

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

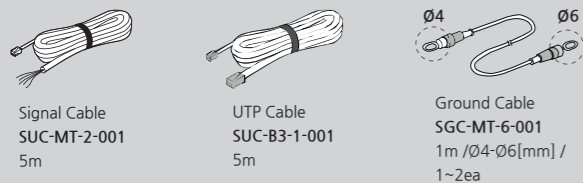
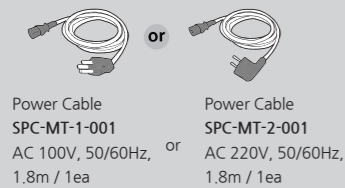
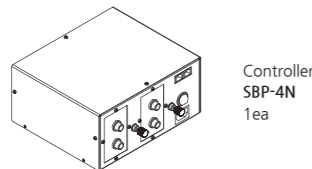
- * If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- * Do not let the water touch the product. It may cause electric shock or fire due to malfunction.
- * When you check or maintain the product, make it sure you turn off 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.
- * 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 controller 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.

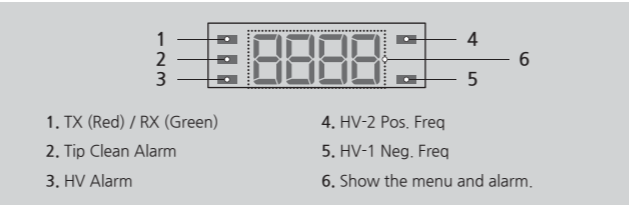
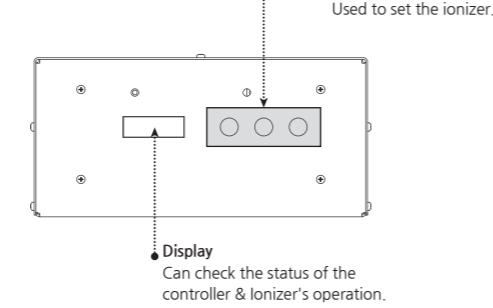
2 Check the package contents

Product compositions
The package includes the following products composition.

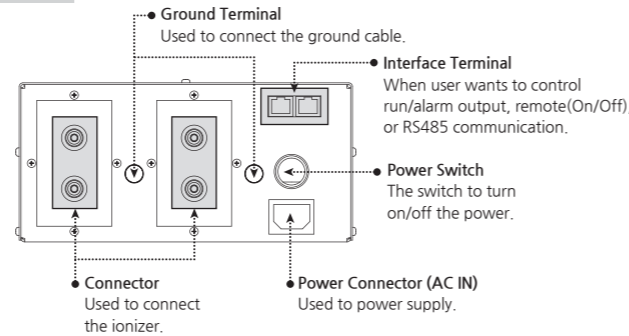


3 Nomenclatures of parts

Front



Rear

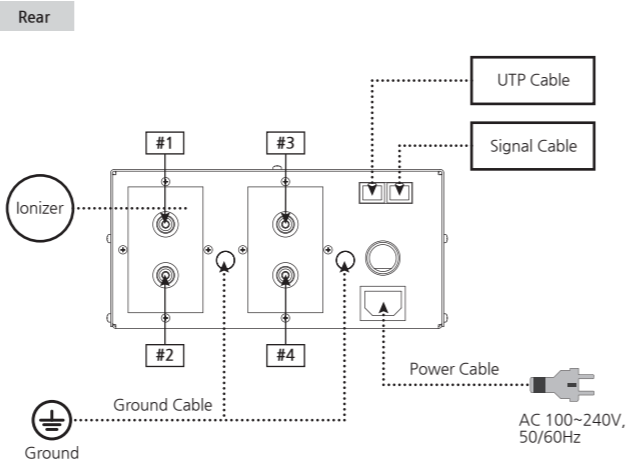


4 Installation and connection

CAUTION

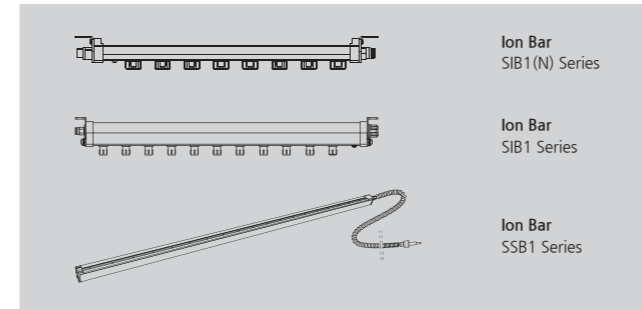
- * During installation, please try to avoid the area where the product might get(electrical) stress. There might be chances for cable breakage, electric shock, or fire explosion.
- * Please be sure to use a ground cable for safety purposes.

How to connect
Refer to the figure below to connect the product.



Connectable products

The SBP-4N Series can be connected to the (multiple) products as below.

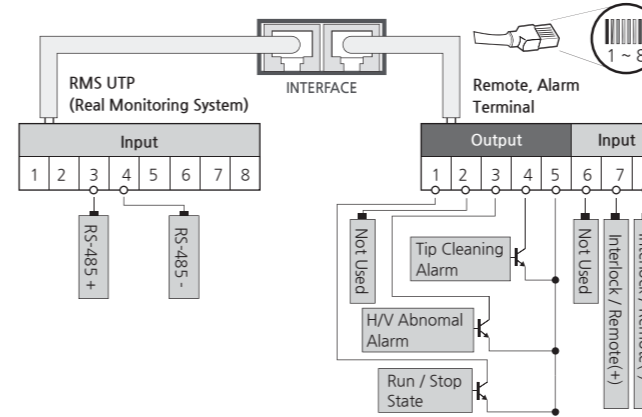


How to connect the interface (Signal Cable)

For the specification of the signal cable to be used, refer to the table below.

RS-485 & Interface Terminal

This is a terminal for controlling RS-485 data communication, the status (operation/stop) of the Ion Bar, alarm output (Over current Alarm, Tip cleaning timer Alarm), and Remote On/Off.



RMS UTP (Real Monitoring System)

No	Color	Descriptions
1	Brown	Not Used
2	White & Brown	Not Used
3	Orange	RS-485+
4	White & Orange	RS-485-
5	Green	Not Used
6	White & Green	Not Used
7	Blue	Not Used
8	White & Blue	Not Used

Remote, Alarm Terminal

No	Color	Function	Output	Picture
1	Brown	Run / Stop State	Photo Relay Output (Run-Close, Stop-Open)	Run / Stop
2	White & Brown	-	-	-
3	Orange	High Voltage Abnormal	Photo Relay Output (Normal-Open, Alarm-Close)	Normal / Alarm
4	White & Orange	Tip Cleaning Alarm	Photo Relay Output (Normal-Open, Alarm-Close)	Normal / Alarm
5	Green	Common	-	-
6	White & Green	-	-	-
7	Blue	Remote(+)	DC 24V	-
8	White & Blue	Remote(-)	Ground	-

* The remote stops when the input signal (DC24V) is received.

Communication Protocol

1. DATA Request

Byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Code	\$	B	C	,	R	E	Q	,	A	*	h	h	Wr	Wn

Byte	Information	Byte	Comment	Remarks
0	Start Code	1		
1	Product Type	1	B(Bar Type Ionizer)	A:Photo, B:Bar, C:Blower
2	Ionizer Model	1	C	SBP-N Series
4, 5, 6	Data Request	3	REQ	Command(REQ,RUN,STP)
8	Bar Address	1	1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G	1 ~ 16 : '1' ~ 'G'
9	End Code	1		
10, 11	Check Sum	2	Check Sum	
12, 13	Line Feed, New Line	2		

1. DATA Receive

Byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Code	\$	B	C	,	A	,	1F	,	1D	,	1H	,	2F	,
Byte	14	15	16	17	18	19	20	21	22	23	24	25		
Code	2D	,	2H	,	A/S	,	R/S	*	h	h	Wr	Wn		

Byte	Information	Byte	Comment	Remarks
0	Start Code	1		
1	Product Type	1	B(Bar Type Ionizer)	A:Photo, B:Bar, C:Blower
2	Ionizer Model	1	C	SBP-N Series
4	Address	1	1,2,3,4,5,6,7,8,9,A,B,C,D,E,F,G	1 ~ 16 : '1' ~ 'G'
6	HV1 Frequency	1	0,1,2,3,4,5,6,7,8,9,A,B,C	0,1,0,3,1,3,5,8,10,20,30,35,40,50Hz : '0'~'9', 'A'~'C'
8	HV1 Duty	1	ASCII : 'c' [40] ~ 'd' [100]	40 ~ 70%
10	HV1 High Voltage	1	1 ~ 10	1 : 8.0 ~ 10 : 12.5
12	HV2 Frequency	1	0,1,2,3,4,5,6,7,8,9,A,B,C	0,1,0,3,1,3,5,8,10,20,30,35,40,50Hz : '0'~'9', 'A'~'C'
14	HV2 Duty	1	ASCII : 'c' [40] ~ 'd' [100]	40 ~ 70%
16	HV2 High Voltage	1	1 ~ 10	1 : 8.0 ~ 10 : 12.5
18	Alarm State	1	Normal : 0, HV1-AL : 1, HV2-AL : 2, HVALL-AL : 3, TipClean : 4	
20	Run/Stop State	1	Stop : 0, Run : 1, HV1-AL : 2, HV2-AL : 3	
21	End Code	1		
22, 23	Check Sum	2	Check Sum	
24, 25	Carriage Return, Line Feed	2		

* 12, 14, 16 Byte '_' in 2-channel (HV2) mode

1. Comm Sample

Request	\$BC, REQ, 9*0FWrWn
Receive	\$BC, 9, 6, <, 6, 6, <, 6, 0, 1*6CWn

- Addr : 9
- Bar 1 Freq : 6(10Hz) = Bar 2
- Bar 1 Duty : <(60%) = Bar 2
- Bar 1 HV : 6(10.5kvpp) = Bar 2
- Alarm : 0(Normal)
- Run/Stop : 1(Run)

2. Control [Run]														
Byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Code	\$	B	C	,	R	U	N	,	A	*	h	h	Wr	Wn

2. No Receive

3. Control [Stop]														
Byte	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Code	\$	B	C	,	S	T	P	,	A	*	h	h	Wr	Wn

3. No Receive

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Checksum Calculation
$ ~ * Calculation

#include<stdio.h>

Void main()
{
char packet[] = "BC,REQ,1", cksum = 0;
int i, size = 0;

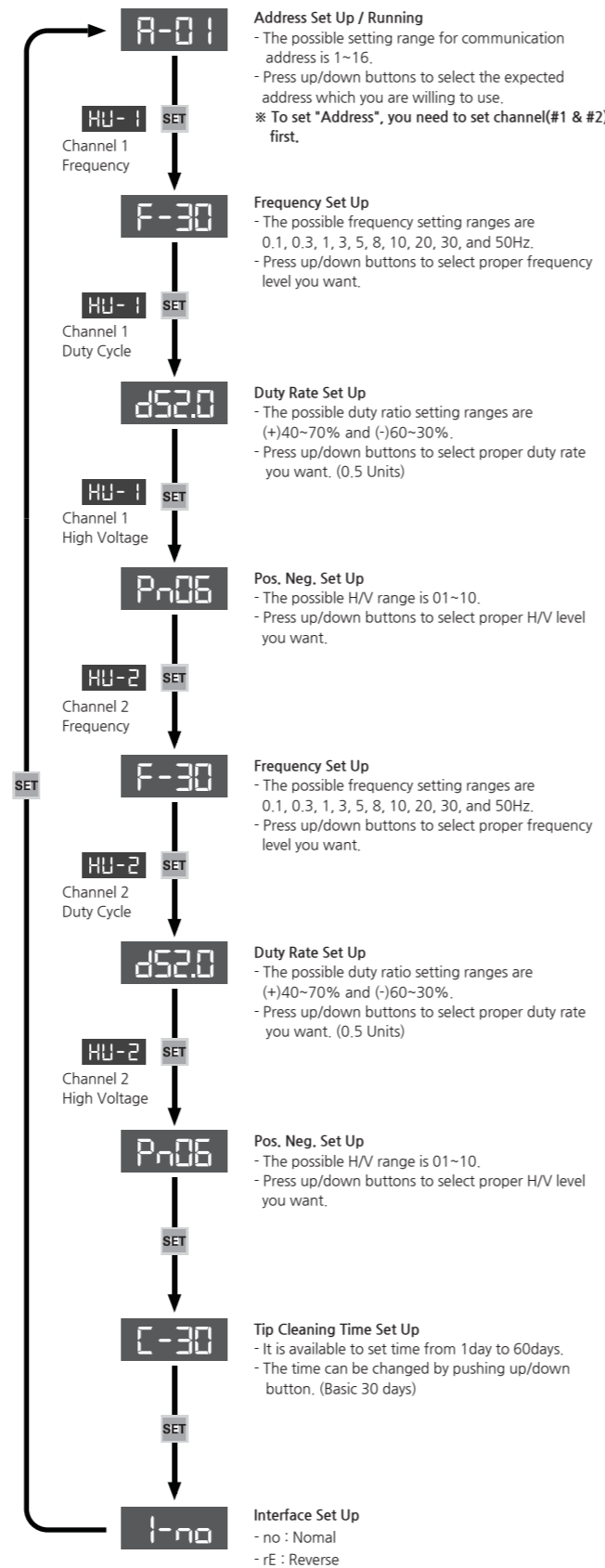
while(packet[size] !='\0') size++;

for(i = 0 ; i < size ; i++)
{
if(i == 0)
cksum = packet[i];
else
cksum^= packet[i];
//printf("packet[%d] = %c, checksum = %.2x\n", i, packet[i], cksum);
}

printf("Request : $BC,REQ,1*%.2X",cksum); //Checksum character send by ASCII.
    
```

5 How to set

WARNING
 * Do not tamper with the set value. The malfunction might arise.



※ Once your setup is done, the device will automatically save your current setup value immediately (within 3 second).

Alarm status information

- al-1** : HV1- Alarm
- al-2** : HV2- Alarm
- al-3** : HVALL- Alarm
- al-4** : Tip Clean Alarm

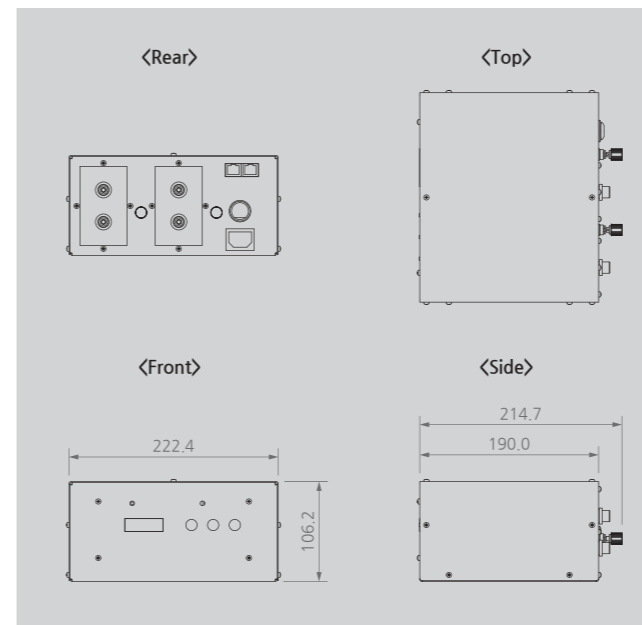
※ When HV1 or HV2 Alarm occurs, the normal port continues outputting. However, settings cannot be changed.

6 Problem solving

Checklist before called

Problem	Identifying Problem	Solution
The product does not work.	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 device?	Turn on the power switch.
There is no ionization.	Is a fuse broken?	Replace the proper fuse immediately. (250V, 1A)
	Does the installed environment have too high/low level of humidity or temperature?	Please install the device upon the proper working specification.
The ionizing performance has been decreased.	Can't possibly ground the device?	Please refer to 'Installation & Connection, for grounding the device.
	Any damages or cut on the cables?	You need to replace the cables if it gets cut or damaged.

7 Dimensions



8 Specification

Parameter	Description / Value	
Input Power	AC 100~240V, 50/60Hz	
Output Voltage	Pulse AC 13 kVp-p(Max.)	
Power Consumption	30W	
Weight	2.81kg	
Main Body Material	EGI	
Operation Circumstance	0℃ ~ +50℃(32 F ~ 122 F), 35% ~ 85% RH	
Adjust Function	Frequency [Hz]	0.1, 0.3, 1, 3, 5, 8, 10, 20, 30, 50(10Steps)
	Duty Ratio [%]	40~70(0.5 Unit)
	High Voltage [Level]	H : 1~10(1 Unit)
Interface	Remote On/Off, Run State, H/V Alarm State, RS485	
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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