

Instruction Manual Ver.1.0

DTY-BX01 Series Ionizer

X904284

Thank you for purchasing the DTY-BX01 Series Ionizer. Though this ionizer is not subject to electric equipment standards as a high-voltage device, it handles 2000V of AC voltage. Before using this device, be sure to read the contents of this manual carefully, and operate it correctly while observing the operation precautions noted herein. Keep this manual in a safe place for future reference.

Safety precautions

⚠ WARNING

This product is not designed to be explosion proof. Do not locate it or use it in any location or environment where flammable gas or solvents are used. Doing so creates the risk of fire and explosion.
High voltage is applied to the discharge needle. Keep your fingers and other body parts, as well as wires, tools, and other conductive objects away from it. Such conditions can cause electric shock and malfunction.
The tip of the discharge needle is a sharp point. Exercise sufficient care when handling the needle. Careless handling creates the risk of personal injury.
Never attempt to disassemble, repair, or modify the product in any way. Doing so can cause accident or malfunction.
Be sure to turn off power before performing wiring, installation, or inspection work. Failure to do so can cause accident, electric shock, or malfunction.
Ionizers use air as their medium. Do not use any other type of medium.
For information about other warnings, refer to the "Safety Precautions" section in the Static Electricity Removing Unit Ionizer catalog (Catalog No. R0005).

⚠ CAUTION

This product has a high-voltage generating device built in. Keep it away from areas where water or oil can get on it, and do not locate it in areas that are subjected to high temperatures and humidity. In particular, do not use this product in areas subjected to high humidity and condensation.
If your product is one that applies pressurized air, always supply air while power is turned on.
Always be sure to ground the ionizer. Failure to do so can cause poor static electricity removal and malfunction.
When the product is no longer usable or is no longer needed, dispose of it appropriately as industrial waste.
Install and properly mark a switch or circuit breaker that allows workers to immediately cut off power.
Be sure to perform wiring correctly. Incorrect or improper wiring can cause malfunction.
For the DC power supply, use a 24 VDC output voltage power supply with double or reinforced insulation between input and output.
This product has a high-voltage generating device built in. While power is being applied to the product, keep metal objects away from the discharge needle to avoid abnormal discharge. Such conditions can cause malfunction of or damage to the product and/or its peripherals.
An ionizer emits ozone into the atmosphere. If you notice the odor of ozone, ventilate the area. Do not try to check for ozone odor by bringing your face close to the ion nozzle. Doing so may injure your nose and throat.
This product cannot be used if the medium or ambient atmosphere includes any of the substances below. Organic solvents, phosphate type hydraulic oil, sulfur dioxide gas, chlorine gas, or acids.
The life of the discharge needle depends on operating environment conditions. Periodic maintenance is required because performance will deteriorate if the product is used in a bad operating environment (high humidity, etc.) or if the discharge needle is not cleaned.
Note that inrush current occurs when power is turned on.
For information about other precautions, refer to the "Safety Precautions" section in the Static Electricity Removing Unit Ionizer catalog (Catalog No. R0005).

⚠ Electric shock precaution

This product has a high-voltage generating device built in, which creates the risk of electric shock. Never touch the discharge needle while power is being applied.
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1. Product overview

This product is an ionizer (static electricity removing unit) for use as a quickly resolving problems when static electricity trouble occurs. It minimizes problems due to static electricity by quickly and effectively removing the static electricity of charged objects. The distinctive functions of this product are described below.

• Description of ionizer

Product type	Static electricity removal mode	Ionizer type	Number of external potential sensors connected	Model	
				Body size: 200 mm	Body size: 400 mm
External potential sensor	<ul style="list-style-type: none"> High-frequency static electricity removal Pulse static electricity removal Ion control static electricity removal*1 	Standard	Maximum 2	DTY-BX01-200	DTY-BX01-400
		With fan		DTY-BX01-200-F	DTY-BX01-400-F
		Low particle generation		DTY-BX01-200-L	DTY-BX01-400-L
Built-in potential sensor	<ul style="list-style-type: none"> Ion control static electricity removal*1 	Standard	Maximum 1	DTY-BX01-200-B	DTY-BX01-400-B
		With fan		DTY-BX01-200-FB	DTY-BX01-400-FB
		Low particle generation		DTY-BX01-200-LB	DTY-BX01-400-LB
Simple	<ul style="list-style-type: none"> High-frequency static electricity removal 	Standard	0	DTY-BX01-200-N	DTY-BX01-400-N

*1: In the ion control static electricity removal mode, the mode changes to the high-frequency static electricity removal mode when ion control is not done.

• Static electricity removal mode

- Ion control static electricity removal mode
The charge quantity of the target is detected by a potential sensor and, based on the polarity of the charge, optimum ions are immediately supplied to enable optimum static electricity removal in accordance with target conditions. One potential sensor is required. Another potential sensor is required to evaluate the state of the target after static electricity has been removed. If static electricity is being removed from a moving object, install the potential sensor to be located upstream from the ionizer main unit, then use the software (monitor) and the ionizer's switches to set the ionizer's and potential sensor's installation status. Also, accurately set the size of the target and the distance or time from the upstream potential sensor to the ionizer. Ions are supplied by the ionizer after the set time or distance after the target passes under the potential sensor.
- Pulse static electricity removal mode
Positive and negative ions are alternately generated by one discharge needle at a time, which enables optimum discharge of targets. A potential sensor is required to evaluate the state of the target after static electricity has been removed.
- High-frequency static electricity removal mode
A high-frequency generator supplies well-balanced ions to the target to enable optimum static electricity removal in accordance with target conditions. A potential sensor is required to evaluate the state of the target after static electricity has been removed.

(A potential sensor cannot be connected to the simple type)

• Functions

- Check output, alarm output function
The ionizer's CHECK indicator LED flashes quickly and a CHECK signal from the power signal cable is output whenever a discharge abnormality occurs or the potential sensor is disconnected. (Quick flashing: ON 0.1 seconds, OFF 0.1 seconds)

The ionizer's ALARM indicator LED lights and an ALARM signal from the power signal cable is output when high-voltage output stops due to high-voltage power supply malfunction, etc. (Applicable models: All)

○ Static electricity removal stop function

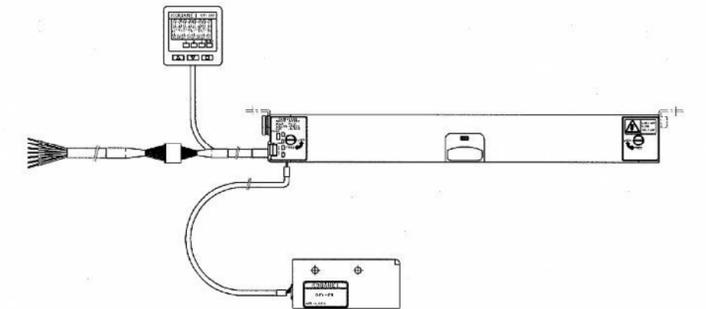
When shorting power signal cable's H.V.OFF to 0 V, discharge is stopped, and static electricity removal can be switched between ON and OFF. The ionizer's H.V. indicator LED is lit when ON and unlit when OFF. In the case of a fan type, the fan also stops when static electricity removal stops. (Applicable models: All)

○ Cleaning timer function

When a preset amount of time elapses, the ionizer's CHECK indicator LED flashes slowly and a power signal cable is output to alert you that the standard maintenance period has been reached. (Slow flashing: ON 0.25 seconds, OFF 0.25 seconds) (Applicable models: All)

2. System configuration

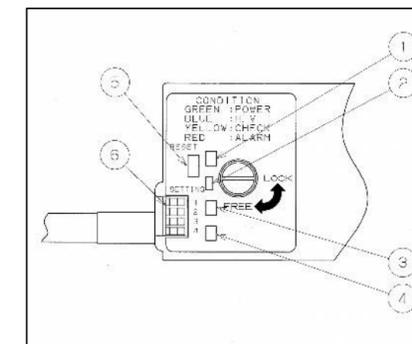
Connecting an optional potential sensor (DTY-ZS*L-BX) and monitor (DTY-ZSU-*) to the product makes it possible to perform optimal static electricity removal and to check the removal status. Use the power signal cable that comes with the product to connect a DC power supply and ground. An optional AC adapter (DTY-ZPS-BX) is available, but the input/output cannot be used when using the AC adapter.



3. Nomenclature and functions

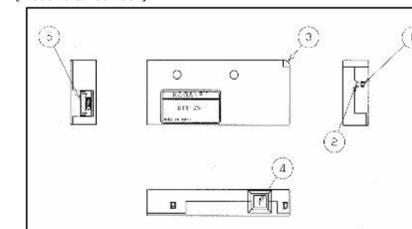
□ Display and switch nomenclature

[Ionizer]



- 1 POWER indicator LED (Lit when power is ON, green.)
- 2 H.V. indicator LED (Blue)
- 3 CHECK indicator LED (Yellow)
- 4 ALARM indicator LED (Red)
- 5 RESET switch
- 6 SETTING switch

[Potential sensor]



- 1 Measurement range select switch/zero point calibration switch
- 2 Measurement range LED (Blue)
- 3 Indicator LED (Green/red)
- 4 Charged potential measurement section
- 5 Power supply connector

Specifications

[Ionizer]						
Model	DTY-BX01-200 DTY-BX01-200-B DTY-BX01-200-L DTY-BX01-200-LB	DTY-BX01-400 DTY-BX01-400-B DTY-BX01-400-L DTY-BX01-400-LB	DTY-BX01-200-F DTY-BX01-200-FB	DTY-BX01-400-F DTY-BX01-400-FB	DTY-BX01-200-N	DTY-BX01-400-N
Input voltage	DC24V±5%					
Consumption current*2	110mA (MAX)	170mA (MAX)	240mA (MAX)*3	410mA (MAX)*3	100mA (MAX)	160mA (MAX)
Output voltage	2 kV (in high-frequency mode)					
Abnormal signal output	Transistor 24VDC 50 mA (MAX)					
Static charge removal stop input	Discharge stop by short circuiting H.V.OFF to 0 V (No voltage input, internal drop voltage of 0.5 V or less)					
External dimensions (main unit only)	35(L)×200(W)×25(H)mm	35(L)×400(W)×25(H)mm	35(L)×200(W)×46(H)mm	35(L)×400(W)×46(H)mm	35(L)×200(W)×25(H)mm	35(L)×400(W)×25(H)mm
Mass (main unit only)	153g (200, 200-L) 158g (200-B, 200-LB)	275g (400, 400-L) 284g (400-B, 400-LB)	229g (200-F) 236g (200-FB)	430g (400-F) 440g (400-FB)	146g	268g
Ion balance	±30V *1					
Ozone generation amount	0.08 ppm (300 mm from nozzle tip, at 0.25 MPa pressure)		0.08 ppm (300 mm from nozzle tip)		0.08 ppm (300 mm from nozzle tip, at 0.25 MPa pressure)	
Operating air pressure range	0.05 to 0.5 MPa		—		0.05 to 0.5 MPa	
Medium	Air		—		Air	
Expanded air flow rate	60 L/min (at 0.5 MPa)	100 L/min (at 0.5 MPa)	—		60 L/min (at 0.5 MPa)	100 L/min (at 0.5 MPa)
Operating environment	Indoors, 0 to 40°C, 15 to 65% RH (non-condensation)					
Installation environment	Installation Category I, Pollution Degree 2					
Altitude	No greater than 2000 meters					
Accessories	Power signal cable (1.5 meters), mounting brackets (2 pcs.), screws (2 pcs.)					

*1: Ion balance value is during high-frequency mode, and is measured in accordance with KOGANEI measurement conditions. *2: When an external potential sensor is installed, add the consumption current of the potential sensor.

*3: Inrush current is caused when the fan starts up. (Approximately 150 mA added for inrush current.)

[Potential sensor]

Option suffix	-S*L
Dimensions	10.5(L) × 55(W) × 25(H)mm
Mass	13g
Consumption current	35mA
Data output cycle	10ms
Voltage resolution	F.S(p-p)/2000
Accuracy	±5% F.S
Measurement distance	50 to 150mm
Measurement range *4 *5	Low potential (Range: ±2 kV), High potential (Range: ±20 kV)
Accessories	Cable for potential sensor (1 or 3 meters), mounting bracket (1 pcs.), screws (2 pcs.)

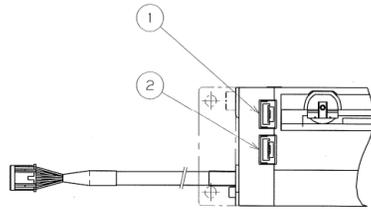
*4: For regular operation, use it at a low potential (± 2 kV range). The measurement range does not need to be set.

Set a high potential (±20 kV range) only when the potential detected by the potential sensor for controls exceeds 2 kV.

*5: The integrated potential sensor has no high potential setting (±20 kV range).

- Connectors
 - [Ionizer]
 - Potential sensor connectors

Applicable models: External potential sensor type
DTY-BX01-200, DTY-BX01-200-L, DTY-BX01-200-F
DTY-BX01-400, DTY-BX01-400-L, DTY-BX01-400-F

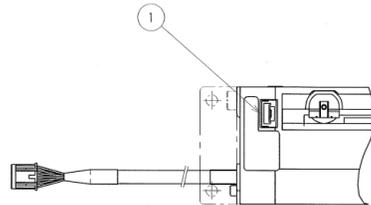


- ① Potential sensor connector (sen.1)
Connect a potential sensor for use in the ion control mode. The external sensor connected to sen.1 becomes the control potential sensor. : Potential sensor (sen.1)
- ② Potential sensor connector (sen.2)
Connect a potential sensor for use when evaluating the charge state of the static electricity removal target. The external sensor connected to sen.2 becomes the potential sensor for evaluations. : Potential sensor (sen.2)

“sen.1”: The signal of the potential sensor connected here is used for ion control. If the target is moving, install the potential sensor to be located upstream from the ionizer main unit.

“sen.2”: The potential sensor connected here is used to detect the charge state of a target whose static electricity has been removed. If the target is moving, install the potential sensor to be located downstream from the ionizer main unit.

Applicable models: Built-in potential sensor type
DTY-BX01-200-B, DTY-BX01-200-LB, DTY-BX01-200-FB
DTY-BX01-400-B, DTY-BX01-400-LB, DTY-BX01-400-FB



- ① Potential sensor connector (sen.1)
Connect a potential sensor for use when evaluating the charge state of the static electricity removal target. The external sensor connected to sen.1 becomes the potential sensor for evaluations. : Potential sensor (sen.1)

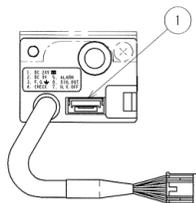
“sen.1”: The potential sensor connected here is used to detect the charge state of a target whose static electricity has been removed. Install the potential sensor to be located downstream from the ionizer main unit. (The built-in potential sensor type of ionizer performs ion control in accordance with a built-in potential sensor's detection signal.)

Note 1. Turn off power before connecting or disconnecting a potential sensor. Failure to do so will cause the ALARM indicator LED to light, and the ALARM signal to become “open,” and send notification about the abnormality.

Note 2. DTY-BX01-200-N and DTY-BX01-400-N do not support potential sensor connection.

- Communication cable connector

Applicable models: External potential sensor type, built-in potential sensor type, simple type
Note 1. DTY-BX01-200-N and DTY-BX01-400-N do not support monitor connection.



- ① Communication cable connector
Use this connector to connect a computer or a monitor.

Use a separately available special cable (DTY-ZTC-BX or DTY-ZMC*L-BX) for connection.

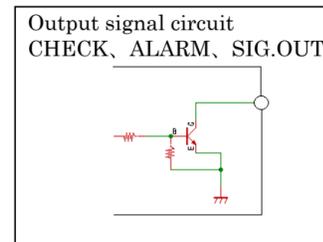
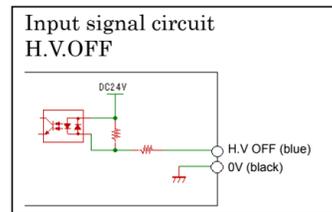
- Cable
 - [Ionizer]
 - Power signal cables

Number	Names	Cable color	Description
1	DC24V	Red	Power supply cable (24 VDC)
2	DC 0V	Black	Power supply cable (0 VDC)
3	F.G	Green	Grounding cable (D class grounding)
4	CHECK	Yellow	CHECK output signal cable Outputs when cleaning time is exceeded (Normally open, then closes when time is exceeded)
5	ALARM	White	ALARM output signal cable Outputs when discharge cannot be done by alarm etc. (Normally closed, then opens when an alarm occurs)
6	SIG.OUT	Brown	SIG.OUT output signal cable*1
7	H.V.OFF	Blue	Static electricity removal stop input signal cable Static electricity removal turned OFF by shorting to 0 V

*1: SIG.OUT outputs a signal in the cases described below.

- ① For built-in potential sensor types, they produce output when the threshold value of the alarm of the potential sensor (sen.1) connected to the potential sensor connector (sen.1) is exceeded. (While exceeded: Closed)
(DTY-BX01-***-B, DTY-BX01-***-LB, DTY-BX01-***-FB)
- ② For external potential sensor types, they produce output when the threshold value of the alarm of the potential sensor (sen.2) connected to the potential sensor connector (sen.2) is exceeded. (While exceeded: Closed)
(DTY-BX01-***, DTY-BX01-***-L, DTY-BX01-***-F)
- ③ Outputs while in ion control static electricity removal mode on external potential sensor types for static electricity removal from stationary targets, when the potential sensor is connected to connector (sen.1), and when there is no external potential sensor on built-in potential sensor types.
(While in ion control static electricity removal mode: Closed)

Input/output signal circuit



Note 1: Do not connect while the output signal line is in a no load state. Since an overcurrent protection circuit is not equipped, failure to do so can cause damage to internal circuitry, accident, and/or malfunction.

- Indicator and input/output signals
- [Ionizer]

State	Indicator				Signal			Cancellation method
	Green	Blue	Yellow	Red	ALARM	CHECK	SIG.OUT	
Normal state (Mode other than pulse static electricity removal)	●	●	○	○	Closed	Open	Open	-
Normal state (Pulse static electricity removal mode)	●	●	○	○	Closed	Open	Open	-
Discharge stop (H.V OFF)	●	○	○	○	Closed	Open	Open	-
Discharge abnormality alarm	●	○	●	○	Open	Open	Open	Turn power back on.
High-voltage abnormality alarm	●	○	○	●	Open	Open	Open	Turn power back on/requires repair
Type error	●	○	○	●	Open	Open	Open	Turn power back on.
EEPROM abnormality alarm	●	○	○	●	Open	Open	Open	Turn power back on.
Exceeded set cleaning time	●	●	●	○	Closed	Closed	Open	Press and hold RESET button 5 seconds
Ionizer operating time reset complete	●	●	●	○	Closed	Open	Open	Release RESET button
Exceeded alarm threshold value*1	●	●	●	○	Closed	Open	Closed	Auto clear according to threshold value
During ion control*2	●	●	●	○	Closed	Open	Closed	Auto clear due to end of ion control
In static electricity removal adjustment mode	●	●	○	○	Closed	Open	Open	• Input static charge residual voltage • Static charge removal adjustment mode ended • Static charge removal clear sent by support software • Alarm or error occurred
Power on (about 2 seconds)	●	●	●	●	Closed	Open	Open	-
Non-energizing (power off)	○	○	○	○	Open	Open	Open	-

●: Indicator lit ●: Indicator flashing slowly ●: Indicator flashing quickly, ○: Indicator unlit

- *1: This function is not supported on types that are not equipped with a potential sensor.
- *2: For built-in potential sensor types, and only when no external potential sensors are connected.
- *3: Quick flashing is ON 0.1 seconds/OFF 0.1 seconds. Slow flashing is ON 0.25 seconds/OFF 0.25 seconds

- Note 1. The blue, yellow, and red indicator LEDs flash slowly for about two seconds after power is turned on.
- Note 2. If there is an EEPROM abnormality that cannot be recovered by turning power off and then back on again, perform initialization by using the support software and re-input each setting. If this does not correct the problem, contact Koganei overseas department for required repairs.
- Note 3. Conductive objects coming into contact with the ionizer can cause abnormalities. If this happens, remove the object in contact with the ionizer, and then turn power off and then back on again.
- Note 4. When multiple states overlap, the states will be indicated and a signal will be output for each state in order of highest priority. When the state with the highest priority is cleared, the next state is displayed and a signal is output.
The blue indicator goes out when an abnormal state occurs or discharge stops.

[Potential sensor]

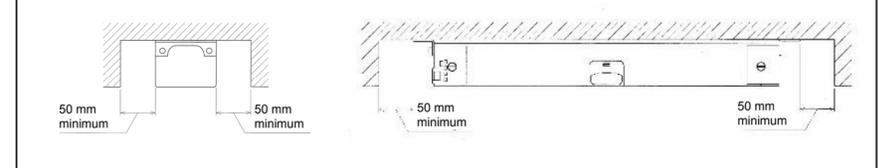
- Power turned onGreen indicator LED lights.
- Zero point calibration completeGreen indicator LED flashes.
- ±20 kV range setBlue indicator (measurement range LED) lights.
- Measured value out of rangeRed indicator LED lights.
- EEPROM abnormalityRed indicator LED flashes.

- Note 5. The green indicator LED flashes for about two seconds when power is turned on.
- Note 6. Repair is required when an EEPROM abnormality occurs. Contact Koganei overseas department.

4. Installation

- Ionizer installation
 - * Locate the ionizer away from walls and other obstructions.
 - * Use the mounting brackets that come with the product or separately available mounting brackets (adjustable angle brackets) to install the ionizer.
 - * Do not allow conductive objects to touch the ionizer. Conductive objects may damage the ionizer.
 - * Use high-strength frames and other hardware for installing the ionizer. Weak frames and other hardware may result in dropping and/or deflection of the ionizer.
 - * Installation in a location that is not level, subject to vibration, or otherwise unstable can cause deformation and malfunction. Install the ionizer in a location that is level and free of vibration.
 - * Before installing the ionizer, check the discharge needle unit to make sure it is not loose. Looseness may result in the discharge needle unit dropping out when the ionizer is being installed or when air is applied.
 - * Any structural obstruction between the ionizer installation location and the target will result in loss of ions and make it impossible to achieve the proper static electricity removal effect. Install the ionizer in a location where there is open space and no structural obstruction between it and the target. Particular care is required concerning movable structural obstructions, which may not be immediately evident when the ionizer is being installed.
 - * If the working distance of the target is too small, discharging may be generated between the discharge needle tip and the target, which can result in abnormal stoppage of the ionizer or damage to the target. Be sure to maintain the proper installation distance.
 - * Set up the ionizer and target so the target is located along the central axis of the ionizer.
 - * Locate ionizers so there is at least 500 mm between them.
 - * Static electricity removal may not be possible or may require too much time if the target is moving too fast or is too far away from the ionizer. If this is the case, reduce the distance to the ionizer or the speed of the target.

Installation distance from the conductor during mounting



Note 1. Do not use the product in moving parts of a machine where there is vibration or shock.

- Ionizer wiring and piping
 - Wiring
 - * Use the power signal cable that comes with the product for wiring.
 - * If you are using only an AC adapter and not using input/output, connect the AC adapter to the connector of the cable that comes out of the ionizer body.
 - * Securely connect the ground wire (with a grounding resistance of 100Ω or less).
 - * Insert connectors fully and securely.
 - Piping
 - * Use a Φ6 air tube to the air fitting on the side of the ionizer.
 - * Do not use soft urethane tubing.
 - * For the medium, use clean air that is free of all oil and water. For information about selecting air equipment, refer to the Koganei general catalog (Catalog No. AR013).
 - * This product supports applied air pressure no greater than 0.5 MPa. Use a regulator and other control devices.

Note 1. Do not use the AC adapter cable, or the power signal cable that come with the product in moving parts of a machine. Doing so creates the risk of the wires being cut.

- Potential sensor installation
 - * Install the potential sensor measurement section surface so it is parallel with the measurement surface of the object being measured.
 - * Be careful to not over tighten the mounting screws when installing the potential sensor to the mounting brackets. Doing so may cause malfunction of or damage to the product. (Recommended torque for mounting screws: 0.3 N·m)
 - * Measured potential is intimately related to the distance from the object being measured. Keep the ionizers' installation distance as accurate as possible.
 - * Because it has an effect on measurement accuracy, be sure to ground the potential sensor unit and the ionizer unit. The mounting hole of the potential sensor unit is a ground connection terminal.
 - * If application of voltage at the installation location is unavoidable, insulation is required. Failure to provide insulation not only affects measurement values, it also creates a short to ground.
 - * A potential sensor measures the strength of an electric field and calculates a voltage value. Because of this, it must be remembered that anything that disturbs an electric field (relays, solenoids, metal objects, etc.) in the vicinity of the potential sensor or between the object being measured and the potential sensor can affect measured values.
 - * Install potential sensors so they are separated from ionizers by the following distances.
 - Install potential sensors so they are not further away than the ionizer from the static electricity removal target. The recommended distance between the static electricity removal target and the potential sensor is 50 mm.

[Distance between potential sensor and ionizer unit when installed]

Static electricity removal mode	Potential sensor working distance
Ion control static electricity removal mode	500 mm minimum *1
Pulse static electricity removal mode	300 mm minimum
High-frequency static electricity removal mode	50 mm minimum

- (*1. When removing static electricity from a stationary target with an external potential sensor type ionizer, the potential sensor must be installed between the ionizer and the static electricity removal target, but there must be at least 100 mm between the ionizer and the potential sensor.)
- * Do not install the potential sensor directly in line between the ionizer and the static electricity removal target.

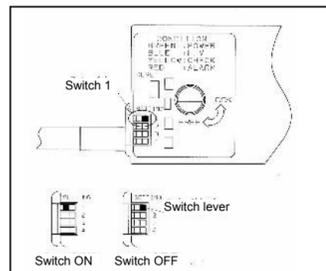
5. Settings

5-1. Setting the switches on the ionizer and the potential sensor

- [Ionizer]
- Setting the static electricity removal mode
- Settings for external potential sensor types only

Applicable models: External potential sensor type

DTY-BX01-200, DTY-BX01-400, DTY-BX01-200-F, DTY-BX01-400-F,
DTY-BX01-200-L, DTY-BX01-400-L



- Selecting the ON position with SETTING switch 1 (shown in the illustration to the left) enables pulse generation of ions for optimum static electricity removal of a target's charges. (Pulse static electricity removal mode)
- By setting SETTING switch 1 to OFF as shown in the diagram on the left, in combination with potential sensor (sen.1), ion generation can be optimized for the polarity, and static electricity removal can be optimized in accordance with target conditions. (Ion control static electricity removal mode)
- When no potential sensor (sen.1) is connected, it is high-frequency static electricity removal mode.

- Note 1. Setting SETTING switch 1 to ON (pulse static electricity removal mode) while the potential sensor (sen.1) is connected, causes a type error. After turning off the power, disconnect potential sensor (sen.1), and then set switch 1 to ON. Turn off power before changing modes or connecting an external potential sensor.

- Ionizer installation distance setting
- Settings for external potential sensor types only

Applicable models: External potential sensor type

DTY-BX01-200, DTY-BX01-400, DTY-BX01-200-F, DTY-BX01-400-F,
DTY-BX01-200-L, DTY-BX01-400-L

Use SETTING switches 2, 3 and 4 to set the ionizer installation distance and operating pressure.
Setting the ionizer's set distance (SETTING switches 2 and 3)

Working distance	50 mm	51 mm to 100 mm	101 mm to 150 mm	151 mm minimum
Switch settings				

Operating pressure setting (SETTING switch 4)

Operating air pressure	0.05 to 0.19 MPa	0.2 to 0.5 MPa
Switch settings		

- Cleaning timer setting
- Settings for built-in potential sensor types and simple types only

Applicable models: Built-in potential sensor types and simple types

*DTY-BX01-200-B, *DTY-BX01-200FB, DTY-BX01-200-N,
*DTY-BX01-400-B, *DTY-BX01-400-FB, DTY-BX01-400-N

- Use SETTING switches 1, 2, and 3 to configure the cleaning timer setting. After the ionizer operates for a preset amount of time, the CHECK indicator LED will light and a CHECK output signal will be output.
- Pressing and holding the RESET switch on the ionizer for at least 5 seconds resets the cleaning timer indicator and signal, and the cumulative ionizer operating time. The blue, yellow and red indicator LEDs flash slowly when reset is complete.
- Use the cleaning timer as a reference for cleaning the discharge needle.
- Models marked with an asterisk (*) also support settings from the support software or monitor.
- For models marked with an asterisk (*), SETTING switch 4 is used to specify SETTING switch priority or support software (or monitor) priority.
- Models other than those shown above support settings from the support software or monitor only.

Cleaning timer setting (SETTING switches 1, 2, and 3)

Time settings	Timer function OFF	100 hours	200 hours	300 hours
Switch settings				

Time settings	400 hours	600 hours	800 hours	1000 hours
Switch settings				

Priority setting (SETTING switch 4)

	SETTING switch priority	Support software (monitor) priority
Switch settings		

[Potential sensor]

- Measurement range settings
- Pressing and holding the measurement range select switch for 5 seconds makes it flash green LED and switches between ± 2 kV and ± 20 kV.
- The blue LED lights when ± 20 kV is selected.

Note 1. When turning power back on, the measurement range is the one that was selected the last time power was turned off.

Note 2. Ionizer unit settings must also be configured. Use the support software or monitor to configure the settings.

Note 3. The ± 20 kV measurement range can only be used with potential sensor (sen.1) (control potential sensor).

Note 4. Press and hold the switch for more than 5 seconds to change it blue, if you stop pressing it before it lights blue LED (must be held for at least 5 seconds), the potential sensor does zero point calibration.

5-2. Settings from the support software or monitor

In addition to configuring the switches on the ionizer, do the following settings according to the state of the static electricity removal target (moving/stationary) and the number of potential sensors connected.

- Ionizer settings

Applicable models: External potential sensor types

DTY-BX01-200, DTY-BX01-200-L, DTY-BX01-400, DTY-BX01-400-L,
DTY-BX01-200-F, DTY-BX01-400-F

The settings of these ionizer types need to be configured in order to optimize static electricity removal.

One or two external potential sensors are required to use the ion control static electricity removal mode.

A potential sensor is required to evaluate the target's static electricity removal state when using high-frequency static electricity removal mode or pulse static electricity removal mode.

- Set potential sensor (sen.1) and potential sensor (sen.2) as shown below if ion control static electricity removal mode is selected using SETTING switch 1 on the ionizer.

Set [Potential sensor (sen.1)] when connected to potential sensor connector (sen.1), and set [Potential sensor (sen.1)+(sen.2)] when connected to potential sensor connector (sen.2).

To optimize the ion control static electricity removal for a target after completing the settings, make adjustments while using the ionizer to remove static electricity from actual targets. For details, refer to "6. Adjusting the ionizer's static electricity removal".

Caution: If the workpiece is moving slower than 100 mm/s (stationary target) and the potential sensor (sen.1) is installed over 100 mm away, use less than 0.2 MPa for the ionizer's applied air pressure. If the air pressure is over 0.2 MPa, the ion control may not operate correctly.

- Set [Potential sensor (sen.2)] if pulse static electricity removal mode is selected using SETTING switch 1 on the ionizer and is being used in combination with potential sensor (sen.2).

- Use the support software (or monitor) to configure the following settings.

[Potential sensor (sen.1)]

Item	Description
Potential sensor (sen.1) installation distance	Enter the distance between the external potential sensor (sen.1) and the target. (Installation distance is 50 mm to 150 mm)
Potential sensor (sen.1) measurement range	Select a setting in accordance with the external potential sensor (sen.1) setting. (Normally, use the 2 kV range. If the potential sensor is out of the range, use the 20 kV range. It is also necessary to switch the measurement range of external potential sensors.)
Workpiece movement speed	Input the passing speed of the workpiece. Input "0" mm/s if the target is stopped or moving at less than 100 mm/s during static electricity removal. (Setting range 0 mm/s to 1000 mm/s)
Distance between potential sensor and ionizer	Enter the installation distance between the potential sensor (sen.1) and the ionizer. (Input is not necessary when the workpiece speed is 0 mm/s.) (Setting range 400 mm to 3000 mm)
Time to travel between potential sensor and ionizer	Enter the time to travel between the potential sensor (sen.1) and the ionizer. (Input is not necessary when the workpiece speed is 0 mm/s.) (Setting range 0.01 s to 30.00 s)
Distance/time selection	Select whether to use the distance between the potential sensor and ionizer or the time to pass between the potential sensor and the ionizer. (Selection is not possible when the workpiece speed is 0 mm/s.)
Workpiece size	Input the size of the target as a diameter. (Setting range 50 mm to 300 mm)
Ion control starting voltage	Setting is not necessary if used in ordinary applications. Set to change the ion control starting voltage to the value you want if necessary. (Setting range is 500 V to 1000 V)
Ion control ending voltage	Setting is not necessary if used in ordinary applications. Set to change the ion control ending voltage to the value you want if necessary. (Setting range is 50 V to 490 V)
Residual voltage	Inputting the charge potential of the target after static electricity removal compensates the ions control. (Setting range is -20000 V to 20000 V)

(Caution: Set the distance and time with reference to the center of the product.)

[Potential sensor (sen.2)]

Item	Description
Potential sensor (sen.2) installation distance	Enter the distance between the external potential sensor (sen.2) and the target. (Installation distance is 50 mm to 150 mm)
Potential sensor (sen.2) measurement range	Normally, use the 2 kV measurement range when setting potential sensor (sen.2). (Use the 2 kV measurement range for external potential sensors also)
Alarm threshold value	Following static electricity removal, the potential of the target is checked. If it exceeds this value, a signal is output from the SIG.OUT port. (Setting range is 100 V to 2000 V)

[Potential sensor (sen.1) + (sen.2)]

Item	Description
Potential sensor (sen.1) installation distance	Enter the distance between the external potential sensor (sen.1) and the target. (Installation distance is 50 mm to 150 mm)
Potential sensor (sen.1) measurement range	Select a setting in accordance with the external potential sensor (sen.1) setting. (Normally, use the 2 kV range. If the potential sensor is out of the range, use the 20 kV range. It is also necessary to switch the measurement range of external potential sensors.)
Potential sensor (sen.2) installation distance	Enter the distance between the external potential sensor (sen.2) and the target. (Installation distance is 50 mm to 150 mm)
Potential sensor (sen.2) measurement range	Normally, use the 2 kV measurement range when setting potential sensor (sen.2). (Use the 2 kV measurement range for external potential sensors also)
Workpiece movement speed	Input the passing speed of the workpiece. Input "0" mm/s if the target is stopped or moving at less than 100 mm/s during static electricity removal. (Setting range 0 mm/s to 1000 mm/s)
Distance between potential sensor and ionizer	Enter the installation distance between the potential sensor (sen.1) and the ionizer. (Input is not necessary when the workpiece speed is 0 mm/s.) (Setting range 400 mm to 3000 mm)
Time to travel between potential sensor and ionizer	Enter the time to travel between the potential sensor (sen.1) and the ionizer. (Input is not necessary when the workpiece speed is 0 mm/s.) (Setting range 0.01 s to 30.00 s)
Distance between potential sensor (sen.1) and potential sensor (sen.2)	Enter the installation distance between the potential sensor (sen.1) and the potential sensor (sen.2). (Input is not necessary when the workpiece speed is 0 mm/s.) (Setting range 800 mm to 6000 mm)
Time to travel between potential sensor (sen.1) and potential sensor (sen.2)	Enter the time to travel between the potential sensor (sen.1) and the potential sensor (sen.2). (Input is not necessary when the workpiece speed is 0 mm/s.) (Setting range 0.01 s to 60.00 s)
Distance/time selection	Select whether to use the time to pass or the distance between the potential sensor and ionizer or whether to use the time to travel or the distance between potential sensor (sen.1) and potential sensor (sen.2). (Selection is not possible when the workpiece speed is 0 mm/s.)
Workpiece size	Input the size of the target as a diameter. (Setting range 50 mm to 300 mm)
Ion control starting voltage	Setting is not necessary if used in ordinary applications. Set to change the ion control starting voltage to the value you want if necessary. (Setting range is 500 V to 1000 V)
Ion control ending voltage	Setting is not necessary if used in ordinary applications. Set to change the ion control ending voltage to the value you want if necessary. (Setting range is 50 V to 490 V)
Alarm threshold value	Following static electricity removal, the potential of the target is checked. If it exceeds the set value, a signal is output from the SIG.OUT port. (Setting range is 100 V to 2000 V)

(Caution: Set the distance and time with reference to the center of the product.)

Applicable models: Built-in potential sensor type

DTY-BX01-200-B, DTY-BX01-200-LB, DTY-BX01-400-B, DTY-BX01-400-LB,
DTY-BX01-200-FB, DTY-BX01-400-FB

The settings need to be configured in order to optimize static electricity removal. Built-in potential sensor type ionizers have potential sensors built-in in the ionizer main unit. A potential sensor is required to evaluate the target's static electricity removal state.

- Use the support software to configure the following settings.

Item	Description
Ionizer installation distance (Built-in potential sensor working distance)	Enter the distance between the target and the ionizer. (Setting range 50 mm to 150 mm)
Workpiece size	Input the size of the target as a diameter. (Setting range 50 mm to 300 mm)
Ion control starting voltage	Setting is not necessary if used in ordinary applications. Set to change the ion control starting voltage to the value you want if necessary. (Setting range is 500 V to 1000 V)
Ion control ending voltage	Setting is not necessary if used in ordinary applications. Set to change the ion control ending voltage to the value you want if necessary. (Setting range is 50 V to 490 V)
Potential sensor (sen.1) installation distance	Enter the distance between the potential sensor (sen.1) and the target. (Setting range is 50 mm to 150 mm)
Potential sensor (sen.1) measurement range	Use the 2 kV measurement range when setting potential sensor (sen.1). (Use the 2 kV measurement range for external potential sensors also)
Alarm threshold value	Following static electricity removal, the potential of the target is checked. If it exceeds this value, a signal is output from the SIG.OUT port. (Setting range is 100 V to 2000 V)

(Caution: Set the distance and time with reference to the center of the product.)

- Cleaning timer setting
- SETTING switch 4 is set if support software (or monitor) has priority.
- Set the time to use as a guideline for cleaning.

Item	Description
Cleaning timer	Enter the time as a guideline for cleaning. If you enter 0 for the time, the timer function is turned off. (Setting range is 0 hours to 1000 hours)

Applicable models: Simple types
DTY-BX01-200-N, DTY-BX01-400-N

No settings required. These types can be used by turning on 24 VDC power and supplying compressed air.

□ External potential sensor 1 (sen.1/sen.2) settings

- ① Various potential sensor settings
When using an external potential sensor, it is necessary to set the "Installation distance" and the "Measurement range" for the ionizer. Use the support software or monitor to configure the settings.

6. Adjusting the ionizer's static charge removal

- Adjusting static electricity removal in ion control static electricity removal mode
To optimize the ion control static electricity removal for various targets, use the ionizer to remove static electricity from actual targets and confirm the static electricity removal state with the potential sensor.
(You can remove static electricity without opposite charging and remove static electricity at high speeds also.)

Do the adjustments according to the procedures in the support software. (The monitor cannot be used to adjust static electricity removal)

7. Potential sensor zero point calibration

- Built-in potential sensor zero point calibration for built-in potential sensor types
Pressing the ionizer RESET switch triggers zero point calibration.

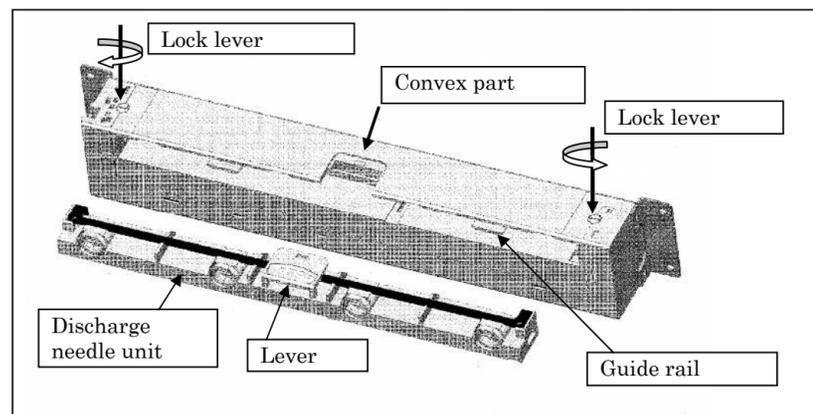
- Potential sensor zero point calibration
Holding down the potential sensor measurement range select switch triggers zero calibration.

8. Maintenance

- Discharge needle maintenance
The discharge needle of the ionizer will become dirty with dust and other foreign matter after long periods of use. Static electricity removal will not be performed at the level for which the ionizer is designed if the dust is not removed. Periodic cleaning (every two weeks) is recommended.

Note 1. Turn off power before performing maintenance. Never touch the discharge needle directly with your hand. Doing so creates the risk of personal injury. Perform work carefully.

- Discharge needle unit cleaning
Clean the discharge needle by wiping it with a cotton swab that has been moistened with alcohol.
If the ionizer is installed in a location that makes wiping the discharge needle difficult, remove it from the ionizer and then clean it.
- Removing the discharge needle unit
 - ① Rotate the ionizer's lock levers in the FREE direction.
 - ② Pinch the discharge needle unit's lever to disengage it from the convex part on the ionizer, and then pull out the discharge needle unit.
- Installing the discharge needle unit
 - ① Check to make sure that the ionizer's lock levers are in the FREE position.
 - ② Aligning the discharge needle unit's slits with the ionizer's guide rails, slide the discharge needle unit into the ionizer.
 - ③ Engage the square hole on the lever of the discharge needle unit with the indent on the ionizer.
 - ④ Rotate the ionizer's lock levers in the LOCK direction. (This completes installation.)

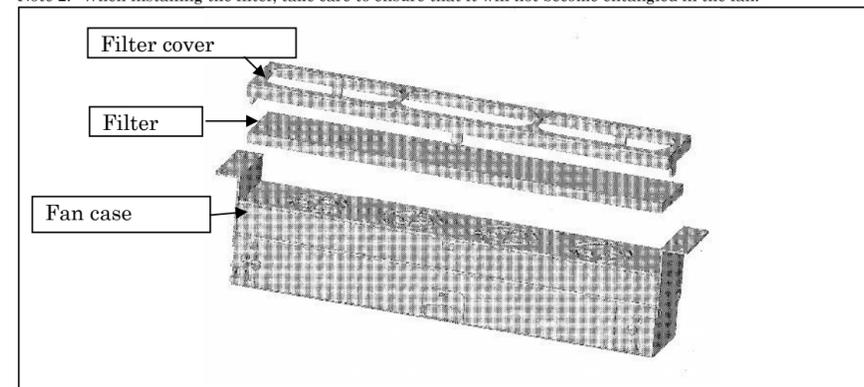


Note 2. Check to make sure that the discharge needle unit is securely mounted on the ionizer before use. An unsecured discharge needle unit can cause malfunction or damage.

- Filter maintenance
The fan intake port of a fan type model has a filter. Periodic cleaning or replacement of the filter is recommended.
- Installing and removing the filter
Remove the filter cover from the fan case, and then clean or replace the filter.

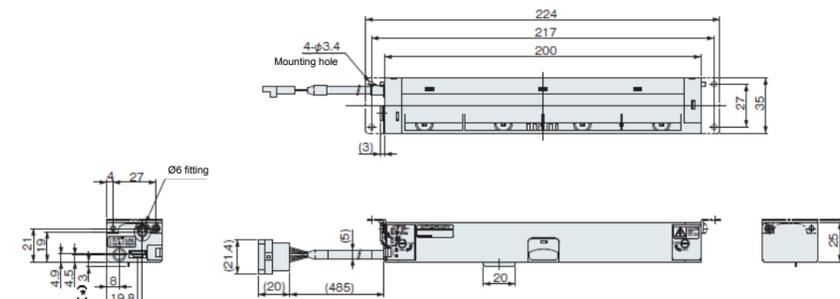
Note 1. The fan case is loosely attached in order to allow removal of the filter cover.
Whenever carrying the ionizer, be sure to grasp the ionizer itself. Picking up the ionizer by grasping the filter cover can cause the filter cover to come off and the product to fall. This can cause malfunction and damage, so care is required.

Note 2. When installing the filter, take care to ensure that it will not become entangled in the fan.



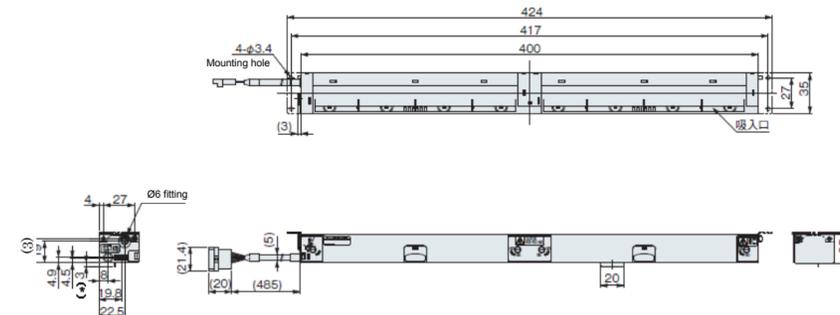
9. Outline drawing

[Ionizer]
DTY-BX01-200, DTY-BX01-200-L, DTY-BX01-200-B, DTY-BX01-200-LB, DTY-BX01-200-N



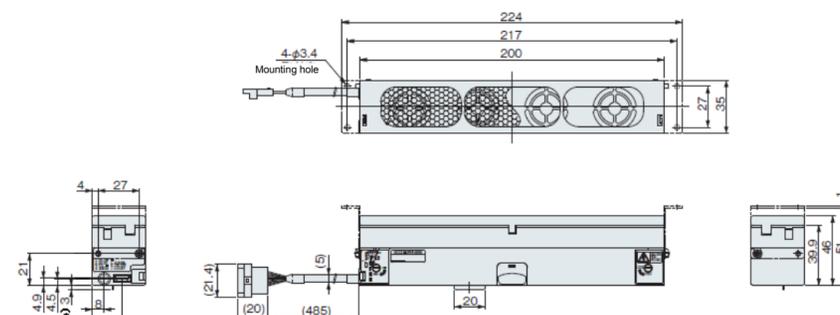
Dimensions in parentheses (*) are for the DTY-BX01-200-B and DTY-BX01-200-LB types only.

DTY-BX01-400, DTY-BX01-400-L, DTY-BX01-400-B, DTY-BX01-400-LB, DTY-BX01-400-N



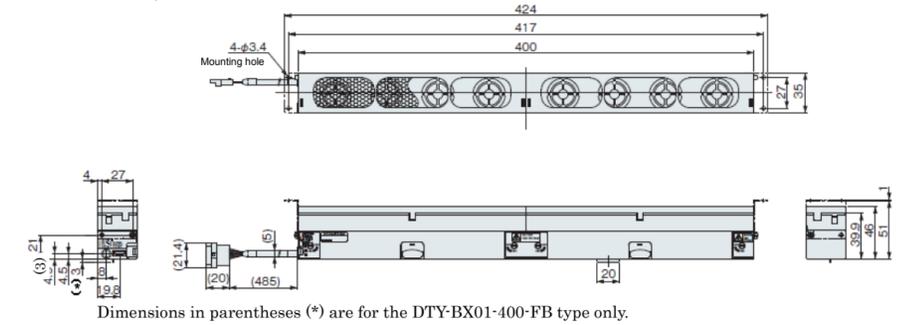
Dimensions in parentheses (*) are for the DTY-BX01-400B and DTY-BX01-400-LB types only.

DTY-BX01-200-F, DTY-BX01-200-FB

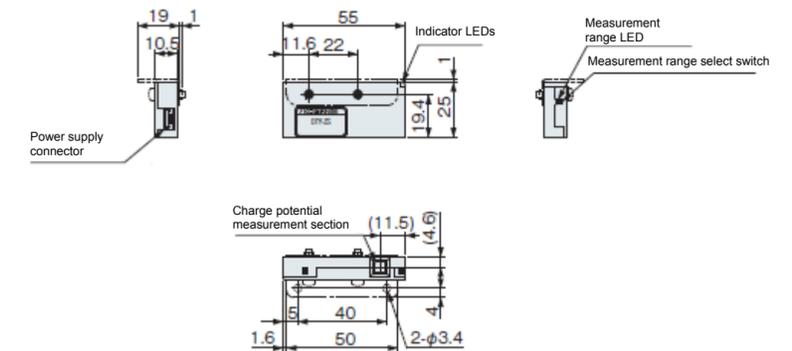


Dimensions in parentheses (*) are for the DTY-BX01-200-FB type only.

DTY-BX01-400-F, DTY-BX01-400-FB



[Potential sensor]



JUST CONSULT US:
KOGANEI CORPORATION OVERSEAS DEPARTMENT
3-11-28, Midoricho, Koganei-shi, Tokyo, 184-8533, Japan
TEL:+81-042-383-7271 FAX:+81-042-383-7276
Website: <http://www.koganei.co.jp>
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