

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

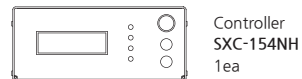
- Do not fabricate or do maintenance by yourself. Malfunction, Electric shock, and fire danger are considered. Contact us directly if you need the item to be repaired.
- Do not let the water touch the product. It may cause electric shock or fire due to malfunction.
- When you check or maintain the product, 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.
- 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 output 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(Electrostatic elimination). Malfunction or danger of accident may occur.

2 Check the package contents

- Product compositions**
The package includes the following products composition.

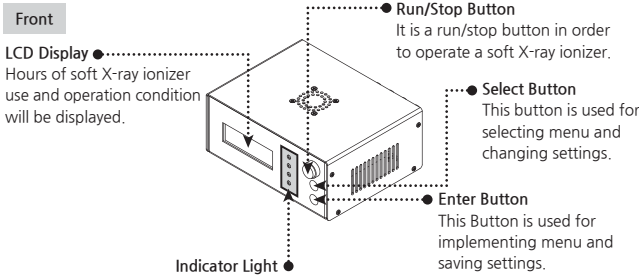


- Output Cable** SOC-XN-6-001 10m / 1ea
- Power Cable** SPC-MT-1-001 AC 100V, 50/60Hz, 1.8m / 1ea
- Power Cable** SPC-MT-2-001 AC 220V, 50/60Hz, 1.8m / 1ea
- D-Sub Cable** SDC-SN-4-001 25Pin / 5m / 1ea

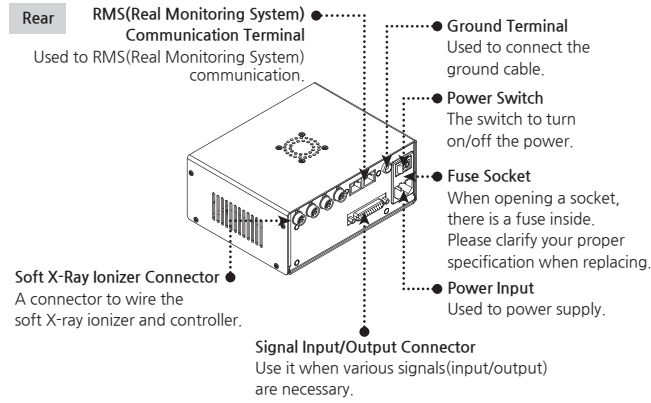
- Option**
If you require extra functions with the basic accessories we provided, you need to purchase optional items in below for further assistant.

- Ground Cable** SGC-MT-5-001 2.5m/ Banana Plug-Ø3[mm]
- UTP Cable** SUC-B3-1-001 5m
- RMS Controller** RMSU

3 Nomenclatures of parts



- POWER** : Power Indicator
Blue LED will be turned on when the controller is powered on.
- INTERLOCK** : Safety(Interlock) Indicator
For user's safety purpose, green LED will be turned on when interlock is safely contacted.
- OVERTIME** : Tube Replacement Alarm Indicator
Orange LED will be turned on when the lifetime of X-ray tube is exceeded.
- ALARM** : Malfunction Indicator
When false operation, red LED will be turned on.

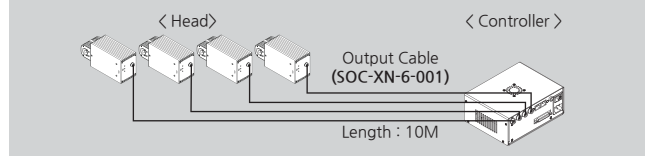


4 Installation and connection

How to connect

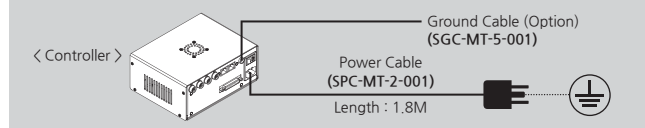
Connecting the soft X-ray ionizer

Please connect the soft X-ray ionizer and controller with supported "Output Cable".



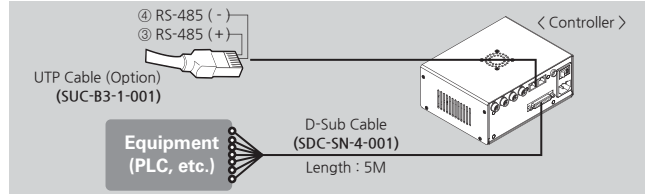
Connecting the Ground and Power

Using supported ground and power cables to connect the controller.



Connecting the Input & Output Signal Cable and Communication Cable

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



Input/Output Signal Cable Specifications (D-Sub Cable)

Division	No.	Pin Name	Labeling	Color	Function
INPUT	1	REMOTE ON	RMT-ON	Black	Remote On/Off (Electrical Contact)
	2	REMOTE OFF	RMT-OFF	White on Black	
	3	COMMON	RMT-COM	Brown	
	4	INTERLOCK	INT-ON	White on Brown	
	5	INTERLOCK	INT-OFF	Red	
OUTPUT	6	REMOTE(N.O)	RE-N.O	White on Red	Remote On/Off State Output
	7	REMOTE(COM)	RE-COM	Orange	
	8	REMOTE(N.C)	RE-N.C	Black on Orange	
	9	INTERLOCK(N.O)	IN-N.O	Yellow	Interlock On/Off State Output
	10	INTERLOCK(COM)	IN-COM	Black on Yellow	
	11	INTERLOCK(N.C)	IN-N.C	Green	
	12	NOT USED	-	-	-
	13	GROUND	-	Black	-
	14	POWER (N.O)	POW-N.O	White on Green	Power On/Off State Output
	15	POWER (COM)	POW-COM	Blue	
	16	POWER (N.C)	POW-N.C	White on Blue	
	17	Over Time (N.O)	HEAD-N.O	Violet	Over Time State Output
	18	Over Time (COM)	HEAD-COM	White on Violet	
	19	Over Time (N.C)	HEAD-N.C	Gray	
	20	ALARM (N.O)	AL-N.O	Black on Gray	Alarm(Abnormal) State Output
	21	ALARM (COM)	AL-COM	White	
	22	ALARM (N.C)	AL-N.C	Black on White	
	23	NOT USED	-	-	-
RS 485	24	RS-485(+)	RS-485+	Pink	RS 485 Communication
	25	RS-485(-)	RS-485-	Sky Blue	

5 How to set

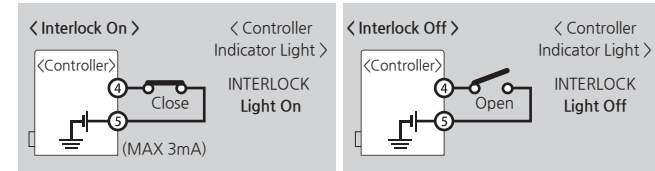
Set the interlock

Interlock On

If #4 and #5 of a D-Sub cable are connected, the interlock is on. When LED is on, it shows that the door is securely locked and totally shielded. "Interlock indicator (INTERLOCK)" light will be turned on in the front of the controller.

Interlock Off

If #4 and #5 of a D-Sub cable are disconnected, the interlock is off. When LED is on, it shows that the door is securely unlocked and not shielded well. "Interlock indicator (INTERLOCK)" light will be turned off in the front of the controller.



Article	Interlock On	Interlock Off
D-Sub Cable No.	4 - 5 Close	4 - 5 Open
State	The shield door is closed	The shield door is open
Meaning	Normal operation standby	Abnormal operation standby

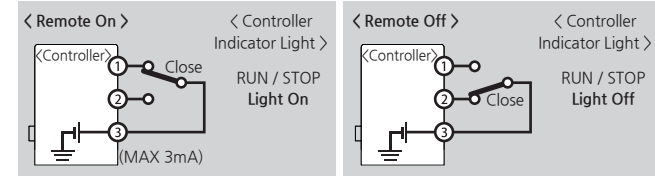
Set the remote

Remote On

Under interlock ON condition, Remote is set. Remote ON means that ion generates as Soft X-ray ionizer is working. If #1 and #3 of a D-Sub cable are connected, the remote is on.

Remote Off

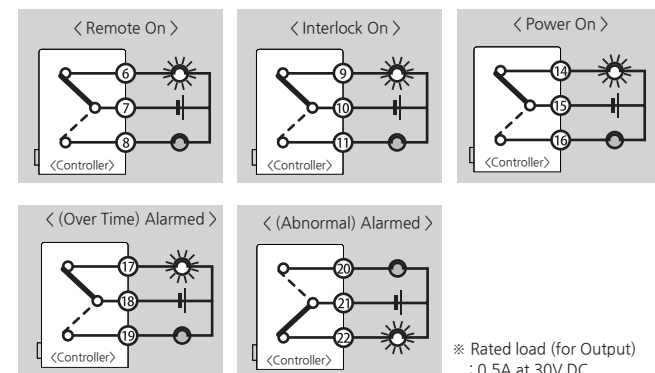
Under interlock ON condition, Remote is set. Remote OFF indicates that the Soft X-ray ionizer is not operating. If #2 and #3 of a D-Sub cable are connected, the remote is off. ※ The Run/Stop button is available when you don't use remote. ※ If the interlock is in off, the Soft X-ray ionizer will not operate even though the remote is on.



Article	Remote On	Remote Off
D-Sub Cable No.	1-3 Close	2-3 Close
State	Soft X-ray ionizer starts operating	Soft X-ray ionizer stops operating
Meaning	Ion starts forming	Ion stops forming

Output status signal

category	Remote Status Output	Interlock Status Output	Power Status Output	Over Time Alarm Status Output	Alarm(Abnormal) Status Output
D-sub Cable No.	6-7 Close	9-10 Close	14-15 Close	17-18 Close	21-22 Close
Status	Remote On	Interlock On	Power On	(Over Time) Alarmed	(Abnormal) Alarmed
Meaning	Ion forming	Normal Operation Standby	Power applied	Allowable tube lifetime elapsed.	Soft X-ray Ionizer Malfunction
Controller Indicator	Run/Stop Indicator On	Interlock Indicator On	Power Indicator On	Tube Replacement Alarm Indicator On	Malfunction Indicator On
	RUN / STOP	INTERLOCK	POWER	OVERTIME	ALARM

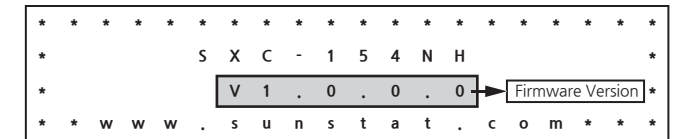


※ Rated load (for Output) : 0.5A at 30V DC

6 SXC-154NH operations

When it powers on

After displys for 2 seconds, it switch to the main screen.



The main screen

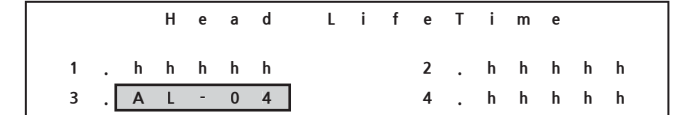
Normal condition



- Display the using time of connected Head.
- It shows "----" on display when the Head doesn't connected.

When the alarm occurred

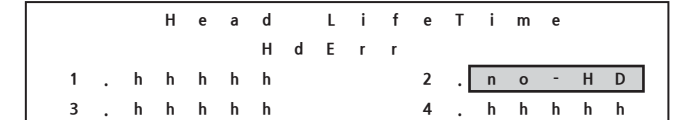
ex) When the H/V alarm occurred in no.3 Head



- During operation, display alarm information if alarm occurred
→ It shows alarm information and usage time of the Head that alarm occurred every 5 seconds alternately.
- Alarm information meaning
→ H/V Alarm : "AL-04"
→ Communication Alarm : "AL-02"

Error of the number of connected Head

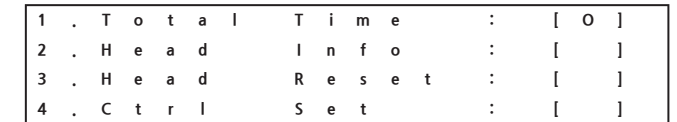
ex) When the Head #2 is not connected



- The alarm appears when the number of connected Head is differ from number of setting Head
→ It shows "no-HD" if the Head is not connected.
- The alarm will not appear if the number of connecting Head is not set-up

Menu

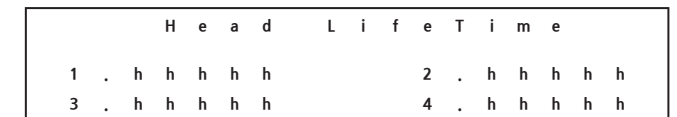
Press the enter button to switch to the menu screen.



- Selecting Menu**
- You can select a menu sequentially via pushing the select button.
- Run the Menu**
- You can run the menu via pushing the enter button.

1. Total Time

Indicating each Head usage time



- It shows Head usage time and alarm information.
※ Refer to operational method on page 04 ▶ Main screen.

2. Head Information

Indicating Head information : It is possible to check Head condition. (Usage time, Alarm, Overtime)

* H e a d 0 1 *	
T i m e	: h h h h h
A l a r m	: O f f
O v e r T i m e	: O f f

- *Head01***
 - You can change a Head number sequentially via pushing the select button.
- Time condition**
 - It indicates Head usage time.
- Alarm condition**
 - 1) AL-04 : H/V Alarm 2) AL-02 : Internal system error
 - 3) no-HD : Number of connected Head error
- Overtime condition**
 - 1) On : It means that replacement cycle is come.
 - 2) Off : It means that the Head is still available.

3. Head Reset

Checking the head reset information.

1) Normal conditions

H e a d	1 . h h h h h	2 . h h h h h
0 1	3 . h h h h h	4 . h h h h h
	5 . - - - - -	6 . - - - - -
	7 . - - - - -	8 . - - - - -

- You can run the head reset in interlock off condition.
- It shows each head's reset information. (Up to 8ea)
- It indicates informations as the number of time reset.
- ex) If you run time reset 3 times, then you can see the information from no.1 to no.3. No.4 shows current head's usage time. From no.5, it shows *-----*.
- If you run time reset over 8 times, then 9th information will be indicated in no.8.
- You can check each head's reset information via pushing the select button sequentially.

2) When the Alarm or Overtime occurred

H e a d	1 . h h h h h	2 . h h h h h
0 1	3 . h h h h h	4 . A L - 0 4
	5 . - - - - -	6 . - - - - -
R e s e t	7 . - - - - -	8 . - - - - -

- The head that has alarm occurred or overtime used shows status information instead of the current time.
- * AL-04 : H/V abnormal / Over : Overtime (It doesn't indicates internal error.)
- It is possible to reset in the head that has alarm, overtime problems.
- * Reset sign on the displ in the lower left will blink.

3) How to Tube Reset

CAUTION

- * When head operates, heat is generated. Product is hot right after operation, so be careful not to touch it. There is a risk of burn.
- * After replacement, check if head and Soft X-Ray Ionizer body are connected correctly. Unless they are connected properly, ground could be unstable.
- * Do not unscrew any bolts other than fixing bolts. If unscrewed, it can occur fire, electric shock, and breakages.

① Checking the head reset information

H e a d	1 . h h h h h	2 . h h h h h
0 1	3 . h h h h h	4 . A L - 0 4
	5 . - - - - -	6 . - - - - -
R e s e t	7 . - - - - -	8 . - - - - -

- It is possible to reset in the head that has alarm, overtime problems.
- Select the head that need reset in Interlock off condition.

② For head reset execution

H e a d	1 . h h h h h	2 . h h h h h
0 1	3 . h h h h h	4 . P r o c
	5 . - - - - -	6 . - - - - -
R e s e t	7 . - - - - -	8 . - - - - -

- Execute the head reset pushing Run/Stop button for more than 5 seconds.
- After execute head reset, wait about 5 seconds.

③ - 1 When head reset succeed

H e a d	1 . h h h h h	2 . h h h h h
0 1	3 . h h h h h	4 . R e s e t
	5 . - - - - -	6 . - - - - -
R e s e t	7 . - - - - -	8 . - - - - -

- When head reset succeed, controller will be stop.
- Controller will be operated normally after turn off and turn on the switch at the rear of the controller sequentially.

③ - 2 When head reset failed

H e a d	1 . h h h h h	2 . h h h h h
0 1	3 . h h h h h	4 . E r r o r
	5 . - - - - -	6 . - - - - -
R e s e t	7 . - - - - -	8 . - - - - -

- When head reset failed, controller will be stop.
- Turn off and turn on the switch at the rear of the controller sequentially, and try again after checking the head reset method.

4. Ctrl Set (Controller Setting)

RMS(Real Monitoring System) for communication Address Setting and setting of the number of connected head.

A d d r e s s	: - -
C t r l T y p e	: - -
H e a d N u m b e r	: - -
I / F O v e r t i m e	: - -
I / F A l a r m	: - -

1. Set the address value

- You can change address value sequentially via pushing the Select button. (1~16)

2. Set the Controller Type

- Available to change the controller type with Select button (1~4)

3. Set the Head Number

- 0 : No alarm when power on even the number of Head set-up and connected Head is not matched
- 1~4 : When power on, It will alarm if the number of Head set-up and connected Head is not matched

4. Overtime I/F setting

- Press Select button and it can be changed.

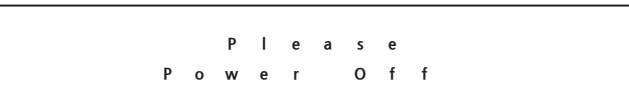
- 1) ON : Use as Overtime Interface 2) OFF : Use as Alarm Interface

5. Alarm I/F setting

- 1) ON : Interface alarm indicates when Soft X-Ray Ionizer stops.
- 2) OFF : Interface alarm does not indicate when Soft X-Ray Ionizer stops.

- * You can run the controller setting in Interlock off condition.
- * When you press Enter button after setting, next setting change is possible.
- * It blinks at interval on a second while you are setting on.

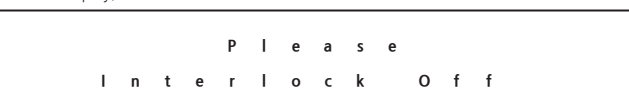
After all setting is done, the screen below appears and changed setting is saved at the same time.



- It operates with changed setting figure when you turn the switch on again.
- If there is no change on setting, it does not show Power off, but moves to menu screen.

▶ Interlock Off

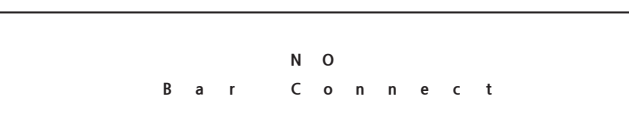
Head reset, Controller setting can be run in Interlock off condition. If you try to head reset, Controller setting in Interlock On condition, you can see the screen in the below on the display.



- * How to cancel : To switch to the menu screen, wait more than 5 seconds or pressing the enter button.

▶ Bar Connect

The screen in the below indicated, but that Soft X-ray ionizer is not connected when run the head reset.



- * How to cancel : To switch to the menu screen, wait more than 5 seconds or pressing the enter button.

7 Problem solving

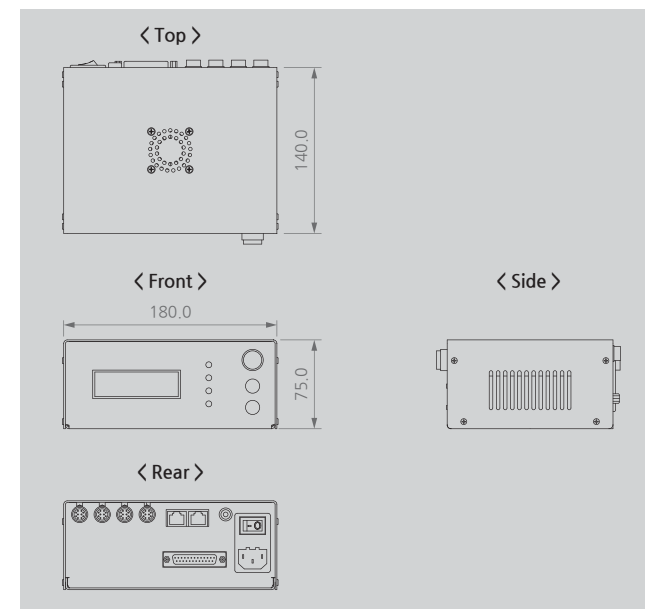
▶ Checklist before called

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 there head replacement LED on the device?	Purchase and replace the head unit (replaceable).
	Is remote Off?	Clear the remote Off corresponding to 'Remote Setup' manual.
Device might operate abnormally.	Is the controller set correctly to the connected model?	Set the proper number of head referring to 'Menu - 4. Ctrl Set' list in SXC-154NH manual.
	Have you followed the proper procedure for Input/output signal cable(s)?	Check whether the cable connection is properly done.
No Signal	Can't possibly ground the device?	Please refer to 'Installation & Connection' for (proper) grounding the device.
	Any damages or cut on the cables?	You need to replace the cables if it gets cut or damaged.
Device isn't working (when pressing Run button on the controller)	Is the remote Off control on your machine?	Clear the Remote Off on your machine.
Error code displayed on the Controller LCD panel	See from manual for [Error code Verification].	

▶ Error Code Verification

Error Code	Status	Solution
AL-02	Internal system error of a Soft X-ray ionizer	Please contact us if the unit doesn't work properly. Within the warranty period, the expected charges will be free on your side.
AL-04	Ionization level of the Soft X-ray ionizer is lower than the minimum current	Replace the head of the Soft X-ray ionizer. Contact us immediately.
HdErr	Disconnected or damaged cable occur the number of Head is not matching between connected and set-up	Check the connecting status of Head Cable. If Head Cable is damaged, replace the Cable. Check the number of head is correct through operation mode setting.

8 Dimensions



9 Specification

Parameter	Description / Value
Input Power	AC 100~240V, 50/60Hz
Power Consumption	Max. 100W
Operation Circumstance	0°C ~ +40°C(32°F ~ 104°F), 35% ~ 85% RH
Alarm Function	H/V Abnormal, Communication Error
Interface	(Run, Alarm, Power, Over Time, Remote, Interlock) Remote On/Off, Interlock On/Off, Output State
Controller Fuse	250V, 3A, 5X20 Glass Type Fuse
Weight	1.05kg
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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