

INSTRUCTION MANUAL

Static Remover Wide-area Fan Type Ionizer ER-TF Series

<EX>

Thank you very much for using SUNX 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.



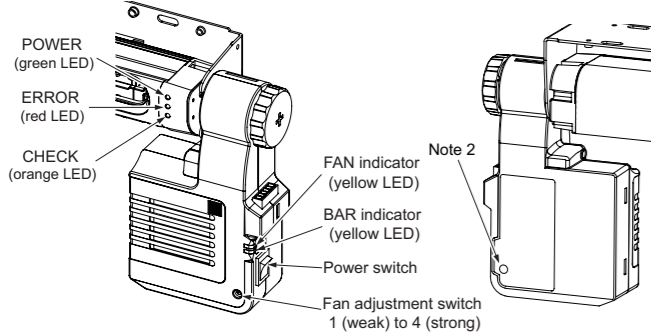
WARNING

- 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.
- High voltages are applied to the discharge needle, so never touch the discharge needle while the power for the product is turned on, otherwise electric shocks may result.

1 OUTLINE

- This product is a wide-area fan-type ionizer.
- The fan speed for this product can be adjusted to one of four different settings. When the fan speed is set to the MAX setting, the product can remove charges from a wide area very quickly.
- It is equipped with a sensor monitoring function which halts the discharge operation if it detects that an object has been inserted into the discharge window.

2 PART DESCRIPTION



Descriptions of each LED

Bar unit

POWER ····· Lights when the power is turned on.

(POWER indicator)

ERROR ····· Lights when an abnormal discharge occurs or if the sensor monitoring function detects that an object has been inserted into the caused by a blockage of the filter or a problem with the fan such as a constraint is detected.

CHECK ····· Lights when it is nearly time for regular inspection of the discharge needle unit to be carried out, or if the fan speed drop due to a cause such as a blockage of the fan air intake filter is detected.

Fan unit

BAR ··· Lights when a discharge part error or a discharge part check is detected. (discharge part status indicator)

FAN ··· Lights when a fan error or a fan check is detected. (fan status indicator)

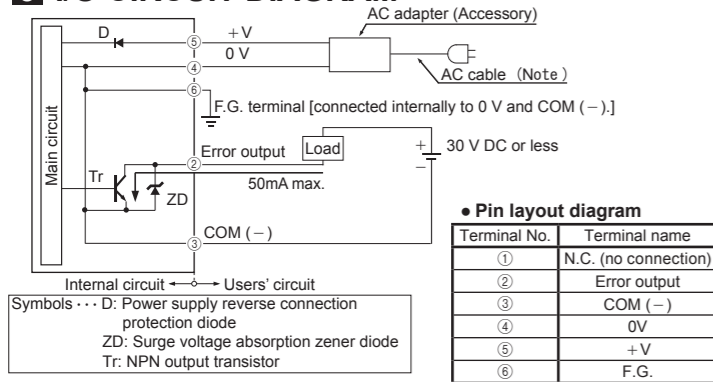
Note1: Sensor monitoring function

When this function detects that an object is inserted into the discharge window, it halts discharging, and a notification is given via error output and indicators.

2: Ion balance adjuster

The seal is put in the state of factory shipment. When adjust ion balance, remove the seal first and make sure to use measuring instrument to adjust. After adjusting, cover the volume with the blindfold seal (Accessory).

3 I/O CIRCUIT DIAGRAM

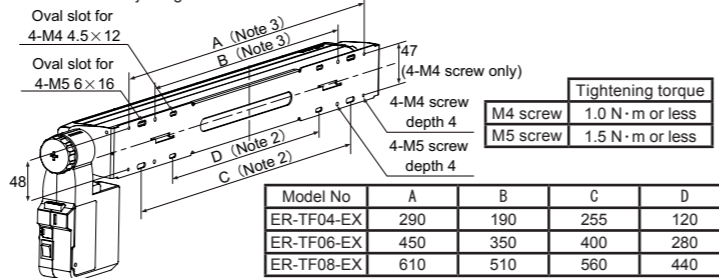


4 MOUNTING

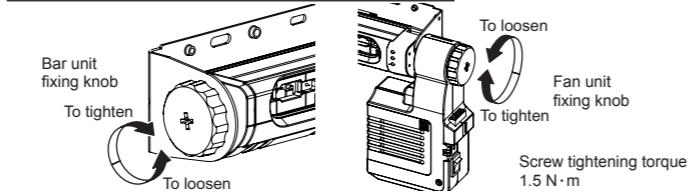
- Always be sure to turn off the power before adjusting the direction of the fan unit.

- Secure the product to the place of installation.
- Adjust the directions of installation for the bar unit and the fan unit.
 - Loosen the bar unit fixing knob and the fan unit fixing knob.
 - First adjust the direction of the bar unit. Once the direction of the bar unit has been determined, secure it in place by tightening the bar unit fixing knob. Next adjust the direction of the fan unit. Once the direction of the fan unit has been determined, secure it in place by tightening the fan unit fixing knob.
- When adjusting the direction of the fan unit, do not apply excess force to the fan unit to cause it to rotate outside of its normal range of rotation, otherwise it may damage the fan unit.
- Always be sure to securely ground the F.G. terminal (Note 1). If it is not securely grounded, the charge removal process may not work correctly.

- Notes: 1) The F.G. connection terminal of the input connector is connected internally to 0 V and to COM(-).
2) If mount the product on slotted holes (C,D), mount it from the front (ionizer side).
3) If mount the product on threaded holes (A,B), mount it from the back (mounting bracket side).
4) If the direction of bar unit needs to readjust once it has been installed, first loosen both the bar unit fixing knob and the fan unit fixing knob and then carry out steps ② and ③ above to adjust the direction of the bar unit. Note that the fan unit may turn from its own weight when the fan unit fixing knob is loosened, so hold it in place by hand when loosening the fan unit fixing knob at this time.
5) Be careful not to get your finger caught between the bar unit and the mounting bracket when adjusting the direction.

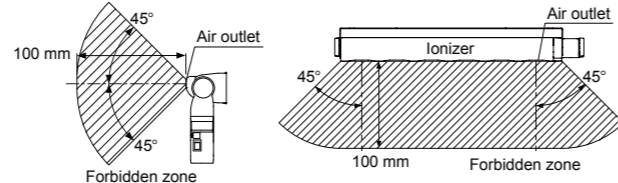


Adjusting the bar unit and the fan unit directions



5 INSTALLATION CONDITIONS

- Do not place any objects or any other charge removal equipment within 100 mm of the ionized air outlet front (refer to the illustration below), as they may affect operation and performance of this ionizer.



6 CONNECTION METHOD

While pushing the release buttons of the connector terminals, insert the cables into the terminals as far as they will go. (Refer to the illustration at right.)

Note: At the time of shipment from the factory, the F.G. terminal, +V terminal and 0V terminal are connected to the connector.

<Applicable cables>

Size	Conductor cross-sectional area
AWG24 to 16	0.2 to 1.5 mm ²

7 OPERATION MATRIX

	Indicators (○:Light up, ●:Off, ※:Blink)					Error output	Discharge operation
	Bar unit		Fan unit				
	POWER	ERROR	CHECK	BAR	FAN		
Normal operation	○	●	●	●	●	ON	ON
Discharge part error	○	○	●	○	●	OFF	OFF
Discharge part check	○	●	○	○	●	ON	ON
Fan error	○	○	○	●	○	OFF	OFF
Fan check	○	●	○	○	○	ON	ON
Output short-circuit	○	●	※	※	※	Short-circuit	ON

Note: When an error is detected, discharge operation is halted. Turn the power off, remove the cause of the error and then turn the power back on again. If the error condition has not been removed, the error status will occur again.

8 CARE AND MAINTENANCE

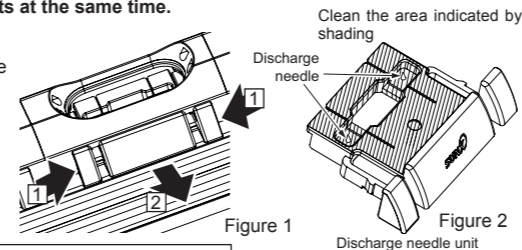
- Always be sure to turn off the power before carrying out any care and maintenance of the product.
- The tip of the discharge needle is sharp, so be careful not to touch it while cleaning.
- When the product is used for long periods of time, dust and other foreign particles may accumulate on the discharge needle and the area around it, and also on the fan filter. If this happens, clean the needle and the fan filter.
- Clean both the discharge needle unit and the fan air intake filter regularly as follows, otherwise their charge removal performance will drop and operating problems or accidents may occur.
 - The discharge unit: about once every week
 - The fan air intake filter: about once every two month
- The discharge needle is a consumable part. If the charge removal performance is not restored after cleaning the discharge needle, the discharge needle unit should be replaced. All of the discharge needle units should be replaced at the same time.

Cleaning and replacing the discharge needle units

- Check that the power is turned off.
- Remove the discharge needle unit. Hold the discharge needle unit at the left and right sides as shown by the arrows ① in the illustration below, and then pull it in the direction of arrow ②. (Refer to Figure 1.)
- Use a cotton swab or similar item which has been moistened with alcohol to clean the discharge needle and the area around it. If the needle is extremely dirty, use a brush (such as a toothbrush) which has been moistened with alcohol to do the cleaning, and then use a cotton swab to dry the area. (Refer to Figure 2.)
 - The discharge needle unit can also be cleaned using commercially-available ultrasonic cleaner. (Immerse the discharge needle units completely into the cleaning tank one at a time.)
- After cleaning, install the discharge needle unit. Insert it until a click is heard, and then check that it is securely installed.

- Notes: 1) Do not touch inside the discharge window when removing and installing the discharge needle unit, otherwise operating problems or accidents may occur.
2) If replacing the discharge needle unit because of natural wear and use, replace all units at the same time.

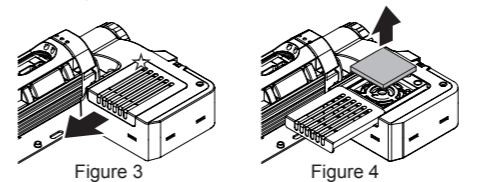
- OPTION ER-TFANT: Discharge needle unit (1 pc.)



Cleaning and replacing the fan air intake filter

- Remove the filter. While pushing the place indicated by ☆ in the illustration below, slide the fan cover in the direction of the arrow. (Refer to Figure 3.)
 - Clean off any dust which is adhering to the filter. If the filter is extremely dirty, wash it with water. If washing the filter with water, let it dry thoroughly before reusing it.
 - Install the filter.
- Notes: 1) Do not use it while the filter is still wet, otherwise operating problems or accidents may occur.
2) If the filter will not come clean, it should be replaced.
3) Be careful not to let anything get inside the air intake of the fan unit when removing and installing the filter.

- OPTION ER-TFFX10: Air filter (10 pcs.)



9 TROUBLESHOOTING

- Always be sure to turn off the power before checking the discharge part.

Problem	Probable cause	Remedy
ERROR indicator lights up.	Discharge part status indicator (BAR) lights up. Condensation Foreign objects F.G. not connected Sensor monitoring function operated	· An abnormal discharge may have occurred. Turn off the power and check that the tips of the discharge needles are not broken and that the discharge needle units are correctly installed to the bar unit. · Check that the F.G. terminal is securely connected. · A foreign object may have been detected entering the discharge window. Turn off the power, check that there are no foreign objects around the ionized air outlet, and then turn the power back on.
Fan status indicator (FAN) lights up.	Air intake covered Vibration or shocks Fan speed adjustment switch position incorrect	· Check that the air intake is not covered and that the filter is not dirty or blocked, and then turn the power back on. · Check that the ionizer is securely installed. If the ionizer is continually being subjected to vibration or shocks, re-examine the installation location to reduce the amount of vibration and shocks. · Check that the fan speed adjustment switch is set to a correct position (not in between two positions).
CHECK indicator lights up.	Discharge needle dirty Discharge needle worn F.G. not connected Condensation	· Check that the discharge needles are not broken, worn or dirty and that the discharge needle units are correctly installed to the bar unit. · If the CHECK indicator remains lit even after the discharge needles have been cleaned, check the area around the discharge needles also.
Fan status indicator (FAN) lights up.	Filter blocked Fan speed dropped	· Turn off the power and check that the filter is not dirty or blocked.
Fan unit indicator flashes	Output wire short-circuited	· The load may be short-circuited. Turn off the power and then check.
Charges not being removed.	Obstruction Error detection	· Check if the error detection function has operated. If there is no error, turn off the power and check if there are any obstructions near the ionized air outlet.

10 MAJOR SPECIFICATIONS

Item	Type	Wide-area fan type		
	Model No.	ER-TF04-EX	ER-TF06-EX	ER-TF08-EX
Charge removal time		Approx. 1 second (Note 1)		
Ion balance (Note 2)		± 10 V or less (Note 2)		
Power supply voltage		Accessory AC adapter input: 100 to 240 V AC ± 10 % 50/60 Hz (Note 3) (Output: 24 V DC)		
Power consumption		80 VA or less (at 100 V: 70 VA or less)		
Discharge method		Steady-state DC		
Discharge output voltage		± 6,000 V approx.		
Error output		NPN open-collector transistor · Maximum sink current: 50 mA · Applied voltage: 30 V DC or less (between output and 0 V) · Residual voltage: 1 V or less (at 50 mA sink current)		
	Output operation	OFF if abnormal discharge, object inserted into discharge window or fan problem detected; normally ON		
Indicators	Short-circuit protection	Equipped		
	Bar	POWER	Green LED (Lights up when power supplied)	
		ERROR	Red LED (Lights up when discharge part error or fan error is detected)	
		CHECK	Orange LED (Lights up when discharge part check or fan check is detected)	
Fan	Discharge part status	Yellow LED (Lights up when discharge part error or discharge part check is detected)		
	Fan status	Yellow LED (Lights up when fan error or fan check is detected)		
Ozone generation		0.02 ppm or less (Note 2)		
Ambient temperature		0 to +50°C (No dew condensation), AC adapter: 0 to +40°C		
Ambient humidity		35 to 65 % R.H. (No dew condensation)		
Vibration resistance		10 to 30 Hz frequency, 0.75 mm amplitude in X, Y and Z directions for two hours each		
Material		Bar unit enclosure: ABS, Fan unit enclosure: ABS Discharge needles: Tungsten, Mounting bracket: SPCC		
Weight		1.0 kg approx.	1.2 kg approx.	1.4 kg approx.
Accessories		AC adapter, F.G. connection cable, spare replacement filters (5 pcs.), blindfold seals(2 sheets.)		

- Notes: 1) Typical value at a distance of 200 mm from directly in front of air outlet at the middle of the unit at maximum fan speed.
2) Typical value at a distance of 300 mm from directly in front of air outlet at the middle of the unit at maximum fan speed.
3) AS for AC cable model(CN-AC ※※ -C2) of the Option, please contact our office.

11 CAUTIONS

- This product has been developed / produced for industrial use only.
- Do not use this product for any purpose other than charge 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 errors 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 power 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 4 seconds to stabilize the fan operation after the power is turned on. 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 errors or accidents may occur. 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 the power plug of the AC adapter if it has become dusty, otherwise fire may occur.
- 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 needles with hard objects such as tools. If the discharge needles become broken, they will not provide sufficient charge removal performance, and moreover operating problems or accidents may occur.
- Do not use this product without the filter or while the filter is blocked, otherwise operating errors or accidents may occur.
- Clean or replace the filter at regular intervals.
- Be sure to turn off the power before replacing the filter.
- Install the product so that it is at least 100 mm away from the object being charged.
- When installing this product, be sure to securely tighten the fixing knobs for the bar unit and fan unit. If they are not securely tightened or if constant vibration or shocks are applied, operating problems or accidents may occur.
- Do not place any objects which may obstruct air flow within 10 mm the front of the fan air intake, otherwise operating problems or accidents may occur.
- If this product ceases functioning or is no longer required, dispose of it according to appropriate local waste disposal regulations.

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