

ELECTROSTATIC REMOVER

PhotoIonBar™ L12536

ELECTROSTATIC CHARGE REMOVER

"0V" neutralization achieved by light

OVERVIEW

The PhotoIonBar is an electrostatic charge remover using photoionization that neutralizes static electricity by irradiating the charged object with weak soft X-rays. To neutralize static charges, ordinary ionizers generate ions by corona discharge and send them toward the charged object by air flow. Unlike these old methods, the PhotoIonBar emits weak soft X-rays that directly ionize the air around the charged object to neutralize static charges. The PhotoIonBar needs "NO AIR FLOW" and generates "NO DUST" and "NO ELECTROMAGNETIC NOISE".

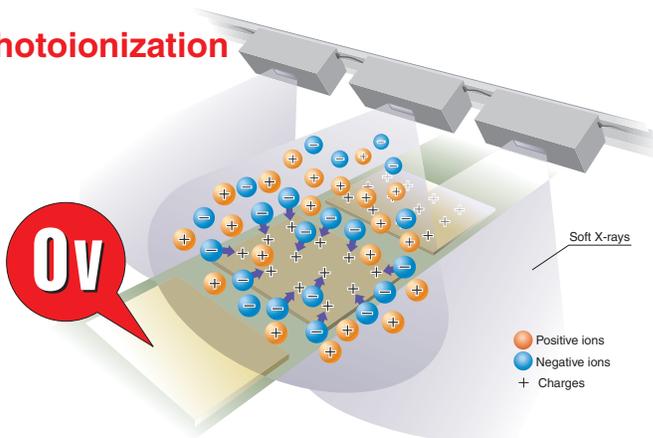


* Controller and cable are sold separately.

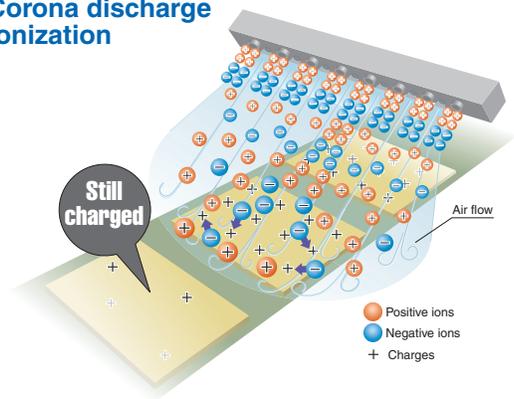
Here's why photoionization works so well!

- **0V neutralization**
Fine ion balance makes no opposite charging
- **Generates no dust and no electromagnetic noise**
- **Needs no air flow**
"Soft X-ray irradiation area" = "Static charge neutralization area"
- **Maintenance free (needs no electrode cleaning)**

Photoionization



Corona discharge ionization



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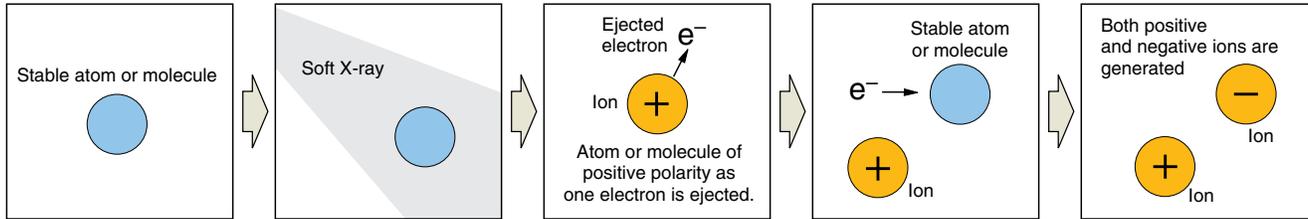
PhotoIonBar OFFERS MORE FEATURES

- **Compact size for flexible installation layout**
Comes with DIN rail attachment for easy installation and removal
- **Static charge neutralization area can be changed to match production line layout**
Maximum of 10 units can be daisy-chained to cover areas up to 2 m wide (recommended).
- **Eco-friendly (contains no hazardous beryllium)**
- **Low cost**
- **Low power consumption**
- **Long service life**
- **Easy to shield**
Soft X-rays can be completely shielded with acrylic plate only 3.3 mm thick

"PHOTOIONIZATION" MECHANISM

When X-rays hit a stable atom or molecule, an electron is ejected out of the atom or molecule leaving a positive ion (atom or molecule of positive polarity). The ejected electron then combines with another stable atom or molecule to form a negative ion (atom or molecule of negative polarity). As a result, the same amount of positive ions and negative ions are generated.

These ions are also generated in the vicinity of a charged object, and they are attracted to the charged object to neutralize the static charges.

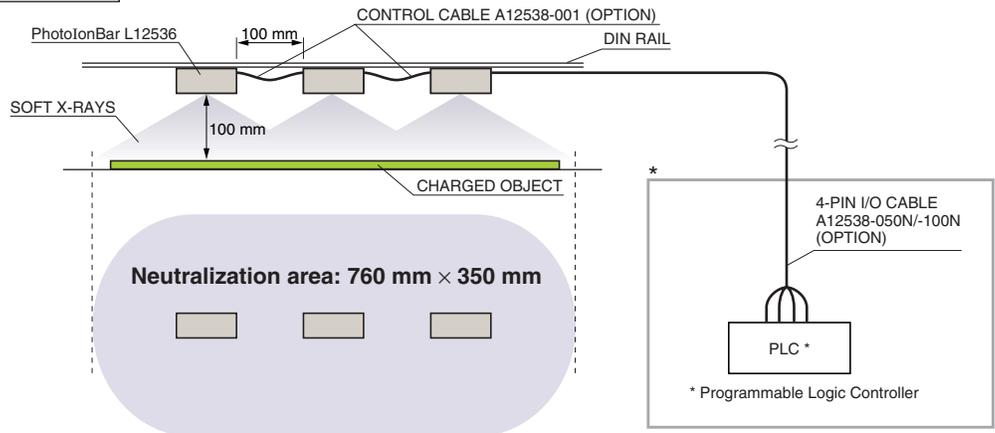


EXAMPLE OF INSTALLING THE PhotonIonBar

PhotoIonBar emits cone-shaped soft X-ray, and it works effectively within 300 mm of work distance.

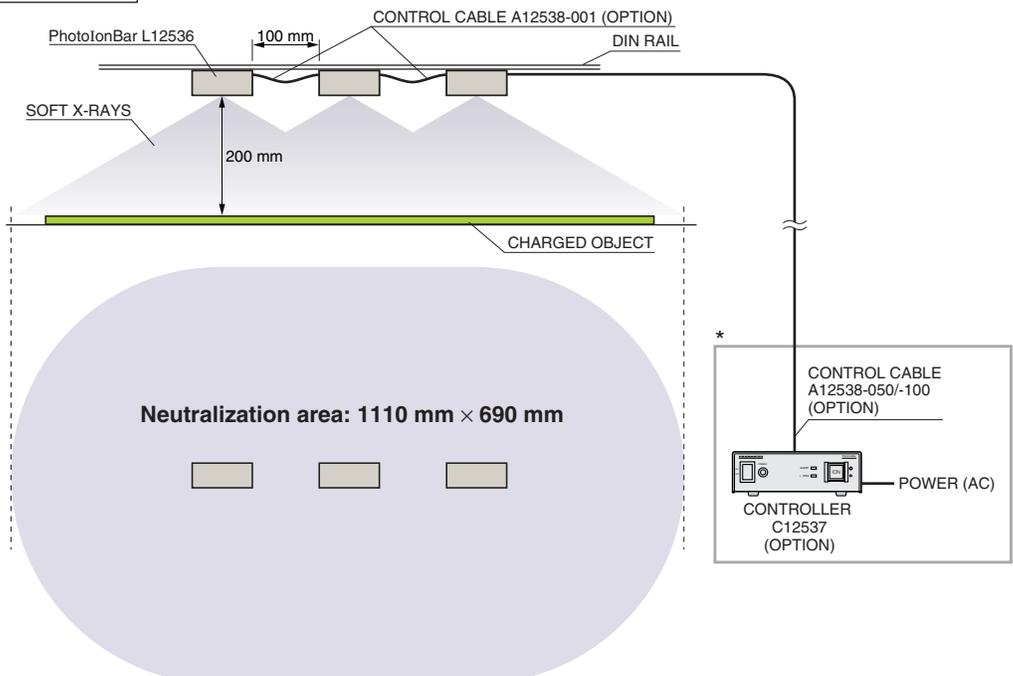
Recommended installation A

- Distance to charged object : 100 mm
- Distance between each PhotoIonBar : 100 mm



Recommended installation B

- Distance to charged object : 200 mm
- Distance between each PhotoIonBar : 100 mm



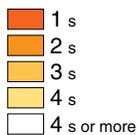
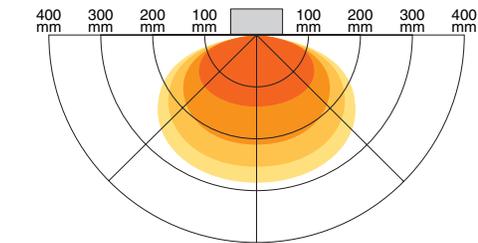
* Please prepare PLC or purchase controller depending on operation method.

CHARGE NEUTRALIZATION EFFECT

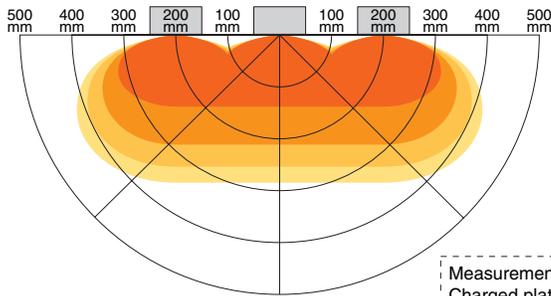
In photoionization, ions are generated over the entire area irradiated with soft X-rays. This improves the charge neutralization efficiency and also shortens the charge neutralization time.

CHARGE NEUTRALIZATION EFFECT

When 1 PhotoIonBar is used



When 3 PhotoIonBars are connected



Measurement conditions
 Charged plate: □150 mm, 20 pF
 Charged voltage: 1 kV → 100 V
 Distance between each PhotoIonBar: 100 mm
 Temperature: 25 °C
 Humidity: 50 %

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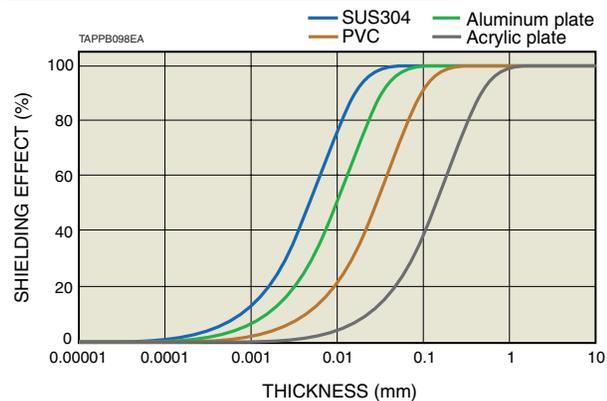
SOFT X-RAY SHIELDING

Using the PhotoIonBar requires "soft X-ray shielding" during operation. However, the soft X-rays emitted from the PhotoIonBar are only at a strength of about 3 to 4.9 keV and so only need the following materials for 100 % shielding.

Shielding material	Thickness (mm)	
	Our other Photoionizers	PhotoIonBar
SUS304 (stainless steel)	0.22	0.11
Aluminum plate	1.3	0.23
Acrylic plate	21.7	3.3
PVC	2.2	0.65

* A survey meter can be used to check soft X-ray leakage. Please consult us for details.

SOFT X-RAY SHIELDING EFFECTS



Note 1: Shielding effect is measured when distance between PhotoIonBar and survey meter is 100 mm and shielding material is placed between them (survey meter side).

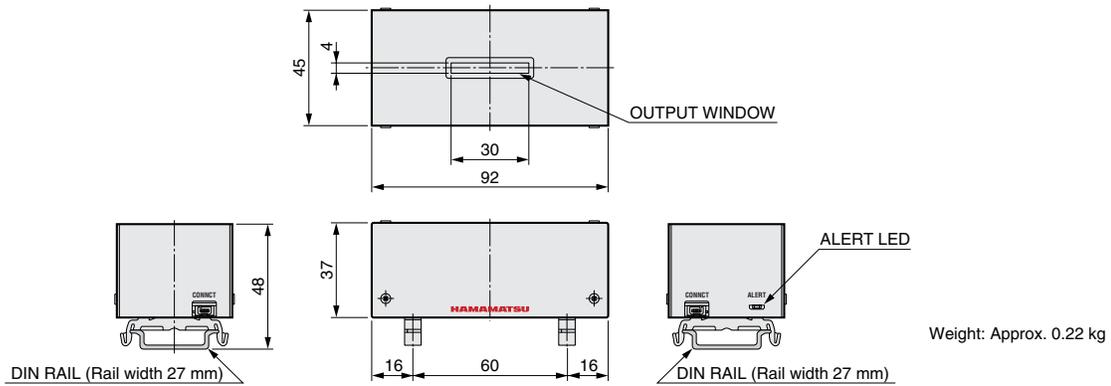
Note 2: The surface of PVC (polyvinyl chloride) plates may blacken when directly irradiated by soft X-rays from a very short distance (within 100 mm) for a continuous period over several months, but this is not a problem. Such type of changes will not occur in iron and aluminum material plates.

SPECIFICATIONS

Parameter		Description / Value
Soft X-ray tube	Tube voltage (DC)	4.9 kV
	Beam angle	120 °
Recommended distance to charged object		100 mm to 300 mm
Recommended distance between each PhotoIonBar		100 mm
Installation method		DIN rail mount
Connection to head unit		Control cable
Maximum connectable head units		10 units
Input voltage		DC 24 V ①
Power consumption		4 W Max.
Guaranteed life		1 year
Life expectancy		15000 hours
Operating / storage temperature range		0 °C to +40 °C / -10 °C to 60 °C
Operating / storage humidity range		Below 60 % / below 85 %

NOTE: ① Power supply voltage is AC 100 V to AC 240 V (50 Hz / 60 Hz) when controller is used.

DIMENSIONAL OUTLINES (Unit: mm)



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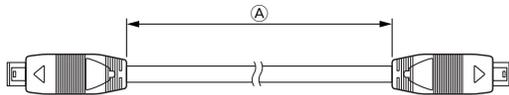
OPTIONS (Unit: mm)

CONTROLLER C12537



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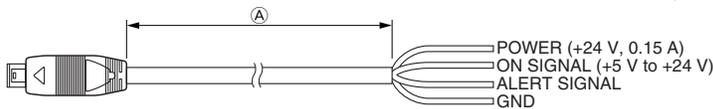
CONTROL CABLE A12538-001/-005/-050/-100



Type No.	Connection between	(A)
A12538-001	PhotoIonBar and PhotoIonBar	100 mm
A12538-005	PhotoIonBar and PhotoIonBar	500 mm
A12538-050	PhotoIonBar and controller	5000 mm
A12538-100	PhotoIonBar and controller	10000 mm
A12538-050N	PhotoIonBar and PLC*	5000 mm
A12538-100N	PhotoIonBar and PLC*	10000 mm

*Programmable logic controller

4 PIN I/O CABLE A12538-050N/-100N



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SAFETY PRECAUTIONS

- Soft X-rays emitted from this product are harmful to human health. Handle carefully to avoid X-ray exposure.
- When using this product, always install the product inside an X-ray shielded cabinet or other shielded location with utilizing **safety interlock mechanism**.

PRECAUTIONS DURING USE

- This product is a high precision device. Handle it carefully to avoid applying shock and vibration.
- The internal ion generator (soft X-ray tube) is a vacuum tube using glass material that might crack or rupture if subjected to mechanical shock. Do not apply strong shock or vibration to this product.
- This product was designed for natural air cooling. Do not install it inside a small, air-tight container or locations where the generated heat cannot dissipate.
- Do not use this product in locations where organic solvents or flammable gases are present.
- If this product does not operate correctly, turn the power off and check the cable connections. Then turn the power on again and recheck operation. If still inoperative then this product might be defective so contact us for advice.

LEGAL REGULATIONS INVOLVING THIS PRODUCT

This product must be used in compliance with health and safety regulations enforced to prevent bodily harm caused by the ionizing radiation. Users of this product must be familiar with the applicable laws that regulate use of X-ray emission devices. To obtain more information, refer to international or domestic laws and regulations on ionizing radiation and comply with the required procedures listed there.

WARRANTY PERIOD

This product is guaranteed for one year from the date of delivery. The warranty is limited to replacement of the product. The warranty does not cover damage caused by misuse or accidents such as natural disasters.

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