G2PL 2KM	61F-G2PL 4KM

Type	High-sensitivity	Low-sensitivity
	Model	Model
G2 models	61F-G2PH	61F-G2PD

Type	General-purpose	Long-distance (for 2 km)	Long-distance (for 4 km)
	Model	Model	Model
I models	61F-IP	61F-IPL 2KM	61F-IPL 4KM

Type	High-sensitivity	Low-sensitivity
	Model	Model
I models	61F-IPH	61F-IPD

Note: When ordering, specify the desired operating voltage at the end of the model number.
Example: 61F-G1P [110VAC]
└──── Desired supply voltage

■ Plug-in Models

Specifications

Item	General-purpose Controller 61F-G1P 61F-G2P 61F-IP	Long-distance Controllers 61F-G1PL 61F-G2PL 61F-IPL (see note 2)	High-sensitivity Controllers 61F-G1PH 61F-G2PH 61F-IPH (see note 1, see note 6)	Low-sensitivity Controller 61F-G1PD 61F-G2PD 61F-IPD
Controlling materials and operating conditions	For control of ordinary purified water or sewage water	For control of ordinary purified water in cases where the distance between sewage pumps and water tanks or between receiver tanks and supply tanks is long or where remote control is required.	For control of liquids with high specific resistance such as distilled water	For control of liquids with low specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals
Supply voltage	100, 110, 200, 220 VAC; 50/60 Hz			
Operating voltage range	85% to 110% of rated voltage			
Interelectrode voltage	8 VAC		24 VAC	8 VAC
Interelectrode current	Approx. 1 mA AC max.		Approx. 0.4 mA AC max.	Approx. 1.2 mA AC max.
Power consumption	Approx. 6.4 VA max.			
Interelectrode operate resistance	0 to approx. 4 kΩ	0 to 1.8 kΩ (for 2 km) 0 to 0.7 kΩ (for 4 km)	Approx. 15 kΩ to approx. 70 kΩ (see note 5)	0 to approx. 1.8 kΩ
Interelectrode release resistance	Approx. 15 k to ∞ Ω	4 k to ∞ Ω (for 2 km) 2.5 k to ∞ Ω (for 4 km)	Approx. 300 k to ∞ Ω	Approx. 5 k to ∞ Ω
Response time	Operate: 80 ms max. Release: 160 ms max.			
Cable length (see note 3)	1 km max.	2 km max. 4 km max.	50 m max.	1 km max.
Control output	2 A, 200 VAC (Inductive load: cosϕ = 0.4) 5 A, 200 VAC (Resistive load)			
Ambient temperature	Operating: –10 to 55°C			
Ambient humidity	Operating: 45% to 85% RH			
Insulation resistance (see note 4)	100 MΩ min. (at 500 VDC)			
Dielectric strength (see note 4)	2000 VAC, 50/60 Hz for 1 min.			
Life expectancy	Electrical: 500,000 operations min. Mechanical: 5,000,000 operations min.			
Weight	Approx. 495 g			

Note: 1. The relay in the 61F-G1H/-G2H/-IPH de-energizes when there is water present across the Electrodes, whereas the relay in the 61F-GP-N8HY energizes when there is water present across the Electrodes.

2. Models are available for 2 km and 4 km.

3. The length when using completely-insulated, 600-V, 3-conductor (0.75 mm^2) cabtire cables. Usable cable lengths will become shorter as the cable diameter or number of conductors becomes larger. For details, refer to *Safety Precautions for Floatless Level Controllers*.

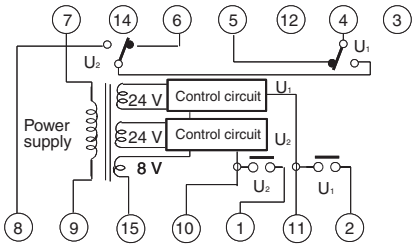
4. The insulation resistance and dielectric strength indicate values between power terminals and Electrode terminals, between power terminals and contact terminals, and between Electrode terminals and contact terminals. For details, refer to *Safety Precautions for Floatless Level Controllers*.

5. Possible to use with 15 kΩ or less, however, this may cause reset failure.

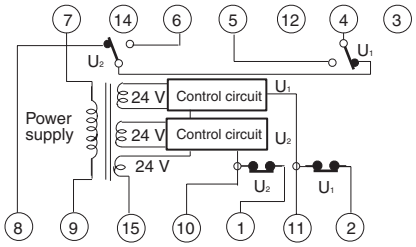
6. High-sensitivity Controllers use advanced operation.
When the power supply voltage is applied, if there are some liquids between the electrodes (ground and operation electrodes), the internal relay will not operate.
When the power supply voltage is applied, if there are no liquids between the electrodes (ground and operation electrodes), the internal relay will operate.

Internal Circuit Diagrams

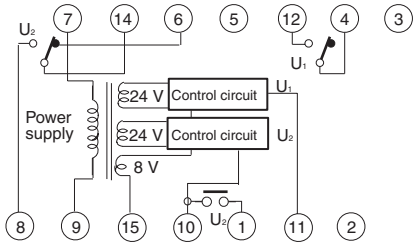
61F-G1P/-G1PL/-G1PD



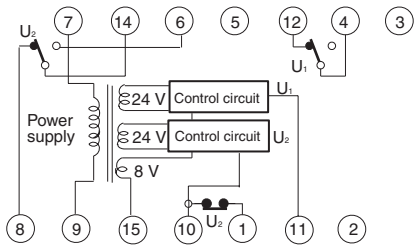
61F-G1PH



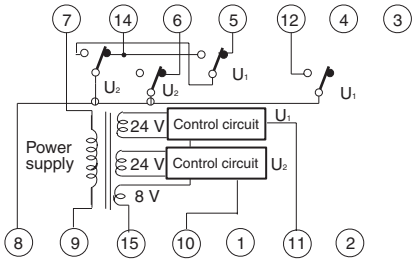
61F-G2P/-G2PL/-G2PD



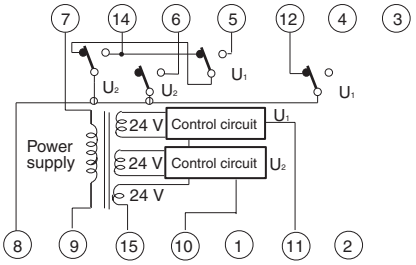
61F-G2PH



61F-IP/-IPL/-IPD



61F-IPH



Note: The 61F-G□PH High-sensitivity Controller uses advanced operation. The internal relay will operate on the NO contact side when power is supplied and then will operate according to the liquid level.

■ Connections

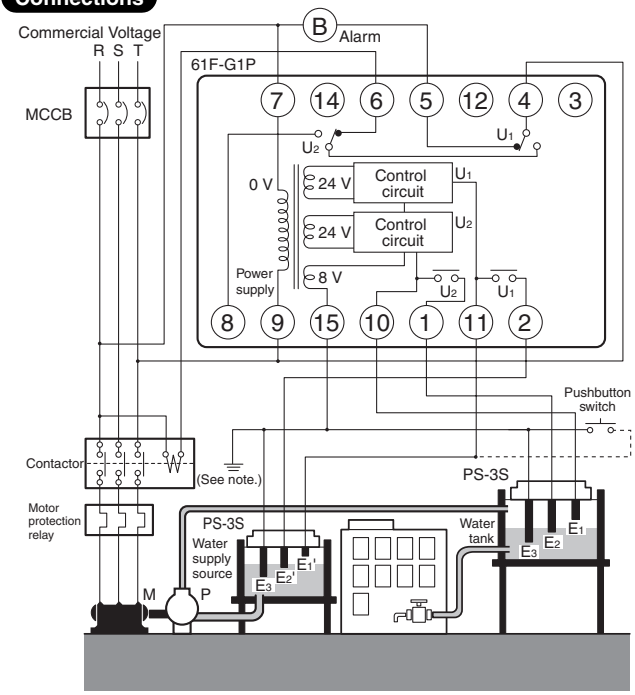
Automatic Water Supply Control with Pump Idling Prevention and Abnormal Water Shortage Alarm

Plug-in Type
61F-G1P

Dimensions: Page 7

Automatic Water Supply Control with Pump Idling Prevention

Connections



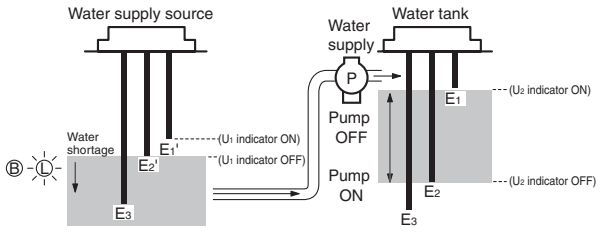
Note: Be sure to ground the common Electrode E_3 (the longest Electrode).

- Insert a pushbutton switch between terminals 11 and 15 as shown by the dotted lines.
- Do not press the pushbutton if the low-water alarm sounds and the pump stops during normal operation (water below E_2').

Test Operation/Recovering from Power Interruptions

If the supply water level is below E_1' when starting operation or when recovering from a power interruption, press the pushbutton to momentarily close the circuit to start the pump.

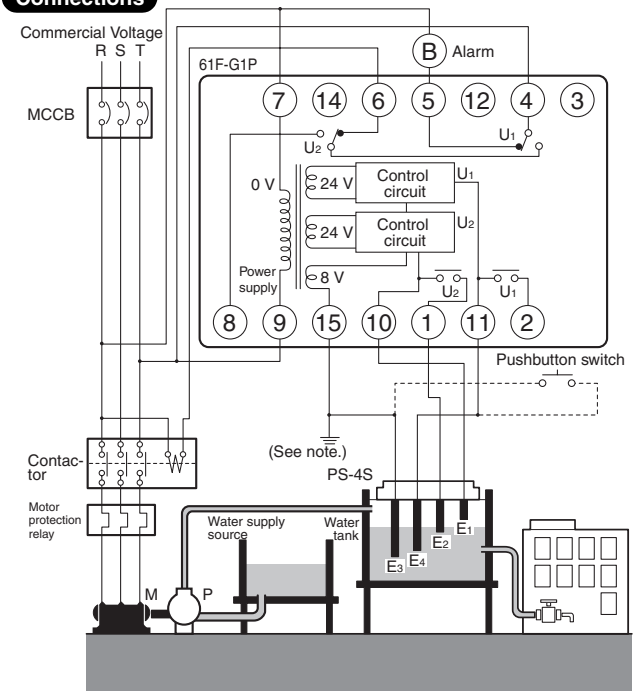
Principles of Operation



- The pump starts when the water level in the tank drops below E_2 and stops when the water level reaches E_1.
- When the level of water supply source drops below E_2', the pump stops. Pumping idling is prevented and the alarm sounds.

Automatic Water Supply Control with Abnormal Water Shortage Alarm

Connections



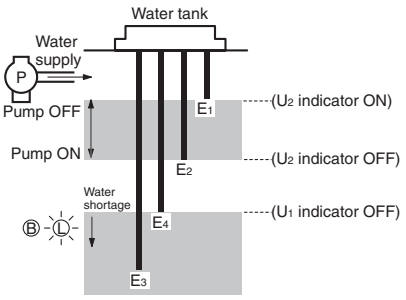
Note: Be sure to ground the common Electrode E_3 (the longest Electrode).
Connection Sockets
14PFA (Front-connecting)
PL15 (Rear-connecting)

- Insert a pushbutton switch between terminals 11 and 15 as shown by the dotted lines.
- If the pump stops when the pushbutton switch is released, press it again.

Test Operation/Recovering from Power Interruptions

If the supply water level is below E_4 when starting operation or when recovering from a power interruption, press the pushbutton to momentarily close the circuit to start the pump.

Principles of Operation



- The pump stops when the water level reaches E_1 and starts when the water level in the tank drops below E_2.
- If the water level drops below E_4 for any reason, the pump stops and the alarm sounds.

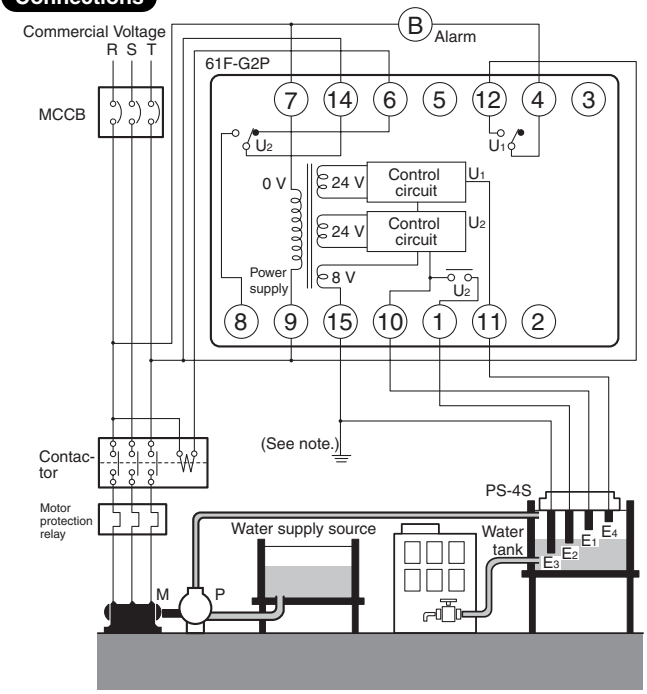
Automatic Water Supply and Drainage Control with Abnormal Water Increase Alarm

Plug-in Type
61F-G2P

Dimensions: Page 7

Automatic Water Supply with Abnormal Water Increase Alarm

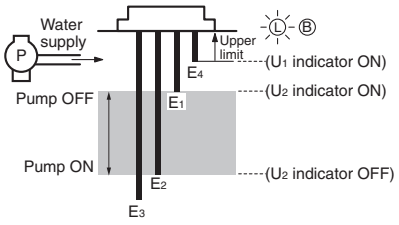
Connections



Note: Be sure to ground the common Electrode E_3 (the longest Electrode).

Connection Sockets
14PFA (Front-connecting)
PL15 (Rear-connecting)

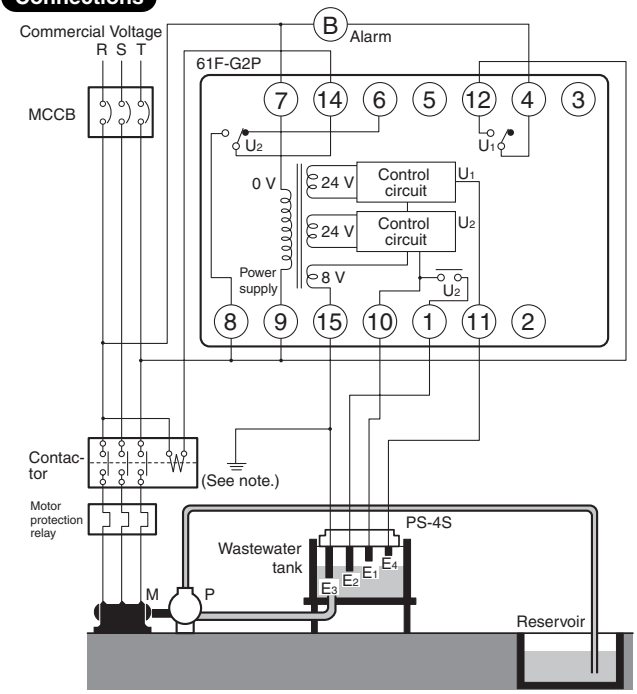
- Connect terminal 14 to power supply terminal 9. (Terminal 8 is not connected.)
- The power supply depends on the specifications of the model.



- The pump starts when the water level drops below E_2 and stops when the water level reaches E_1.
- If the water level drops below E_4 for any reason, the pump stops and the alarm sounds.

Automatic Drainage Control with Abnormal Water Increase Alarm

Connections

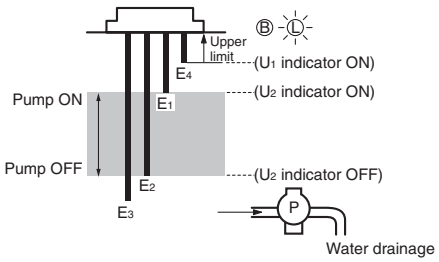


Note: Be sure to ground the common Electrode E_3 (the longest Electrode).

Connection Sockets
14PFA (Front-connecting)
PL15 (Rear-connecting)

- Connect terminal 8 to power supply terminal 9.

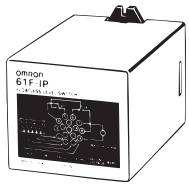
Principles of Operation



- The pump starts when the water level reaches E_1 and stops when the water level drops below E_2.
- If the water level drops below E_4 for any reason, the pump stops and the alarm sounds.

Liquid Level Indication and Alarm

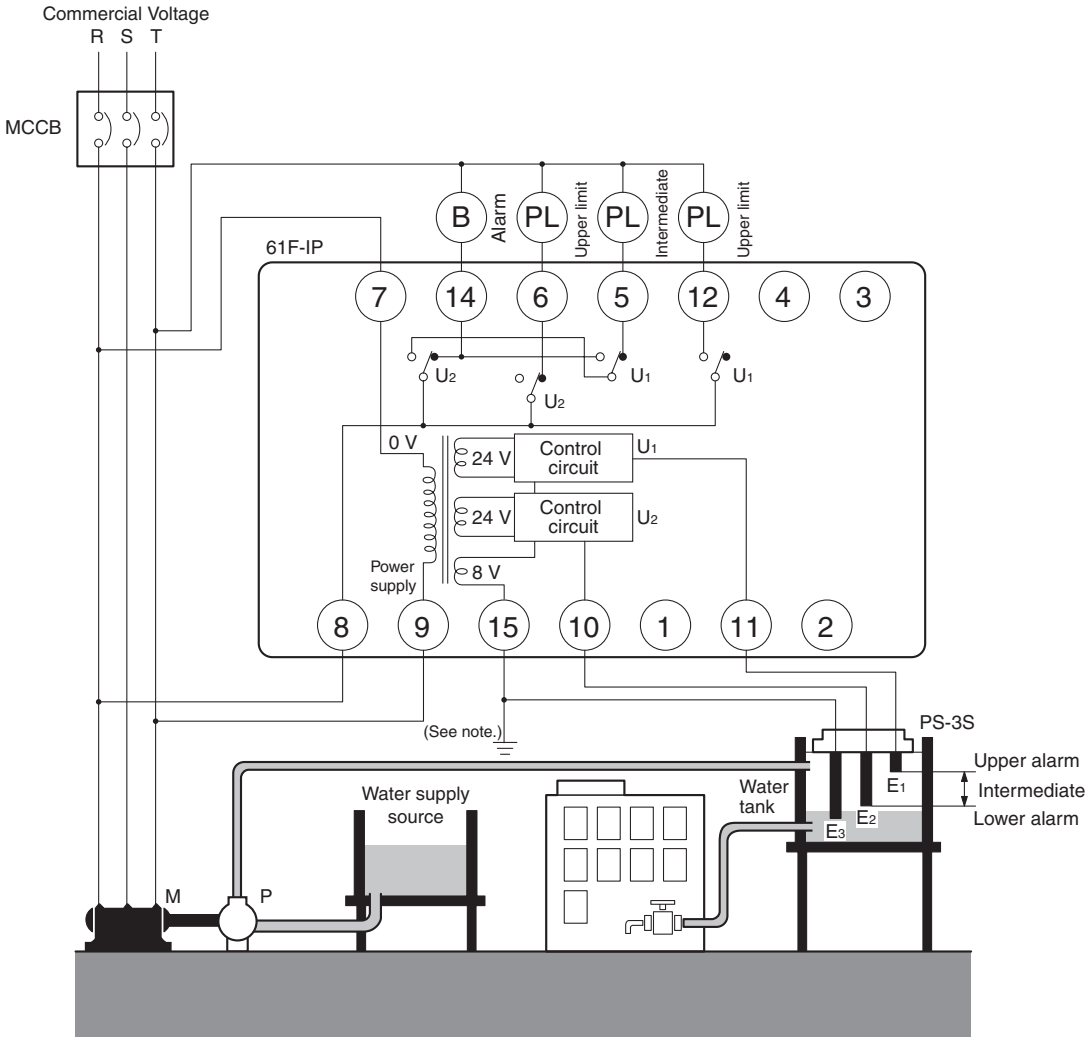
Plug-in Type
61F-IP



Dimensions: Page 7

Liquid Level Indication and Alarm

Connections

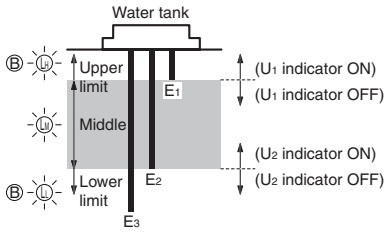


Note: Be sure to ground the common Electrode E_3 (the longest Electrode).

Connection Sockets
14PFA (Front-connecting)
PL15 (Rear-connecting)

Principles of Operation

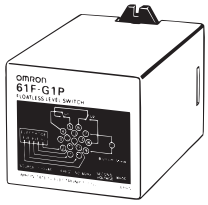
- When the water level drops E_2, the lower-limit indicator turns ON and the alarm sounds.
- When the water level reaches E_2, the indicator turns OFF and the intermediate indicator turns ON.
- When the water level rises to E_1, the upper-limit indicator turns ON and the alarm sounds.

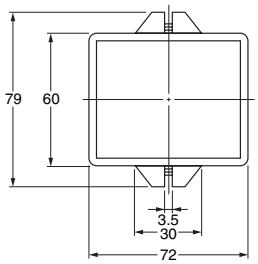


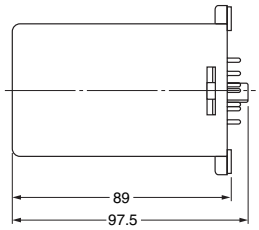
Dimensions

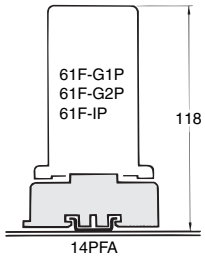
Note: All units are in millimeters unless otherwise indicated.

61F-G1P, -G1PL, -G1PH, -G1PD
61F-G2P, -G2PL, -G2PH, -G2PD
61F-IP, -IPL, -IPH, -IPD









■ Safety Precautions

Refer to *Safety Precautions for All Level 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.

In the interest of product improvement, specifications are subject to change without notice.

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

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

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

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

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.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

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.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

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

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.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

2009.9

In the interest of product improvement, specifications are subject to change without notice.

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