

# Alternate Operation Relay 61F-AN/-APN2

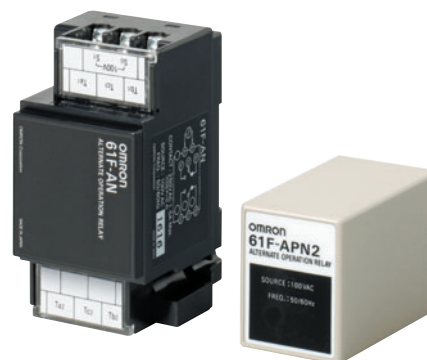
CSM\_61F-AN\_-APN2\_DS\_E\_3\_1

## Increases Motor Life and Enables Operating Only One Pump When Cleaning Tanks or as an Emergency Measure for Pump Failures.

- Electronic Relay with the same operation as the G4Q Latching Relay. Compared with the G4Q, the 61F-AN/-APN2 has a shorter power supply application time and no restrictions on mounting direction.
- Compact Models (61F-AN) and Compact Plug-in Models (61F-APN2) available.

**Note:** A changeover switch must be included in the sequence to enable operating only one pump.

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



## Ordering Information

Type	Model
Alternate Operation Relay	61F-AN
	61F-APN2

**Note:** When ordering, specify the desired operating voltage at the end of the model number.

Example: 61F-AN [220VAC]

\_\_\_\_\_ Desired supply voltage

## Specifications

### Ratings

Supply voltage	100, 110, 200, 220 VAC; 50/60 Hz
Operating voltage range	85% to 110% of rated voltage
Power consumption	3 VA
Accessories	Hold-down clip PFC-N8 *

\* Hold-down clip PFC-N8 is attached only 61F-APN2.

### Contact Ratings (with G2RK Keep Relay)

Item	Resistive load ( $\cos\phi = 1$ )	Inductive load ( $\cos\phi = 0.4$ , $L/R = 7$ ms)
Max. load	3 A at 250 VAC	1.5 A at 250 VAC
Carry contact	3 A	
Max. operating current	3 A	
Max. switching capacity	750 VA	375 VA

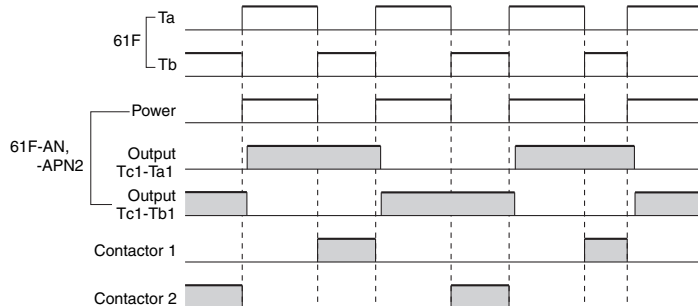
### Characteristics

Response time	Operate: 25 ms max. Release: 30 ms max.
Minimum pulse width	Min. ON time: 40 ms min. Min. OFF time: 200 ms min.
Insulation resistance	100 MΩ min. at 500 VDC (between each terminal and power supply)
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min (between each terminal and power supply)
Vibration resistance	10 to 55 Hz, 1-mm double amplitude
Shock resistance	10 G (approx. 98 m/s <sup>2</sup> )
Life expectancy	Mechanical: 1,000,000 operations (at operating frequency of 1,800 operations/hour) Electrical: 100,000 operations min. (rated load)
Ambient temperature	Operating: -10 to 55°C
Ambient humidity	Operating: 45% to 85% RH
Weight	61F-AN: Approx. 215 g 61F-APN2: Approx. 190 g

## Time Chart for Alternate Operation of Water Supply

When the 61F-A□ Alternate Operation Relay is combined with a Floatless Level Switch, the Relay output contacts switch (break) while the contactor is engaged. The Relay output contacts will not switch simultaneously with engaging the contactor. In other words, the contactor or other load is switched with the output contacts from the Floatless Level Switch, not directly with the output contacts from the 61F-A□ Alternate Operation Relay. Using water supply as an

example, after the control level is reached and the 61F Controllers' NC contacts turn OFF (break), the Relay's output contacts switch. The next time the 61F Controller's NC contacts turn ON, the output contacts have already switched. Thus, only the continuous carry current needs to be considered for the load capacity of the 61F-APN2, enabling application to the rated carry current of 3 A.

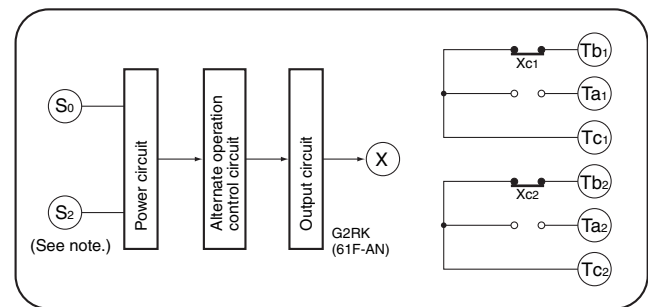


## 61F-AN (Compact Model)

Used in combination with a 61F-G□N Floatless Level Switch.

### Operation

- The 61F-AN is used in combination with a Floatless Level Switch for alternate operation when using two pumps for level control in one location.
- When power is applied to the input terminals S<sub>0</sub> and S<sub>2</sub>, NO contacts Tc<sub>1</sub> and Ta<sub>1</sub>, and NO contacts Ta<sub>2</sub> and Tc<sub>2</sub> are turned ON via the alternate operation control circuit and the output circuit. This state is held with a magnetic lock even if the power supply is turned OFF.
- When power is applied to the input terminals again, the NO contacts are turned OFF and the NC contacts Tc<sub>1</sub> and Tb<sub>1</sub> and NC contacts Ta<sub>2</sub> and Tc<sub>2</sub> are turned ON. This state is held with a magnetic lock even if the power supply is turned OFF.
- The above operation is repeated each time the power supply is turned ON.  
(Power Supply Pulse Response Method)



(Note: The above diagram is for a rated voltage of 200 or 220 VAC.  
Power is supplied to S<sub>0</sub> and S<sub>1</sub> for 100 or 110 VAC.)

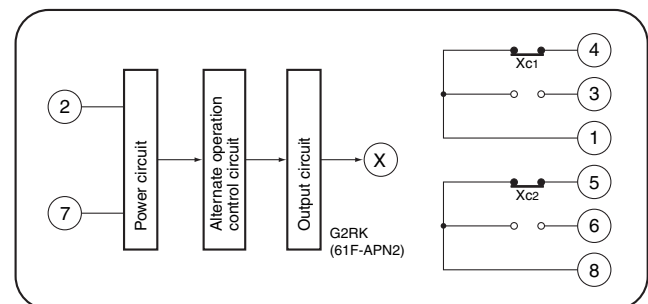
Connections (Refer to connection diagram.)

## 61F-APN2 (Compact Plug-in Model)

Used in combination with a Floatless Level Switch.

### Operation

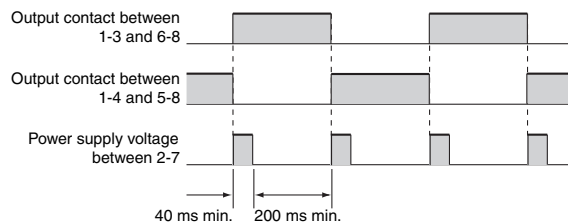
- The 61F-APN2 is used in combination with a Floatless Level Switch for alternate operation when using two pumps for level control in one location.
- When power is applied to the input terminals 2 and 7, NO contacts 1 and 3, and NO contacts 6 and 8 are turned ON via the alternate operation control circuit and the output circuit. This state is held with a magnetic lock even if the power supply is turned OFF.
- When power is applied to the input terminals again, the NO contacts are turned OFF and the NC contacts 1 and 4 and NC contacts 5 and 8 are turned ON. This state is held with a magnetic lock even if the power supply is turned OFF.
- The above operation is repeated each time the power supply is turned ON.  
(Power Supply Pulse Response Method)



Note: Refer to *Connecting Sockets, Mounting Brackets, DIN Rails* for the applicable Sockets.

Connections (Refer to connection diagram.)

- Connect output terminal Ta in the 61F-G example (page 5) to input terminal 2 on the 61F-APN2.
- Connect coil terminal A on each of the two contactors to the switching contact terminals 3 and 4 on the 61F-APN2.
- Use the switching contact terminals 5 and 6 on the 61F-APN2 to control the operation of the two pumps.
- The power supply of the 61F-APN2 is 100, 110, 200, or 220 VAC. Be sure to use the correct power supply.



## Connections

### Combining with the 61F-GN

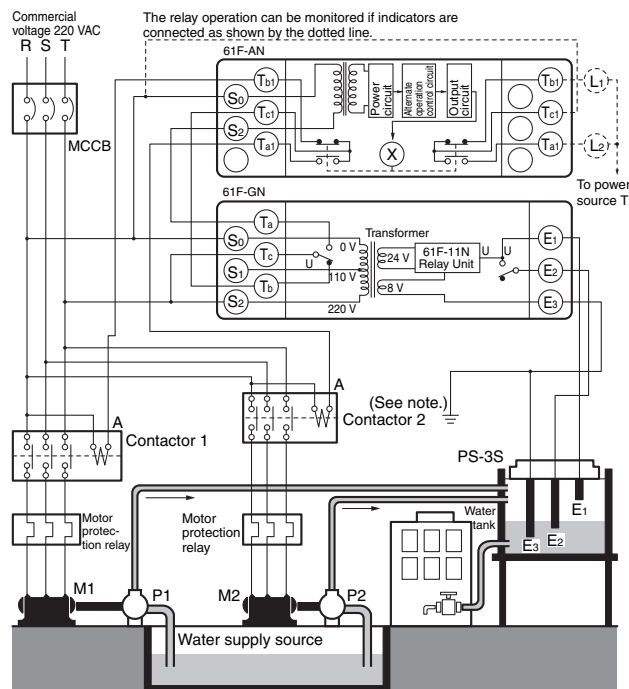
61F-AN

Dimensions:  
page 17



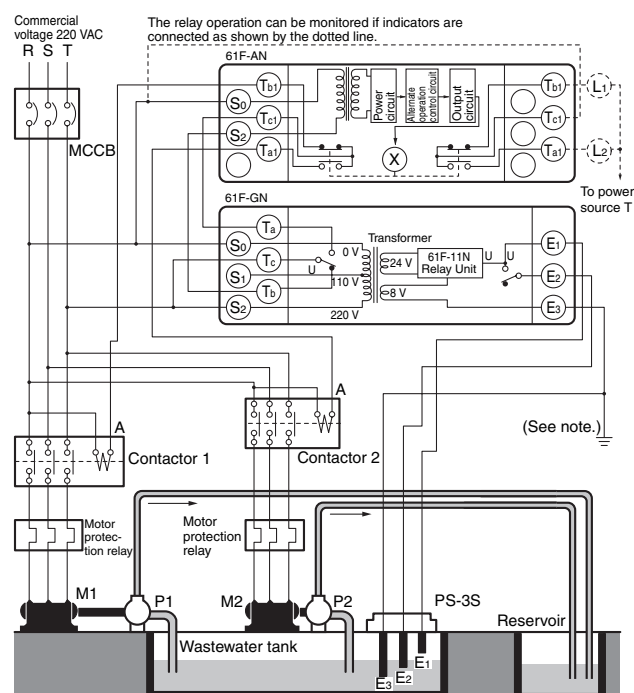
#### Combining with the 61F-GN

##### Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

##### Drainage



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Combining with the 61F-G

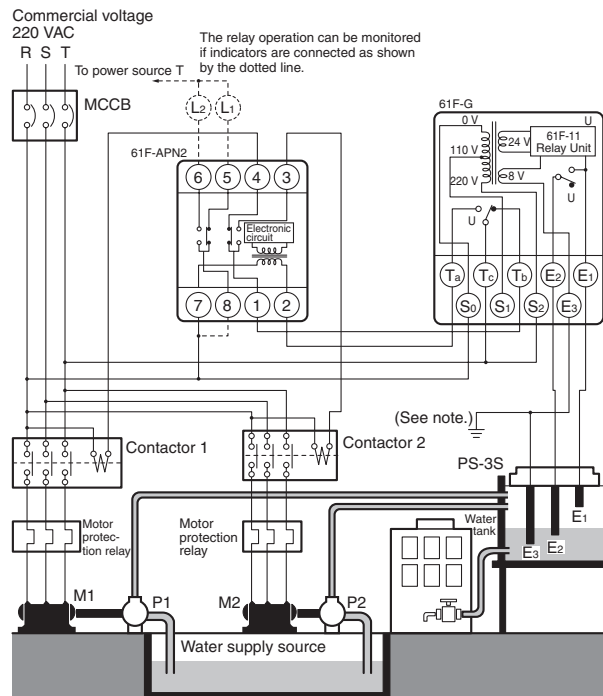
61F-APN2

**Dimensions:**  
page 17



### Combining with the 61F-G

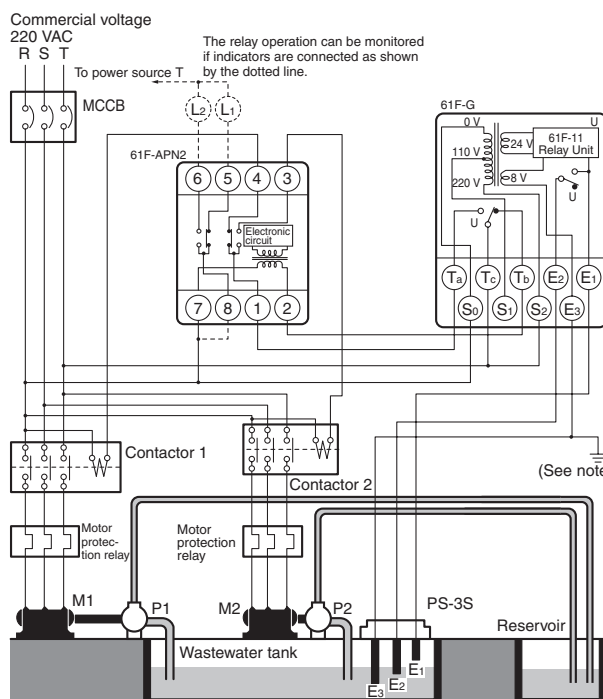
## Water Supply



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

**Connection Sockets**  
**PF083A (Front-connecting)**  
**PL08 (Rear-connecting)**

## Drainage



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

**Connection Sockets**  
**PF083A (Front-connecting)**  
**PL08 (Rear-connecting)**

## Combining with the 61F-G1N

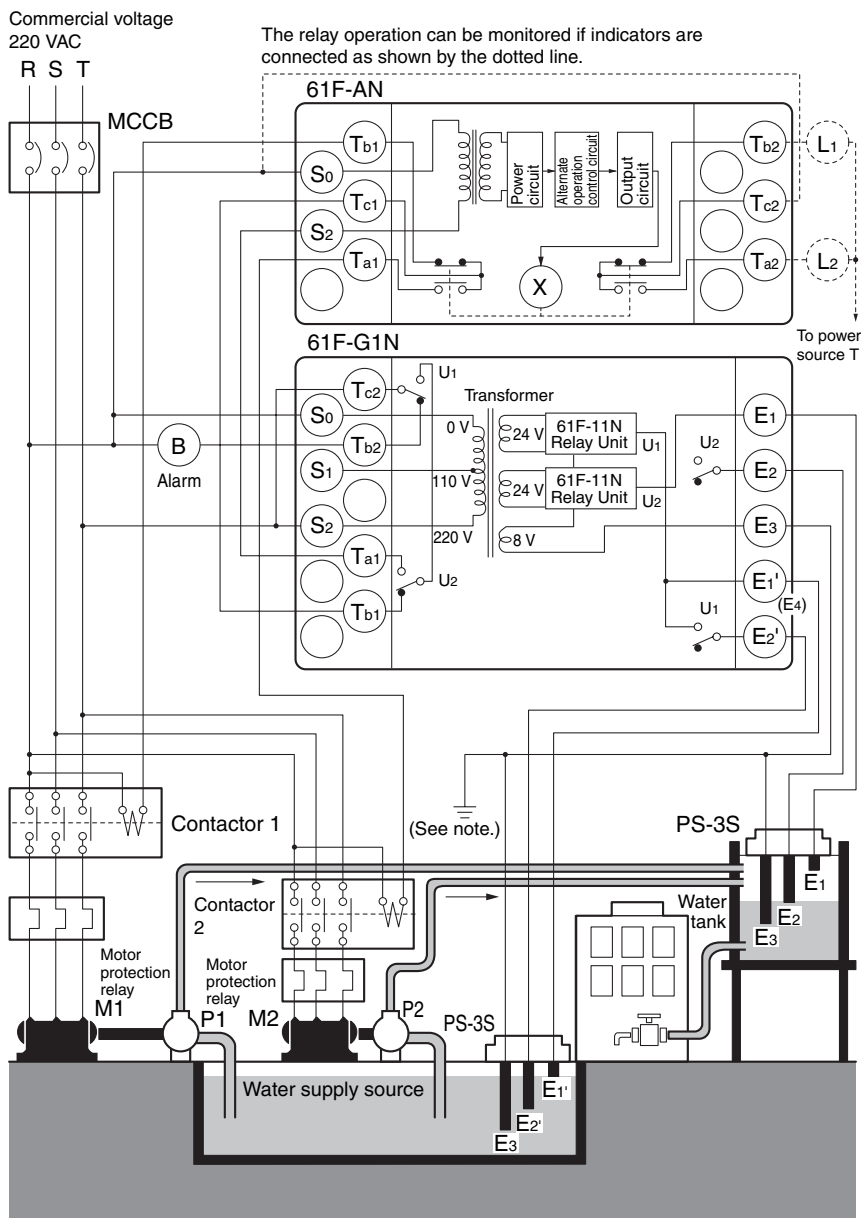
**61F-AN**

**Dimensions:**  
page 17



### Combining with the 61F-G1N

## Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Drainage

The 61F-G1N is to be used only for supplying water and cannot be used for alternate operation for controlling drainage.

## Combining with the 61F-G1

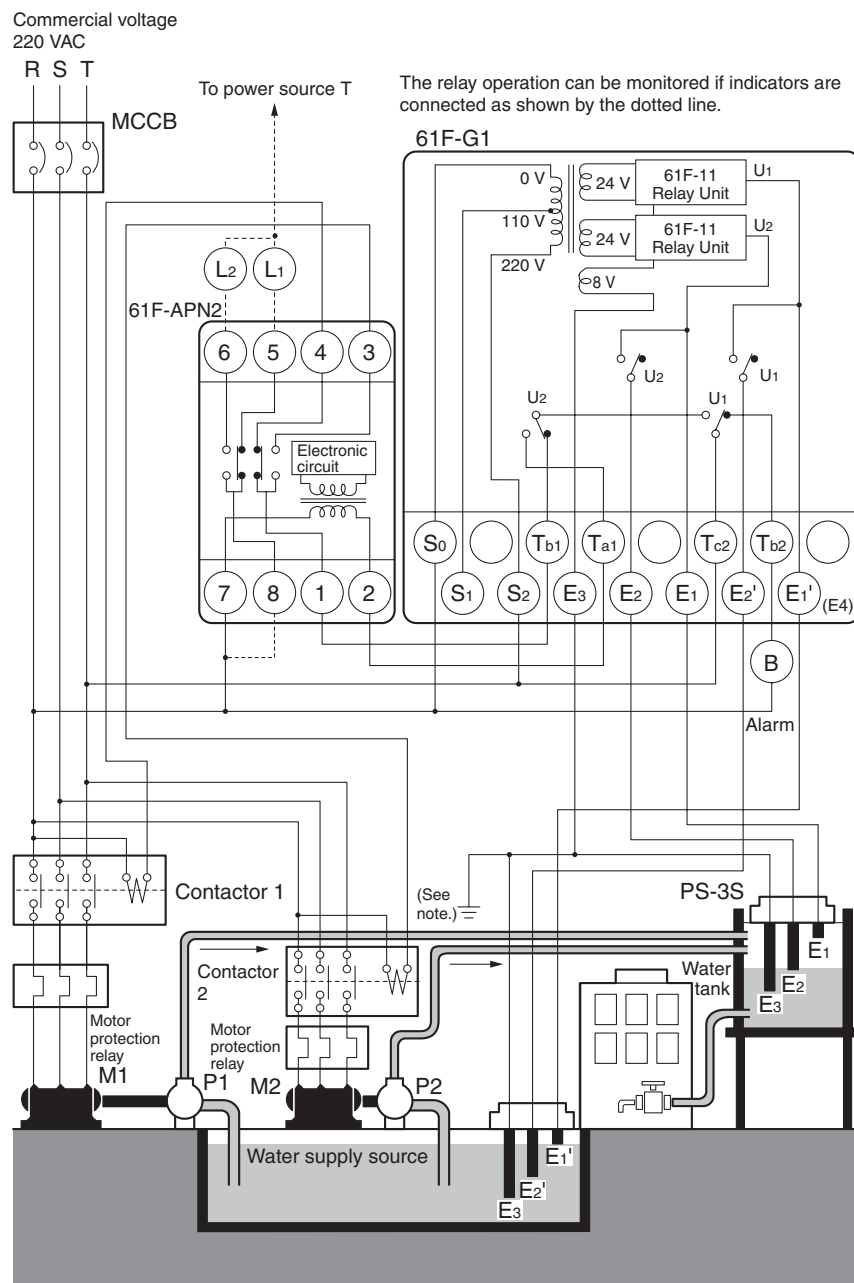
61F-APN2



Dimensions:  
page 17

## Combining with the 61F-G1

## Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Water Drainage

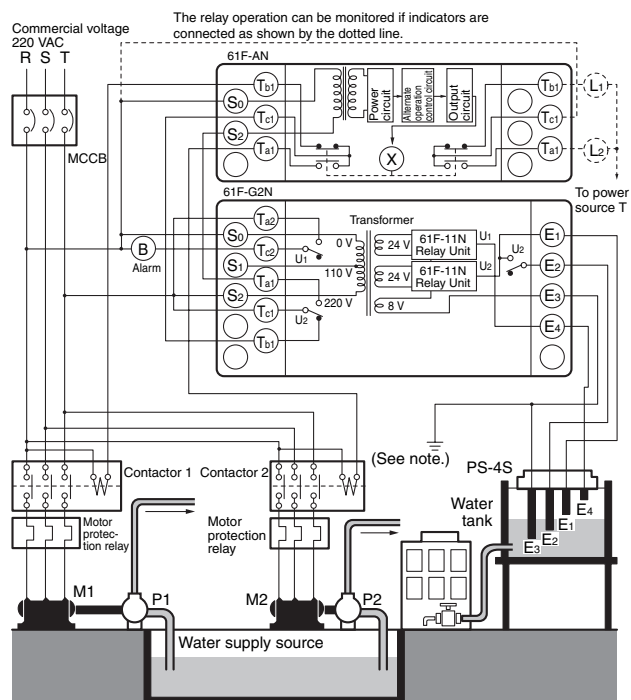
The 61F-G1N is to be used only for supplying water and cannot be used for alternate operation for controlling drainage.



**Dimensions:**  
page 17

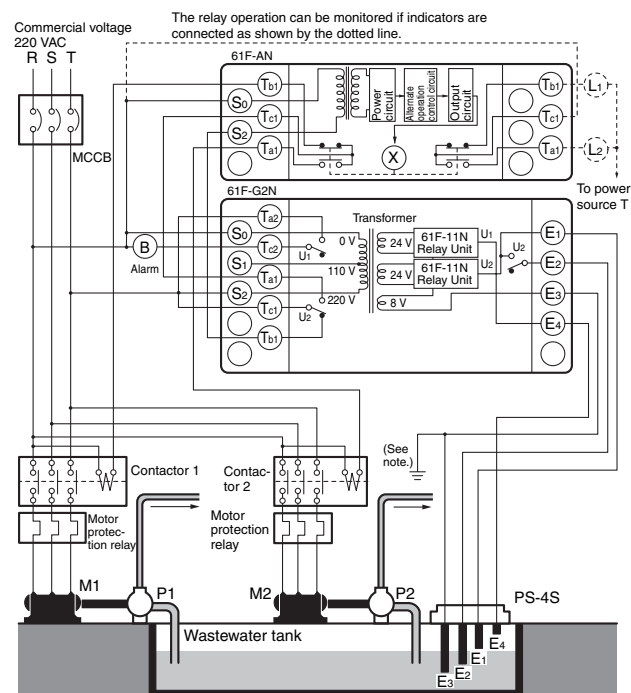
### Combining with the 61F-G2N

## Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Drainage



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).



## Combining with the 61F-G2

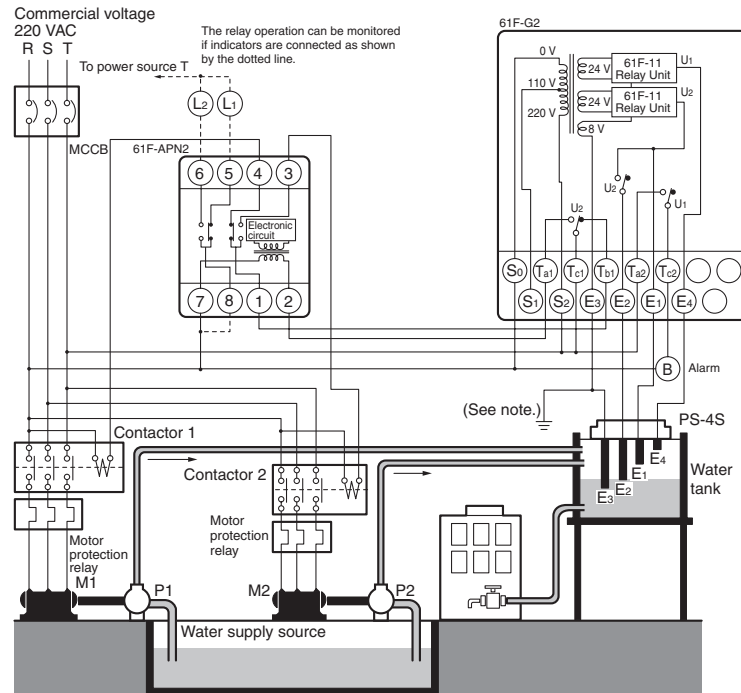
61F-APN2

Dimensions:  
page 17



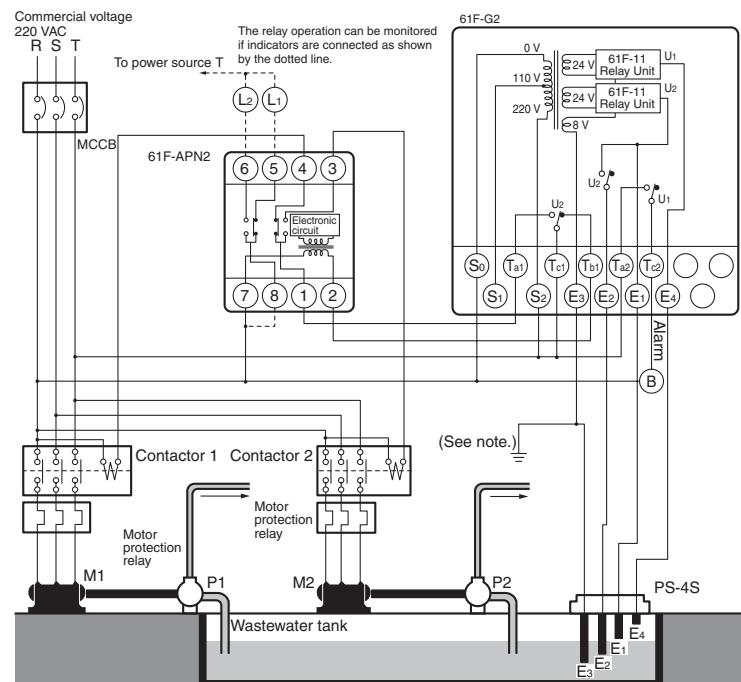
### Combining with the 61F-G2

#### Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

#### Drainage

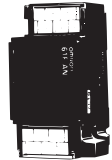


**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Combining with the 61F-G3N

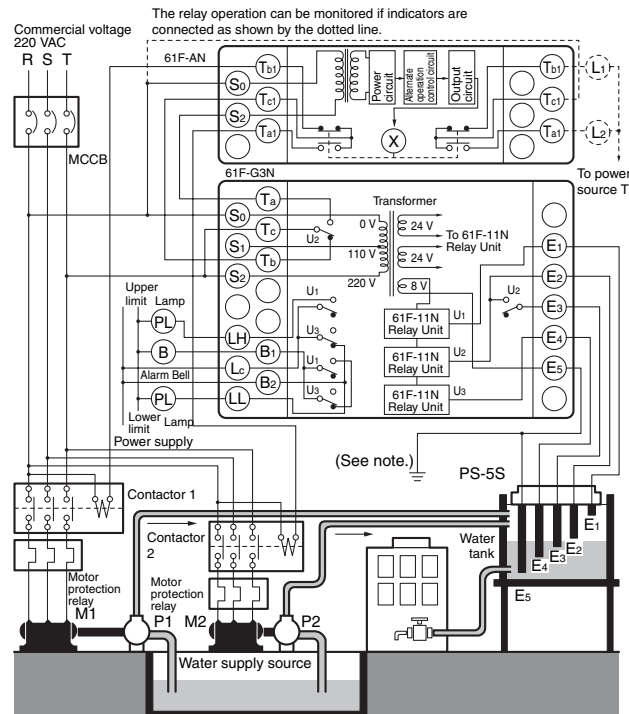
61F-AN

Dimensions:  
page 17



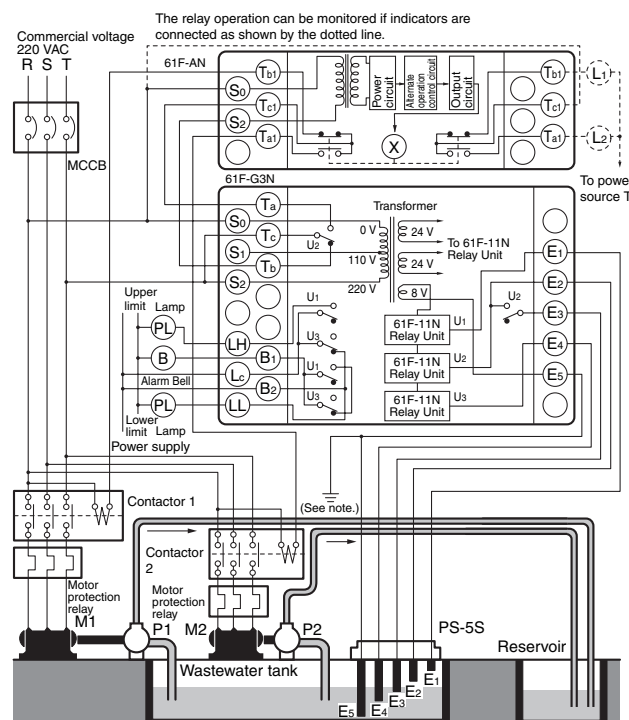
### Combining with the 61F-G3N

#### Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

#### Drainage

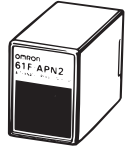


**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Combining with the 61F-G3

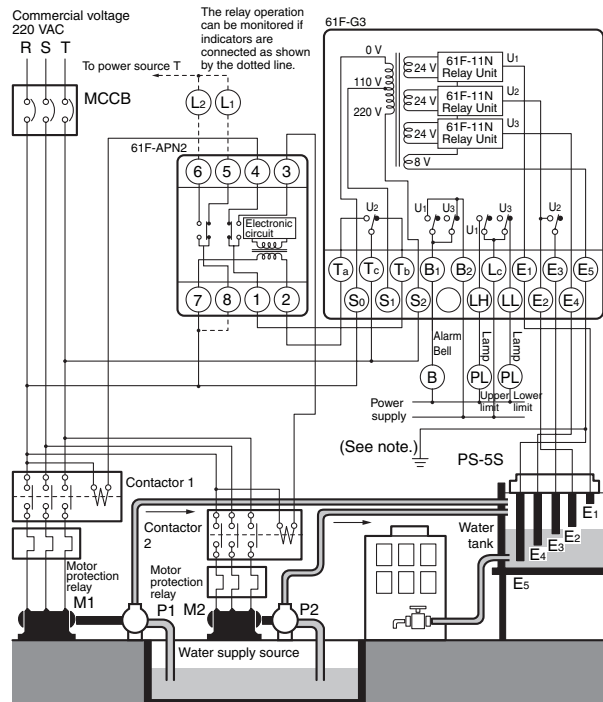
61F-APN2

Dimensions:  
page 17



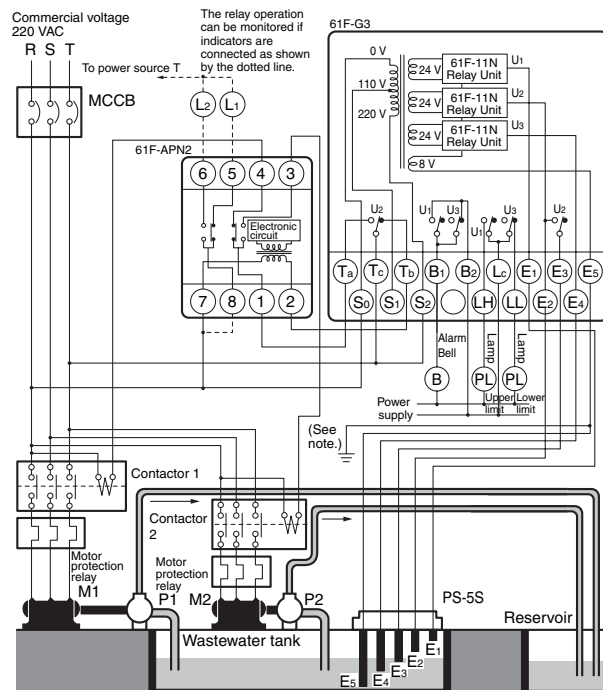
### Combining with the 61F-G3

#### Water Supply



**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

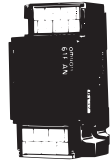
#### Drainage



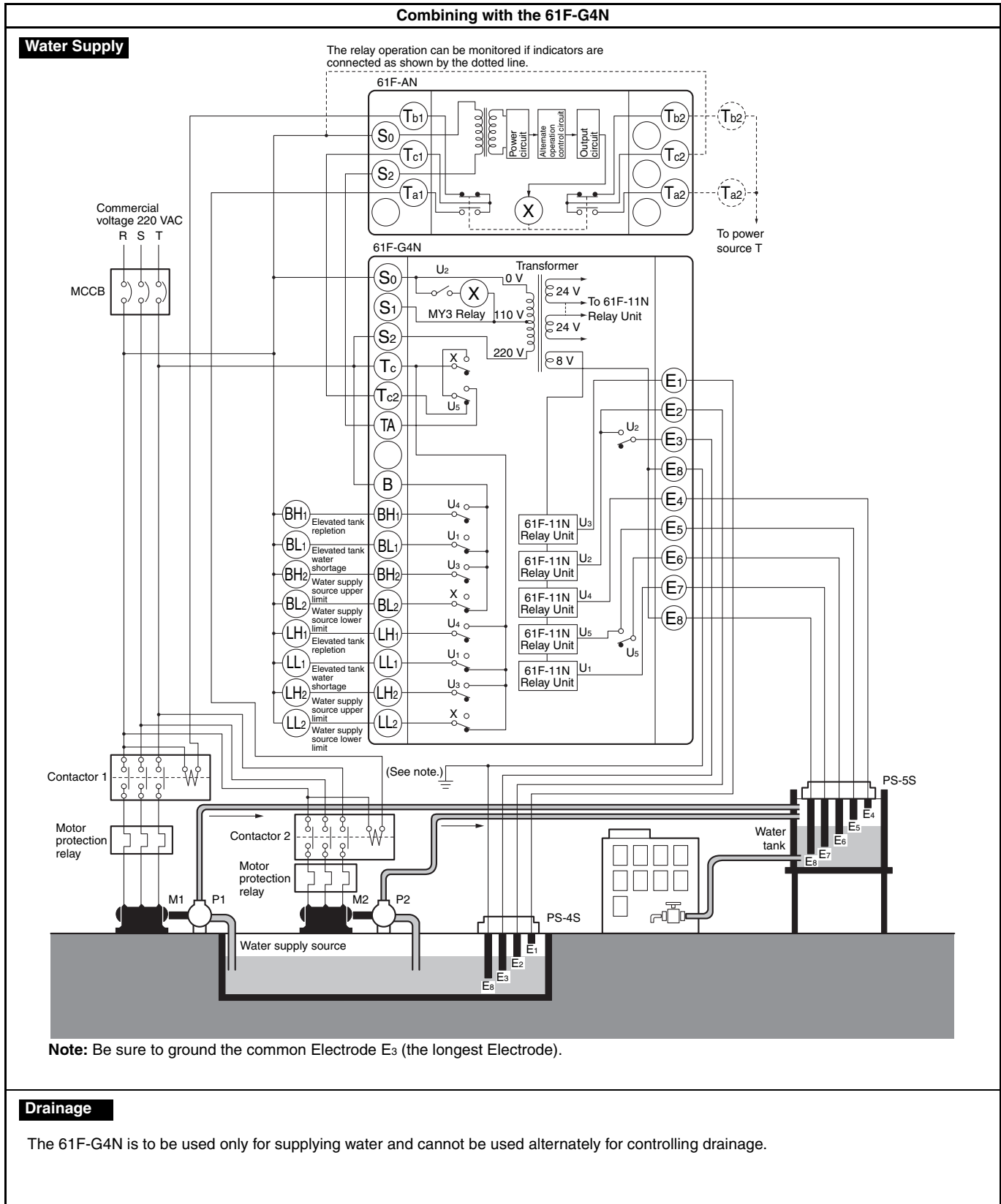
**Note:** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).

## Combining with the 61F-G4N

## Alternate Operation Relay 61F-AN



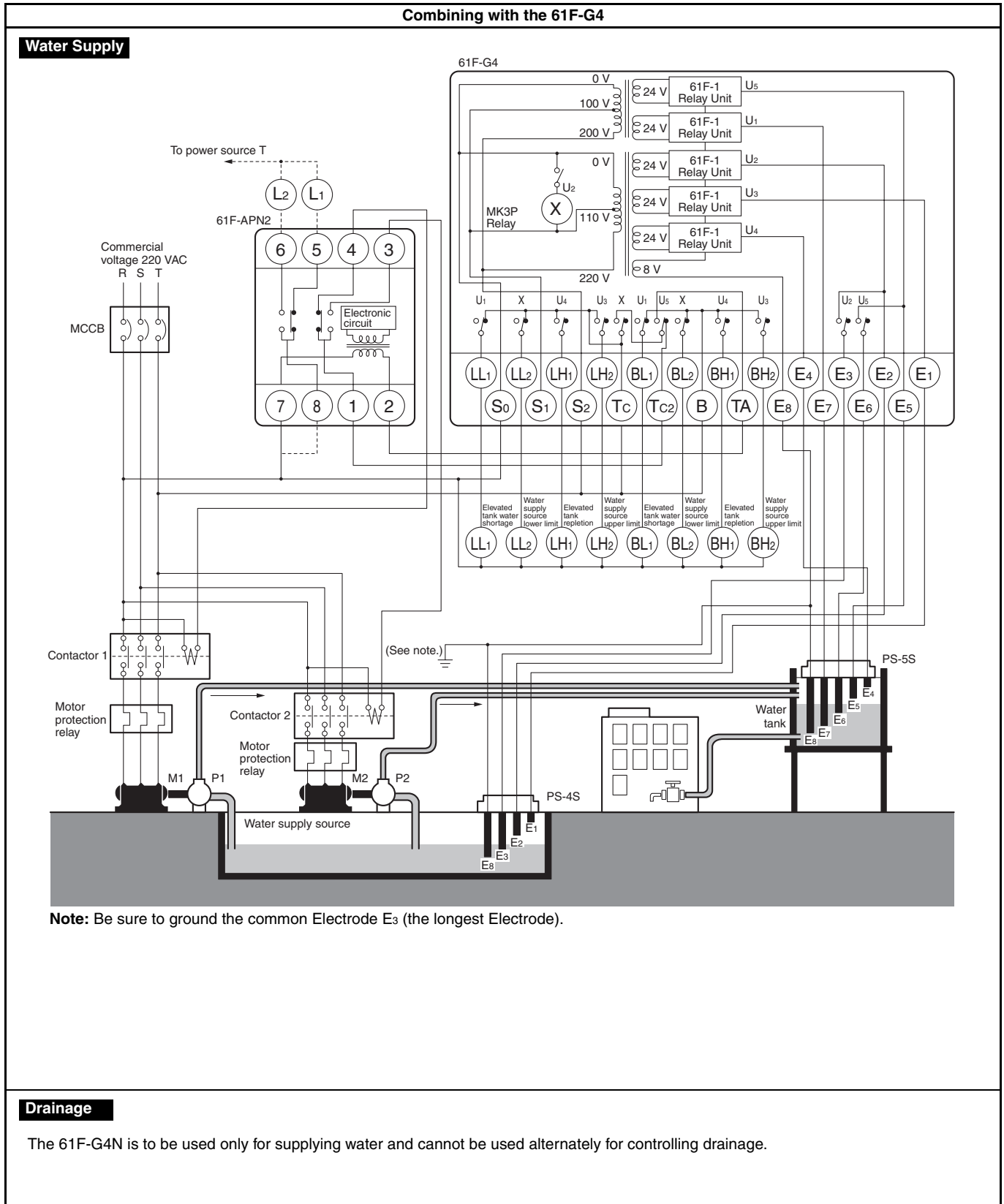
Dimensions:  
page 17

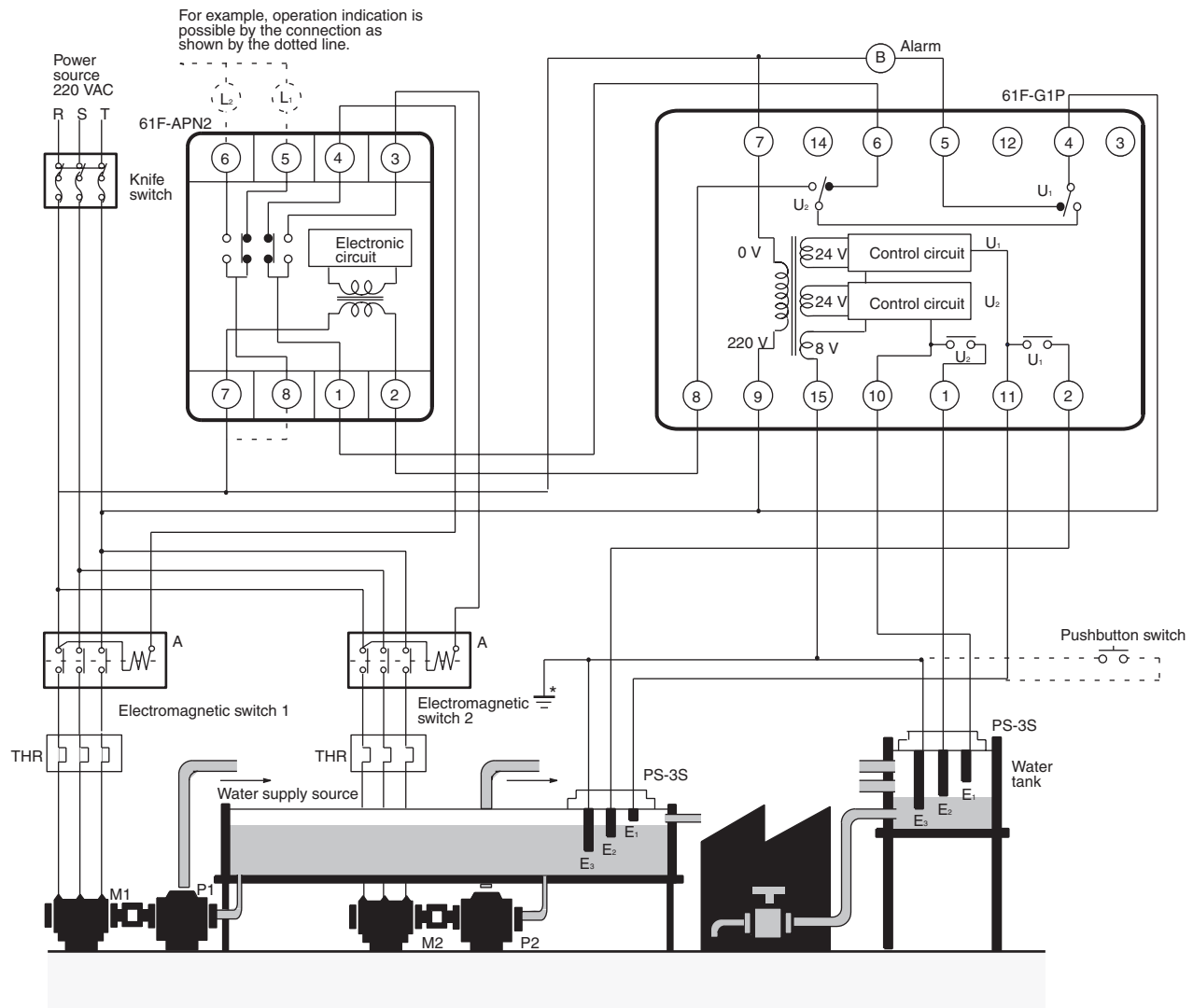


## Combining with the 61F-G4

## Alternate Operation Relay 61F-APN2

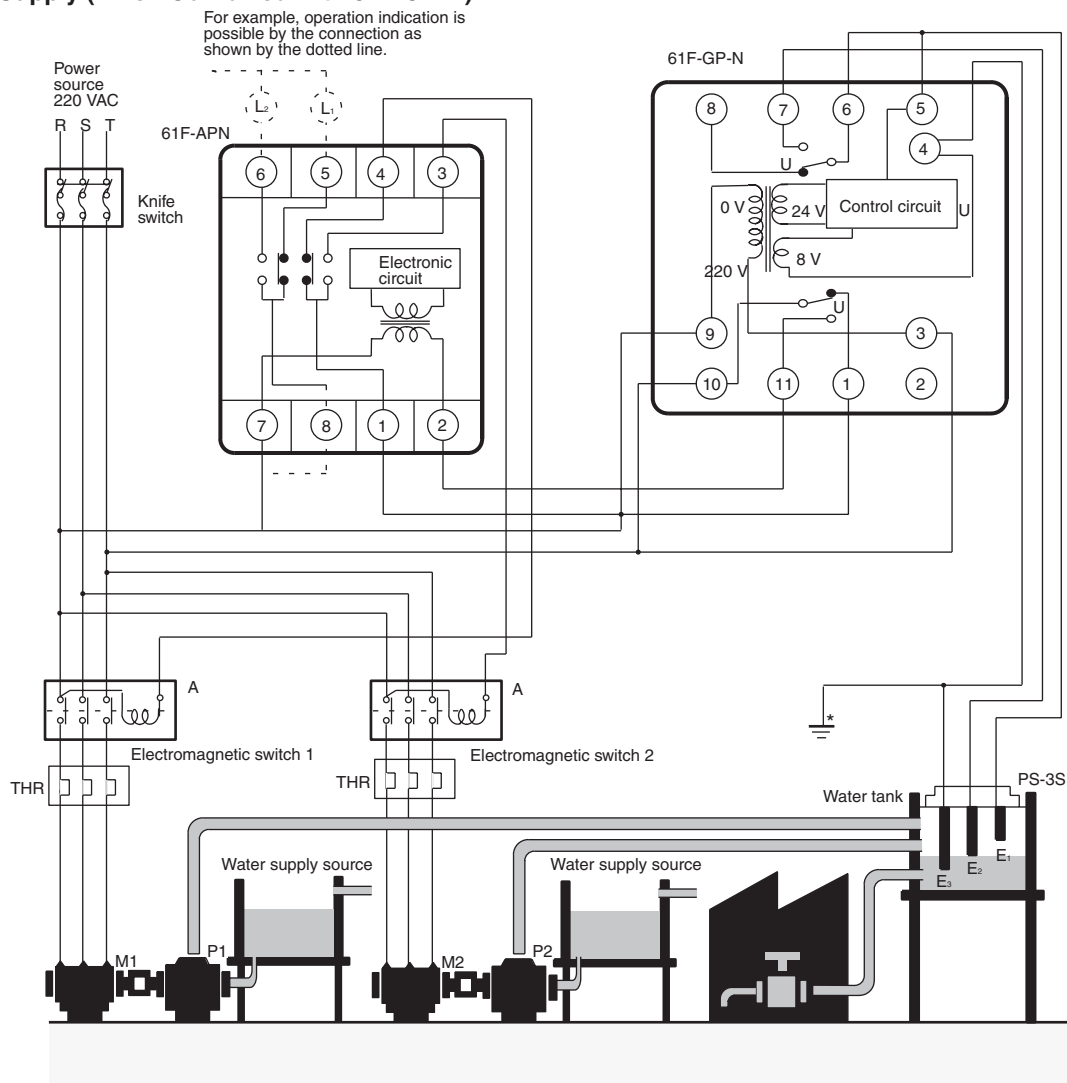
Dimensions:  
page 17



**At 220 VAC****Water Supply (When Combined with 61F-G1P)**

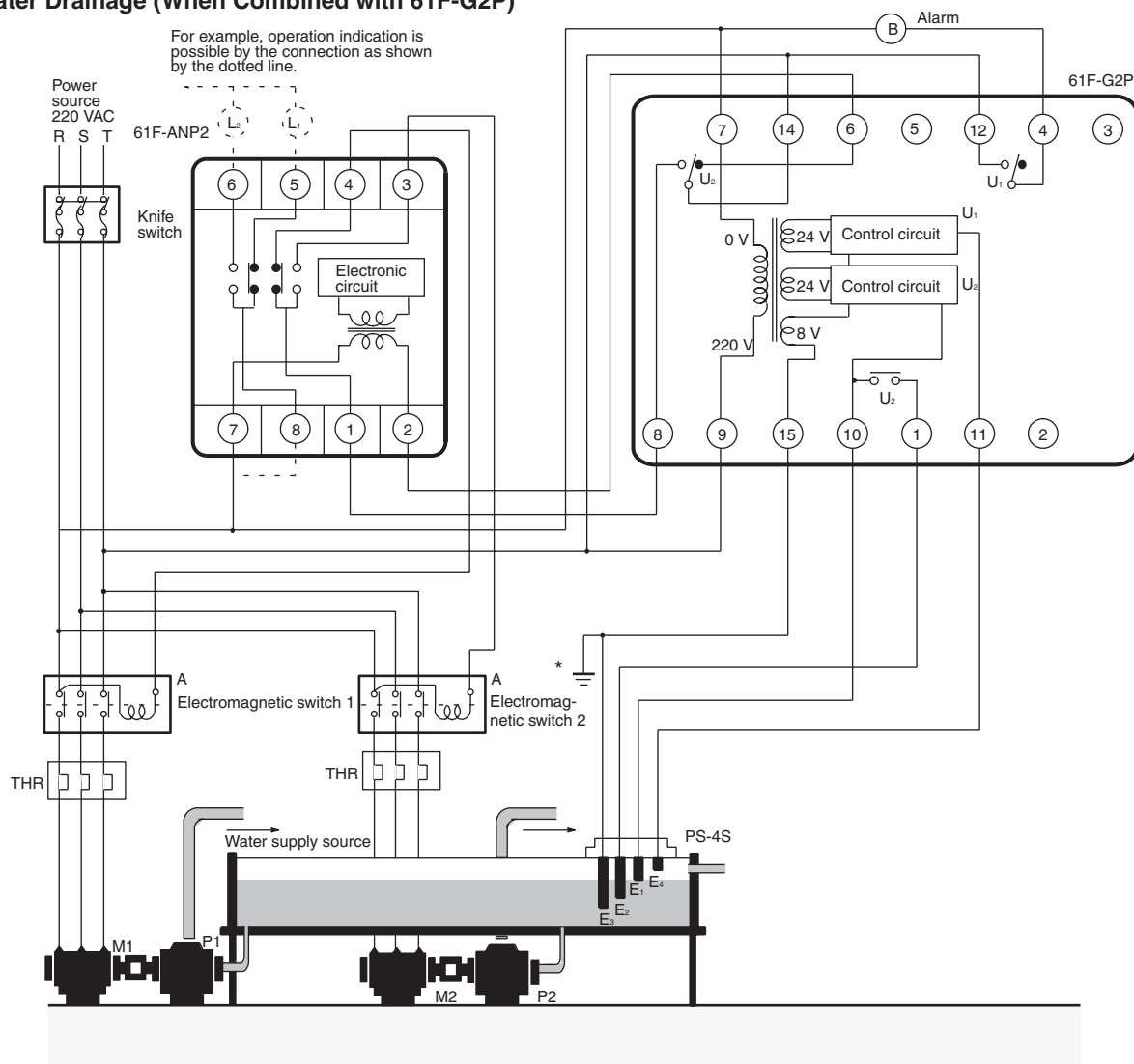
\*Be sure to ground terminal 15.

# Water Supply (When Combined with 61F-GP-N)



\*Be sure to ground terminal 4.

## Water Drainage (When Combined with 61F-G2P)



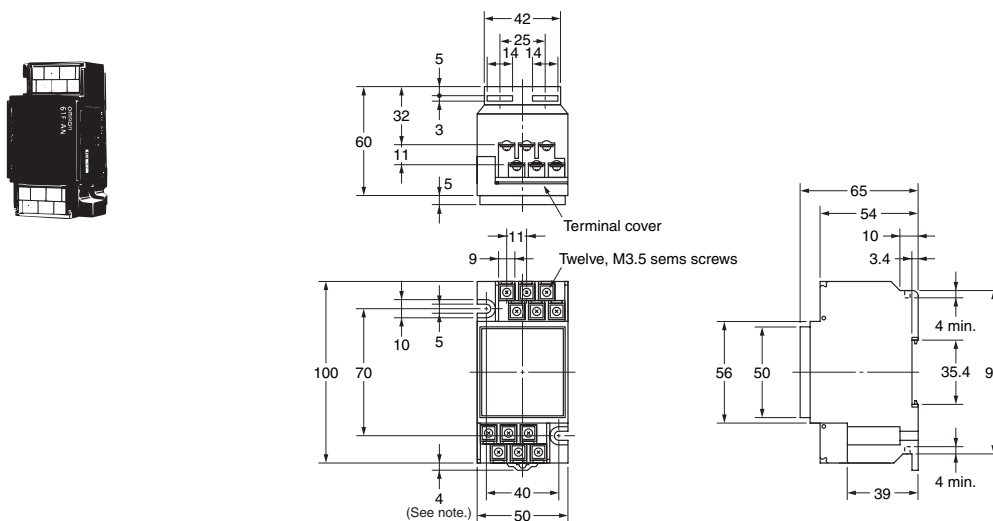
\*Be sure to ground terminal 15.



## Dimensions

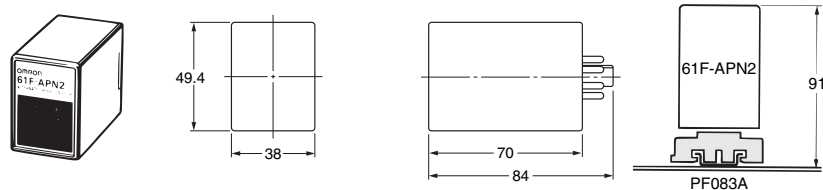
**Note:** All units are in millimeters unless otherwise indicated.

### 61F-AN



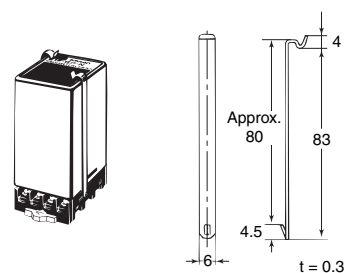
**Note:** Dimensions are with the DIN rail mounting (sliding) bracket attached.

### 61F-APN2



Use a PFC-N8 Mounting Bracket to mount the Level Controller to a PF083A Rail-mounted Socket.

#### PFC-N8



**Note:** PFC-N8 Mounting Bracket (provided with the Level Controller)

## ■ 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.

2010.3

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

**OMRON Corporation**  
Industrial Automation Company

<http://www.ia.omron.com/>

(c)Copyright OMRON Corporation 2010 All Right Reserved.

## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9