Panasonic **INSTRUCTION MANUAL**

Static Remover & Dust Remover Cleaner Box

EC-B series

MJE-ECB No.0036-23V

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

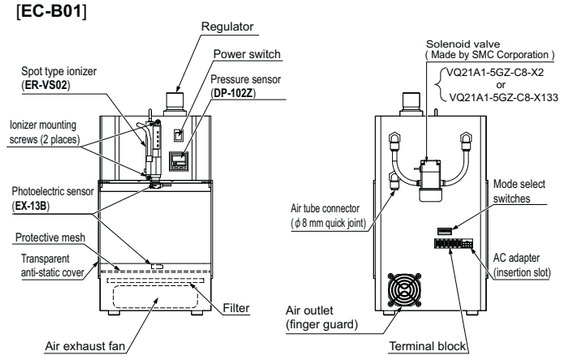
- Never use this product with a device for personnel protection.
- In case of using devices for personnel protection, use products which meet laws or standards, such as OSHA, ANSI or IEC etc., for personnel protection applicable in each region or country.
- Do not use this product in places where there may be a danger of flammable or combustible items being present.
- When carrying, hold the bottom of the main unit from both sides. Do not hold the transparent antistatic cover or damage may occur.
- 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.
- Be sure to ground the main body of this product via ground terminal to ensure electric shock prevention and reliable charge removal.
- Since the tip of the discharge needle is pointed, take sufficient care in handling the discharge needle, or injuries may result.
- The cut edges of the protective mesh are sharp, so be very careful when handling the mesh, otherwise injury may occur.

1 OUTLINE

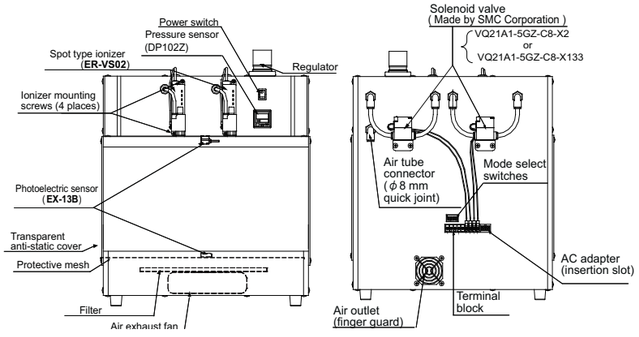
- This product is a static removal and dust removal device which can remove dust adhering to objects (electrostatically-charged objects) and prevent dust from adhering to them.
- It neutralizes the static electric charges of objects (electrostatically-charged objects) by ionized air from the ionizer to which it is installed, and removes any dust which is adhering at the same time.

2 PART DESCRIPTION

[EC-B01]

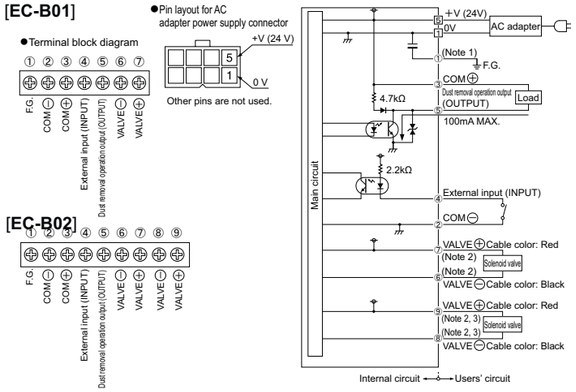


[EC-B02]



3 I/O CIRCUIT DIAGRAMS

[EC-B01]

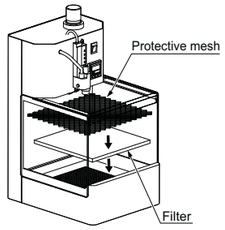


[EC-B02]

Notes: 1) The F.G. terminal has continuity with the enclosure.
2) This terminal is for the solenoid valve only. Do not connect any line to it other than the power supply line for the solenoid valve.
3) The **EC-B01** has 7 terminals, and the **EC-B02** has 9 terminals.

4 SETTING AND WIRING • AIR PIPING

- This product should be set up on a stable, level surface such as a work table.
- Install the accessory filter and protective mesh as shown in the illustration.
- Insert the power supply connector of the AC adapter into the cleaner box.
- Connect the ground (F.G.) terminal on the terminal block to a secure ground.
- Insert an 8 mm diameter air tube into the air tube connector.



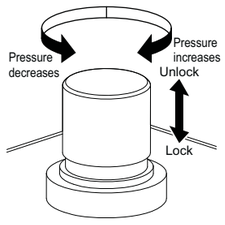
(The air supplied should be dry, clean air (air drier: dew point approx. −20°C. Use an air filter with a mesh size of approx. 0.01 μm).)

⚠ CAUTION

The cut edges of the protective mesh are sharp, so be very careful when handling the mesh, otherwise injury may occur.

5 OPERATION

① Turn on the power switch.
② Open the main valve of the air source, and adjust the regulator so that the value displayed by the pressure sensor is within the range of 0.05 to 0.5 MPa. (The air pressure value will drop when dust removal operation is being carried out, so adjust so that the value displayed by the pressure sensor is within the range of 0.05 to 0.5 MPa during operation. Also be sure to set the pressure so that it does not exceed 0.6 MPa when operation is stopped.)

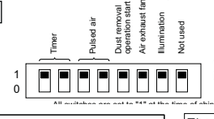


⚠ CAUTION

This product detects the air supply status.
If air is not being supplied to the product, or if the pressure of air being supplied is 0.6 MPa or higher, the product will treat this as an error condition, and dust removal operation will not be carried out when an object (electrostatically-charged object) is inserted.

③ Move the mode select switches to select the required operation setting.

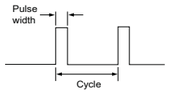
Mode select switches



All switches are set to "1" at the time of shipment from the factory.

Name	Position	Details
Timer	1 0	10 sec.
		5 sec.
		2 sec.
		Synchronized with sensor or synchronized with external input
Pulsed air		Pulse 1 (Long) *1
		Pulse 2 (Short) *2
		OFF (Continuous)
Dust removal operation start		*1 Sensor (Dust removal operation starts when beam interrupted)
		*2 External input (Dust removal operation starts when short-circuited to 0 V)
Air exhaust fan		Always ON
		Synchronized with dust removal operation
Illumination		ON *2
		Always OFF

The **EC-B02** produces intermittent discharges from each ionizer alternately.



*1 Pulse 1: Pulse ionized air emission cycle approx. 100ms, pulse width approx. 50ms
Pulse 2: Pulse ionized air emission cycle approx. 100ms, pulse width approx. 10ms
*2 Equipped with a function to turn illumination off automatically if a standby status continues for approximately 60 sec.

④ Insert the object (electrostatically-charged object).
- Photoelectric sensor will detect the object and dust removal operation will start. (Note)
- Dust removal operation will continue for the length of time set by the mode select switches, and then operation will stop and the cleaner box will change to standby.

※ If the mode select switches for the timer are set to "Synchronized with sensor or synchronized with external input", dust removal operation will be carried out continuously for as long as the object is present (for as long as it is being detected by photoelectric sensor).

Note: If the mode select switch for dust removal start is set to "External input", dust removal will not start by sensor operation. Dust removal will start when the external input is short-circuited to 0 V.

6 CARE AND MAINTENANCE

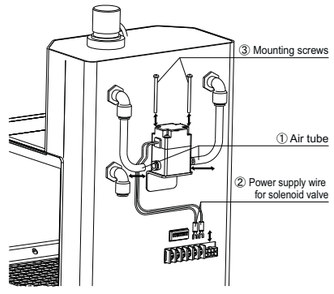
⚠ CAUTION

- Turn off the power and air before carrying out any maintenance or cleaning. Make sure that the supply of air has been fully shut off and that all pressures at the product and inside the tubes are at zero before continuing. If this is not done, air pressure may cause operating problems or accidents.
- Since the tip of the discharge needle is pointed, take sufficient care in handling the discharge needle, or injuries may occur.

- If this product becomes dirtys, wipe with a soft cloth without using chemicals.
- If the tip of the discharge needle of the ionizer becomes dirty, it will reduce the charge removal performance, so it should be cleaned periodically. For details on the procedures for cleaning or replacing the discharge needle, refer to the separate instruction manual for the **ER-VS02** spot type ionizer.
- If foreign particles have accumulated inside the nozzle of the ionizer, the ionizer may not operate correctly. When removing the nozzle, remove the ionizer mounting screws (2 places) and clean the nozzle.
- When the cleaner box is used for long periods, dust and dirt will adhere to the dust collection filter, so the filter should be cleaned when this happens.
  If the filter is extremely dirty, wash it in water. If the filter has been washed in water, allow it to dry thoroughly before reusing it. If the filter is used while it is still wet, operating problems or accidents may occur.
- If the filter is so dirty that it cannot be cleaned, replace it with a new filter.
  ●Replacement filter exclusive for **EC-B01**: Model No. **EC-BFX3**
  ●Replacement filter exclusive for **EC-B02**: Model No. **EC-B2FX3**
- This product utilizes a solenoid valve for controlling the vacuum pressure. The operating life for the solenoid valve is approximately 8 million operations. If the solenoid valve reaches the end of its operating life, it should be replaced.
- Recommended solenoid valve for maintenance : **VQ21A1-5GZ-C8-X2**
  (Made by SMC Corporation)

Solenoid valve replacement procedure

① Disconnect the air tube from the solenoid valve.
② Disconnect the power supply wire for the solenoid valve from the terminal block.
③ Loosen the two mounting screws, and then remove the solenoid valve.
④ Install the new solenoid valve, and then tighten the mounting screws and reconnect the air tube and the power supply wire.
* The tightening torque for the mounting screws is 0.5 N•m or less.



7 TROUBLESHOOTING

This product detects if there are any abnormal discharges from the ionizer or if there is a problem with the supply of air. It is equipped with a function which stops the product from operating when a problem is detected. If a problem occurs, carry out the following.

<If the error indicator (red) of the ionizer illuminates>
- It is possible that an abnormal discharge has occurred. Turn off the power and check that the tip of the discharge needle is not chipped or dirty and that the discharge unit is correctly installed to the ionizer. Also check that there are no foreign materials inside the nozzle and that the nozzle is installed correctly.

<If the display value of the pressure sensor is illuminates red>
- Use the regulator to adjust the air pressure to within 0.05 to 0.5 MPa. The value displayed by pressure sensor illuminates green when the pressure is within the range of 0.05 to 0.5 MPa.

⚠ CAUTION

- Do not change the pressure sensor settings. If the settings are changed, this product may cease to operate correctly.

8 SPECIFICATIONS

Item \ Model No.	EC-B01	EC-B02
Ionizer	**ER-VS02**: 1 (Note 1)	**ER-VS02**: 2 (Note 1)
Power supply voltage	Accessory AC adapter INPUT: 100 to 240V AC±10% 50/60Hz (Note 2) (OUTPUT: 24V DC)	
Power consumption	80 VA or less (At 100 V: 60 VA or less)	90 VA or less (At 100 V: 70 VA or less)
Charge removal performance	0.5 sec. or less (1,000 V → 100 V) (Note 3)	
Ion balance	±10 V or less	
Charge removal area (W × H × D)	200 × 130 × 177 mm	400 × 200 × 277 mm
Applicable fluid	Air (dried clean air) (Note 4)	
Supplied air flow (Max.)	300 ℓ/min (ANR) or less	500 ℓ/min (ANR) or less
Air presure range	0.05 to 0.5 MPa (Note 5)	
Tube connector diameter	ϕ 8 mm quick joint	
Air exhaust flow	1,500 ℓ/min (ANR)	2,000 ℓ/min (ANR)
Dust removal operation output	Photocoupler output / Universal • Max. sink current: 100 mA • Residual voltage: 2.5 V or less (at sink current of 100 mA or less)	
Output operation	During dust removal operation: ON, during standby: OFF	
External input	0 V short-circuit: Input received	
Ambient temperature	0 to + 40°C	
Ambient humidity	35% to 65% RH (No dew condensation)	
Noise resistance	Power supply line: Peak voltage 1,000 V Radiation: Peak voltage 300 V (Noise pulse width cycle 10 ms, noise pulse width 0.5 μs)	
Vibration resistance	Endurance 10 to 55 Hz, Amplitude 0.15 mm in X, Y and Z directions for two hours each (not powered up)	
Enclosure earthing method	C (capacitor) earth	
Accessories	AC adapter × 1, Filter × 1, Protective mesh × 1	
Weight	Main unit: 6.5 kg approx.	Main unit: 13 kg approx.
Applicable standards	Complies with EMC directives	

Notes: 1) For details on the specifications for the **ER-VS02** ionizer, refer to the separate instruction manual for the **ER-VS02**.
2) The AC cable of the accessory AC adapter is rated at 125 V solenoid valve power line (domestic Japan specifications). If using voltages which may rise above 125 V, use a suitable AC cable obtained separately.
3) Typical value at a distance of 100 mm in front of the air outlet at an applied pressure of 0.50 MPa.
4) Use air which has passed through an air dryer (dew point −20°C approx.) and an air filter (mesh size of 0.01 μm approx.).
5) Value displayed by pressure sensor during dust removal operation (adjusted using the regulator).

9 CAUTIONS

- This product has been developed / produced for industrial use.
- This product is not for use in explosion-proofing. Do not use it in places where flammable gases or solvents are being handled, such as in painting booths. If this is not observed, fire or explosions may occur.
- Do not use this product for any purpose other than charge removal or dust removal.
- Do not use this product beyond its rated specifications. Doing so can cause product breakdown, non-function, or damage. Further, it will also cause a marked reduction in product life.
- Never disassemble, repair, modify, or misuse this product, as it can cause accident or malfunction.
- Do not throw this product in fire. There is a danger of it exploding, or generating poisonous gas.
- 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.
- 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.
- Do not turn the power back on immediately after it has been turned off, otherwise operating problems 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 show 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.
- If using the product after it has been stored in a place with a high level of humidity, its charge removal and dust removal performance may be below normal levels. As a general guide, let the product stand at a temperature of +25°C and a relative humidity of 30 % RH for 8 hours or more before using it.
- 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.
- Do not use this product with the filter removed or while the filter is blocked, otherwise operating errors or accidents may occur.
- Clean or replace the filter at regular intervals.
- If this product ceases functioning or is no longer required, dispose of it according to appropriate local waste disposal regulations.

10 INTENDED PRODUCTS FOR CE MARKING

- **Contact for CE**
  Panasonic Marketing Europe GmbH Panasonic Testing Center
  Winsbergring 15, 22525 Hamburg,Germany

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