OMRON Model ZN-A2502

Air Clean Unit

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.



which, if not avoided.

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PRECAUTIONS ON SAFETY

Meanings of Signal Words

WARNING	Indicates a potentially hazardous situation which, if not avoided will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.
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Alert Statements in This Instruction Sheet

When screw-fastening the body for use, vibration or the body's own weight may cause it to fall, and cause an injury if the screws are not sufficiently tightened.

Mount the body using M5 screws tightened to a tightening torque of 12 to 16 Nm

Do not open the cace and insert your hand inside the body before the fan has stopped rotating. Doing so might cause an injury.

Before opening the cace to replace the filter, always turn the power supply OFF, and make sure that the fan has stopped rotating.

PRECAUTIONS FOR SAFE USE

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

- 1. Do not use this product in environments where it can be exposed to inflammable/explosive gas.
- 2. In order to secure the safety of operation and maintenance, do not install this product close to high-voltage devices and power devices.
- 3. Use the power supply within the specified voltage range.
- 4. Do not disassemble, repair, or modify this product. 5. Dispose of this product as industrial waste.
- 6. Do not connect Ethernet with the communication terminal (RJ-45).
- The equipment might be damaged. Applicable standards
- EN61326-1
- · Electromagnetic environment : Industrial electromagnetic environment (EN/IEC 61326-1 Table 2)

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 salt, or iron particles
- · Direct vibration or shock
- · Direct sunlight
- · Water, oil, or chemical fumes or spray · Strong magnetic or electric field, and charged objects
- 2. Power Supply and Wiring
- Always use the AC adapter provided with the product.
- Do not apply 24 VDC from the power terminal while the AC adapter is in use.
- · If surge current is present in the power lines, connect surge absorbers that suit the operating environment
- · When connecting the power and output lines, pay attention to the polarity of the lines. The supply voltage must be within the rated range.
- When connecting the power line, do not short-circuit the power supply.
- · When connecting the output line, the supply current must be within the rated
- 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.
- Do not connect or disconnect connectors and other components with nower applied to the product.
- 3. Maintenance and Inspection
- When the filter clogging detection display turns ON, replace the HEPA filter.
- · Before replacing the filter, always make sure the fan has stopped rotating.
- . When replacing the filter, do not touch the electrical circuits inside the body,
- · Open the upper body section only to replace HEPA filter.
- · Periodically clean dust from the pre-filter.

Intended purpose

- Air clean unit makes the area that is enclosed less dust condition in the manufacturing environment. It is used to reduce defectives that are caused by dust in assemble process.
- It is possible to adjust air volume according to size or clean level of the area that needs to be kept clean.

Ratings/Performance

ltem	Specifications
Model	ZN-A2502*1 / ZN-A2502D
Air outlet dimension	225 X 205 mm
Particle outlet efficiency	More than 99.99% for 0.3 µm particle
Air volume (m ³ /min)	0.3 to 1.8 m ³ /min (typical)
Sound noise level	Air volume level 3: 53 dB (typical) Air volume level 1: 41 dB (typical)
Fan motor	DC brushless compact centrifugal blower: 2
Main filter	HEPA filter
Main filter part number	ZN9-AHP25
Pre-filter part number	ZN9-APF25
Power supply voltage	24 VDC±10% ripple (p-p) 10% max.
Current consumption	Air volume level 5: 2.1 A max. (RMS value) Air volume level 1: 0.4 A max. (RMS value)
Indicator	Operation: Green/Red Air volume: Blue
Output	 Alarm output 1: Alarm output 1 turns OFF, when one of the followings happens. (Normally, Alarm output 1 is ON.) Check indicator to find out which one is happening. Filter is clogged. Fan error Cleaning alarm for discharge needle (when ZN-J is used with) Discharge error (when ZN-J is used with) Alarm output 2: Only for ZN-J used with) Alarm output 2: Unsed with Alarm output 2 turns OFF with cleaning notice for discharge needle. (Normally, Alarm output 2 is ON.) 30 VDC, 50 mA max. Residual voltage: 1 V max. with load current 10 mA, 2 V max. with load current 50 mA Manual Air volume selectable (Level 1 to 5).
Functions	Air volume selectable by RS-422/RS-485 communication, Multi connection up to 9 units, Automatic control by ZN-PDA Filter clogging alarm, Available with ZN-J (Ionizer unit)
Ambient temperature	Operating and storage: 0 to 40°C (with no icing or condensation)
Ambient humidity	Operating and storage: 35 to 85% (with no condensation)
Material	Upper case: ABS, Bottom frame: Steel
Dimensions (mm)	250 (W) x 250 (D) x 97.5 (H)
Weight (packed state)	Approx. 2 kg (approx. 3.3 kg)
Accessories	Instruction sheet. Sealing parts, Mounting screws, I/O connector (XW4B-06B1-H1), AC adapter *1 (NOT for ZN-A2502D)

[•]I AC adapter: made inken Electric Co., Ltd. Model SEB100P2-24.0 (for ZN-A2502). Supply voltage 100 VAC to 240 VAC

Part Names and Functions



(1) AC adapter jack

For connecting the AC adapter (Always use the exclusive AC adapter.)

- (2) Power supply/output terminals
- Terminals for power input and alarm out put
- For wire used for a terminal block, consider the following. Wire length: 30m and less

	Terminal No.	Input/Output Signal
	1	+ power (24 VDC)
654321	2	GND
	3	Alarm output 1 (*1)
	4	Alarm output 2 (*2)
	5	COMMON
out alarm output]	6	NC (Not Used)

[Abo Alarm output is ON, when the power for a ZN-A is OFF.

Alarm output 1 turns OFF when one of the following happens. (Normally, alarm output 1 is ON.) (Check the indicators to find out which one is happening. Refer to "(11) Indicators")

- · When the filter clogs (red and green indicators lit simultaneously)
- During error output (red indicator flashing)
- . When the upper body section is not properly attached (green and blue indicators flashing)
- Cleaning alarm for discharge needle (When Ionizer Unit, ZN-J25 (sold separately), is connected.)
- (Check this on the ZN-J25 indicators.)
- Discharge error
- (When Ionizer Unit, ZN-J25 (sold separately), is connected.) (Check this on the ZN-J25 indicators.)
- (*2)

Valid only when Ionizer Unit, ZN-J25 (sold separately), is connected.

At a ZN-J25 discharge needle cleaning notice (Check this on the ZN-J25 indicators.)

(3) Connection terminal for Ionizer Unit (ION PORT) Used for connecting lonizer Unit ZN-J25 (sold separately)

(4), (5)Terminal for communication (COMMUNICATION PORT)

- Use for communicating by RS-422/RS-485, or for connecting Air Particle Sensor ZN-PDA and Interface Unit ZN-SF(sold separately).
- · When using Air Particle Sensor ZN-PDA or Interface Unit ZN-SF(sold separately), set RS-422 communication and connect to the IN side.
- Regarding communication setting , please refer to "(7)DIP SW". During RS-422 communication, 24 VDC is supplied to (4)IN side communication terminal (RJ-45) pin No.8. Do not connect Ethernet. The equipment might be damaged. · When connecting multiple ZN-As during RS-422 communication, connect the (5) OUT
- side to the next (4)IN side. (Don't connect the (4)IN side to each other.)
- Use straight type LAN cables for connecting between multiple ZN-As by RS-422/RS-485 communication
- The cable length between devices must be 30m and less. The cables must be 100 m and less in total length

(6) ID rotary switch

Used for ID settings when communicating with RS-422/RS-485. Need to set the IDs in the following cases.

· Connecting multiple ZN-As

· Connecting with ZN-SF(Need to set IDs to ZN-As, even when connected with one ZN-A) Give the different IDs to each ZN-As, and do not use "0" for ID number. (Set an ID "0" only when the ZN-A is controlled by ZN-PDA.)

(7) DIP switch

Use this DIP switch when changing air volume changing method.

DIP SW	Function	OFF	
1	Air volume switching method selection	Air volume is switched manually (air volume switching button on body).	-
2	Filter clogging detection	Filter clogging detection : Effective	Γ
3	Baud rate selection	Baud rate : 38.4kbps	E
4	Communication Settings	RS-422	F



(8) Air volume switch button

Each press of this button switches the air volume as follows: $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5$

(*) When the Particle Sensor ZN-PDA is connected and the DIP switch terminal 1 at (6) above is set to ON, the air volume is not switched even if this button is pressed.

(9) Air volume level indicator This indicator indicates the air volume level. (blue)

(10) ON/OFF switch

Switches the unit between the run and standby modes.

(11) Indicators

The lighting pattern and color of these indicators notifies the operator of the state of the ZN-A2502.

No.	Indicator Lighting Pattern and Color	State
1	Green lit	Normal operation
2	Green flashing	Standby mode
3	Green and red lit simultaneously	Filter clogging detection function is activated. Make sure that the air inlet and outlet are not blocked, and then replace the filter with a new one.
4	Red flashing + air volume level 1 (blue) lit	Incorrect power supply voltage
5	Red flashing + air volume level 2 (blue) lit	The power supply is connected to both the AC adapter and the power terminal.
6	Red flashing + air volume level 3 (blue) lit	Fan error(*)
7	Red flashing + air volume level 4 (blue) lit	Product life of fan is over.
8	Red flashing + air volume level 5 (blue) lit	Software error(**) Data of the product is broken
9	Red flashing + air volume level 1 & 5 (blue) lit	Filter clogging detection function is not working properly.(*)
10	Green and all air volume level indicators (blue) flashing	The upper body section is not property fitted.

If turning the power supply OFF then back ON does not remedy the problem, contact your OMRON representative.

The following operation initializes the product.

If it does not remedy the problem, contact your OMRON representative.

Initializing settings

(1) Disconnect the power supply (AC adapter or the power supply terminal).

(2) Set the DIP SW2 to ON

(3) Connect the power supply. Push the ON/OFF SW to rotate the fan.

(4) Push the ON/OFF SW to stop the fan. Disconnect the power supply.

(5) Set the DIP SW2 to OFF.

ON

The air volume is automatically controlled by feedback from Air Particle Sensor ZN-PDA and Interface Unit ZN-SF (sold separately).

Filter clogging detection : Invalid

Baud rate : 19.2kbps

BS-485



(12) Pre-filter cover

This cover is for fixing the pre-filter. When performing maintenance on the pre-filter, turn this cover to remove it.

(13) Pre-filter

This filter is for removing large dust particles. Periodically remove dust from the pre-filter. Before performing maintenance, always turn the power supply OFF, and make sure that the fan has stopped rotating.

(14) Upper body section

Alarm Output

30 VDC

50 mA

50 mA max

Output voltage

Residual voltage

Load current

Remove this part to replace the filter. Before replacing the filter, always turn the power supply OFF, and make sure that the fan has stopped rotating. Before restarting the ZN-A2502, attach the upper body section to the body, and press the ON/OFF switch.

Maintenance

- Before replacing the pre-filter and/or HEPA filter, always turn the power supply OFF, and make sure that the fan has stopped rotating.
- · When replacing the filter, do not touch the electrical circuits inside the body.
- · Do not support or lift up the body by only its grating on the bottom surface.
- Never touch HEPA filter by its surface. Doing so might damage the filter, resulting in loss of filtering capabilities.
- Do not drop nor subject HEPA filter to shock.
- Doing so might damage the filter, resulting in a loss of cleaning performance.
 When the filter clogging detection display turns ON (refer to the item 3 of "(11) Indicators, Part Names and Functions"), replace the HEPA filter after confirming

whether foreign objects block inlet port or air supply port. Air supply performance will be decreased by using the product with the filter elogged.

After cleaning pre-filter and replacing III:PA filter, it takes about one minute until the filter clogging detection display turns OFF.

- · Periodically remove dust from the pre-filter.
- . Open the upper body section only to replace HEPA filter.

Replacing Filter

1. Removing Pre-filter

- * Replace a damaged pre-filter with a new one (ZN9-APF25).
- (1) Turn the power supply OFF, and make sure that the fan has stopped rotating.(2) Remove the pre-filter cover from the upper body section by turning it
- (2) Remove the pre-finer cover from the upper body section by turning in clockwise,
- (3) Remove the pre-filter.
- (4) Clean the pre-filter, and return it to its original position. Next, attach the pre-filter cover to the upper body section by turning it anticlockwise, and make sure that it does not come loose.



1 V max, with load current 10 mA, 2 V max, with load current



Alarm output is ON, when the power for a ZN-A is OFF.

2. Replacing HEPA Filter

- * Replacement filter: ZN9-AHP25
- Never touch the filter by its surface.
- (1) Turn the power supply OFF, and make sure that the fan has stopped rotating.
- (2) Unlock the buckles to open the upper body section.(3) Lift up IIEPA filter to remove it from the lower body section.
- Take care when handling the filter as it may slip.
- (4) Set a new filter to the lower body section. During this step, pay attention to the filter's orientation. Align the wider side of the filter frame with the buckle side. The filter will lose its filtering capabilities if it is set on the wrong side.
- (5) Attach the upper body section, and lock the buckles.



Dimensions



Installation

- When the Unit is mounted on a clean booth surface, firmly mount it using M4 screws.
- (tightening torque of 1.2 to 1.6 N·m)
- When using the mounting screws (provided), use a mounting panel of thickness 14 mm or less, and thoroughly check the strength of the installation surface.
- The depth of the body mounting holes is 17 mm. When preparing your own
 mounting screws, take the thickness of the installation surface into consideration
 when selecting the screws.
- Allow at least 40 mm of space above the air inlet to ensure good intake of air.
- Do not support or lift up the body by only its grating on the bottom surface.
- Use the sealing parts (provided) to prevent air from escaping between the body and the installation surface.



Filter Clogging Detection Function

- (Refer to the item 2, (7) DIP SW, Part Names and Functions)
- When the filter clogging detection display turns ON (refer to the item 3 of "(11) Indicators. Part Names and Functions"), replace the III:PA filter after confirming whether foreign objects block inlet port or air supply port. Air supply performance will be decreased by using the product with the filter

An supply performance will be decreased by using the product will the line clogged.

After cleaning pre-filter and replacing HEPA filter, it takes about one minute until the filter clogging detection display turns OFF.

- The filter clogging detection display is set to turn ON when the air volume becomes about 30% to 60% of the initial value. The threshold level of filter clogging detection display will be changed by the influence of ambient temperature.
- By setting the terminal 2 of DIP switch (refer to "Part Names and Functions") to ON, it is possible to cancel the filter clogging detection function.



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