

空間TRINC (高精度)

STATIC-FREE SPACE TRINC (HIGH ACCURACY)

TAS-821 SFS-XXXX



高精度地中和空間中的所有靜電
最適用於電子行業、醫療行業的靜電・異物対策！

Static charges in the space are all neutralized with high-accuracy. For antistatic and anti-foreign-materials measures in the field of electronics and medical care!



空間トリック
TAS-821 SFS-XXXX

規格 Specifications		TAS-821 SFS-XXXX						
型式 Model	TAS-821 SFS-XXXX							
結構 Configuration	550	690	830	1250	1810	2230		
型式名称 Model name	空間TRINC STATIC-FREE SPACE TRINC							
除電方式 Ionizing method	空間方式 Static-free Space Method							
除電有効範囲 (mm) ※1 Effective ionizing area	Width	6,000						
	Depth	3,000						
	Height	1,400	1,500	1,700	2,400	3,000	4,000	
除電性能 (秒) ※2 Ionizing performance (second)	42	28		14				
離子平衡制御方式 Ion balance control method	TAIBS方式 TAIBS method							
放電針數量 Discharge needle	8 (4 2)	12 (6 2)	16 (8 2)	28 (14 2)	44 (22 2)	56 (28 2)		
放電針清掃方式 Discharge needle cleaning method	鈦針 Titanium needle							
放電針清掃方式 Discharge needle cleaning method	一動手清掃方式 One-touch cleaner type							
放電針壽命 ※3 Needle service life	約 24,000 個小時 (針頭可更新) Approx. 24,000 hours (Needles are replaceable)							
臭氧發生量 Amount of ozone generation	0.05PPM 以下 (於離子棒吹出口中央、前面 300 mm 測定時) Less than 0.05PPM (measured at the middle point of 300mm off the center of emission holes)							
動作中表示 Indicators	綠色 (POWER) LED 亮燈、藍色 (-ION)、白色 (+ION) LED 輪流亮燈 Green (POWER) LED lighting up, Blue (-ION) & White (+ION) LEDs lighting up alternately							
警報表示 LED Alarm indication LED	異常時、紅色 (ERROR) LED 閃亮 Red (ERROR) LED flashing if abnormal conditions arise							
警報輸出 Alarm interface output	紅色 (ERROR) LED 閃亮時輸出晶體管 ON Output transistor comes on when Red (ERROR) LED flashing							
防爆 / 非防爆區別 Explosion protection method	非防爆 Non-explosion proof construction							
耗電 (W) ※4 Power consumption	4.0			4.5				
電源 Power source	AC Adapter (輸出: AC100~240V 15%、50/60Hz 出力: DC24V) AC adaptor (Input: AC100-240V±15%, 50/60Hz, Output: DC24V)							
外形尺寸 (mm) External dimensions	離子棒1支 Per ion bar	Length	550	690	830	1,250	1,810	2,230
		Depth	31					
		Height	59					
質量 (g) Weight	離子棒1支 Per ion bar	620	750	860	1,200	1,900	2,040	
使用溫度、濕度 Operation temperature, humidity	0~40°C 35~65% RH (應無結露) (No dew condensation allowed)							
附屬件 Accessories	AC Adapter、安裝固定坐、固定坐用螺絲、接地線 (2條)、信號電線 (1條) AC adaptor, installation stay, screw for stay, ground wire (2pcs), modular cable (1pcs)							
選購件 Option	站立支架【ST-06】※5、站立支架【ST-07】※5、懸掛架【IHS-03】※6 Stand【ST-06】、Stand【ST-07】、Hanger【IHS-03】 信號電線【MIC-XXXX】、外部輸出信號電線【OMIC-XXXX】、更新用毛刷【BRS-04】、更新用放電針【DE-321-T 5根1套】 Modular cable【MIC-XXXX】、Error output modular cable【OMIC-XXXX】、Replaceable brush【BRS-04】、Replaceable needle【DE-321-T 5pcs set】							

- ※1 離子棒之間距離MAX3000mm、站立式的有效範圍。 In the stand type set up, both ion bars should stand a part from each other 3,000mm maximum.
- ※2 20pF・無風・離子棒間隔2000mm・於中央測定 Measured at middle part of the bars located 2,000mm apart, using a charge plate monitor set at 20pF without air.
- ※3 放電針壽命為期待數值並不保證數值。按照使用條件和使用環境會有大幅變動。
Needle service life is not a guaranteed but an expected time length. It varies depending on usage and/or circumstances.
- ※4 2支 1組的耗電量，包含AC Adapter。 Power consumption per 2 ion-bars as a set including AC adaptor.
- ※5 支架對本產品 1 組需要2台。站立支架 ST-06使用於550、690、830、站立支架 ST-07使用於1250、1810、2230。
Two stands are needed for a set (2 ion bars). ST-06 is applicable for 550 through to 830, while ST-07 for 1250 through to 2230.
- ※6 懸掛架 IHS-03使用於尺寸550、690、830時對1組需要4台、尺寸1250、1810、2230時對1組需要6台。
Bar hanger IHS-03 is to be used 2 each for a bar for 550, 690, 830 (4 for a set), and 3 each for bar for 1250, 1810, 2230 (6 for a set).

「無風除電」「空間除電」「微風除電」は(株)TRINCの登録商標です。
Air-Free Ionizing, Static-Free Ionizing, Slight-Air Ionizing are registered trademarks (in Japan) of TRINC Corporation.

安全に関するご注意 ■本製品をご使用前に必ず「取扱説明書」をよくお読み下さい。 Make sure to read the user's manual before handling the product.

<p>● 開発販売元 Manufacturing & sales origin</p> <p>株式会社 TRINC 〒432-8006 静岡県浜松市西区大久保町748-37 (浜松技術工業団地内) TEL:053-482-3412 FAX:053-482-3414</p> <p>TRINC Corporation 748-37 Okubo-cho Nishi-ku Hamamatsu-city Shizuoka-pref 432-8006 Japan TEL:+81-53-482-3412 FAX:+81-53-482-3414 URL: http://www.trinc.co.jp E-mail: info@trinc.co.jp</p> <p>このカタログの記載内容は2014年7月現在のものです。 The catalogue is based on specifications made in 07/2014.</p>	<p>● お求めは下記販売店でどうぞ Please contact the dealer below for purchasing.</p>
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TRINC 注目於「為何灰塵吸附於產品？」此根本性問題，
進行分析灰塵吸附的原理。
結果獲知吸附產品的灰塵是漂浮而帶電灰塵。
因此將包括漂浮灰塵的整個空間，若可以無風地除電（無風TRINC）的話
可以防止對產品的灰塵吸附情形發生。
吹風容易擴散灰塵，因此必須不要吹風才對。
由此想法誕生了TRINC獨自的Roomless Cleanroom
「沒有牆壁的無塵室」。

We at TRINC once kept our eyes on the fundamental question, "Why does dust adhere to workpieces?" and tried to analyze its adhering mechanism. The results revealed that the floating dust charged with static was the one attracted to adhere to them. In other words, if we dissipate the static charged on it by ionizing the whole space including it without blow (Air-Free TRINC), we can avoid dust adherence. Blowing raises dust so has to be avoided. From this idea, the TRINC's unique Room-less Clean Room, that is, "wall-less clean room" has been borne.

對應環保型號(RoHS)

Environmental preservation compliance models

適應RoHS的對應環保的型號。可更放心使用。

These model complying with RoHS directives for environmental preservation make you feel further assured in operation.

使灰塵不活性化 實現灰塵不吸附的環境。

The environment where floating dust won't adhere to objects is realized by inactivating it.

Room-less clean room®

實現沒有牆壁的Cleanroom。所有的灰塵，Particle皆被不活性化。

The wall-less clean room is actualized. The dirt and dusts are all inactivated.

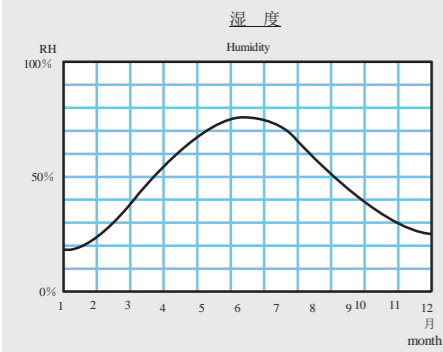
01
MERIT

【脫靜電】實現無風的沒有靜電環境。

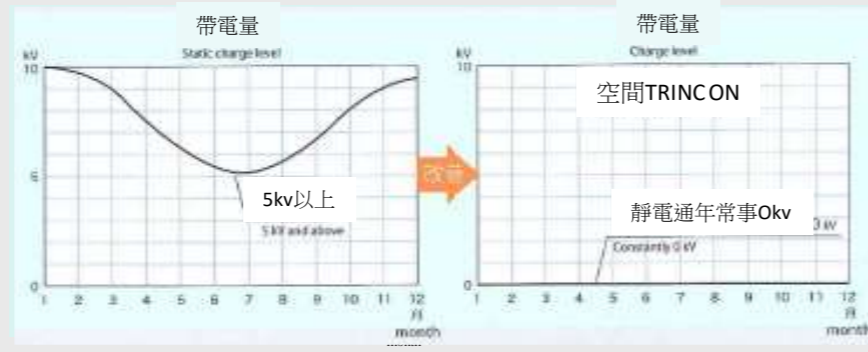
濕度下降的季節多發的由於靜電的不良發生。為了設備穩定運轉和品質不可缺少的是靜電對策。空間TRINC除電整個作業空間，實現任何季節都像梅雨一樣的靜電環境。

【Break away from static】 The static-free environment generated with out air-assist

Product defects due to static occur frequently in the season when humidity gets low. So anti-static measures are indispensable to keep stable production and quality. Static-Free Space TRINC ionizes (to dissipate static) a work space in whole to make it the static-free environment like the rainy season.



例子：日本國內氣候變動
 Example: Climate change in Japan



經過30秒以後的塑膠表面電位 (初期值=10 kV)
 Plastic surface charged voltage after 30 sec. (Default value:10 kV)

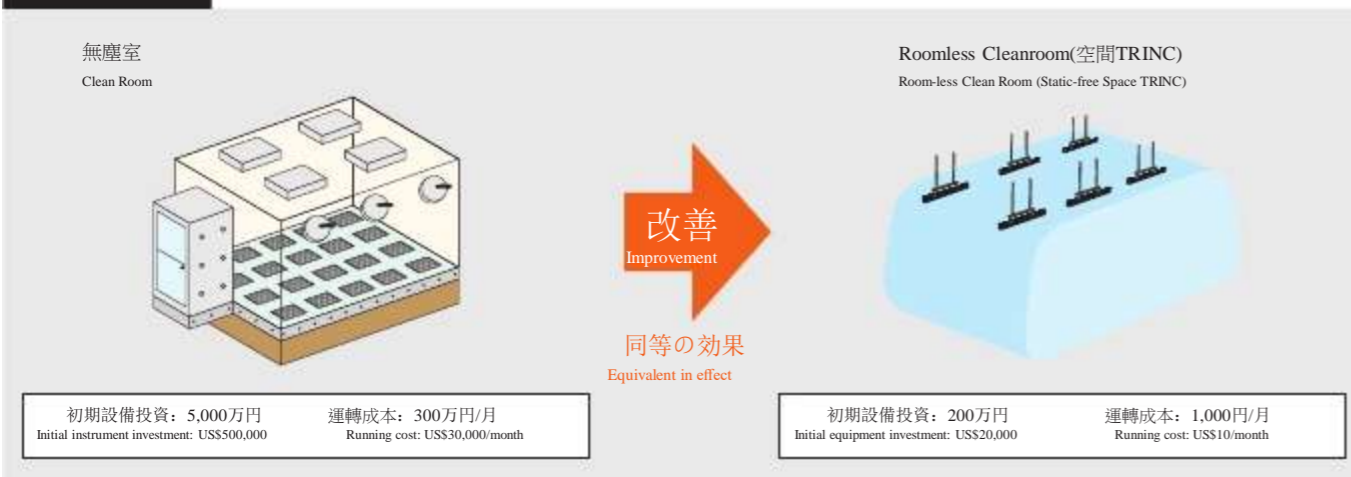
02
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【脫無塵室】無塵室太浪費！

無塵室的導入需要高貴的初期設備投資，運轉後還有電費等成本很高讓人發頭痛。不需要無塵室但存在灰塵問題時，最適用的是空間TRINC。空間TRINC別稱為「Roomless Clean Room®」，可以說沒有牆壁的無塵室。從來的無塵室防止由外部的灰塵進入而防止灰塵不良。空間TRINC以相反的想法被開發的。即盡然有灰塵漂浮但沒有吸附就不發生不良。吸附灰塵為物體的靜電與灰塵帶的靜電互相吸引而造成的。因此我們想使雙方的靜電中和就好。結果灰塵對產品的吸附劇減，我們的想法可以說被證明了。這樣誕生Roomless Cleanroom。

【Break away from cleanroom】 Cleanroom---what a waste!

Not only is a high initial investment required to introduce a clean room into the factory, but the management gets to worry about a high running cost after instruction. Static-Free TRINC is best suited for those who think that they don't necessarily need a clean room but are always worried about dust-related problems. Static-Free TRINC is a wall-less clean room. Ordinary clean rooms are designed to prevent dust from coming into the room from outside, but Static-Free TRINC was developed from a reversal thinking. That is, if floating dust in the space doesn't adhere to objects, there would be no dust-related defects, because dust adhesion is a result of static attraction charged on dust and objects. So neutralizing of those static was thought to be a solution. It was turned to be right and dust adhesion was reduced drastically, and "Room-less (wall-less) Clean Room" was borne.



03
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【脫加濕】不要加濕。

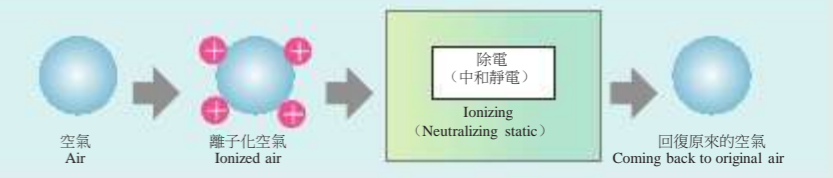
濕度高可控制靜電，因此工廠整體的靜電對策一般採用加濕。但也有不能調高濕度或水分對產品品質帶來不佳影響的工廠。TRINC由於離子的中和靜電功能，已確立不需要加濕器的於乾燥環境下的靜電對策。不使用異物（水分等媒體）可發揮很大的除電能力。

【Break away from humidification】 Humidification is not required.

Because higher humidity holds down static, humidification inside the factory has been common as an antistatic measure. But some of them cannot raise humidity higher, or moisture can affect product quality. TRINC has established an antistatic measure effective even in the dry environment (not using humidifier) by neutralizing static. This displays a large ionizing ability without using any mediums like moisture.



加濕器 (家庭用) Humidifier (house use) not required
 加濕器 (工業用) Humidifier (industry use) not required



將空氣做為媒體使用，除電作用結束以後回復原來的空氣
 The air utilized as a media comes back to original state after anti-static operation

04
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【脫防靜電手環】可解放防靜電手環。

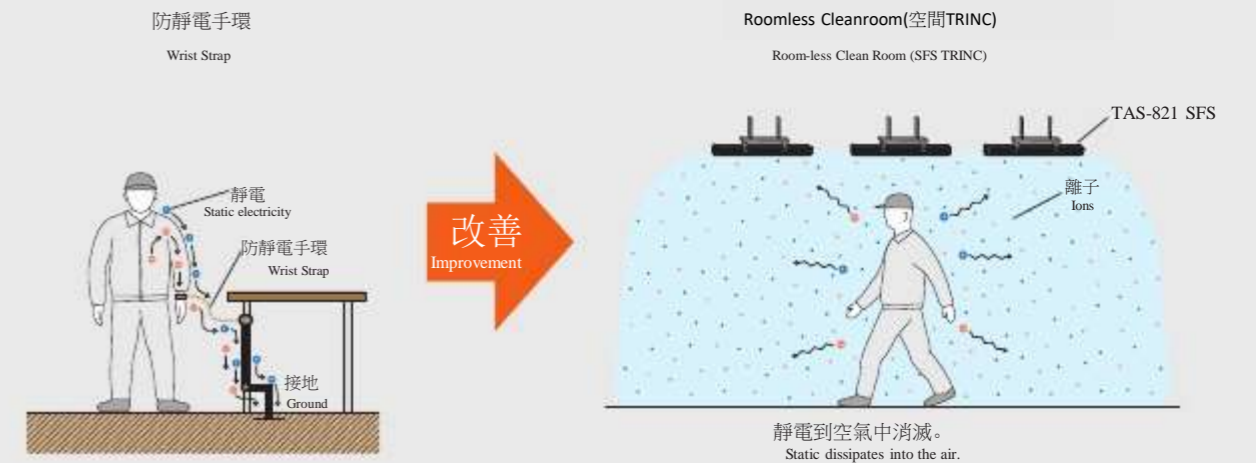
可以解放人類起始以來的傳統靜電對策防靜電手環。這是劃時代的事情。作業員不以繩子限制動作可隨便移動。由Cell方式的生產和生產革新手法上被採用的新的工廠模式為作業員為中心的世界。

從來方式為作業人員固定，產品移動的傳統情景已經改變一新，作業員已經可隨便移動。空間TRINC對工廠的到處都可放射離子使它擴散。

空氣離子於廠內到處都有飛行。可換言說廠內的空氣有帶導電性。人體和產品開始帶靜電立即週邊飛行的離子被吸收，靜電很像是接觸空氣即消滅一樣。已經沒有必要用防靜電手環接地人體。可以說作業員的解放。

【Break away from wriststrap】 Workers are freed from a wriststrap.

Workers are freed from the wrist strap that has long been used as an antistatic measure in mankind's history. This is a landmark event, since workers can walk around freely unbanded with a leash. The new factory style adopted in the "cell production" and "new innovative production" systems is a worker-centered world, and the obsolete image that workers are working tied to a leash has been renewed to free-walking-around. Static-Free Space TRINC diffuses ions in every corner inside the factory so that atmospheric ions are floating everywhere inside the factory. In other words, the inside air starts to have conductivity, and the instant that human body or object gets charged with static, the ions floating nearby are absorbed to it to have the static dissipated into the air. A wrist strap has been no more required to ground the human body. Workers are freed from it.





05
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無風TRINC 減低灰塵不良

體現TRINC的原則思想「除電不要吹風」。沒有吹風即不能除電為錯誤的陳舊觀念。實際上吹風對清潔環境的大敵。除電僅需要離子，最好沒有吹風。TRINC為打破從來的有錯誤的陳舊觀念，提案「無風除電」獲得許多現場的好評。

Air-Free TRINC for reduction of dust-related defects

TRINC has embodied its leading motive, "Air is useless for ionization." It's a mistaken stereotype that ionization cannot be done without assistance of air. In reality, air is an adversary to the clean environment. It is the ions that ionization needs, and air is useless. TRINC has proposed "Air-Free Ionization" to defy the prevailing mistaken stereotype and enjoyed reputation from many worksites.

一手動清潔機構

離子棒內的各放電針的旁邊有裝配毛刷，拉一下於離子棒背面的按鈕的一個動作，幾十根的放電針可一齊清掃。可以一舉解決由放電針污染造成的除電效果減低和煩人的清掃問題。



一動手可清掃放電針
 Cleaning electrodes through one-touch operation

One-touch needle cleaning function

With the brush arrayed alongside each discharge needle, dozens of needles can be cleaned in a lump just by pulling aside the lever located at the back of the bar. This clears up both lowering ionizing effect due to needle fouling and troublesome cleaning problems once for all.

07
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由離子感應器感應的高精度離子平衡

由感應器檢知離子量，維持穩定的離子平衡。

A high ion balance secured by ion sensors

A sensor senses the amount of ions generated to keep the ion-balance at a steady level.

08
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遙控功能

本機台主電源起動的狀態下，以外部信號控制放出離子的ON/OFF。因只需要時放出離子可減低由針頭污染的清掃次數的同時，還有由延長針頭壽命的省能源效果。

Remote controlling function

With the main switch kept on, ON/OFF action of ion discharge can be controlled rough the outgoing signal. Because the ion discharge can be made as needed, not only can maintenance of needle cleaning be reduced, but needle service life can be prolonged for higher energy-saving effect.

09
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ERROR信號的外部輸出

可檢知放電針減損和由於異物的漏電等放電異常。檢知後顯示盤的ERROR LED閃亮，視覺上確可認ERROR。另，具有ERROR信號的外部輸出功能，若顯示盤裝於不能看到的地方也可確認ERROR。

ERROR signal sending out

Needle wear-out and abnormal discharging like an electric leak caused by foreign bodies are detected. The ERROR LED on the display panel starts flashing to alert operators visibly to the problems. The error signal can be output to an external device so that the error is notified even if the ion bars are mounted remotely.

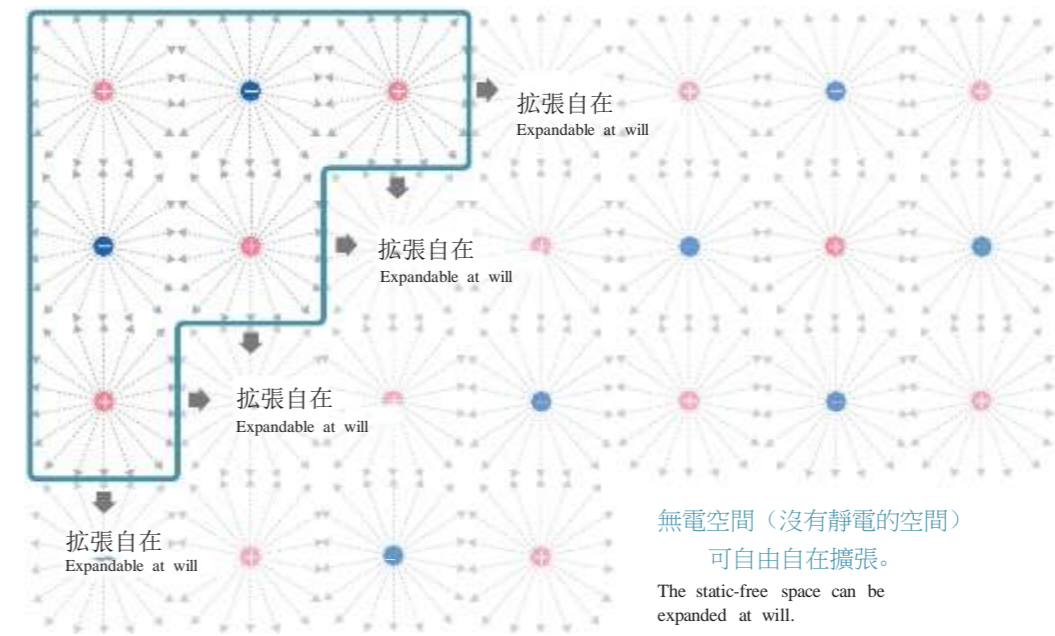
佈置方式 Configuration

空間佈置自由自在。

1組的空間TRINC為最小單位，組合複數的空間TRINC可無限擴大。無電空間（沒有靜電的空間）可自由自在地擴張。隨著廠房設計任何形狀的空間也可對應裝設。

Layout at will

A pair of SFS TRINC set as a minimum unit, a combination of multiple units makes the effective space unlimited. The static-free space can be extended at will. Tailoring the space to factory layout, any configuration of the effective space can be made freely.



以連接口簡單連接。

為了最大限利用離子極性需要同期除電器的極性。TAS-821 SFS系列裝有以連接電線簡單地連接複數除電器的專用連接插口。使同期每個除電器放射的十和一離子，可作出強力而廣範圍的除電。

A easy link with the link ports provided

To make the best use of ion polarity in ionizing, it is necessary to synchronize the polarity of ionizers. TAS-821 SFS series are equipped with the dedicated link ports so that multiple ionizers are linked easier. The positive and negative ions radiated from each ionizer are well synchronized to make it possible to eliminate static powerfully and extensively.

利用離子極性普遍除電空間內。

TAS-821 SFS 系列對離子生成採用空間方式。一對的空間除電器具有十或者一的極性。利用異性離子相引同性離子相斥的性質可高效率地擴張無電空間。這是空間方式獨特的發展性。

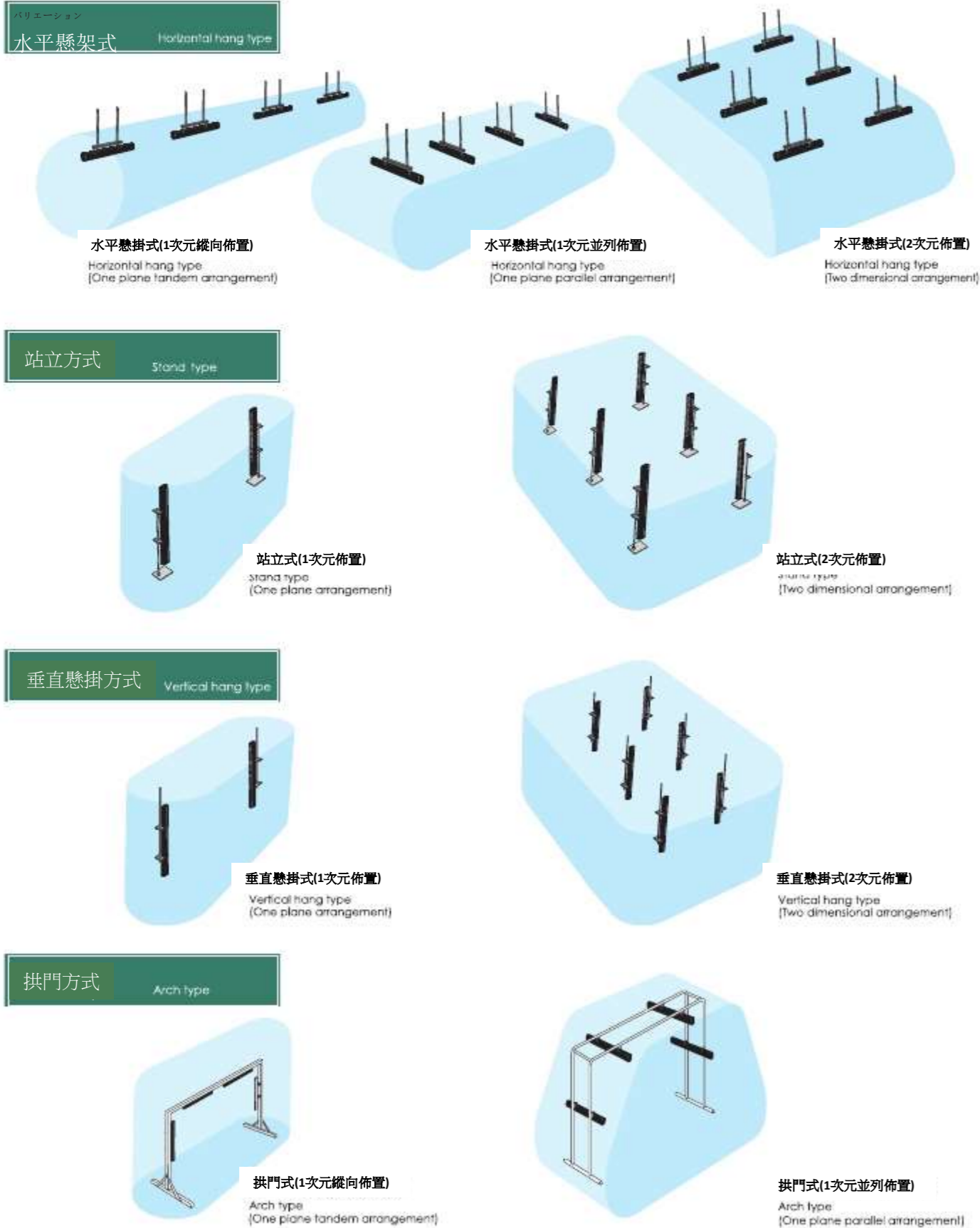
Static elimination in every corner of the space is made possible through the use of ion's polarity

TAS-821 SFS series use DC system to generate ions. The ions radiated from a pair of Static-Free Space ionizers are either positive or negative. The static-free space can be extended effectively through the use of ion's property; that is, the ions with different polarities attract each other and those with the same polarities repel one another. The expansibility of DE system.



豐富多彩的佈置方式對應各種空間

An abundance of model variation meets the various types of space.



用途 Application example

<p>1 實現沒有靜電的環境 Static-free environment generated</p> <p>① 無塵室 ② 無塵BENCH ③ 無塵BOX</p>	<p>11 藥品工場 Medicament factory</p> <p>① 藥品包裝段</p>
<p>2 FPD面板運輸帶 FPD panel conveyor</p> <p>① FPD面板運輸帶</p>	<p>12 石油化學製造廠* Petrochemical manufacturing plant</p> <p>① 燃料製造廠</p>
<p>3 家電電子 Consumer electronics</p> <p>① 家電電子 ② 半導體工廠 ③ PCB工廠 ④ PCB實裝工廠</p>	<p>13 更衣室 Dressing room</p> <p>① 防止更衣室的頭髮附著</p>
<p>4 設備組裝 Installings into equipments</p> <p>① 半導體生產設備 ② LCD生產設備 ③ PDP生產設備 ④ OLED生產設備 ⑤ 電池生產設備</p>	<p>14 粉體廠 Powdered products factory</p> <p>① 粉體廠</p>
<p>5 塑膠板, 薄膜製造, 加工廠 Sheet and film manufacturing</p> <p>① 塑膠板, 薄膜製造, 加工廠, 檢查廠</p>	<p>15 樹脂工場 Plastic/resin factory</p> <p>① 樹脂原料生產設備 ② 樹脂再生工廠</p>
<p>6 玻璃生產廠 Glass manufacturing factory</p> <p>① 玻璃生產廠</p>	<p>16 纖維廠 Textile factory</p> <p>① 纖維製造, 加工, 檢查廠</p>
<p>7 印刷廠 Print factory</p> <p>① 印刷廠 ② 網版印刷廠 ③ 塑膠板, 薄膜, 印刷工廠</p>	<p>17 包裝·梱包廠 Wrapping, packing factory</p> <p>① 包裝, 梱包, 貯藏</p>
<p>8 塗裝* Painting process</p> <p>① 塗裝廠</p>	<p>18 醫院 Hospital</p> <p>① 感染對策 ② 防止細菌附著</p>
<p>9 汽車修理廠 Vehicle repairing factory</p> <p>① 無塵間</p>	<p>19 辦公室 Office</p> <p>① 防止感電OA</p>
<p>10 食品廠 Food factory</p> <p>① 冰激淋 ② 方便麵</p>	<p>20 酒店 Hotel</p> <p>① 於酒店大廳的感電防止 ② 於酒店走廊的感電防止</p>
	<p>21 家庭用 Domestic use</p> <p>① 花粉症對策</p>

*使用於防爆區的客戶請使用TAS-80SFS-1510W-EPA

Be sure to use an explosion-proof model, TAS-80 SFS-1510W-EPA, inside the explosion hazard area.

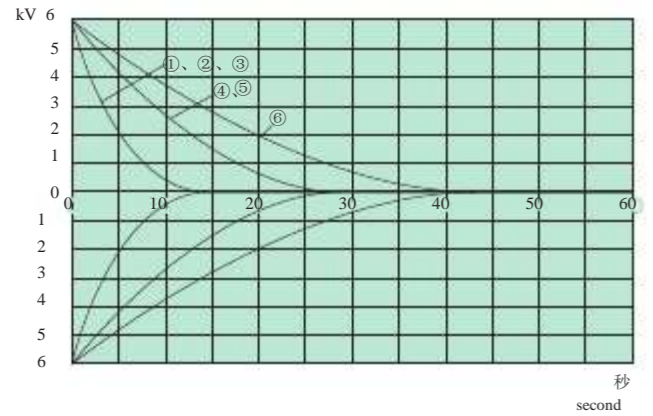
空間TRINC (高進度) STATIC-FREE SPACE TRINC (HIGH ACCURACY) TAS-821 SFS-XXXX



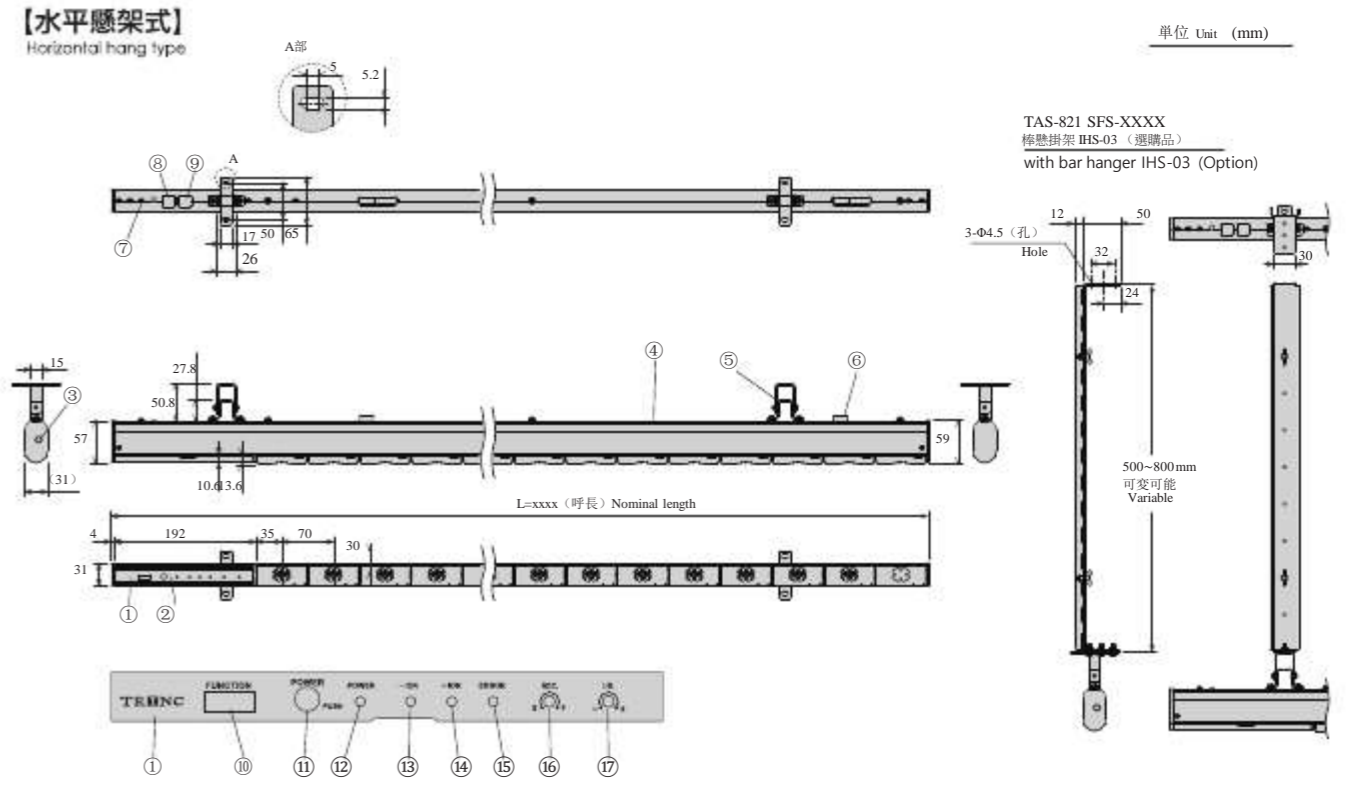
除電時間 Decay time spec. 敝公司測定條件下的數據，並不保證數值。
The data instrumental data under TRINC test standard, not guaranteed for every condition.

【測定条件】 (1) 於離子棒中央測定 (2) 離子切換周期: 10sec.
Measuring conditions Measured at the center of ion bars. Clock

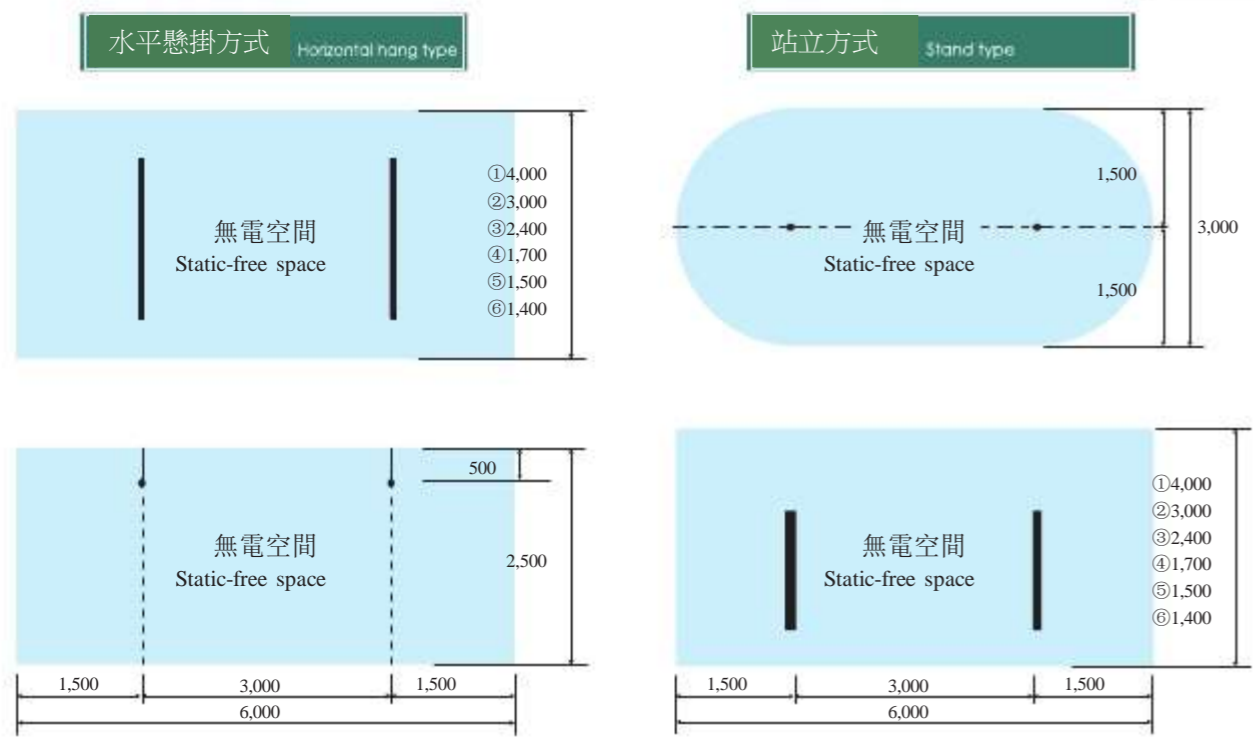
- ①TAS-821 SFS-2230
- ②TAS-821 SFS-1810
- ③TAS-821 SFS-1250
- ④TAS-821 SFS-830
- ⑤TAS-821 SFS-690
- ⑥TAS-821 SFS-550



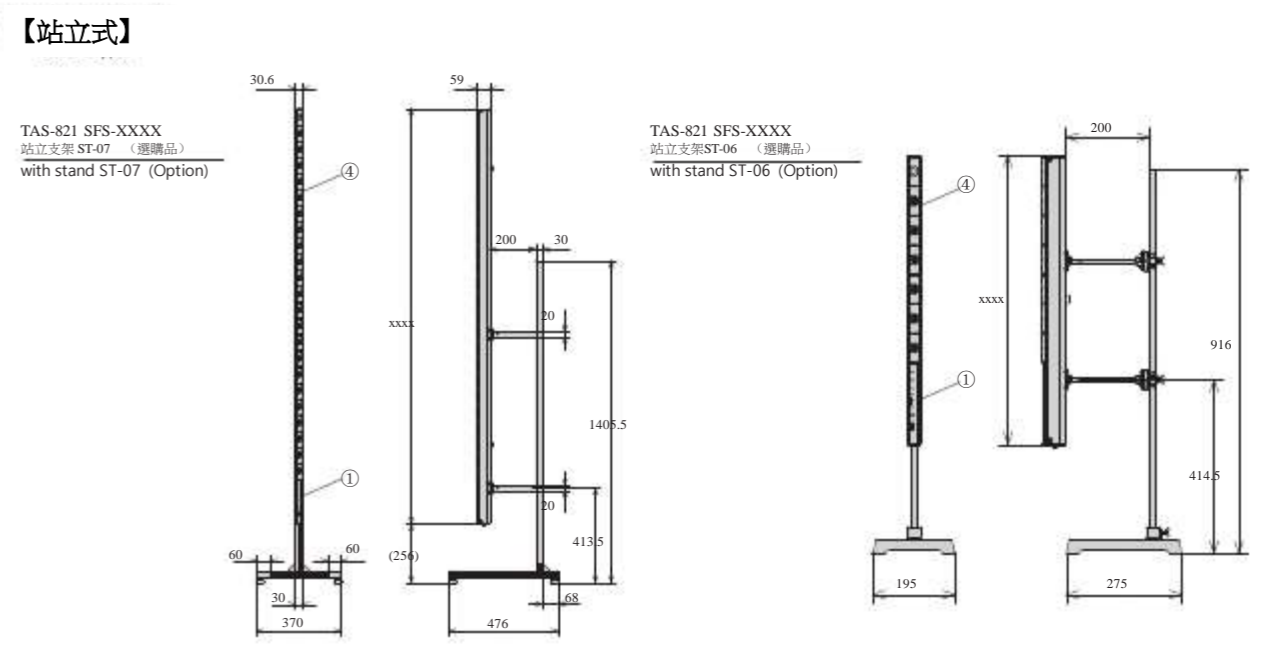
寸法图 Outline dimension 單位 Unit (mm)



除電效果範圍 Effective ionizing area 敝公司測定條件下的數據，並不保證數值。
The data instrumental data under TRINC test standard, not guaranteed for every condition.



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- ④ TAS-821 SFS-830
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- ⑥ TAS-821 SFS-550



① 操作盤 Function panel	⑤ 安裝固定坐 Bar holder stay	⑨ 連接插口OUT Link port OUT	⑬ 離子放出中表示LED (藍) LED displaying ionizing (-) (blue)	⑰ 離子平衡調整旋鈕 Ion balance adjust screw
② 操作盤蓋子 Function panel cover	⑥ 一動手清潔用按鈕 One-touch cleaner lever	⑩ 功能鍵 Function switch	⑭ 離子放出中表示LED (白) LED displaying ionizing (+) (white)	
③ DC插口 DC jack	⑦ 接地端子 Ground terminal	⑪ 電源開關 Power switch	⑮ ERROR LED (紅) Error LED (red)	
④ 離子棒 Ion bar	⑧ 連接插口IN Link port IN	⑫ 電源LED (綠) Power LED (green)	⑯ 離子極性切換周期調整旋鈕 Clock adjust screw	