

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

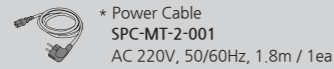
- Do not disconnect the output cable with power applied. There is a possibility of electric shock or malfunction.
- Connect wires referring to the product manual. Wrong connection can cause failures.
- For your proper cable connection, take a look at the manual "Installation & Connection" for references. 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.



Controller SXC-104N(450) 1ea



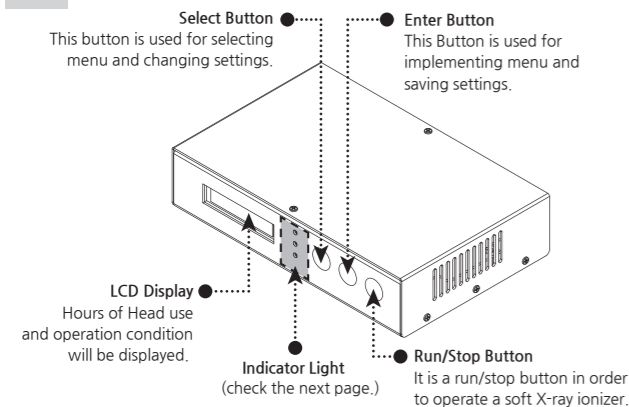
- Option**
If you require extra functions with the basic accessories we provided, you need to purchase optional items in below for further assistant.



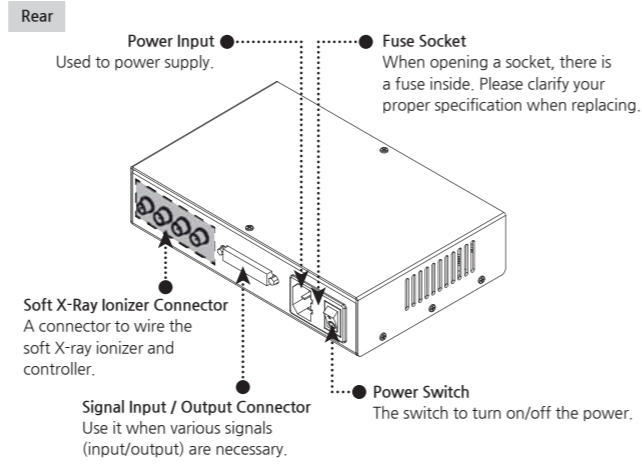
* RMS Controller RMSU

3 Nomenclatures of parts

Front



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

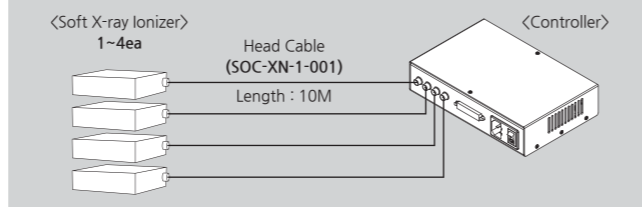


4 Installation and connection

How to connect

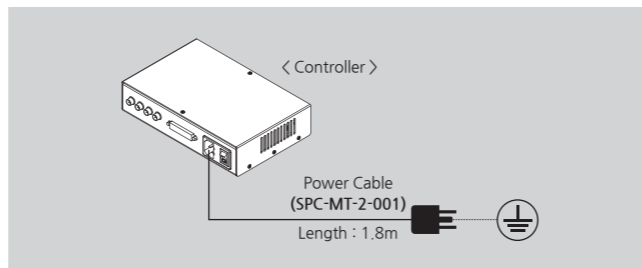
Connecting the soft X-ray ionizer

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



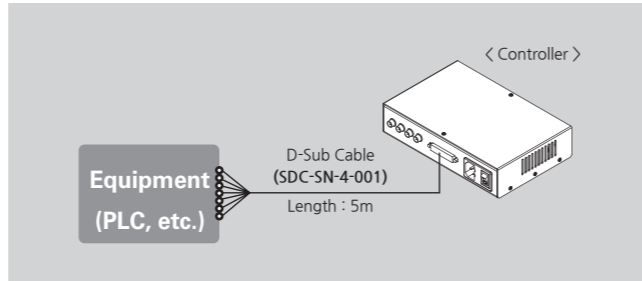
Connecting the Earth Ground and Power

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 Cable Specifications

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	Interlock On / Off (Electrical Contact)	
	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		
	RS 485	20	Alarm (N.O)	AL-N.O	Black on Gray	Alarm(Head Fail) State Output
		21	Alarm (Com)	AL-COM	White	
		22	Alarm (N.C)	AL-N.C	Black on White	
	RS 485	24	Rs-485(+)	RS-485+	Pink	RS 485 Communication
25		Rs-485(-)	RS-485-	Sky Blue		
23		Not Used	-	-		

5 How to set

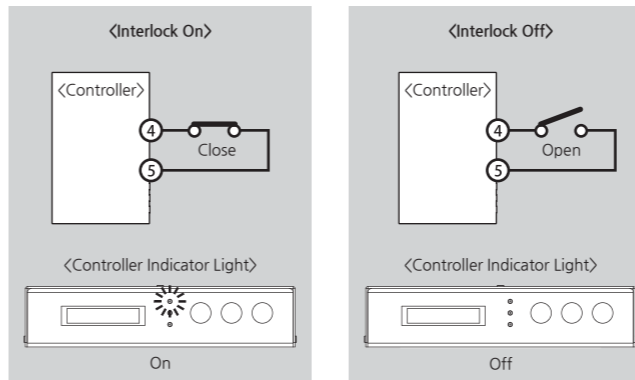
Set the interlock

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 blink 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 off, 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
Controller Indicator Light	INTERLOCK On	INTERLOCK Off

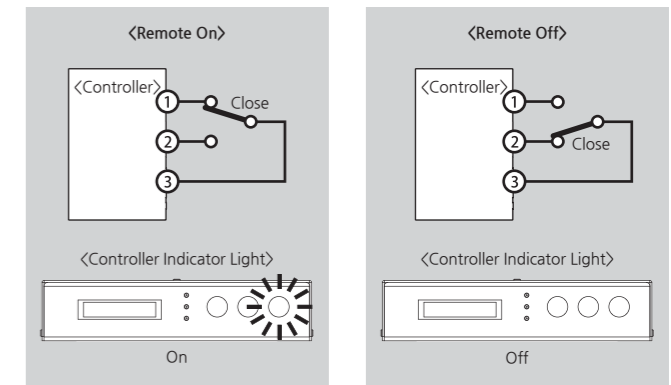
Set the remote

Remote On

Set-up interlock before setting remote. If the interlock is in off, the head unit will not operate even though the remote is on.

Remote Off

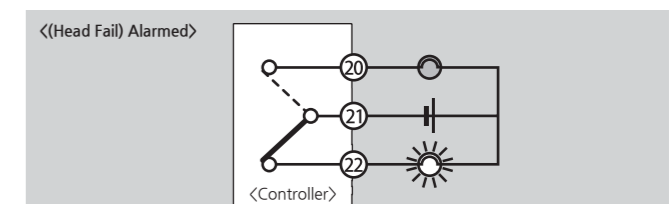
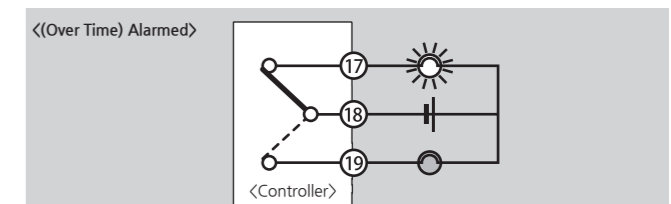
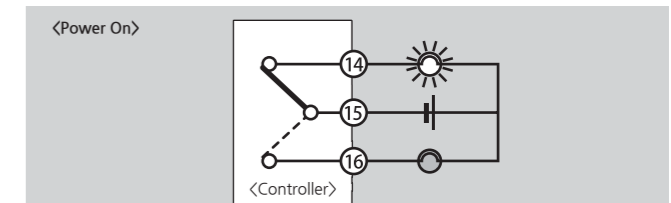
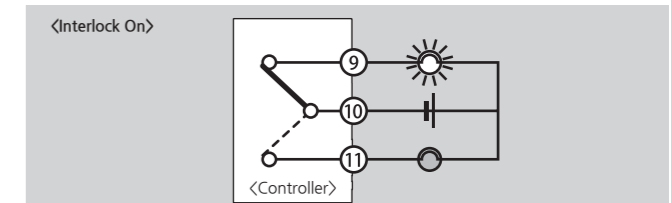
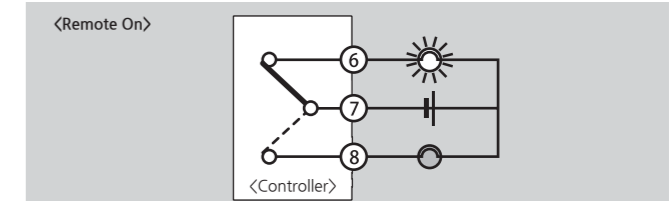
If #2 and #3 of a D-Sub cable are connected, the remote is off. Remote off indicates that the head unit is not operating. ※ Run/Stop button is available only when you are not using the remote.



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

Output status signal

category	Remote Status Output	Interlock Status Output	Power Status Output	(Over Time) Status Output	(Head Fail) 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	(Head Fail) Alarmed
Meaning	Ion Forming	Normal Operation Standby	Power applied	Head Unit: 7,500 Hrs of use	Head Unit Malfunction
Controller Indicator	Run/Stop Indicator On	Interlock Indicator On	-	Tube Replacement Alarm Indicator On	Malfunction Indicator On
	RUN	INTERLOCK	-	OVERTIME	ALARM

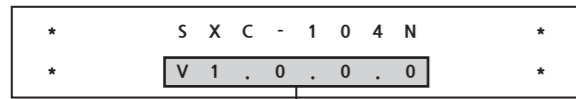


※ Rated load (for Output) : 0.5A at 30V DC

6 How to operate SXC-104N(450)

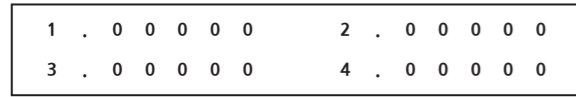
Operates when power is on

It switches to the default screen after displaying about 2 seconds.



Main Screen

Stopped State



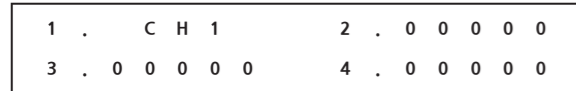
- The usage time of all heads is displayed.
- Head that is not connected is displayed as "-----".

Operating State



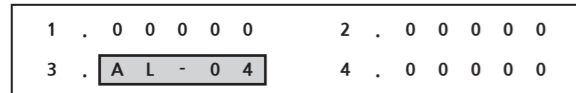
- The usage time of head and RUN phrase are displayed alternately every 5 seconds.
- If only Head 1 is being individually controlled, only Head 1 is displayed.

Tube Replacement Information



- This is a specification for SXH-10SD only.
- Tube replacement information and usage time are displayed every 5 seconds.
- Replacement information is displayed. (If tube replacement is required)
- Tube1 replacement information: "CH1" / Tube2 replacement information: "CH2"

Alarm Occurrence Status



- Alarm information and usage time of the head where the alarm is generated are displayed alternately at 5 second intervals.
- Display alarm information

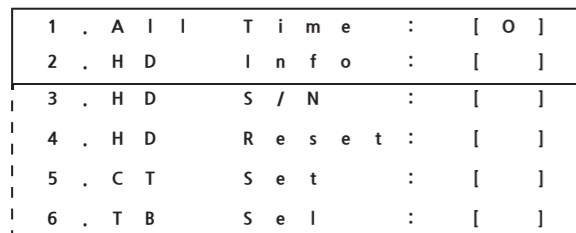
AL-02	AL-04	AL-05
Internal System Error	Poor high Voltage	Invalid current detection

Head position check function

1. If you pass the Select button in the main screen state, Head is sequentially selected. (The selected head blinks every 0.5 seconds.)
2. About 2 seconds later after selecting the head, the indicator of the head body blinks with white for 6 seconds

Menu

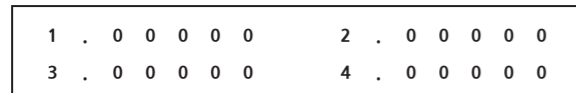
Press the Enter button to switch to the menu screen.



1. Menu selection
 - Select menu sequentially by pressing the Select button. (Scroll up)
2. Enter Menu
 - Press Enter to enter the selected menu.

1. Main Screen

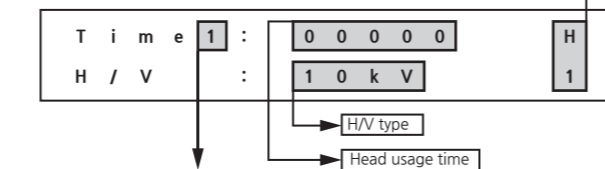
Display of total head usage time



- Displays usage time and alarm information for the entire head.
- ※ Refer to page 05 ▶Main Screen" operation method.

2. HD Info (Head Information)

Display Individual Head Information

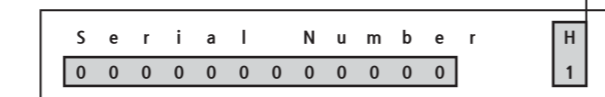


Dedicated specifications for SXH-10SD
 - Displays the usage time of each 2 tubes alternately at intervals of 5 seconds.
 - Detail Display Content
 Time1 : Tube 1 usage time
 Time2 : Tube 2 usage time
 Time : All connection head usage time except SXH-10SD

- Individual head usage time and H/V type information are displayed.
- Press the Select button to view the information for each head sequentially.

3. HD S/N (Head Serial Number)

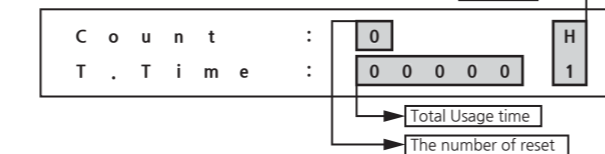
Serial Number Lookup Method for Individual Heads



- The Serial Number of the individual heads is displayed.
- Press the Select button to check the serial number of each head sequentially.

4. HD Reset (Head Reset)

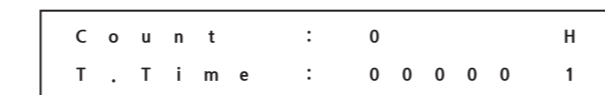
Display Reset information for individual heads



- The number of resets of each head and total usage time are displayed.
- It is displayed only when the connected head is a replaceable type, and in the case of an integrated type, the number of resets is displayed as "-" and the total usage time is displayed as "-----".
- You can check the reset information of each head one by one pressing the Select button.

■ Head Reset Method (Need to Reset after tube replacement)

① Check Head Reset condition



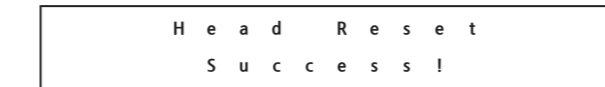
- It is possible to reset the Head that has been alarmed or used for overtime.
- In Interlock Off state, press the Select button to select the head you want to reset.

② How to enter Head Reset



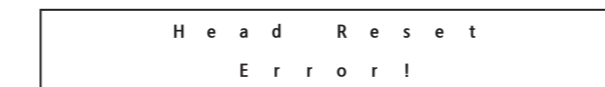
- Press the Run button for more than 5 seconds to enter Head reset.
- Please Wait at least 5 seconds after entering Head Reset.

③ - 1 Head reset successful



- If Head Reset is successful, controller operation stops.
- If you turn the power switch on the back of the controller off and on, it starts working normally.

③ - 2 Head Reset failed

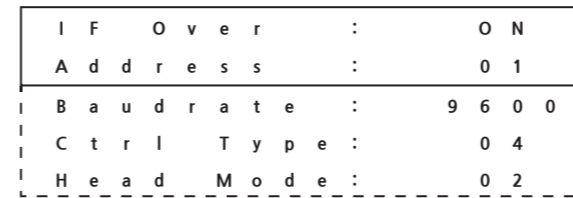


- If Head Reset fails, controller operation stops.
- After turning the power switch on the back of the controller off and on, check the Head Reset method and try again.

5. CT Set (Controller Setting)

Controller operation mode setting

- ※ Setting errors can cause malfunctions, so please read the details before making changes.



1. Overtime input/output signal setting

- Setting can be changed by pressing the Select button.
- On: Overtime output execution(default)/ OF : Alarm output execution.
- By pressing the Enter button, you can change the settings of the following items. (Even if the value is not changed, press the Enter button to go to the next item).

2. Address setting

- By pressing the Select button, you can change the Address values sequentially.(1~16)
- By pressing the Enter button, you can change the settings of the following items. (Even if the value is not changed, press the Enter button to go to the next item)

3. Baud Rate Setting

- By pressing the select button, you can change the Baud Rate value. (9600, 19200, 38400, 56000 sequentially changed)
- By pressing the Enter button, you can change the settings of the following items. (Even if the value is not changed, press the Enter button to go to the next item)

4. Type Setting

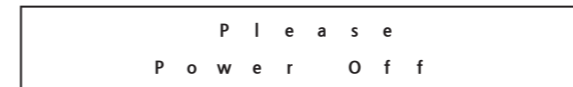
- By pressing the Select button, you can set the Type.
- 02: SXC-102N / 04: SXC-104N(Setting other values can cause malfunction)
- By pressing the Enter button, you can change the settings of the following items. (Even if the value is not changed, press the Enter button to go to the next item)

5. Head connection mode setting

- By pressing the Select button, you can set the Mode.
- 01: SXH-10SD / 02: SXH-15N (Setting other values can cause malfunction)
- After changing the setting value, press the Enter button to complete the setting.

※ The value being set blinks at 1 second intervals.

When all settings are completed, the following screen is appeared on the display window as soon as the changed setting are saved.



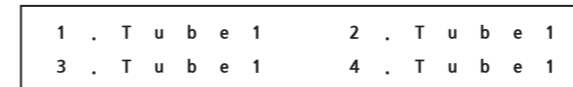
- If the power switch on the back of the controller is turned off and on, it operates with the changed set value.
- If there is no setting change, the menu screen will be appeared without displaying "Power Off".

6. Tube Select

It is possible to enter when the interlock is released.

It is Used when connecting SXH-10SD. Select the tube you want to operate between the two tubes.

▶ Select



- The Tube number currently being used is displayed.
- If the connected head is not SXH-10SD, "-----" is displayed.

How to set

- Press the Select button to select Tube1 or Tube2
- Press the Enter button to move to the next Head.
- After selecting up to the 4th Head, press the Enter button to change it.

※ The value that can be changed in the current setting blinks every 1 second. (No blinking when changing the value)

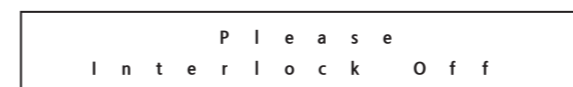
▶ Checking whether to enter



- It will be displayed if there is no SXH-10SD connected.
- Press the Enter button or enter the menu page after 5 seconds.

▶ Interlock Off

Head reset, Controller setting, and Tube Select can be selected only in Interlock off state. If you try Head reset, Controller Setting, Tube select, the following screen is displayed on the display window.



- ※ How to Cancel : Wait for more than 5 seconds or Press the Enter button to go Menu screen.

7 Problem solving

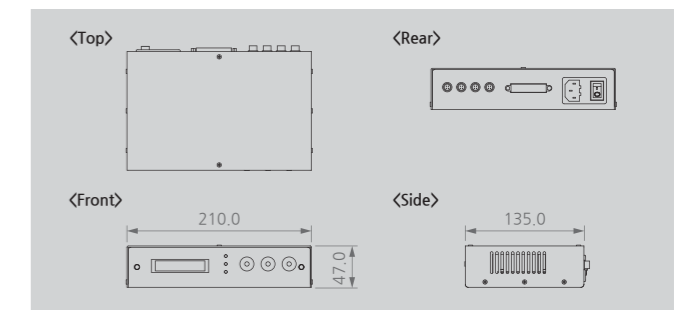
▶ Checklist before called

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 any Alarm LED on the head unit of device?	Purchase and replace the tube unit(replaceable).
No Signal	Is remote off?	Clear the remote off corresponding to "Remote Setup" manual.
	Is Interlock off?	Place Interlock on corresponding to "Interlock setup" manual.
Decreased Performance	Have you followed the proper procedure for Input/output signal cable(s)?	Check whether the cable connection is properly done.
	Can't possibly ground the device?	Please refer to "Installation & Connection" for(proper) grounding the device.
Head unit not working (when pressing Run button on the controller)	Any damages or cut on the cables?	You need to replace the cables if it gets cut or damaged.
	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	Check the status of head cable connection. Replace the cable if head cable gets cut or damaged.
AL-04	Over High Voltage	Replace the power module of the head unit. Contact us immediately.
AL-05	Abnormal Current Detection	Replace the tube module of the head Unit. Contact us immediately.

8 Dimensions



9 Specification

Parameter	Description / Value
Ion Generation Method	Soft X-ray
Source	Soft X-ray Tube
Beam Angle	150°
Input Power	AC 100~240V, 50/60Hz
Power Consumption (with Head)	Max. 90W
Controller Fuse	250V, 3A, 5X20 Glass Type Fuse
Operation Circumstance	0°C ~ +50°C(32°F ~ 122°F), 35% ~ 85% RH
Weight	0.77kg
Alarm Function	Head Fail, Head Communication Error
Interface	(Run, Alarm, Power, Over Time, Remote, Interlock) Remote On/Off, Interlock On/Off, Output 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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