ASAHI SUNAC

Operation and Maintenance Manual

Electrostatic Controller

BPS114

(Ver.2.01)

Ec'Coater™ エコーター

This manual contains important information on warnings and cautions. Read the manual thoroughly before starting to operate this equipment, and follow the instructions. Always keep the manual handy until such time as the equipment is no longer being used. If your manual is lost or worn badly, do not hesitate to contact our agency which is closest to you, or the Asahi Sunac Corporation, directly, and ask us to send you a new one.

3rd Edition: July 27, 2022

Preface

Thank you very much for choosing our Electrostatic controller (BPS114).

In order to keep the equipment in the best condition for an extended period, please carefully read this manual before use. Above all, the specifications, warnings and prohibitory or cautionary instructions shown herein shall be fully understood and observed during the use of the equipment.

The equipment covered by this manual is designed for industrial coating work. It shall be used by those who have been duly trained regarding the handling and scope of application and have an understanding of the operating procedure.

If you need further information about this manual, please call any of our branches listed on the back cover by specifying the “model” and “serial No.” of your equipment.

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1 For Safety and Correct Use

Contents of this instruction manual shall be fully understood and the instructions shown herein shall be strictly observed. Using the machine without following instructions in this manual may lead to **bodily injury or damage to properties.**

The safety measures described herein are the minimum requirements and additional measures may also be required. All requirements provided by laws and legislations as well as rules and guidelines laid by your company or office shall be observed.

The cautionary instructions shown below shall be construed as minimum basic requirements for safety in the use of our product.

●Cautionary instructions are shown in three levels as defined below.

⚠ WARNING	Calls the user's attention to a situation that may lead to bodily injury and describes how to avoid that situation.
⚠ CAUTION	Calls the user's attention to a situation that may lead to damage or breakdown to the equipment and describes how to avoid that situation.
NOTE	Gives important or helpful information.

* Please remember that the situation mentioned under ⚠CAUTION may also lead to a serious disaster under certain circumstances. All instructions are important for your safety and prevention of machine disorder and shall be strictly observed.

This manual only describes the BPS114. For the electrostatic gun and coating equipment to be connected with it, see the respective instruction manuals.

⚠ WARNING

Adequate conditions of use for the product

The product covered by this instruction manual is a controller specially designed to supply a high-frequency power to the hand-held electrostatic gun contained in the 24VAC high-voltage generator or a similar device and to control high-voltage charges on the gun.

The product is not explosion-proof. Do not use it in an explosion-proof area.

If you have any doubt about the intended use of the product or materials used for it, please consult us. Using the product under conditions other than specified above will be considered as abuse unless specially approved by us. In this case, great caution must be exercised to prevent possible accidents.

Danger from abuse

<<General safety requirements>>

- Thoroughly check the supply voltage before use. Applying a voltage other than selected may lead to a failure and/or fire. For how to switch the voltage between 100-120VAC and 200-240VAC, see the installation manual.
- The controller handles high voltages and, therefore, must be properly grounded. Failure to ground it may lead to a failure, electric shock, injury and/or fire. Always ground the grounding terminal (class A grounding work). Do not fail to tighten screws on the terminal block and attach connectors.
- Do not modify the wiring when it is live.
- **The controller is not explosion-proof. Do not use it in an explosion-proof area.**
- Do not pour water over the controller although it complies with protection class IP43. Do not use it outdoors.
- Do not use it in a place where it will be subject to a higher temperature or humidity or excessive vibration. Doing so may lead to a failure.
- If the controller fails, immediately stop it and turn it off. After checking that it has been discharged, short the charging terminal to the ground.
  If the protector or fuse has been tripped, do not turn it on again.
- Do not operate the controller with the door open. Do not touch the charger and hot parts contained in the case. Doing so may lead to a burn, injury and/or electric shock.
- The door, if open, may be unhinged from the case. Do not raise the controller with the door open.

⚠ WARNING

To prevent fire and explosion

<<Sources of fires>>

The electrostatic coating process uses the electrostatic phenomenon at a higher voltage to positively generate static electricity.

Static electricity is also generated while the paint is running through the pump or hose.

If any part of the coating machine or any metallic object around it is not correctly grounded, electrostatic sparks will be generated. The sparks may ignite volatile components of a solvent, paint mist from the nozzle, suspended particles or another combustible substance to cause a fire or explosion, possibly resulting in serious bodily injury or damage to the equipment.

- Check that the coating machine, all metallic objects around it and the products to be coated have been grounded. If not, a fire or explosion may be caused by electrostatic sparks.
- The spraying place and the vicinity of the coating machine shall be well ventilated.
- Do not bring the high-voltage electrode at the end of the gun or any peripheral device close to a product to be coated or the ground or bring them into contact during the electrostatic coating process. Unknowingly using a faulty gun may generate big sparks. It may also cause damage to the nozzle and electrode.
- When interrupting or finishing the coating process, never fail to turn off the BPS114 and, five seconds after that, bring the corona pin at the end of the gun into contact with a grounding wire or grounded metallic object for at least 10 seconds to discharge residual charges.
- Do not plug in or out the coating machine or other electric equipment within a radius of 7 to 8 meters from the spraying place.
- Do not perform the coating work in the vicinity of an open flame, lamp or another source of ignition.
- Never smoke in the spray coating place.
- If you feel shocked even slightly by the static electricity while handling the coating machine, immediately stop the coating work and check each component for grounding. Do not restart the coating work until the cause is determined and corrective action is taken.
- The input power and connecting cables, if damaged, may generate sparks to cause a fire or explosion. Protect the cables from damage.
- Fire extinguishers with a sufficient capacity must be provided at the spray coating place.

<<Grounding>>

To prevent danger from static electricity, completely ground all metallic or conductive objects in the spray coating place (ones in use and booths, hangers, coated products, pumps, coating machines and equipment, fire extinguishers, floor materials, etc. around them). If no adequate ground is provided, perform the grounding work (class A grounding = 10Ω or less) using the methods specified by the Technical Standards for Electric Equipment. The methods for grounding the coating equipment are described below.

⚠ WARNING

●Grounding the working floor

The working floor shall be constructed from conductive materials and grounded. Spilt paints and stains on the floor, if any, shall be immediately wiped off to maintain the cleanliness.

●Grounding the paint hose

Use a completely grounded paint hose.

When using an extended paint hose, check that it has been completely grounded.

●Grounding the air hose

Use a completely grounded air hose.

●Grounding the electrostatic hand gun

The electrostatic hand gun firmly connected with properly grounded air and paint hoses is considered to be adequately grounded.

●Completely ground the BPS114. Connect a grounding wire to the grounding terminal on the controller for complete grounding (class A or equivalent grounding).

●Grounding the products to be coated

The resistance between the products to be coated and the grounded conveyor shall not exceed 10kΩ. Contaminants on hangers and earth clips shall be immediately removed to keep them grounded.

For detail, follow the instructions of the fire station with jurisdiction over the associated region.

●Grounding the human body

All persons entering the spray coating place shall wear anti-static clothes with embedded grounding wires and anti-static shoes with clean soles (conductive shoes with a resistance about 10MΩ) so that their bodies will not be charged with static electricity. When performing the electrostatic coating work, hold the gun grip with your bare hand. If it is inevitable to wear gloves, punch a hole at the palm of each glove to bring part of your palm into direct contact with the gun grip or use conductive gloves.

●Grounding the paint container

Do not use any paint container other than lidded metallic ones. Provide an exclusive paint port and put the container on a grounded floor or table to completely ground the paint container body. If it is impractical to ground it through a floor or table, connect an exclusive grounding wire to the paint container to completely ground it. In addition, the coating work must be performed with the paint container lid closed.

●Grounding the cleaning solvent container

Dripping or spouting cleaning solvent may generate static electricity.

If a metallic container not adequately grounded is used for collecting cleaning solvent, it will be charged with much static electricity to pose a possibility of danger. Use a metallic container put on a grounded floor or table to completely ground the container body. Never put it on a non-conductive material such as corrugated cardboard.

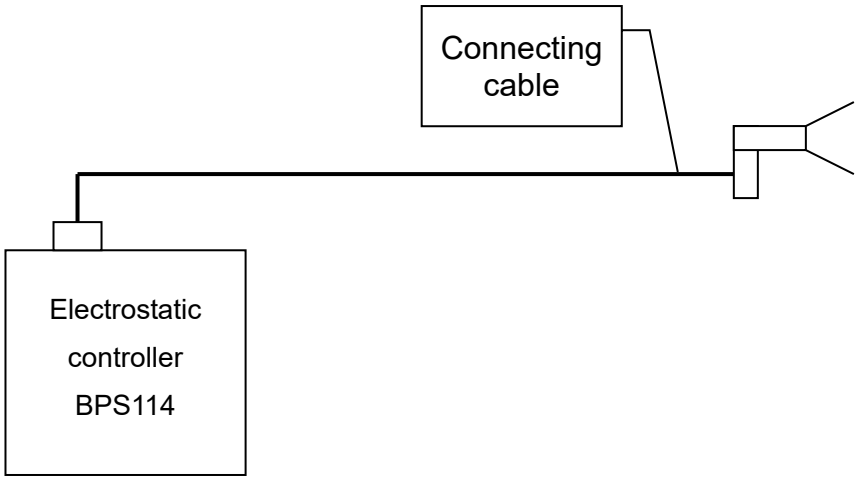
If it is impractical to ground it through a floor or table, connect an exclusive grounding wire to the solvent container to completely ground it.

When cleaning a paint pump or reducing the pressure, firmly hold the hose mouthpiece at the bottom of the gun extension onto the edge of a grounded solvent container and then pull the trigger.

2 Overview

This equipment is a controller that supplies power to the hand-held electrostatic gun contained in the 24VAC high-voltage generator or a similar device and controls high-voltage charges on the gun.

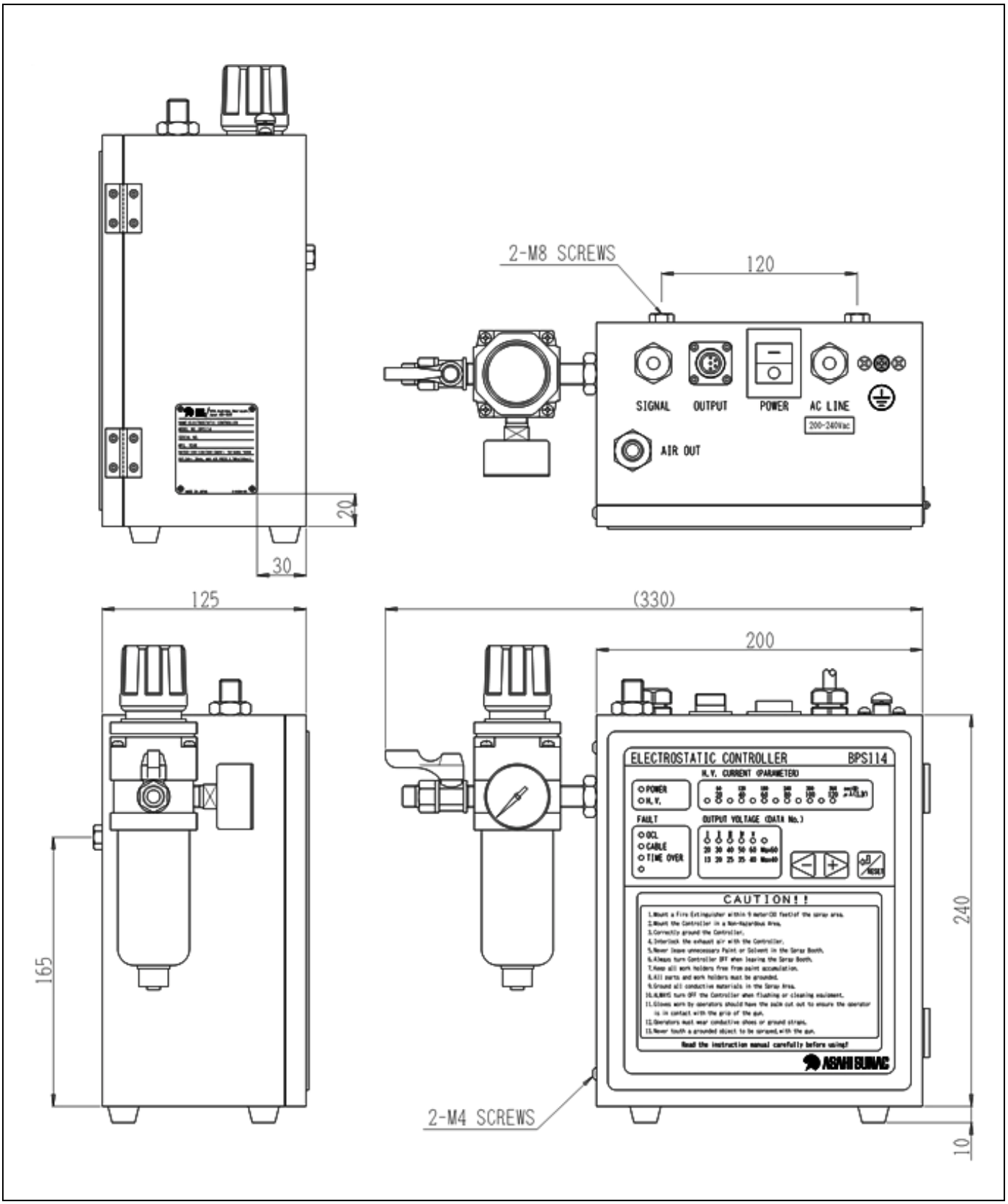
Only a single gun can be controlled. The operation status of the controller and that of the gun are shown on the front panel of the controller.



3 Specifications

Item \ Gun type	-40kV or lower electrostatic gun	-60kV or lower electrostatic gun
Product name	Electrostatic controller	
Model	BPS114	
Safety devices	Fixed current protection circuit Absolute over-current detection type shut-down circuit (OCL) Output alarm circuit (CABLE) Air leakage detection circuit (TIME OVER)	
High-voltage charging method (Remote signal)	By opening and closing the air flow switch.	
Voltage generated under no load	-40kVDC ± 3kVDC	-60kVDC ± 3kVDC
Rated output current	80μA（26kV）	80μA（37kV）
Constant current setting	30 to 80μA±5μA (at intervals of 10μA)	
Shorting current	80μA±10μA	
Over-current setting	30 to 80μA (at intervals of 10μA)	
Output voltage adjustment	-13/-20/-25/-35/-40kV	-20/-30/-40/-50/-60kV
	It is possible in any exclusive mode to preset the voltage in 10 further steps.	
Maximum pressure for air flow switch	0.7MPa	
Transmission voltage	24VAC ± 2VAC	
Transmission frequency	20kHz ± 1kHz	
Conditions of use	Ambient temperature 0 to 45°C Humidity 20 to 85% (no condensation allowed) No corrosive gas, dust, vapor, water drops and direct rays of the sun are allowed.	
Protection class	IP43	
Input power	100 VAC to 120VAC/200 VAC to 240VAC ± 10% * Switchable by changing the power transformer tap positions.	
Input frequency	50/60Hz	
Power supply capacity	50VA	
Color	Munsell 5R2.5/10	
Weight	Approx. 5.0kg	

4 Outside Dimensions



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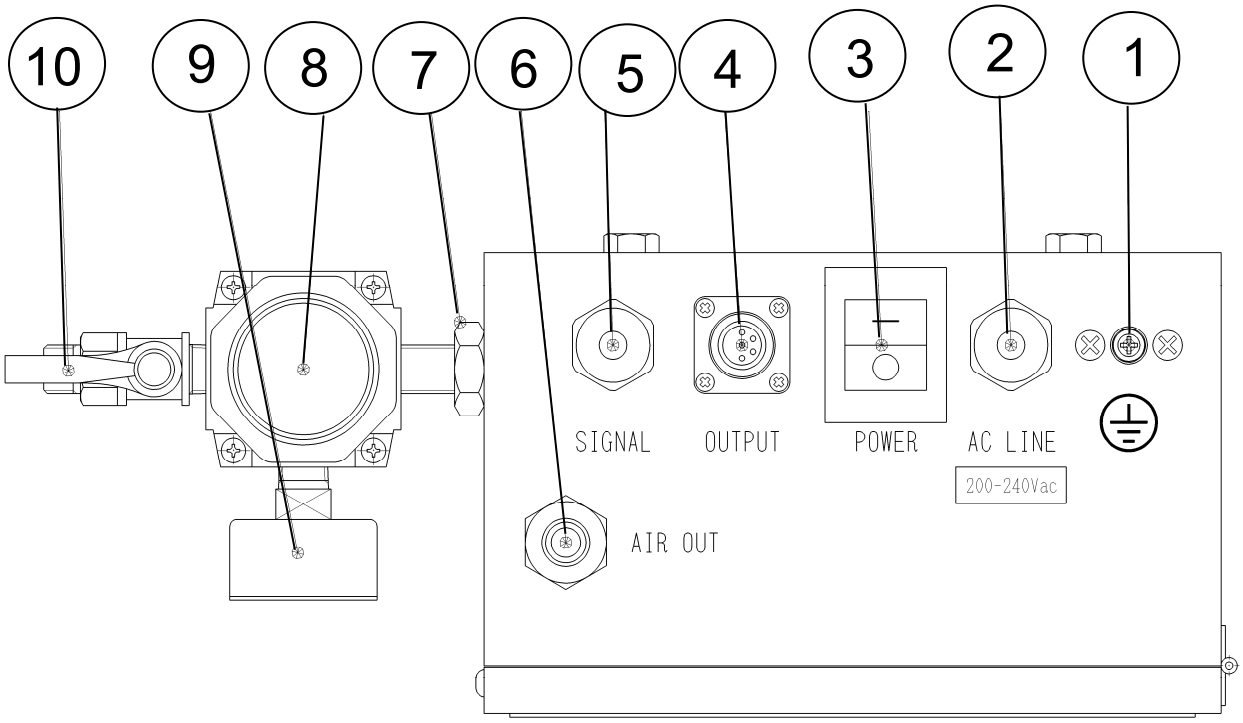
5 Names and Functions of Components

5.1 Names of components

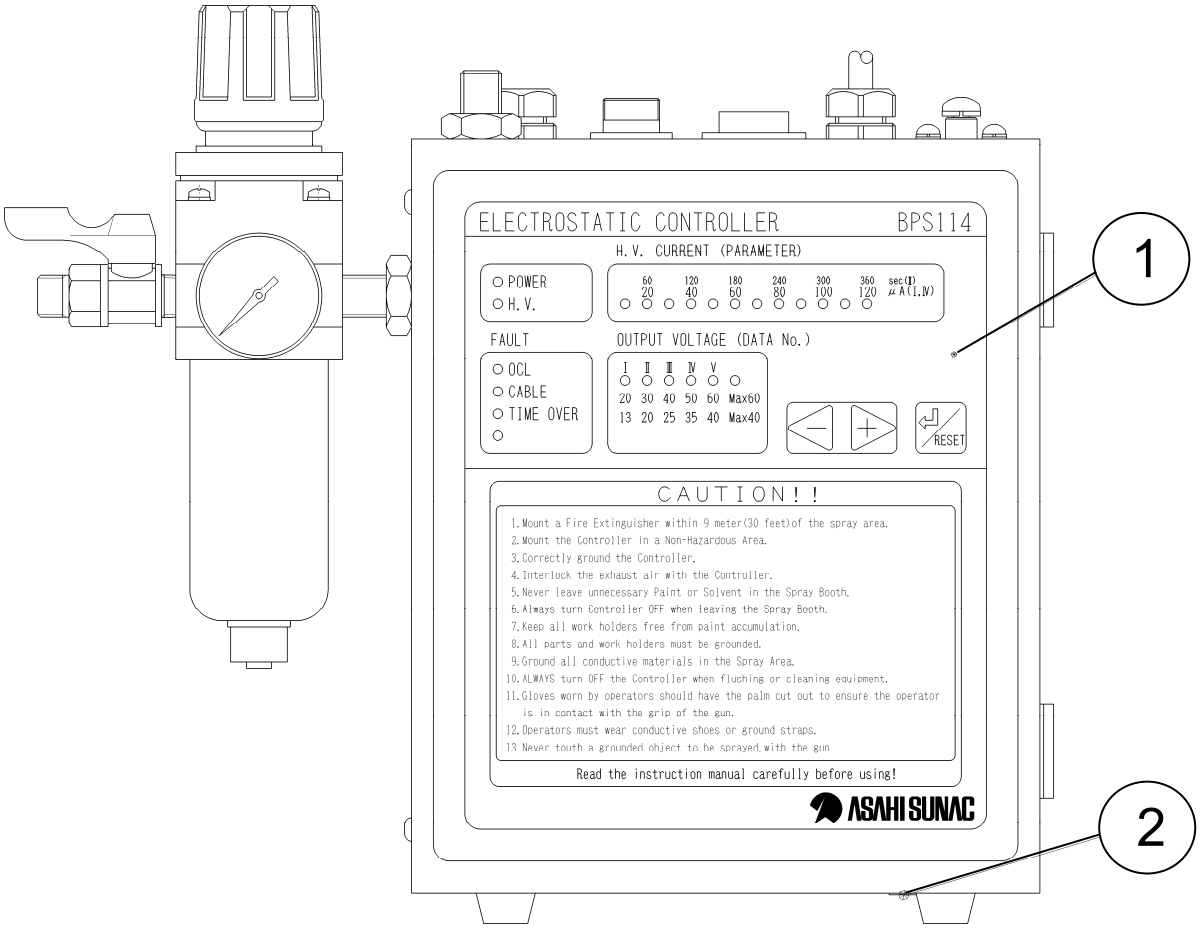
<Top panel>



No.	Name	No.	Name
(1)	Grounding terminal “ ⏚ ”	(2)	Input power cable “AC LINE”
(3)	Power switch “POWER”	(4)	Output connector “OUTPUT”
(5)	Output signal outlet “SIGNAL”	(6)	Air outlet “AIR OUT”
(7)	Air flow switch (Part No.: 3913)	(8)	Filter regulator (Part No.: 301-0031)
(9)	Pressure gauge (Part No.: 305-0033)	(10)	Ball cock (Part No.: 325-0003)

Note: The controller shape and specifications may be changed without notice to reflect improvements, etc.

<Front panel>



No.	Name	No.	Name
(1)	Display/console	(2)	Buzzer

Note: The controller shape and specifications may be changed without notice to reflect improvements, etc.

5.2 Functions of components

<Top panel>

(1) Grounding terminal "⏚"

A terminal for grounding the BPS114. It handles a high voltage and, therefore, requires class A grounding work (10Ω or less).

⚠ WARNING

Incomplete grounding may lead to a failure, electric shock, injury, fire and/or explosion.

(2) Input power cable "AC LINE"

Connect the power plug at the end of the input power cable to the power outlet.

For how to switch the supply voltage, see the installation manual.

⚠ WARNING

Applying a voltage other than selected may lead to a failure and/or fire.

(3) Power switch "POWER"

A power switch for the BPS114. Set to "1" to turn on or "0" to turn off.

Turn off when not working.

(4) Output connector "OUTPUT"

Used to connect the power transmission cable for the electrostatic gun. A 5-pin connector complying with JIS 5432 is used to transmit 24VAC. Incompatible with 80VAC electrostatic guns.

(The 24VAC and 80VAC electrostatic guns are different in terms of connector pin arrangement and not interchangeable.)

(5) I/O signal outlet "SIGNAL"

An outlet for the I/O signal wire. Connect the output signal wire to the terminal block on the CPU board.

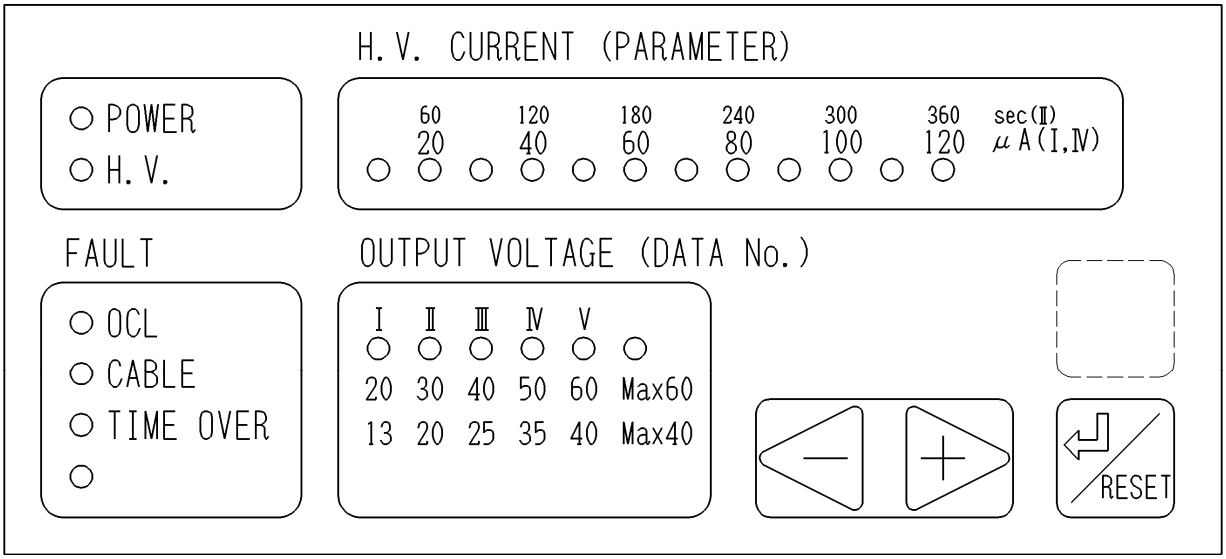
For how to connect it, see the installation manual.

(6) Air outlet "AIR OUT"

An air outlet for the air flow switch. Connect the air hose from the electrostatic gun.

<Front panel>

(1) Display/console



(1) Power lamp “POWER”

Lights when the power switch is on and indicates that power is supplied to the controller.

(2) High-voltage generation lamp “H.V.”

Lights when the air flow switch is on (the electrostatic gun trigger is pulled) and indicates that a high voltage has been generated.

(3) Absolute over-current alarm lamp (OCL)

Blinks when the high-voltage current coming from the high-voltage generator exceeds the preset limit (OCL is activated).

(4) Output alarm lamp “CABLE”

Blinks when the power transmission circuit to the high-voltage generator or the high-voltage current circuit from it has a problem and indicates that the grounding or return current wire has been cut or shorted. It also blinks when a transmitted or return current is detected with the air flow switch off (remote signal off).

(5) Air leak lamp (TIME OVER)

Blinks when the air flow switch signal (remote signal) remains on longer than the preset time and stops the high-voltage generation. It indicates that air is leaking from the gun or the lead switch has been fused.

(6) H.V. current/parameter indicator “H.V. CURRENT (PARAMETER)”

The lamp corresponding to the voltage of the high-voltage output current of the electrostatic gun lights during the high-voltage generation.

In the function setting mode, the lamp corresponding to the value of the parameter being set blinks.

(7) Output voltage/data No. indicator “OUTPUT VOLTAGE (DATA NO.)”

The lamp corresponding to the preset voltage lights.

In the function setting mode, the lamp corresponding to the No. of the data being set blinks.

(8) Up/down keys “+/-”

Used to increase or decrease the setting value. Ineffective when the data lock is applied (dipswitch 6 on).

(9) Enter/reset key “↵/RESET”

Press this key for 3 seconds or longer to transit to the function setting mode. In any universal mode (dipswitch 8 on), you cannot transit to the function setting mode.

This key is also used to reset the system when the warning buzzer is activated.

A set voltage is fixed. H.V. current (transmitted current) peak value is reset.

6 Operating procedure

(1) Before operating, check that the controller has been wired as specified in the installation manual.

(2) Check that the power transmission cable for the electrostatic gun has been connected to the output connector “OUTPUT”.

(3) Check that the air hose for the electrostatic gun has been connected to the air outlet “AIROUT.”

(4) Supply compressed air and paint.

(5) Turn on the power switch “POWER” on the controller.

(6) Pull the electrostatic gun trigger to start electrostatic coating.

(7) As the nozzle gets too close to the ground, the safety device is activated to sound the buzzer and stop the high-voltage supply.

＊ In case of a soluble electrostatic coating gun, the OCL will not be activated if the nozzle gets close to the ground due to its design.

(8) Release the trigger to reset.

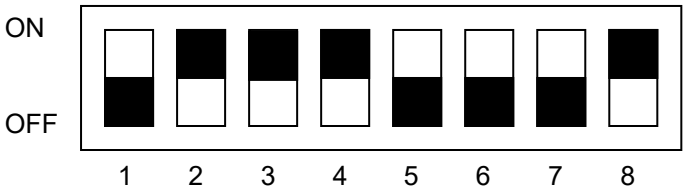
(9) Turn off the power switch “POWER” when finishing the work.

7 Various Settings

Please change in various settings if you receive the education.

7.1 Dipswitch settings

For how to setting it, see the installation manual.



No.	Item	Default status	ON	OFF
1	-	OFF	Do not change	
2	Cable (feed) fault	ON	Effective	Ineffective
3	Cable (return) fault	ON	Effective	Ineffective
4	Time over fault	ON	Effective	Ineffective
5	-	OFF	Do not change	
6	Data lock	OFF	Effective	Ineffective
7	Current monitor	OFF	Transmitted current	H.V. current
8	Mode	ON	Universal	Exclusive

The default on/off positions are colored.

7.2 Fault settings

7.2.1 Fault indication

The status of each alarm lamp in case of a fault and how to reset a fault are shown below.

If a fault occurs, the lamp marked with ● blinks and the warning buzzer sounds.

	OCL lamp	CABLE lamp	TIME OVER lamp	How to reset fault
OCL	●			Press the "↵/RESET" key.RESET input Release gun trigger. *
CABLE(feed)		●		Press the "↵/RESET" key. RESET input
CABLE(return)	●	●		Press the "↵/RESET" key. RESET input
TIME OVER			●	Press the "↵/RESET" key. RESET input

*1 When the FAULT output setting for DATA No. "V" has the value of 2 or 3.

7.2.2 External outputs in case of a fault

The status of each external output changes as shown below in case of a fault.

The alarm functions can be turned on/off using dipswitches 2 to 4 on the CPU board.

	POWER output	H. V. output	FAULT output	Default status
OCL	ON	OFF	ON *	Detected(Can not change)
CABLE (feed)	ON	OFF	ON *	Detected
CABLE (return)	ON	OFF	ON *	Not detected
TIME OVER	ON	OFF	ON *	Detected

* When the FAULT output setting for DATA No. "V" has the value of 3, the fault output turns on 2 seconds later.

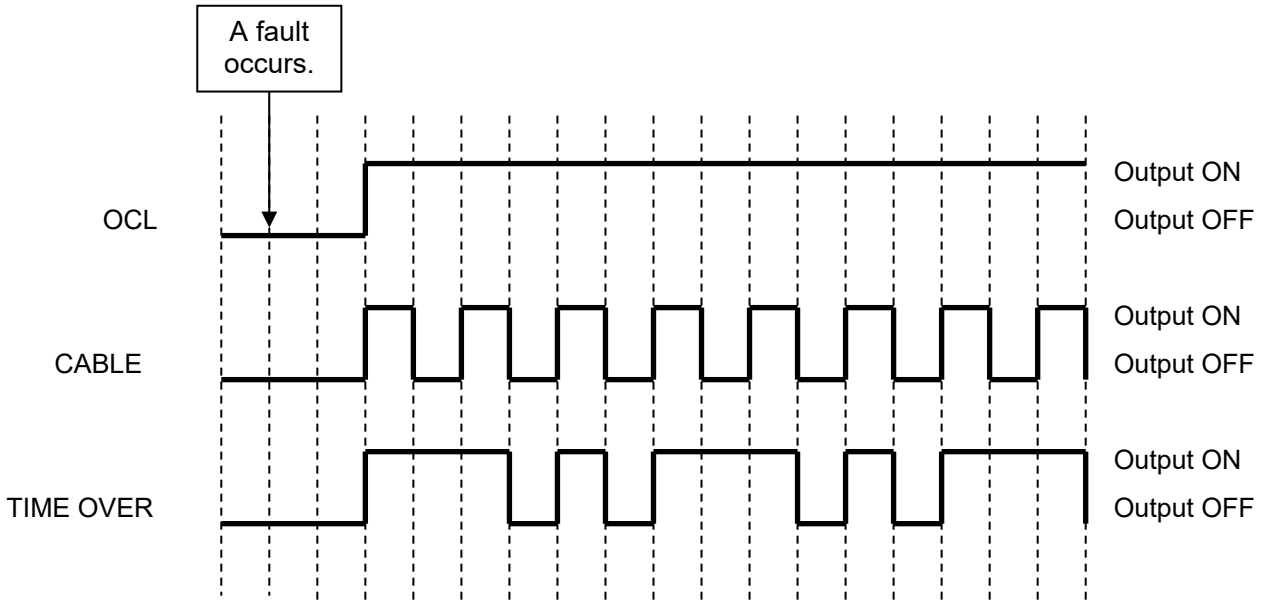
7.2.3 FAULT output

When the FAULT output setting for DATA No. “V” has the value of 3, the FAULT output timing is different for each alarm.

The buzzer contained in the BPS114 sounds at the same time the FAULT output turns on. From buzzer sound pattern, you can determine which fault has occurred.

When the setting has the default value of 1 or 2, the FAULT output remains on for any alarm.

The FAULT output timing for each alarm is shown below.



The buzzer sound patterns are different for each fault.

OCL:	Boooooo …
CABLE:	Boo Boo Boo
TIME OVER:	Booboo Booboo Booboo

8 Operation in general / exclusive mode

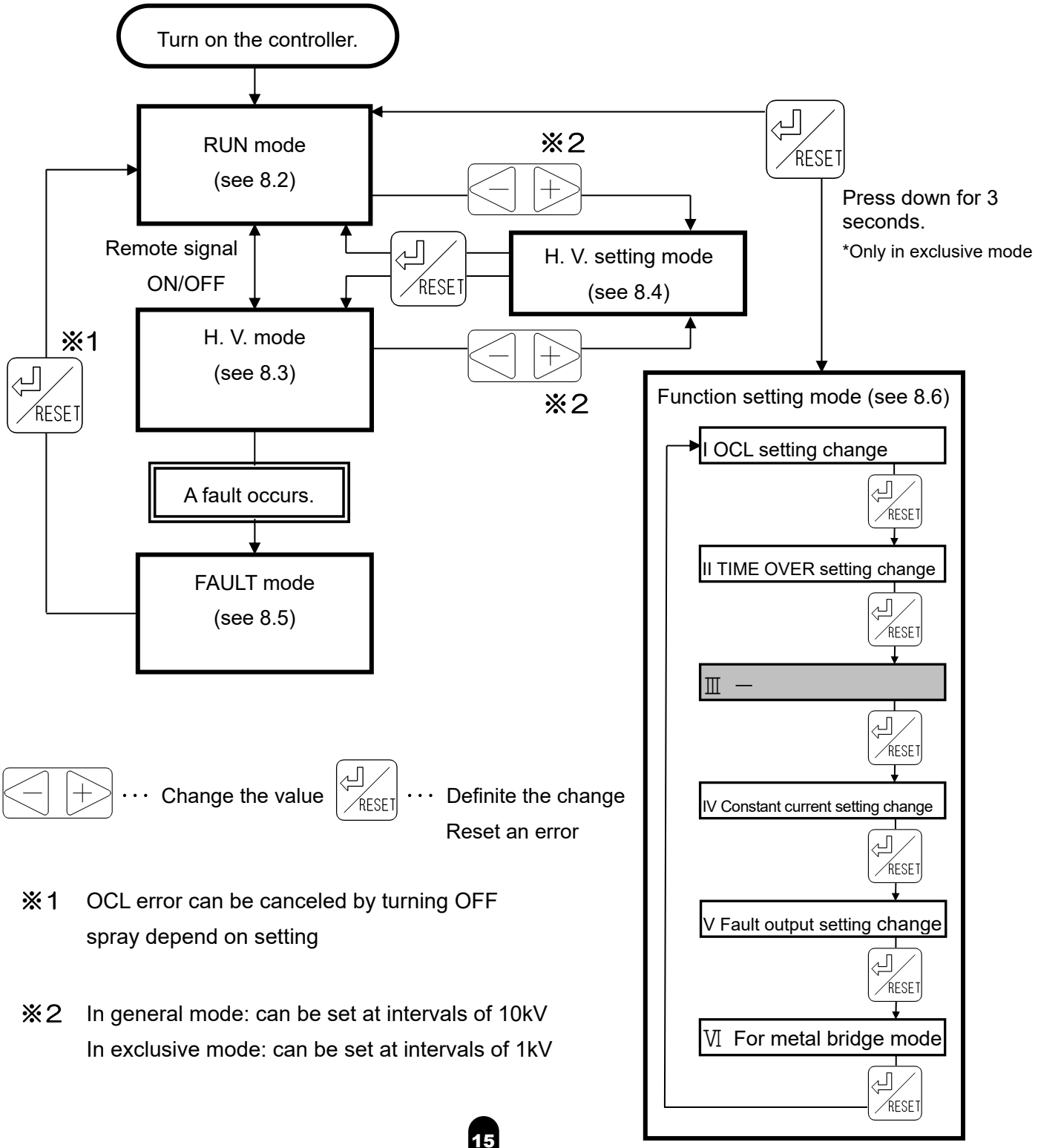
This device operates as general mode when the Dip-SW8 (Refer to 7.1 Dip-SW setting) is ON, and when that is OFF, it operated as exclusive mode.

At the time of factory shipment, the device is in general mode.

8.1 To change the mode

It can switch to some modes as below.

RUN mode/ H. V.mode/ high voltage setting mode/ FAULT mode/ function setting mode



※1 OCL error can be canceled by turning OFF spray depend on setting

※2 In general mode: can be set at intervals of 10kV
In exclusive mode: can be set at intervals of 1kV

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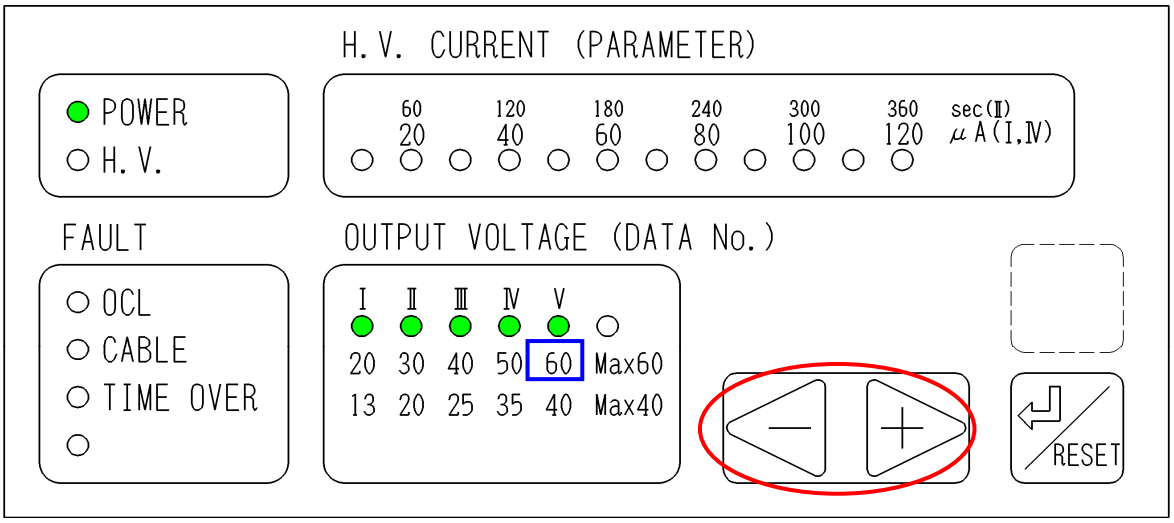
8.2 Operation and indication in the RUN mode

(1) As the controller is normally turned on, the “POWER” LED lights and the RUN mode is selected.
In this mode, it is possible to generate a high voltage. Turn on the remote signal to start the high-voltage generation.

(2) The “PARAMETER” LED corresponding to the program version blinks for three seconds after the power-up.

(3) If it becomes necessary to change the voltage setting according to the coating conditions, etc., press the “-” or “+” key to increase or decrease it.



* The above figure shows that a gun with the maximum voltage of 60kV has been used and the voltage is preset to 60kV.

Indication	Status	Content
POWER	Lit	Power switch on (running)
H.V.	Off	High-voltage generator OFF
OCL	Off	-
CABLE	Off	-
TIME OVER	Off	-
H.V. CURRENT (PARAMETER)	Blinking / Off	The LED corresponding to the program version blinks for three seconds after the power-up
OUTPUT VOLTAGE (DATA NO.)	Lit	Indicates the preset voltage *Refer to high voltage setting mode regarding to details of current value.

Key switch	Status	Content
- / +	Effective *1	Change to setting high voltage mode
↵ / RESET	Effective	Push to reset the peak value of output current Long press to change to function setting mode

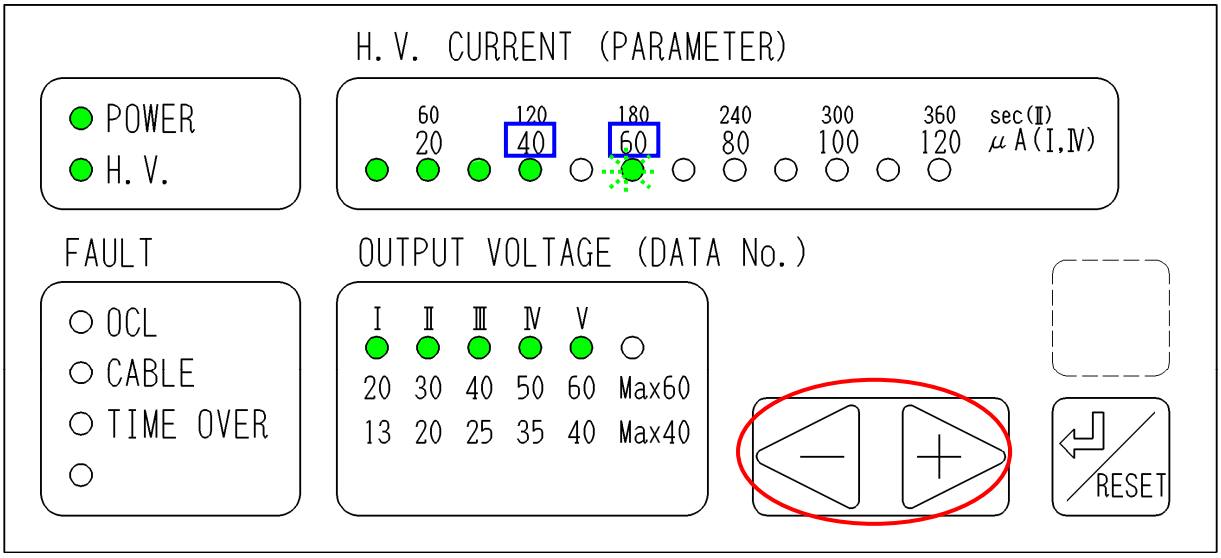
*1 Ineffective when the data lock is applied (dipswitch 6 on).

8.3 Operation and indication in the H. V. mode

(1) As the remote signal is turned on in the “RUN” mode, the “H. V.” LED lights and the “H. V.” mode is selected. A high voltage is generated. The “H. V. CURRENT” LED corresponding to the output current of the gun lights.

When dipswitch 7 is terned on ,the LED corresponding to the transmitted current lights.

(2) If it becomes necessary to change the voltage setting according to the coating conditions, etc., press the “-” or “+” key to increase or decrease it as in the RUN mode.



* The above figure shows that H.V. current is 40μA (peak value is 60μA) at present.

Indication	Status	Content
POWER	Lit	Power switch on (running)
H.V.	Lit	High-voltage generator on
OCL	Off	-
CABLE	Off	-
TIME OVER	Off	-
H.V. CURRENT (PARAMETER)	Lit / Blinking	Lights: Indicates H.V. current (transmitted current) Blinking: Indicates H.V. current (transmitted current) peak value *2
OUTPUT VOLTAGE (DATA NO.)	Lit	Indicates the preset voltage. *Refer to high voltage setting mode regarding to details of current value.

Key switch	Status	Content
- / +	Effective *1	Change to high voltage setting mode
↵ / RESET	Effective	Push to reset the peak value of output current Long press to change to function setting mode

*1 Ineffective when the data lock is applied (dipswitch 6 on).

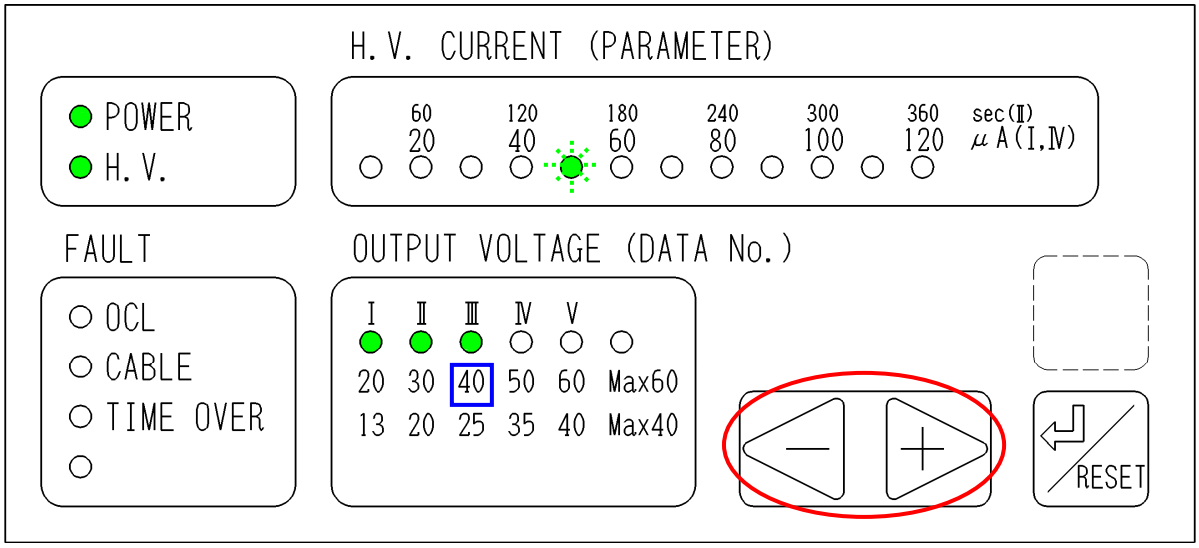
*2 in general mode：Turn OFF the remote signal to reset the peak value indication of output current.

8.4 Operation and indication in high voltage setting mode

(1) Push “+” or “-“ to turn on/off the “DATA No.” LED and then move to “high voltage setting mode”.

(2) If it becomes necessary to change the voltage setting according to the coating conditions, etc., press the “-” or “+” key to increase or decrease it.

(3) Press “↵/RESET” to return to the “H. V.” mode.



* The above figure shows that a gun with the maximum voltage of 60kV has been used and the preset voltage is 45kV.

Indication	Status	Content
POWER	Lit	Power switch on (running)
H.V.	Lit/Off	High-voltage generator on/off
OCL	Off	-
CABLE	Off	-
TIME OVER	Off	-
OUTPUT CURRENT (PARAMETER)	Blinking	In exclusive mode：Indicates the preset voltage. * Nine LEDs from the left are used to indicate the preset voltage LED. The voltage is usually shown in five steps but in ten steps in this mode more closely. *1
OUTPUT VOLTAGE (DATA NO.)	Lit	Indicates the preset voltage. The voltage is roughly indicated in five steps.

*1 When a gun with the maximum voltage of 60kV is used in exclusive mode, the voltage can be preset between 20kV and 60kV at intervals of 1kV.

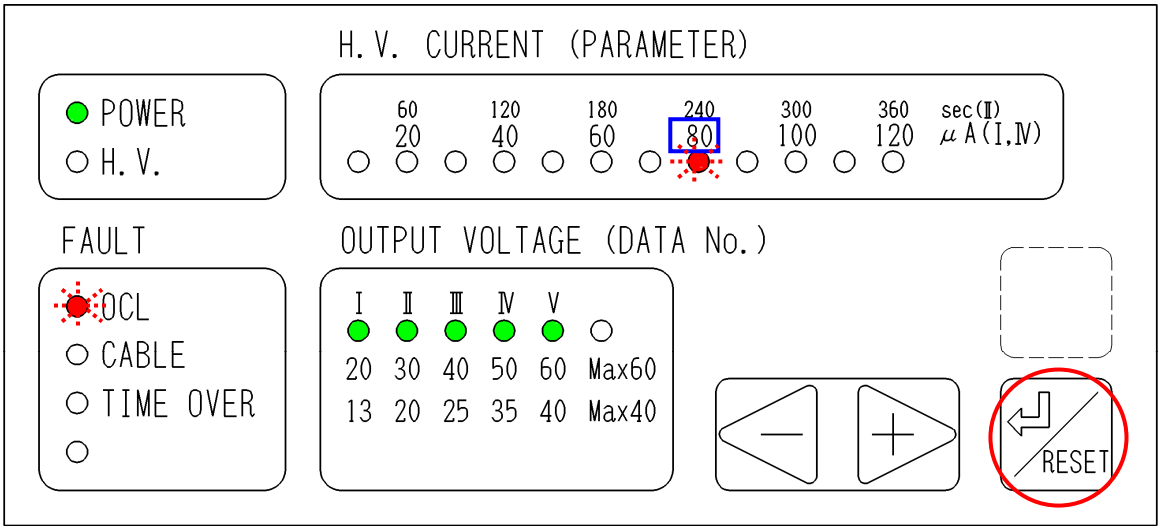
Key switch	Status	Content
- / +	Effective * 2	Increases or decreases the preset voltage.
↵ / RESET	Effective	(1) Defines the preset voltage. (2) H.V. current (transmitted current) peak value is reset. (3) Used to transit to the H.V. mode.

*2 Ineffective when the data lock is applied (dipswitch 6 on).
Change to “RUN mode” by no key inputting as well, but set value isn’t determined.

8.5 Operation and indication in the FAULT mode

(1) If a fault occurs, the relevant lamp blinks.

(2) Turn off the remote signal in case of an OCL fault or press "↵ /RESET" for other faults to reset the alarm and return to the "RUN" mode.



* The above figure shows that an OCL fault has occurred and the gun output current at that time was 80μA.

Indication	Status	Content
POWER	Lit	Power switch on (running)
H.V.	Off	High-voltage generator off
OCL	Blinking / Off	Blinking: An OCL fault has occurred.
CABLE		Blinking only "CABLE/RING" : Error in transmission current Error in Ring Blinking with "OCL" : Error in output current
TIME OVER		Blinking: The preset time was over.
H.V. CURRENT (PARAMETER)	Lit	Indicates the output current at the time the fault occurred.
OUTPUT VOLTAGE (DATA NO.)	Lit	Indicates the preset voltage.

Key switch	Status	Content
- / +	Ineffective	-
↵ / RESET	Effective	(1) Reset the alarm. (2) Used to transit to the RUN mode.

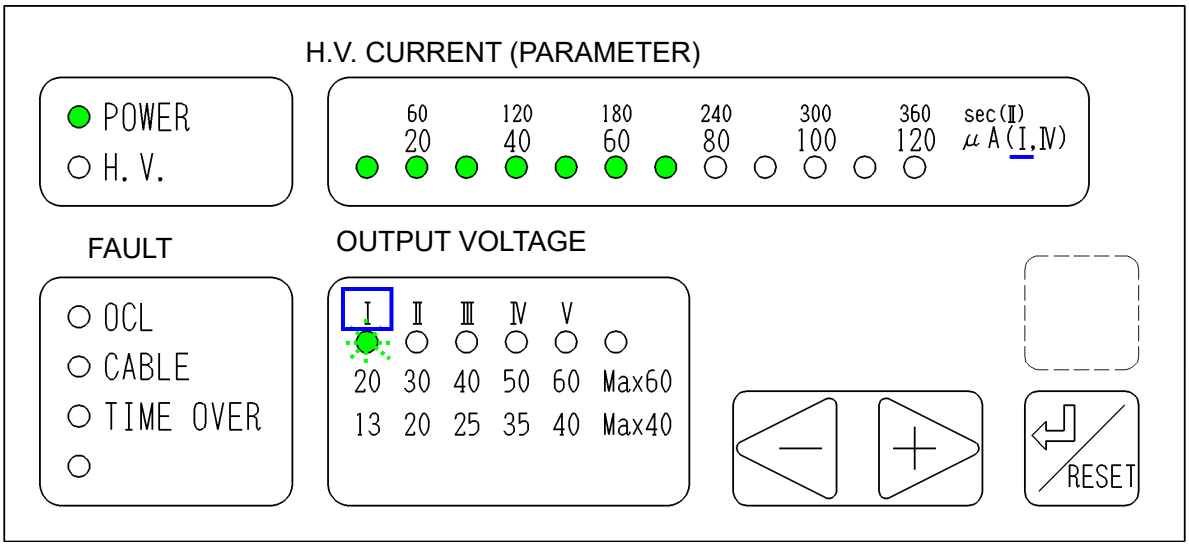
8.6 Operation and indication in the function setting mode

Please change in function setting if you receive the education.

(1) Press "↵/RESET" for three seconds or longer in the "RUN" mode to transit to the "function setting" mode through the "DATA No. I" LED blinks and "PARAMETER" LEDs light.

(2) Select a DATA No. using "↵/RESET" and change the parameter value using the "+" or "-" key.

(3) Press the "↵/RESET" key for three seconds or longer to return to the "RUN" mode.



＊The above figure shows that the OCL setting is being changed and the set value is 70μA.

Indication	Status	Content
POWER	Lit	Power switch on (running)
H.V.	Off	High-voltage generator off
OCL	Off	-
CABLE	Off	-
TIME OVER	Off	-
H. V. CURRENT (PARAMETER)	Lit	Indicates the value of the parameter being set.
OUTPUT VOLTAGE （DATA No.）	Blinking	Indicates the No. of the data being changed. I: OCL setting change II: TIME OVER setting change III: - IV: Constant current setting change V: Fault output setting change VI :For metal bridge mode ON/OFF

Key switch	Status	Content
-/+	Effective *1	Used to increase or decrease a parameter setting.
↵/RESET	Effective	Press down to change the DATA No. Press down for three seconds or longer to return to the RUN mode.

*1 Ineffective when the data lock is applied (dipswitch 6 on).

8.6.1 Function settings (parameters)

In the function setting mode, you can specify the threshold for raising each alarm.

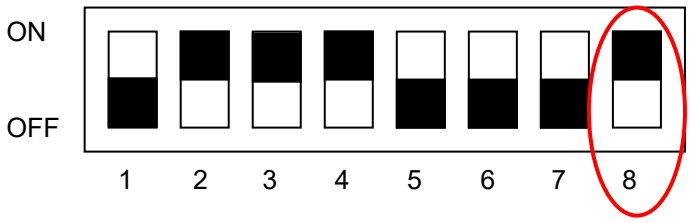
You cannot do this in any universal mode (dipswitch 8 on).

DATA No.	Content	Min	Max	Default value	Related fault	Remark
I	OCL setting change	30	80	80	OCL	30 to 80μA at intervals of 10μA
II	TIME OVER setting change	30	360	240	TIME OVER	30 to 360 sec at intervals of 30 sec
III*	—	2.5	30	20		*Do not change
IV	Constant current setting change	30	80	80	-	30 to 80μA at intervals of 10μA
V	Fault output setting change	1	3	2	-	1,2:Continuous output 3: Continuous/intermittent output for each alarm
VI	For metal bridge mode ON/ OFF	1	2	1	-	1：OFF 2：ON *1

*1 Delay the set up of output current during trigger ON

9 Initialization

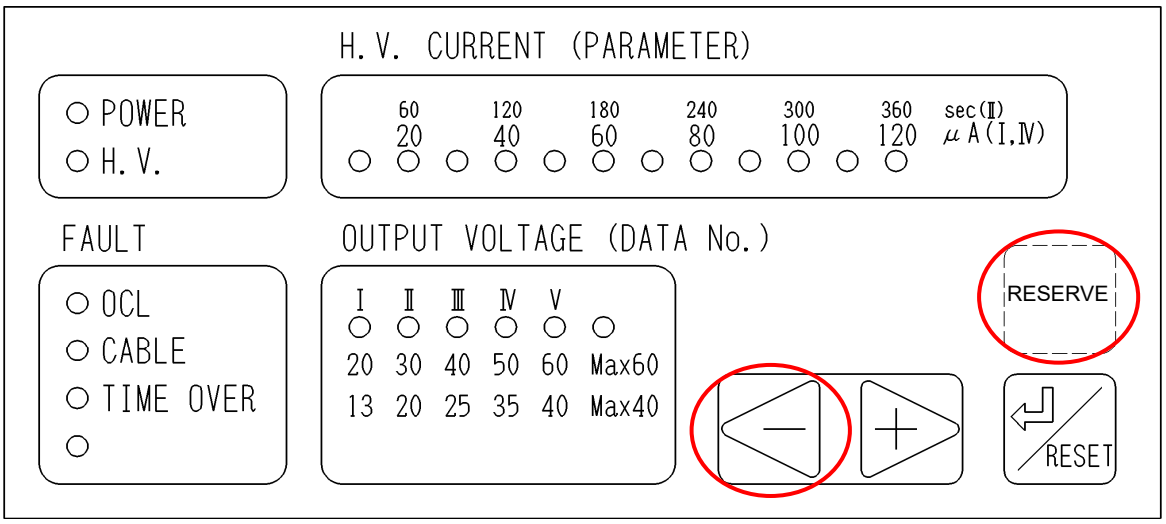
When initializing the system parameters to default values, follow the procedure described below.



(1) After turning off the equipment, open the door and set dipswitch 8 on the CPU board attached to the door to ON.

⚠ WARNING

Doing this with the equipment powered may lead to a burn, injury and/or electric shock.



(2) Turn on again while pressing “RESERVE,” and “-” keys at the same time.

(3) After LEDs light, the controller is initialized.

* Ineffective when the data lock is applied (dipswitch 6 on).

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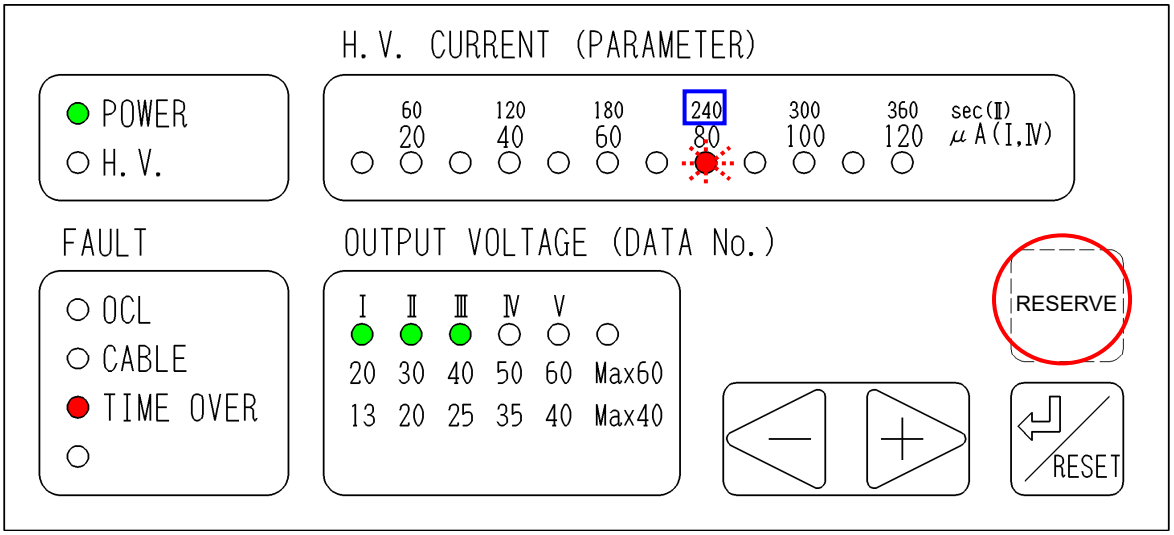
10 How to Check the Last Fault

The last fault can be checked by pressing the “RESERVE” key excluding the “FAULT” mode and function setting mode either in the universal mode (dipswitch 8 on) or exclusive mode (dipswitch 8 off).

The last fault is deleted when turning off power.

10.1 How to Check the Last Fault



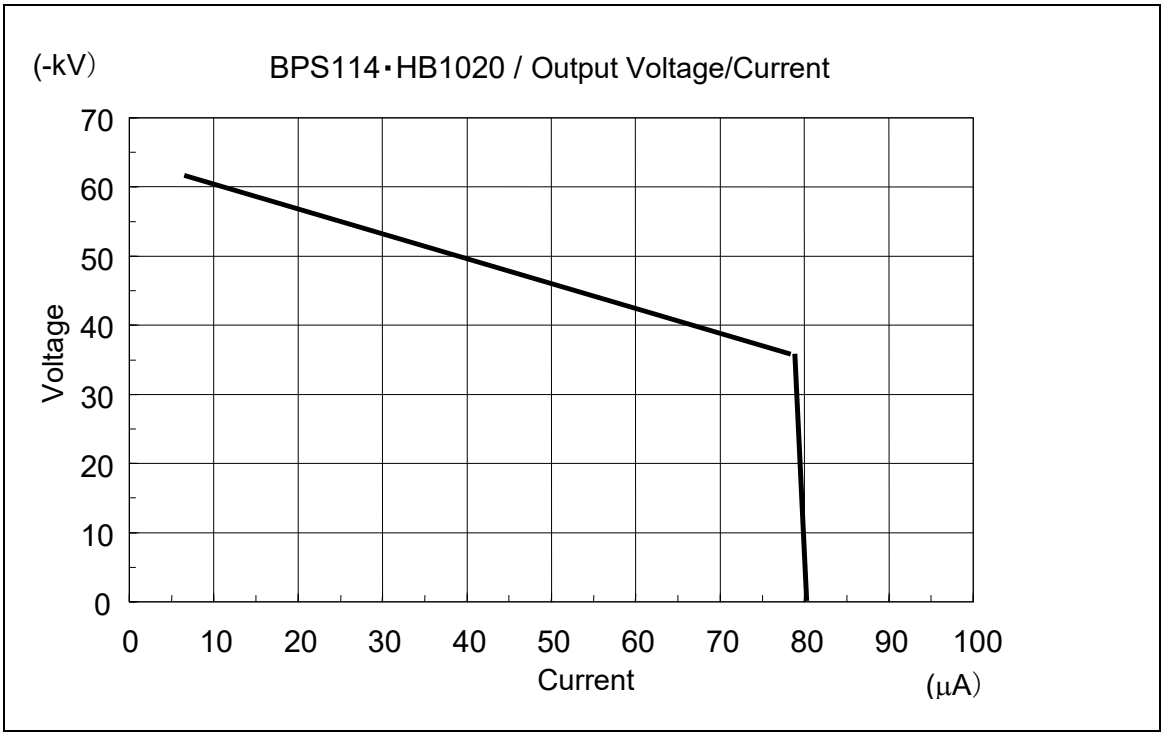
(1) Press the “RESERVE” key excluding the “FAULT” mode and function setting mode.

(2) The relevant FAULT LED lights and “PARAMETER” LED blinks to indicate the last fault. When the FAULT output setting for DATA No. “V” has the value of 2 or 3, OCL faults are not covered by this function.

* The above figure shows that a TIME OVER fault occurred at 240 seconds.

(3) The last fault is indicated only while the key is being pressed.

11 Output Voltage/Current Changes



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12 Maintenance Log

Shown below is a maintenance log format of a kind we recommend you to keep. Each time that you conduct a maintenance service, such as replacement of a part, tear-down cleaning, post-failure repair, etc., record the details. In the long run, you will find that such a log is very valuable in keeping your equipment in a consistently good operating condition.

Equipment name			BPS114		Date of acquisition: YYYY/MM/DD	
Date of service			Portion worked on	Description	Results	Who serviced
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
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						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac

13 Revision record

Revision level	Date	Content of revision	Program version
First edition	June 6, 2009	-	Ver1.02
2nd edition	June 10, 2019	Add about output error Add “for metal bridge mode” Unify the instruction of general/ exclusive mode	Ver2.00
3rd edition	July 27, 2022	Warranty revision	Ver2.01

14 Warranty

ASAHI SUNAC CORPORATION (the “Company”) shall provide the original purchaser (the “Purchaser”) with warranty service for a period of one (1) year from the date of purchase of the product, as follows:

- Should you find defects in design or workmanship with regard to parts, ship them back to the Company, with freight prepaid. The Company shall repair or replace the parts free of charge and reimburse the freight charges, provided that, as a result of an inspection and investigation of the parts conducted by the Company, the defects are deemed to be to attributable to the factors within the Company’s responsibility.

- In the following cases, free after-sales service is not provided.

  1. Failure resulting from an inappropriate method of installing this equipment.
  2. Failure resulting from a use method not conforming to this instruction manual or mishandling.
  3. Failure resulting from insufficient maintenance management of this equipment and incorrect handling such as non-conformance to the procedures specified in this instruction manual.
  4. Failure resulting from unauthorized alteration or structure change of this equipment without the Company’s consent.
  5. Failure due to force majeure such as earthquake, disaster, flood disaster or lightening.
  6. Warranty for consumables worn or deteriorated even in the case where this equipment is used correctly.
  7. Repair after the machine has been used outside Japan, and shipping cost.
  8. In addition to the above, failure due to circumstances beyond our control.
  9. If parts other than genuine ones are used.

- As for items such as parts purchased by the Company from another manufacturer, the warranty of that manufacturer shall apply.

- As for any parts deemed to be defective, the Company shall not be held liable for any expenses beyond the provision of repair or replacement parts free of charge.

- The Company shall not be held liable for any damage to the Purchaser caused by factors not attributable to the Company, such as misuse of product, etc.

【MEMO】

- When a transfer of title of this equipment takes place, please see to it that this Instruction Manual is handed over to the new owner.
- This equipment is manufactured in compliance with the Laws and Regulations of Japan.
  In the rare eventuality of this equipment being used outside Japan, compliance with the safety standards of the relevant countries is of course mandatory.

3rd edition: July 27, 2022

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