

Instruction Manual

SUNJE

SXN-05U

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.
- \* Please shield your installing circumstances first since the item releases the soft X-ray. Direct X-ray exposure is not recommended owing to cause health problem.
- \* It includes a beryllium window on the X-ray tube unit in order to release soft X-ray for ionization. This beryllium material can cause respiratory disorder only if the person gets exposed to forms of either beryllium powder or smoke. However, our device doesn't creat beryllium in neither of the mentioned forms. Please be careful not to break the device since there might be a slight chance that the device could partially degrade into the powder form, then it can cause harm defects. If the user touches the beryllium material on the device, clean oneself on the running water or rinse it off with soap directly.
- If the beryllium window gets dirty or damaged, call us directly for assistance.
- \* 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(Electrostatic elimination). Malfunction or danger of accident may occur.
- \* If you wish to discard the head unit of X-ray device, you need to report for disuse declaration to the institution(s) where they ask to. A proper declaration procedure is necessary in order to disuse X-ray device.
- \* Please contact to either Korea Institute of Nuclear Safety(KINS) or a safety supervisor of Sunje directly.

2 Check the package contents


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




- \* Head SXN-05U 1 ea




- \* Fixing Bolt SFB-XN-1-001 1/4"-20unc x 15L/ 1ea 1/4"-20unc x 8L/ 1ea M4 x 0.7Pitch x 10L/ 2ea




- \* Adapter SAD-MT-1-001 INPUT : AC100~240V, 50/60Hz OUTPUT : DC12V, 2A 1.6m / 1ea




- \* Output Cable SOC-XN-3-003 5m / 1ea



- \* Extension Power Cable SEC-MT-1-001 15m / 1ea



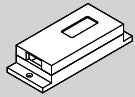
- \* Power Cable SPC-MT-1-001 AC 100V, 50/60Hz,1.8m / 1ea or



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

▶ Option

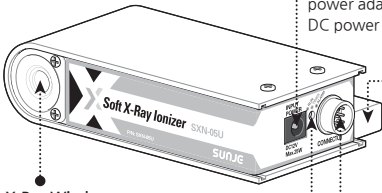
If you require extra functions with the basic accessories we provided, you need to purchase optional items in below for further assistant.



- \* Time Reader SXN-U Timer Reader / 1ea

3 Nomenclatures of parts

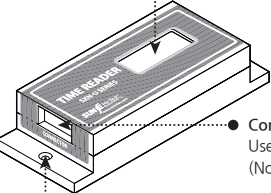
▶ SXN-05U



- **Soft X-Ray Window**  
The X-ray radiation will be released through this beryllium window from the head unit.
- **Power Connector(DC IN)**  
Used to power supply. SXN-05U runs by connected power adapter with DC power input.
- **Mounting Bracket**  
A bracket to fix the item on the facing target.
- **Input/Output Connector**  
Interconnection terminal for using functions of interlock, remote, indicator and power.
- **Indicator Light**

- **Green LED (RUN)** Operating indicator  
Green LED will be on when the item is in operating condition.
- **Orange LED Tube replacement (TIMER)** Alarm indicator  
Orange LED will be turned on when the lifetime of X-ray tube is exceeded.
- **Red LED (ALARM)** Malfunction Indicator  
When false operation, Red LED will be on.

▶ SXN-U Time Reader (Option)



- **Timer LCD**  
It displays the operation time of SXN-05U.
- **Connector**  
Used to connect the SXN-05U. (Non-Powered)
- **Holes for fixing equipment**  
2-Ø2.2-THRU Ø4.0X90°

4 Installation and connection

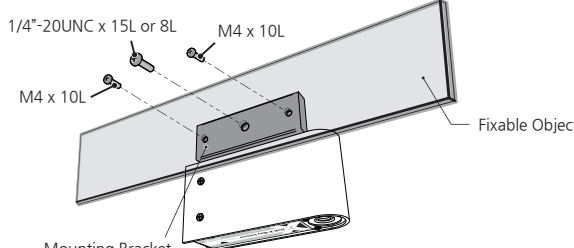
▶ Check the installation conditions head unit

Please check the installation condition whether it meets proper specification.

- Shielded room
- There must be no objects between the target area and X-ray device.
- No vibration on the fixed device.
- Be aware of any flammable or ignitable materials around the working area.
- Secure to have enough working space for quick maintenance of the device.

▶ Head unit fixing

Fix the target product on the fixed area where you install by using supported fixing bolt(s).



1/4"-20UNC x 15L or 8L M4 x 10L M4 x 10L

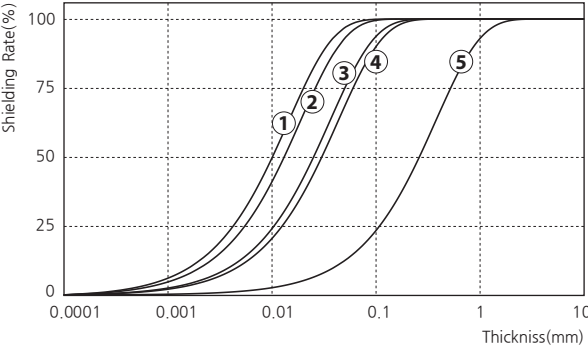
Mounting Bracket

Fixable Object

▶ Shielding methods

**Shielding Material Selection**

See the following graph for references.  
Select the ideal tickness and quality of shielding material.



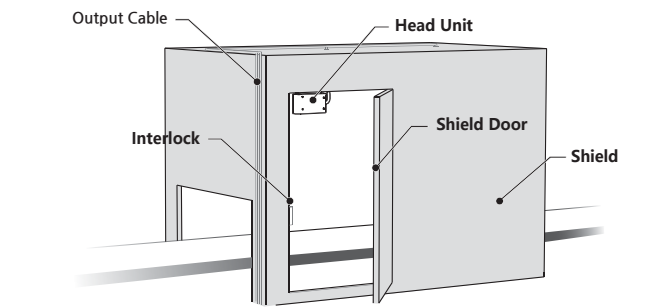
No.	Shield Material	Thickness [mm]
①	SUS	Over 0.2
②	Aluminium	Over 0.25
③	Glass	Over 0.5
④	PVC	Over 0.6
⑤	Acrylic	Over 5.0

⚠ WARNING

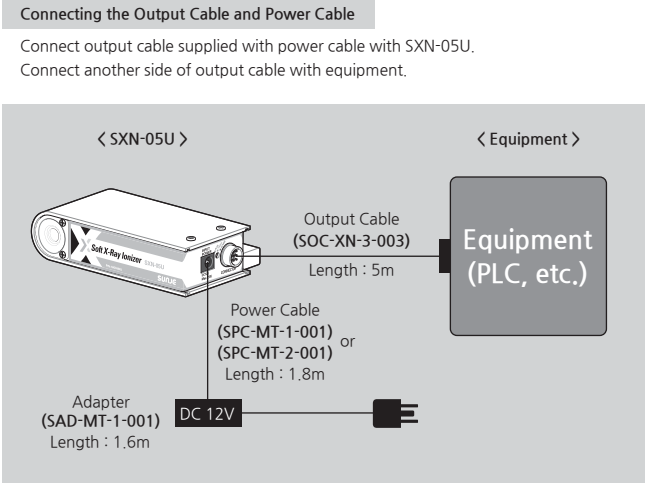
- \* Please shield the area where the customer is willing to install the soft X-ray device for safety issue.
- \* After shielding process, please connection to your own interlock system to operate the X-ray device On/Off when the door is opened/closed.

▶ Shield installation compositions

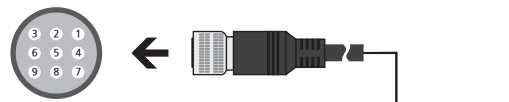
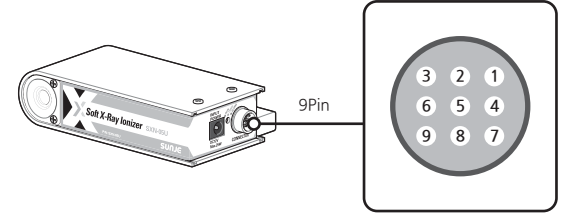
Please refer to the "Installation Compositions" for your references.  
Please keep your working environment of the leakage radiation level within the range of 1μSv/hr all the time.

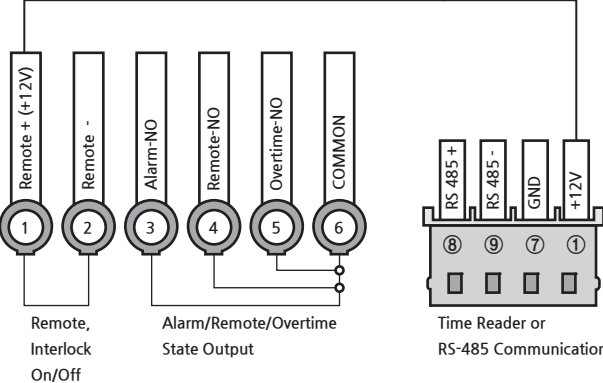


▶ How to connect



**Output Cable No.**

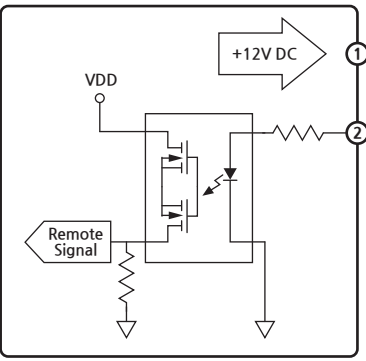




Remote + (+12V) Remote - Alarm-NO Remote-NO Overtime-NO COMMON

Remote, Interlock On/Off Alarm/Remote/Overtime State Output

Time Reader or RS-485 Communication



< Inside of SXN-05U >

⚠ CAUTION

- \* +12VDC come out through No.1(Remote+) and is applied to No.2(Remote-). Please be careful with not to have any contact with external circuit.

**Output Cable Specifications**

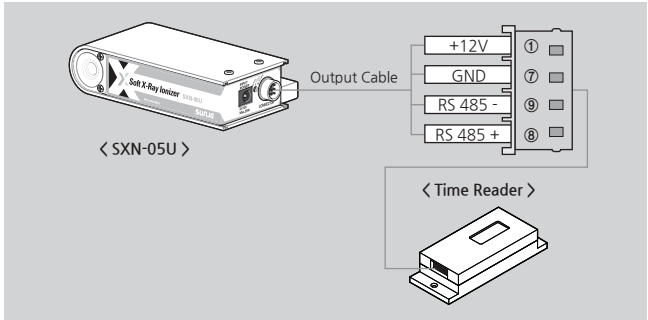
Signal	No.	Color	Pin Name	Function
Input	1	Yellow	Remote + (+12V)	The terminal is for On / Off function of the product. (Close: Ionizer On, Open: Ionizer Off) 1: 12V Out / 2: 12V In
	2	Black on Yellow	Remote -	
Output	3	Orange	Alarm-NO	When alarm occurs, it opens with common terminal.
	4	Pink	Remote-NO	When remote function works, it is closed.
	5	Black on Orange	Overtime-NO	Replacement cycle alarming function helps it to be closed with common terminal after 4,500 hours use.
	6	Gray	Common	It is common terminal for Alarm, Overtime, Remote State.
Time Reader / RS485	1	Black on Gray	+12V	An Input power terminal of Time Reader.
	7	Black on Pink	GND	-
	9	White	RS485 -	RS 485(-) communication terminal.
	8	Black on White	RS485 +	RS 485(+) communication terminal.

⚠ CAUTION

- \* As SXN-05U requires CD 12V, do not connect with any product using DC24V. There could be danger of malfunction, electric shock, and fire. (Be cautious when connecting Remote/Interlock)

Connecting to the SXN-U Time Reader (Option)

It enables you to check the hours of use outside the equipment connecting Time Reader sold seperately. Use output cable to connect SXN-05U with Time Reader.

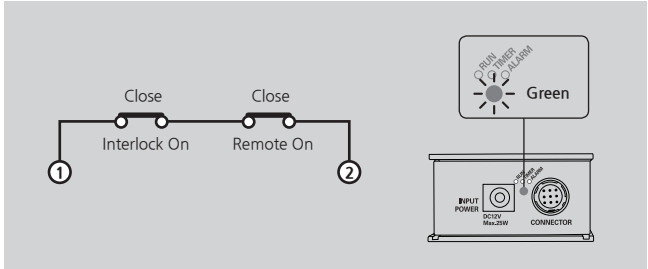


5 How to set

Set the Remote / Interlock

Remote / Interlock On

When the contact of output cable No.1 and No.2 is closed, it changes to remote / interlock on.  
It means that the door of shielding material is securely locked and ready to operate. Green LED(RUN) on the back of product is turned on under remote/interlock on.



Remote / Interlock Off

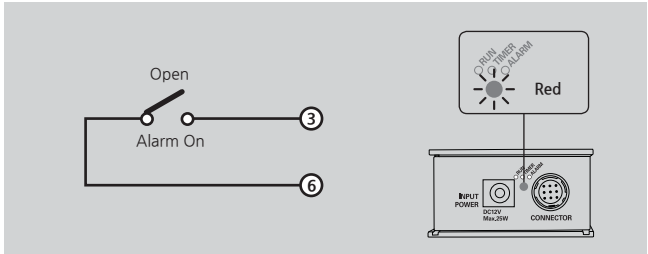
When the contact of output cable No.1 and No.2 is opened, it changes to remote / interlock off.  
It means that the door of shielding material is opened and the product doesn't operate. Under interlock off state, product doesn't work despite remote on.  
Green LED(RUN) on the back of product is turned off under remote/interlock off.

Signal	Product Operation State
	Off
	Off
	Off

Alarm state output

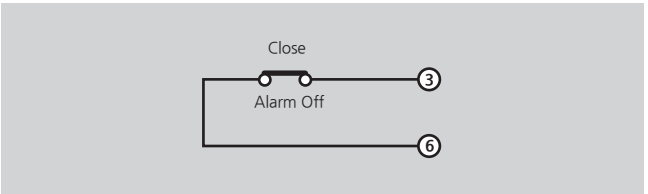
Alarm On

When the contact of output cable No.3 and No.4 is opened, it changes to alarm on. Under alarm on state, it instructs the malfunction of product as red LED(ALARM) on the back of product is turned on.



Alarm Off

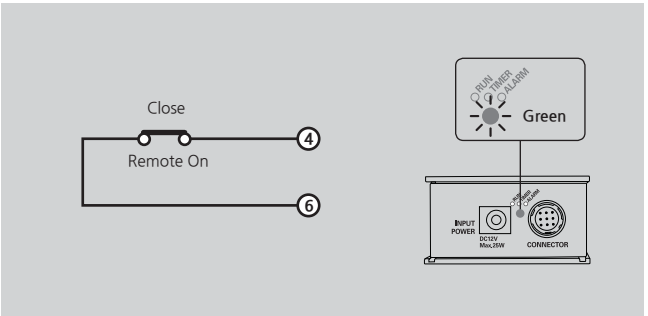
When the contact of output cable No.3 and No.4 is closed, it changes to alarm off. Under alarm off state, it indicates normal operation of product and red LED(ALARM) on the back of product is turned off.



Remote state output

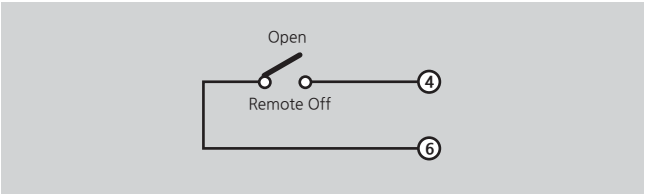
Remote On

When the contact of output cable No.4 and No.6 is closed, it changes to remote on. Under remote on state, it indicates normal operation of product and green LED(RUN) on the back of product is turned on.



Remote Off

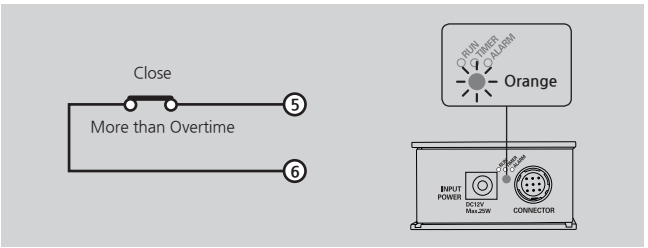
When the contact of output cable No.4 and No.6 is opened, it changes to remote off. Under remote off state, product doesn't work as green LED(RUN) on the back of product is turned off.



Overtime State Output

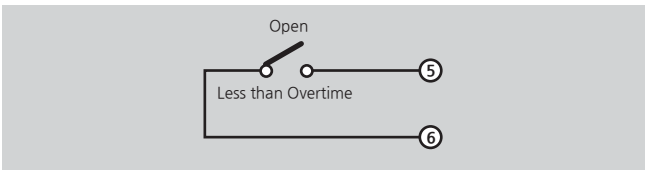
More than Overtime

When the usage time is exceeded, orange LED(TIMER) is turned on, and it means the replacement time.



Less than Overtime

When the usage time is within the limit, orange LED(TIMER) doesn't turned on, and it means does not replacement time.



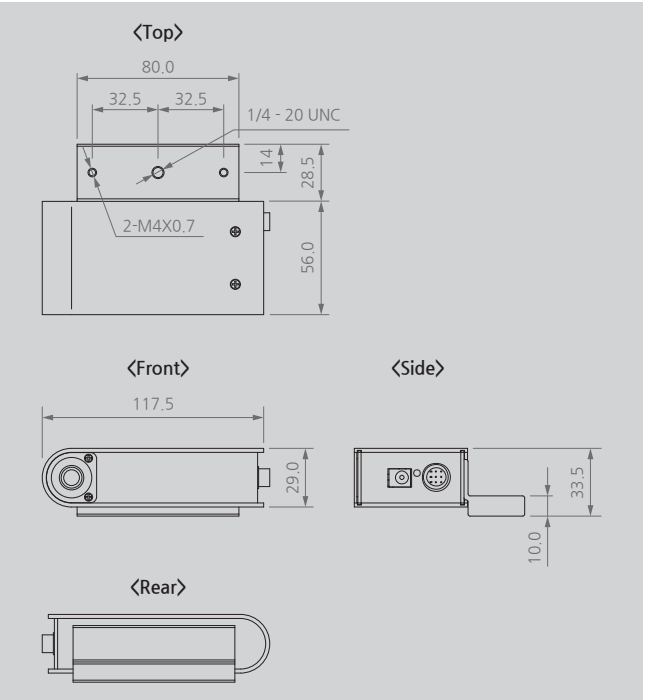
6 Problem solving

Checklist before called

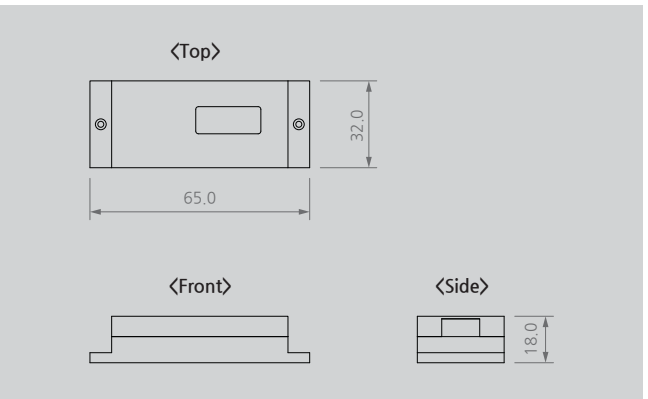
Problem	Identifying Problem	Solution
Not Operating	Is your power cable still plugged in?	Please re-plug the power cable and then turn the device on again.
	Was the proper voltage level applied for this set-up?	Please use the proper level of power input for the device. (AC 100~240V, 50/60Hz)
	Is remote off?	Clear the remote off corresponding to 'Remote Setup' manual.
	Is Interlock off?	Place interlock on corresponding to 'Interlock setup' manual.
No Signal	Have you followed the proper procedure for Input/output signal cable(s)?	Check whether the cable connection is properly done.
Decreased Performance	Any damages or cut on the cables?	You need to replace the cables if it gets cut or damaged.

7 Dimensions

SXN-05U



SXN-U Time Reader (Option)



8 Specification

Parameter	Description / Value
Ion Generation Method	Soft X-ray
Dimensions	Please Refer to Dimension Drawing
Source	Soft X-ray Tube
Tube Voltage	4.9kV
Tube Current	400uA
Cooling Method	Natural Air Cooling
Mounting Method	Bolt Mounting with Bracket
Power Consumption	8W
Current Consumption	Max. 36mA (AC 220V)
Operation Circumstance	0℃ ~ +50℃(32°F ~ 122°F), 35% ~ 85% RH
Weight	0.4Kg
Input Power	AC 100~240V, 50/60Hz(Adaptor Input) _DC 12V, 1A Adapter
Alarm	Head Fail
Warning	Life Time Over
Remote / Interlock	Remote / Interlock On/Off Control
Indicator	Alarm State, Over Time 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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