

# Static electricity eliminating unit ionizer

## Blow type (Low flow rate)

# DTY-ELK01F Series

Maintains excellent static elimination while delivering low airflow **that will not blow away small work pieces.**

**Standard type**



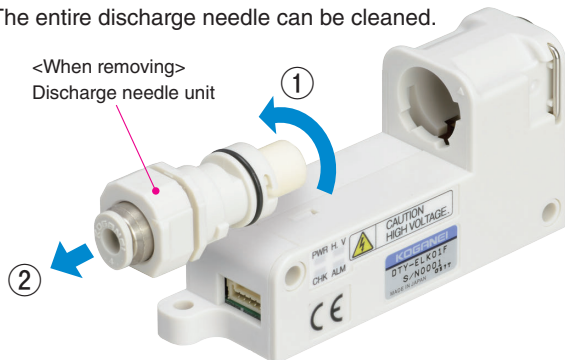
**Low particle generation type**



# Ionizer Blow type (Low flow rate) DTY-ELK01F Series

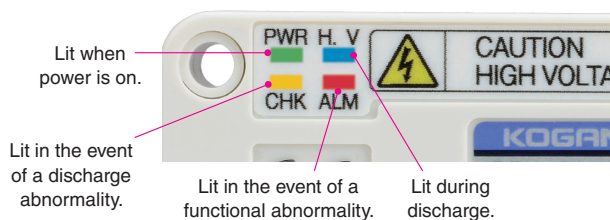
## Simple maintenance

The discharge needle unit can be attached and detached with one touch.  
The entire discharge needle can be cleaned.



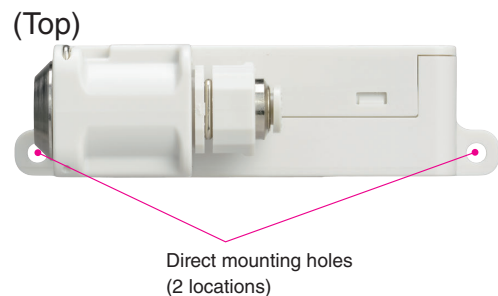
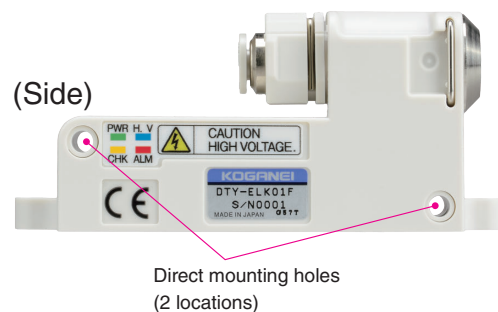
## Safe design

The discharge status and ionizer abnormalities can be checked via LED indicators and outputs.



## Direct mounting of the main unit is possible.

Mounting using the two direct mounting holes on the main unit is now possible, increasing installation flexibility.



## Standard type (DTY-ELK01F)

### Low flow rate Does not blow away small work pieces

Reduced installation space due to a more compact main unit.

Volume reduced by 40% compared to the current model.

Improved usage environment:

Safe low-ozone operation even at low flow rates

Ozone concentration reduced by 50% (compared to DTY-ELK01)



## Low particle generation type (DTY-ELK01F-L)

# Particle generation is reduced

An ionizer suitable for use in clean environments.

This low dust specification minimizes particle generation from the discharge needles and flow paths.



## Particle generation level of the Low particle generation type

### ● Evaluation of particle generation

We evaluate particle generation using our own proprietary measurement method that is not affected by the measurement environment (such as downflow from a clean bench).

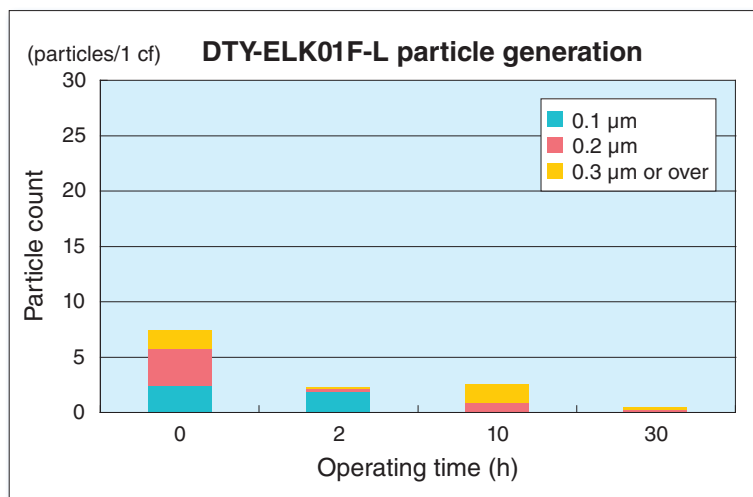
### ○ Measurement method

All air discharged from the ionizer is sent directly to a particle counter for measurement.

1. With the ionizer power OFF, supply air only and measure particles (background measurement).
2. Turn the ionizer power ON and measure particles.

### ○ Measurement conditions

Applied pressure : 0.3 MPa [44 psi]  
Measurement time : 2 hours  
Suction flow rate : 1 cf/min  
Measured particle size: 0.1  $\mu\text{m}$  or larger



Notes 1: The particle generation level is the total amount generated over 2 hours converted to a value per 1 cf (28.3  $\ell$ ).

2: This data represents actually measured values obtained under the above conditions and are not guaranteed values.

Particle generation varies depending on compressed air cleanliness and the surrounding environment. Before use, please conduct sufficient verification under your actual operating conditions.



**Caution**

Before use, be sure to read "Handling instructions and precautions" on page 4.

## Controller unit (DTY-ZKCRU)

# Integrated ON/OFF control of power and supply air!

- Using the controller unit allows integrated ON/OFF control of both the power supply and supply air via external signals.
- Depending on the controller settings, ion air can be discharged intermittently (5 Hz or 10 Hz). By applying intermittent ion air, dust removal effectiveness can be improved.
- Equipped with a cleaning timer that notifies you of the operating time of the ionizer. After 300 or 500 hours of operation, notification is provided via an LED indicator and output, which can be used as a guideline for cleaning. For details, see page 6.

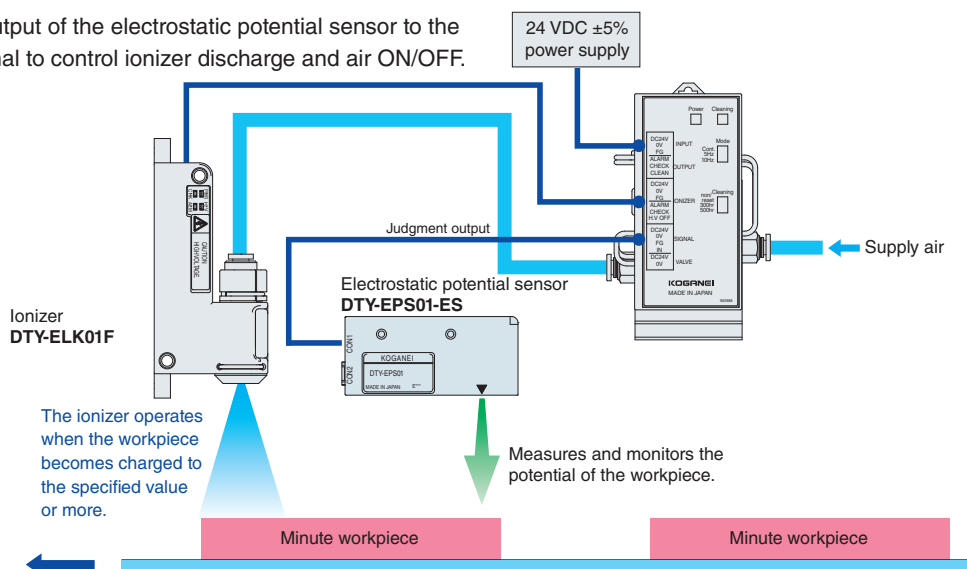
\* Actual cleaning intervals vary depending on the usage environment.



## Examples of controller unit usage

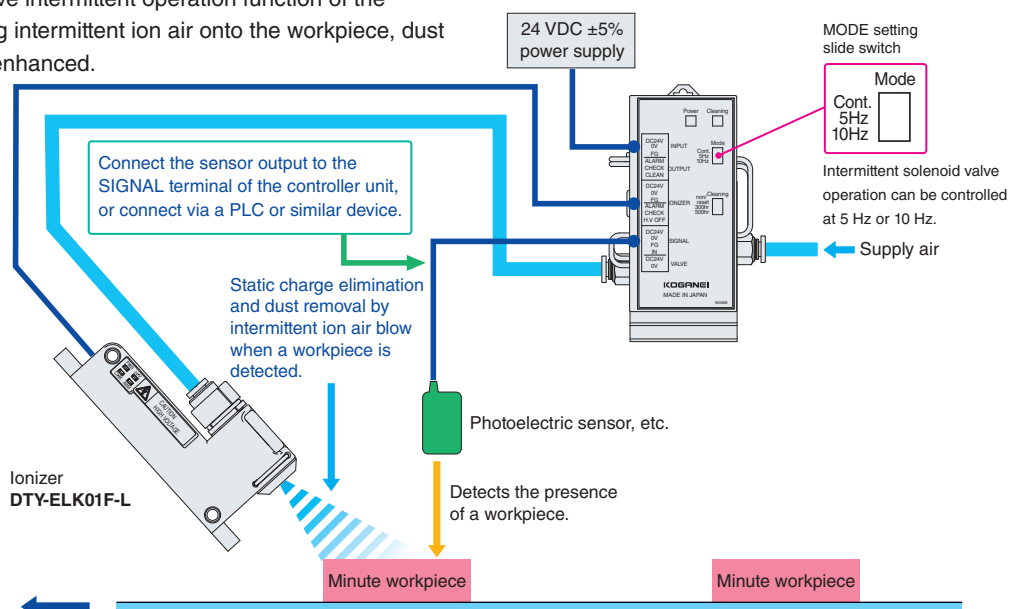
- Monitoring static electricity with an electrostatic potential sensor and controlling the ionizer with the controller unit

Connect the judgment output of the electrostatic potential sensor to the controller SIGNAL terminal to control ionizer discharge and air ON/OFF.



- Static charge elimination and dust removal using intermittent ion air blow

By using the solenoid valve intermittent operation function of the controller unit and blowing intermittent ion air onto the workpiece, dust removal effectiveness is enhanced.



### Notes on use

1. For the blow type ionizer, always supply compressed air before supplying electric power. Supplying electric power while no compressed air is supplied may result in a discharge that increases internal ozone density that produces a bad effect on the devices and environment.
2. Turn the ionizer power ON/OFF on the input power side (+24 VDC side).
3. An inrush current flows when power is turned on. Please exercise caution. When controlling ON/OFF with a PLC or similar device, perform control using H.V OFF.
4. Do not use nozzles other than those supplied by us. Do not modify the nozzle. Doing so could cause the product to fail, stop working, and break.
5. Do not use ultra-soft tubing.  
Pull-out strength will be significantly reduced, which may cause the tubing to come loose.

### About the output of the abnormal output contact

1. The abnormal output circuit of this product starts normal operation approximately 1 second after power is turned on. When designing an abnormality detection circuit for equipment installation, please exercise sufficient care.
2. If the power to the ionizer main unit is turned ON immediately after being turned OFF, an abnormal output will be generated. When turning the power back ON after turning it OFF, allow at least 1 second.
3. An abnormal output may be generated when the power to the ionizer main unit is turned OFF.  
Be sure to design the abnormality detection circuit so that ionizer abnormal output is not detected for 1 second after turning OFF the power to the ionizer main unit.

Notes 1: The same applies when turning the ionizer ON/OFF using H.V OFF.

2: In all of the above cases, there is no problem with ionizer performance.

### Caution

- For the blow type ionizer, always supply compressed air before supplying electric power. Supplying electric power while no compressed air is supplied may result in a bad effect on the devices and environment.
- Use clean air not containing oil or moisture as the medium.

# Specifications

## Blow type DTY-ELK01F Series

Item	Model	DTY-ELK01F (Standard type)	DTY-ELK01F-L (Low particle generation type)
Input voltage	[V]	24 VDC ±5%	
Current consumption	[mA]	Approx. 50	
Output voltage	[kVp-p]	Approx. 2 (high frequency)	
Display	PWR LED (green)	Lit when power is on.	
	H.V LED (blue)	Lit during discharge.	
	CHK LED (yellow)	Lit in the event of a discharge abnormality (H.V LED off).	
	ALM LED (red)	Lit in the event of a functional abnormality (H.V LED off).	
Output		Contact output when CHECK LED or ALARM LED is lit (24 V, 50 mA max, open drain)	
Ionizer ON/OFF control input		Discharge stop by short circuit with 0 V (no voltage input, internal drop voltage of 0.5 V or less)	
Mass	[g [oz]]	50 [1.76]	55 [1.94]
Ion balance	[V]	±10 (standard nozzle used, 0.3 MPa [44 psi], distance 50 mm [1.969 in.])	
Ozone generation amount	[ppm]	0.015 (standard nozzle used, 0.3 MPa [44 psi], distance 300 mm [11.811 in.])	
Particle generation <sup>Note 1</sup>	Particle count	–	50 or less
Medium		Air (clean air, water vapor and oil removed)	
Air pressure range	[MPa [psi]]	0.01 to 0.3 [1 to 44]	
Expanded air flow rate <sup>Note 2</sup>	[L/min (ANR) [ft <sup>3</sup> /min]]	50 [1.766] or less	
Operating temperature	[°C [°F]]	0 to 40 [32 to 104]	
Operating humidity	[%RH]	15 to 65 (no condensation)	
Accessories		Standard nozzle, power and signal cable (2 m [6.560 ft])	

Notes 1: Particle size 0.3 μm or larger, per 1 cf/min. Actually measured values, not guaranteed values.

2: At supply air pressure of 0.3 MPa [44 psi].

Remark 1: Ion balance is measured according to our measurement conditions.

## Controller (only for DTY-ELK01 and DTY-ELK01F Series)

Item	Model	DTY-ZKCR (controller)	DTY-ZKCRU (controller unit)
Input power supply		DC24V±5%	
Current consumption <sup>Note 1</sup>	mA	50	230
Control input <sup>Note 2</sup>		No voltage input, internal drop voltage of 0.5 V or less	
Output	ALARM	Ionizer output pass-through	
	CHECK	(Open drain, 24 VDC, 50 mA max)	
	CLEAN	Open collector output, 24 VDC, 50 mA max	
Solenoid valve connection <sup>Note 3</sup>		24 VDC (200 mA max)	–
Settings	MODE (solenoid valve operation setting)	Cont. (continuous operation), 5Hz (intermittent operation), 10Hz (intermittent operation)	
	Cleaning <sup>Note 4</sup> (timer setting)	non/reset (not used or timer reset) 300hr (ionizer operating time: 300 hours) 500hr (ionizer operating time: 500 hours)	
	Power LED (red)	Lit when power is on.	
Display	Cleaning LED (red)	Lit when the cleaning timer setting time is reached.	
	Port size	–	φ6 [0.236] quick fitting (IN, OUT)
Operating pressure range	MPa [psi]	–	0.05 to 0.5 [7 to 73] <sup>Note 5</sup>
Medium		–	Air (clean air, water vapor and oil removed)
Built-in solenoid valve	Model	–	130E1-2-SR-4W DC24V (direct-drive type, low-grease specification, surge protected)
	Flow characteristics	–	Sonic conductance C: 0.96 dm <sup>3</sup> (s·bar), effective cross-sectional area: 4.8mm <sup>2</sup> [0.007 in <sup>2</sup> ]
	Connection port size	–	Rc1/8
	Operating pressure range MPa [psi]	–	0 to 0.9 [0 to 131] <sup>Note 5</sup>
	Maximum operating frequency Hz	–	10
	Current value mA	–	177
Mass	g [oz]	60 [2.12]	250 [8.82]
Mounting method		DIN rail mounting	Bracket mounting
Usage environment		Indoor use: 0 to 40°C [32 to 104°F], 35 to 65% RH (no condensation)	

Notes 1: Does not include the ionizer or externally connected equipment.


2: Use with a control input OFF time of 200 ms or longer.

3: This indicates the capacity of connectable solenoid valves. For the solenoid valve, use a direct-drive one. Use a product with surge protection that uses minimal grease.

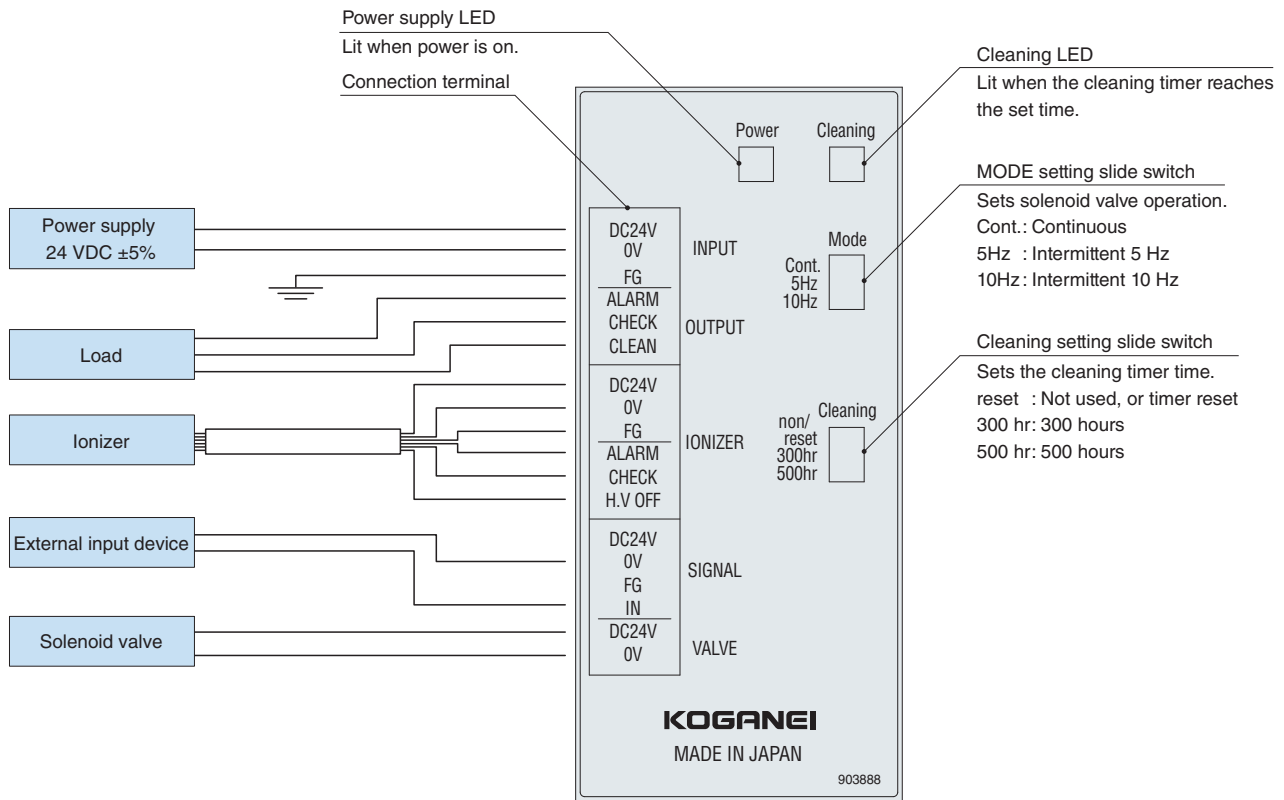
4: The ionizer cleaning interval varies depending on the usage environment. Use the cleaning timer as a guideline only.

5: Operate within the operating pressure range of the ionizer.

Remark: DTY-ZKCRU (controller unit) is a unit product of DTY-ZKCR (controller) and a solenoid valve. Solenoid valve durability differs from that of the ionizer depending on operating conditions.

-  1. When it is used with the Low particle generation type, note that particles may be generated from the solenoid valve.
2. When it is operating intermittently, if the piping distance from the solenoid valve to the ionizer is long, the intermittent air effect may not be obtained.
3. When it is intermittently blowing the ionizer using the dedicated controller, static charge elimination time and ion balance characteristics are slightly reduced compared to continuous operation.  
Confirm the static charge elimination status in advance according to the distance to the workpiece and pressure settings, and design the system to satisfy the required functional performance.

# Controller connection configuration and functions of each section



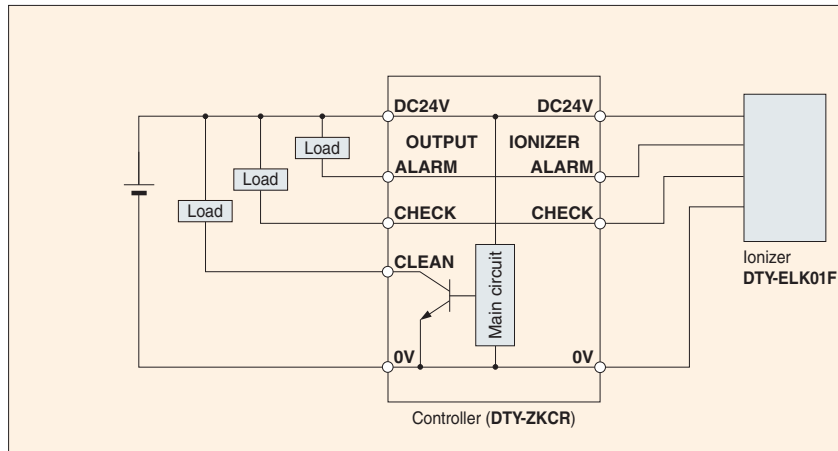
Note: Be sure to connect the IONIZER H.V OFF terminal.

Remark: Recommended solenoid valve: **130E1-2-SR-4W DC24V** (direct-drive type, low-grease specification, surge protected)  
Solenoid valve durability differs from that of the ionizer depending on operating conditions.

## Function of each connection terminal

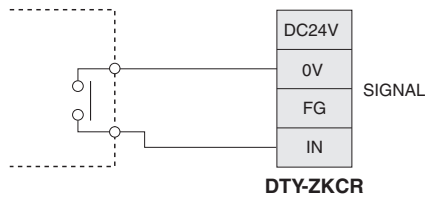
Terminal name		Function
INPUT	DC24V	Inputs 24 VDC ±5% power supply.
	0V	
	FG	
OUTPUT	ALARM	Outputs abnormal output and check signals from the ionizer.
	CHECK	
	CLEAN	
IONIZER	DC24V	Supplies power to the ionizer.
	0V	
	FG	Connects the ionizer ground.
	ALARM	Connects the ionizer abnormal signal line.
	CHECK	Connect the ionizer check signal line.
H.V OFF	Controls ionizer discharge ON/OFF.	
SIGNAL	DC24V	Connects external input devices such as switches or sensors. While a signal is being input from the external device, the ionizer and solenoid valve operate. Use 24 VDC as the power supply for external input devices. (200 mA max)
	0V	
	FG	
	IN	
VALVE	DC24V	Operates the solenoid valve.
	0V	

## OUTPUT terminal circuit configuration

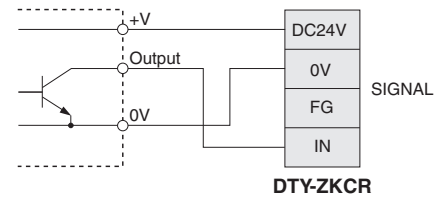


## Examples of external connection to the SIGNAL terminal

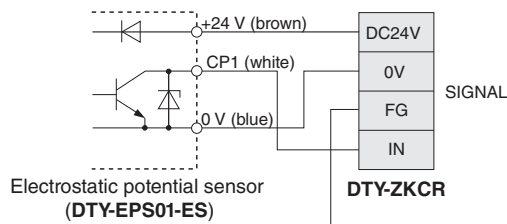
### Contact output type



### NPN open collector output type



### For electrostatic potential sensor



FG (black)  
 Note: A ring terminal is attached.  
 Cut it off before making a connection.

# Order codes

## Blow type DTY-ELK01F (Standard type)

### Main unit

- Single-head type  
**DTY-ELK01F**



**NOTE** The standard nozzle is factory-installed before shipment.

### Options for Standard type (sold separately)

- Standard nozzle  
**DTY-NZKF-01S**
- Shower nozzle  
**DTY-NZKF-60SW**

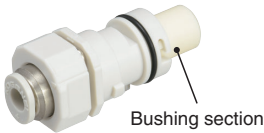


\* Fixing pin included



\* Fixing pin included

- Replacement discharge needle unit  
**DTY-ZKFEM**



Bushing section

- Power and signal cable (2 m [6.560 ft])  
**DTY-ZKFDSC**



- Replacement bushing  
**DTY-ZKFEB**



- AC adapter  
**DTY-ZKFPS**



Rating  
Input : 100 to 240 VAC  
50/60 Hz, 0.58 A  
Output: 24 VDC, 1 A



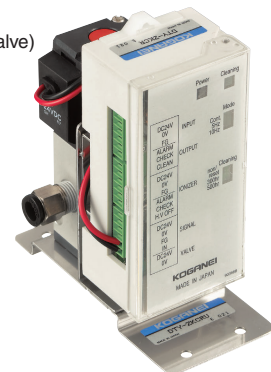
\* The AC adapter is supplied with a mini clamp wire mount plug.

### Controller

- Controller (main unit only)  
**DTY-ZKCR**



- Controller unit (with solenoid valve)  
**DTY-ZKCRU**



# Order codes

## Blow type DTY-ELK01F-L (Low particle generation type)

### Main unit

- Single-head type  
**DTY-ELK01F-L**



**NOTE** The standard nozzle is factory-installed before shipment.  
Remark: The main unit is single-layer clean packaged.

### Options for Low particle generation type (sold separately)

- Standard nozzle  
**DTY-NZKF-01SL**



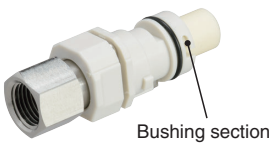
\* Fixing pin included  
Remark: Single-layer clean packaged.

- Shower nozzle  
**DTY-NZKF-60SWL**



\* Fixing pin included  
Remark: Single-layer clean packaged.

- Replacement discharge needle unit  
(for Low particle generation type)  
**DTY-ZKFEML**



Bushing section  
Remark: Single-layer clean packaged.

- Power and signal cable  
(2 m [6.560 ft])  
**DTY-ZKFDSC**



- Replacement bushing  
**DTY-ZKFEB**



- AC adapter  
**DTY-ZKFPS**



Rating  
Input : 100 to 240 VAC  
50/60 Hz, 0.58 A  
Output: 24 VDC, 1 A



\* The AC adapter is supplied with a mini clamp wire mount plug.

- Filter (with check valve)  
**DTY-ZKF40C**  
Connection port size R (RC) 1/8

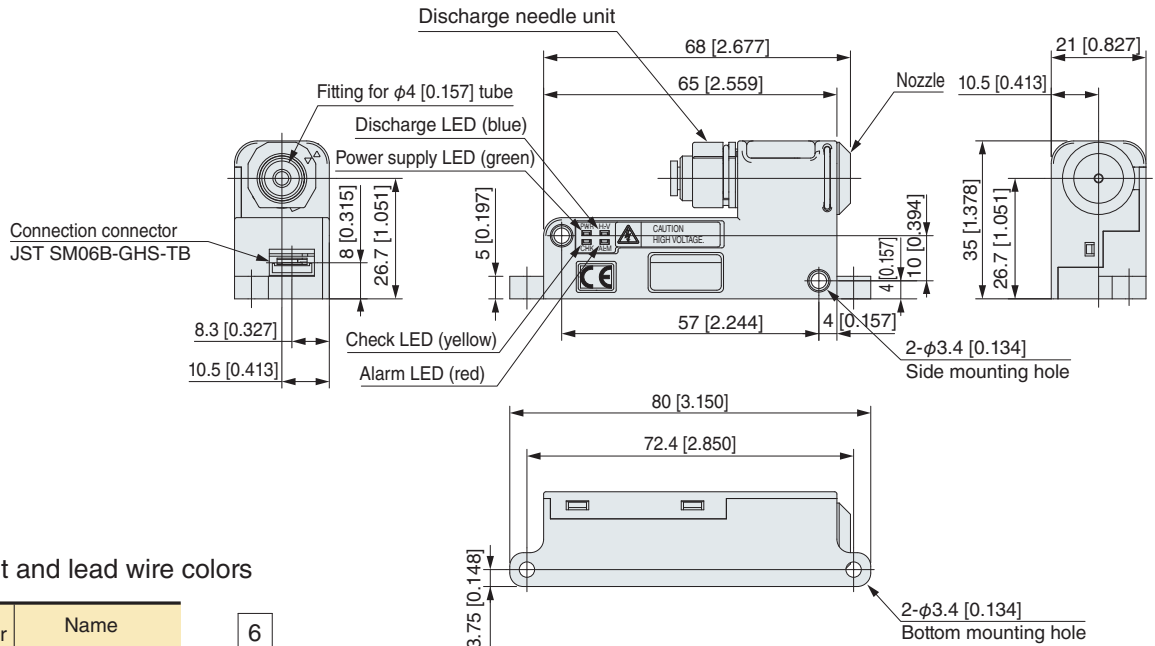


**NOTE** When a filter is installed, a slight delay compared to the static charge elimination time shown on page 13 will occur. Confirm the static charge elimination status in advance according to the distance to the workpiece and pressure settings, and design the system to satisfy the required functional performance.

# Dimensions (mm [in.])

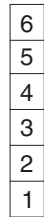
## Blow type DTY-ELK01F (Standard type)

### Main unit

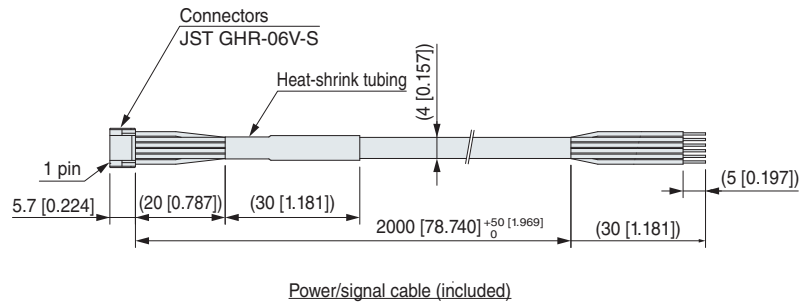


### Pin assignment and lead wire colors

Pin No.	Lead wire color	Name
6	Yellow	CHECK
5	Brown	ALARM
4	White	H.V OFF
3	Red	DC24V
2	Black	0 V
1	Green	F.G.

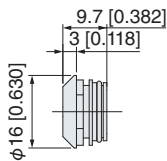


Pin location

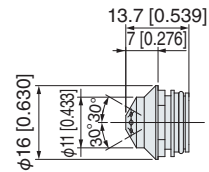


### Nozzle

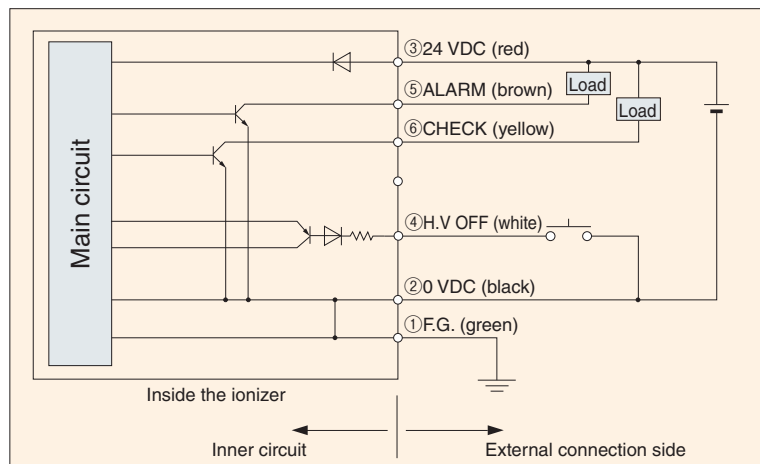
- Standard nozzle DTY-NZKF-01S



- Shower nozzle DTY-NZKF-60SW



### Circuit diagram

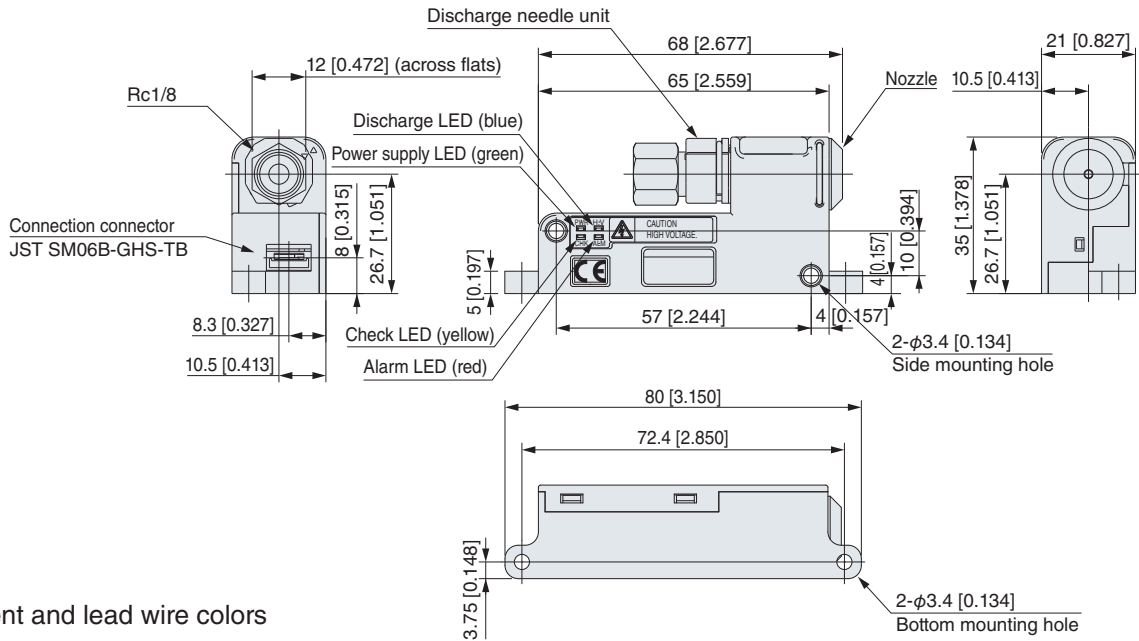


\* ② 0 VDC and ① F.G. are internally connected.

# Dimensions (mm [in.])

## Blow type DTY-ELK01F-L (Low particle generation type)

### Main unit

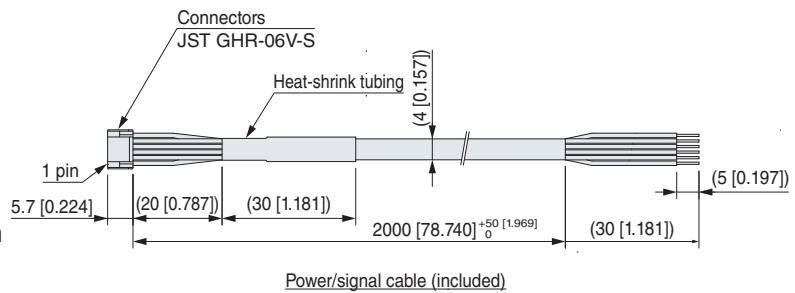


### Pin assignment and lead wire colors

Pin No.	Lead wire color	Name
6	Yellow	CHECK
5	Brown	ALARM
4	White	H.V OFF
3	Red	DC24V
2	Black	0 V
1	Green	F.G.

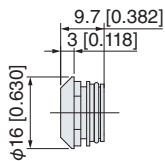


Pin location

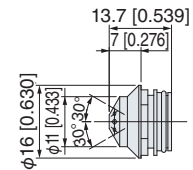


### Nozzle (Low particle generation type)

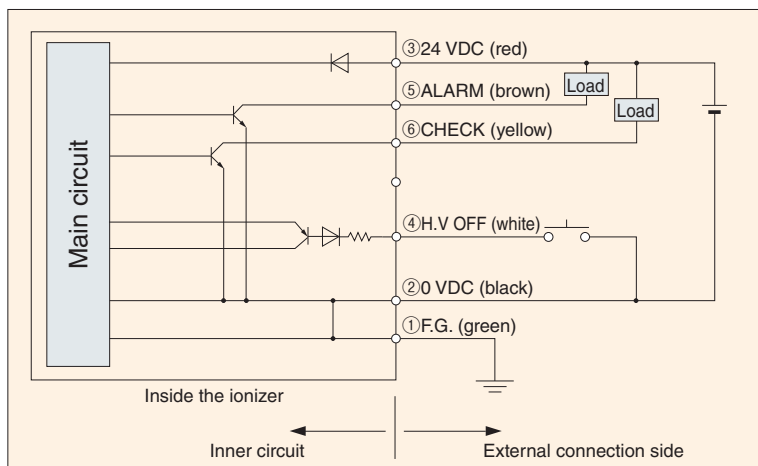
- Standard nozzle  
DTY-NZKF-01SL



- Shower nozzle  
DTY-NZKF-60SWL



### Circuit diagram

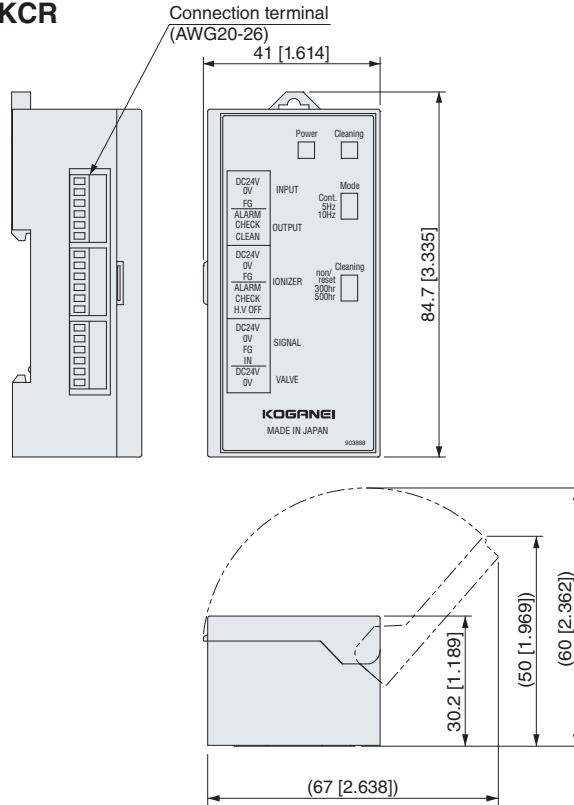


\* ② 0 VDC and ① F.G. are internally connected.

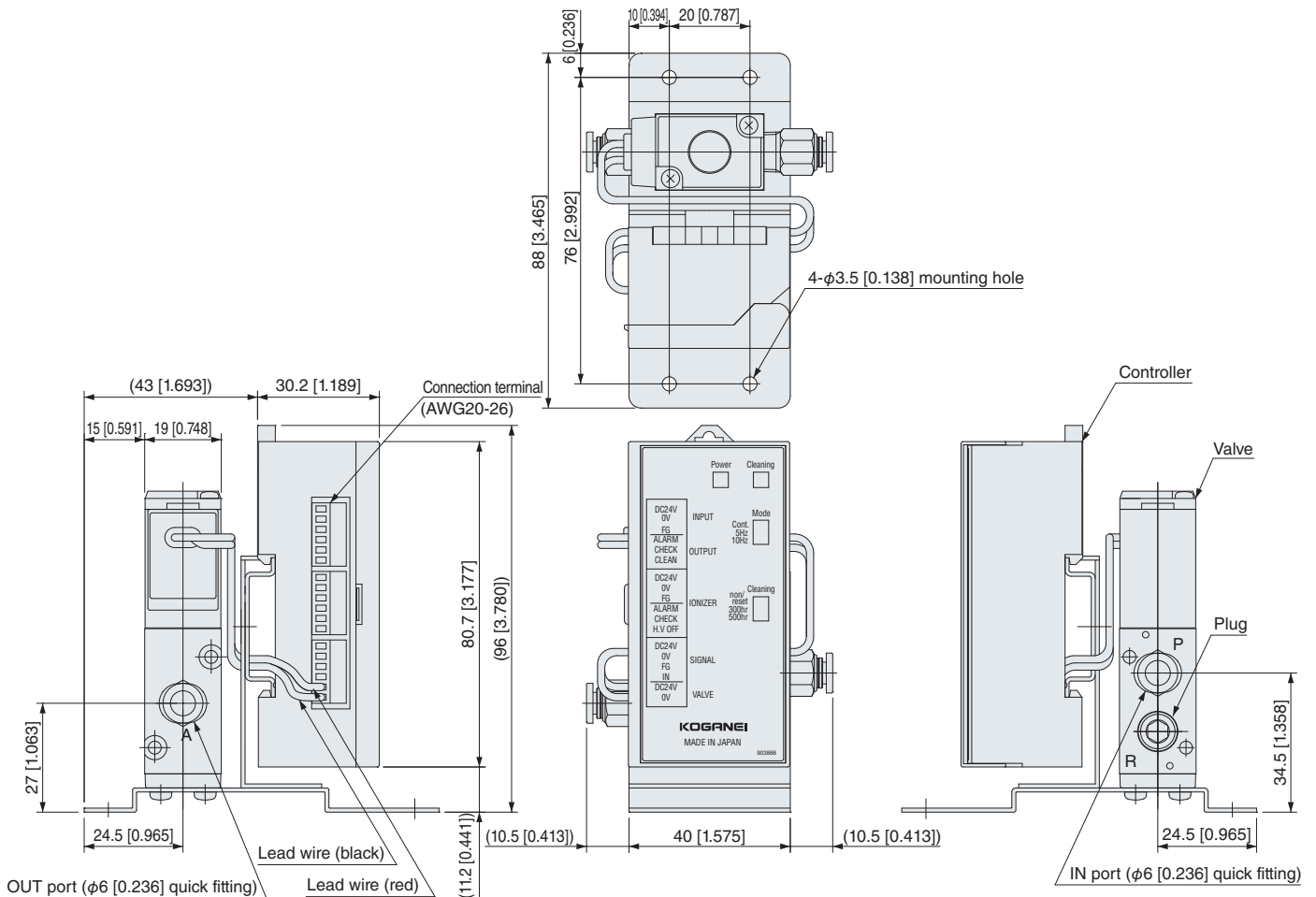
# Dimensions (mm [in.])

## Blow type DTY-ELK01 Series common options

### Controller (main unit only) DTY-ZKCR



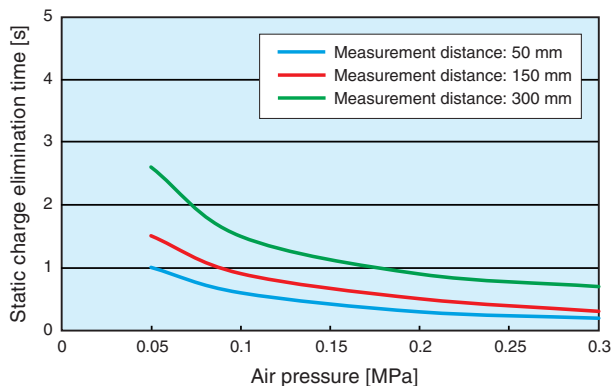
### Controller unit (combined with solenoid valve) DTY-ZKCRU



## Static charge elimination characteristic graph

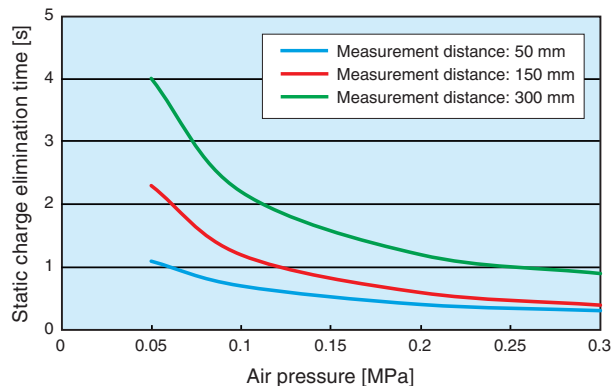
Standard nozzle static charge elimination characteristics

DTY-NZKF-01S □



Shower nozzle static charge elimination characteristics

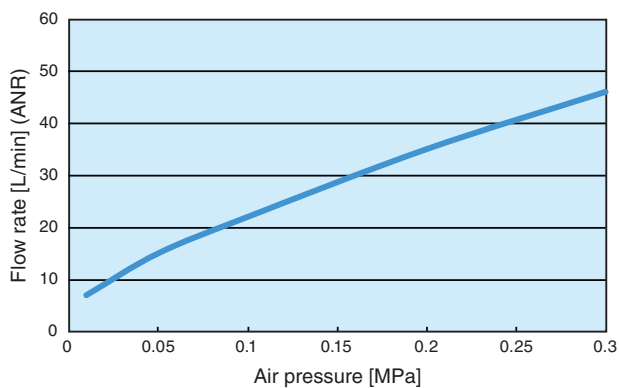
DTY-NZKF-60SW □



- Notes 1: Measurements are taken under Koganei measurement conditions, using a 20 pF, □150 mm [5.906 in.] charged plate monitor.  
 2: The static charge elimination time is the decay time from  $\pm 1000$  V to  $\pm 100$  V.  
 3: Static charge elimination characteristics are reference values measured by Koganei and are not guaranteed.

## Flow rate characteristic graph

DTY-ELK01F-□ (When the standard nozzle is used)





# Limited Warranty

KOGANEI CORP. warrants its products to be free from defects in material and workmanship subject to the following provisions.

**Warranty Period** The warranty period is 180 days from the date of delivery.

**Koganei Responsibility** If a defect in material or workmanship is found during the warranty period, KOGANEI CORP. will replace any part proved defective under normal use free of charge and will provide the service necessary to replace such a part.

**Limitations**

- This warranty is in lieu of all other warranties, expressed or implied, and is limited to the original cost of the product and shall not include any transportation fee, the cost of installation or any liability for direct, indirect or consequential damage or delay resulting from the defects.

- KOGANEI CORP. shall in no way be liable or responsible for injuries or damage to persons or property arising out of the use or operation of the manufacturer's product.

- This warranty shall be void if the engineered safety devices are removed, made inoperative or not periodically checked for proper functioning.

- Any operation beyond the rated capacity, any improper use or application, or any improper installation of the product, or any substitution upon it with parts not furnished or approved by KOGANEI CORP., shall void this warranty.

- This warranty covers only such items supplied by KOGANEI CORP. The products of other manufacturers are covered only by such warranties made by those original manufacturers, even though such items may have been included as the components.

The specifications are subject to change without notice.

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