

# Air Clean Unit

ZN-A/ZN-J Series

# OMRON



Compact, slim shape and powerful airflow, the ZN Series.  
Designed and built to flexibly and speedily  
clean work environments.



ZN-A2502  
[1.8m<sup>3</sup>/min]



ZN-A6112  
[12m<sup>3</sup>/min]



ZN-A4105  
[5m<sup>3</sup>/min]

With an industry-top 12 m<sup>3</sup>/min of airflow,  
this new grade of Clean Air Unit handles the job required by  
A lineup of three models was created to cover various types

“Cleaner,” “more sensitive,” “simpler” ...

Industry continues to demand greater sophistication and diversity of the clean measures it depends on. To flexibly respond to these demands “for more,” Omron has added an 12 m<sup>3</sup>/min airflow model to the ZN Series of Air Clean Units in order to clean atmospheres across larger areas. Choose a model that fits the size and use of your clean booths.



## [12m<sup>3</sup>/min] ZN-A6112

For large clean booths. Carefully designed with  
large air volume, ease of use and functionality in mind.

### Applications

- Products assembly and inspection inside of clean booths
- Multiple processes along work bench lines
- Medium to large class automated equipment, etc.

### Slimmest in its class

Slimmer profiles have been pursued with the entire series. In fact, the ZN-A6112 protrudes just 118 mm above the clean booth roof, as the filter unit is located inside the booth, making it the slimmest in its class.



### Industry's highest class airflow

Slim yet delivering the highest class of airflow in the industry at 12 m<sup>3</sup>/min (ZN-A6112). This rate offers ample margin for cleaning even spacious areas.



even with large clean booths.  
and sizes of clean environments.

**[5 m<sup>3</sup>/min]**  
**ZN-A4105**

High-powered to deliver 5 m<sup>3</sup>/min airflows in a compact body.  
Speedily cleans targeted environments.

Applications

- Products assembly on work benches
- Small to medium class automated equipment, etc.

**[1.8 m<sup>3</sup>/min]**  
**ZN-A2502**

Strong airflow from very slim body with unique twin-fan structure.

Applications

- Products assembly on work benches
- Small class automated equipment, etc.

**99.99% removal**

Dusty air

Clean air

**Used with all models**

**Proud 99.99%\***  
**particle removal HEPA filter**

\* 0.3 μm particles

All models of the ZN Series are outfitted with a HEPA filter capable of removing 99.99% of particles 0.3 μm in size. Coupled with a powerful airflow, users enjoy high performance dust removal.

## Upgraded features to ensure quality

Units have upgraded features in easy airflow control, filter clogging detection and alarm output. Moreover, an optional built-in ionizer makes particle removal easy. All together, it helps to maintain the work environment clean, improve quality and conserve energy.



## Outstanding maintainability

Easy maintenance is another big merit of the ZN Series. The ZN-A6112 makes it possible to change filters and operate switches inside the clean booth, therefore it is not necessary to climb onto the booth to perform maintenance.



# Slim profile and powerful airflow for cleaning wide areas

Upgraded performance and features that  
address clean environment issues from installation to maintenance



[12m<sup>3</sup>/min]  
ZN-A6112

## If you seek taller clean booths

**Slimmest in its class 118 mm**

**Can be installed even on clean booths with high ceilings.**

The unit's height off the clean booth roof has been greatly minimized by locating the filter unit inside the booth. Clean booths can be built closer to building ceilings, including in places where users had foregone possible use.



Filter unit located inside of clean booth



## If you seek energy-efficient operation in proportion to cleanliness level

### Airflow settable to 5 levels according to situation

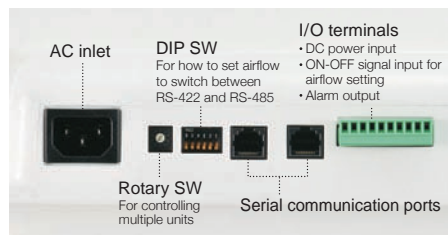
Airflow can be set to 5 levels (4 to 12 m<sup>3</sup>/min) according to cleanliness class and particle generation. Airflow can be set by button operation, ON-OFF signal input or serial (RS-422 or RS-485 \*) communications.

Note: See the below example of use and pg.7 and 8 for more information.

\* Can be set by DIP switch.

#### New Feature

### Airflow setting by ON-OFF signal input



## If you seek real-time trouble detection

### Trouble notification by alarm output and LED

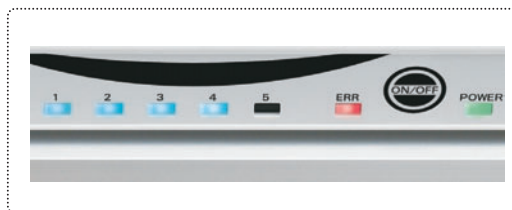
Units have a fan rotation check built-in, therefore trouble, including disconnection, are immediately reported. End of fan service-life and troubles are reported by alarm output and LED.

#### Filter replacement due to anticipated clogging reported in advance

Filter clogging detection provided (ZN-6112P). The unit automatically indicates when filter maintenance is needed.

#### New Feature

### Fan rotation check alarm output



Filter replacement and button operations can be done from inside the clean booth.

## If you seek easy HEPA filter replacement

### Easy filter replacement and button operation from inside the clean booth

Unit maintenance can be performed without climbing on top of the clean booth. Moreover, operating switches are located on the bottom face of the unit, so turning the unit ON/OFF and other operations can be done easily from inside the booth.

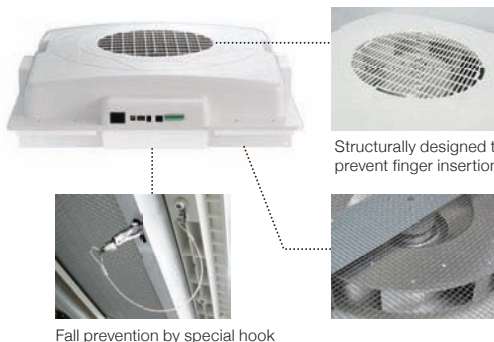
## If you seek safety for your maintenance work

### HEPA fall prevention by special hook

The filter unit comes with a fall prevention hook, so there is no worry of the HEPA filter accidentally dropping out of the unit during maintenance work.

### No fear of injuries caused by incorrect maintenance work

The underside of the upper body and the prefilter housing are designed to prevent finger insertion, therefore accidental injuries are unlikely when replacing the HEPA filter or prefilter.



Structurally designed to prevent finger insertion

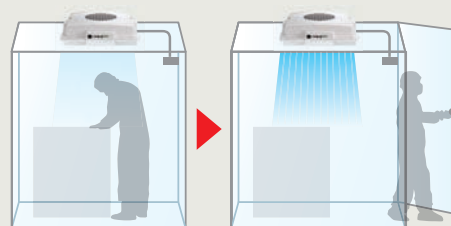
Fall prevention by special hook

### Example of energy conservation by using ON/OFF signal input to set airflow

**Airflow is automatically switched when the door is opened/closed.**

**Various kinds of feedback are available when using ON/OFF signal input to set airflow.**

Because airflow level switching by ON/OFF signal input comes as a standard feature, it is easy to adjust airflow level according to the environment. Various equipment can be used for real-time feedback airflow level switching with ON/OFF signal input. For example, the ON/OFF signals from a door sensor can be used to switch airflow level as people enter and exit the clean booths, to ensure more efficient operation.



When the door is opened, airflow increases to keep air clean.

Powerful airflow in a compact body  
Upgraded features for keeping  
work environments clean

[1.8m<sup>3</sup>/min]

ZN-A2502

Amazing particle removal performance  
from a twin fan structure



[5m<sup>3</sup>/min]

ZN-A4105

Perfect match for small to medium size clean booths

## Can be installed anywhere. Slimmest profile in the class at 97.5 mm (NZ-A2502)

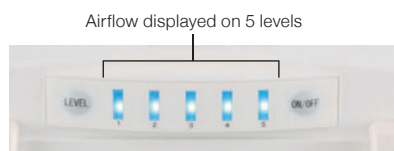
By having a unique twin fan structure, Omron successfully downsized the unit. The ZN-A2502 has the slimmest profile amongst products of the same class. The sleek design will not get in the way of clean booth work.



## Airflow settable to 5 levels according to situation

Airflow can be set to 5 levels (ZN-A2502: 0.3 to 1.8 m³/min, ZN-A4105: 1 to 5 m³/min) by button operation from the unit itself or serial (RS-422 or RS-485) communications\*.

\* See pg.8 for more information.



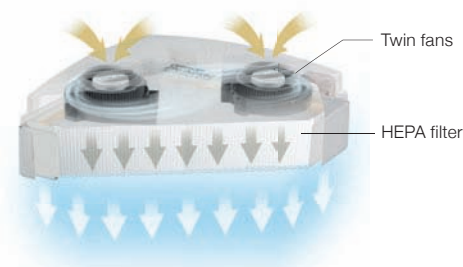
## Hardware trouble reported by alarm output and LED indication

When it is time to replace the HEPA filter or if trouble occurs with the unit, notification is made by alarm output and two corner LEDs.

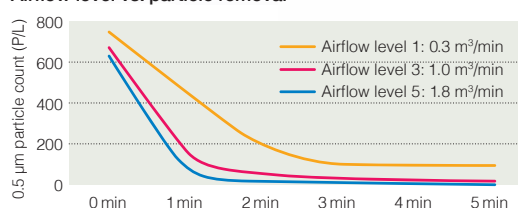


## Twin fan structure for excellent particle removal performance (ZN-A2502)

A proprietary twin fan structure ensures uniform laminar airflow. Though the unit is compact, particle removal performance is a whole rank higher.



Airflow level vs. particle removal



## Easy, one-touch filter replacement

The HEPA filter can be easily replaced without tools thanks to unit-locking buckles. Greatly less time is needed for maintenance because of the one-step operation.



## Easy static electricity removal: Built-in ionizer unit

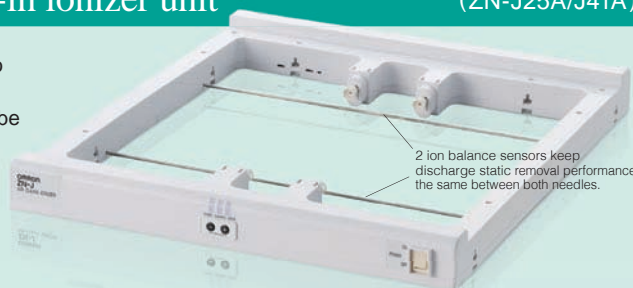
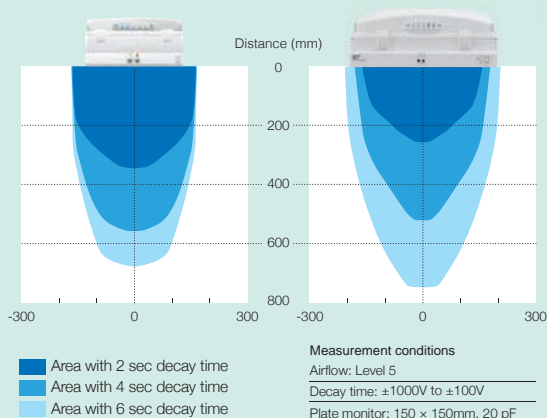
(ZN-J25A/J41A)

A very unique ionizer can be used with the Air Clean Unit to prevent particle adhering because of static electricity. It is designed so as not to obstruct airflow from ZN-A, so it can be used without worrying about disrupting airflow patterns.

### Easy static electricity removal

ZN-J25A

ZN-J41A



### Easy installation and wiring

The ionizer unit fits between the Clean Air Unit and clean booth ceiling, and is easily wired by just a connector cable.

### Ozone accumulation prevention

Power turns OFF when the Air Clean Unit stops to prevent ozone from accumulating.

### Self-diagnostics and display

LEDs and alarm output provide notification when discharge needles need cleaning or discharge errors occur.



# Omron clean environment solutions for enhanced manufacturing quality

Simply installing an Air Clean Unit does not guarantee the workplace environment will stay clean. This is why Omron offers highly universal systems and upgrades optional equipment. Total solutions that enhance efficiency in line with constantly changing manufacturing environments, deliver assured cleanliness and lead to improved quality are what we do best.

If seeking easy ways to clean work environments and operate efficiently according to situation

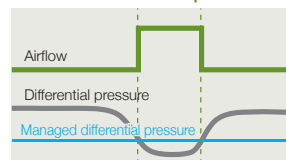
Energy-efficient operation  
via airflow control

The ZN-A6112 enables airflow control by ON-OFF signal input. This makes energy-efficient operation easy as a low-power airflow can be used on a regular basis and a higher-powered airflow as needed. By interlocking the Air Clean Unit with a sensor installed on the clean booth door, airflow can be increased whenever the door is opened. Or, if a Differential Pressure Station is connected, pressure inside the clean booth can be monitored and airflow can be increased if that pressure changes. The constant feedback of information from work environments can be used to ensure energy-efficient operation.

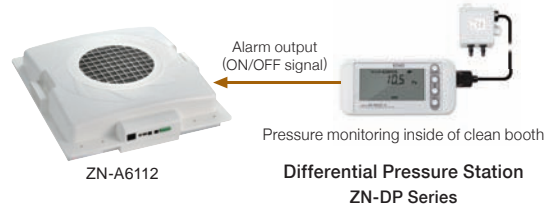
Easy-to-build feedback example based on differential pressure changes between the clean booth and outside

The Differential Pressure Station constantly monitors the differential pressure between the clean booth and outside. If pressure inside the booth drops, airflow is automatically increased to prevent particles from unexpectedly coming into the booth.

Pressure feedback operation



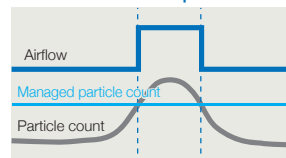
Air Clean Unit + Differential Pressure Station



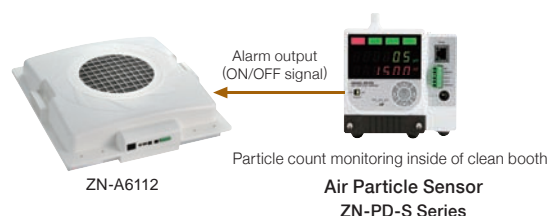
Easy-to-build feedback example based on changes in particle count

Particle count is constantly measured and airflow is automatically increased if the particle count exceeds a set level, to quickly remove particles.

Particle feedback operation



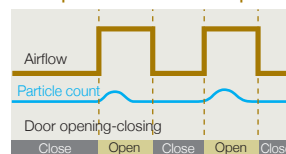
Air Clean Unit + APS (Particle type)



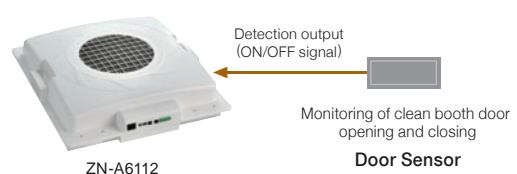
Easy-to-build feedback example using door open-closed sensor

By interlocking the Air Clean Unit with a sensor installed on the clean booth door, airflow is automatically increased whenever the door is opened and automatically turned down whenever the door is closed.

Door open/closed feedback operation



Air Clean Unit + Door Sensor



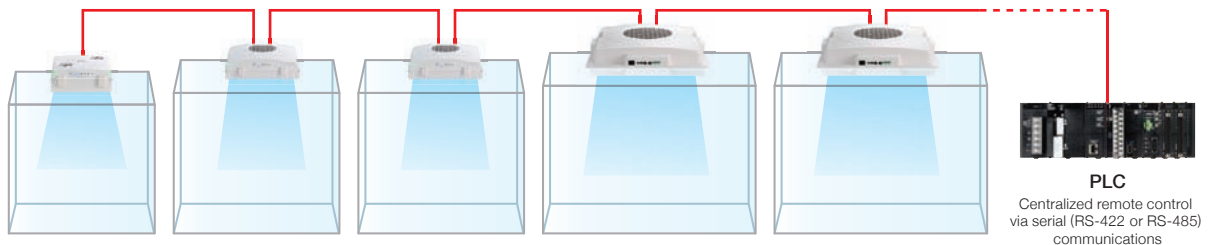




## If you seek centralized control of multiple Air Clean Units

If multiple clean booths are needed, multiple Air Clean Units must be installed. Managing them individually presents unnecessary difficulties, therefore Omron enables centralized remote control of a maximum of 9 Air Clean Units via serial communications.

Up to 9 Air Clean Units can be connected into a centralized system. (Different sizes are OK, too.)



## If you seek constant monitoring of airborne dust and particles

Dust and particles are a threat to product quality. Omron offers Air Particle Sensors for detecting differing sizes of airborne particles. These units lead to better managed environments inside of clean booths.



Air Particle Sensor  
Particle measurement type  
ZN-PD03-S

0.3μm 0.5μm 1.0μm






Air Particle Sensor  
Dust measurement type  
ZN-PD50-S

5 (10)μm 20 (30)μm 50μm

## Types/Standard Prices

### Air Clean Unit

#### Air Clean Unit

Appearance	Application	Power supply	Model
	250 x 250 mm	24V DC	ZN-A2502D
	410 x 410 mm		ZN-A4105D
	610 x 610 mm		ZN-A6112 ZN-A6112P *


\* Type with filter clogging detection.

#### Accessories

	Applicable Air Clean Unit	Model	Qty
Replacement HEPA filter	For 250 x 250 mm	ZN9-AHP25	1
	For 410 x 410 mm	ZN9-AHP41	1
	For 610 x 610 mm	ZN9-AHP61	1
Replacement prefilter	For 250 x 250 mm	ZN9-APF25	2
	For 410 x 410 mm	ZN9-APF41	1
	For 610 x 610 mm	ZN9-APF61	1

### Ionizer Unit

#### Ionizer Unit

Appearance	Application	Power supply	Model
	250 x 250 mm	Supplied from Air Clean Unit	ZN-J25A
	410 x 410 mm		ZN-J41A

#### Accessories

	Model	Qty
Replacement Discharge Needles	ZN9-JH04	4 per pack

#### Single-Ended Connection Cable (for DC power supply and I/O)

Cable length	Model	Qty
2m	ZN9-JC02	1

## Specifications

### Air Clean Unit

Item	Model	ZN-A2502D	ZN-A4105D	ZN-A6112	ZN-A6112P
Air outlet dimensions		225 x 205 mm	360 x360mm	578 x 568 mm	
Main filter/Removal rate	HEPA filter/99.99% of particles 0.3 μm and larger				
Air volume	0.3 to 1.8 m³/min (TYP.)		1 to 5 m³/min (TYP.)	4 to 12 m³/min (TYP.)	
Power supply voltage	24V DC ±10%, ripple(p-p) 10% max.				
Current consumption	Airflow level 5: 2.1 A max. (RMS value)/(Peak: 3 A)		Airflow level 5: 3.5 A max. (RMS value)/(Peak: 5.5 A)	Airflow level 5: 24V DC: 4.3 A max. (RMS value)/(Peak: 8 A)	
Airflow levels	5 levels • Settable by button operation • Settable by serial (RS-422 or RS-485 *1) communications			5 levels • Settable by button operation • Settable by serial (RS-422 or RS-485 *1) communications • Settable by ON/OFF signal input (3 levels) *2	
Running noise	Airflow level 3: 53 dB (TYP.)			Airflow level 3: 58 dB (TYP.)	
Fan motor	Compact DC brushless centrifugal blower x 2		DC brushless turbo fan x 1	DC brushless turbo fan x 1	
Indicator lamps	Operating status: Green/Red			Air volume: Blue	
Filter clogging detection	Yes			No	Yes
External output	Alarm output 1: Alarm output 1 turns OFF when one of the following events occurs. (Normally alarm output 1 is ON.) (Check indicator to find out which event occurred.) • Filter is clogged. • Fan error • Cleaning alarm for discharge needle (when ZN-J-series Ionizer (sold separately) is connected) • Discharge error (when ZN-J-series Ionizer (sold separately) is connected) Alarm output 2: Enabled only when ZN-J-series Ionizer (sold separately) is connected. • Alarm output 2 turns OFF to indicate that cleaning is necessary for ZN-J Series discharge needles. (Normally alarm output 2 is ON.)			Fan operation alarm output Alarm output OFF in below cases (ON during normal operation) • Fan not rotating (Including when power is OFF or on standby) • Trouble • Clogged filter (ZN-A6112P only)	
	30 VDC, 50 mA max. Residual voltage: 1 V max. with load current of 10 mA, 2 V max. with load current of 50 mA.				
Applicable Ionizer Unit (Optional)	ZN-J25A		ZN-J41A	None	
Ambient temperature range	Operating and storage: 0 to 40 °C (with no icing or condensation)				
Ambient humidity range	Operating and storage: 35 to 85% (with no icing or condensation)				
Applicable contamination degree	2				
Material	Top: Antistatic plastic, Bottom: SECC			Top: ABS, HEPA filter frame: Aluminum	
Outer dimensions (mm)	250 (W) x 250 (D) x 97.5 (H)		410 (W) x 410 (D) x 129.5 (H)	714.4 (W) x 654.4 (D) x 174.3 (H) (Height off installation surface: 117.3)	
Weight (Packaged)	Approx. 2 kg (Approx. 3.3 kg)		Approx. 5.2 kg (Approx. 8.6 kg)	Approx. 12.5 kg (Approx. 17 kg)	
Accessories	Instruction Sheet, Sealing parts, Mounting screws, I/O connector (XW4B-06B1-H1)			Instruction Sheet, Sealing parts, Mounting screws, I/O connector (XW4B-10B1-H1)	

\*1 Use the dip switches on the unit surface (connector surface) to switch between RS-422 and RS-485.

\*2 Contact input: 5 mA max. ON current. Use input device of 30 V or higher withstand voltage.

### Ionizer Unit

	ZN-J25A	ZN-J41A
Applicable Air Clean Unit	ZN-A2502D	ZN-A4105D
Power supply voltage	24V DC ±10%, Ripple (p-p):10% max.	
Current consumption	300 mA max	
Discharge voltage	± 7kV max	
Discharge method	Variable DC discharge	
Static electricity removal time (Typical) *1	5 s max.	
Ion balance (Typical) *2	±30 V max.	
Indicator lamps	Power (green), Cleaning notice (orange flashing), Cleaning alarm (orange), High voltage error (red)	
External output	High voltage error, cleaning outputs: Output from photo MOS relay (30V DC, 300 mA max.)	
Functions	Manual adjustment of ion balance, cleaning required detection, high voltage detection	
Ambient temperature range	Operating and storage: 0 to 40°C (with no icing or condensation)	
Ambient humidity range	Operating and storage: 35% to 65% (with no condensation)	
Materials	Body: ABS, Needles: Tungsten	
Outer dimensions (mm)	248 (W) x 310 (D) x 45 (H)	408 (W) x 470 (D) x 45 (H)
Weight (Packaged)	Approx. 0.6 kg (Approx. 1.4 kg)	Approx. 1.5 kg (Approx. 2.7 kg)
Accessories	Instruction Sheet, Sealing parts, Mounting screws, Connector cable for Air Clean Unit, English warning label	

\*1 Measurement conditions:

Distance: 300mm  
Air Clean Unit: ZN-A Series with airflow level 5 at center of air outlet  
Discharging from ±100V to ±100V with a charge plate monitor (150 x 150mm, 20pF)  
Temperature: 18 to 28°C, Humidity: 35 to 55%  
Performance may not be satisfied if gases such as from solvents are in the measurement area.

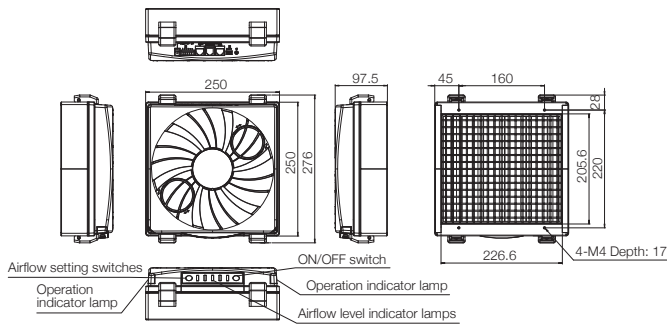
\*2 Measurement conditions:

Distance: 300mm  
Air Clean Unit: ZN-A Series with airflow level 5 at center of air outlet  
Measured for 10 sec by a charge plate monitor (150 x 150mm, 20pF)  
Temperature: 18 to 28°C, Humidity: 35 to 55%  
Performance may not be satisfied if gases such as from solvents are in the measurement area.

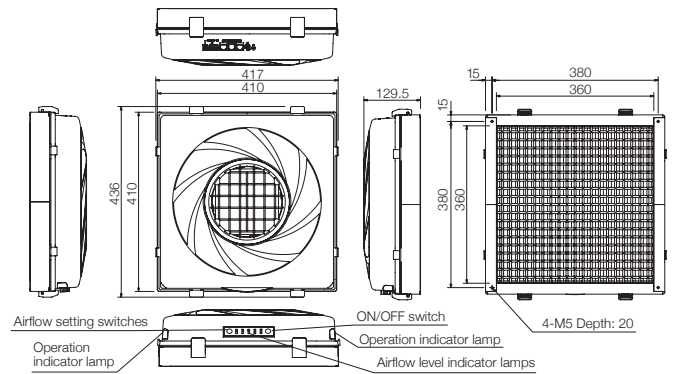
## Outer Dimensions

### ■ Air Clean Unit (Units: mm)

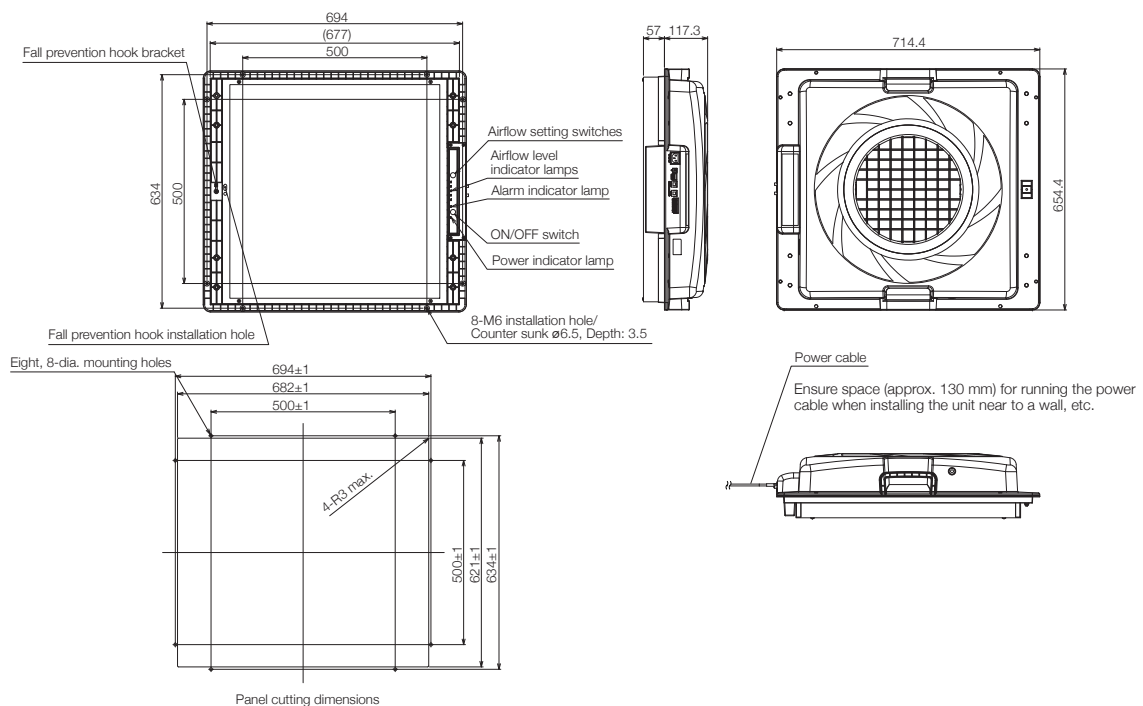
#### ZN-A2502D



#### ZN-A4105D

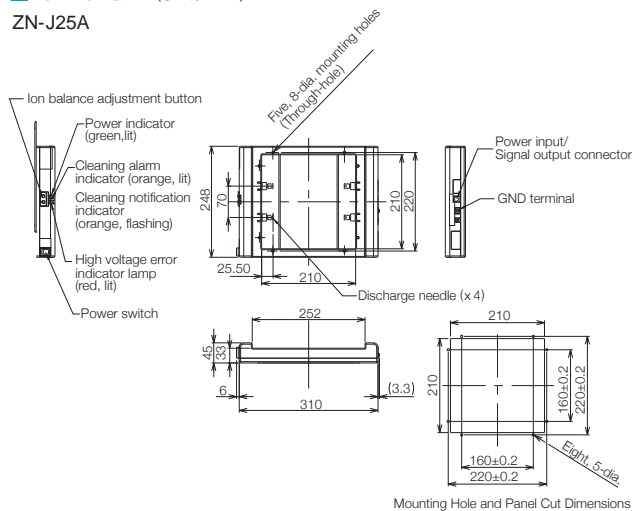


#### ZN-A6112/A6112P

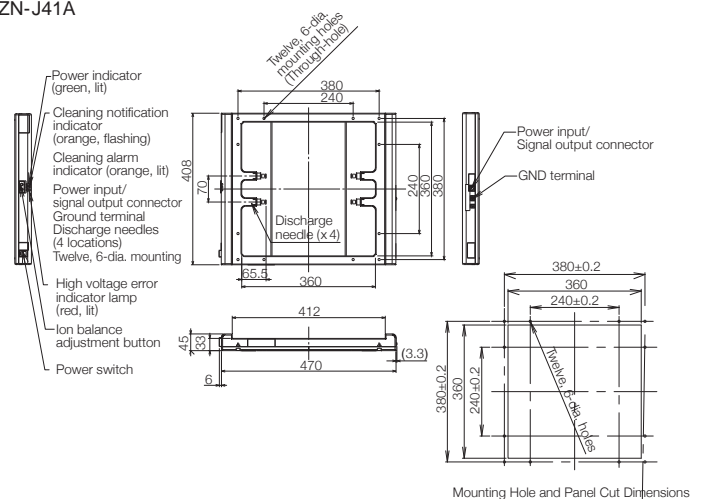


### ■ Ionizer Unit (Units: mm)

#### ZN-J25A



#### ZN-J41A



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CSM\_1\_1\_0513

Cat. No. Z324-E1-01

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