

Panasonic**INSTRUCTION
MANUAL****Amplifier Built-in Leak Detection Sensor
EX-F60 Series**

MJEC-EXF60 No.0045-90V

Thank you very much for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.



- This product is a sensor for detecting leak of fluids.
- When this product is used with safety devices, construct the system such that the device itself always operates in the safety side.

1 SPECIFICATIONS

Item	Type		PFA mounting bracket type (For screw-fixing)		PVC mounting bracket type (For adhesive-fixing)			
	Model No.	NPN output type	3m cable length type	5m cable length type	3m cable length type	5m cable length type		
	PNP output type	EX-F61	EX-F61-C5	EX-F62	EX-F62-C5			
			EX-F61-PN	EX-F61-PN-C5	EX-F62-PN	EX-F62-PN-C5		
Sensing object			Agent, such as Sulfuric acid, Hydrochloric acid, Phosphoric acid or Ammonia etc. (Note1, 2)					
Supply voltage			12 to 24V DC ± 10% Ripple P-P 10% or less					
Current consumption			15mA or less					
Output			<NPN output type> NPN open-collector transistor ▪ Maximum sink current: 50mA ▪ Applied voltage: 30V DC or less (between output and 0V) ▪ Residual voltage: 1.0V or less (at 50mA sink current) 0.4V or less (at 16mA sink current)		<PNP output type> PNP open-collector transistor ▪ Maximum source current: 50mA ▪ Applied voltage: 30V DC or less (between output and +V) ▪ Residual voltage: 1.0V or less (at 50mA source current) 0.4V or less (at 16mA source current)			
			Output operation				ON when normal operation, OFF when leak is detected or the sensor is mounted improperly.	
			Short-circuit protection				Incorporated	
Response time			50ms or less					
Abnormality indicator			Red LED (lights up when leak is detected or the sensor is mounted improperly.)					
Normal indicator			Green LED (lights up when the sensor is mounted properly.)					
Protection			IP67(IEC)					
Ambient temperature			-10 to +60°C (No dew condensation or icing allowed) (Note 3, 4), Storage: -20 to +70°C					
Ambient humidity			35 to 85% RH, Storage: 5 to 85% RH					
Ambient illuminance			Incandescent light: 1,000 lx or less at the light-receiving face					
Emitting element			Infrared LED (non-modulated)					
Material			Enclosure: PFA					
Cable			0.1mm ² 3-core PFA cabtyre cable, 3m long	0.1mm ² 3-core PFA cabtyre cable, 5m long	0.1mm ² 3-core PFA cabtyre cable, 3m long	0.1mm ² 3-core PFA cabtyre cable, 5m long		
Weight			60g approx.	80g approx.	60g approx.	80g approx.		
Accessories			PFA mounting bracket: 1 pc.		PVC mounting bracket: 1pc.			

Notes: 1) Highly viscous liquid may not be stably detected.

2) The agents mentioned above are examples. Further, PVC mounting bracket may not be used depending on type or viscosity etc. of the agent. For details, please contact us.

3) Liquid being detected should be also kept within the rated ambient temperature range.

4) The specified ambient temperature is only for fixed product.

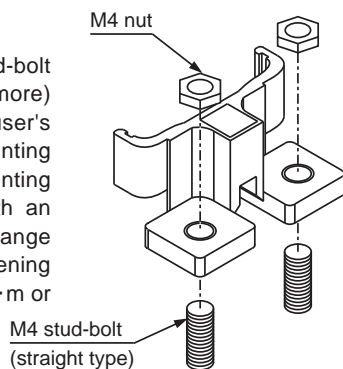
2 CAUTIONS

- This product has been developed / produced for industrial use only.
- Avoid using the product in an explosive atmosphere because this product does not have an explosive-proof protective construction.
- Make sure to carry out the wiring in the power supply off condition.
- Take care that wrong wiring will damage the sensor.
- Verify that the supply voltage variation is within the rating.
Take care that if a voltage exceeding the rated range is applied, or if an AC power supply is directly connected, the sensor may get burnt or damaged.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.
- Do not use during the initial transient time (50m sec. approx.) after the power supply is switched on.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Cable extension is possible up to total 50m with 0.3mm², or more, cable. However, in order to reduce noise, make the wiring as short as possible.
- Do not run the wires together with high-voltage lines or power lines or put them in the same race way. This can cause malfunction due to induction.
- In case a surge is generated in the used power supply, connect a surge absorber to the supply.
- Be sure to use the exclusive mounting bracket when installing the sensor to avoid human error, etc. Reliable detection cannot be guaranteed when this mounting bracket is not used.
- Make sure to use an isolation transformer for the DC power supply. If an auto-transformer (single winding transformer) is used, this product or the power supply may get damaged.
- In case air bubbles are drawn into the sensing part, take care that it may take some time for sensing to stabilize, or sensing may even become unstable.
- When liquid remains on the sensing surface after leak detection, wipe all liquid from the sensing surface. To avoid scratching the sensing surface and the enclosed mounting bracket, use a soft cloth.
- If there is liquid remained or scratch on the sensing surface or the exclusive mounting bracket, normal operation cannot be performed.
- Since this sensor employs non-modulated infrared LED, take sufficient care against extraneous light. Do not expose the sensing part directly to the extraneous light.
- Avoid dust, dirt, and steam. Further, do not use this product where oil or grease splashes to the product, or in an environment containing corrosive gas, etc.
- In case this sensor is used where electrostatic charge is present, use a metal leak pan, which should be connected to an actual ground.
- In case of using this product 50°C or more, be sure to fix this product with a dedicated mounting bracket.

3 MOUNTING

EX-F61□

- Insert the M4 stud-bolt (length 10mm or more) welded on the user's facilities into the mounting hole of the PFA mounting bracket and screw with an M4 nut (please arrange separately). The tightening torque should be 0.98N·m or less.

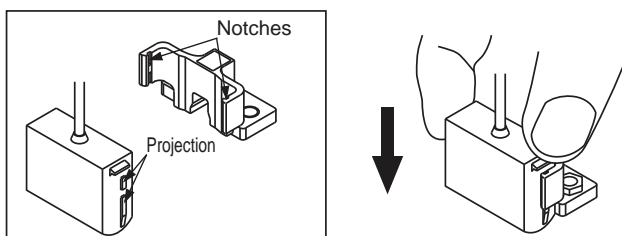


EX-F62□

- Please note that if the excess adhesive from the bottom surface of the exclusive mounting bracket is removed, the sensing capability may be affected.
- Use adhesive for polyvinyl chloride(PVC).

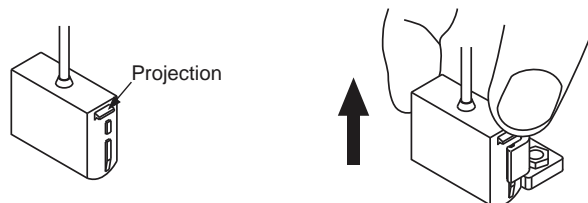
How to fit the sensor body to the exclusive mounting bracket

- Align the projections in the sensor body with the notches of the exclusive mounting bracket and slide till a click is felt.



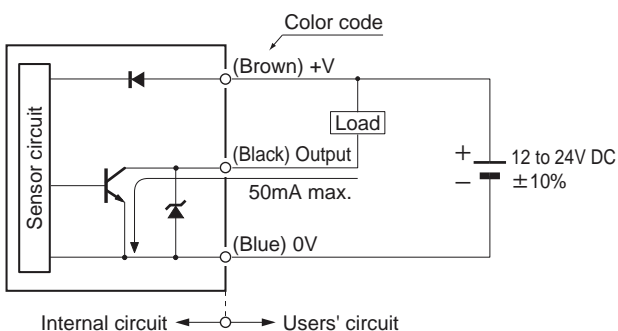
How to remove the sensor body from the exclusive mounting bracket

- Pinch the projections of the sensor body and pull the body upwards. Never pull the cable, since it may cause a cable break.

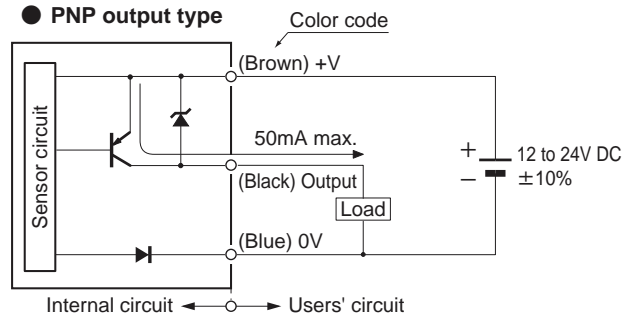


4 I/O CIRCUIT DIAGRAMS

- NPN output type

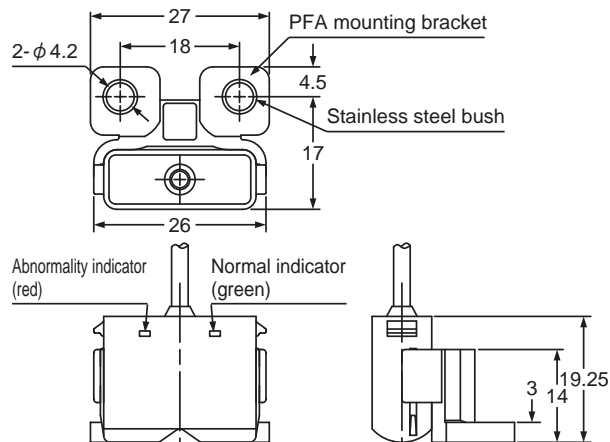


- PNP output type

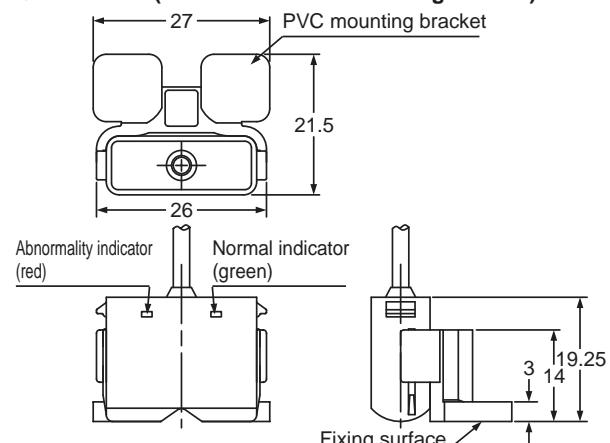


5 DIMENSIONS (Unit: mm)

- EX-F61□ (Sensor with PFA mounting bracket)



- EX-F62□ (Sensor with PVC mounting bracket)



6 INTENDED PRODUCTS FOR CE MARKING

- The models listed under '1 SPECIFICATIONS' come with CE Marking. As for all other models, please contact our office.



- Contact for CE

Panasonic Marketing Europe GmbH Panasonic Testing Center
Winsbergring 15, 22525 Hamburg, Germany

Panasonic Industrial Devices SUNX Co., Ltd.

<http://panasonic.net/id/pidsx/global>

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Panasonic**INSTRUCTION
MANUAL****Amplifier Built-in Leak Detection Sensor
EX-F70 Series**

MJEC-EXF71 No.0044-45V

Thank you very much for purchasing Panasonic products. Please read this Instruction Manual carefully and thoroughly for the correct and optimum use of this product. Kindly keep this manual in a convenient place for quick reference.

⚠ WARNING

- Never use this product as a sensing device for personnel protection.
- In case of using sensing devices for personnel protection, use products which meet laws and standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.

1 SPECIFICATIONS

Type			SUS mounting bracket type		PVC mounting bracket type	
			2m cable length type	5m cable length type	2m cable length type	5m cable length type
Model	NPN output		EX-F71	EX-F71-C5	EX-F72	EX-F72-C5
Item No.	PNP output		EX-F71-PN	EX-F71-PN-C5	EX-F72-PN	EX-F72-PN-C5
Sensing object			Water, Fluorinert ™ (Note 1) (Note 2)			
Supply voltage			12 to 24V DC ± 10% Ripple P-P 10% or less			
Current consumption			10mA or less (PNP output type: 15mA or less)			
Output			<NPN output type> NPN open-collector transistor • Maximum sink current: 50mA • Applied voltage: 30V DC or less (between output and 0V) • Residual voltage: 1.0V or less (at 50mA sink current) 0.4V or less (at 16mA sink current)		<PNP output type> PNP open-collector transistor • Maximum source current: 50mA • Applied voltage: 30V DC or less (between output and +V) • Residual voltage: 1.0V or less (at 50mA source current) 0.4V or less (at 16mA source current)	
			ON when normal operation, OFF when leak is detected or the sensor is mounted improperly.			
Output operation		Incorporated				
Short-circuit protection		50ms or less				
Response time			Red LED (lights up when leak is detected or the sensor is mounted improperly.)			
Abnormal indicator			Green LED (lights up when the sensor is mounted properly.)			
Normal indicator			IP67 (IEC)			
Protection			-10 to +60°C (No dew condensation or icing allowed) (Note 3), Storage: -20 to +70°C			
Ambient temperature			35 to 85% RH, Storage: 35 to 85% RH			
Ambient humidity			Incandescent light: 1,000lx or less at the light-receiving face			
Ambient illuminance			Infrared LED (non-modulated)			
Emitting element			Enclosure: Polypropylene			
Material			0.1mm ² 3-core PVC cabtyre cable, 2m long			
Cable			0.1mm ² 3-core PVC cabtyre cable, 5m long		0.1mm ² 3-core PVC cabtyre cable, 2m long	
Weight			Approx. 25g		Approx. 55g	
Accessories			SUS mounting bracket: 1 pc.		PVC mounting bracket: 1 pc. each for two-point-fixing and adhesive-fixing	

Notes: 1) Highly viscous liquid may not be stably detected.

2) Fluorinert™ is the worldwide trademark of 3M.

3) Liquid being detected should be also kept within the rated ambient temperature range.

2 CAUTIONS

- This product has been developed / produced for industrial use only.
- Avoid using the product in an explosive atmosphere because this product does not have an explosive-proof protective construction.
- Make sure that the power supply is off while wiring.
- Take care that wrong wiring will damage the sensor.
- Verify that the supply voltage variation is within the rating.
Take care that if a voltage exceeding the rated range is applied, or if an AC power supply is directly connected, the sensor may get burnt or damaged.
- If power is supplied from a commercial switching regulator, ensure that the frame ground (F.G.) terminal of the power supply is connected to an actual ground.

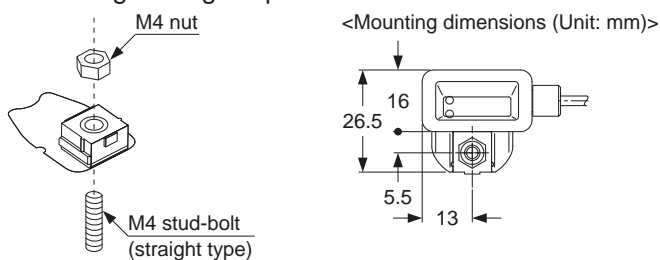
- Do not use during the initial transient time (approx. 50m sec.) after the power supply is switched on.
- In case noise generating equipment (switching regulator, inverter motor, etc.) is used in the vicinity of this product, connect the frame ground (F.G.) terminal of the equipment to an actual ground.
- Cable extension is possible up to total 50m with 0.3mm², or more, cable. However, in order to reduce noise, make the wiring as short as possible.
- Do not run the wires together with high-voltage lines or power lines or put them in the same raceway. This can cause malfunction due to induction.
- In case a surge is generated in the used power supply, connect a surge absorber to the supply and absorb the surge.
- Be sure to use the exclusive mounting bracket when installing the sensor to avoid human error, etc. Reliable detection cannot be guaranteed when this mounting bracket is not used.

- Take care not to use the SUS mounting bracket for **EX-F72** or the PVC mounting bracket for **EX-F71** mistakenly, since normal detection cannot be performed.
- Make sure to use an isolation transformer for the DC power supply. If an auto-transformer (single winding transformer) is used, this product or the power supply may get damaged.
- In case air bubbles are drawn into the sensing part, take care that it may take some time for sensing to stabilize, or sensing may even become unstable.
- When conducting maintenance after operation, wipe all liquid from the sensor and mounting bracket with a soft cloth.
- If there is liquid remained or scratch on the sensing surface or the exclusive mounting bracket, normal operation cannot be performed.
- Since this sensor employs non-modulated infrared LED, take sufficient care against extraneous light. Do not expose the sensing part directly to the extraneous light.
- Avoid dust, dirt, and steam. Further, do not use this product in an environment containing organic solvents.
- Take care that the product does not come in contact with oil, grease or organic solvents, such as, thinner, etc.
- In case this sensor is used where electrostatic charge is present, use a metal leak pan, which should be connected to an actual ground.

3 MOUNTING

EX-F71

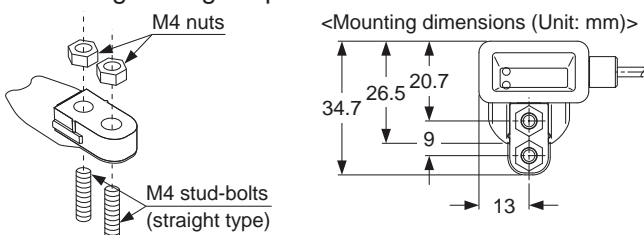
- Insert the M4 stud-bolt (length 10mm or more) welded on the user's facilities into the mounting hole of the SUS mounting bracket and screw with an M4 nut (please arrange separately). The tightening torque should be 0.98N·m or less.



EX-F72

<In case of using the two-point-fixing PVC mounting bracket>

- Insert M4 stud-bolts (length 10mm or more) welded on the user's facilities into the mounting holes of the two-point-fixing mounting bracket and screw with M4 nuts (please arrange separately). The tightening torque should be 0.49N·m or less.

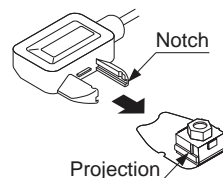


<In case of using the PVC mounting bracket for adhesive fixing>

- Use adhesive to stick fast the mounting bracket on the mounting surface. Please note that if the adhesive sticks out from the bottom surface of the mounting bracket or is 0.5mm, or more thick, the sensor body cannot be fitted to the mounting bracket.

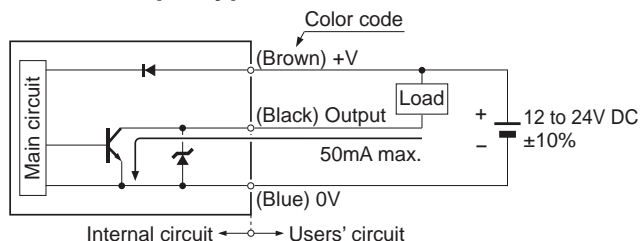
How to fit the sensor body to the exclusive mounting bracket

- Match the notch in the sensor body with the projection of the exclusive mounting bracket and slide till a click is felt.

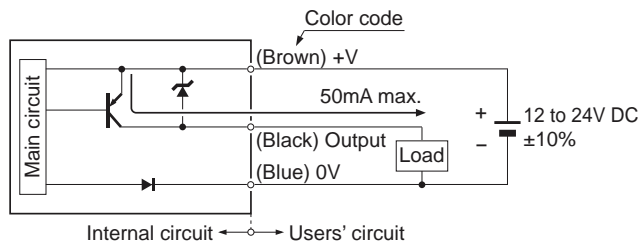


4 I/O CIRCUIT DIAGRAMS

• NPN output type



• PNP output type



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