

Instruction Manual

SUNJE
SXN-05U
US **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 disassemble, modify, or repair the product arbitrarily. Doing so may cause malfunction, electric shock, or fire. Contact us directly if repair is required.
- * 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.
- * Mount the product firmly and securely to the target fixture. Loose mounting may cause abnormal discharge, product fall, or damage.
- * Always install and operate the product inside a fully shielded enclosure.
- * Direct exposure to soft X-rays is extremely dangerous and hazardous to human health.
- * 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, this device does not generate beryllium in either form during normal operation. Handle with extreme care to avoid damaging the window. If you touch the beryllium window, immediately wash the affected area thoroughly with soap under running water.
- * 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 explosion-proof.
- * 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 while power is 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 for the disposal of X-ray devices.
- * 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.



* Soft X-Ray Ionizer
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

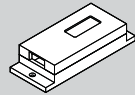
* Extension Power Cable
SEC-MT-1-001
10m / 1ea

* 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

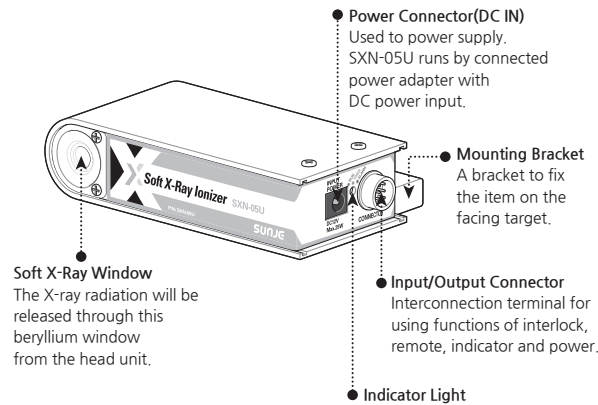
If you require extra functions with the basic accessories we provided, you need to purchase optional items in below for further assistant.



* Time Reader
SXN-U Timer Reader / 1ea

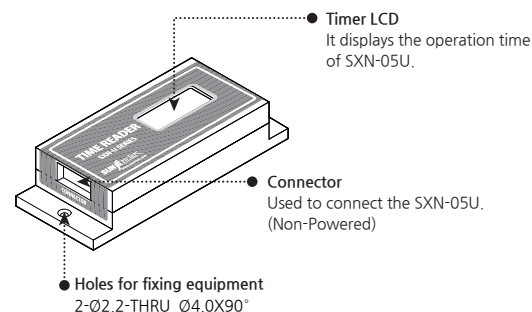
3 Nomenclatures of parts

SXN-05U



	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)



4 Installation and connection

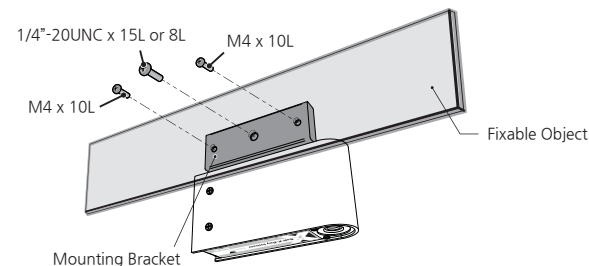
Check the installation conditions head unit

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

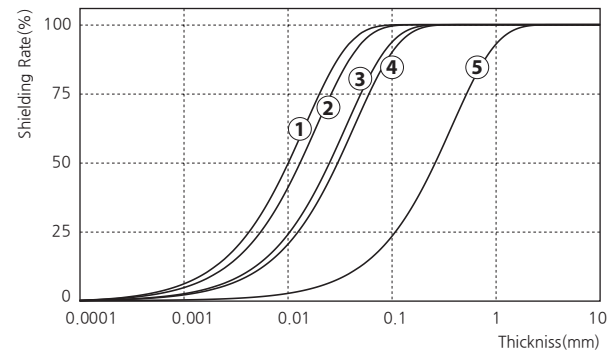
Fix the target product on the fixed area where you install by using supported fixing bolt(s).



Shielding methods

Shielding Material Selection

See the following graph for references.
Select the optimal thickness and material for shielding.



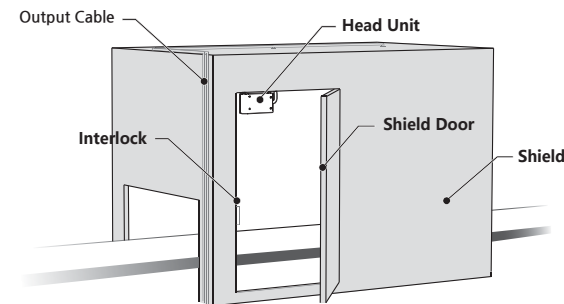
No.	Shield Material	Thickness [mm]
①	SUS	Over 0.2
②	Aluminium	Over 0.25
③	Glass	Over 0.5
④	PVC	Over 0.6
⑤	Acrylic	Over 5.0

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

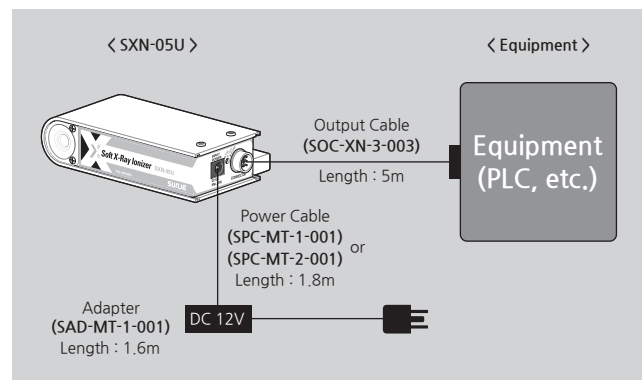
Please refer to the "Installation Compositions" for your references.
Please keep your working environment of the leakage radiation level within the range of 1µSv/hr all the time.



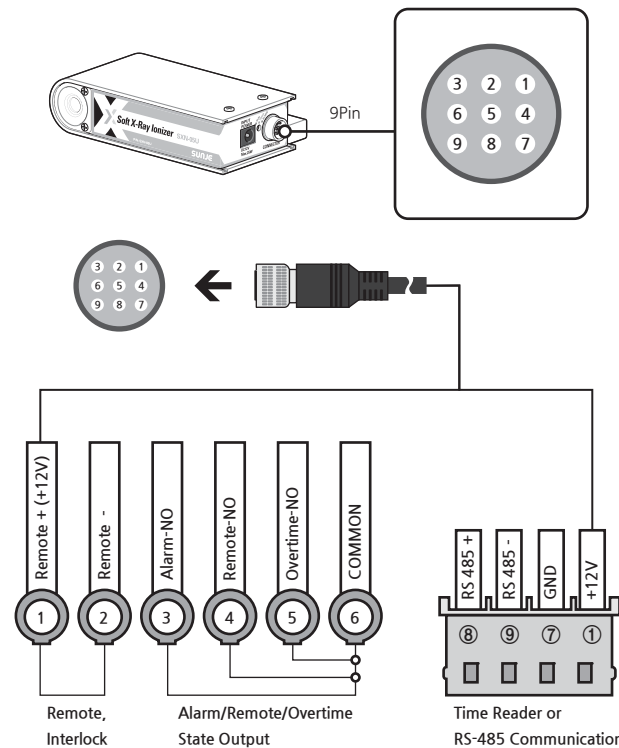
How to connect

Connecting the Output Cable and Power Cable

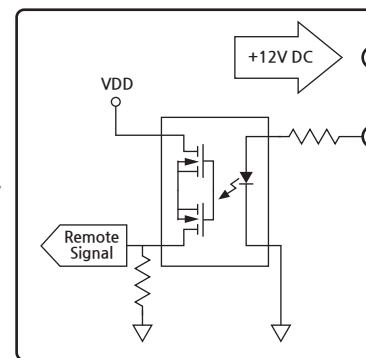
Connect output cable supplied with power cable with SXN-05U.
Connect another side of output cable with equipment.



Output Cable No.



< 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

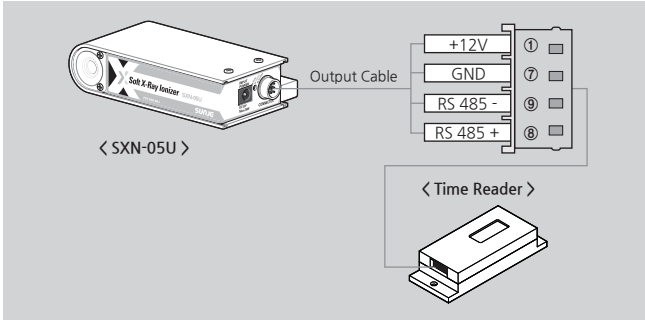
Signal	No.	Color	Pin Name	Function
Input	1	Yellow	Remote + (+12V)	The terminal is for On / Off function of the product. (Close: Ionizer On, Open: Ionizer Off) 1: 12V Out / 2: 12V In
	2	Black on Yellow	Remote -	
Output	3	Orange	Alarm-NO	When alarm occurs, it opens with common terminal.
	4	Pink	Remote-NO	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	Power output (+12V) supplied to the 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 DC 12V, do not connect with any product using DC 24V. 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 the Time Reader (sold separately). Use output cable to connect SXN-05U with Time Reader.

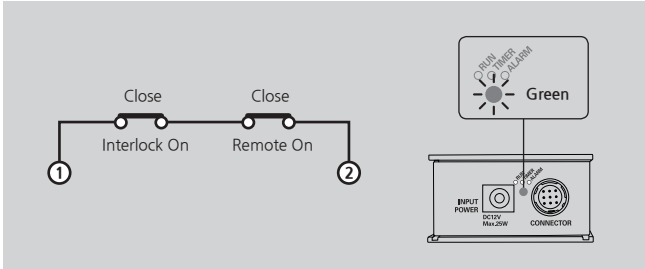


5 How to set

► 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

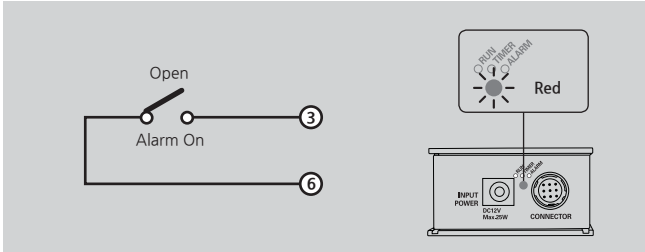
When the contact of output cable No.1 and No.2 is opened, it changes to remote / interlock off. It means that the door of shielding material is opened and the product doesn't operate. Under interlock off state, product doesn't work despite remote on. Green LED(RUN) on the back of product is turned off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

Signal	Product Operation State
	Off
	Off
	Off

► Alarm state output

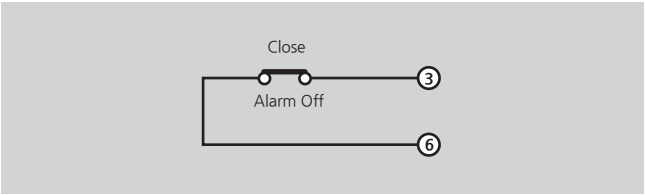
Alarm On

When the contact between Output Cable No.3 and No.6 is opened, it indicates 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

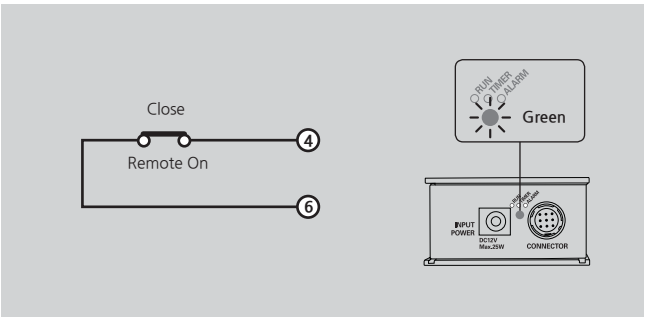
When the contact between Output Cable No.3 and No.6 is closed, it indicates Alarm Off. Under alarm off state, it indicates normal operation of product and red LED(ALARM) on the back of product is turned off.



► Run State Signal Output

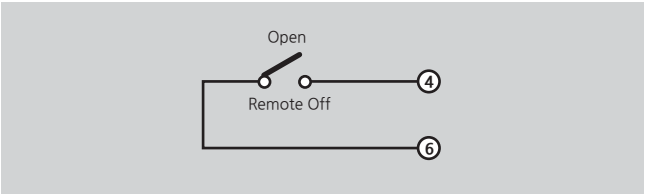
Run

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



Stop

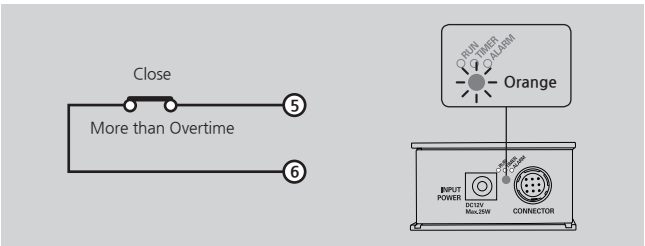
When the contact of output cable No.4 and No.6 is opened, it indicates Stop state. Under Stop state, product doesn't work as green LED(RUN) on the back of product is turned off.



► Overtime State Output

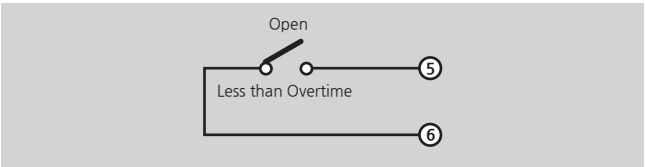
More than Overtime

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, the orange LED (TIMER) remains off, indicating that unit replacement is not required.



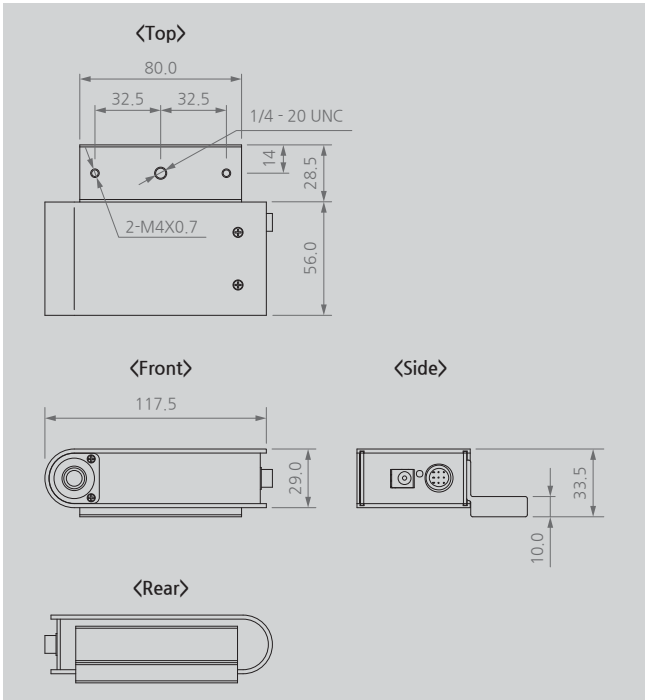
6 Problem solving

► Checklist before called

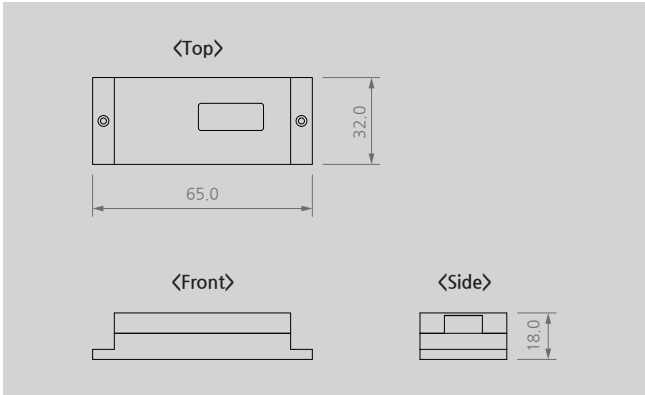
Problem	Identifying Problem	Solution
Not Operating	Is the power plug disconnected?	Plug in the power cord securely and restart the device.
	Is the input power out of specification?	Supply the rated power. (AC 100-240 V, DC 12 V)
	Is Remote in the Off state?	Deactivate Remote Off according to the "Remote / Interlock Setup" section.
	Is Interlock in the Off state?	Connect (close) the interlock by referring to the "Remote / Interlock Setup" section.
No Signal Output	Are the input/output signal lines wired in the wrong sequence?	Check and correct any wiring errors.
Decreased Performance	Is the surface of the ion irradiation window (beryllium window) contaminated?	Turn off the power and gently wipe the window surface with a clean swab moistened with ethanol.
	Has the accumulated tube operating time exceeded the limit? (Orange TIMER LED turns on)	The product service life has expired. Replace the unit with a new SXN-05U.

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	4.9 kV
Tube Current	400 μ A
Beam Angle	150°
Cooling Method	Natural Air Cooling
Mounting Method	Bolt Mounting with Bracket
Power Consumption	8 W
Current Consumption	Max. 36 mA (AC 220 V)
Operation Circumstance	0 ~ 50 °C (32 ~ 122 °F), 35 % ~ 85 % RH
Weight	0.4 kg
Input Power	AC 100 ~240 V, 50/60 Hz(Adaptor Input) / DC 12 V, 2 A Adapter
Alarm	Head Fail
Warning	Life Time Over
Remote / Interlock	Remote / Interlock On/Off Control
Indicator	RUN (Power/Run), TIMER (Over Time), ALARM (Head Fail)
Warranty	1 Year

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

SUNJE Hi-Tek Co., Ltd.

www.sunstat.com

Head Office & Factory (Busan)
8 Cheonggwang-gil, Ilgwang-eup,
Gijang-Gun, Busan, Korea
T) +82-51-720-7500 F) +82-51-720-7501

Sunje (SHANGHAI) Trading Co.,Ltd.
205B, Building A, No.1018 Mingzhu Road,
Qingpu District, Shanghai, China
T) +86-21-5433-9761 F) +86-21-5433-9762

Sales Headquarter (Osan)
3rd floor, 129-20, Gyeonggi-daero 632
beon-gil, Osan-si, Gyeonggi-do, Korea
T) +82-31-203-9034 F) +82-31-202-9034

Sunje Technology Co., Ltd.
2F, No.6, Lane.102, Sinhe Rd, Sinfong
Township, Hsinchu County, Taiwan 30472
T) +886-3-568-7891 F) +886-3-568-7950

Product & Quotation Inquiries
+82-51-720-7529

Technical Support & A/S
+82-51-720-7519