

Instruction Manual

SUNJE Electrostatics

SXC-154L

Eng

It is recommended that only persons who have sufficient knowledge and experience such as system designers and responsible persons deal with this product after carefully reading the product manual.

1 The matters of safety

WARNING

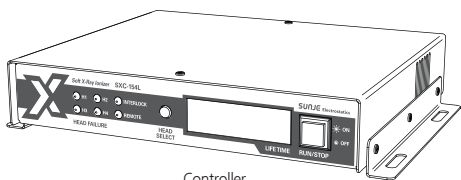
- Do not fabricate or do maintenance by yourself. Malfunction, Electric shock, and fire danger are considered. Contact us directly if you need the item to be repaired.
- Do not let the water touch the product. It may cause electric shock or fire due to malfunction.
- When you check or maintain the product, make it sure you turn off the power. It may cause electric shock or fire due to malfunction.
- The item should be fixed to the target tightly. Electric discharging or breakage might happen.
- Do not use the product at the place where dangerous material such as inflammable or ignitable material exists. This product is not the product of anti-explosive type.
- This device is made only for industrial uses. You need to ground the device beforehand. Otherwise, there are in case of malfunction, electric shock, or fire damage.

CAUTION

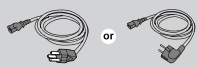
- Do not disconnect the head cable with power applied. There is a possibility of electric shock or malfunction.
- Connect wires referring to the product manual. Wrong connection can cause failures.
- For your proper cable connection, take a look at the manual "Installation & Connection" for references. Any disordered connection is detected, the malfunction might arise.
- All cables should be connected all the time. Please careful of cable disconnections. If power or communication cables got damaged, replace them immediately. Malfunction and fire danger may happen.
- Do not install the device where the vibration can be detected. Any minor impact or vibration on the device, the malfunction or danger of accident might happen.
- Do not use the item off the range of usage. Malfunction or danger of accident may occur.

2 Check the package contents

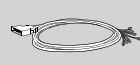
Product Compositions
The package includes the following products composition.



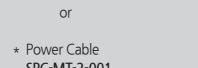
Controller SXC-154L 1 ea



* Power Cable SPC-MT-1-001 AC 100V, 50/60Hz, 1.8m / 1ea



* D-Sub Cable SDC-SN-5-001 15Pin-15Pin(Open) / 5m / 1ea



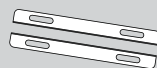
* Power Cable SPC-MT-2-001 AC 220V, 50/60Hz, 1.8m / 1ea



* Head Cable SOC-XN-5-002 9Pin-9Pin / 10m / 4ea

Option
If you require extra functions with the basic accessories we provided, you need to purchase optional items in below for further assistant.

Controller Mounting Bracket



* SXC-104 Bracket SBR-XN-1-003

3 Nomenclatures of parts

Front

- FND**: The Display window shows the head life.
- Head Selection Button**: This is for when you want to select an individual head from the whole connections.
- Run/Stop Button**: It is a Run/Stop button in order to operate a soft X-ray ionizer.
- Mounting Bracket**: A bracket to fix the item on the facing target.
- Indicator Light**:
 - HEAD 1**: A indicator light for selecting the head unit. If the head(#1) is properly connected, the green light will be on. If not, the red light will be on.
 - HEAD 2**: A indicator light for selecting the head unit. If the head(#2) is properly connected, the green light will be on. If not, the red light will be on.
 - HEAD 3**: A indicator light for selecting the head unit. If the head(#3) is properly connected, the green light will be on. If not, the red light will be on.
 - HEAD 4**: A indicator light for selecting the head unit. If the head(#4) is properly connected, the green light will be on. If not, the red light will be on.
 - INTERLOCK**: Interlock indicator light. If the interlock is connected, the green light will be blink over time. When using "Single Interlock Contacting Mode", the light will not be on. If using "Dual Interlock Contacting Mode", the yellow light will be blink over time.
 - REMOTE**: Remote Mode indicator light.

Rear

- Signal Input/Output Connector**: Use it when various signals (input/output) are necessary. (Interlock, Remote, Indicator)
- Fuse**: Please clarify your proper specification when replacing.
- Head Connector**: A connector that links the head unit and controller.
- Power Connector**: Using it when power supply.
- Power Switch**: A switch for supply/cut the power.

4 How to connect

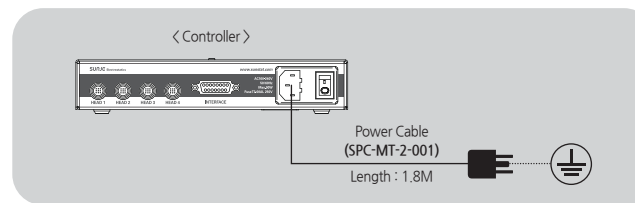
Connecting to the head Unit
Please connect the head and controller unit with supported "Head Cable".

Connectable products
The SXC-154L(i.e.Power Controller) can be connected to the products as below.

Soft X-Ray Ionizer SXN-15S Soft X-Ray Ionizer SXN-15U

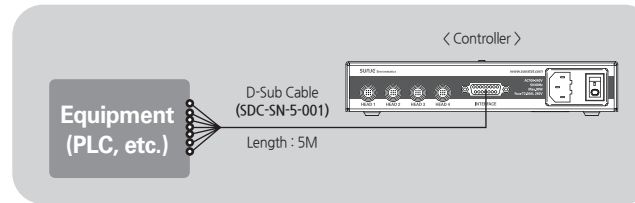
How to connect Earth Ground and Power Supply

Using supported ground and power cables to connect the controller.



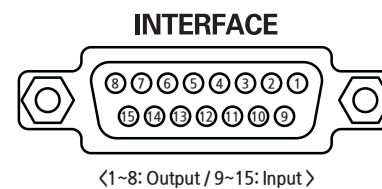
Connecting the Input/Output signal

Please connect the controller and external machinery equipment with supported "D-Sub Cable".



Input/Output signal NO.

15Pin D-Sub



Input/Output signal specifications

Division	No.	Pin Name	Descriptions	Function
OUTPUT	1	GND	GND	-
	2	Power State	Indicator Power State	Power Status output
	3	Interlock State	Indicator Interlock State	Interlock status output
	4	Run State	Indicator Run State	RUN status output
	5	Alarm State	Alarm Output	Alarm state output
	6	N.C	No Connected	No Connected
	7	N.C	No Connected	No Connected
	8	N.C	No Connected	No Connected
INPUT	9	Remote-Mode	Remote Mode Select	Single Contacting / Dual Contacting Mode Select (Electrical Contact)
	10	Mode-COM	GND	
	11	Remote-ON	Remote ON	1 contacts using 11-13: Close → ON 2 contacts using 11-13: Close → ON
	12	Remote-OFF	Remote OFF	11-13: Open → OFF 11-13: Open → ON(Keep) 12-13: Close → OFF
	13	Remote-COM	GND	
	14	Interlock-COM	GND	
	15	Interlock-ON	Interlock ON/OFF	Interlock ON / OFF(Electrical Contact)

5 How to set

Set the Interlock

Interlock On

An interlock will be on if #14 or #15 of D-sub Cable is contacted. The interlock on stands for the status when the unit is connected properly and the shielding door is totally closed during operation. "Interlock Indicator (INTERLOCK)" light will be blink in the front of the controller.

Interlock Off

An interlock will be off if #14 or #15 of D-sub Cable is not contacted. The interlock off stands for the status when the unit is not properly connected and the shielding door is opened during operation. "Interlock Indicator (INTERLOCK)" light will be turned off in the front of the controller".



Article	Interlock On	Interlock Off
D-sub Cable No.	14 - 15 Close	14 - 15 Open
State	The shield door is closed	The shield door is open
Meaning	Ready for Ionization	Still in process for Ionization
Controller Indicator Light	● INTERLOCK	○ INTERLOCK

Set the Remote mode

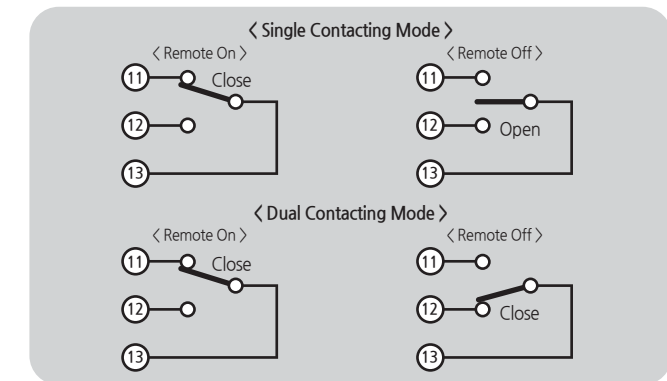
In the remote mode, there are "Dual Contacting Mode" and "Single Contacting Mode".
 - If remote mode on / off(9) is connected to com(10) in the interface. (Dual interlock contacting mode)
 - If remote mode on / off(9) is not connected(e.g.Open) to com(10) in the interface. (Single interlock contacting mode)
 If dual interlock contacting mode is entered, remote led will be blink.

Dual Contacting Mode: Remote On / Remote Off (Have a 2 Contacting)
Single Contacting Mode: Remote On (Have a 1 Contacting)



Article	Dual Contacting Mode	Single Contacting Mode
D-sub Cable No.	9 - 10 Close	9 - 10 Open
Controller Indicator Light	● REMOTE	○ REMOTE

Single Contacting Mode / Dual Contacting Mode Remote set



CAUTION

- The Remote Off will be operated preferentially when 12pin and 13pin closed regardless of Uni point contact / Dual point contact mode.
- The remote can be operated only if the interlock in on. In interlock off, the head unit will not be operated even though the remote is on.

Status output signal

Article	LED Color	LED State	Output Status
Run / Stop	Green	On	Run state (No relation whether the head unit will be present or not)
	-	Off	Stop state
Interlock	Green	Blinking	Emergency state(Interlock open when run state)
	Green	On	Interlock close(#15) of interface at the back of the device
Remote	-	Off	Interlock open of interface at the back of device when emergency state
	Yellow	On	Indicating R-Mode(#9) close at the back of dual contacting mode
Head 1	-	Off	Indicating r-mode open / emergency state at the back of single contacting mode
	Red	On	When alarm signals of the head unit(Head #1) is inputted or when the controller is not communication with Head unit
	Green	On	If low/high current is detected from the current sensing circuit when running
	Red/Green	Off	If there are no alarm signal but Head #1 gets connected when stop or run
Head 2	Red	On	When Head #1 is not connected / emergency / interlock open
	Red	Blinking	When alarm signals of the head unit(Head #2) is inputted or when the controller is not communication with Head unit
	Green	On	If low/high current is detected from the current sensing circuit when running
	Red/Green	Off	If there are no alarm signal but Head #2 gets connected when stop or run
Head 3	Red	On	When Head #2 is not connected / emergency / interlock open
	Red	Blinking	When alarm signals of the head unit(Head #3) is inputted or when the controller is not communication with Head unit
	Green	On	If low/high current is detected from the current sensing circuit when running
	Red/Green	Off	If there are no alarm signal but Head #3 gets connected when stop or run
Head 4	Red	On	When Head #3 is not connected / emergency / interlock open
	Red	Blinking	When alarm signals of the head unit(Head #4) is inputted or when the controller is not communication with Head unit
	Green	On	If low/high current is detected from the current sensing circuit when running
	Red/Green	Off	If there are no alarm signal but Head #4 gets connected when stop or run
H1/H2/H3/H4	Red	On	All the cases where none of the head units are connected

► FND Display

Article	Firmware Version	Stop
Display		
Explanation	Power OFF → ON : Firmware Version will be shown for 3 seconds on the controller display.	If the device displays 'STOP', then following sign "----" will be shown on the controller display.
Article	Run	
Display		
Explanation	If you push the "Run Key" button ,the following sign "----" will be rotated sequentially to show whether it is in working order.	
Article	Interlock Open in the stop state	Interlock Open in the run state
Display		
Explanation	The "Lock" sign will be shown. All LEDs : Off	The "Lock" will blink in every 0.2sec cycle. ※ Run LED : Blinking / Rest of LEDs : Off
Article	Alarm	
Display		
Explanation	When an alarm occurs more than two, the head number will change in every 2sec cycle.	
Article	Display the time used for a head unit	
Explanation	<ul style="list-style-type: none"> The "Head Selection" button is available to select each individual head units, and the selected head units will be light on the LED display panel. When you push the "head select" button at the initial time, the "lifetime of Head1" will be shown for 3 seconds. When in Lifetime state pressing a "Head Select" button, the head unit will be consecutively changed. It will go back to the initial state if it stays for 3 seconds in either one of the head selections. (H1→H2→H3→H4→H1→...) If it is not connected to the Head unit, "no-C" (no-C) will be displayed. If it is not communicated with the head unit, "no-E" (no-E) will be displayed. There will be no display when in emergency state(The Interlock Open during Running). 	

6 Maintenance

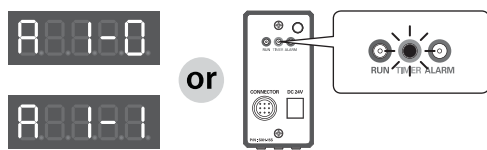
► Operate Reset (when replacing SXN-15S Tube)

You should reset after replacing tube when problems occur or the tube was excessively used more than its span. Make sure to reset otherwise replaced tube will not work.

※ Only under interlock off condition, RESET function is available. Make sure that interlock LED of controller is off.

1. When to RESET

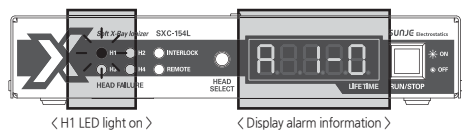
- Connect SXN-15S to controller.
- In the case that alarm occurs(except for communication alarm) or TIMER LED which is in the rear side of SXN-15S is on.



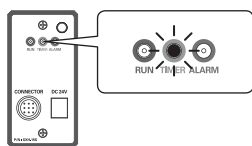
2. Check Disfunctional Head

- Alarm : Red light will be on the disfunctional head and alarm information will be shown on the LCD.

EX) H/V Alarm occurs from Head 1



- Over Time : TIMER LED of SXN-15S rear side is turned off.



3. Tube Replacement

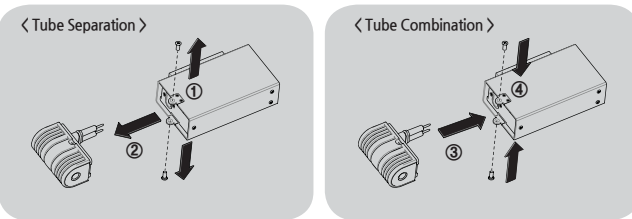
WARNING

- This device uses the high level of voltage. When operating maintenance, please power off and unplug the device. Otherwise, there might be in case of electric shock or fire damage.

CAUTION

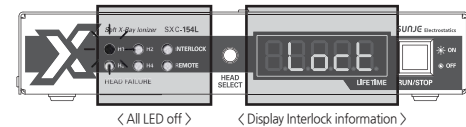
- When tube operates, heat is generated. Product is hot right after operation, so be careful not to touch it. There is a risk of burn.
- Be sure not to cause accident by falling or missing a bolt when you change the tube module.
- A H/V connector of tube module is protruded. After unscrewing, pull the unit horizontally up. Please be careful when replacing H/V connector.
- After replacement, check if tube and head body are connected correctly. Unless they are connected properly, ground could be unstable.
- When replacing tube, do not touch beryllium window of the unit. In case you touch it, please wash it in flowing water.

- Unscrew the Tube Fixing Bolts**
Unscrew the tube fixing bolts with a screwdriver.(the upper and lower sides, 2 positions)
- Separating Tube**
After unscrewing, pull the unit horizontally up. Discard the old tube.
- Replacing New Tube**
Repeat the previous steps backward to assemble.
- Screw the Tube Fixing Bolts**
Screw the tube fixing bolts with a screwdriver after checking whether the new tube is properly positioned.



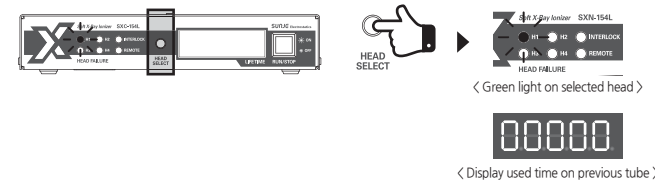
4. Interlock Off

Make sure that Interlock LED of controller is in off condition.

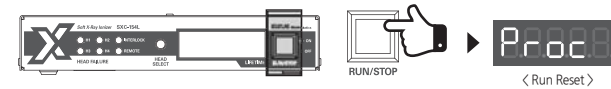


5. Run Reset

- Press Head Select button while power applies to controller, and then select the Head you want to reset.



- Press Run/Stop button for 5 sec.



6. Reset complete

Wait for 5 seconds after reset, reSet appears on LCD. If it is failed Error appears on LCD.

※ After finishing reset, turn the power of controller off/on. Reset function will work properly if alarm information is off. (Reset used time, alarm condition)

※ If error appears on LCD due to reset failure, turn controller off/on again and start from the first stage of reset.



7 Problem solving

► Emergency

If Interlock is open when running

- Symptoms : Other leds will be off and run/stop led will blink. (every 0.2sec)
The "Lock" will blink on controller display.
- Solution : Power(AC) off. The operating termination cannot be done unless the ac power is off.

► If the head unit doesn't operate properly

Article	Cause
Interlock Open	When #14 & #15 are open in the back of interface.
Remote-off Close	When #12 & #13 are close in the back of interface.
Emergency	If interlock is open when running.

► LED Check

Once the power is applied, all the LEDs will be turned on for testing whether to check the they are failing(e.g. All LEDs consecutively turns on every 0.5sec) during operation.

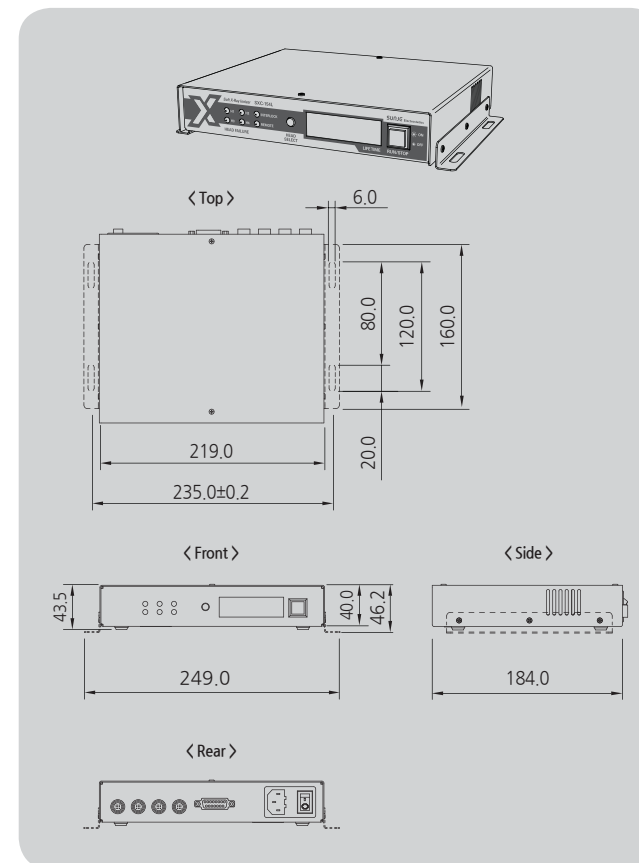
Light sequences	Run / Stop → Interlock → Remote → H1 (Red → Green) → H2 (Red → Green) → H3 (Red → Green) → H4 (Red → Green)
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※ This procedure will work only once when the power is on.

► Checklist before called

Problem	Identifying Problem	Solution
Not Operating	Is your power cable still plugged in?	Please re-plug the power cable And then turn the device on again.
	Was the proper voltage level applied For this set-up?	Please use the proper level of power Input for the device. (AC 100~240v, 50/60hz)
	Is the switch off at back Of the controller?	Turn on the power switch.
	Is a fuse broken?	Replace the proper fuse immediately.
	Is remote off?	Clear the remote off corresponding To 'remote setup' manual.
	Is interlock off?	Clear the remote off corresponding To 'remote setup' manual.
No Signal	Have you followed the proper procedure For input/output signal cable(s)	Place interlock on corresponding to 'Interlock setup' manual.
Decreased Performance	Can't possibly ground the device?	Please refer to 'installation & connection' or (proper) grounding the device.
	Any damages or cut on the cables?	You need to replace the cables if it gets cut or damaged.
Head Unit Not Working (When Pressing Run Button On The Controller)	Properly control interlock on Function on your machine?	Clear the remote off on your machine.

8 Dimensions



9 Specification

Parameter	Description / Value	Remarks
Input Power	AC100~240V, 50/60Hz	
Power Consumption	88W	with Head
Current Consumption	400mA	AC 220V
Fuse	250V, 3A, 5X20 Glass Type Fuse	
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH	
Weight	1.27kg	
Dimensions	Please Refer to Dimension Drawing	
Alarm	Head Fail	
Warning	Life Time Over	
Interlock	Interlock On/Off Control	
Remote	Remote On/Off Control	
Interface Output	Power State, Interface State,	
	Run State, Alarm State	
Warranty	1 Year	

※ The appearance and specification of the product may be changed without prior notice for the improvement of the product.

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