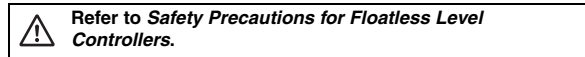


## Improved Design for a More Lightweight Construction and Reduced Standby Power Consumption.

- Standby power reduced to 85% or less of previous models. (Applicable to 61F-GN.)
- Weighs only 85% or less of previous models. (Applicable to 61F-G3N/-G4N.)
- Easy identification of operating status with LED operation indicator.
- Increased reliability of internal relay (micro load: 5 VDC, 1 mA) to enable PLC input.
- Electrode terminals and other wiring terminals are separated for easy wiring.
- Select from three mounting methods: JEM, DIN rail mounting, or screw mounting.

**Note:** LED operation indicator is provided on Controllers manufactured in August 1999 or later.



## Model Number Structure

### ■ Model Number Legend

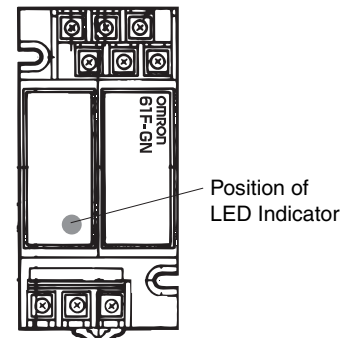
61F-□N□  
1 2

#### 1. Controller Application

- G: Automatic water supply and drainage
- G1: Automatic water supply with idling prevention or water shortage alarm
- G2: Automatic water supply and drainage with abnormal water increase alarm
- G3: Automatic water supply and drainage with full tank and water shortage alarm
- G4: Automatic water supply with water level indicator for water supply tank and water receiving tank and prevention of idling due to water shortage
- I: Liquid level indication and alarm (no two-wire models)

#### 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
- R: Two-wire



**Note:** LED indicator is provided on Controllers manufactured in August 1999 or later. It is not mounted on the case surface. It can be seen through the case.

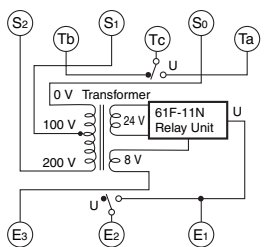
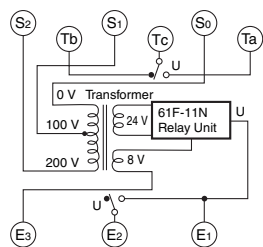
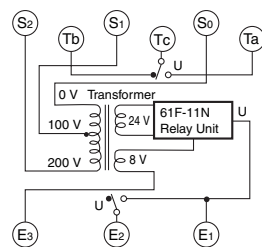
# Ordering Information

| Classification by application     |            |                                              | Set contents                                           | General-purpose | Long-distance (between Controller and Electrodes) (See note 2.) | High-sensitivity (for high specific resistance) | Low-sensitivity (for low specific resistance) | Two wire |
|-----------------------------------|------------|----------------------------------------------|--------------------------------------------------------|-----------------|-----------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------|----------|
| Classification by control purpose |            |                                              |                                                        |                 |                                                                 |                                                 |                                               |          |
| Controller                        | GN Models  | ◆                                            | 61F-GN Base x 1<br>61F-11□ Units x 1                   | 61F-GN          | 61F-GNL                                                         | 61F-GNH                                         | 61F-GND                                       | 61F-GNR  |
|                                   | G1N Models | ▲ w/pump idling prevention                   | 61F-G1N Base x 1<br>61F-11□ Units x 2                  | 61F-G1N         | 61F-G1NL                                                        | 61F-G1NH                                        | 61F-G1ND                                      | 61F-G1NR |
|                                   |            | ▲ w/alarm for abnormally low level           |                                                        |                 |                                                                 |                                                 |                                               |          |
|                                   | G2N Models | ◆ w/alarm for abnormally high level          | 61F-G2N Base x 1<br>61F-11□ Units x 2                  | 61F-G2N         | 61F-G2NL                                                        | 61F-G2NH                                        | 61F-G2ND                                      | 61F-G2NR |
|                                   | G3N Models | ◆ w/alarm for abnormally high and low levels | 61F-G3N Base x 1<br>61F-11□ Units x 3                  | 61F-G3N         | 61F-G3NL                                                        | 61F-G3NH                                        | 61F-G3ND                                      | 61F-G3NR |
|                                   | G4N Models | ▲ w/level display of water source and tank   | 61F-G4N Base x 1<br>61F-11□ Units x 5<br>MY3 Relay x 1 | 61F-G4N         | 61F-G4NL                                                        | 61F-G4NH                                        | 61F-G4ND                                      | 61F-G4NR |
|                                   | IN Models  | Level indication with alarm                  | 61F-IN Base x 1<br>61F-11□ Units x 2                   | 61F-IN          | 61F-INL                                                         | 61F-INH                                         | 61F-IND                                       | 61F-INR  |
| Relay unit                        |            |                                              | 61F-11□ Units x 1                                      | 61F-11N         | 61F-11NL                                                        | 61F-11NH                                        | 61F-11ND                                      | 61F-11NR |

- Note:** 1. ◆: Automatic water supply and drainage control, ▲: Automatic water supply control
2. Subclassified into 2 km and 4 km models according to the model of relay unit used. Specify 2 km or 4 km when ordering.
3. When ordering, specify the desired operating voltage at the end of the model number.  
Example: 61F-GN[110/220 VAC]  
\_\_\_\_\_ Desired supply voltage
4. Contact your OMRON representative for products with voltages other than those listed above.
5. If you order with a standard model number, the corresponding Relay Units are also delivered as part of a set.  
If you order the 61F-GN, one 61F-11 Relay Unit is included in the set.

# Specifications

## Standard Models

| Items                                                     | Type | General-purpose Controllers 61F-□N                                                                     | Long-distance Controllers 61F-□NL 2KM (2 km)<br>61F-□NL 4KM (4 km)                                                                                                                                                        | High-sensitivity Controllers 61F-□NH                                                                      |
|-----------------------------------------------------------|------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Controlling materials and operating conditions            |      | For control of ordinary purified water and wastewater                                                  | For control of ordinary purified water and wastewater. Particularly in cases where the distance between the pumps and water tanks or between supply and receiver tanks are far apart or where remote control is required. | For control of liquids with high specific resistance, such as distilled water                             |
| Rated voltage                                             |      | 100/200, 110/220 or 120/240 VAC, 50/60 Hz (both supported on same model)                               |                                                                                                                                                                                                                           |                                                                                                           |
| Allowable voltage fluctuation range                       |      | 85% to 110% of rated voltage                                                                           |                                                                                                                                                                                                                           |                                                                                                           |
| Inter-electrode voltage                                   |      | 8 VAC                                                                                                  |                                                                                                                                                                                                                           |                                                                                                           |
| Inter-electrode current                                   |      | Approx. 1 mA AC max.                                                                                   |                                                                                                                                                                                                                           |                                                                                                           |
| Power consumption                                         |      | GN□: 3 VA max., G1N□, G2N□, IN□: 4 VA max., G3N□: 5.5 VA max., G4N□: 8.5 VA max.                       |                                                                                                                                                                                                                           |                                                                                                           |
| Inter-electrode operation resistance (recommended values) |      | 0 to approx. 4 kΩ                                                                                      | 0 to 1.8 kΩ (for 2 km)<br>0 to 0.7 kΩ (for 4 km)                                                                                                                                                                          | Approx. 10 kΩ to 40 kΩ (See note 4.)                                                                      |
| Inter-electrode release resistance (recommended values)   |      | Approx. 15 k to ∞Ω                                                                                     | 4 k to ∞Ω (for 2 km)<br>2.5 k to ∞Ω (for 4 km)                                                                                                                                                                            | Approx. 100 k to ∞Ω                                                                                       |
| Cable length (See note 2.)                                |      | 1 km max.                                                                                              | 2 km max.<br>4 km max.                                                                                                                                                                                                    | 50 m max.                                                                                                 |
| Output                                                    |      | 3 A, 200 VAC (Resistive load)                                                                          |                                                                                                                                                                                                                           |                                                                                                           |
| Ambient operating temperature                             |      | -10 to 55°C                                                                                            |                                                                                                                                                                                                                           |                                                                                                           |
| Ambient operating humidity                                |      | 45% to 85%                                                                                             |                                                                                                                                                                                                                           |                                                                                                           |
| Insulation resistance (See note 3.)                       |      | 100 MΩ min. (at 500 VDC)                                                                               |                                                                                                                                                                                                                           |                                                                                                           |
| Dielectric strength (See note 3.)                         |      | 2,000 VAC, 50/60 Hz for 1 min.                                                                         |                                                                                                                                                                                                                           |                                                                                                           |
| Life expectancy                                           |      | Electrical: 250,000 operations min.<br>Mechanical: 10,000,000 operations min.                          |                                                                                                                                                                                                                           |                                                                                                           |
| Weight                                                    |      | GN models: 315 g; G1N, G2N, IN models: 410 g; G3N models: 625g; G4N models: 870 g                      |                                                                                                                                                                                                                           |                                                                                                           |
| Internal Circuit Diagrams                                 |      | Example: 61F-GN<br> | Example: 61F-GNL<br>                                                                                                                  | Example: 61F-GNH<br> |

**Note:** 1. The □ in the model name represents G, G1, G2, G3, G4, or I.

- The length when using completely insulated, 600-V, 3-core (0.75 mm<sup>2</sup>) cabtire cables. Usable cable lengths will become shorter as the cable diameter or number of cores becomes larger due to increased floating capacity. For details, refer to *Safety Precautions for Floatless Level Controllers*.
- The insulation resistance and dielectric strength are the 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*.
- Application is possible with 10 kΩ or less, however, this may cause reset failures.

| Items                                                            | Type | Low-sensitivity Controller 61F-□ND                                                                                         | Two-wire Controller 61F-□NR                                                                                                      |
|------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Controlling materials and operating conditions</b>            |      | For control of liquids with low specific resistance, such as salt water, wastewater, acid chemicals, or alkaline chemicals | For control of ordinary purified water or wastewater. Used with a Two-wire Electrode Holder (incorporating a resistor of 6.8 kΩ) |
| <b>Rated voltage</b>                                             |      | 100/200, 110/220 or 120/240 VAC, 50/60 Hz (supported by the same model)                                                    |                                                                                                                                  |
| <b>Allowable Voltage Fluctuation</b>                             |      | 85% to 110% of rated voltage                                                                                               |                                                                                                                                  |
| <b>Inter-electrode voltage</b>                                   |      | 8 VAC                                                                                                                      |                                                                                                                                  |
| <b>Inter-electrode current</b>                                   |      | Approx. 1 mA AC max.                                                                                                       |                                                                                                                                  |
| <b>Power consumption</b>                                         |      | GN□: 3 VA max., G1N□, G2N□, IN□: 4 VA max., G3N□: 5.5 VA max., G4N□: 8.5 VA max.                                           |                                                                                                                                  |
| <b>Inter-electrode operation resistance (recommended values)</b> |      | 0 to approx. 1.8 kΩ                                                                                                        | Approx. 0 to 1.1 kΩ                                                                                                              |
| <b>Inter-electrode release resistance (recommended values)</b>   |      | Approx. 5 k to ∞ Ω                                                                                                         | Approx. 15 k to ∞ Ω                                                                                                              |
| <b>Cable length (See note 2.)</b>                                |      | 1 km max.                                                                                                                  | 800 m max.                                                                                                                       |
| <b>Output</b>                                                    |      | 3 A, 200 VAC (Resistive load)                                                                                              |                                                                                                                                  |
| <b>Ambient operating temperature</b>                             |      | -10 to 55°C                                                                                                                |                                                                                                                                  |
| <b>Ambient operating humidity</b>                                |      | 45% to 85%                                                                                                                 |                                                                                                                                  |
| <b>Insulation resistance (See note 3.)</b>                       |      | 100 MΩ min. (at 500 VDC)                                                                                                   |                                                                                                                                  |
| <b>Dielectric strength (See note 3.)</b>                         |      | 2,000 VAC, 50/60 Hz for 1 min.                                                                                             |                                                                                                                                  |
| <b>Life expectancy</b>                                           |      | Electrical: 250,000 operations min.<br>Mechanical: 10,000,000 operations min.                                              |                                                                                                                                  |
| <b>Weight</b>                                                    |      | GN models: 315 g; G1N, G2N, IN models: 410 g; G3N models: 625g; G4N models: 870 g                                          |                                                                                                                                  |
| <b>Internal Circuit Diagrams</b>                                 |      | Example: 61F-GND<br>                                                                                                       | Example: 61F-GNR<br>                                                                                                             |

- Note:**
1. The □ in the model name represents G, G1, G2, G3, G4, or I.
  2. The length when using completely insulated, 600-V, 3-core (0.75 mm<sup>2</sup>) cabtire cables. Usable cable lengths will become shorter as the cable diameter or number of cores becomes larger due to increased floating capacity. For details, refer to *Safety Precautions for Floatless Level Controllers*.
  3. The insulation resistance and dielectric strength are the 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*.
  4. Application is possible with 10 kΩ or less, however, this may cause reset failures.

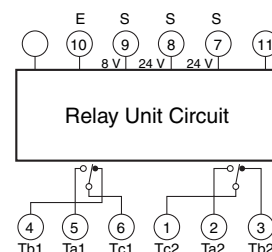
## Relay Unit

The Relay Unit can be replaced without removing the wires for maintenance inspections. It can also be replaced with other Relay Units.

## Compatibility with General Purpose Model (61F-11N)

|                                     |                                            |              |
|-------------------------------------|--------------------------------------------|--------------|
| <b>General-purpose Controller</b>   | 61F-11N                                    | ---          |
| <b>Long-distance Controllers</b>    | 61F-11NL (for 2 km)<br>61F-11NL (for 4 km) | Provided     |
| <b>High-sensitivity Controllers</b> | 61F-11NH                                   |              |
| <b>Low-sensitivity Controller</b>   | 61F-11ND                                   |              |
| <b>Two-wire Controller</b>          | 61F-11NR                                   | Not provided |

## Terminal Arrangement



### Ordering Example

If you order the components listed above, the corresponding Relay Unit will be supplied with the Controller.

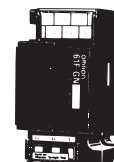
Example: If a 61F-GN Controller is ordered, a 61F-11N Relay Unit will also be included.

## ■ Connections

### Automatic Water Supply Control

Compact Model  
61F-GN

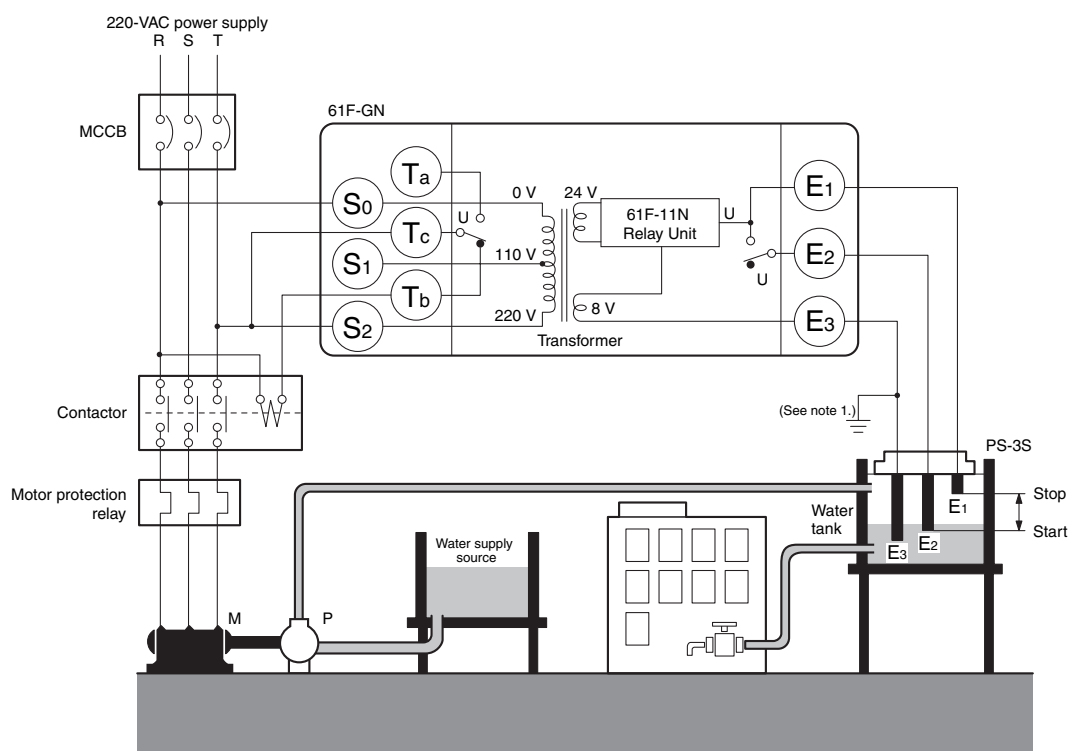
Dimensions  
page 16



#### Automatic Water Supply Control

##### Connections

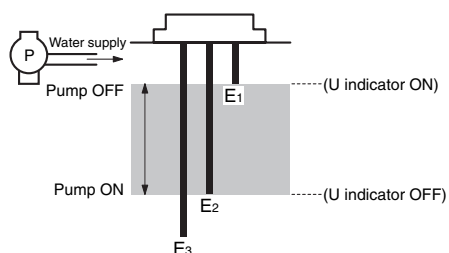
- Connect contactor coil terminal to Tb.
- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC



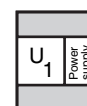
**Note:** 1. Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).  
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

##### Principles of Operation

The pump stops (U indicator ON) when the water level reaches E<sub>1</sub> and starts (U indicator OFF) when the water level drops below E<sub>2</sub>.



##### Relay Unit Layout



## Automatic Drainage Control

Compact Model  
61F-GN

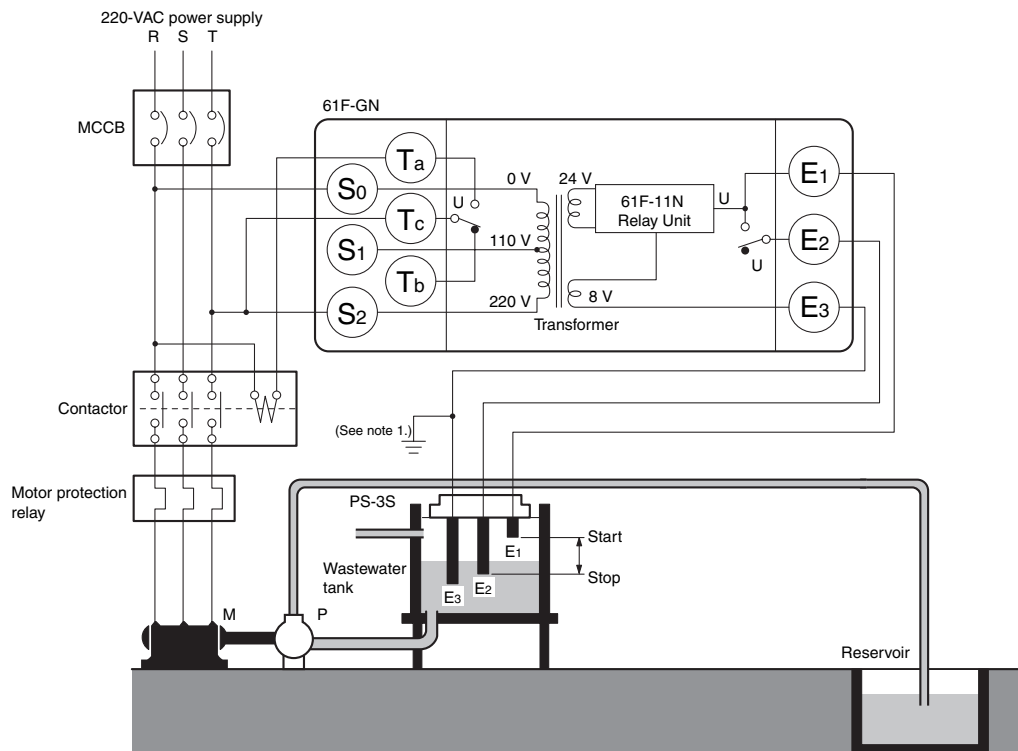
Dimensions  
page 16



### Automatic Drainage Control

#### Connections

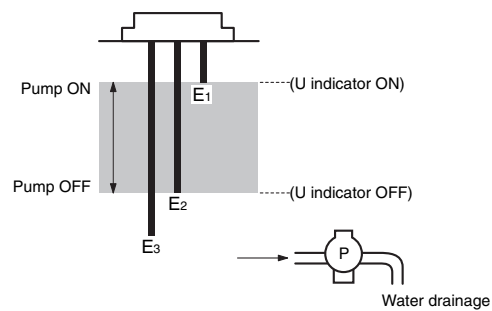
- Connect the contactor coil terminal to Ta.
- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC



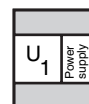
**Note: 1.** Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).  
**2.** The above wiring diagram is for a rated voltage of 110/220 VAC.

#### Principles of Operation

- The pump starts (U indicator ON) when the water level reaches E<sub>1</sub> and stops (U indicator OFF) when the water level drops below E<sub>2</sub>.



#### Relay Unit Layout



## Compact Model 61F-G1N

**Dimensions**  
**page 16**

## Connections

- [illegible]

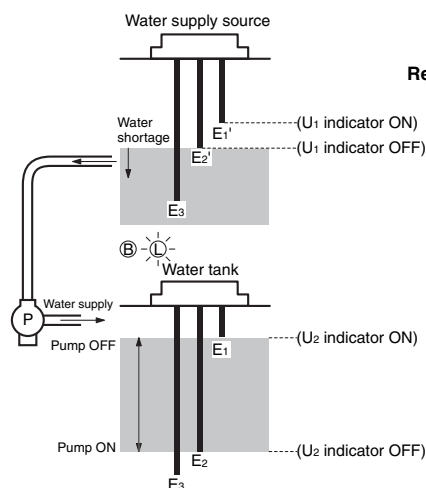
## Test Operation/ Recovering from Power Interruptions

If the water supply source level has not yet reached E<sub>1</sub>' when starting the pump or after recovering from a power interruption, press the pushbutton switch to start the pump (U<sub>1</sub> indicator ON) by momentarily short-circuiting E<sub>1</sub>' and E<sub>3</sub>.

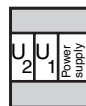
**Note:**

1. Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

- The pump starts ( $U_2$  indicator OFF) when the water level drops below  $E_2$  and stops ( $U_2$  indicator ON) when water level reaches  $E_1$ .
- The pump is forced to stop when the water supply source level drops below  $E_2'$  ( $U_1$  indicator OFF) to prevent the pump from idling and gives an alarm.



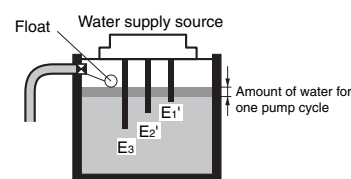
## Relay Unit Layout



### Note

- Length of Electrode E1'

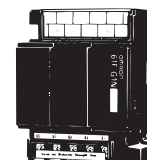
When installing the Controller in locations where there is a possibility of momentary power interrupts or blackouts, the length of E1' should be made so that the amount of water corresponding to one pump cycle does not expose the Electrodes. This will prevent the E2' self-holding circuit from failing.



## Automatic Water Supply Control with Abnormal Water Shortage Alarm

## Compact Model 61F-G1N

Dimensions  
page 16



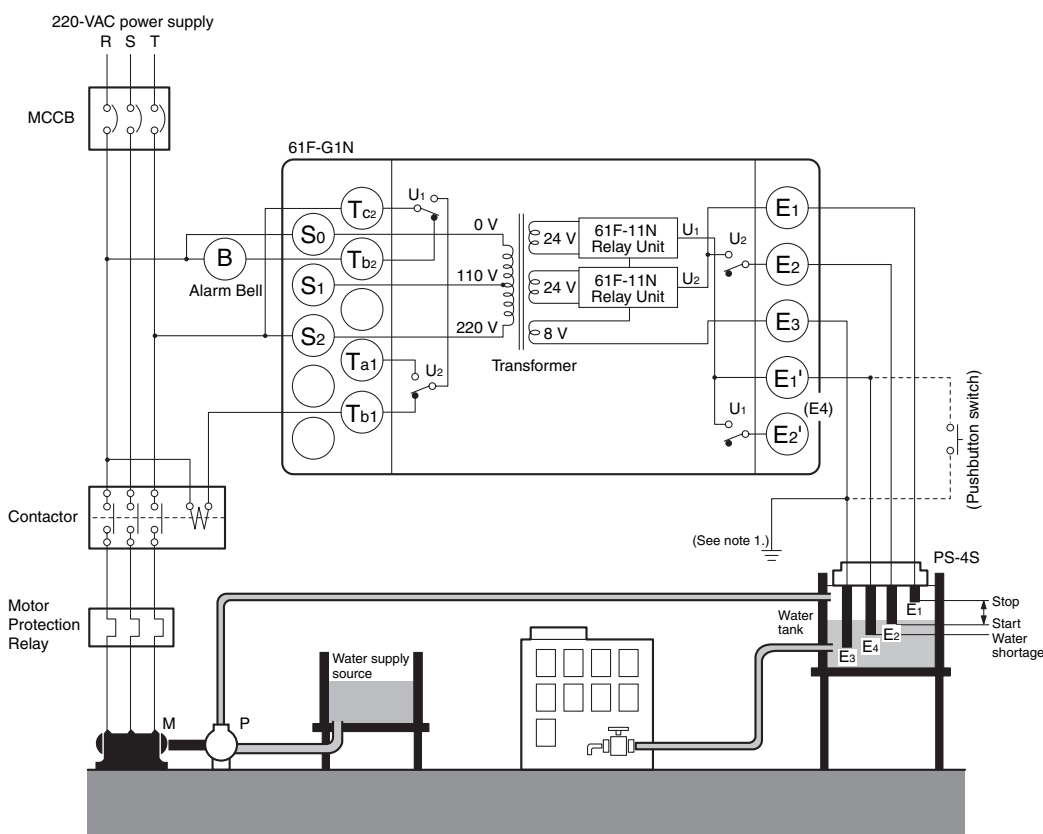
### Automatic Water Supply Control with Abnormal Water Shortage Alarm

#### Connections

- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC
- Insert a pushbutton switch (NO contact) between E<sub>3</sub> and E<sub>4</sub>.
- If the pump stops upon releasing the pushbutton switch, keep pressing the pushbutton switch.
- Connect the E<sub>4</sub> electrode for the water shortage alarm to the E<sub>1</sub>' terminal.

#### Test Operation/ Recovering from Power Interruptions

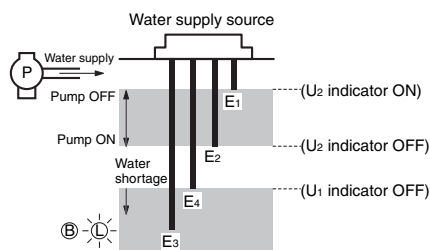
If the water level has not yet reached E<sub>4</sub> when starting the pump or after recovering from a power interruption, press the pushbutton switch to start the pump by short-circuiting E<sub>3</sub> and E<sub>4</sub> (U<sub>1</sub> indicator ON).



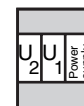
- Note:** 1. Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).  
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

#### Principles of Operation

- The pump stops (U<sub>2</sub> indicator ON) when the water level reaches E<sub>1</sub> and starts (U<sub>2</sub> indicator OFF) when water level drops below E<sub>2</sub>.
- If the water level drops below E<sub>4</sub> for any reason, an alarm is given (U<sub>1</sub> indicator OFF).



#### Relay Unit Layout



## Compact Model 61F-G2N

**Dimensions**  
**page 16**

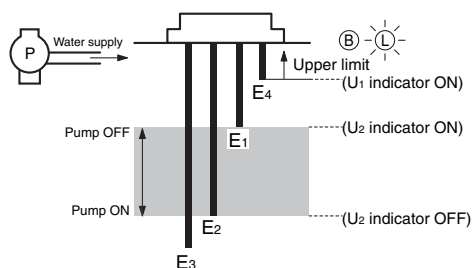
## Connections

- 

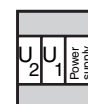
**Note:**

1. Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

- The pump starts ( $U_2$  indicator OFF) when the water level reaches  $E_2$  and stops ( $U_2$  indicator ON) when the water level rises above  $E_1$ .
- If the water level reaches  $E_4$  for any reason, an alarm is given ( $U_1$  indicator ON).



### Relay Unit Layout



Automatic Drainage Control with  
Abnormal Water Increase Alarm

Compact Model  
61F-G2N

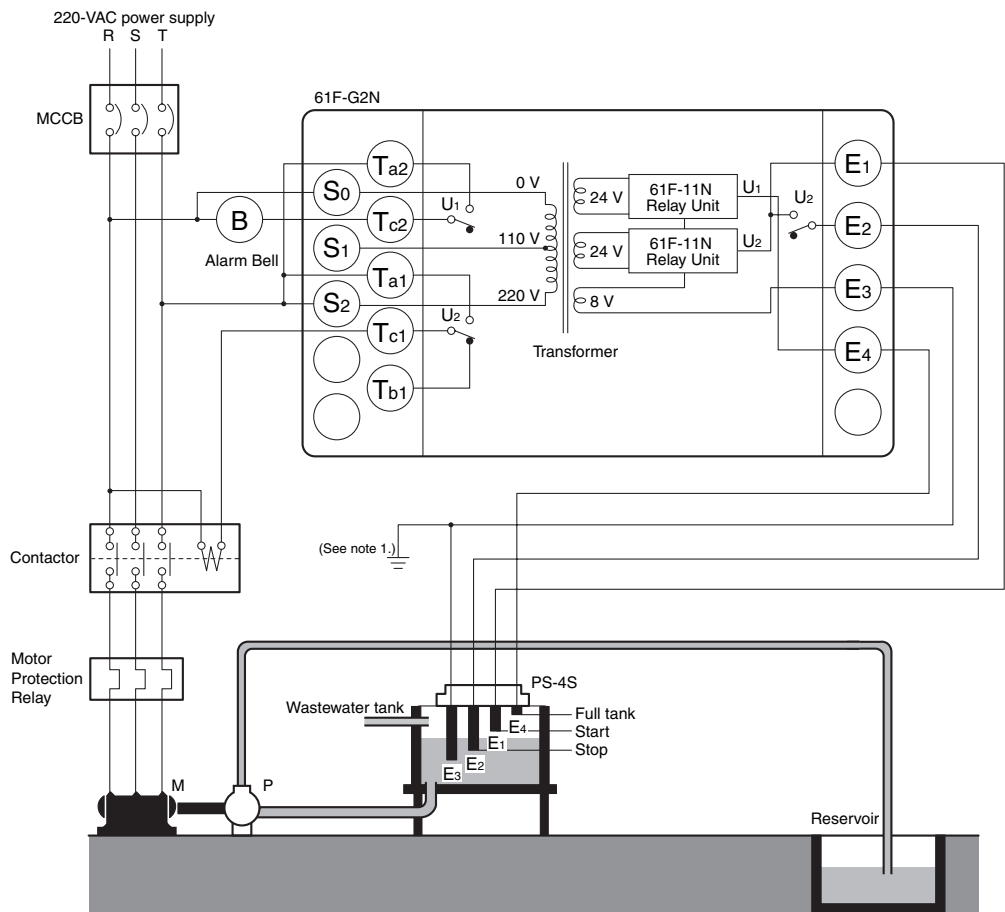
Dimensions  
page 16



Automatic Drainage Control with Abnormal Water Increase Alarm

Connections

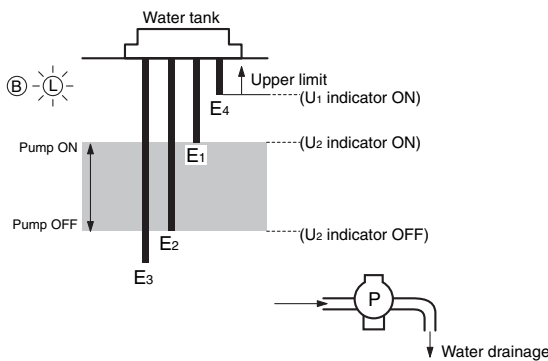
- Connect power supply S<sub>2</sub> to terminal Ta<sub>1</sub>.
- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC



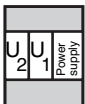
- Note:** 1. Be sure to ground the common Electrode E<sub>5</sub> (the longest Electrode).  
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

Principles of Operation

- The pump starts (U<sub>2</sub> indicator ON) when the water level reaches E<sub>1</sub> and stops (U<sub>2</sub> indicator OFF) when the water level drops below E<sub>2</sub>.
- If the water level reaches E<sub>4</sub> for any reason, an alarm is given (U<sub>1</sub> indicator ON).



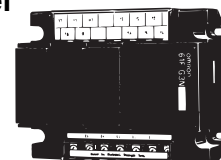
Relay Unit Layout



# Automatic Water Supply Control with Full Tank and Water Shortage Alarm

Compact Model  
61F-G3N

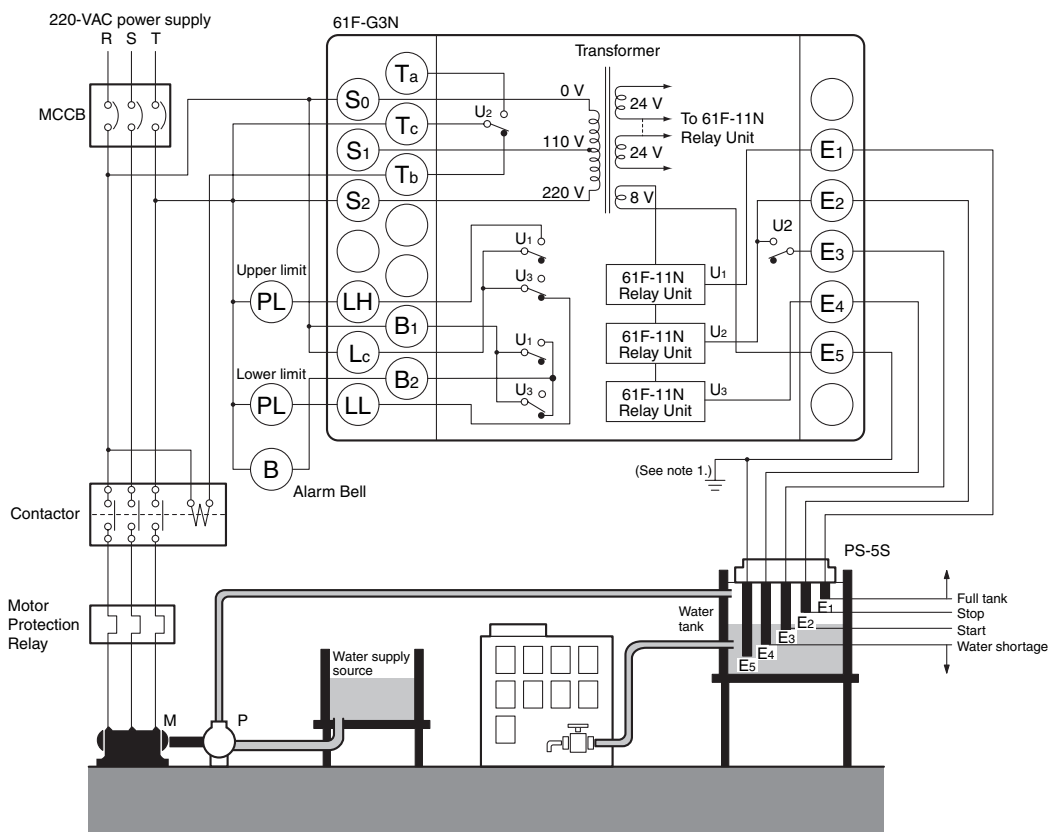
Dimensions  
page 17



## Automatic Water Supply Control with Full Tank and Water Shortage Alarm

### Connections

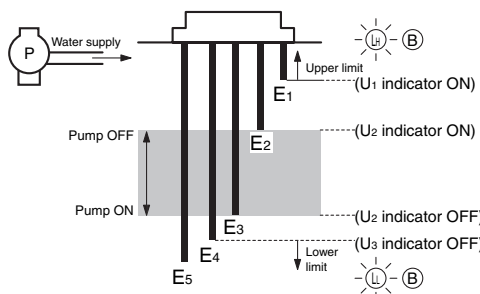
- Connect contactor coil terminal to Tb.
- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC



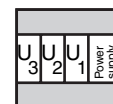
- Note: 1.** Be sure to ground the common Electrode E<sub>5</sub> (the longest Electrode).  
**2.** The above wiring diagram is for a rated voltage of 110/220 VAC.

### Principles of Operation

- The pump starts (U<sub>2</sub> indicator ON) when the water level reaches E<sub>2</sub> and stops (U<sub>2</sub> indicator OFF) when the water level drops below E<sub>3</sub>.
- If the water level rises to E<sub>1</sub> for any reason, the upper-limit indicator turns ON and an alarm is given (U<sub>1</sub> indicator ON). If the water level drops below E<sub>4</sub> for any reason, the lower-limit indicator turns ON and an alarm is given (U<sub>3</sub> indicator OFF).



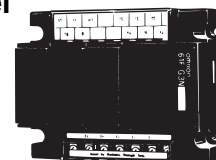
### Relay Unit Layout



# Automatic Drainage Control with Full Tank and Water Shortage Alarm

Compact Model  
61F-G3N

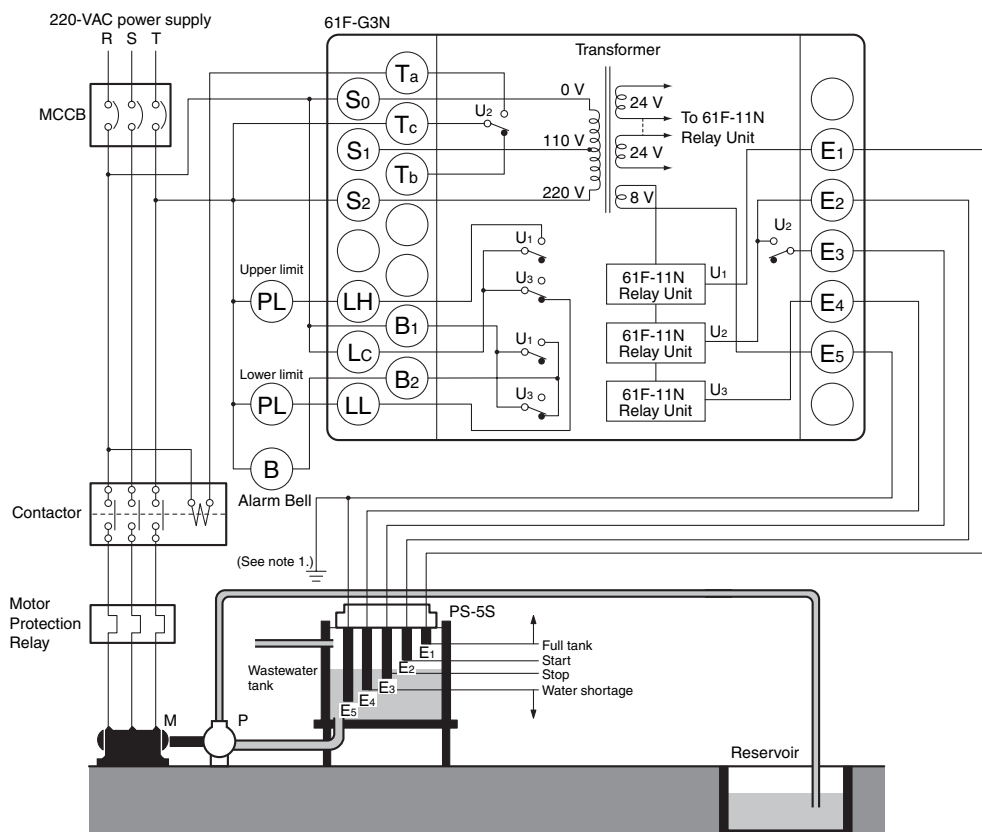
Dimensions  
page 17



## Automatic Drainage Control with Full Tank and Water Shortage Alarm

### Connections

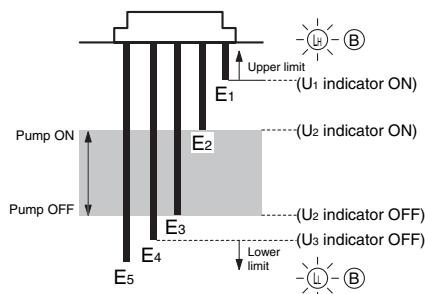
- Connect contactor coil terminal to Ta.
- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC



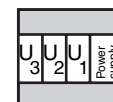
- Note:** 1. Be sure to ground the common Electrode E<sub>5</sub> (the longest Electrode).  
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

### Principles of Operation

- The pump starts (U<sub>2</sub> indicator ON) when the water level reaches E<sub>2</sub> and stops (U<sub>2</sub> indicator OFF) when the water level reaches E<sub>3</sub>.
- If the water level rises to E<sub>1</sub> for any reason, the upper-limit indicator turns ON and an alarm is given (U<sub>1</sub> indicator ON). If the water level drops below E<sub>4</sub> for any reason, the lower-limit indicator turns ON and an alarm is given (U<sub>3</sub> indicator OFF).



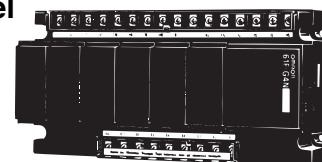
### Relay Unit Layout



# Water Source Level Indication with Prevention of Pump Idling Due to Water Shortage, and Automatic Water Supply Control with Indication of Water Level in Elevated Tank

## Compact Model 61F-G4N

Dimensions  
page 17



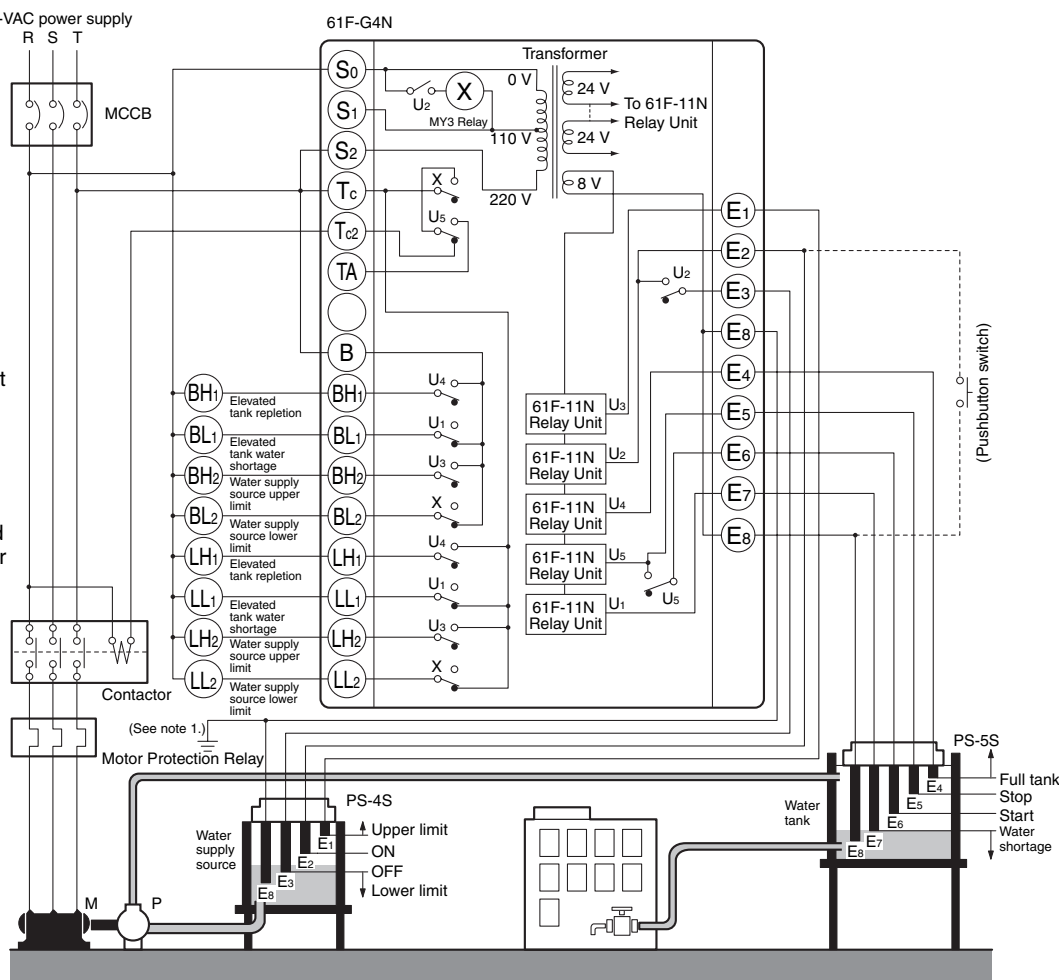
### Water Source Level Indication with Prevention of Pump Idling Due to Water Shortage, and Automatic Water Supply Control with Indication of Water Level in Elevated Tank

#### Connections

- Connect to power supply terminals.  
S0-S1: 110 VAC  
S0-S2: 220 VAC
- Insert a pushbutton switch (NO contact) between E<sub>2</sub> and E<sub>8</sub> as shown by the dotted line.
- Do not press the pushbutton switch if the pump stops during normal operation after an alarm is given for low water level (i.e., the water level has not reached E<sub>3</sub>).

#### Test Operation/Recovering from Power Interruptions

When starting the pump and after recovering from a power interruption, if the water source level has not yet reached E<sub>2</sub> (U<sub>2</sub> indicator OFF), press the pushbutton switch to start the pump by momentarily short-circuiting E<sub>2</sub> and E<sub>8</sub>.

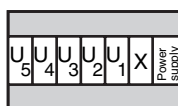


**Note:** 1. Be sure to ground the common Electrode E<sub>8</sub> (the longest Electrode).  
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

#### Principles of Operation

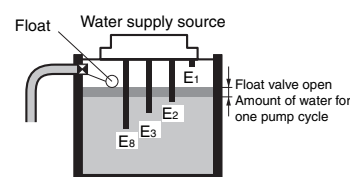
- Insert four Electrodes in the water supply source and five Electrodes in the elevated water tank.
- The lower-limit indicator for the water supply source remains ON while the water source level is below E<sub>3</sub> (U<sub>2</sub> indicator OFF).
- When the water level rises to E<sub>2</sub>, the lower-limit indicator turns OFF (U<sub>2</sub> indicator ON) and the pump is ready for operation.
- When the water level reaches E<sub>1</sub>, the upper-limit indicator turns ON (U<sub>3</sub> indicator ON).
- The water-shortage indicator for the elevated tank remains ON while the water level in the elevated tank is below E<sub>7</sub>. The indicator turns OFF (U<sub>1</sub> indicator ON) when the water level rises to E<sub>7</sub>.
- The pump stops (U<sub>5</sub> indicator ON) when the water level reaches E<sub>5</sub> and starts (U<sub>5</sub> indicator OFF) when the water level drops below E<sub>6</sub>.
- If the water level reaches E<sub>4</sub> for any reason, the tank repletion indicator for the elevated tank turns ON (U<sub>4</sub> indicator ON).

#### Relay Unit Layout

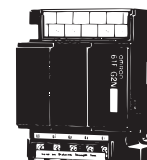


#### Precaution

- Length of Electrode E<sub>2</sub>  
When installing the Controller in locations where there is a possibility of momentary power interruptions or blackouts, the length of E<sub>2</sub> should be made so that the amount of water corresponding to one pump cycle does not expose the Electrodes. This will prevent the E<sub>3</sub> self-holding circuit from failing.



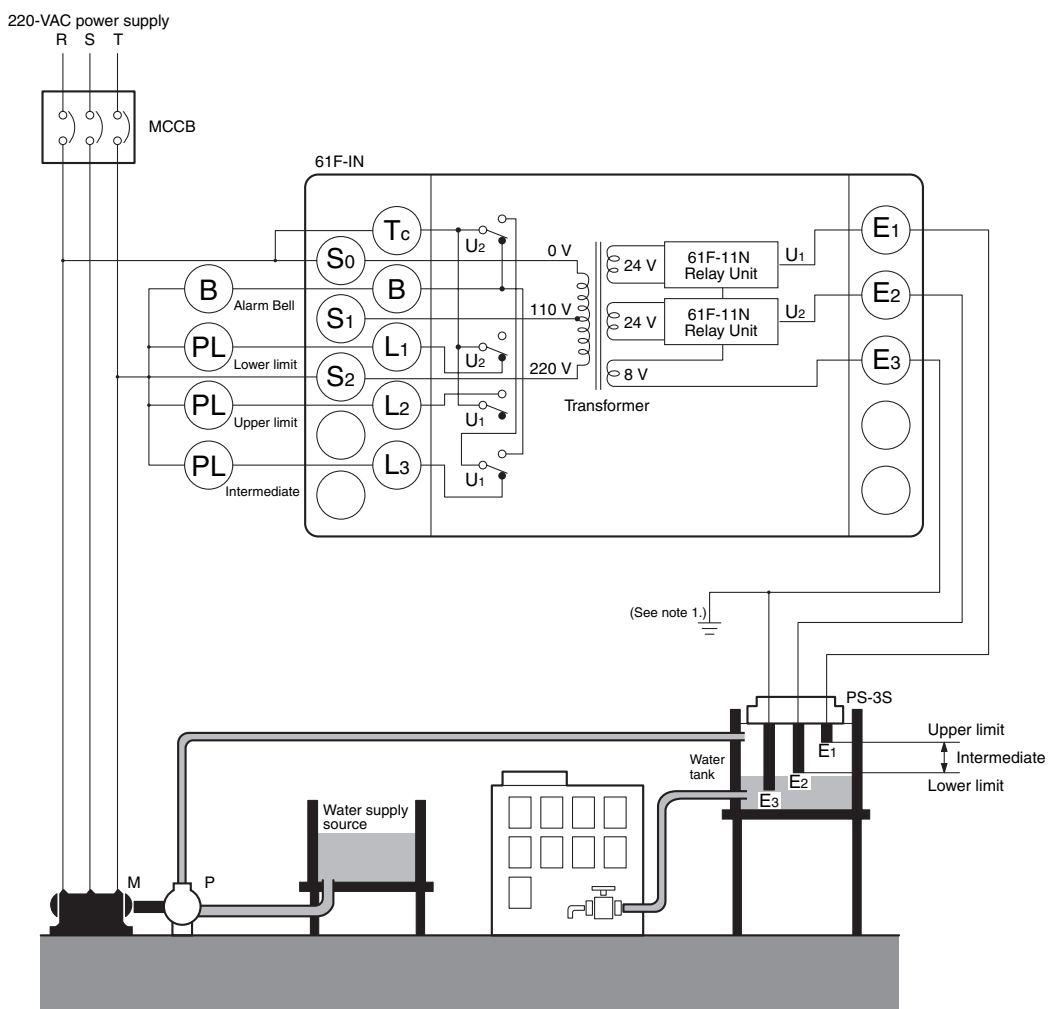
## Liquid Level Indication and Alarm

Compact Model  
61F-INDimensions  
page 16

## Liquid Level Indication and Alarm

## Connections

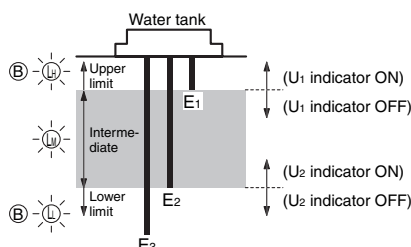
- Connect to power supply terminals.  
S<sub>0</sub>-S<sub>1</sub>: 110 VAC  
S<sub>0</sub>-S<sub>2</sub>: 220 VAC



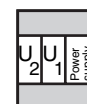
- Note:** 1. Be sure to ground the common Electrode E<sub>3</sub> (the longest Electrode).  
2. The above wiring diagram is for a rated voltage of 110/220 VAC.

## Principles of Operation

- When the water level drops below E<sub>2</sub>, the lower-limit indicator turns ON and an alarm is given (U<sub>2</sub> indicator OFF).
- When the water level reaches E<sub>2</sub>, the alarm turns OFF and the intermediate indicator turns ON (U<sub>2</sub> indicator ON).
- When the water level rises to E<sub>1</sub>, the upper-limit indicator turns ON and an alarm is given (U<sub>1</sub> indicator ON).



## Relay Unit Layout



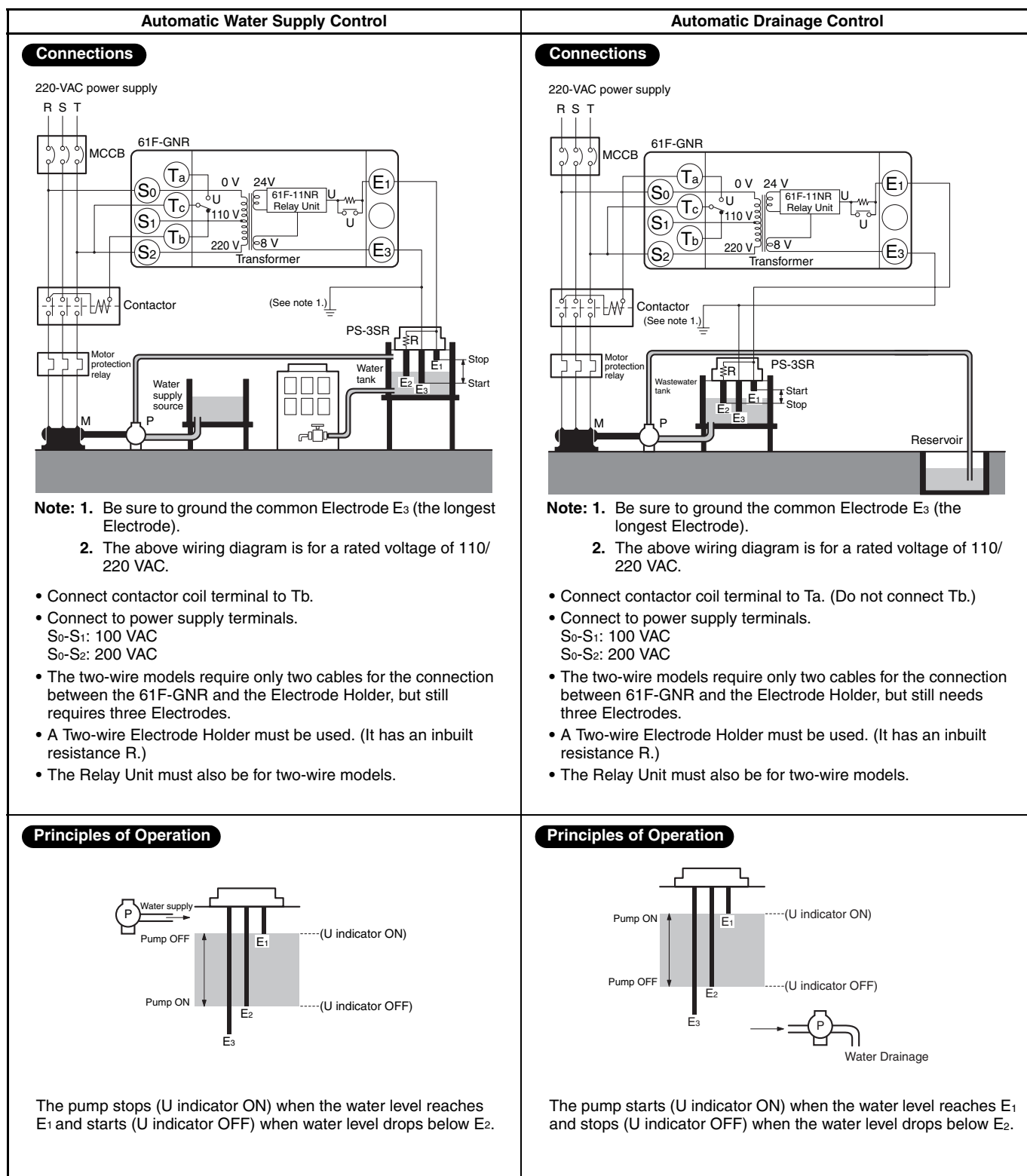
## ■ Two-wire Connection

The wiring between the 61F Controller and the Electrodes can be reduced by removing the self-hold circuit. This arrangement is called a two-wire connection. Three Electrodes are still required. Both the 61F Controller (including the Relay Unit) and Electrode Holder must be two-wire models. Two-wire Electrode Holders have an in-built resistor of 6.8 kΩ 1W.

## Automatic Water Supply and Drainage Control

## Compact Model 61F-GNR

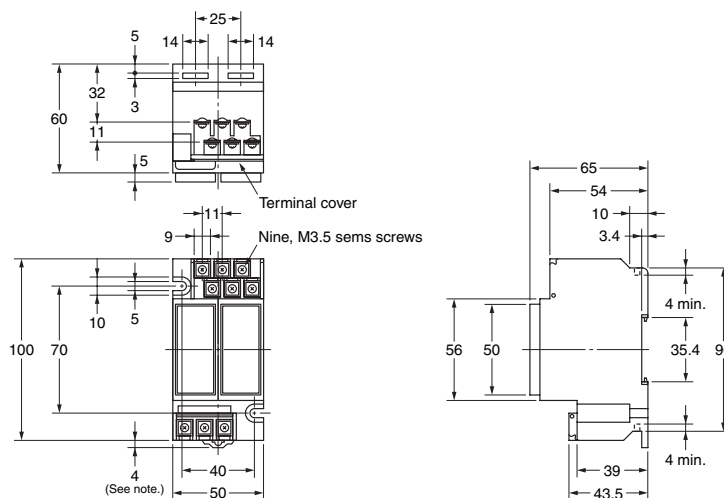
**Dimensions**  
page 16



# Dimensions

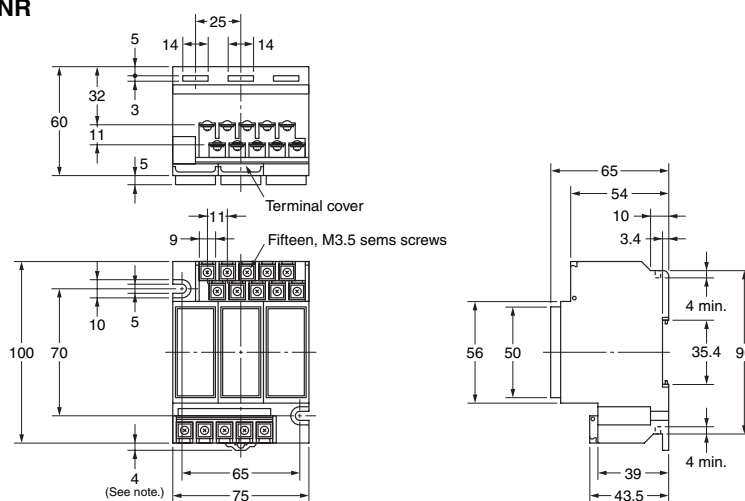
**Note:** All units are in millimeters unless otherwise indicated.

## 61F-GN, -GNL, -GNH, -GND, -GNR



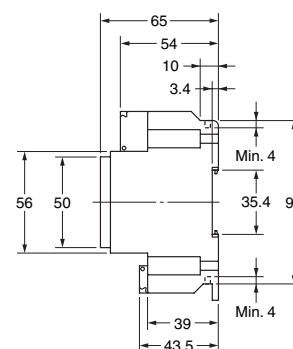
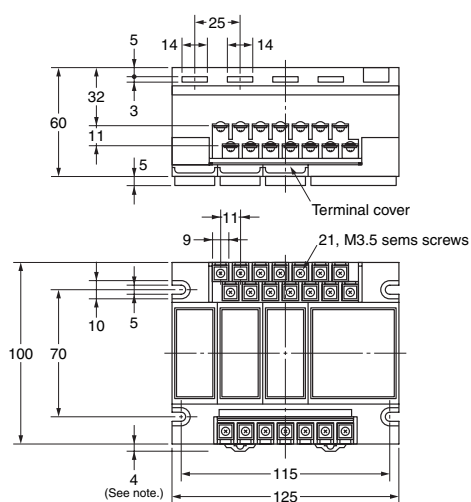
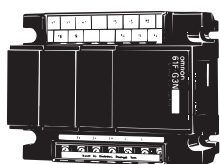
**Note:** Dimensions are with the DIN rail mounting (sliding) bracket attached.

## 61F-G1N, -G1NL, -G1NH, -G1ND, -G1NR 61F-G2N, -G2NL, -G2NH, -G2ND, G2NR 61F-IN, -NL, -INH, -IND



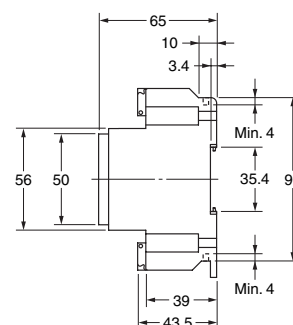
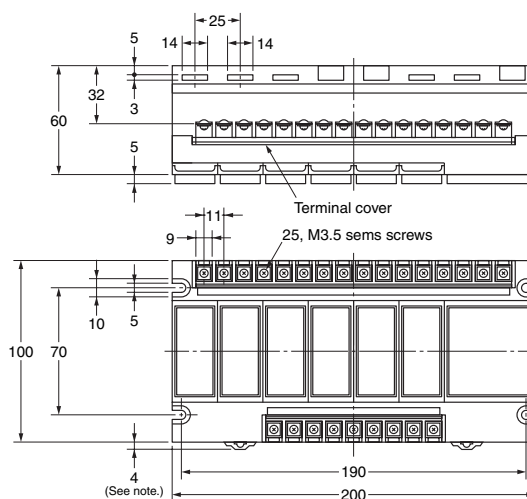
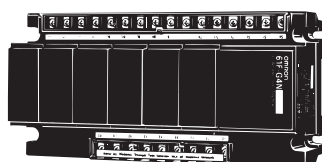
**Note:** Dimensions are with the DIN rail mounting (sliding) bracket attached.

## 61F-G3N, -G3NL, -G3NH, -G3ND, -G3NR, -G3N-NGD



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

## 61F-G4N, -G4NL, -G4NH, -G4ND, -G4NR, -G4N-KYD



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

## ■ 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.

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