

OMRON

Model ZJ-FW□□□

Ionizer

INSTRUCTION SHEET

Thank you for selecting OMRON product. This sheet primarily describes precautions required in installing and operating the product. Before operating the product, read the sheet thoroughly to acquire sufficient knowledge of the product. For your convenience, keep the sheet at your disposal.

TRACEABILITY INFORMATION:

Importer in EU: Omron Europe B.V. Wegalaan 67-69, 2132 JD Hoofddorp, The Netherlands
 Manufacturer: Omron Corporation, Shiokoji Horikawa, Shimogyo-ku, Kyoto 600-8530 JAPAN

The following notice applies only to products that carry the CE mark:
 Notice: This is a class A product. In residential areas it may cause radio interference, in which case the user may be required to take adequate measures to reduce interference.



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PRECAUTIONS FOR SAFE USE

Please observe the following precautions for safe use of the product.

1. Installation environment
 - Do not use this product in environments where it can be exposed to inflammable/explosive gas.
 - In order to secure the safety of operation and maintenance, do not install this product close to high-voltage devices and power devices.

2. Power Supply and Wiring
 - The supply voltage must be within the rated range.
 - Be sure to use the specified AC adapter.

For handling, refer to the instruction manual of a recommended AC adapter.
 AC adapter for ZJ-FW013, 029: ZN9-PS36FW-□
 AC adapter for ZJ-FW053: ZN9-PS90FW-□

- The length of all input / output cables must be within 30m.
- The size of all input / output cable must be AWG 20 to 22.
- High-voltage lines and power lines must be wired separately from this product. Wiring them together or placing them in the same duct may cause induction, resulting in malfunction or damage.
- Avoid connecting or disconnecting connectors while the product is powered on. Doing so might damage the product.
- Output circuit does not have short-circuit protection. Do not wire output circuit with no load connected, otherwise it may be damaged.

3. Maintenance
 - Before cleaning discharge needles or removing/installing discharge needles unit, be sure to wait more than one minute after turning the power off.
 - Do not touch the discharge needles directly with your hands.

4. Applicable standards
 - EN61326-1
 - Electromagnetic environment : Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)

5. Others
 - Do not disassemble, repair or modify this product.
 - Dispose of this product as industrial waste.

PRECAUTIONS FOR CORRECT USE

Please observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

1. Installation Site
 - Do not install this product in locations subjected to the following conditions:
 - Ambient temperature outside the rating
 - Ambient humidity outside the rating
 - Presence of corrosive or flammable gases
 - Presence of dust, salt, or iron particles
 - Direct vibration or shock
 - Outdoor or Direct sunlight
 - Water, oil, or chemical fumes or spray
 - Strong magnetic or electric field
 - Over 2,000m above sea level

2. Power Supply and Wiring
 - For the power supply, use a DC power supply that has a countermeasure (safety ultra-low voltage circuit) for preventing generation of high voltage, or a UL Class 2 DC power supply.
 - Do not ground the +(plus) terminal on the secondary (DC) side.
 - If surge current is present in the power lines, connect surge absorbers that suit the operating environment.
 - Be sure to connect functional earth terminal to ground by the cable with the ground resistance of 100 ohm or less. If not, the ion balance would deviate. Not doing so may result in malfunction of the product or deviation of the ion balance.

3. Maintenance
 - Periodically clean the discharge needles as dirt on these needles cause the amount of generated ions to fall or the ion balance to deviate..
 - Use ethanol or IPA to clean discharge needles. Do not use paint thinner, benzene, acetone or kerosene

Outline and Features

This product neutralizes static electricity on electric-charged objects with ionizes air by DC high-voltage corona discharge, which is blew on the charge object by the embedded fan in the product.

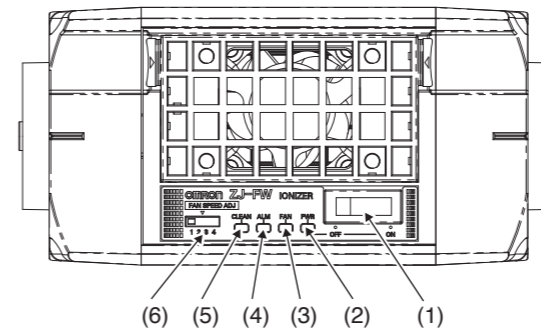
1. Specifications

Model	ZJ-FW013	ZJ-FW029	ZJ-FW053
	Power supply voltage	24VDC±10% ripple(p-p)10%	
Current consumption	0.9A max.	1.2A max.	3.0A max.
Ion generation system	Variable DC system		
Output voltage	±7.5kV		
Discharge time *	1.5s	1s	1s
Ion balance *	±10V		
Indicators	Power supply indicator (Green), Fan operation indicator (Green), Alarm indicator (Red), Cleaning indicator (Yellow)		
External output (for both cleaning and alarm outputs)	Photo MOS relay output (NPN or PNP) • Applied voltage: 30VDC max., load current: 100mA max. • Residual voltage: 1V max.		
Discharge stop input	No-voltage contact input • ON: 0V short circuit • OFF: Open (leakage current: 0.1mA max.)		
Ambient temperature	Operating / Storage : 0 °C to 50 °C (With no condensation)		
Ambient humidity	Operating : 35% to 65%RH Storage : 35% to 85%RH (With no condensation)		
Usage environment	Pollution degree 2		
Material	Approx. 0.6kg (body) Approx.1.2kg (packing)	Approx. 1 kg (body) Approx. 1.8kg (packing)	Approx. 2kg (body) Approx. 3kg (packing)
Weight	Case : ABS, Frame : Aluminum, Discharge needle : Tungsten, Mounting bracket : SUS	Case : ABS, Frame : Aluminum, Discharge needle : Tungsten, Stand : ABS	
Accessories	Instruction sheet, I/O connector, Streamer, Mounting bracket, Body fixing screw (2 pcs.)	Instruction sheet, I/O connector, Streamer, Stand, Body fixing screw (2 pcs.)	

* : Typical value
 Measurement conditions: distance 300mm, center of the product, maximum fan speed
 Discharging time: the time that ±1000V charging plate is discharged to ±100V
 Measurement time of ion balance: 10seconds
 The plate of charging plate monitor: 150mm sq., 20pF

2. Parts Names and Functions

Front



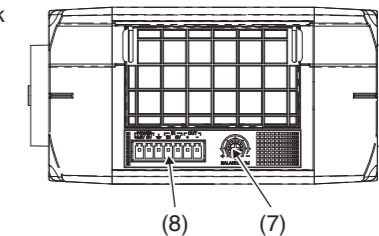
- (1) Power switch
This is the switch that turns on the ionizer.
- (2) Power indicator (PWR)
The indicator is on with power on.
- (3) Fan operation indicator (FAN)
When the fan(s) is working normally, the indicator is on.
- (4) Alarm indicator (ALM)
When some errors occur, this indication is on.
- (5) Cleaning indicator (CLEAN)
When discharge needles need to be cleaned, this indicator is on.
- (6) Fan speed adjustment switch (FAN SPEED ADJ)
Fan speed (air volume) is selectable with four levels for the operating conditions. (Note, that deionizing performance depends on fan speed.)

Indicators lighting pattern

The lighting pattern notifies the operator of the state of the ZJ-FW□□□.

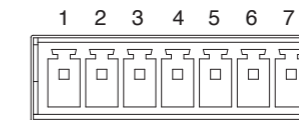
No.	Lighting pattern				Output state	Conditions
	PWR	FAN	ALM	CLEAN		
1	ON	ON	OFF	OFF	ON	Normal operation
2	ON	OFF	OFF	OFF	OFF	Front cover open Discharge stop input
3	ON	ON	OFF	ON	OFF	Cleaning
4	ON	OFF	ON	OFF	OFF	Fan rotation error
5	ON	ON	ON	ON	OFF	Malfunction error

Back



- (7) Ion balance adjustment volume (BALANCE ADJ)
This is for adjusting ion balance.
• The ion balance has been adjusted at our factory. If the ion balance needs to be adjusted, turn this volume to adjust the balance with a phillips head screwdriver. Measuring equipment as charging plate monitor is needed for adjusting the ion balance.

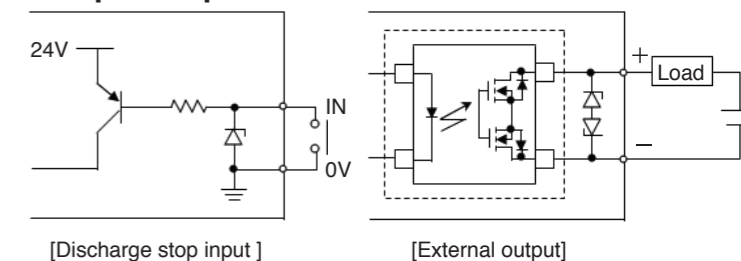
- (8) Connector (Model XW4B-07B1-H1)
This is for power input and functional ground.



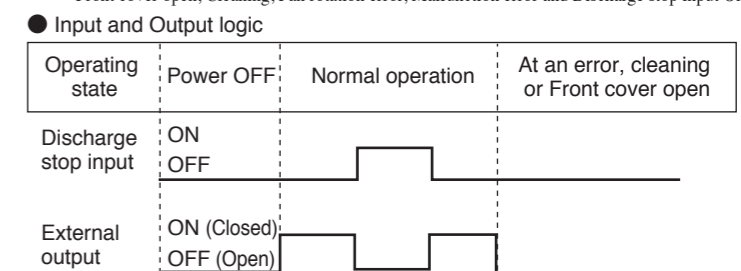
No.	Symbol	Input/ Output Signal
1	+24V	+power (24VDC)
2	0V	0V
3	⏏	Functional ground (Note: Be sure to connect to the ground with the ground resistance of 100 ohm or less.*
4	IN	Discharge stop input (+)
5	0V	Discharge stop input (0V)
6	OUT (+)	External output (+)
7	OUT (-)	External output (-)

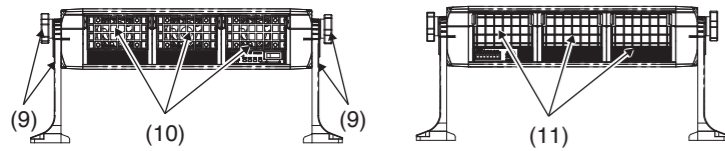
*1 : The 0V terminal, functional earth terminal and discharge stop input (0V) terminal are connected inside the main unit.
 For cable used for a terminal block, consider the following.
 Wire length: 30m and less

Input/output circuit



- (1) Discharge stop input
When the discharge stop input is turned ON, the discharge from needles and rotation of fans stops and external output turns OFF(Open).
- (2) External output
External output is ON(Close) state when ZJ-FW is working normally.
External output is OFF(Open) state as one of the below conditions occurs.
• Front cover open, Cleaning, Fan rotation error, Malfunction error and Discharge stop input ON





- (9) Body fixing screw and Stand (ZJ-FW013: Mounting bracket)
The body can be fixed at an angle.
- (10) Front cover
Front cover is removable.
- (11) Air filter and filter cover
This filter prevents dirt from entering the unit.

3. Installation

1. Installing the main unit

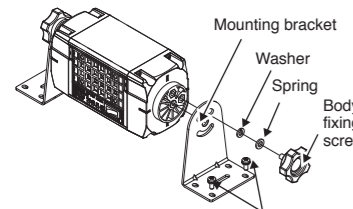
- Firmly tighten the provided stand and mounting bracket with the body fixing screw.

● Stand (ZJ-FW029 and 053)

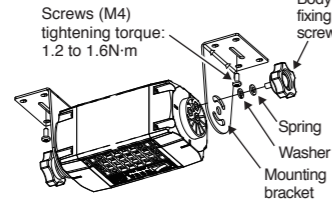
- Use the stand on the desk.
- The stand cannot be used to mount the product to a frame. Be sure to use an optional mounting bracket (ZJ9-BRL1F).
- When securing the stand on the desk, use M4 screws. (tightening torque: 0.8 to 1.2N·m)

● Mounting bracket (ZJ-FW013)

(1) Mounting at a normal position



(2) Mounting at the upper side of the frame



Screws (M4) tightening torque: 1.2 to 1.6N·m

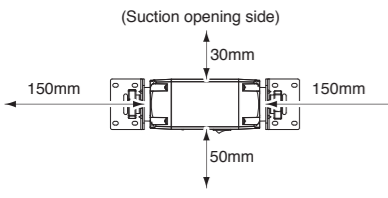
- When the product is mounted on a frame of a booth using mounting bracket, firmly mount it using M4 screws. (tightening torque 1.2 to 1.6 N·m)
- When mounting the product at a normal position, use nuts at the upper side of the product, or use nuts at both sides (left: supply opening side, right: suction opening side) when mounting the product at the upper side of the frame.

The stand can also be used for ZJ-FW013, and mounting bracket for ZJ-FW029 or 053.

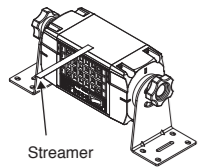
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Stand: ZJ9-BRS1FW

Mounting bracket: ZJ9-BRL1FW



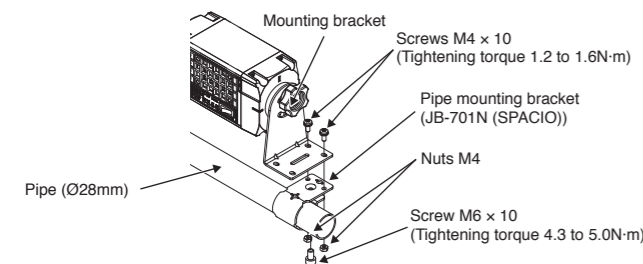
- Allow at least 30mm of space at the back of air inlet, and 50mm of space in front to ensure good intake of air.
- If there is a conductor or electric-charged object around the product, ion balance control may become disabled. Be sure to secure at least 150mm of space from it.



- Mount the streamer to the aluminum frame. The mounting position must be near the center of the front cover.
- Wipe off any dirt on the aluminum frame with alcohol before pasting the streamer.

2. Installing the pipe mounting bracket ZJ9-BRP1FW (sold separately)

- The pipe mounting bracket is used only for the pipe with 28mm diameter.
- Firmly secure the pipe mounting bracket with M6 screws, and pipe mounting unit and mounting bracket with M4 screws (both screws are provided).
- (tightening torque of 1.2 to 1.6 N·m for M4, 4.3 to 5.0 N·m for M6)



4. Maintenance

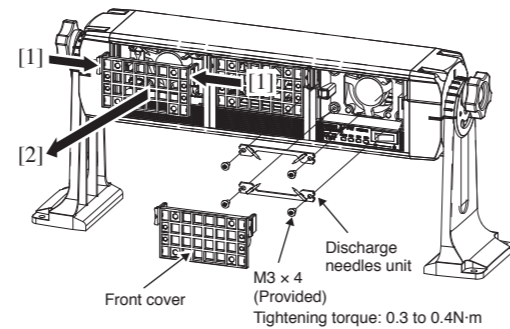
Periodically clean the discharge needles and the air filter.
Be careful not to touch the needles during cleaning.
Be sure to wait more than one minute after turning the power off, before starting cleaning.

1. Cleaning the discharge needles and inside the product

- (1) Cleaning the discharge needles and inside the product.
- To open the front cover, confirming that the fan stopped, press the both sides of [1] and then pull it to the direction of [2].
 - Wipe off any dirt on the tips of the discharge needles with a cotton wool bud moistened with ethanol or IPA.
 - Also clean inside the product (e.g. Fan and front cover).

(2) Replacing the discharge needles unit

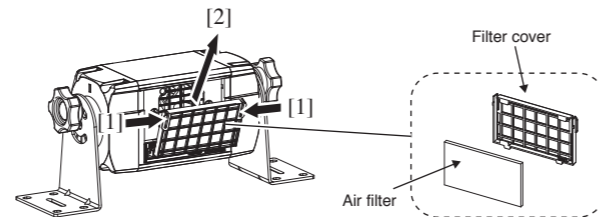
- Make sure that the fan has stopped rotating, and then open the front cover.
- Take off the screws by using a Phillips head screwdriver, then remove the discharge needles unit. A needle itself cannot be replaced. Do not pull out a needle with pliers, etc. Be sure to replace the whole discharge needles unit.
- Set the new discharge needle unit and tighten the screws (provided). When mounting the discharge needles unit, place the needles side facing the front cover and tighten it with screws.
- (tightened torque :0.3 to 0.4N·m)



- Even in clean rooms with few particles, corona discharge that occurs on the tips of the discharge needles causes gas in the air to be turned into particles which stick to the discharge needles. In processes where these particles will damage your product, be sure to periodically clean the discharge needles and air filter.
- Do not touch the tip of discharge needles. Damaging or bending the tips of discharge needles will affect their performance.
- When mounting the discharge needle unit back again, be sure to use the screws that have been mounted to secure the discharge needle unit at product shipment.

2. Cleaning the air filter

- Push both sides of the filter cover shown as [1] below and pull it toward you to remove it in the direction shown as [2] below. Remove dust of the air filter that is stored in the filter cover with a vacuum cleaner, etc.
- After the cleaning, store the filter to the air filter cover and mount it to the main unit.



- Periodically clean the discharge needles and the air filter. The cleaning cycle depends on manufacturing environment, then decide how often cleaning is needed according to your condition.
- If the performance does not get restored after cleaning, replace the discharge needle unit and the air filter. (Be sure to use the following parts specified by OMRON.)

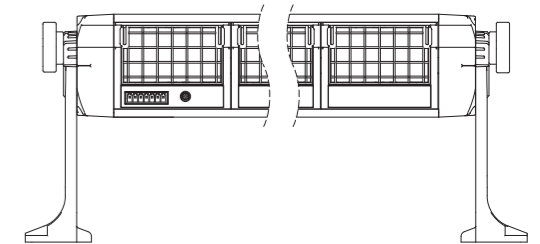
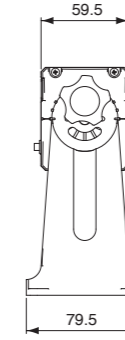
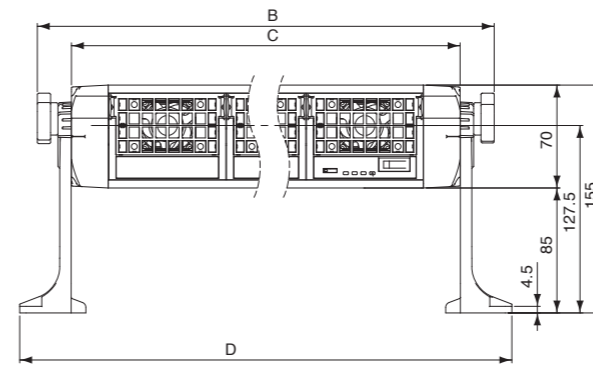
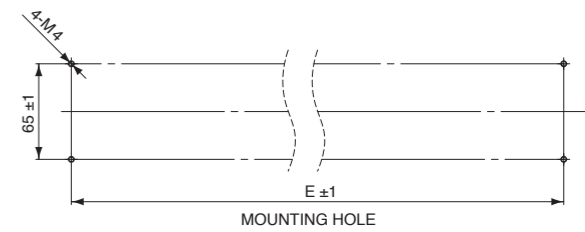
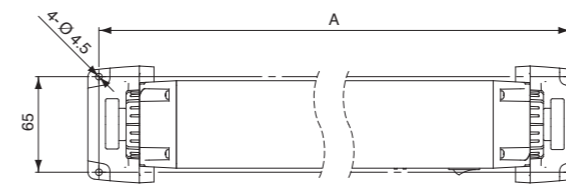
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Discharge needle unit ZJ9-NDT04FW (pack of 2 for ZJ-FW□□□□)

Air filter ZJ9-FL40FW (pack of 6 for ZJ-FW□□□□)

5. Dimensions

● Using the stand

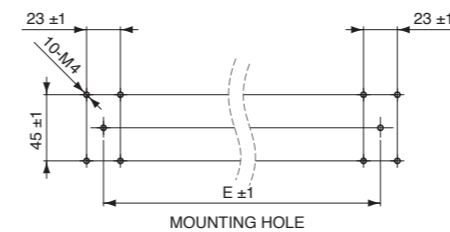
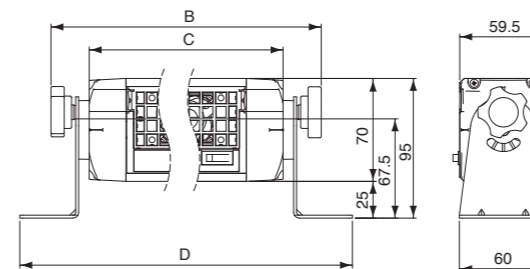
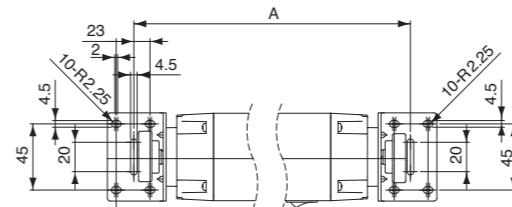


Model	Dimensions				
	A	B	C	D	E
ZJ-FW013 *	185.4	176.4	130	200.4	185.4
ZJ-FW029	345.4	336.4	290	360.4	345.4
ZJ-FW053	585.4	576.4	530	600.4	585.4

* : Dimensions when using an optional product (ZJ9-BRS1FW).

(Unit: mm)

● Using the mounting bracket



(Unit: mm)

Model	Dimensions				
	A	B	C	D	E
ZJ-FW013	184.4	182	130	224.4	188.4
ZJ-FW029 *	344.4	342	290	384.4	348.4
ZJ-FW053 *	584.4	582	530	624.4	588.4

* : Dimensions when using an optional product (ZJ9-BRL1FW).

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.

See also Product catalog for Warranty and Limitation of Liability.

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