

Instruction Manual

SUNJE

SXC-104N

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.
- * 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.

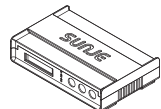
CAUTION

- * 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
1ea

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

* Head Cable
SOC-XN-1-001
10m / 1~4ea

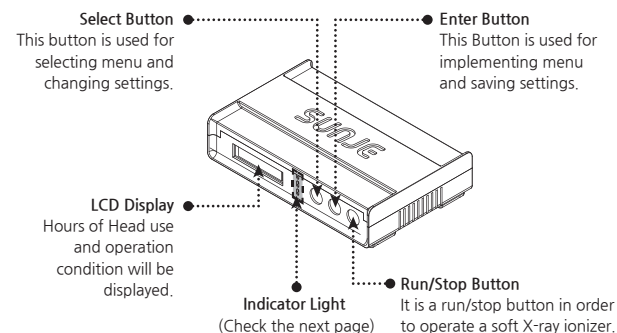
or

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

* D-Sub Cable
SDC-SN-4-001
25Pin / 5m / 1ea

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.

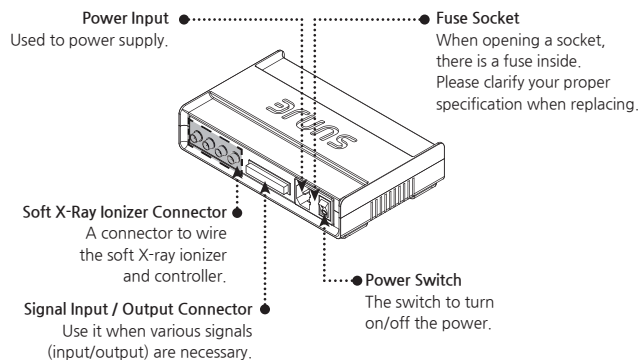
OVERTIME (Orange LED)
: Tube Replacement
Alarm Indicator

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.

Rear



4 Installation and connection

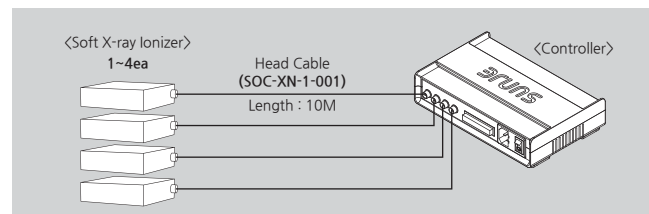
Soft X-ray ionizer connectable with SXC-104N

No.	5kV	10kV	15kV
1	SXH-05S	SXH-10S	SXH-15N
2	SXH-05T	SXH-10T	
3	SXH-05SP1	SXH-10SP1	
4	SXH-05S(I)	SXH-10SD	

How to connect

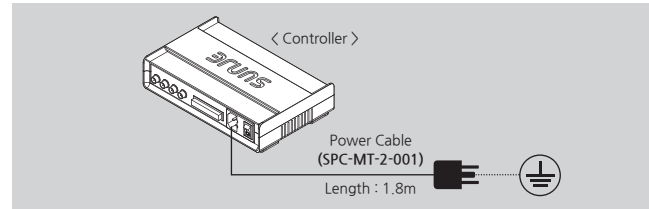
Connecting the soft X-ray ionizer

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



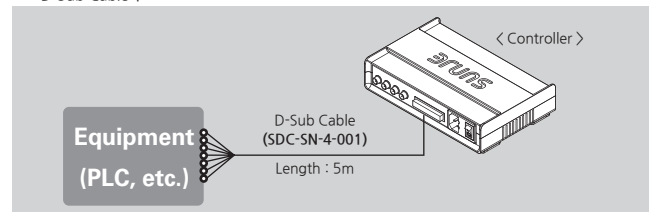
Connecting the Earth Ground and Power

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	
	4	Interlock	INT-ON	White on Brown	Interlock On / Off (Electrical Contact)
	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(Head Fail) 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

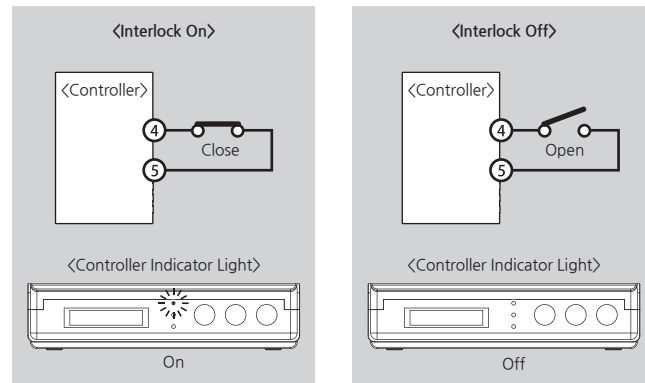
Set the interlock

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 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

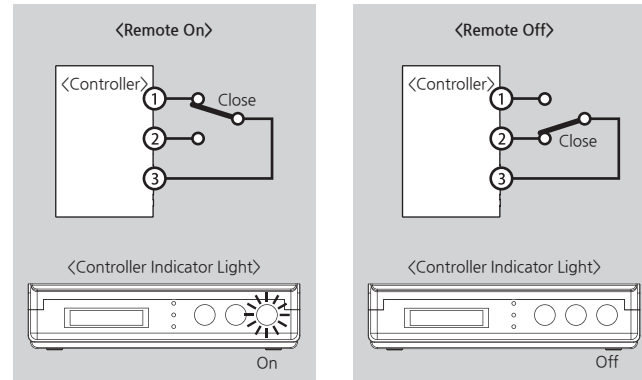
Set the remote

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

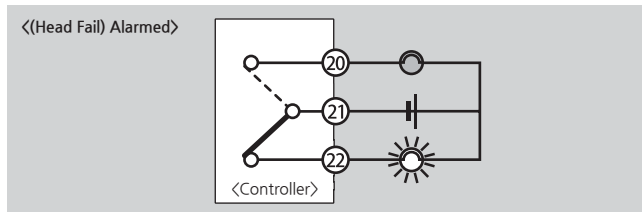
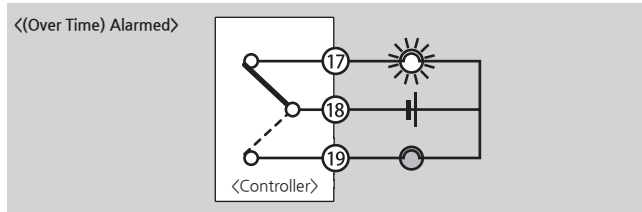
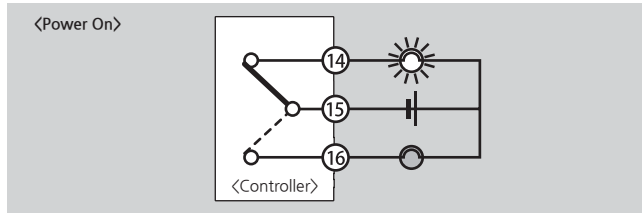
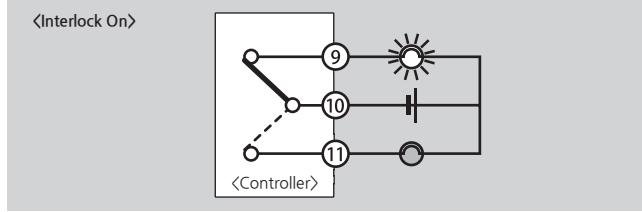
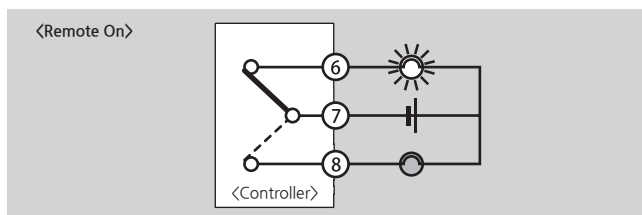
If #2 and #3 of a D-Sub cable are connected, the remote is off.
Remote off indicates that the head unit is not operating.
※ Run/Stop button is available only when you are not using the remote.



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

- Operates when power is on
It switches to the default screen after displaying about 2 seconds.

*	S	X	C	-	1	0	4	N	*
*	V	1	.	0	.	0	.	0	*

Firmware Version

► Main Screen

Stopped State

1	.	0	0	0	0	0	2	.	0	0	0	0	0
3	.	0	0	0	0	0	4	.	0	0	0	0	0

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

Operating State

1	.	R	U	N	2	.	R	U	N
3	.	R	U	N	4	.	R	U	N

- 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

1	.	C	H	1	2	.	0	0	0	0	0		
3	.	0	0	0	0	0	4	.	0	0	0	0	0

- 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

1	.	0	0	0	0	0	2	.	0	0	0	0	0
3	.	A	L	-	0	4	4	.	0	0	0	0	0

- 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	.	A	I	L	T	i	m	e	:	[	O	]
2	.	H	D	I	n	f	o	:	[		]	
3	.	H	D	S	/	N	:	[		]		
4	.	H	D	R	e	s	e	t	:	[		]
5	.	C	T	S	e	t	:	[		]		
6	.	T	B	S	e	l	:	[		]		

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

1	.	0	0	0	0	0	2	.	0	0	0	0	0
3	.	0	0	0	0	0	4	.	0	0	0	0	0

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

05

2. HD Info (Head Information)

Display Individual Head Information

T	i	m	e	1	:	0	0	0	0	0	H	1
H	/	V	:	1	0	k	V					

H/V type
Head usage time

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

S	e	r	i	a	l	N	u	m	b	e	r	H	1
0	0	0	0	0	0	0	0	0	0	0	0		

- 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

Display Reset information for individual heads

Count :	0	H
T. Time :	0 0 0 0 0	1

Head No. →

→ Total Usage time

→ The number of reset

- 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

C o u n t	:	0	H
T . T i m e	:	0 0 0 0 0	1

- 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

P	r	o	c	e	s	s	.	.	.
---	---	---	---	---	---	---	---	---	---

- 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

H	e	a	d	R	e	s	e	t
S	u	c	c	e	s	s	!	

- 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.

④ - 2 Head Reset failed

H	e	a	d	R	e	s	e	t
E	r	r	o	r	!			

- 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.

06

I	F	O	v	e	r	:	O	N				
A	d	d	r	e	s	:	0	1				
B	a	u	d	r	a	t	e	:	9	6	0	0
C	t	r	l	T	y	p	e	:	0	4		
H	e	a	d	M	o	d	e	:	0	2		
I	F	A	l	a	r	m	:	O	N			
H	D	C	o	u	n	t	:	0	0			
C	h	a	n	g	e	4	8	5	:	-	-	

1. Overtime input/output signal setting
- Setting can be changed by pressing the Select button.
On: Overtime output execution(default)/ OF : Alarm output execution.
2. Address setting
- By pressing the Select button, you can change the Address values sequentially.(1~16)
3. Baud Rate Setting
- By pressing the select button, you can change the Baud Rate value.
(9600, 19200, 38400, 56000 sequentially changed)
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)
5. Head connection mode setting
- By pressing the Select button, you can set the Mode.
01 : SXH-05S, SXH-05T, SXH-10S, SXH-10T, SXH-10SD
02 : SXH-15N (Setting other values can cause malfunction)
6. Interface Alarm Setting
- By pressing the Select button, You can change the On/Off settings.
7. Setting the number of head connections
- By pressing the Select button, you can change the Setting values.(0 ~ 4)
0: Disable Head connection count check function.
1~4 : Alarm is generated when connecting to the other head instead of the set number (AL-06)
8. Setting additional communication identifiers
- By pressing the Select button, you can set the Mode.(A1~AN)
* Existing communication identifiers(AM) can be communicated regardless of the settings.

- ※ The value being set blinks at 1 second intervals.
- ※ 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.

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

P	l	e	a	s	e		
P	o	w	e	r	O	f	f

- 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

1	.	T	u	b	e	1	2	.	T	u	b	e	1
3	.	T	u	b	e	1	4	.	T	u	b	e	1

- 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

N O	
D u a l	T u b e

- 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.

P l e a s e											
I	n	t	e	r	l	o	c	k	O	f	f

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

07

7 Problem solving

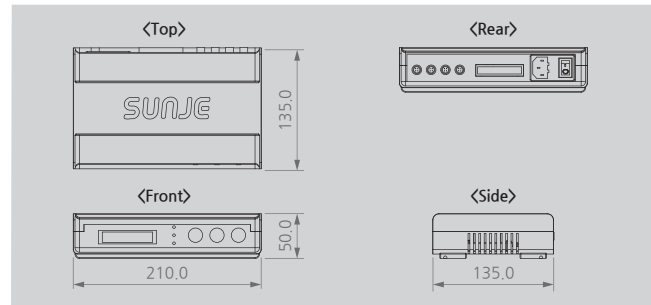
► Checklist before called

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 swith 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.
	Have you followed the proper procedure for Input/output signal cable(s)?	Check whether the cable connection is properly done.
Decreased Performance	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.
Head unit not 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	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.
AL-06	The error of number of head connections	CT Set → Check HD Cont Settings Set : 0 (no function) Check the number of connected heads and the setting value match

8 Dimensions



9 Specification

Parameter	Description / Value
Input Power	AC 100~240V, 50/60Hz
Power Consumption (with Head)	Max. 50W (Basis on 1:4)
Controller Fuse	250V, 3A, 5X20 Glass Type Fuse
Operation Circumstance	0℃ ~ +50℃(32°F ~ 122°F), 35% ~ 85% RH
Weight	0.62kg
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.

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, 129-12, 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

Customer Center +82-51-720-7519

Sales Contact +82-51-720-7529

08