Floatless Level Switch (Ultra High-sensitivity Type)
61F-UHS/-HSL

CSM_61F-UHS_-HSL_DS_E_3_2

Ideal for Detecting Ice, Pure Water, or Humidity

- Applicable for detecting ice, pure water steam, humidity, or other substances that conduct electricity poorly.
- Two types of model available: Ultra high-sensitivity and variable ultra high-sensitivity.

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

■ Ordering Information

Type	Ultra high-sensitivity	Variable ultra high-sensitivity
	Model	Model
Ultra high-sensitivity	61F-UHS	61F-HSL

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

Example: 61F-UHS [220VAC]

Desired supply voltage

■ Ultra High-sensitivity Models

Use these models for sensing objects such as ice, high-purity distilled water, moisture, or other objects with low electrical conductivity.

Specifications

Item	High-sensitivity 61F-UHS	Variable high-sensitivity 61F-HSL
Supply voltage	100, 200, or 220 VAC; 50/60 Hz	24, 100, 110, 200, or 220 VAC; 50/60 Hz
Operating voltage range	85% to 110% of rated voltage	
Interelectrode voltage	24 VAC	13 VDC max.
Interelectrode current	Approx. 1 mA AC max.	Approx. 1 mA DC max.
Power consumption	3.2 VA max.	
Interelectrode operate resistance	0 to approx. 1 MΩ (see note 1)	0 to approx. 5 MΩ (variable)
Interelectrode release resistance	Approx. 5 M to ∞ Ω	Operate resistance + 2.5 MΩ max.
Cable length	5 m (see note 2)	(see note 3)
Control output	0.3 A, 220 VAC (Inductive load: cosϕ = 0.4) 1 A, 220 VAC (Resistive load)	2 A, 220 VAC (Inductive load: cosϕ = 0.4) 5 A, 220 VAC (Resistive load)
Ambient temperature	Operating:–10 to 55°C	
Ambient humidity	Operating:45% to 85% RH	
Insulation resistance	100 MΩ max. (at 500 VDC)	
Dielectric strength	2,000 VAC, 50/60 Hz for 1 min	
Life expectancy	Electrical: 50,000 operations min. Mechanical: 5,000,000 operations min.	Electrical: 500,000 operations min. Mechanical: 5,000,000 operations min.
Weight	Approx. 380 g	Approx. 240 g

Note: 1. Use 61F-UHS for detecting water leakage with high specific resistance. Connect a sensor cable between terminals 1 and 7.

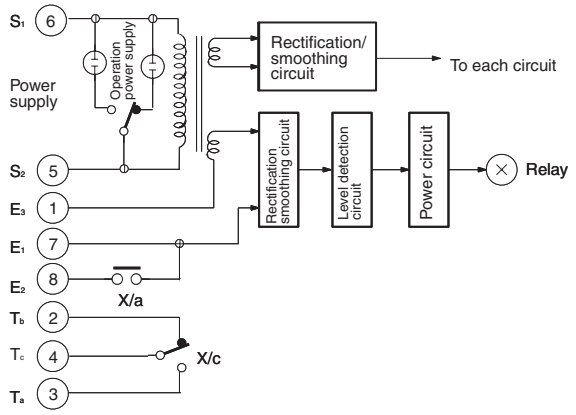
2. Two Electrodes can be connected to the 61F-HSL. Use them for an alarm, not for creating a self-holding circuit.

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

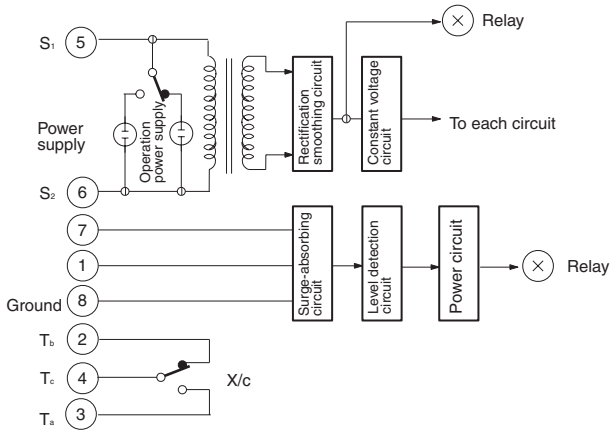
4. It is recommended that the cable length be kept as short as possible since the Electrode circuit current is at DC micro-current level. Moreover, the Electrodes will corrode rapidly if the current is allowed to constantly flow between the Electrodes.
Be careful with the electrode polarity and grounding when wiring.

Internal Circuit Diagrams

61F-UHS

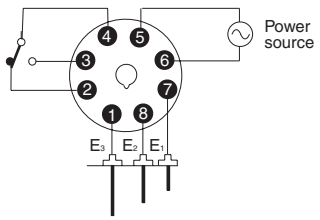


61F-HSL



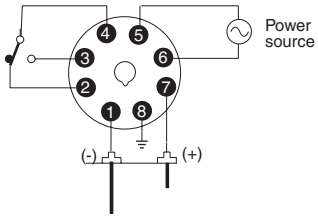
External Circuit Diagrams (Example)

61F-UHS



Socket: 8PFA1 (track mounted)/
PL08 (back connecting)

61F-HSL

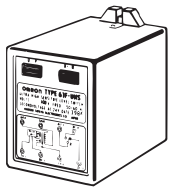


Socket: 8PFA (track mounted)/
PL08 (back connecting)

■ Connections

Automatic Water Supply and Drainage Control

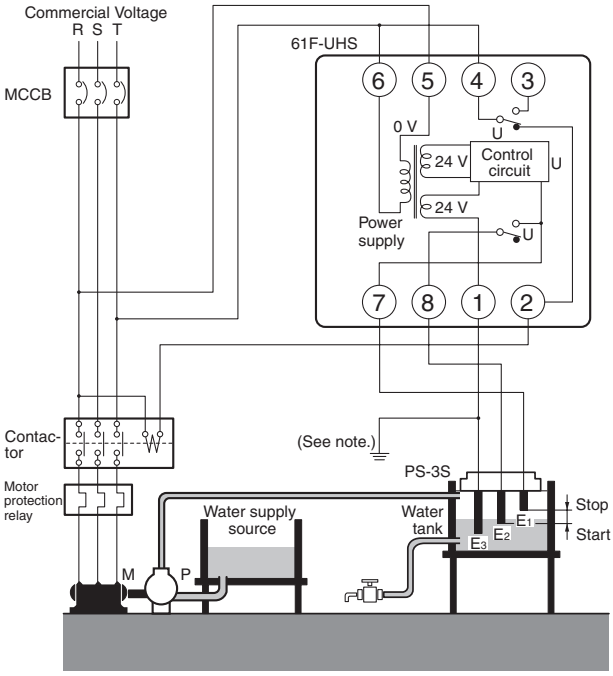
Ultra High-sensitivity Type



Dimensions:
Page 4

Automatic Water Supply Control

Connections

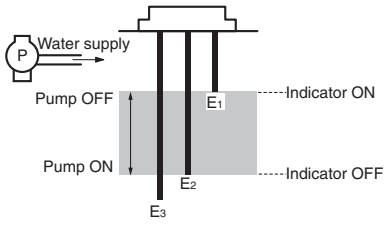


Note: Be sure to ground the common Electrode E_3 (the longest Electrode).

Connection Sockets
8PFA1 (Front-connecting)
PL08 (Read-connecting)

Connect terminal 2 to the contactor coil terminal.

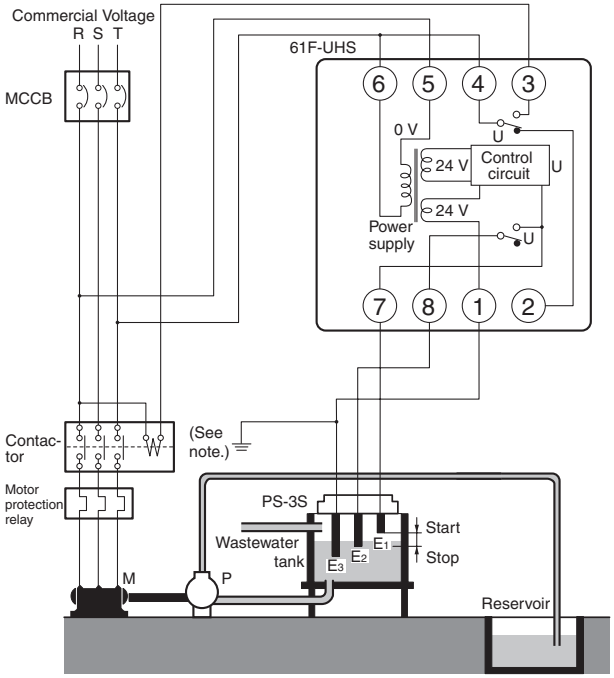
Principles of Operation



- When the water level reaches E_1, the pump stops and, when the water level reaches E_2 or below, the pump starts.

Automatic Drainage Control

Connections

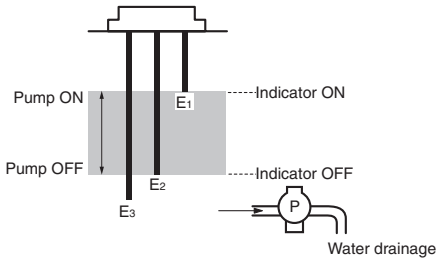


Note: Be sure to ground the common Electrode E_3 (the longest Electrode).

Connection Sockets
8PFA1 (Front-connecting)
PL08 (Read-connecting)

Connect terminal 3 to the contactor coil terminal.

Principles of Operation

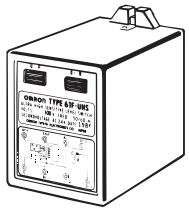


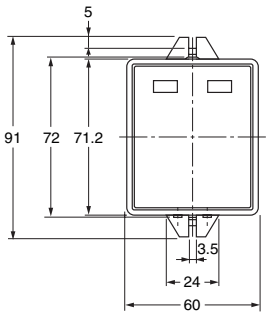
- When the water level reaches E_1, the pump starts and, when the water level reaches E_2 or below, the pump stops.

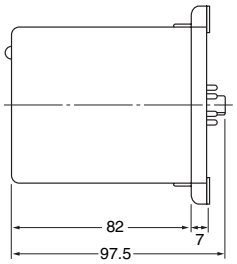
Dimensions

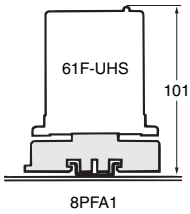
Note: All units are in millimeters unless otherwise indicated.

61F-UHS

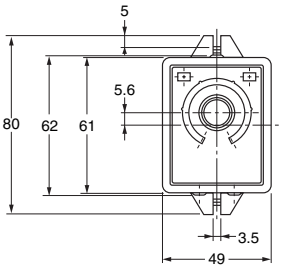


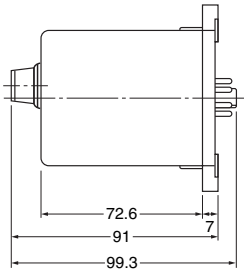


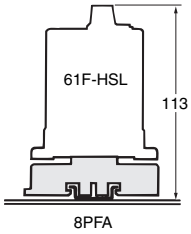




61F-HSL

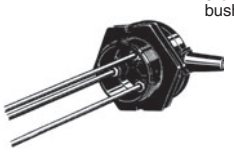


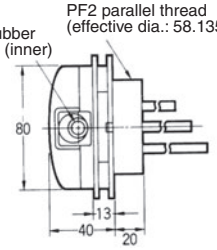


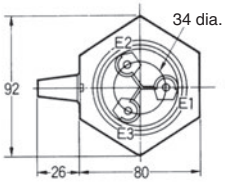


■ Electrode Holders

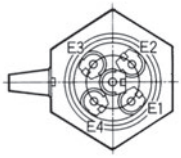
PS-3S/-4S/-5S
PS-3SR/-4SR/-5SR
(see note)



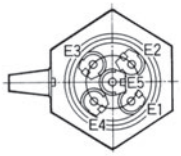




PS-3S (approx. 150 g)
PS-3SR (approx. 155 g)

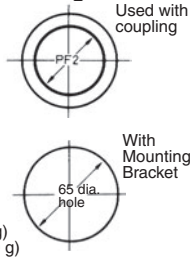


PS-4S (approx. 170 g)
PS-4SR (approx. 175 g)



PS-5S (approx. 185 g)
PS-5SR (approx. 190 g)

Mounting Holes



Mounting Screw Holes

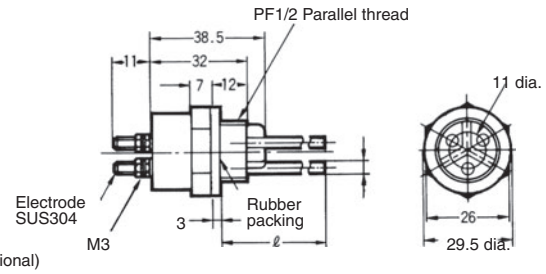
Note: The PS-3SR, PS-4SR, and PS-5SR have built-in resistor of 6.8 kΩ and used for the two-wire 61F models.

PS-31

Weight: approx. 325 g

F03-31 Dust-preventive rubber cap (optional)

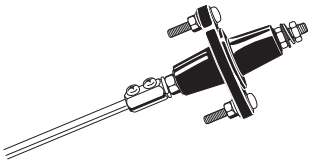
Weight: approx. 20 g



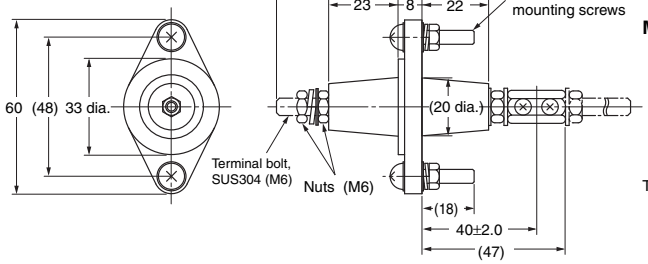
Mounting Holes

Note: Standard holder construction includes three integral 300-mm-long Electrodes. However, a model having 1,000-mm-long Electrodes is available on request.

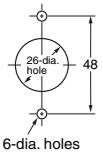
BF-1



Weight: approx. 75 g



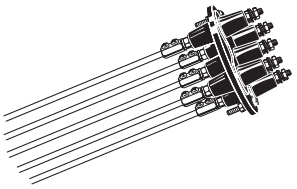
Mounting Holes

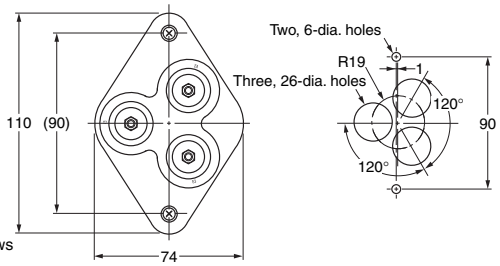


BF-3/-3R
BF-5/-5R

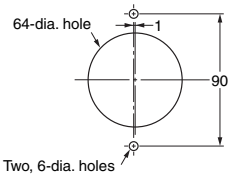
BF-3(R)

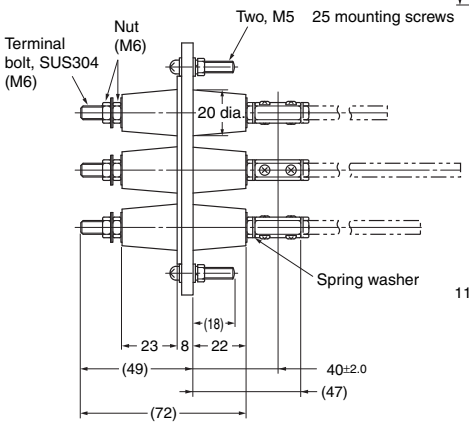
Weight
BF-3: approx. 210 g
BF-3R: approx. 215 g





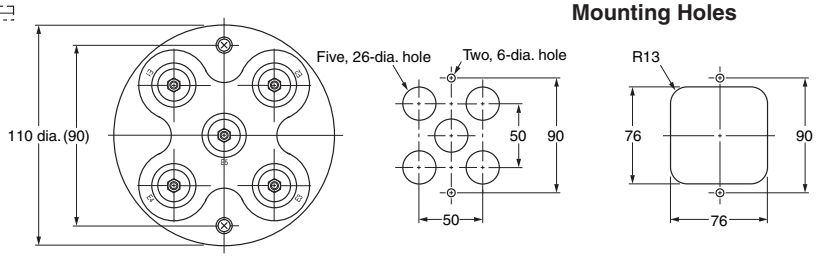
Mounting Holes





BF-5(R)

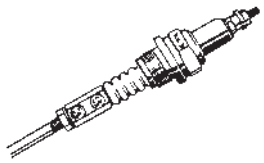
Weight
BF-5: approx. 360 g
BF-5R: approx. 365 g



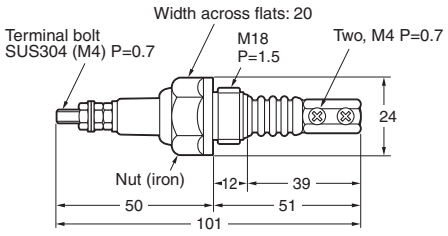
Mounting Holes

BS-1(S)

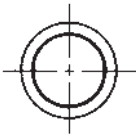
Weight: approx. 70 g



BS-1

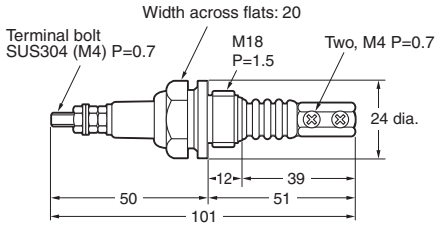


Mounting Holes



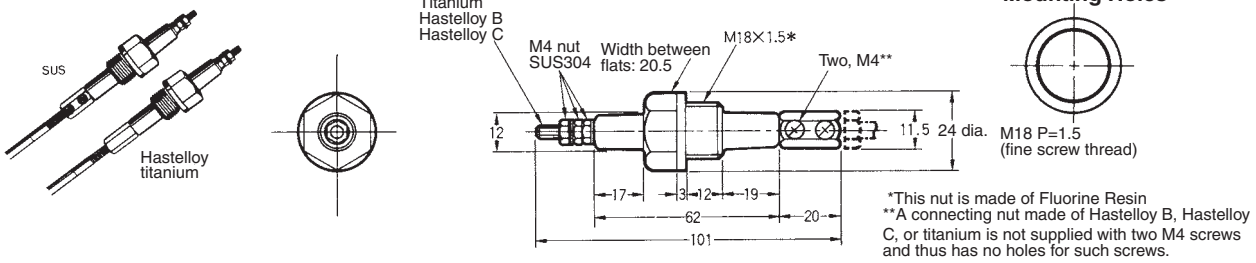
M18 P=1.5
(fine screw thread)

BS-1S
BS-1S-1
BS-1S2



M18 P=1.5
(fine screw thread)

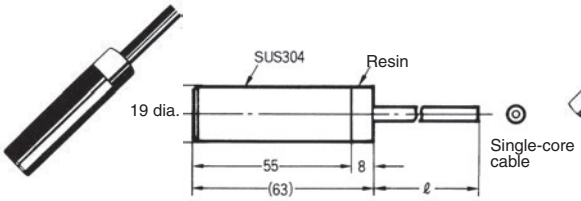
BS-1T



*This nut is made of Fluorine Resin
**A connecting nut made of Hastelloy B, Hastelloy C, or titanium is not supplied with two M4 screws and thus has no holes for such screws.

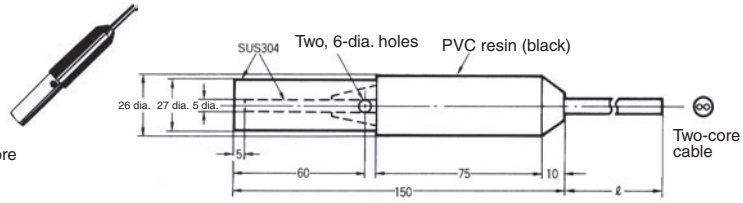
Material	SUS304	SUS316	Titanium	HAS B	HAS C
Weight	Approx. 55 g	Approx. 55 g	Approx. 45 g	Approx. 65 g	Approx. 60 g

PH-1
(Approx. 140 g with a 1-m cord)



Cable OD: Vinyl 5.0 dia., Hypalon 6.5 dia.

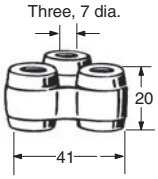
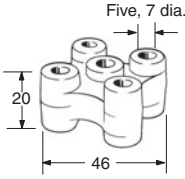
PH-2
(Approx. 235 g with a 1-m cord)



Cable OD: Vinyl, Hypalon 6.8 dia.

Note: Cable is supplied in lengths of 1, 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, or 100 meters.

■ Electrode Separators

F03-14 1P for one pole	F03-14 3P for three poles	F03-14 5P for five poles
 Weight: Approx. 15 g	 Weight: Approx. 30 g	 Weight: Approx. 30 g

■ Safety Precautions

Refer to *Safety Precautions for All Level Controllers*.

Precautions for Correct Use

Short Wiring in Electrode Circuit

- Keep the wires connecting the Controller to Electrode Holders as short as possible. If long leads are used, the floating capacity of the leads, and abnormal surges or noise in the Electrode circuit can cause malfunctions.
- The thicker the cables, the shorter the permitted wiring length. The length of the cable connecting the Controller and Electrode is specified in the Controller datasheet as a guideline assuming that a 600-V VCT 0.75-mm^2, 3-core cabtire cable is used. Test results indicate that the actual wiring length using VCT 3.5-mm^2, 3-core cable laid over the ground is 50% of the specified length for general-purpose applications and 80% of the specified length for long-distance applications. When selecting cable specifications, remember that the wiring length is further decreased for underground cables and larger diameter cables because of the increased floating capacity with the ground.

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

OMRON Corporation
Industrial Automation Company

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

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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Данный компонент на территории Российской Федерации

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