

Model 61F-LS Float-less Switch **OMRON** 5706279-1A

Safety Precautions

● Meanings of the warning indications

Caution	It may result in minor to moderate injury or property damage due to this risk if the product is not handled correctly.
Safety points	It indicates the actions that should be taken or avoided in order to use the product safely.
Precautions on use	It indicates the actions that should be taken or avoided to prevent product inoperability, malfunction, or adverse effects on its performance or functions.

● Meanings of graphic symbols

	● Caution on electric shock A notice that warns of the possibility of electric shock under certain conditions.
	● Prohibition symbols in general A general and non-specific notice of prohibition.
	● No disassembly A notice of prohibition where disassembly of the equipment may cause injury such as electric shock.
	● General forced action symbol A graphic symbol indicating the general action of an unspecified user.

Caution

Minor injury may be caused by electric shock in rare cases. Turn off the power supply when wiring, and do not touch the terminals while the power is on. Do not touch the product with wet hands.	
Slight electric shock, ignition, or equipment failure may occur in rare cases. Do not allow metal, wires, or chips from installation process to enter the product.	
If the contact output is suddenly switched due to a failure in the product, physical damage to the facility, equipment, etc. connected to this product may occur in rare cases. Please be sure to conduct periodic inspections on this product.	
Minor injury may be caused by explosion in rare cases. Do not use this product under presence of flammable or explosive gases.	
Slight electric shock, ignition, or equipment failure may occur in rare cases. Do not disassemble, modify or repair this product, or touch its interior parts.	

Safety points

- Please be sure to thoroughly read and understand this manual before handling the product.
- Do not use or store this product under the following environments:
 - Any outdoor environment or one that comes under direct sunlight
 - Any environment where it may be splashed with water or oil
 - Any environment where it is exposed to the weather
 - Any environment where there is significant vibration and impact
 - Any environment where the temperature changes are drastic
 - Any environment where there is a risk of freezing or condensation
 - Any environment where there is dust or corrosive gas (especially sulfide gas, ammonia gas, etc.)
 - Any environment where it may be affected by static electricity or noise
 - Any environment where there are insects or small animals
 - Any environment where it may be splashed with flammable or soluble liquid
 - Any environment where it is exposed to sea breeze
 - Install the product as far away as possible from equipment that generates strong high frequency or surge voltage. (3) Do not place the product on an unstable surface. It poses a risk of the product falling and becoming damaged, or hitting someone and causing injury.
 - Do not place the product on an unstable surface. It poses a risk of the product falling and becoming damaged, or hitting someone and causing injury.
 - Do not use the product if the product is dropped by mistake, as the inside of the product may be damaged.
 - Install a switch or circuit breaker and provide an appropriate indication so that the operator can turn OFF the power immediately.
 - Install the product in the correct orientation.
 - Use the power supply voltage and load within the specifications and ratings.
 - Use a power supply that will reach the rated voltage within 1 second after the power is turned ON.
 - Do not connect anything to unused terminals.
 - This product should be handled by a specialist with knowledge about electricity.
 - When using the equipment, make sure to check the wiring before turning on the power.
 - It may be prone to radio disturbance. Do not use any radio wave receivers near the product.

- Use or store the product while keeping the ambient temperature and humidity within the specification range. In particular, do not install the product close to other heating equipment (equipment containing coil or winding). Implement forced cooling if necessary.
- It cannot be used for types of oil, etc. that have high specific resistance of liquid and conduct little electricity.
- Install the product while ensuring not to apply any load on the main body.
- Check that the output contacts are operating properly. Depending on the operating environment, deterioration of the internal relay may be accelerated and result in malfunction.
- Check that the indicator LED is operating properly. Depending on the operating environment, deterioration of the LED may be accelerated and result in indication failure.
- Occurrence of chattering may shorten the life of the output relay in this product. Use a circuit and setting that do not cause chattering.
- When controlling the contactor opening and closing, be sure to use the self-holding electrode (E2). The contactor may flap under the waviness of the liquid surface and burn the contacts when control is executed only with E1.
- Use DIP switch within the following torquevalue range:
Operating Torque : 0.29 N to 4.9 N
- Select the electrodes and electrode holders with consideration of the size of the water tank and the environment inside the water tank (pressure, temperature, controlled liquid, etc.).
- Refer to the respective manuals for proper installation of the electrodes and electrode holders.
- Keep suspended matters from adhering to the electrodes.
- Keep the wiring distance between this product and the electrode holder within the specification range. If the wiring distance is too long, abnormal surge or noise may appear on the electrode circuit and result in abnormal operation.
- It becomes safe from surges if a surge killer unit (Model 61F-03B or -04B) is connected to the electrode circuit of this product. Be sure to install it especially in areas where lightning frequently occurs. When surge may enter the power supply, it is safer to connect a commercially available surge killer to the power supply circuit.
- To prevent smoke generation and ignition, check the rating of the wires and use the wires that are listed below.

Type of wire	Wire material	Recommended wire diameter
Single wire/stranded wire	Copper	0.25 to 1.5 mm ² AWG24 to AWG16

- To clean, use commercially available alcohol and no thinners.
- Dispose of this product as industrial waste.

Precautions on use

- It cannot be used for flammable liquids such as gasoline, kerosene, and heavy oil.
- When measuring the insulation resistance, never conduct megger tests between the electrode terminals.
- This product requires a certain response time during operation and recovery. Employ caution regarding designs that require subtle timing for sequence control. For details, please check the product specifications for the model to be used.
- Do not connect multiple units of this product to the same electrode. For example, a closed circuit (circulating circuit) that passes through the internal circuit of each other is formed when the voltage phase of the 5 V AC power supply is reversed, and this product will operate (malfunction) regardless of the water level by only applying the power supply. Use the electrode rods to be connected to multiple units of this product apart from each other so that they do not suffer mutual interference. However, there is no problem with the sharing of common electrode (the longest electrode).
- Use a separator which is sold separately (Model F03-14) to prevent contact if the electrodes come into contact with each other in the liquid.
- Make sure that there is no risk of rainwater, etc. accumulating at the connection between the electrodes.
- Be sure to ground the common electrode terminal. It can reduce the influence of noise.
- Install the socket and DIN rail with screws to prevent loosening. If the screws are loose, vibration, impact, etc. may cause the DIN rail, socket, product main body, or wiring to come off.
- When attaching a crimped terminal to a terminal screw, tighten it with the tightening torque within the range from 0.45 to 0.6 N·m.

Specifications

Power supply voltage/frequency	Model 61F-LS-CP□□-A 100 to 240 V AC, 50/60 Hz (alternating current)
Allowable voltage fluctuation range	Model 61F-LS-CP□□-B 24 V AC, 50/60 Hz (alternating current)
Allowable power supply frequency fluctuation range	85 to 110% of the rated voltage
Power consumption	± 5 Hz of the rated frequency 3.2 VA or lower
Ambient operating temperature	-10 to 70°C (However, there shall be no freezing or condensation.)
Ambient operating humidity	Relative humidity 25 to 90% RH -10 to 70°C
Storage temperature	(However, there shall be no freezing or condensation.) Relative humidity 25 to 90% RH
Storage humidity	250 V AC, 5 A (resistance load (cos φ = 1)), 250 V AC, 1 A (inductive load (cos φ = 0.4))
Relay output	5 Vp-p or lower
Voltage between electrodes	3 s after turning on the power supply (The LED blinks during the startup lock time)
Startup lock time	

Model 61F-LS-CP□□-A Sensitivity:Standard setting Operating time:Instantaneous setting (refer to the following table)

Model 61F-LS-CP□□-S□□-A Operating time can be varied at DIPSW(refers to the following table)

Sensitivity	Operating resistance value	Reset resistance value	Wire length
Standard setting	4kΩ or higher	15kΩ or lower	4km or smaller
Low sensitivity setting	1.3kΩ or higher	4kΩ or lower	4km or smaller
Ultra-Low sensitivity setting	0.5kΩ or higher	2.5kΩ or lower	4km or smaller
High sensitivity setting	70kΩ or higher	300kΩ or lower	50m or smaller
Ultra-high sensitivity setting	200kΩ or higher	500kΩ or lower	30m or smaller

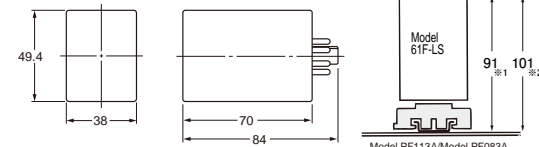
Response speed	Operating time	Recovery time
Instantaneous setting	80ms or less	160ms or less
5s setting	5s or less	5s or less

Altitude 2000 m or lower
Installation environment Overvoltage category II
Pollution Degree 2

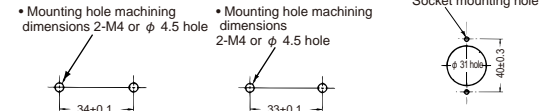
■ Operation setting (Model 61F-LS-CP□□-S□□-A only)

Symbol	Item	Specifications	Factory shipment setting
(A)	Response speed	5s	○
		INSTANT (instantaneous)	○
		Operating resistance	Sensitivity
(B)	Dynamic sensitivity	0.5 kΩ or higher	Ultra-low sensitivity
		1.3 kΩ or higher	Low sensitivity
		4 kΩ or higher	General
		70 kΩ or higher	High sensitivity
		200 kΩ or higher	Ultra-high sensitivity

■ External dimensions

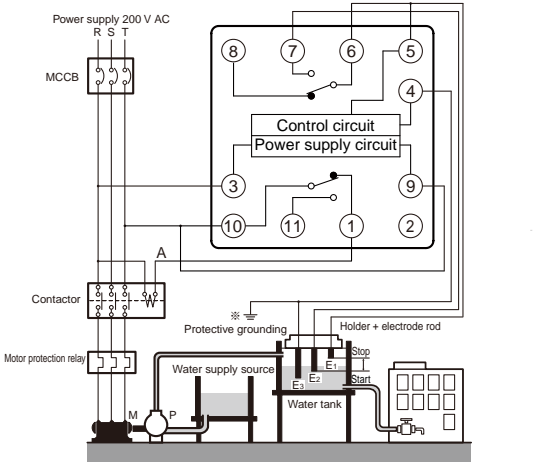


- Model PF113A
For surface connection sockets, mount it so that the key groove faces downward.
- Model PF083A
For surface connection sockets, mount it so that the key groove faces upward.
- Model PL11
For backside connection socket



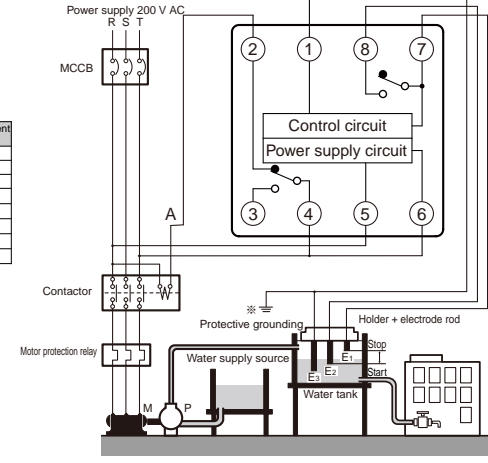
■ Example of external connection

● For Model 61F-LS-CP11-N□□-S□□



- Be sure to ground the common electrode (the longest electrode).
- Wiring is partially different between water supply and drainage.
- Refer to each catalog for details about electrode rods and electrode holders.
- For water supply
 - Connection Connect A and terminal [1] to connect the contactor with coil terminal. (Terminal [11] will be a free terminal.)
 - Operation The pump will stop when the water level reaches E1 (operation display "ON"), and start at E2 or lower (operation display "OFF").
- For drainage
 - Connection Connect A and terminal [11] to connect the contactor with coil terminal. (Terminal [1] will be a free terminal.)
 - Operation The pump will start when the water level reaches E1 (operation display "ON"), and stop at E2 or lower (operation display "OFF").

● For Model 61F-LS-CP08-N□□-S□□



- Be sure to ground the common electrode (the longest electrode).
- Wiring is partially different between water supply and drainage.
- Refer to each catalog for details about electrode rods and electrode holders.
- For water supply
 - Connection Connect A and terminal ② to connect the contactor with coil terminal. (Terminal ③ will be a free terminal.)
 - Operation The pump will stop when the water level reaches E1 (operation display "ON"), and start at E2 or lower (operation display "OFF").
- For drainage
 - Connection Connect A and terminal ③ to connect the contactor with coil terminal. (Terminal ② will be a free terminal.)
 - Operation The pump will start when the water level reaches E1 (operation display "ON"), and stop at E2 or lower (operation display "OFF").

● For initial operation model (Model 61F-LS-CP□□-A□□)

While the operation after turning on the power is identical to that of the sequential operation model (Model 61F-LS-CP□□-N□□-S□□), the contacts when the power is turned OFF are different.

The following contacts are used when the power is turned OFF.

Sequential operation model: At CP11, ⑥ - ⑦, and ⑩ - ⑪ are open
At CP08, ③ - ④ is open

Initial operation model: At CP11, ⑥ - ⑧, and ⑩ - ① are open
At CP08, ② - ④ is open

Please select one according to your environment of use.

Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product.

At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT 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 PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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