

Static Remover Ultra-compact Fan Ionizer ER-Q

CMJE-ERQ No.0031-24V

Thank you very much for using 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.

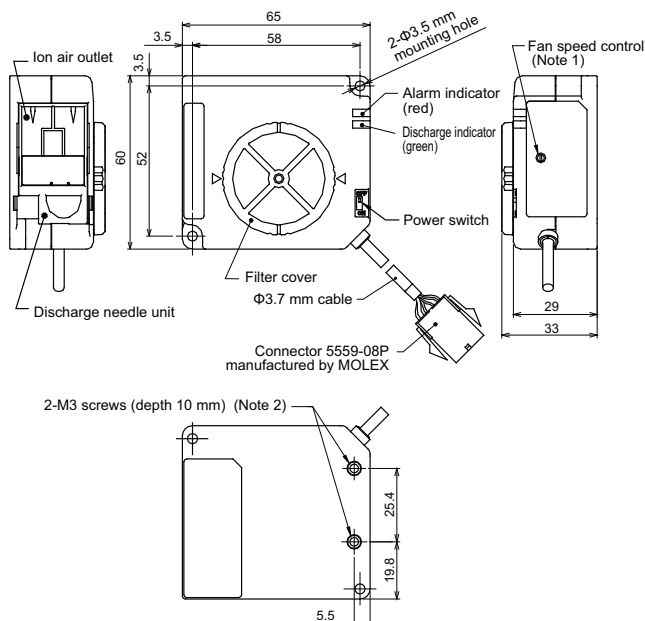
WARNING

- Never use this product with a device for personnel protection. In case of using devices for personnel protection, use products which meet laws or standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- Do not use this product in places where there may be a danger of flammable or combustible items being present.
- Clean the equipment regularly (discharge needles: about once every week, filter: about once a month), otherwise optimum charge removal performance may not be obtained and fire or operating problems may occur.
- If this product is used in an airtight room, ozone emitted from this product may be detrimental. Therefore, in order for this product to be used in an airtight room, be sure to keep the room ventilated.
- Do not direct ionized air toward the face. Ozone may cause irritation to places such as the nose and throat.
- Since the tip of the discharge needle is sharp, take sufficient care in handling the discharge needle, or injuries may result.
- Be sure to ground the frame ground (F.G.) terminal, otherwise electric charge removal may not be reliable.
- Take care not to let any foreign objects get into the fan air inlet, otherwise accidents or operating problems may occur.

1 OUTLINE

- This is a static charge remover which utilizes ion generation by means of corona discharge.
- It has a compact shape, so that it can be positioned either vertically or horizontally.
- It is equipped with an automatic stop function which operates when the discharge needle unit has been removed.

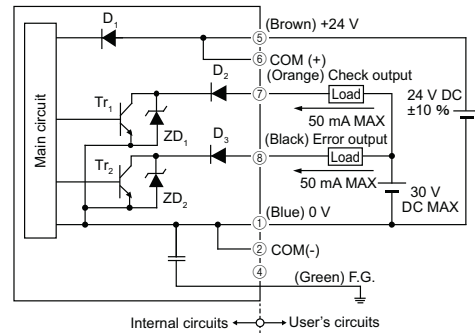
2 PART DESCRIPTION



Notes: 1) Fan speed control
This is set to MAX fan speed at the time of shipment from the factory. Use a precision screwdriver (-) to adjust the fan speed.
2) Screw threads exclusive for SUNX mounting brackets. Do not use them in mounting with other products.
When mounting this product directly to a case or such, fix it with M3 screws using 2-Φ3.5 mounting holes.

- Description of indicators
Discharge indicator (DSC) ... Lights during discharge (when ions are being generated)
Alarm indicator (ALARM) ... Lights when discharge error or discharge checking occurs, blinks when fan error occurs.

3 INPUT AND OUTPUT CIRCUIT DIAGRAM



Connector pin layout diagram

Terminal no.	Terminal name	Lead wire color
①	0 V	Blue
②	COM (-)	—
③	N.C. (Not used)	—
④	F.G.	Green
⑤	24 V	Brown
⑥	COM (+)	—
⑦	Check output	Orange
⑧	Error output	Black

D₁: Power supply reverse connection protection diode
D₂, D₃: Output protection diodes
ZD₁, ZD₂: Surge voltage absorption Zener diodes
Tr₁, Tr₂: NPN output transistors

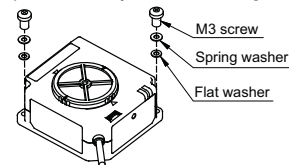


4 MOUNTING

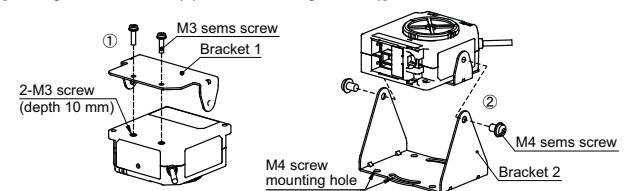
- Be sure to turn off the power before carrying out angle adjustment for this product, otherwise accidents or problems with operation may occur.

- If installing this product directly to the enclosure, use M3 screws. (M3 screws should be arranged separately.)
- If using the **ER-QMS1** (optional mounting bracket), use the screws provided with the mounting bracket.
- If using SUNX mounting bracket or screws other than the **ER-QMS1**, do not use screws which are longer than 10 mm, otherwise they may cause damage to internal parts when fastened.
- Tightening torques are 0.5 N·m for M3 screws and 1.2 N·m or less for M4 screws.
- If using several of these products alongside each other, leave a space of 50 mm or more between each product, otherwise product performance may be adversely affected.

[If installing this product directly to the enclosure]



[If using the **ER-QMS1** (optional mounting bracket)]



- ① Install bracket 1 to the main unit with the M3 screws.
- ② Install bracket 2 to the main unit with the M4 semi screws, and then use the M4 screw mounting holes to install to the enclosure.

* The M3 and M4 screws are included with the **ER-QMS1**.

5 OPTIONS

• AC adapter

Model No.	Details
ER-VAPS1	IN: 100 to 240 V AC, 50/60 Hz, 40 VA OUT: 24 V DC, 750 mA

• Cable with connectors

Model No.	Details
ER-QCC2	Cable length 2 m
ER-QCC5	Cable length 5 m

• Replacement discharge needle unit

Model No.	Details
ER-QANT	Unit with tungsten needles

• Replacement air filter

Model No.	Details
ER-QFX5	5-piece air filter set

• Mounting bracket

Model No.	Details
ER-QMS1	Mounting bracket for air direction adjustment

6 CARE AND MAINTENANCE

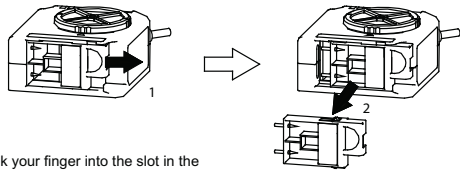
- Be sure to turn off the power before carrying out cleaning and maintenance.
- The discharge needle has a sharp point, so be very careful when cleaning the needle.
- After long periods of use, dirt may adhere to the discharge needles, the area around them and the filter. If these areas are not cleaned, charge removal performance will drop and accidents or problems with operation may occur. Therefore they should be periodically cleaned (discharge needles: about once every week, filter: about once a month).

- The discharge needles are consumable parts. If the discharging performance is not restored after the discharge needles have been cleaned, it is recommended that you replace the whole discharge needle unit (option). It is recommended that you replace the discharge needle unit after about 10,000 hours of operation.

[Cleaning and replacement procedure for discharge needle unit]

- ① Follow the procedure given below to remove the discharge needle unit from the main unit.
- ② Use a cotton swab or similar moistened in alcohol to clean the discharge needles and the areas around them.
If the needles are particularly dirty, use a brush (such as a toothbrush) moistened with alcohol to rub them clean, and then use a cotton swab to wipe them.
A commercially-available ultrasonic cleaner can also be used for cleaning. (Immerse the discharge needle unit into the cleaning tank to clean them.)
- ③ Insert the tabs of the discharge needle unit into the two slots in the main unit, slide the discharge needle unit sideways to install it to the main unit until a click is heard.

[Discharge needle unit removal procedure]



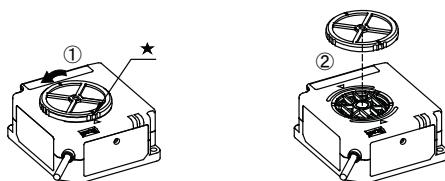
1 Hook your finger into the slot in the discharge needle unit and slide the unit in the direction shown in the illustration until a click is heard.

2 After this, you can pull the discharge needle unit toward you to remove it.

- * Do not touch the interior of the main unit when removing and installing the discharge needle unit, otherwise accidents or problems with operation may occur.
- * Do not apply any more force than is necessary when removing and installing the discharge needle unit, otherwise the discharge needle unit may become damaged.

[Fan filter cleaning and replacement procedure]

Install and use a filter depending on the operating environment.



- ① Turn the filter cover in the direction shown in the illustration to align the * marks.
- ② Remove the filter cover and the filter from the ER-Q main unit.
- ③ Remove the filter from the filter cover, and remove any dust and dirt adhering to the filter. If the filter is extremely dirty, wash it in water. If washing the filter in water, let it dry thoroughly before using it again.
- ④ Install the filter and the filter cover to the ER-Q main unit.

- * If the filter is used while it is still wet, accidents or problems with operation may occur.
- * If the filter cannot be cleaned, replace it.
- * Be careful not to let any foreign objects get inside the main unit when removing and installing the filter.

7 OPERATION MATRIX

	Indicator (○: Lit, ●: Off, ✱: Blinking)		Output		Discharge operation	Fan operation
	Discharge (DSC)	Alarm (ALARM)	Check	Error		
	Green	Red	Normal open	Normal closed		
Normal	○	●	OFF	ON	ON	ON
Discharge check	○	○	ON	ON	ON	ON
Discharge error	●	○	OFF	OFF	OFF	OFF
Fan error	●	✱	OFF	OFF	OFF	OFF

- * Once an error has been detected, the error status will be maintained until the power is turned off and back on again.
- * Eliminate the cause of the error before turning the power back on again.
- * If the cause of the error has not been eliminated, the error will occur again.

8 TROUBLESHOOTING

● Be sure to turn off the power before checking the discharge unit or the fan unit.		
Problem	Probable cause	Remedy
Discharge check (Discharge ○ Alarm ○)	Dirty discharge needle Wear Condensation F.G. not connected	• Check that the power supply voltage is within the usable range. • Turn off the power and check that the tips of the discharge needles are not worn or dirty and that the discharge needle unit is correctly installed to the main unit. • If the alarm indicator remains lit even after the discharge needles have been cleaned, check for any dirt around the discharge needles also. • Check that the F.G. terminal is securely connected to the ground.
Discharge error (Discharge ● Alarm ○)	Foreign object obstruction Condensation F.G. not connected	• Check that the power supply voltage is within the usable range. • There may be an abnormal discharge. Turn off the power and check that the discharge needles are not dirty or broken and that the discharge needle unit is correctly installed to the main unit. • If the alarm indicator remains lit even after the discharge needles have been cleaned, check for any dirt and foreign objects around the discharge needles also. • Check that the F.G. terminal is securely connected to the ground.
Fan error (Discharge ● Alarm ✱)	Fan intake covered Filter blocked Foreign object obstruction	• Turn off the power and check if the filter is blocked. • Check if there are any foreign objects inside the product.

* Indicators (○: Lit, ●: Off, ✱: Blinking)

9 SPECIFICATIONS

Item	Type	Fan type ionizer
	Model No.	ER-Q
Charge removal time		1.5 sec. approx. (Note 1)
Ion balance		±10 V or less (Note 1)
Power supply voltage		24 V DC ±10 %
Power consumption		200 mA or less
Discharge method		High-frequency AC method
Discharge output voltage		±2 kV approx.
Max. fan speed		6.4 m/s (Note 1)
Max. fan volume		0.2 m³/min
Output (CHECK, ALARM)		NPN transistor/open collector • Max. sink current: 50 mA • Applied voltage: 30 V DC or less (between output terminal and 0 V) • Residual voltage: 1 V or less (at input current of 50 mA)
	Output operation	Check: On when discharge check (Note 2) detected Off at all other times Error: Off when discharge error or fan error (Note 2) detected On at all other times
	Short-circuit protection	Incorporated
Indicators	DSC	Green LED (Lights up during normal discharge)
	ALARM	Red LED (Lights up during discharge checking and when discharge error (Note 1) detected, blinks when fan error (Note 1) detected)
Ozone generation amount		0.02 ppm or less (Note 1)
Ambient temperature		0 to +50°C (No dew condensation) / Storage temperature: -10 to +65°C
Ambient humidity		35 to 65% RH (No dew condensation) / Storage temperature: 35 to 65% RH
Vibration resistance		10 to 150 Hz frequency, 0.75 mm amplitude in X, Y and Z directions for two hours each
Material		Enclosure: PBT Discharge needle: Tungsten
Grounding method		C (capacitor) grounding
Weight		110g approx. (main unit only)
Accessories		● Wiring connector: 1 set [Manufactured by MOLEX: Housing (5557-08P), Terminal (5556T)]

Notes: 1) Representative value at 100 mm from directly in front of fan outlet, maximum fan speed with filter not installed.

2) Discharge check: Drop in discharging status detected.

Discharge error: Abnormal discharge detected.

Fan error: Fan operating problem detected.

10 CAUTIONS

- This product has been developed / produced for industrial use only.
- Do not use this product for any purpose other than charge removal and dust removal.
- Do not use this product in environments which are outside the specification range, otherwise operating problems or damage may occur. In addition, the operating life of the product may become significantly reduced.
- Never disassemble, repair or modify this product, otherwise operating problems or accidents may occur.
- Do not dispose of this product by burning it, otherwise it may explode or toxic fumes may be generated.
- This product generates ozone, so be sure to provide adequate ventilation if using it in a confined space.
- 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.
- Be sure to turn off the air and the power supply before carrying out any cable connection or inspection work. If this is not done, operating problems, damage or electric shocks may occur.
- After connecting the cables, check that the connections are correct before turning on the power. If the cables are connected incorrectly, operating problems or accidents may occur.
- Verify that the supply voltage variation is within the rating.
- It takes approximately 2 seconds after the power is turned on before the fan operation stabilizes. To ensure proper charge removal performance, do not use the product until sufficient time has elapsed.
- Do not turn the power back on immediately after it has been turned off, otherwise operating problems or accidents may occur. In addition, the operating life of the product may become significantly reduced. Wait at least 2 seconds before turning the power back on again.
- Do not use any cables which have any damage (such as splitting or cracking), otherwise operating problems or accidents may occur.
- Avoid using the product in places where there are high levels of steam or dust in the air or where it might be directly exposed to water, oil or welding spatter.
- Do not touch the discharge needle with hard objects such as tools. If the discharge needle becomes broken, it will not provide sufficient charge removal performance, and moreover operating problems or accidents may occur.
- Avoid using the product while the filter is blocked, otherwise accidents or problems with operation may occur.
- Clean and replace the filter at periodic intervals.
- Always be sure to turn off the power before replacing the filter.
- Secure the main unit properly when setting up. If the main unit is not correctly secured or if it is subjected to intermittent vibrations or impacts, accidents or problems with operation may occur.
- Do not place any objects which may obstruct air flow within 20 mm the front of the fan air intake, otherwise accidents or problems with operation may occur.
- Use cables with a cross-section of 0.15 mm² or more and a length of less than 30 m. Furthermore, keep the cables as short as possible to avoid the possibility of interference.
- If this product ceases functioning or is no longer required, dispose of it according to appropriate local waste disposal regulations.

Panasonic Industrial Devices SUNX Co., Ltd.

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

Overseas Sales Division (Head Office)

2431-1 Ushiyama-cho, Kasugai-shi, Aichi, 486-0901, Japan

Phone: +81-568-33-7861 FAX: +81-568-33-8591

About our sale network, please visit our website.

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