



**KOGANEI**

X904484

**ION WIPER**  
**"Separate Type"**

(DTY-WB01)  
(DTY-WBM01-S/DTY-WBM01-L)

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**Operating Instructions** (Ver. 1. 0)



# Introduction

Thank you for purchasing "ION WIPER, Separate Type".

Although this device is not subject for the standards for electric installation as a high voltage apparatus, this device uses 2000 V AC voltage. Please read this Operating Instructions manual and the Operating Instructions of Ionizer Air blow Type [DTY-ELK01] for appropriate handling and operation of this device. Please keep this manual for your reference and consult it as needed.

## 1. Safety Precaution

### Warning

This device is not for explosion-proof or water-proof. Do not install this device in a location where combustible gases and/or solvents are used (in a coating booth, for example). Otherwise, there is a risk of ignition and/or explosion.
When cleaning the discharge needle, always turn off the device. Also, the tip of the discharge needle is sharp, pay attention when handling the discharge needle. Otherwise, there is a risk of injury.
This device uses the input air. When turning on this device, always input the air.
As high voltage is applied to the discharge needle equipped to the ionizer, do not move the fingers, body, and metal pieces such as wires and tools close to the discharge needle. Otherwise, it can lead to an electric shock or device failure. This device is a high voltage equipment. Do not install this device in a place exposed to water or oil, high temperature, or high humidity. Especially, avoid a place with high humidity and a chance of dew condensation.
The fluid used for the ionizer is the air. Do not use any other fluid.
Never disassemble, repair, or modify this device. Otherwise, it can lead to an accident or device failure.
Always turn off the device before performing the wiring, installation, and inspection tasks. Otherwise, it can lead to an accident, electric shock, or device failure.
Do not point the nozzle tip to a person.
Wear the protective glasses and ear plugs to prevent scattering objects by the air blow from entering eyes and noise induced deafness.
Install a shut-off valve on the supply side to ensure safety in case of a leak or breakdown.

### Caution

Always ground the wire. Otherwise, it can lead to poor static charge removal characteristic or failure.
When this product is unusable or no longer necessary, the product should be disposed of as a piece of industrial waste.
For the worker to be able to cut the power immediately, install a switch or a circuit breaker and label it properly.
Please wire properly. Incorrect or inappropriate wiring can cause a functional failure.
For the DC power source, use output voltage DC 24 V with double or reinforced insulation.
Due to the EN specification, wiring should be within 30 m.
This device has a high voltage generator. Do not cause abnormal discharge by moving a metal piece to the discharge needle while current is applied. Otherwise, it can lead to failure or damages of peripherals or this device.
The ionizer generates ozone in the air. Ventilate the room when the ozone odor is felt. Do not move your face closer to the ion outlet to check the ozone odor. Otherwise, there is a risk to damage the nose and throat.
This product cannot be used if the following substances are included in the fluid used : Organic solvent, phosphate hydraulic operating fluid, sulfurous acid gas, chlorine gas, acids.
Do not use this device in a location exposed to direct sunlight (ultra-violet ray); with dust, salt, or iron powder; high humidity; or atmosphere with organic solvent, phosphate hydraulic operating fluid, sulfurous acid gas, chlorine gas, or acids. Otherwise, it can lead to loss of function in short period, rapid decrease in performance or shorter life span.
The life of the discharge needle varies depending on the operating environment. A poor operating environment (atmosphere with high humidity, for example) and/or unclean discharge needle can degrade the performance. A periodical maintenance is required.
Please be advised that inrush current would be applied when turning on this product and when the built-in DC fan in the dust collecting unit starts.
Air contaminated with oil and/or solid matters cannot be used. For the supplied fluid, use the cleaned air (use a filter with a nominal filtration rating of 40 μm or less). Drain or dust entered inside the product can cause an operational failure.
To prevent dew condensation and freeze due to the blow from the product, maintain a dew-point temperature of the supplied fluid lower than the ambient atmosphere temperature using a refrigeration air dryer and/or an after cooler.
Do not drop, step on, or hit the product. Otherwise, the product may be damaged.
Walls or objects near the exhaust slot of the dust collecting unit affects the exhaust ventilation. Please keep enough spaces when installing the product.

For other warning and caution items, refer to the "Safety Precautions" in the general catalog.

## 2. Overview

ION WIPER Separate Type is an out-of-box static eliminator/particle removing apparatus to remove particles adhered on the workpiece (charged material).

Ionized air coming out from the ionizer built into the blow unit neutralizes the static electricity on the charged material.

At the same time, the air blow from the blow nozzle blows out the particles on the material.

In addition, the dust collecting unit collects dusts and the filter catches the dust, exhausting from the rear of the project.

A unit type product for flexible installation to a device and a process and a box type product for installing on a workbench are available.

Verify that all the contents below are included in the package. If any item is missing, please contact your dealer (distributor) or a nearest Koganei office.

[DTY-WB01]

Blow unit.....x1 / L-shaped brackets and mounting (M4 x 0.5, length 6 mm) ... 4 pieces each

[DTY-ZMW01]

Dust collecting unit..... x1 / L-shaped bracket ... x4 \*Four mounting screws (M4 x 0.5, length 6 mm) are fixed to the dust collecting unit.

[DTY-WBM01-S/DTY-WBM01-L]

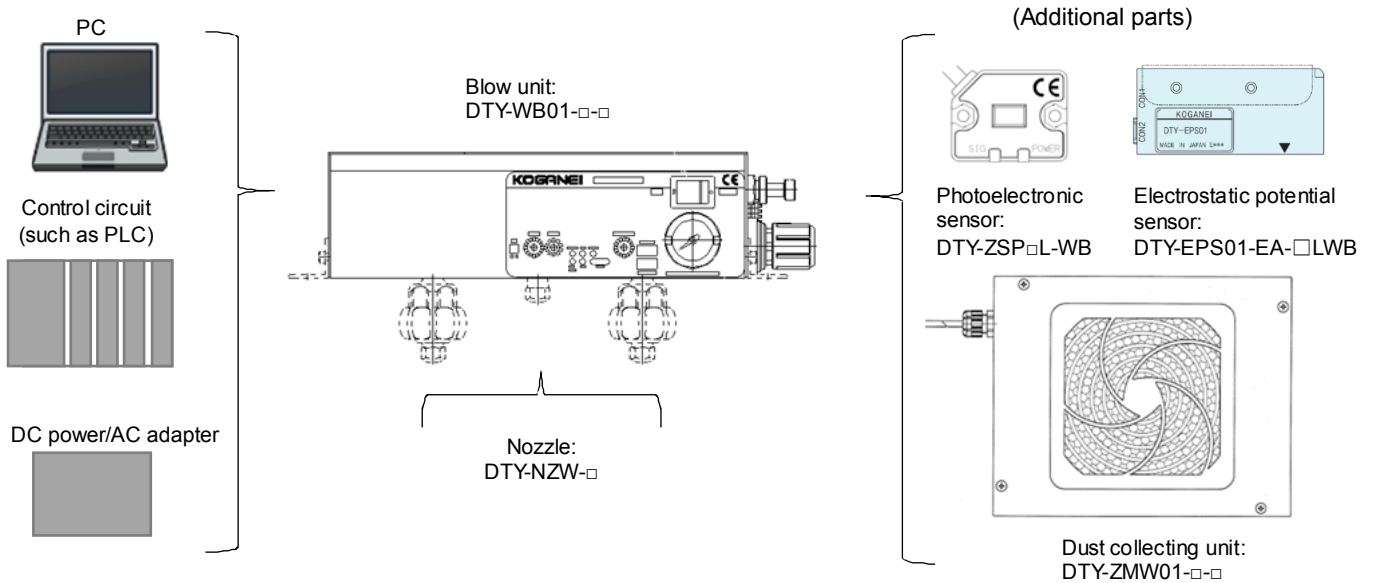
Box unit body..... x1 / Micro screw driver... x1 \*Use the micro screw driver for operating the photoelectric sensor switches.

### 2-1. System Configuration

[DTY-WB01]

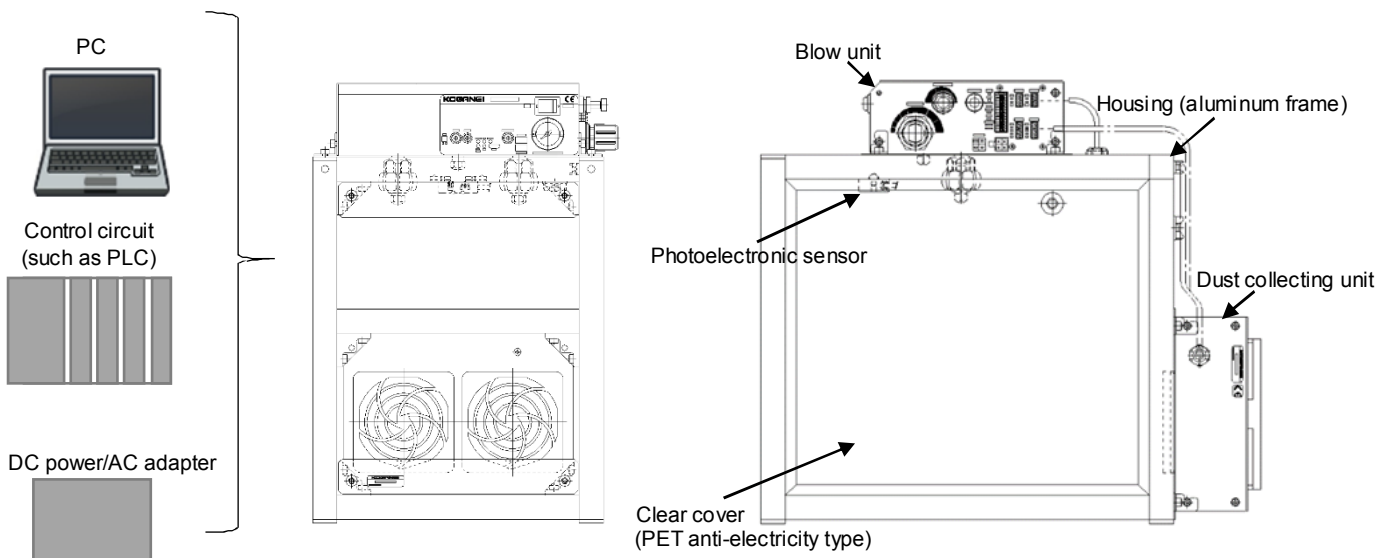
Install the blow unit to a device to remove static charge/particles.

Connect the additional parts to the blow unit, as needed.



[DTY-WBM01]

The Box type product can be installed to a workbench to remove static charge/particles and collect particles.



Box type: DTY-WBM01-S/DTY-WBM01-L

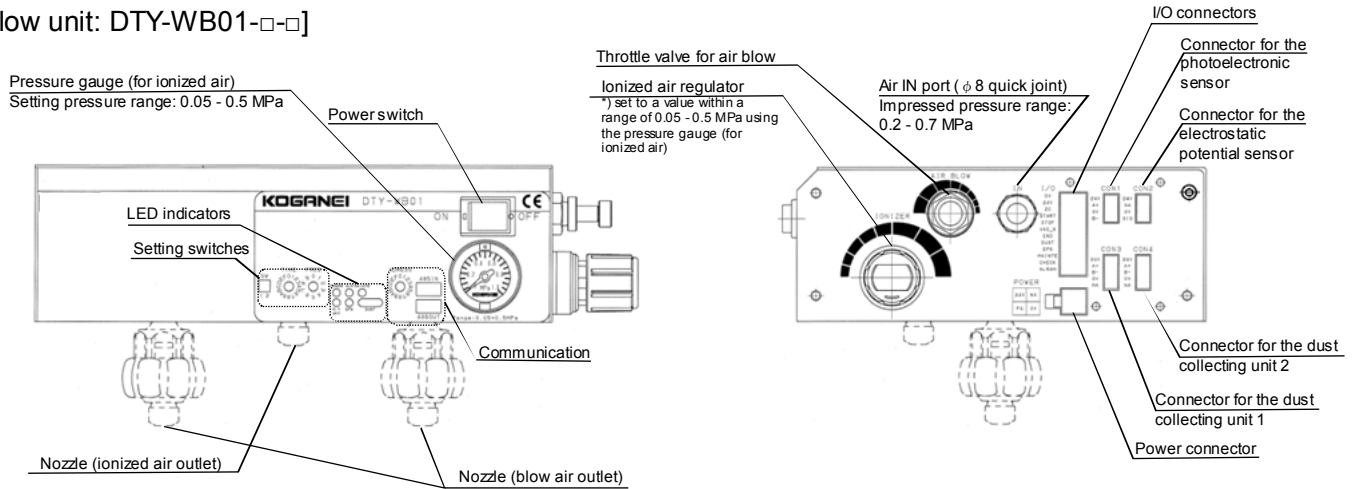
### 3. Device Configuration and Features

The blow unit consists of various functional parts, including the ionizer (DTY-ELK01) and valves, as well as the electric/air control circuits that operate these functional parts.

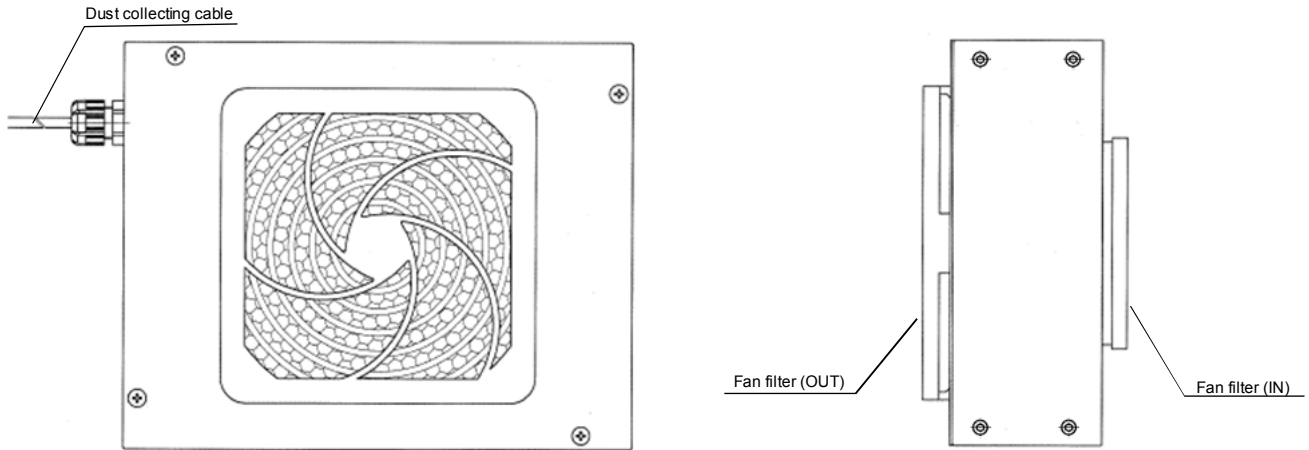
For collecting dusts, an additional part -- dust collecting unit (DTY-ZMW01) -- is available.

#### 3-1. Terms and Functions of Each Part

[Blow unit: DTY-WB01-□-□]



[Dust collecting unit: DTY-ZMW01-□-□]

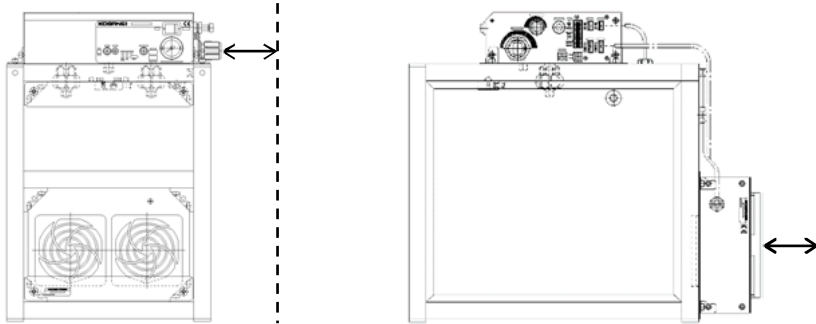


Unit	Term	Feature	Reference Section
Blow unit	Power connector	Power 24 V/0 V/FG is connected.	4-2-1. Power and ground connection
	I/O connectors	These connectors are used to connect PLC and other components to control the blow unit.	4-2-2. Connecting to external devices
	Connectors for the dust collecting units 1 & 2	These connectors are used to connect to the dust collecting units.	4-2-3. Connecting the dust collecting unit
	Connector for the photoelectric sensor	This connector is used to connect the photoelectric sensor.	4-2-4. Connecting the photoelectric sensor
	Connector for the electrostatic potential sensor	This connector is used to connect the electrostatic potential sensor.	4-2-5. Connecting the electrostatic potential sensor
	Communication	This port is used to connect to an external device such as a PC, and to retrieve various settings and information.	4-2-6. Connecting communication devices 6. Communication
	Air IN port	This is a piping port for the air blow and ionized air.	4-3. Air Piping
	Nozzle (ionized air outlet)	This is the nozzle from which the ionized air (for static charge removal) is blown out.	4-3. Air Piping
	Nozzle (blow air outlet)	This is the nozzle from which the blow air (for static charge removal) is blown out.	4-3. Air Piping
	Throttle valve for air blow	This valve adjusts the flow rate of the blow air (for static charge removal).	5-1. Operation Procedures (2)
	Ionized air regulator	This component adjusts the impressed pressure of the ionizer.	5-1. Operation Procedures (2)
	Pressure gauge (for ionized air) (Configured on the ionized air regulator)	This component displays the pressure applied to the built-in ionizer.	5-1. Operation Procedures (2)
	Setting switches	These switches are used to set the blow time/blow intermittent frequency.	5-1. Operation Procedures (3)
	Power switch	This switch is used to turn on/off the blow unit and the additional parts.	5-1. Operation Procedures (4)
LED indicators	These indicators indicate the status of the blow unit and the additional parts.	5-2. LED Indicators	
Dust collecting unit	Dust collecting cable	This cable is connected to the blow unit.	4-2-3. Connecting the dust collecting unit
	Fan filter (IN)	This is the filter on the suction side. (This filter is designed to prevent foreign objects such as screws from entering inside the product)	4-4. Exhaust Ventilation
	Fan filter (OUT)	This is the filter on the exhaust side.	4-4. Exhaust Ventilation

## 4. Installation and Wiring/Piping

### 4-1. Installation Precaution

- This product should be used in an indoor environment. When installing this product, pay attention to the pollution by water and oil, high temperature, and high humidity.
- Especially, avoid a place where dew condensation is anticipated.
- Use the L-shaped bracket to securely fix the product. Do not install this product to an unstable place.  
The fixing screws for the L-shaped bracket are M4 x length 5 mm. When the screws are prepared at the customer site, use screws of M4 x length 5 mm to 10 mm.
- Box type DTY-WBM01 should be installed on a robust and flat place like a workbench. Do not install this product to an unstable place.
- For the blow unit side operation area/air piping (φ8 tube), keep a space larger than 100 mm when installing this product. Also, for the exhaust from the dust collecting unit, keep a space larger than 100 mm when installing this product.



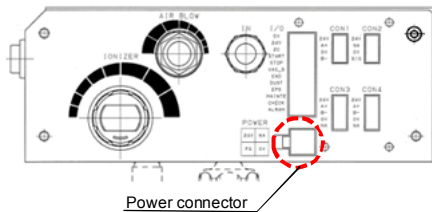
### 4-2. Wiring

#### 4-2-1. Power and ground connection

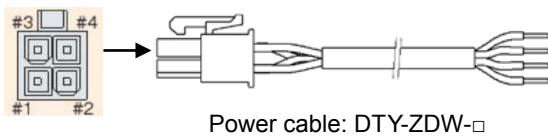
Connect the power cable (DTY-ZDW-□) or the AC adapter (DTY-ZPS4) to the power connector POWER.

Connect the cable securely by inserting the cable until the lock lever locks on the power connector. To disconnect the cable push down the lock lever fully and hold the connector and remove the cable. Do not apply excessive force to the lead wire.

Connect to the power (DC 24 V). The ground wire (green) of the power cable must be grounded.



(Connection using the power cable: DTY-ZDW-□)



Power cable: DTY-ZDW-□

Terminal No.	Symbol	Connecting cable color
1	NA	White
2	0 V	Black
3	24 VDC	Red
4	FG	Green

Connect the red power cable (terminal No.3) to the 24 V DC power.

Connect the black power cable (terminal No.2) to the 0 V power.

Ground the green power cable (terminal No.4).

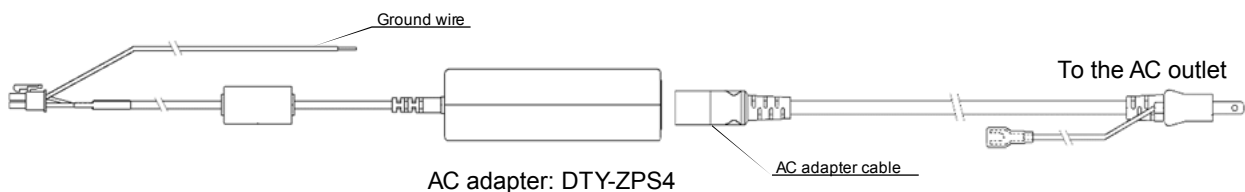
Note: Connect the red and black power cables correctly.

As the reverse connection protective circuit is built-in, the product would not be damaged but does not operate correctly.

(Connection using the adapter: DTY-ZPS4)

Connect the AC adapter cable to the AC adapter, and connect to the AC outlet (100 VAC - 240 VAC, 50 Hz/60 Hz).

Ensure to ground the ground wire (green).



Note: Always ground the ground wire (green) to prevent static charge and to achieve full performance of the ionizer.

Incomplete grounding would degrade the discharge performance.

Note: 0 V and FG (ground terminal) are internally connected.

#### 4-2-2. Connecting to external devices

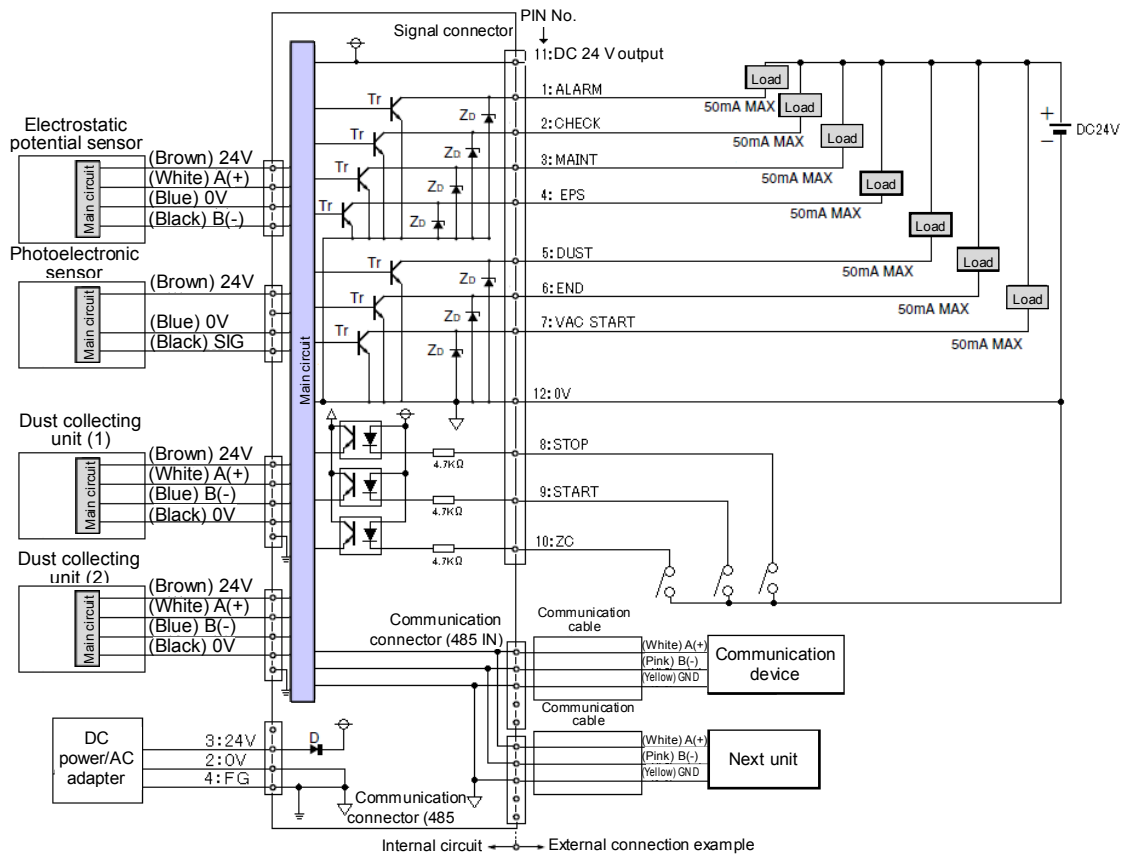
The following table shows the I/O connector specification. Refer to this table when connecting external devices such as PLC.

##### • Input specification

Item	Specification
Input voltage	DC 24 V $\pm$ 5% (Common to DC 24 V power)
Input current	4.8 mA at DC 24 V
Input response time	$\geq$ 30 ms
Input impedance	4.7 k $\Omega$

##### • Output specification

Item	Specification
Output system	Transistor output, NPN open collector (with overcurrent protection)
Output voltage	24 V DC $\pm$ 5%
Output current	50 mA Max
Leakage current when the power is OFF	0.10 mA Max
Residual voltage when the power is ON	0.3 V Max at 5 mA; 1.0 V at 50 mA Max
Output response time	$\geq$ 30 ms



[I/O connector terminal list]

Terminal No.	Term	I/O	Description
1	ALARM	Output	Output abnormality (refer to "8. Troubleshooting" for details)
2	CHECK	Output	Ionizer discharge abnormality (1 shot pulse of 200 ms is output at abnormality)
3	MAINT	Output	Maintenance output (air valve for blow/ionizer discharge needle)
4	EPS	Output	Electrostatic potential sensor decision output (output when the output is below the setting value)
5	DUST	Output	Dust sensor decision output (output when the output is below the setting value)
6	END	Output	Blow operation finish output (1 shot pulse of 200 ms is output when the operation finishes)
7	VAC_START	Output	External device operation output
8	STOP	Input	Operation stop input
9	START	Input	Operation start input
10	ZC (Zero calibration)	Input	Electrostatic potential sensor zero calibration input This is a feature to calibrate the reference potential where the measured value equals to 0 V. 0 V potential is read while facing to the grounded metal plate or a space without charged objects.
11	DC24 V	-	Power DC 24 V output It is connected to the 24 V power of, for example, an external sensor. (Capacity 24 V/100 mA Max)
12	0V	-	I/O 0 V (common to the power connector 0 V)

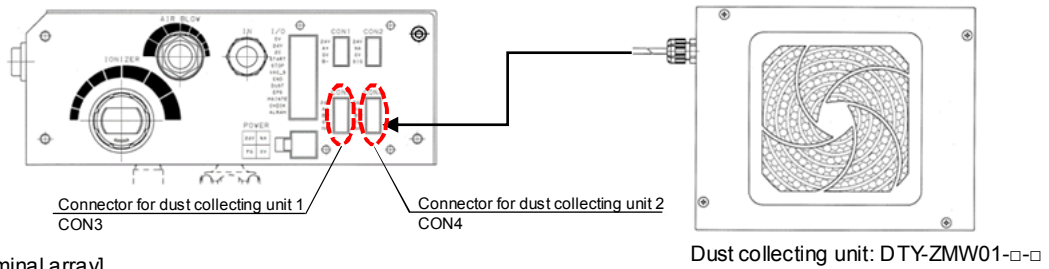
Note: 0 V and FG (ground terminal) are internally connected.

Note: Value of the dust sensor is just a guide. It does not guarantee removal of dust from the workpiece.

#### 4-2-3. Connecting the dust collecting unit

Connect the dust collecting unit connector CON3/CON4 when collecting dust using the dust collecting unit (DTY-ZMW01-□-□). Up to two dust collecting units can be connected to a single blow unit.

(When the dust collecting units equipped with the dust sensors are connected to both of CON3 and CON4, the display and output are based on the higher value of the dust sensors.)

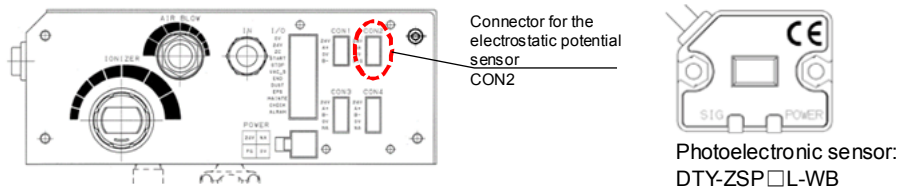


[Terminal array]

Terminal No.	Symbol	Connecting cable color
1	24 VDC	Brown
2	A(+)	White
3	B(-)	Blue
4	0 V	Black
5	NA(FG)	-

#### 4-2-4. Connecting the photoelectric sensor

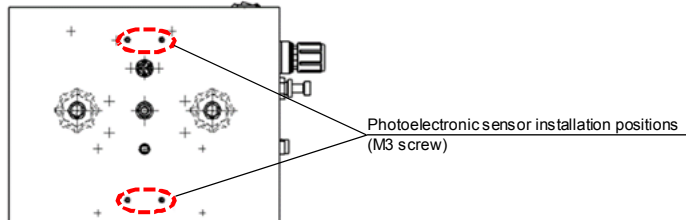
When the photoelectric sensor (DTY-ZSP□L-WB) is used, connect it to the photoelectric sensor connector CON2.



[Terminal array]

Terminal No.	Symbol	Connecting cable color
1	24 VDC	Brown
2	NA	-
3	0 V	Blue
4	SIG	Black

The photoelectric sensor can be installed to the nozzle surface of the blow unit. Use the enclosed screws to mount the sensor. (Either of 2 positions)



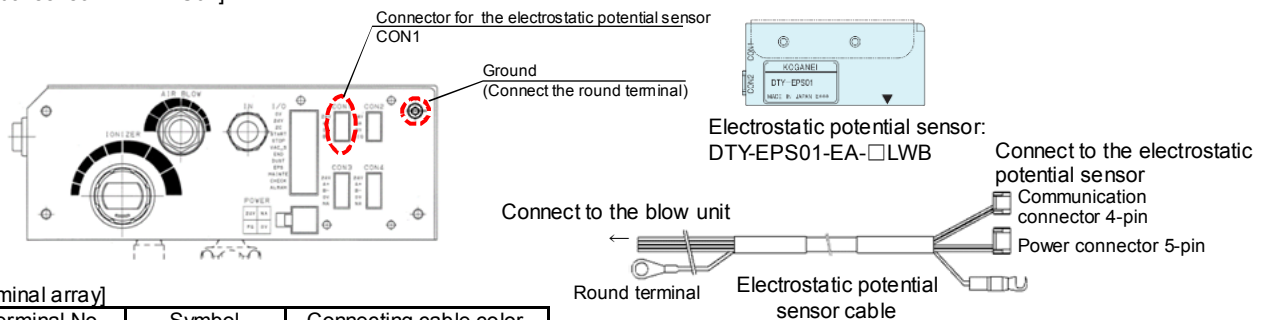
#### 4-2-5. Connecting the electrostatic potential sensor

When the electrostatic potential sensor (DTY-EPS01-EA-□LWB) is used, connect it to the electrostatic potential sensor connector CON1.

Remove the coat of the tip of the electrostatic potential sensor cable (6 mm removal is recommended), crimp a rod terminal and connect to CON1.

Ground the round terminal of the cable. (Connect it to a L-shape bracket fixing screw.)

For the specification details/use method of the electrostatic potential sensor, refer to the operating instructions of [Electrostatic potential sensor DTY-EPS01].



[Terminal array]

Terminal No.	Symbol	Connecting cable color
1	24VDC	Brown
2	A(+)	White
3	0V	Blue
4	B(-)	Black



Note: Connect the 24 VDC and 0 V to their correct connectors. Otherwise, the device does not function normally. In addition, wrong wiring may cause operation failure and damage of the product. Always check wiring before turning on the device. When connecting the electrostatic potential sensor: DTY-EPS01-EA-□LWB for the first time, connect the power connector only and ensure that the green LED of the sensor body is correctly turned on. Then, turn off the device and connect the communication connector.

If the device is turned on when the power of the electrostatic potential sensor has a reverse connection, the device may be damaged.

Note: When inserting a cable to each screwless terminal connector, use a Phoenix contact's screw driver SZS 0,4X2,0 (size: 0.4 x 2.0 x 60 mm) or an equivalent product.

Note: Do not connect to the terminal symbol NA (FG) connectors. If different voltage is supplied, the product may be damaged.

Note: Measurement value may be affected if dust adheres to the dust passage hole of the dust sensor. If dust is adhered to the dust passage hole, removed the fan filter on the OUT side and clean the hole section with air. Life span of the LED used in the dust sensor is limited. Light output will weaken over time when turned on (by less than 5% per 5 years).

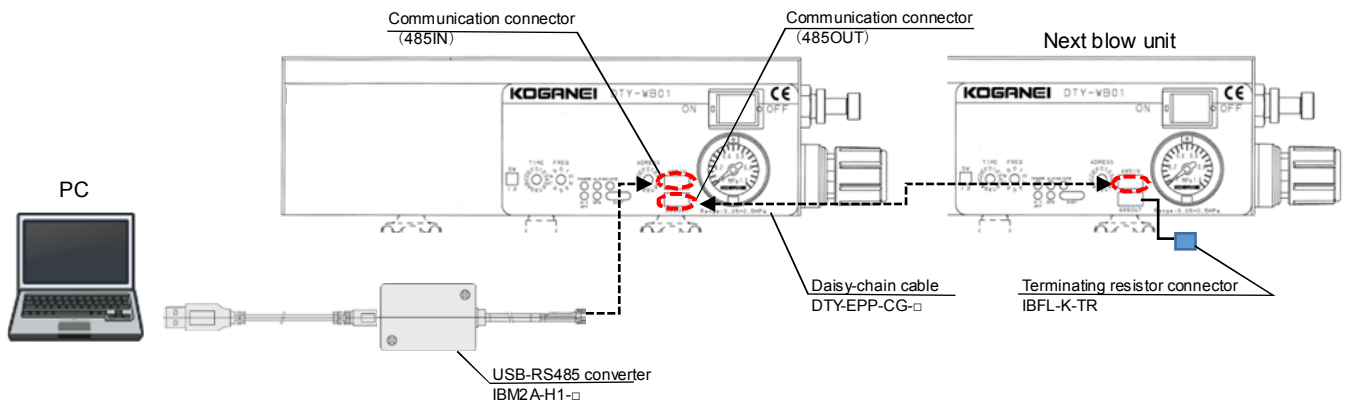
#### 4-2-6. Connecting communication devices

When a communication device such as a PC is connected, connect a USB-RS485 converter (IBM2A-H1-□) to the communication connector (485IN),

When a daisy-chain connection is used, connect a daisy-chain cable (DTY-EPP-CG-□) to the communication connector (485OUT), and connect to the communication connector of the next blow unit (485IN).

Connect a terminating resistor connector (IBFL-K-TR) to the communication connector of the last blow unit (485OUT).

For details of communication, refer to "6. Communication".

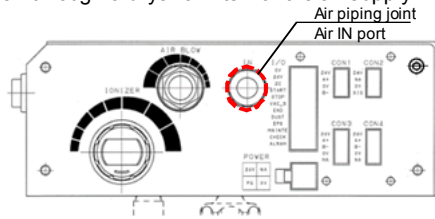


Note: When connecting the communication cable for the first time, ensure that the Power (green) LED of the blow unit successfully turns on and turn off the light before connecting the cable. If the device is turned on when the communication cable or USB-RS485 converter is connected while the power has a reverse connection, the device may be damaged.



### 4-3. Air piping

- Use a urethane or nylon tube of a  $\phi 8$  outer dimension for the air piping.
- Use clean air through a dryer or filter for the air supply.



Note: Prepare sufficient air supply to minimize the pressure drop during operation

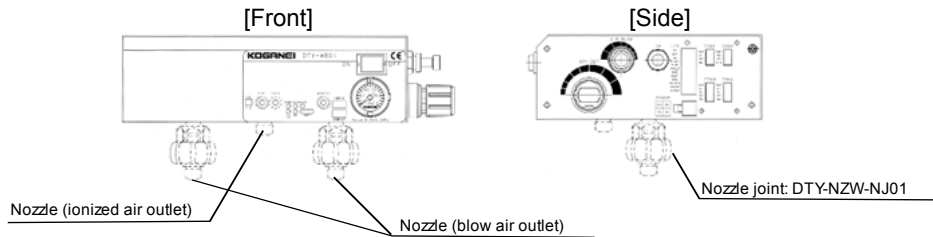
- Connecting the nozzle

Select a nozzle to attach to the blow unit according to the workpiece to remove static charge/particles.

Nozzle piping bore: Rc1/8

Do not use nozzles other than the following nozzles. Do not close the ionized air outlet with a plug, etc.

Recommended tightening torque: 5 N · m



(For pinpoint removal of static charge/particles)

Nozzle: DTY-NZW-PP02 nozzle bore  $\phi 2.0$  mm (It is dedicated particles removal nozzle)  
 DTY-NZW-PP03 nozzle bore  $\phi 3.0$  mm  
 DTY-NZW-PP04 nozzle bore  $\phi 4.0$  mm

(For removal of static charge/particles in a large area)

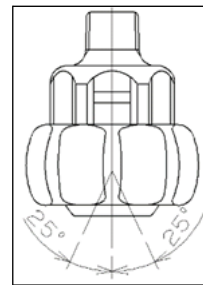
Nozzle: DTY-NZW-SW60 nozzle shower 60°  
 DTY-NZW-SW90 nozzle shower 90°  
 DTY-NZW-FT01 nozzle flat

To adjust the nozzle angle, use in conjunction with the nozzle joint: DTY-NZW- NJ01.

After adjusting the nozzle angle, lock it and use it.

Angle adjustable range of the nozzle joint:  $\pm 25^\circ$

Recommended tightening torque: Body 1 N · m / Nozzle 0.3 N · m



### 4-4. Exhaust Ventilation

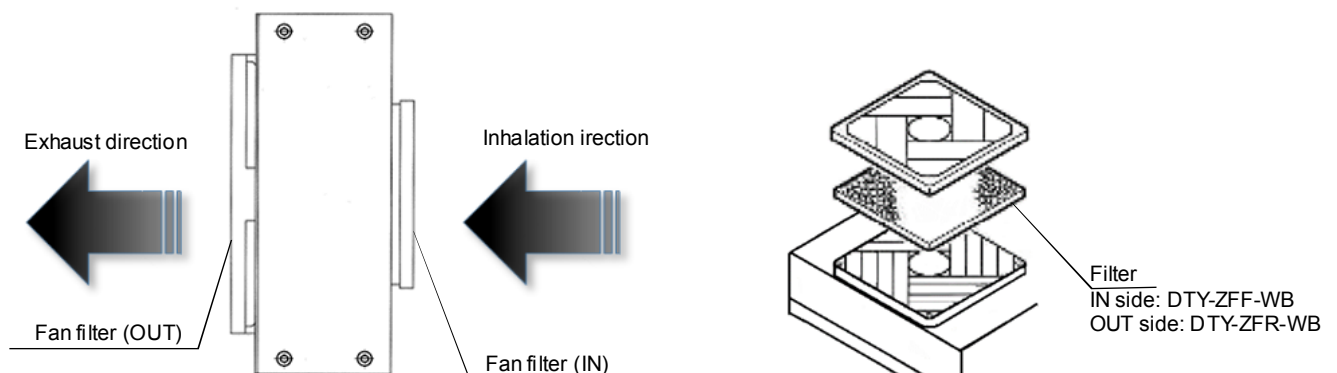
- Dust collecting unit (DTY-ZMW01-□-□) has a dust collection filter in it.

There is a fan inside the unit. Be careful about an injury due to the fan and the fan damage.

The filter on the fan filter (OUT) side collects particles.

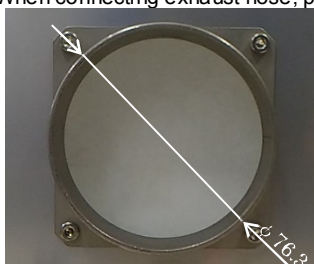
(The filter on the fan filter (IN) side is a filter to prevent larger particles from entering inside the dust collecting unit.)

The filters are consumables. Replace the filter (DTY-ZFF-WB/ DTY-ZFR-WB) when the filter is clogged or contaminated.



- The exhaust duct outer diameter is  $\phi 76.3$  if the dust collecting unit is not used but the duct attaching bracket (DTY-ZBRB-WB) (additional part) is used,

When connecting exhaust hose, pay attention to the exhaust resistance. (Recommended exhaust hose nominal diameter:  $\phi 75$ )



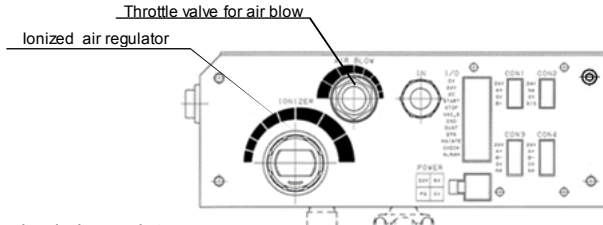
## 5. Operation

### 5-1. Operation procedures

(1) Ensure the power connection, grounding, air piping, wiring, and exhaust ventilation (dust collecting unit/duct piping).  
(Working pressure range: 0.2 - 0.7 MPa)

(2) Open the valve source of the air device (installed by the customer) and adjust the throttle valve for the ionized air regulator/air blow.

Adjust the ionizer supply air pressure to be within a range of 0.05 - 0.5 MPa. When turning on this device, always input the air.

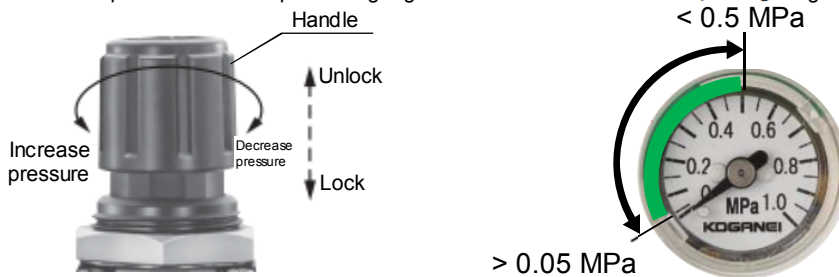


(Ionized air regulator)

Rotate the regulator handle with the handle securely pulled out. Rotate clockwise to increase the pressure, and rotate counter-clockwise to decrease the pressure.

After the adjustment completes, push the handle to lock it.

Check the pressure with the pressure gauge at the front of the blow unit. (Setting range: 0.05 - 0.5 MPa)

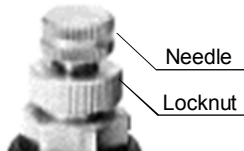


(Throttle valve for air blow)

Rotate the throttle valve needle from the fully open position to the counter-clockwise direction to increase the blow flow rate.

When the desired flow rate is achieved, always fasten the locknut to secure the setting.

When the needle is rotated too much (the flow rate is too high), rotate the handle clockwise to decrease the flow rate.



(3) Set the blow time and blow intermittent frequency using the blow time switch TIME/blow intermittent frequency switch FREQ.

For the blow time, either use the timer setting (0.5 - 10.0 seconds) or select the blow time switch No. from the continuous setting.

When the timer setting is used (blow time setting switch No.0 - A), the product blows the air for the configured time.

When the continuous setting is used (blow time setting switch No. B - F), the product blows the air when the photoelectric sensor detects the workpiece.

For the continuous setting, the sensor OFF delay time can also be selected. When removing particles manually, for example, the products keeps blowing the air during the OFF delay time if the target workpiece is out of the range of the photoelectric sensor. If the workpiece is detected again during the OFF delay time, the OFF delay time is reset.

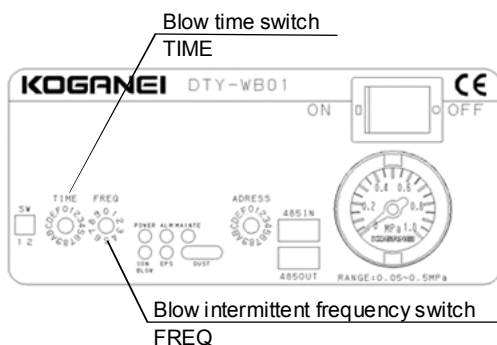
When the blow intermittent frequency setting is used, the product provides intermittent blow at the frequency specified by the blow intermittent frequency switch No.

Set the switch No. to "0" to disable intermittent blow.

The blow intermittent frequency switch No.8/No.9 are the user area that allows the customer to set desired behaviors.

There are two areas. The blow time/intermittent frequency/operation interval time can be configured according to the user environment.

For details, refer to Section 6-3-4. (Setting via communication is required.)



(Blow time switch)

Blow time switch No.	Blow time [second]	Remark
0	0.5	-
1	1.0	-
2	2.0	-
3	3.0	-
4	4.0	-
5	5.0	-
6	6.0	-
7	7.0	-
8	8.0	-
9	9.0	-
A	10.0	-
B	Continue	Sensor OFF_delay time 0.1 second
C	Continue	Sensor OFF_delay time 0.5 second
D	Continue	Sensor OFF_delay time 1.0 second
E	Continue	Sensor OFF_delay time 2.0 seconds
F	Continue	Sensor OFF_delay time 3.0 seconds

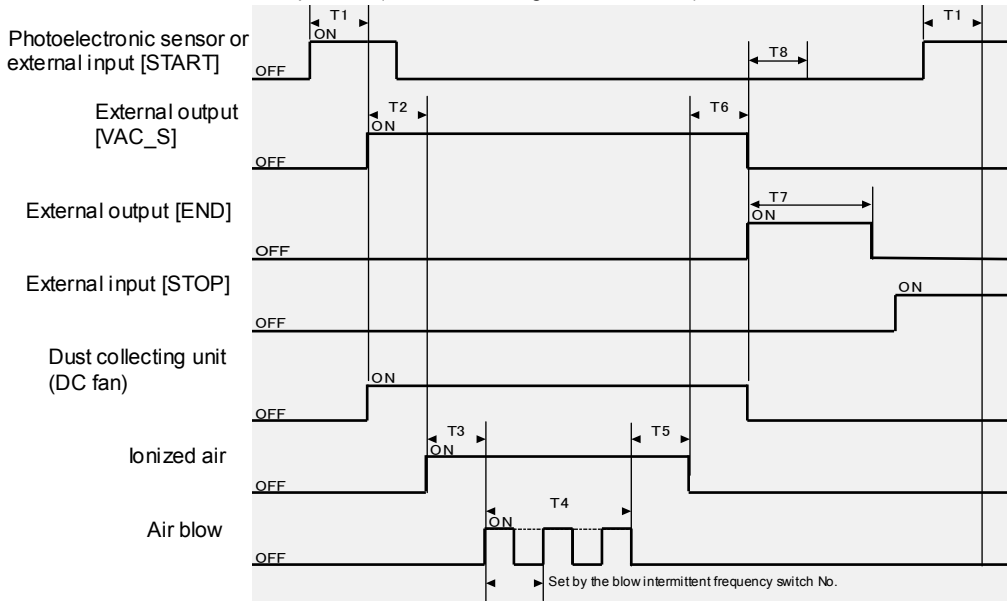
(Blow intermittent frequency switch)

Blow intermittent frequency switch No.	Blow frequency [Hz]	Remark
0	0	No intermittent operation
1	1	-
2	2	-
3	3	-
4	4	-
5	6	-
6	8	-
7	10	-
8	User area 1	-
9	User area 2	-

Note: The intermittent operation is available for air blow only. Intermittent blow is not available for the ionized air.

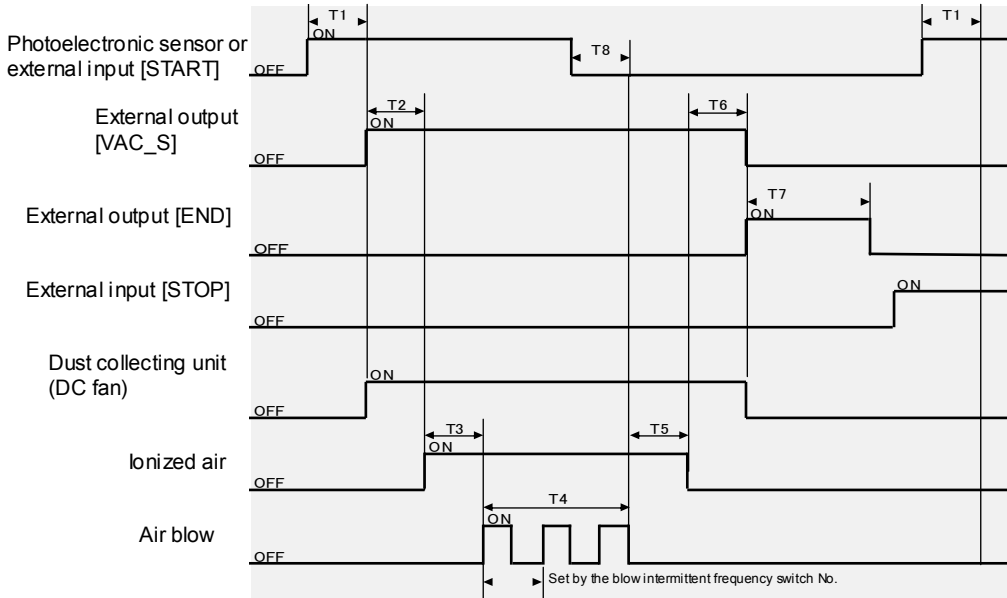
[Time chart]

- When the blow time is specified (blow time setting switch No.0 - A)



Symbol	Term	Time [ms]	Remark
T1	Input signal ON delay time	100	Operation starts when the photoelectric sensor or external input [START] is greater than T1
T2	Dust collecting operation time prior to blow	200	Dust collecting operation time prior to air blow
T3	Ionized air time prior to blow	100	Ionized air time prior to air blow
T4	Air blow time	Set by the blow time setting switch	Air blow time
T5	Ionized air time after blow	0	Ionized air blow time after air blow
T6	Dust collecting operation time after blow	200	Dust collecting operation time after air blow
T7	External output [END] time	200	External output time (1 shot pulse)
T8	Input signal OFF delay time	100	The subsequent operation is accepted when the photoelectric sensor or external input [START] is greater than T8

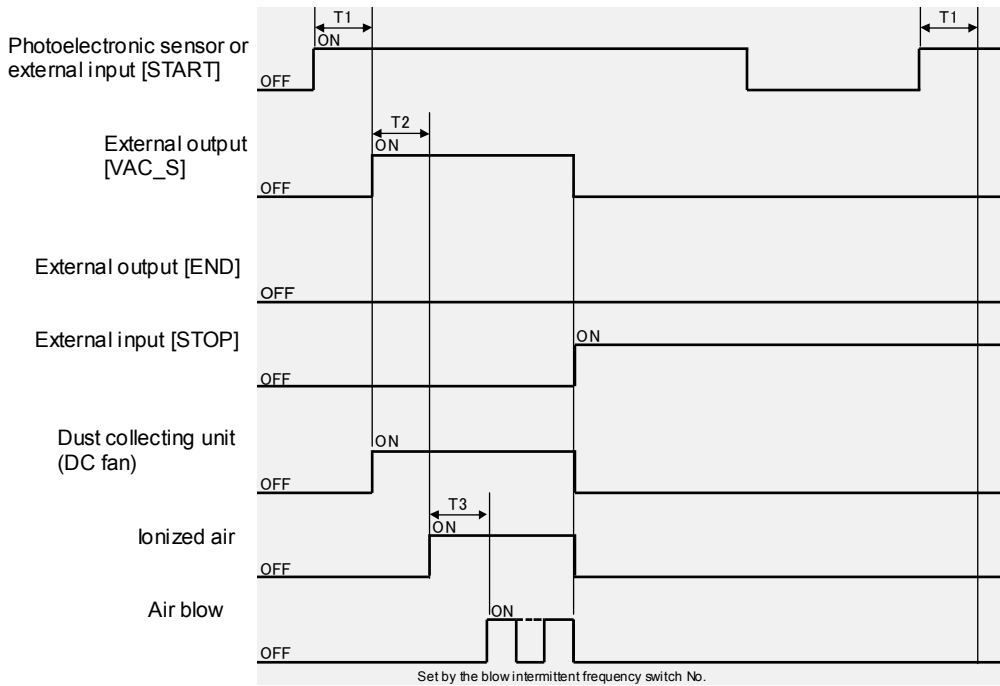
- Continuous blow is specified (Setting switch No. B - F)



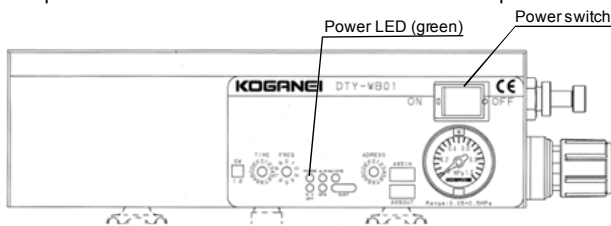
Symbol	Term	Time [ms]	Remark
T1	Input signal ON delay time	100	Operation starts when the photoelectric sensor or external input [START] is greater than T1
T2	Dust collecting operation time prior to blow	200	Dust collecting operation time prior to air blow
T3	Ionized air time prior to blow	100	Ionized air time prior to air blow
T4	Air blow time	Photoelectric sensor or external input [START] When ON (excluding T2/T3, including T8)	Air blow time
T5	Ionized air time after blow	0	Ionized air blow time after air blow
T6	Dust collecting operation time after blow	200	Dust collecting operation time after air blow
T7	External output [END] time	200	External output time (1 shot pulse)
T8	Input signal OFF delay time	Set by the blow time setting switch	Air blow operation stops when the setting is greater than T8 (OFF). The operation continues when the photoelectric sensor or the external input [START] is OFF once and back to ON again within T8.

Note: When the external input [STOP] is set to ON, the photoelectric sensor/external input [START] is not accepted. To enable the operation again, set the external input [STOP] and the photoelectric sensor/external input [START] to OFF, and then activate the operation.

• At the external input [STOP]



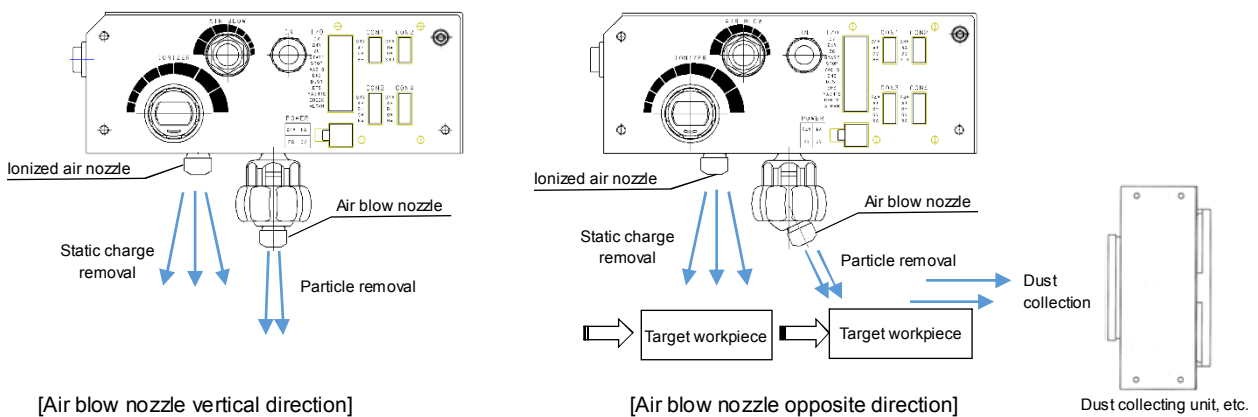
- (4) Press the "-" side of the power switch to turn on the device. The device turns on. If the power LED (green) and the photoelectric sensor are equipped, ensure that the power LED (green) of the photoelectric sensor is turned on before entering the workpiece. The photoelectric sensor detects the entered workpiece and the device starts the operation.



- (5) The blow operation is performed with the blow time/blow intermittent frequency set in Step (3), and then the operation stops. This is the end of the static charge/particle removal process.

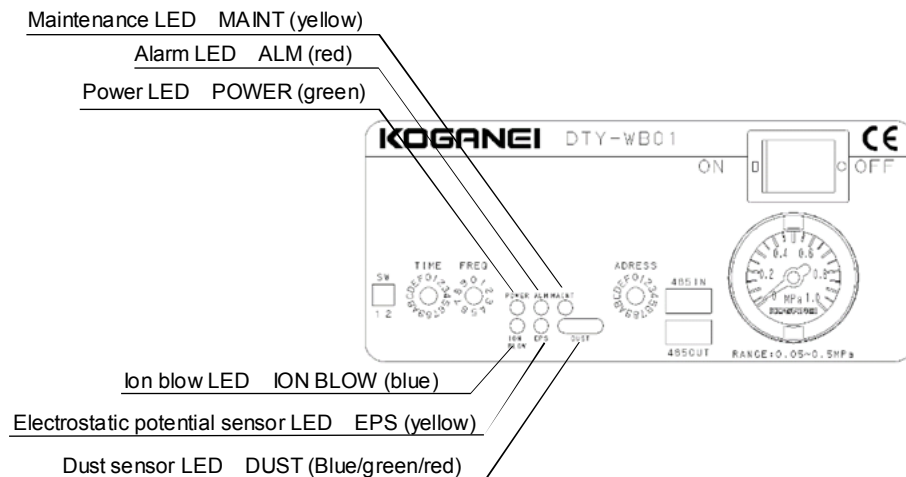
Note: When adjusting the nozzle angle using the nozzle joint, if the air flow nozzle is directed to the ionized air nozzle, the static charge removal performance may be affected. Use the product with the air blow nozzle facing the vertical direction or the opposite direction of the ionized air nozzle. Static charge removal performance may be affected if the ionized air pressure (set value of the ionized air regulator) is low compared to the air blow pressure (impressed pressure).

(Recommended nozzle direction)



## 5-2. LED Indicators

These indicators (turned on/flash/turned off) indicate the status of the blow unit and the additional parts. For the details, refer to the LED status table.



(LED status table)

Item	LED					
	POWER (green)	ALM (red)	MAINT (yellow)	ION BLOW (blue)	EPS (yellow)	DUST (red/green/blue)
Power OFF	○	○	○	○	○	○
While starting up from the power ON	◎	○	○	○	○	○
Power ON	●	—	—	—	—	—
Blowing the ionized air	●	—	—	●	—	—
Maintenance* <sup>1)</sup>	Ionizer discharge needle	●	—	◎ (2Hz)	—	—
	Air blow valve	●	—	◎ (4Hz)	—	—
	Ionizer discharge needle/Air blow valves (both)	●	—	●	—	—
Alarm	Ionizer	●	●	—	—	—
	Blow unit	●	◎ (4Hz)	—	—	—
	Dust collecting unit:	●	◎ (2Hz)	—	—	—
	Electrostatic potential sensor	●	◎ (1Hz)	—	—	—
Electrostatic potential sensor	Judgment output ON	●	—	—	●	—
	Zero-point calibration execution	●	—	—	◎ (2s, 2Hz)	—
	Outside the measurement range	●	—	—	◎ (4Hz)	—
Dust sensor	Dust amount: little	●	—	—	—	● (Blue)
	Dust amount: medium	●	—	—	—	● (Green)
	Dust amount: high	●	—	—	—	● (Red)
	Dust sensor not equipped	●	—	—	—	○

●: On ◎: Flash ○: Off

\*1) To enable maintenance, enable the piano dip switch SW1/2 on the front of the blow unit. (Refer to "7. Maintenance and Precautions" for details)  
(Initial value) Ionizer discharge time: 300 [time]/frequency of air blow valve ON/OFF: 10 million times

Note: While the ion wiper is in operation, ensure that air is supplied to the equipped ionizer. If the pressure setting of the ionized air regulator is less than 0.05 MPa, the device and the environment would receive harmful effect.

Note: The particle removal effect by the ion wiper varies depending on the shape and the amount of charge of the workpiece (charged material), air pressure, blow time, and blow intermittent frequency.

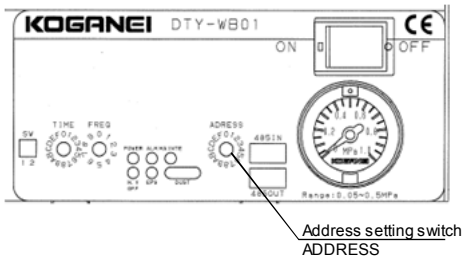
When this device is used, configure the ionized air pressure, blow flow rate/time/frequency appropriate to the workpiece.

Note: Value of the dust sensor is just a guide. It does not guarantee removal of dust from the workpiece.

## 6. Communication

### 6-1. Address Setting

To communicate with the blow unit, it is necessary to configure the unit address for each blow unit. Use the address setting switch to set the address. Up to 15 units can be connected in a daisy-chain. Ensure that there are no duplicated addresses. Duplicated addresses prevent correct communication. Also, do not set the address switch No. to "0". This setting disables communication.



ADDRESS Switch No.	Address	Remark
0	0	Do not configure
1	1	-
2	2	-
3	3	-
4	4	-
5	5	-
6	6	-
7	7	-
8	8	-
9	9	-
A	10	-
B	11	-
C	12	-
D	13	-
E	14	-
F	15	-

### 6-2. Communication Specification

(Communication settings specification)

Item	Description
Communication protocol	Modbus-RTU
Physical layer	RS-485
Communication method	Half duplex, start-stop
Maximum number of connected units	15 Max
Address Setting	1-F[15] (use the rotary switch on the front body) Communication is disabled when set to 0.
Communication speed	115.2 kbps
Data bit	8 bit
Start bit	1 bit
Stop bit	1 bit
Parity	Odd number
Flow control	None

(Communication frame configuration)

Start	Address (1-15)	Function code (1-6)	Data	Error check CRC	End
Silent interval with 3.5 characters (350 $\mu$ s) or more	1 byte	1 byte	n byte	2 byte	Silent interval with 3.5 characters (350 $\mu$ s) or more

(Corresponding function code)

Function code	Function term	Description
1	Read Coil Status	DO state (0/1) read
2	Read Input Status	DI state (0/1) read
3	Read Holding Register	Retention register read
4	Read Input Register	Input register read
5	Force Single Coil	DO state (0/1) overwrite
6	Preset Single Register	Retention register overwrite

### 6-3. Communication Data Address

Use the data address when reading or modifying (writing) data in Modbus communication.

6-3-1. Read Coil Status (function code: 1)/ Force Single Coil (function code: 5)

Read by the function code 1, and overwrite by the function code 5.  
(Readable and overwritable binary data, such as ON/OFF, is deployed)

Data address	Term	Description
0	Stop	Operation stop (equivalent to I/O connector terminal No.8: STOP) Operation stops when toggled to 0 -> 1 * The operation status is reset before starting the operation.
1	Start	Operation start signal (equivalent to I/O connector terminal No.9: START) Operation starts when toggled to 0 -> 1
2	ZC	Electrostatic potential sensor zero calibration execution (equivalent to I/O connector terminal No.10: ZC) Calibration is executed when toggled to 0 -> 1 * Automatically cleared to 0 when the execution successfully completes. If zero calibration does not complete after 100 ms, the process is not complete successfully. Check the connection state and the electric potential, etc.

6-3-2. Read Input Status (function code: 2)

Read by the function code 2.  
(Readable binary data, such as ON/OFF, is deployed)

Data address	Term	Description
0	ALARM	This indicates the same state as the I/O connector terminal No.1: ALARM. 0: OFF, 1: ON
1	CHECK	This indicates the same state as the I/O connector terminal No.2: CHECK. 0: OFF, 1: ON
2	MAINT	This indicates the same state as the I/O connector terminal No.3: MAINT. 0: OFF, 1: ON
3	EPS	This indicates the same state as the I/O connector terminal No.4: EPS. 0: OFF, 1: ON
4	DUST	This indicates the same state as the I/O connector terminal No.5: DUST. 0: OFF, 1: ON
5	END	This indicates the same state as the I/O connector terminal No.6: END. 0: OFF, 1: ON
6	VAC_START	This indicates the same state as the I/O connector terminal No.7: VAC_START. 0: OFF, 1: ON
7	STOP	This indicates the same state as the I/O connector terminal No.8: STOP. 0: OFF, 1: ON
8	START	This indicates the same state as the I/O connector terminal No.9: START. 0:OFF, 1:ON
9	ZC (Zero calibration)	This indicates the same state as the I/O connector terminal No.10: ZC. 0:OFF, 1:ON
10	Touch Sensor	This indicates the detection state of the photoelectric sensor. 0:OFF, 1:ON
11	EPS Connect	Connection state of the electrostatic potential sensor. 0: not connected, 1: connected
12	DUST1 Connect	Connection state of the dust collecting unit 1 0: not connected, 1: connected * Dust collecting unit connected to the dust collecting unit 1 connector CON3
13	DUST2 Connect	Connection state of the dust collecting unit 2 0: not connected, 1: connected * Dust collecting unit connected to the dust collecting unit 2 connector CON4
14	DUST1 FAN Error	Fun error state of the dust collecting unit 1 0: normal, 1: error
15	DUST2 FAN Error	Fun error state of the dust collecting unit 2 0: normal, 1: error
16	ELK CHECK	CHECK state of the ionizer (DTY-ELK01) 0: OFF, 1: ON
17	ELK ALARM	ALARM state of the ionizer (DTY-ELK01) 0: OFF, 1: ON
18	ELK HV	Discharge state of the ionizer (DTY-ELK01) 0: OFF, 1: ON
19	ELK Maint	Maintenance signal of the ionizer (DTY-ELK01) 0: OFF, 1: ON
20	Blow Valve Maint	Maintenance signal for blow valve 0: OFF, 1: ON
24	Current Over ALARM	Overcurrent error state of the I/O connector terminal No.1: ALARM 0: normal, 1: overcurrent error
25	Current Over CHECK	Overcurrent error state of the I/O connector terminal No.2: CHECK 0: normal, 1: overcurrent error
26	Current Over MAINT	Overcurrent error state of the I/O connector terminal No.3: MAINT 0: normal, 1: overcurrent error
27	Current Over EPS	Overcurrent error state of the I/O connector terminal No.4: EPS 0: normal, 1: overcurrent error
28	Current Over DUST	Overcurrent error state of the I/O connector terminal No.5: DUST 0: normal, 1: overcurrent error
29	Current Over END	Overcurrent error state of the I/O connector terminal No.6: END 0: normal, 1: overcurrent error
30	Current Over START	Overcurrent error state of the I/O connector terminal No.7: START 0: normal, 1: overcurrent error



6-3-3. Read Input Register (function code: 4)

Read by the function code 4.  
(Read-only 16-bit data is deployed)

Data address	Term	Description	Unit
0	EPS Data	Electrostatic potential sensor measurement electric potential value (-20000 - 20000) 30000: + over range, -30000: - over range The data is a 16-bit signed integer. In the standard mode: -2000 - 2000, resolution 1 In the high voltage mode: -20000 - 20000, resolution 10	V
8	DUST1 Sensor	Dust collecting unit 1 dust sensor measurement value (0 - 1000) If the value immediately after turning the power on is -1000 and a dust sensor is used, the value of -1000 continues to be used. Disconnected: -1	
9	DUST1 Fan1 SP	Dust collecting unit 1 fan 1 rotation speed (2500 to 8250) Disconnected: -1000, On error: -1	rpm
10	DUST1 Fan2 SP	Dust collecting unit 1 fan 2 rotation speed (2500 to 8250) Disconnected: -1000, On error: -1	rpm
11	DUST2 Sensor	Dust collecting unit 2 dust sensor measurement value (0 - 1000) If the value immediately after turning the power on is -1000 and a dust sensor is used, the value of -1000 continues to be used. Disconnected: -1	
12	DUST2 Fan1 SP	Dust collecting unit 2 fan 1 rotation speed (2500 to 8250) Disconnected: -1000, On error: -1	rpm
13	DUST2 Fan2 SP	Dust collecting unit 2 fan 2 rotation speed (2500 to 8250) Disconnected: -1000, On error: -1	rpm
24	RSW Addr	Current value of the ADDRESS switch (0 - 15)	
25	RSW Freq	Current value of the FREQ switch (0 - 9)	
26	RSW Blow	Current value of the TIME switch blow time (0 - 15)	
27	PIANO SW	Current values of the SW 1/2 switches (0 - 3)	
40	BLOW Unit Major Ver	Main unit major version	
41	BLOW Unit Minor Ver	Main unit minor version	
42	EPS Major Ver	Electrostatic potential sensor major version	
43	EPS Minor Ver	Electrostatic potential sensor minor version	
44	DUSTUnit1 Major Ver	Dust collecting unit 1 major version	
45	DUSTUnit1 Minor Ver	Dust collecting unit 1 minor version	
46	DUSTUnit2 Major Ver	Dust collecting unit 2 major version	
47	DUSTUnit2 Minor Ver	Dust collecting unit 2 minor version	
50	Error History1	Error history 1 (clear not allowed, retention) [New]	
51	Error History2	Error history 2 (clear not allowed, retention) ↑	
52	Error History3	Error history 3 (clear not allowed, retention)	
53	Error History4	Error history 4 (clear not allowed, retention)	
54	Error Histor5	Error history 5 (clear not allowed, retention)	
55	Error Histor6	Error history 6 (clear not allowed, retention)	
56	Error History7	Error history 7 (clear not allowed, retention)	
57	Error History8	Error history 8 (clear not allowed, retention)	
58	Error History9	Error history 9 (clear not allowed, retention) ↓	
59	Error History10	Error history 10 (clear not allowed, retention) [Old]	

6-3-4. Read Holding Register (function code: 3)/ Preset Single Register (function code: 6)

Read by the function code 3, and overwrite by the function code 6.

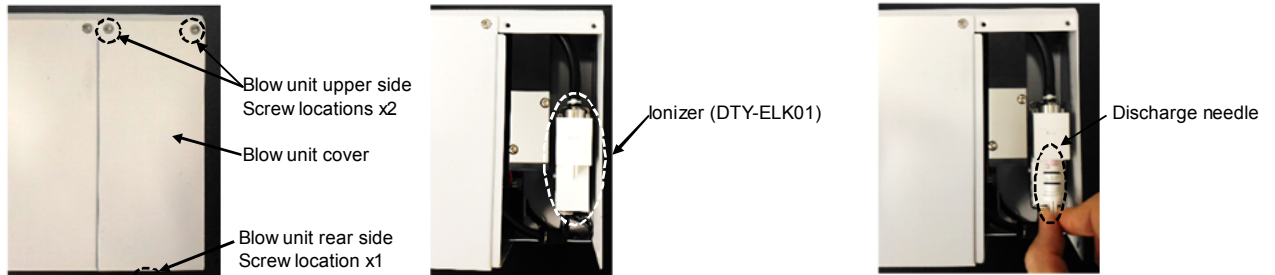
(Readable and overwriteable 16-bit data is deployed. The value of the retention register is maintained after the main unit is turned off.)

Data address	Term	Description	Initial value	Maximum value	Minimum value	Unit
0	EPS Work size	Workpiece size setting for the electrostatic potential sensor	300	400	20	mm
1	EPS Distance	Measurement distance setting for the electrostatic potential sensor	50	100	6	mm
2	EPS CP Thers	Threshold setting for the electrostatic potential sensor * "EPS CP Thers > EPS CP Hys" must be satisfied.	100	20000	0	V
3	EPS CP Hys	Hysteresis setting for the electrostatic potential sensor * "EPS CP Thers > EPS CP Hys" must be satisfied.	10	1000	0	V
4	EPS Mode	Mode setting for the electrostatic potential sensor 0: standard mode, 1: high voltage mode	0	1	0	
8	FAN1 SPEED	Fan rotation speed setting for Dust collecting unit 1	8250	8250	2500	rpm
9	FAN2 SPEED	Fan rotation speed setting for Dust collecting unit 2	8250	8250	2500	rpm
10	FAN1 Mode	Operation mode setting for Fan 1 0: normal, 1: continuous (not turned OFF after the operation)	0	1	0	
11	FAN2 Mode	Operation mode setting for Fan 2 0: normal, 1: continuous (not turned OFF after the operation)	0	1	0	
16	DUST Thres	Dust sensor DUST signal threshold * "DUST Thres > DUST Hys" must be satisfied.	50	1000	0	—
17	DUST Hys	Dust sensor DUST signal hysteresis * "DUST Thres > DUST Hys" must be satisfied.	10	100	0	—
18	DUST Led DH	Dust sensor LED threshold DH Detected value >= DH: red LED turned on DH > Detected value > DL: green LED turned on Detected value <= DL: blue LED turned on	200	1000	0	—
19	DUST Led DL	Dust sensor LED threshold DL Detected value >= DH: red LED turned on DH > Detected value > DL: green LED turned on Detected value <= DL: blue LED turned on	50	1000	0	—
21	End Count H	Operation completion count upper	0	30000	0	x10,000 times
22	End Count L	Operation completion count lower	0	9999	0	time(s)
23	ELK Clean H	Ionizer discharge time (hour) Automatic count at discharge	0	30000	0	h
24	EKL Clean S	Ionizer discharge time (second) Automatic count at discharge * Ensure to clear to 0 after a maintenance task completes.	0	3599	0	s
25	ELK Clean Thres	Discharge needle maintenance time setting (for MAINT output)	300	30000	0	h
26	Blow Valve CntH	Blow valve actuating cycle upper	0	10000		x10,000 times
27	Blow Valve CntL	Blow valve actuating cycle lower * Ensure to clear to 0 after a maintenance task completes.	0	9999	0	time(s)
28	Blow Valve Cnt Thres	Blow valve replacement (for MAINT output)	1000	10000	0	x10,000 times
32	UA1 ON Delay	User area 1 ON delay time: T1	100	3000	0	ms
33	UA1 ON FAN	User area 1 pre-blow blow time: T2	200	3000	0	ms
34	UA1 ON ELK	User area 1 pre-blow discharge time: T3	100	3000	0	ms
35	UA1 Blow Time	User area 1 blow time: T4	1000	60000	500	ms
36	UA1 OFF ELK	User area 1 post-blow discharge time: T5	0	3000	0	ms
37	UA1 OFF FAN	User area 1 post-blow blow time: T6	200	3000	0	ms
38	UA1 OFF Delay	User area 1 OFF delay time: T8	100	3000	0	ms
39	UA1 Blow Freq	User area 1 blow frequency 0: continuous, 10 - 100: pulse blow	0	100	0	x0.1 Hz
40	UA1 Mode	User area 1 operation mode 0: blow time specifying mode, 1: continuous mode	0	1	0	
48	UA2 ON Delay	User area 2 ON delay time: T1	100	3000	0	ms
49	UA2 ON FAN	User area 2 pre-blow blow time: T2	200	3000	0	ms
50	UA2 ON ELK	User area 2 pre-blow discharge time: T3	100	3000	0	ms
51	UA2 Blow Time	User area 2 blow time: T4	1000	60000	500	ms
52	UA2 OFF ELK	User area 2 post-blow discharge time: T5	0	3000	0	ms
53	UA2 OFF FAN	User area 2 post-blow blow time: T6	200	3000	0	ms
54	UA2 OFF Delay	User area 2 OFF delay time: T8	100	3000	0	ms
55	UA2 Blow Freq	User area 2 blow frequency 0: continuous, 10 - 100: pulse blow	0	100	0	x0.1 Hz
56	UA2 Mode	User area 2 operation mode 0: blow time specifying mode, 1: continuous mode	0	1	0	

\*) Data addresses 32 - 40 and data addresses 48 - 56 are enabled when the blow intermittent frequency switch [FREQ]No.8 and the glow intermittent frequency switch [FREQ]No.9 are set, respectively. For their behavior, refer to the [time chart] on page 11.

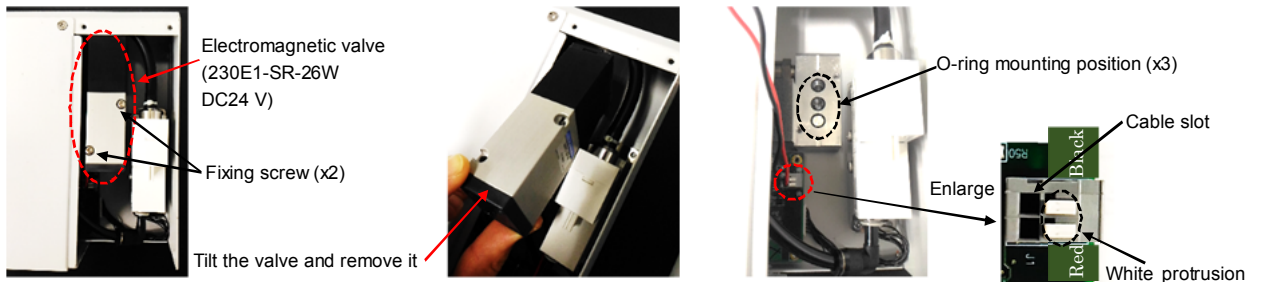
## 7. Maintenance and Caution Items

- While this device is installed to a place where no water or oil splashes over, if water, oil, paint, or other fluids splashes over the device, wipe it out using a piece of cloth.
- Dirt contamination on the tip of the discharge needle of the equipped ionizer degrades the static charge removal performance. If gradual degradation of the static charge removal effect is experienced, clean the tip of the discharge needle using an appropriate tool such as a nylon brush. (Never use a wire brush.)  
Clean the discharge needle and the area nearby using a swab.  
When cleaning the discharge needle of the ionizer, remove the cover from the blow unit body.

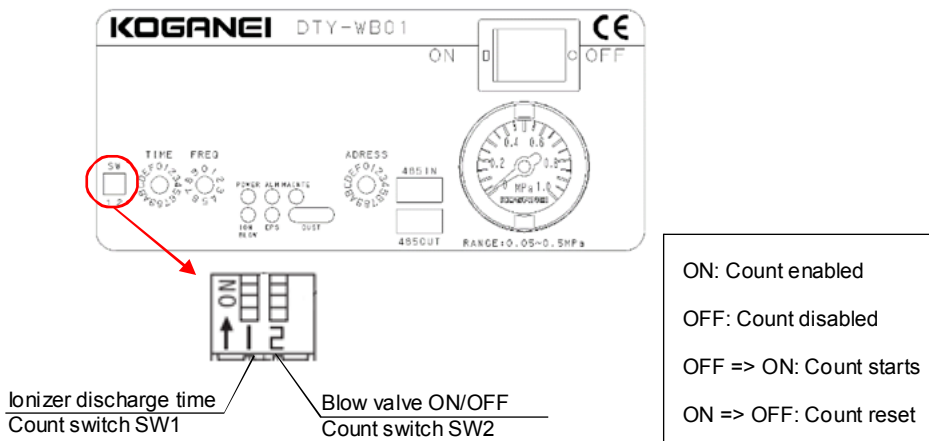


For additional maintenance and precautions regarding the ionizer, refer to the operating instructions of DTY-ELK01.

- The blow intermittent operation of this ion wiper is controlled by an electromagnetic valve. The electromagnetic valve has a product life. The electromagnetic valve is a consumable item. When it reaches the end of the product life, replace it. Model: 230E1-SR-26W DC24V 10 million ON/OFF cycles are considered as a milestone for replacement.  
When replacing the electromagnetic valve, remove the cover from the blow unit body.  
The electromagnetic valve is fixed with two screws.  
Remove the screws and remove the electromagnetic valve from the blow unit body. Tilt the electromagnetic valve for easier removal.  
Disconnect the cables (red/black) from the electromagnetic valve connectors. Push down the white protrusion at the electromagnetic valve connector and pull out the cable to disconnect the cable.  
Align a new electromagnetic valve to the board silk and connect the cables (red/black) of the new electromagnetic valve. Insert the cables while pressing down the white protrusion.  
Ensure to set the electromagnetic valve O-rings (x3) to the specified locations.  
After connecting the cable and attaching the O-rings, fix the electromagnetic valve with the screws. Recommended tightening torque: 0.5 [N·m]



- Setting the maintenance time/count  
The blow unit measures the discharge time of the ionizer. When the discharge time reaches the specified discharge time, the maintenance LED MAINT (yellow) flashes (2 Hz) and I/O connector terminal No.3: MAINT is output.  
The ON/OFF cycle of the air blow valve is also counted. When the number of cycle reach the specified count, the maintenance LED MAINT (yellow) flashes (4 Hz) and I/O connector terminal No.3: MAINT is output.  
When the flash/I/O connector terminal No.3: MAINT is acknowledged, replace the relevant parts.  
To enable the count, SW1 or SW2 on the blow unit front must be set to ON. (They are set to OFF at the time of shipping)



Warning: Ensure to turn off the power before performing the inspection, cleaning, or maintenance task. Also, shut the connection to the air completely.  
When cleaning the discharge needle, pay attention to handle the needle as the tip of the discharge needle is sharp. Otherwise, there is a risk of injury.

## 8. Troubleshooting

### 8-1. When a Problem Occurs

When contacting us for a problem, please inform us about the following items as specific as possible:

Item	Description (example)
What	Model (blow unit: DTY-WB01/Box type DTY-WBM01-S/-L) Others
When	Purchase date (serial No.) Period of service, operating condition When the power is on; One hour after the power is on
In what situation	During operation During configuration
What happened	The unit does not function An error occurs
Frequency	Always occurs Once in an hour The problem is not reproduced

### 8-2. When Alarms Are Issued and Their Resolution

When the I/O connector ALARM signal output is ON, it is considered that an alarm is issued.

Also, the blow unit ALM (red) LED turns on/flashes. (For the details, refer to "5-2. LED Indicators".)

When an alarm is issued, refer to the solutions in "8-3. Alarm List".

### 8-3. Alarm List

Alarm Code	Alarm Subject	Description	Behavior	Possible Cause	Resolution
1001	Blow unit	I/O connector terminal No.1 ALARM overcurrent	Stop	<ul style="list-style-type: none"> <li>The load connected to the I/O output got short circuited.</li> <li>DC 24 V is applied without the load.</li> </ul>	Shut the power, and check the load. After removing the cause of the alarm, turn on the device.
1002		I/O connector terminal No.2 CHECK overcurrent	Stop		
1003		I/O connector terminal No.3 MAINT overcurrent	Stop		
1004		I/O connector terminal No.4 EPS overcurrent	Stop		
1005		I/O connector terminal No.5 DUST overcurrent	Stop		
1006		I/O connector terminal No.6 END overcurrent	Stop		
1007		I/O connector terminal No.7 VAC START overcurrent	Stop		
1020	Memory failure	Stop			
1030		Communication error (CRC mismatch occurred)	Continue	<ul style="list-style-type: none"> <li>Error in the communication settings</li> <li>The power was turned ON while communicating with support software</li> </ul>	Check the communication settings. Connect before applying the power.
1031		Communication error (exception response occurred)	Continue	<ul style="list-style-type: none"> <li>Effect by the noise</li> </ul>	
2010	Dust collecting unit 1	Internal DC fan failure	Stop	<ul style="list-style-type: none"> <li>A foreign object stuck in the DC fan stopped the rotation of the fan.</li> <li>DC fan is broken.</li> </ul>	Turn off the power, and remove the foreign object from the DC fan, if any. If the problem persists, contact us.
2020	Dust collecting unit 2				
3010	Electrostatic potential sensor	Zero calibration error	Continue	<ul style="list-style-type: none"> <li>Zero calibration was performed within the range (within <math>\pm 200</math> V) (<math>\pm 2000</math> V in the high voltage mode)</li> </ul>	Perform calibration within the range (within $\pm 200$ V) ( $\pm 2000$ V in the high voltage mode)
3020		Electrostatic potential sensor	Stop	The sensor is broken	Remove the sensor from the unit and attach it again. If the problem persists, contact us.
4010	Ionizer	Feature failure	Stop	The piezoelectric transformer is broken.	Shut the power, and check for any issues on the discharge needle, such as contamination with dust. If the problem persists, contact us.
4020		Discharge failure	Continue	Abnormal discharge occurred	

## 9. Specification/External Dimension

### 9-1. Specification

Type	Item	Blow unit: DTY-WB01-□-□ Dust collecting unit: DTY-ZMW01-□-□
Input voltage		24 VDC±5%
Current consumption		Blow unit: 0.6 A Max Dust collecting unit x1: 1.0 A Max (2.0 A Max at start-up)
Equipped ionizer		DTY-ELK01 (x1)
Ion balance *1)		±15 V (0.5 MPa, 50 mm)
Discharge time *1)		1 sec (1000 V → 100 V, 0.5 MPa, 50 mm)
Fluid used		Air (Clean air free from water and oil)
Working pressure range		0.2 to 0.7 MPa
Ionized air setting pressure range		0.05 to 0.5 MPa
Piping connection bore		φ8 quick joint
Air blow time	Rotary switch TIME 16-point	0.5 - 10 s/continuous (sensor OFF_delay: 0.1 s - 3.0 s)
Blow intermittent frequency	Rotary switch FREQ 10-point	1, 2, 3, 4, 6, 8, 10 Hz/continuous (no intermittent) User setting 2 area
Switches	Locker switch	Power ON/OFF (○: OFF / - : ON)
	Piano dip switch: SW1	Ionizer discharge time count enabled/disabled (ON: count enabled/OFF: count disabled)
	Piano dip switch: SW2	Blow valve ON/OFF cycle count enabled/disabled (ON: count enabled/OFF: count disabled)
Indicators		POWER (green, turns on when the power is on)
		ALM (red, turns on/flashes on error)
		MAINT (yellow, turns on when a maintenance required)
		ION BLOW (blue, turns on during blow operation)
		EPS (yellow, turns on at electrostatic potential sensor judgment)
External output	Output	DUST (blue/green/ red, indicating the dust sensor status)
		ALARM (Output on error)
		CHECK (Ionizer discharge abnormal output)
		MAINT (Maintenance timing output)
		EPS (Electrostatic potential sensor judgment output)
	Input	DUST (Dust sensor judgment output)
		END (Blow operation end output)
		VAC START (External device operation output)
		STOP (Operation stop input)
		Start (Operation start input)
Connectability sensor		ZC (Electrostatic potential sensor zero calibration input)
		Photoelectronic sensor: DTY-ZSP□L-WB
		Electrostatic potential sensor: DTY-EPS01-EA-□LWB
Nozzle		Dust sensor (Dust collecting unit: built into DTY-ZMW01-□-DS)
		Shower type: 60°, 90°, flat (three types) Pinpoint type: φ2, φ3, φ4 (three types)
Consumed air flow rate *2)	Air blow side	330 L/min (ANR)
	Ionized air side	170 L/min (ANR)
Dust collecting fan exhaust flow rate		2000 L/min at no load
Filter collection capability *3)	OUT side	62%
Communication		RS485 communication
Number of communication connections		15
Operating environment		Indoor 0 - 40°C, 15 -65% RH (no condensation)
Weight		Blow unit: 2.1 kg (no photoelectronic sensor/power unit) Dust collecting unit: 1.3 kg (with a dust sensor)
Mount		4 L-shaped brackets (screws) enclosed with each unit
Box type	A4 type	DTY-WBM01-S-□-□ Weight: 7.5 Kg (with a nozzle and a dust sensor/without a power unit)
	A3 type	DTY-WBM01-L-□-□ Weight: 9.5 Kg (with a nozzle and a dust sensor/without a power unit)

\*1) The values are based on Koganei's measurement criteria. They are not guaranteed values.

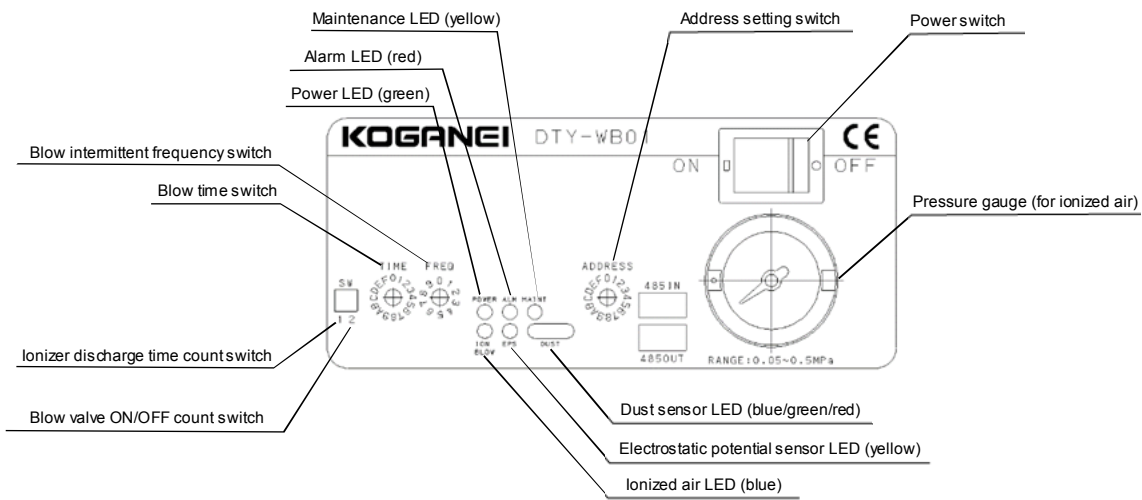
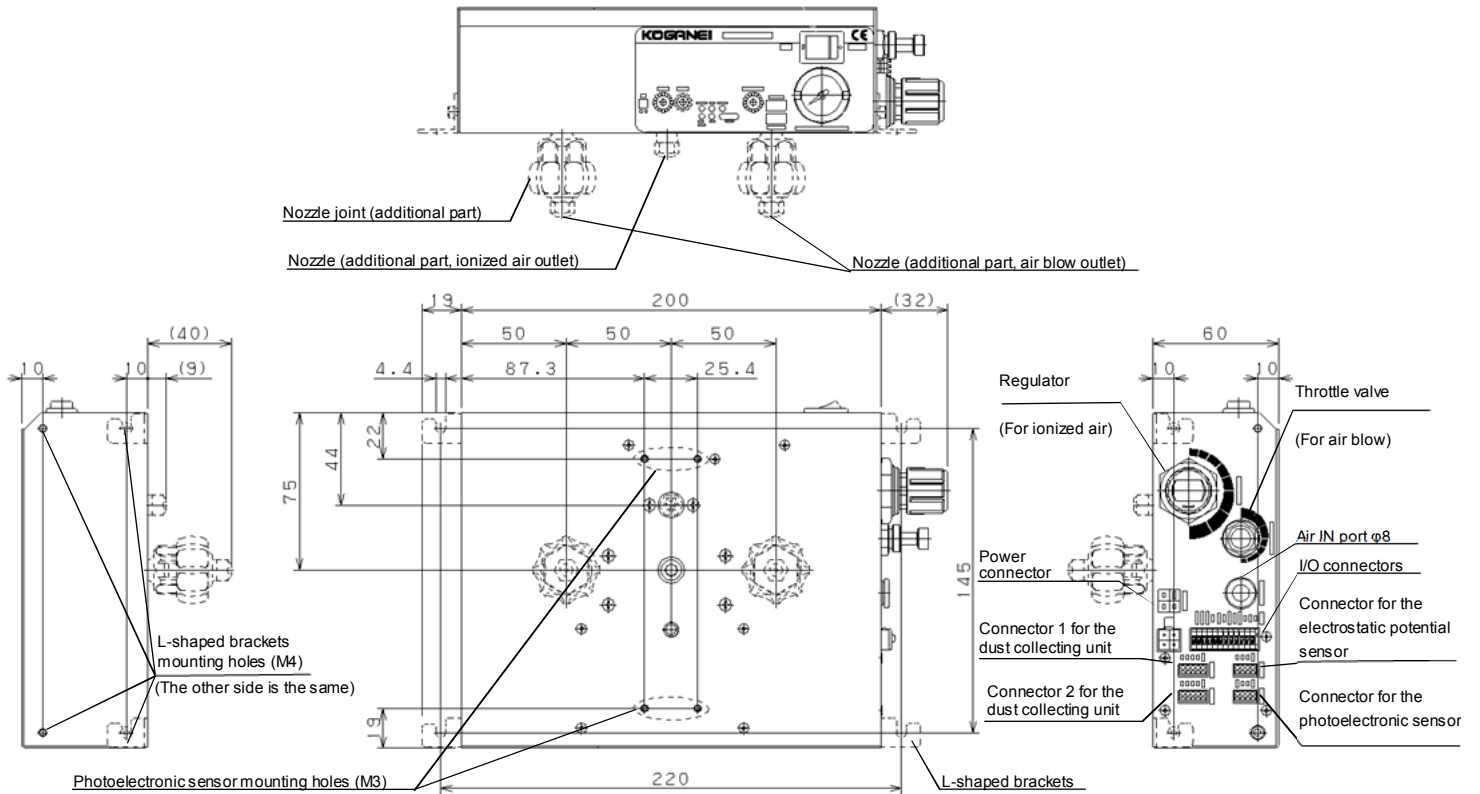
\*2) Nozzle: Pinpoint φ2 x 2, with the conditions of a nozzle shower 60°/slop valve fully open/supply pressure 0.7 MPa/ionized air regulator setting pressure 0.5 MPa

\*3) Test method: ASHRAE 52.1-1992 (weighing method) test dust: ASHRAE TEST DUST

\*4) Value of the dust sensor is just a guide. It does not guarantee removal of dust from the workpiece.

## 9-2. Outline Drawing

[Blow unit: DTY-WB01]

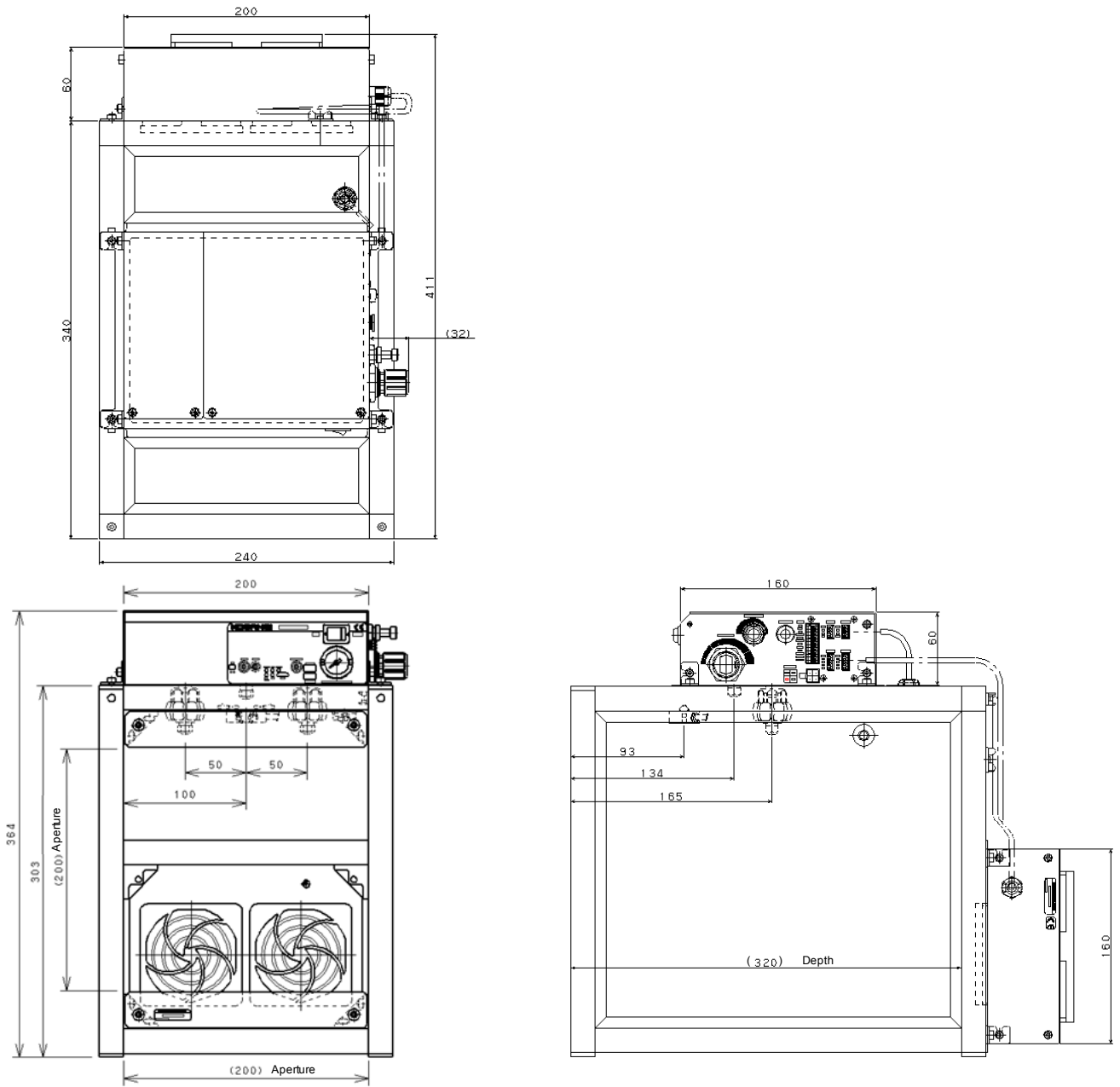


Indicator/setting area details

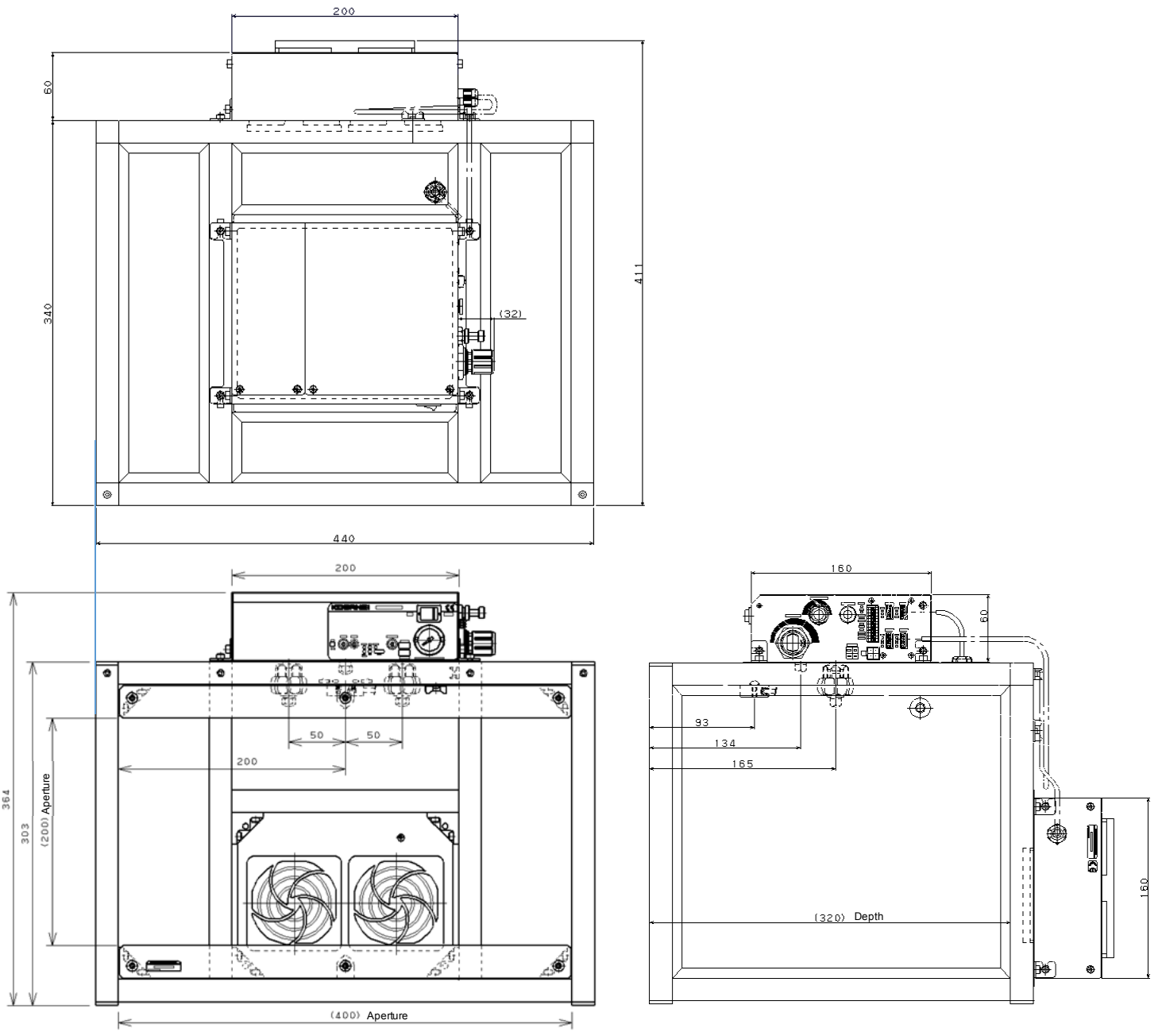




[Box type A4 size: DTY-WBM01-S]



[Box type A3 size: DTY-WBM01-L]





内容についてのご不明な点や技術的なご質問がございましたら、下記へお問い合わせください。

《 お問い合わせ 》

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イオンワイパー  
“セパレートタイプ”

ION WIPER  
“Separate Type”

取扱説明書  
Owner's Manual

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