OMRON

Model ZN-A4105□

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:
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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.

Dispose in accodance with applicable regulations.

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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.

● Alert Statements in This Instruction Sheet

⚠ WARNING

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 1.2 to 1.6 N.m.

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 range.
   - 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 power 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

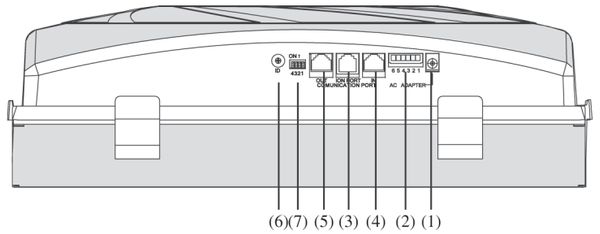
Air clean unit makes the area that is enclosed less dust condition in the manufacturing environment. It is used to reduce defectives that are caused by dust in assemble process. It is possible to adjust air volume according to size or clean level of the area that needs to be kept clean.

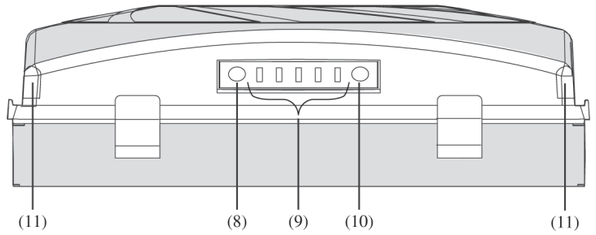
■Ratings/Performance

Item	Specifications
Model	ZN-A4105 *1 / ZN-A4105D
Air outlet dimension	360 X 360 mm
Particle outlet efficiency	More than 99.99% for 0.3 μm particle
Air volume (m^3/min)	1.0 to 5.0 m^3/min (typical)
Sound noise level	Air volume level 3: 53 dB (typical) Air volume level 1: 40 dB (typical)
Fan motor	DC brushless turbo fan: 1
Main filter	HEPA filter
Main filter part number	ZN9-AHP41
Pre-filter part number	ZN9-APF41
Power supply voltage	24 VDC±10% ripple (p-p) 10% max.
Current consumption	Air volume level 5: 3.5 A max. (RMS value), (Peak: 5.5 A) Air volume level 1: 0.32 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 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
Functions	Manual Air volume selectable (Level 1 to 5), 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)	410 (W) x 410 (D) x 130 (H)
Weight (packed state)	Approx. 5.2 kg (approx. 8.6 kg)
Accessories	Instruction sheet, Sealing parts, Mounting screws, I/O connector (XW4B-06B1-H1), AC adapter*1 (NOT for ZN-A4105D)

*1 Attached AC cord as standard is designed for use with 100 VAC (Japanese specifications). When ZN-A4105 is used in other than Japan, ZN-A4105D should be selected. AC adapter and AC cord is not supplied with it, please connect DC power supply to terminal.

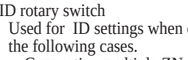
■Part Names and Functions





(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)
2	GND
3	Alarm output 1 (*1)
4	Alarm output 2 (*2)
5	COMMON
6	NC (Not Used)

[About alarm output]
Alarm output is ON, when the power for a ZN-A is OFF.
(*1)
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-J41 (sold separately), is connected.)
  (Check this on the ZN-J41 indicators.)
- Discharge error
  (When Ionizer Unit, ZN-J41 (sold separately), is connected.)
  (Check this on the ZN-J41 indicators.)

(*2)
Valid only when Ionizer Unit, ZN-J41 (sold separately), is connected.
At a ZN-J41 discharge needle cleaning notice
(Check this on the ZN-J41 indicators.)

(3) Connection terminal for Ionizer Unit (ION PORT)
Used for connecting Ionizer Unit ZN-J41 (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	ON
1	Air volume switching method selection	Air volume is switched manually (air volume switching button on body)	The air volume is automatically controlled by feedback from Air Particle Sensor ZN-PDA and interface Unit ZN-SF (sold separately).
2	Filter clogging detection	Filter clogging detection : Effective	Filter clogging detection : Invalid
3	Baud rate selection	Baud rate : 38.4kbps	Baud rate : 19.2kbps
4	Communication Settings	RS-422	RS-485

(8) Air volume switch button
Each press of this button switches the air volume as follows:
1 → 2 →3 →4 →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.

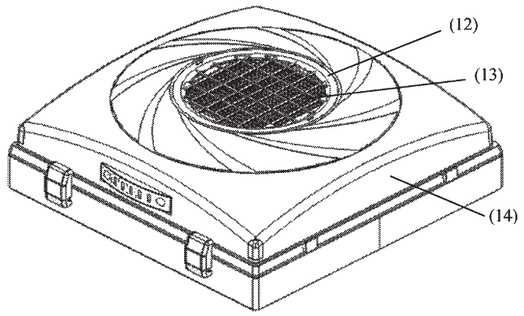
(11) Indicators
The lighting pattern and color of these indicators notifies the operator of the state of the ZN-A4105.

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.

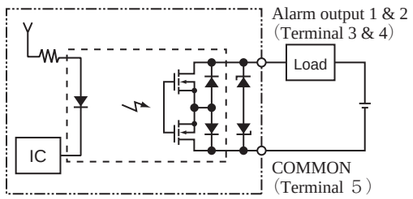
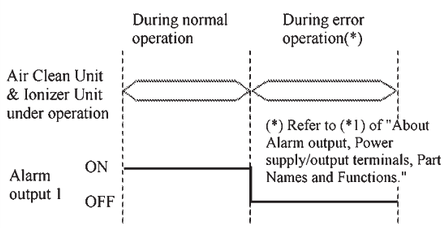
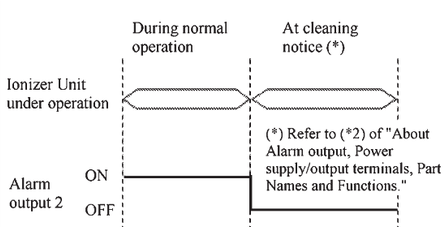


(12) Pre-filter cover
This cover is for fixing the pre-filter. When performing maintenance on the pre-filter, turn this cover to remove it.

(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
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-A4105, attach the upper body section to the body, and press the ON/OFF switch.

■Alarm Output

Output voltage	30 VDC
Load current	50 mA max.
Residual voltage	1 V max. with load current 10 mA, 2 V max. with load current 50 mA
Output circuit	
Output logic	 

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

■Maintenance

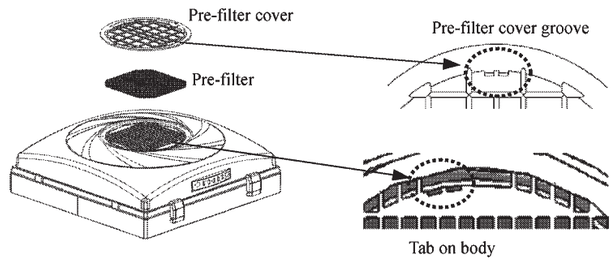
- Before replacing the pre-filter and/or HEPA filter, always turn the power supply OFF, and make sure that the fan has stopped rotating.
- When replacing the filter, do not touch the electrical circuits inside the body.
- Do not support or lift up the body by only its grating on the bottom surface.
- 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 clogged.
  After cleaning pre-filter and replacing HEPA 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-APF41).

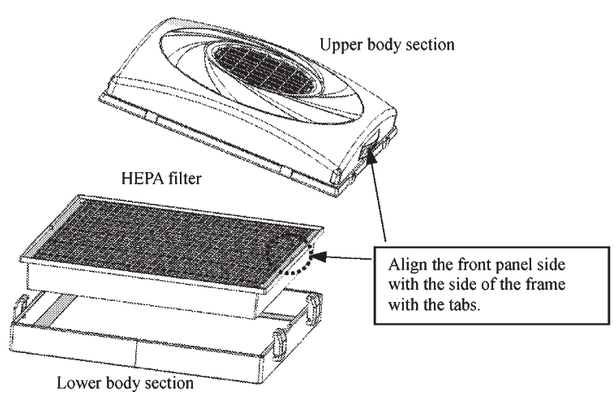
(1) Turn the power supply OFF, and make sure that the fan has stopped rotating.
(2) Remove the pre-filter cover from the upper body section by turning it anticlockwise.
If you find it difficult to remove the cover, lightly press it down while turning it.
(3) Remove the pre-filter.
(4) Clean the pre-filter, and return it to its original position. Next, attach the pre-filter cover to the upper body section by turning it clockwise. When doing this, align the groove of the pre-filter cover with the tab on the body. Last of all, make sure that it does not come loose.



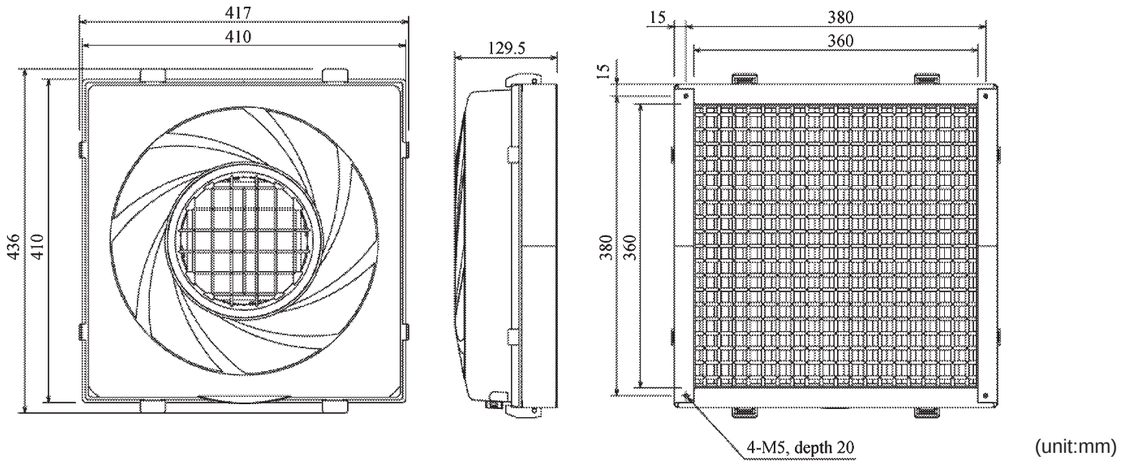
2. Replacing HEPA Filter

* Replacement filter: ZN9-AHP41
* 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 HEPA 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 orientation of the filter and the upper body section.
Attach the filter with the front panel side of the upper body section aligned with the side of the filter frame with the tabs. If the parts are aligned at the wrong orientation, the upper body section cannot be attached properly and the Unit will not function properly.
(5) Attach the upper body section, and lock the buckles.



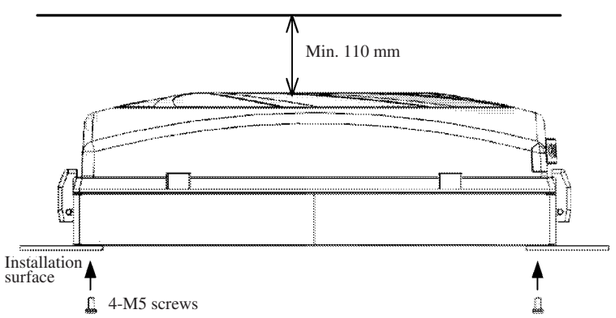
■Dimensions



(unit:mm)

■ Installation

- When the Unit is mounted on a clean booth surface, firmly mount it using M5 screws. (tightening torque of 2.3 to 2.8 N·m)
- The upper body section can also be set at an angle of 90° to the lower body section. Note, however, that when the upper body section si rotated 90°, HEPA filter inside also must be rotated 90°. (See "Replacing the Filter.")
- 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 20 mm. When preparing your own mounting screws, take the thickness of the installation surface into consideration when selecting the screws.
- Allow at least 110 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.
- Do not install the Unit with the air outlet facing up. Doing so may damage the Unit.
- Use the sealing parts (provided) to prevent air from escaping between the body and the installation surface.
- Since this product has a built-in fan, this product and equipment may resonate and vibrate depending on the strength of the installation equipment and the clean booth. When adopting, recommend that verify it with actual equipment. In such cases, may be able to suppress the occurrence of vibration by reinforcing the equipment installed to increase rigidity.



■ 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 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 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.

・Notice for Korea Radio Law
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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.

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