Floatless Level Switch (Compact, Plug-in Type)

61F-GP-N


- Compact: 49.4 × 38 × 84 mm (H×W×D).
- Easy identification of operating status with LED operation indicator.
- Independent DPDT contacts on 11-Pin Models.
- CE marking (N and N8 models) and UL/CSA compliance (N8 models).

⚠️ Refer to Safety Precautions for Floatless Level Controllers.

■ Model Number Legend

<table>
<thead>
<tr>
<th>1. No. of Pins</th>
<th>2. Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>N: 11 pins</td>
<td>Blank: General-purpose</td>
</tr>
<tr>
<td>N8: 8 pins</td>
<td>L 2KM: Long-distance (for 2 km)</td>
</tr>
<tr>
<td></td>
<td>L 4KM: Long-distance (for 4 km)</td>
</tr>
<tr>
<td></td>
<td>H: High-sensitivity</td>
</tr>
<tr>
<td></td>
<td>D: Low-sensitivity</td>
</tr>
<tr>
<td></td>
<td>R: Two-wire</td>
</tr>
<tr>
<td></td>
<td>T: High-temperature</td>
</tr>
</tbody>
</table>

■ Ordering Information

<table>
<thead>
<tr>
<th>Type</th>
<th>General-purpose</th>
<th>Long-distance (for 2 km)</th>
<th>Long-distance (for 4 km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Model</td>
<td>Model</td>
<td>Model</td>
</tr>
<tr>
<td>11-pin</td>
<td>61F-GP-N</td>
<td>61F-GP-NL 2KM</td>
<td>61F-GP-NL 4KM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>High-sensitivity</th>
<th>Low-sensitivity</th>
<th>Two-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Model</td>
<td>Model</td>
<td>Model</td>
</tr>
<tr>
<td>11-pin</td>
<td>61F-GP-NH</td>
<td>61F-GP-ND</td>
<td>61F-GP-NR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Tropical environments</th>
<th>High-temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Model</td>
<td>Model</td>
</tr>
<tr>
<td>8-pin</td>
<td>61F-GP-N-TDL</td>
<td>61F-GP-NT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>General-purpose</th>
<th>Long-distance (for 2 km)</th>
<th>Long-distance (for 4 km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Model</td>
<td>Model</td>
<td>Model</td>
</tr>
<tr>
<td>8-pin</td>
<td>61F-GP-N8</td>
<td>61F-GP-N8L 2KM</td>
<td>61F-GP-N8L 4KM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>High-sensitivity</th>
<th>Low-sensitivity</th>
<th>Two-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Model</td>
<td>Model</td>
<td>Model</td>
</tr>
<tr>
<td>8-pin</td>
<td>61F-GP-N8H</td>
<td>61F-GP-N8D</td>
<td>61F-GP-N8R</td>
</tr>
</tbody>
</table>

Note: When ordering, specify the desired operating voltage at the end of the model number.
Example: 61F-GP-N [220 VAC]
## Compact Plug-in Models (11-pin Type)

### Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>General-purpose Controller 61F-GP-N</th>
<th>High-temperature Controller 61F-GP-NT</th>
<th>Long-distance Controllers 61F-GP-NL 2KM (for 2 km) 61F-GP-NL 4KM (for 4 km)</th>
<th>High-sensitivity Controller 61F-GP-NH (see note 4)</th>
<th>Low-sensitivity Controller 61F-GP-ND</th>
<th>Two-wire Controller 61F-GP-NR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Controlling materials and operating conditions</strong></td>
<td>For control of ordinary purified water or sewage water</td>
<td>For control of ordinary purified water or sewage where operating ambient temperature is high.</td>
<td>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.</td>
<td>For control of liquids with high specific resistance such as distilled water</td>
<td>For control of ordinary purified water or sewage water used in combination with Two-wire Electrode Holder (incorporating a resistor of 6.8 kΩ)</td>
<td></td>
</tr>
<tr>
<td><strong>Supply voltage</strong></td>
<td>24, 100, 110, 120, 200, 220, 230 or 240 VAC; 50/60 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operating voltage range</strong></td>
<td>85% to 110% of rated voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interelectrode voltage</strong></td>
<td>8 VAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interelectrode current</strong></td>
<td>Approx. 1 mA AC max.</td>
<td>Approx. 0.12 mA AC max.</td>
<td>Approx. 1 mA AC max.</td>
<td></td>
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</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Approx. 3.5 VA max.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Interelectrode operate resistance</strong></td>
<td>0 to approx. 4 kΩ</td>
<td>0 to approx. 4 kΩ</td>
<td>0 to approx. 1.3 kΩ (for 2 km) 0 to approx. 0.5 kΩ (for 4 km)</td>
<td>Approx. 10 kΩ to approx. 40 kΩ (see note 3)</td>
<td>0 to approx. 1.3 kΩ</td>
<td>0 to approx. 2 kΩ</td>
</tr>
<tr>
<td><strong>Interelectrode release resistance</strong></td>
<td>Approx. 15 k to ∞ Ω</td>
<td>Approx. 15 k to ∞ Ω</td>
<td>4 k to ∞ Ω (for 2 km) 2.5 k to ∞ Ω (for 4 km)</td>
<td>Approx. 100 k to ∞ Ω</td>
<td>Approx. 4 k to ∞ Ω</td>
<td>Approx. 15 k to ∞ Ω</td>
</tr>
<tr>
<td><strong>Response time</strong></td>
<td>Operate:80 ms max. Release:160 ms max.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cable length (see note 1)</strong></td>
<td>1 km max. 600 m max.</td>
<td>2 km max. 4 km max. 50 m max.</td>
<td>1 km max. 800 m max.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control output</strong></td>
<td>1 A, 250 VAC (Inductive load: cos φ = 0.4) 3 A, 250 VAC (Resistive load)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>Operating: –10 to 55°C (–10 to 70°C for high-temperature controller)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ambient humidity</strong></td>
<td>Operating: 45% to 85% RH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Insulation resistance (see note 2)</strong></td>
<td>100 MΩ min. (at 500 VDC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dielectric strength (see note 2)</strong></td>
<td>2000 VAC, 50/60 Hz for 1 min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Life expectancy</strong></td>
<td>Electrical: 100,000 operations min. Mechanical: 5,000,000 operations min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 155 g</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>Hold-down clip PFC-N8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
1. The length when using completely insulated, 600-V, 3-conductor (0.75 mm²) cable type 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.
2. 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.
3. Possible to use with 15 kΩ or less, however, this may cause reset failure.
4. 61F-GP-NH High-sensitivity Controller uses 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.
   If the advanced operation does not satisfy applications, consider using 61F-N8HY controller which uses sequential operation.
Internal Circuit Diagrams

**61F-GP-N/-NT/-NL/-ND**

- Power supply
- **Control circuit**

- S0 S1 E3
- 5 E1 Ta1 Tc1 Tb1
- 8 Ta2 Tc2 Tb2
- 24 V
- 8 V

---

**61F-GP-NH**

- Power supply
- **Control circuit**

- S0 S1 E3
- 5 E1 Ta1 Tc1 Tb1
- 8 Ta2 Tc2 Tb2
- 24 V
- 8 V

---

**61F-GP-NR**

- Power supply
- **Control circuit**

- S0 S1 E3
- 5 E1 Ta1 Tc1 Tb1
- 8 Ta2 Tc2 Tb2
- 24 V
- 8 V

---

Note: When applying a self-holding circuit, short between terminals 5 and 6 and use terminal 7 as E3.
### Connections

**Automatic Water Supply and Drainage Control**

#### Automatic Water Supply Control

**Connections**
- **Commercial Voltage** R S T
- **MCCB**
- **Contactor**
- **Motor protection relay**
- **Water supply source**
- **Water tank**
- **Contactor**
- **Power supply**
- **Control circuit**
- **Reservoir**
- **PS-3S**

**Note:** Be sure to ground the common Electrode E3 (the longest Electrode).

**Connection Sockets**
- PF113A (Front-connecting)
- PL11 (Rear-connecting)

**Principles of Operation**

- **(Indicator ON)**
  - The pump stops when the water level reaches E1 (indicator ON) and starts when the water level drops below E2 (indicator OFF).

**Note:** The power supply depends on the specifications of the model.

#### Automatic Drainage Control

**Connections**
- **Commercial Voltage** R S T
- **MCCB**
- **Contactor**
- **Motor protection relay**
- **Water supply source**
- **Water tank**
- **Contactor**
- **Power supply**
- **Control circuit**
- **Reservoir**
- **PS-3S**

**Note:** Be sure to ground the common Electrode E3 (the longest Electrode).

**Connection Sockets**
- PF113A (Front-connecting)
- PL11 (Rear-connecting)

**Principles of Operation**

- **(Indicator ON)**
  - The pump starts when the water level reaches E1 (indicator ON) and stops when the water level drops below E2 (indicator OFF).
**Liquid Level Indication**

**Compact, Plug-in Type**

**61F-GP-N**

**Dimensions:**

**Page 14**

---

**Connections**

- **Lower limit**
  - Terminals 6 and 7, and terminals 10 and 11 on the lower-limit 61F-GP-N are shorted when the water level reaches E3 (indicator ON).
- **Intermediate**
  - Terminals 6 and 7, and terminals 10 and 11 on the intermediate 61F-GP-N are shorted when the water level reaches E2 (indicator ON).
- **Upper limit**
  - Terminals 6 and 7, and terminals 10 and 11 on the upper-limit 61F-GP-N are shorted when the water level reaches E1 (indicator ON).

---

**Note:** The power supply phases (terminals 3 to 9) can be matched to use the same ground for the common Electrode (the longest Electrode, terminal 4).

---

**Principles of Operation**

- Terminals 6 and 7, and terminals 10 and 11 on the lower-limit 61F-GP-N are shorted when the water level reaches E3 (indicator ON).
- Terminals 6 and 7, and terminals 10 and 11 on the intermediate 61F-GP-N are shorted when the water level reaches E2 (indicator ON).
- Terminals 6 and 7, and terminals 10 and 11 on the upper-limit 61F-GP-N are shorted when the water level reaches E1 (indicator ON).
Replacing 61F-G3N Functions (Automatic Water Supply Control with Abnormal Water Increase and Water Shortage Alarms)

Connections

Water shortage  Pump control  Full tank

Commercial Voltage

<table>
<thead>
<tr>
<th>R</th>
<th>S</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

MCCB

<table>
<thead>
<tr>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 V</td>
</tr>
<tr>
<td>0 V</td>
</tr>
</tbody>
</table>

Control circuit

<table>
<thead>
<tr>
<th>U1</th>
<th>U2</th>
<th>U3</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>E2</td>
<td>E3</td>
</tr>
<tr>
<td>Lower limit</td>
<td>Alarm</td>
<td>Upper limit</td>
</tr>
</tbody>
</table>

Water tank

Motor protection relay

<table>
<thead>
<tr>
<th>Water supply source</th>
</tr>
</thead>
</table>

Contactor

Note: The power supply phases (terminals 3 to 9) can be matched to use the same ground for the common Electrode (the longest Electrode, terminal 4).

Principles of Operation

- The pump stops when the water level reaches E2 (U2 indicator ON) and starts when the water level drops below E3 (U2 indicator OFF).
- If the water level rises to E1 for any reason, the upper-limit indicator turns ON and the alarm sounds (U1 indicator ON).
- If the water level drops below E4 for any reason, the lower-limit indicator turns ON and the alarm sounds (U3 indicator OFF).

(See note.)
# Two-Wire Connections
## Automatic Water Supply and Drainage Control

### Connections

<table>
<thead>
<tr>
<th>Automatic Water Supply Control</th>
<th>Automatic Drainage Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection Sockets</strong></td>
<td><strong>Connection Sockets</strong></td>
</tr>
<tr>
<td>PF113 (Front-connecting)</td>
<td>PF113 (Front-connecting)</td>
</tr>
<tr>
<td>PL11 (Rear-connecting)</td>
<td>PL11 (Rear-connecting)</td>
</tr>
</tbody>
</table>

- Connect terminal 1 to the contactor's coil terminal.
- **Note:** The power supply depends on the specifications of the model.
- With 2-wire connections, only two wires are required between the 61F-GP-NR and Electrode Holder, but three wires are required for the Electrodes.
- The Electrode Holder must be specified for 2-wire connections. (Resistance R is built into Electrode Holders for 2-Wire Connections.)

### Principles of Operation

**Water supply**

- Pump OFF
- E1 (Indicator ON)
- E2 (Indicator OFF)

The pump stops when the water level reaches E1 (indicator ON) and starts when the water level drops below E2 (indicator OFF).

**Water drainage**

- Pump ON
- E1 (Indicator ON)
- E2 (Indicator OFF)

The pump starts when the water level reaches E1 (indicator ON) and stops when the water level drops below E2 (indicator OFF).

### Note:
- Be sure to ground the common Electrode E3 (the longest Electrode).
**Connection with Three-phase Four-line Circuit**

When supplying power from N-phase to the Controller in three-phase four-line circuit, refer to the following diagrams.

- **Line voltage** (R-S, S-T, or R-T): 380 or 415 VAC
- **Phase voltage** (N-R, N-S, or N-T): 220 or 240 VAC

**61F-GP-N □ 220 or 240 VAC**

---

**Note:**
1. The diagram shows the connections for the water supply. When draining, change the connection from terminal 1 to terminal 11.
2. Be sure to ground terminal 4.
## Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>General-purpose Controller</th>
<th>Long-distance Controllers</th>
<th>High-sensitivity Controllers</th>
<th>Low-sensitivity Controller</th>
<th>Two-wire Controller</th>
<th>Variable Sensitivity Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling materials and operating conditions</td>
<td>61F-GP-N8</td>
<td>61F-GP-N8L 2KM (for 2 km)</td>
<td>61F-GP-N8H</td>
<td>61F-GP-N8D</td>
<td>61F-GP-N8HY</td>
<td>61F-GP-N8-V50</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>24, 100, 110, 120, 200, 220, 230 or 240 VAC; 50/60 Hz</td>
<td>24, 100, 110, 220 or 240 VAC; 50/60 Hz</td>
<td>For control of ordinary purified water or sewage water</td>
<td>Approx. 3.5 VA max.</td>
<td>For control of cases where variable sensitivity control is required such as detection of froth on the surface of a liquid, control of soil moisture content, or detection of degree of water pollution</td>
<td></td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>85% to 110% of rated voltage</td>
<td>24 VAC</td>
<td>For control of ordinary purified water or sewage water used in combination with Two-wire Electrode Holder (incorporating a resistor of 6.8 kΩ)</td>
<td>Approx. 3 mA AC max.</td>
<td>0 to 50 kΩ (Variable)</td>
<td></td>
</tr>
<tr>
<td>Interelectrode voltage</td>
<td>8 VAC</td>
<td>24 VAC</td>
<td>8 VAC</td>
<td>8 VAC</td>
<td>24 VAC</td>
<td></td>
</tr>
<tr>
<td>Interelectrode current</td>
<td>Approx. 1 mA AC max.</td>
<td>Approx. 0.4 mA AC max.</td>
<td>Approx. 1 mA AC max.</td>
<td>Approx. 3 mA AC max.</td>
<td>0 to approx. 4 kΩ</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>Approx. 3.5 VA max.</td>
<td>Approx. 15 kΩ to 80 kΩ</td>
<td>Approx. 300 k to ∞Ω</td>
<td>Approx. 4 k to ∞Ω</td>
<td>Operating resistance +50 kΩ max.</td>
<td></td>
</tr>
<tr>
<td>Interelectrode resistance</td>
<td>0 to approx. 4 kΩ</td>
<td>0 to 1.3 kΩ (for 2 km)</td>
<td>4 k to ∞Ω (for 2 km)</td>
<td>4 k to ∞Ω (for 4 km)</td>
<td>Approx. 15 k to ∞Ω</td>
<td></td>
</tr>
<tr>
<td>Interelectrode release resistance</td>
<td>Approx. 15 k to ∞Ω</td>
<td>Approx. 15 kΩ to ∞Ω</td>
<td>Approx. 300 k to ∞Ω</td>
<td>Approx. 4 k to ∞Ω</td>
<td>Approx. 15 k to ∞Ω</td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>Operate: 80 ms max.</td>
<td>Operate: 80 ms max.</td>
<td>Operate: 80 ms max.</td>
<td>800 m max.</td>
<td>Operating resistance +50 kΩ max.</td>
<td></td>
</tr>
<tr>
<td>Cable length (see note 1)</td>
<td>1 km max.</td>
<td>2 km max.</td>
<td>50 m max.</td>
<td>1 km max.</td>
<td>800 m max.</td>
<td></td>
</tr>
<tr>
<td>Control output</td>
<td>1 A, 250 VAC (Inductive load: cosφ = 0.4)</td>
<td>3 A, 250 VAC (Resistive load)</td>
<td>For control of liq- uids with high specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals</td>
<td>For control of liq- uids with low specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals</td>
<td>For control of liq- uids with low specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>Operating: –10 to 55°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>Operating: 45% to 85% RH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation resistance (see note 2)</td>
<td>100 MΩ min. (at 500 VDC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dielectric strength (see note 2)</td>
<td>2000 VAC, 50/60 Hz for 1 min.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life expectancy</td>
<td>Electrical: 100,000 operations min.</td>
<td>Mechanical: 5,000,000 operations min.</td>
<td>For control of liq- uids with high specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals</td>
<td>For control of liq- uids with low specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals</td>
<td>For control of liq- uids with low specific resistance such as salt water, sewage water, acid chemicals, alkali chemicals</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 155 g</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Accessories</td>
<td>Hold-down clip PFC-N8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1. The length when using completely-insulated, 600-V, 3-conductor (0.75 mm²) cabtire cables. Usable cable lengths will become shorter as the cable diameter or number of conductors becomes larger.
2. 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.
3. Possible to use with 15 kΩ or less, however, this may cause reset failure.
4. 61F-GP-N8H/-N8Y 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.
If the advanced operation does not satisfy applications, consider using 61F-N8HY controller which uses sequential operation.
Internal Circuit Diagrams

61F-GP-N8/-N8L/-N8D/-N8HY

Power supply: 24 V
Control circuit: 8 V (see note)

61F-GP-N8H

Power supply: 24 V
Control circuit: 24 V

61F-GP-N8R

Power supply: 24 V
Control circuit: 8 V

Note: 24 V for the 61F-GP-N8HY.

61F-GP-N8Y

Power supply: 24 V
Control circuit: 8 V

61F-GP-N8-V50

Power supply: 24 V
Control circuit: 24 V

OMRON
## Automatic Water Supply and Drainage Control

### Compact, Plug-in Type

**61F-GP-N8**

### Automatic Water Supply Control

<table>
<thead>
<tr>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Voltage</td>
</tr>
<tr>
<td>MCCB</td>
</tr>
<tr>
<td>Contactor</td>
</tr>
<tr>
<td>Motor protection relay</td>
</tr>
<tr>
<td>Water supply source</td>
</tr>
<tr>
<td>Water level</td>
</tr>
</tbody>
</table>

**Note**: Be sure to ground the common Electrode E3 (the longest Electrode).

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

- Connect terminal 2 to the contactor’s coil terminal.

**Note**: The power supply depends on the specifications of the model.

### Automatic Drainage Control

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
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<td>Contactor</td>
</tr>
<tr>
<td>Motor protection relay</td>
</tr>
<tr>
<td>Waste water tank</td>
</tr>
<tr>
<td>Water level</td>
</tr>
</tbody>
</table>

**Note**: Be sure to ground the common Electrode E3 (the longest Electrode).

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

- Connect terminal 3 to the contactor’s coil terminal.

**Note**: The power supply depends on the specifications of the model.

### Principles of Operation

**Automatic Water Supply Control**

- The pump stops when the water level reaches E1 (indicator ON) and starts when the water level drops below E2 (indicator OFF).

**Automatic Drainage Control**

- The pump starts when the water level reaches E1 (indicator ON) and stops when the water level drops below E2 (indicator OFF).
Two-Wire Connections
Automatic Water Supply and Drainage Control

Compact, Plug-in Type
61F-GP-N8R

Dimensions:
page 14

Water Supply

Automatic Drainage

Note: Be sure to ground the common Electrode E3 (the longest Electrode).

- Connect terminal 2 to the contactor’s coil terminal.
- Note: The power supply depends on the specifications of the model.
- With 2-wire connections, only two wires are required between the 61F-GP-N8R and Electrode Holder, but three wires are required for the Electrodes.
- The Electrode Holder must be specified for 2-wire connections. (Resistance R is built into Electrode Holders for 2-Wire Connections.)

Principles of Operation

The pump stops when the water level reaches E1 (indicator ON) and starts when the water level drops below E2 (indicator OFF).

Principles of Operation

The pump starts when the water level reaches E1 (indicator ON) and stops when the water level drops below E2 (indicator OFF).
Connection with Three-phase Four-line Circuit

When supplying power from N-phase to the Controller in three-phase four-line circuit, refer to the following diagrams.

Line voltage (R-S, S-T, or R-T): 380 or 415 VAC
Phase voltage (N-R, N-S, or N-T): 220 or 240 VAC

61F-GP-N8，220 or 240 VAC

Note: Be sure to ground terminal 1.
Dimensions

Note: All units are in millimeters unless otherwise indicated.

61F-GP-N, -NT, -NL, -NH, -ND, -NR, -N -TDL, -N14, -N15, -NH3

When mounting a Display Unit to a PF113A Surface-mounting Socket, secure the PF113A with the groove facing toward the bottom and then connect the 61F-GP-N the PFC-N8 accessory.

61F-GP-N8, -N8L, -N8H, -N8HY, -N8D, -N8R

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

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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