

INVERTER WELDING TRANSFORMER

IT-513B

OPERATION MANUAL



Thank you for purchasing our Inverter Welding Transformer **IT-513B**.

- Before using, read this operation manual carefully.
- After reading, save it in a proper place.

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1. Special Precautions

(1) Safety Precautions

Before using, read "Safety Precautions" carefully to understand the correct method of use.

- These precautions are shown for safe use of our products and for prevention of damage or injury to operators or others. Be sure to read each of them, since all of them are important for safety.
- The meaning of the words and symbols is as follows.

DANGER

Denotes operations and practices that may imminently result in serious injury or loss of life if not correctly followed.

WARNING

Denotes operations and practices that may result in serious injury or loss of life if not correctly followed.

CAUTION

Denotes operations and practices that may result in personal injury or damage to the equipment if not correctly followed.



These symbols denote "prohibition". They are warnings about actions out of the scope of the warranty of the product.



These symbols denote actions which operators must take.



Each symbol with a triangle denotes that the content gives notice of DANGER, WARNING or CAUTION to the operator.

DANGER

Do not touch the Terminal Block on the rear panel of the Welding Transformer



Since very high voltages are applied to the Terminal Block, it is very dangerous to touch it unnecessarily. When connecting or disconnecting a cable, be sure to disconnect the power supply.

After connecting the cable, mount the terminal cover so that operator can not touch the terminal block during work.



Never disassemble, repair or modify the Welding Transformer

These actions can cause electric shock and fire. Consult us or your distributor for maintenance and repair.



Never burn, destroy, cut, crush or chemically decompose the Welding Transformer

This product incorporates parts containing gallium arsenide (GaAs).

WARNING



IT-513B must be used only with IP-400B Power Supply

The **IP-400B** supplies a voltage of 300 V AC (4 kHz) to the **IT-513B**. Do not use with a power supply other than the **IP-400B**, otherwise fire or breakage of the power supply may result.



Ground the Welding Transformer

If the Transformer is not grounded, you may get an electric shock when there is trouble, or when electricity leaks.



Connect the specified cables securely

Cables of insufficient current capacities and loose connections can cause fire and electric shock.



Do not damage the power cable and connecting cables

Do not tread on, twist or tense any cable. The power cable and connecting cables may be broken, and that can cause electric shock and fire. If any part needs to be repaired or replaced, consult us or your distributor.



Stop the operation if any trouble occurs

Continuous operation after occurrence of a trouble such as burning smell, abnormal sound, abnormal heat, smoke, etc. can cause electric shock and fire. If such a trouble occurs, immediately consult us or your distributor.



Persons with pacemakers must stay clear of the welding machine

A person who uses a pacemaker must not approach the welding machine or walk around the welding shop while the welding machine is in operation, without being permitted by his/her doctor. The welding machine generates a magnetic field and has effects on the operation of the pacemaker while it is turned on.



Protective gear must be worn

Put on protective gear such as protective gloves, long-sleeve jacket, leather apron, etc. Surface flash and expulsion can burn the skin if they touch the skin.



Wear protective glasses

If you look at the surface flash and expulsion directly during welding, your eyes may be damaged. If any flash or expulsion gets in your eye, you may lose your eyesight.

CAUTION



Do not splash water on the Welding Transformer

Water splashed over the electric parts can cause electric shock and short circuits.



Use proper tools (wire strippers, pressure wire connectors, etc) for termination of the connecting cables

Do not cut the conductor of wire. A flaw on it can cause fire and electric shock.



Install the Welding Transformer on firm and level surface

If the Transformer falls or drops, injury may result.



Do not place a water container on the Welding Transformer

If water spills, insulation will deteriorate, and this may cause electric leak and fire.



Keep combustible matter away from the welding machine

Surface flash and expulsion can ignite combustible matter. If it is impossible to remove all combustible matter, cover them with non-combustible material.



Do not cover the Welding Transformer with a blanket, cloth, etc.

If such a cover is used, it may be overheated and burn.



Do not use this Welding Transformer for purposes other than welding

Use of this equipment in a manner other than specified can cause an electric shock and fire.



Use ear protectors.

Loud noises can damage hearing.



Keep a fire extinguisher nearby.

Keep a fire extinguisher in the welding shop in case of fire.



Maintain and inspect the Welding Transformer periodically

Maintain and inspect the Transformer periodically, and repair any damage nearby before starting operation.

(2) Precautions for Handling

- When transporting or moving the Transformer, do not lay it down. Also, handle the Transformer with care so as not to make an impact such as drop on it.
- Install this Welding Transformer on a firm and level surface. If it is inclined, malfunction may result.
- Do not install this Welding Transformer in the following:
 - Damp places where humidity is higher than 90%,
 - Hot or cold places where temperatures are above 40°C or below 0°C,
 - Places near a high noise source,
 - Places where chemicals are handled,
 - Places where water will be condensed,
 - Dusty places, and
 - Places at an altitude above 1000 meters.
- Clean the outside of the Welding Transformer with a soft, dry cloth or one wet with a little water. If it is very dirty, use diluted neutral detergent or alcohol. Do not use paint thinner, benzine, etc., since they can discolor or deform the Welding Transformer.
- Do not put a screw, a coin, etc., in the Welding Transformer, since they can cause a malfunction.
- Operate the Welding Transformer according to the method described in this operation manual.
- The Transformer is not equipped with auxiliary power such as an outlet for lighting.
- The welding power supply, the welding head, and the secondary cables for connecting the welding power supply, the welding head and the Transformer are separately needed to use the Transformer.

(3) On Disposal

This product incorporates parts containing gallium arsenide (GaAs). At the time of disposal, separate it from general industrial waste or domestic waste and carry out the disposal in accordance with applicable laws and regulations.

2. Name and Functions of Each Section

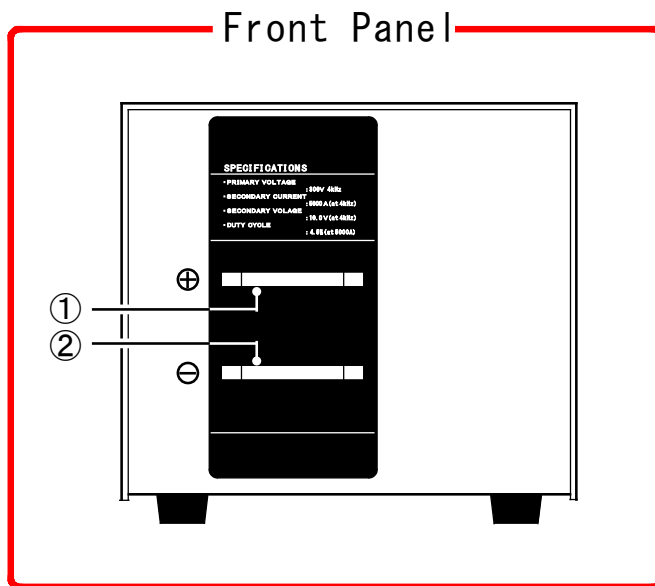


Fig. 2-1

① **[+] Output Terminal ***
Connect the positive (+) cable of the welding head to this terminal.

② **[-] Output Terminal ***
Connect the negative (-) cable of the welding head to this terminal.

* **[+] Output Terminal and [-] Output Terminal** are connected to chassis with a 30 Ω of resistance.

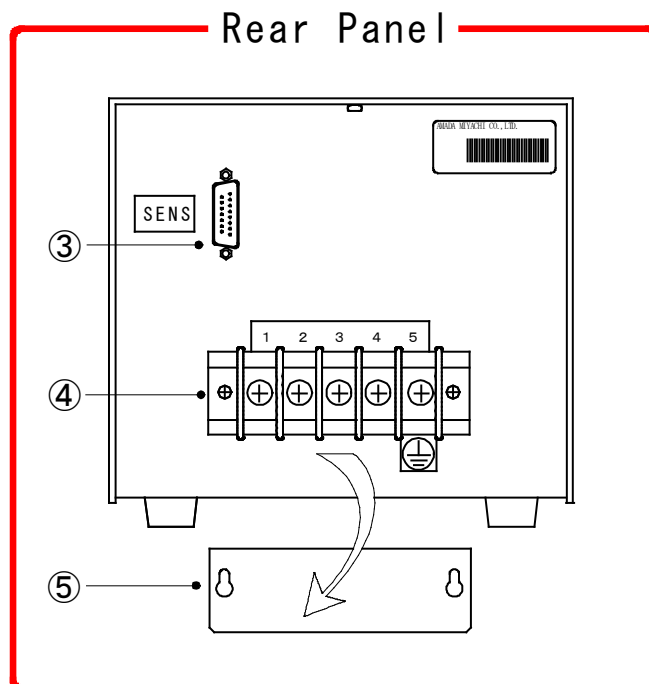


Fig. 2-2

③ **[SENS] Connector**
Insert the **[SENS]** Cable supplied to our inverter power supply in this connector.

④ **Terminal Block**
Connects the Output Cable supplied to our inverter power supply to these terminals.

⑤ **Terminal Cover**
This Cover is installed so that a worker will not touch the terminal block directly. Keep this Cover installed normally.

3. Installation and Connection

■ Place for Installation

Slits are provided on both sides of the **IT-513B** for higher heat radiation efficiency. Install this Transformer with a clearance of at least 10 cm from the walls on both sides for the full performance.

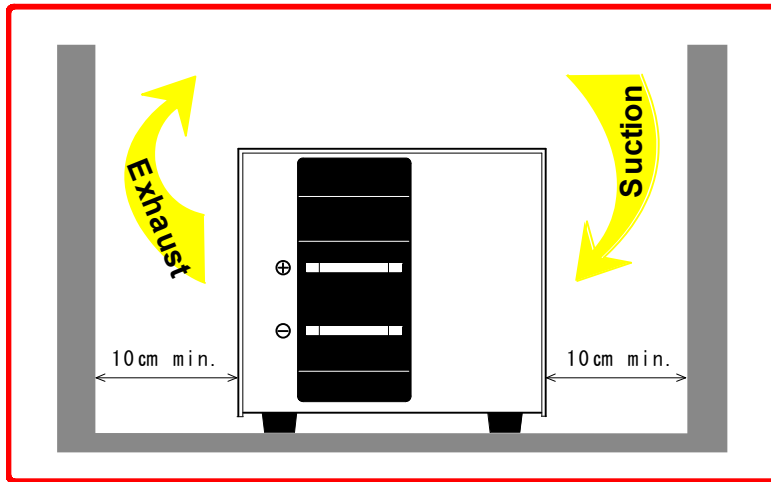


Fig. 3-1

CAUTION



Do not cover the Welding Transformer with a blanket, cloth, etc. If such a cover is used, it may be heated and burn.



Install the Welding Transformer on firm and level surface. If the Transformer falls or drops, injury may result.

■ Connection

After selecting a proper place to install the **IT-513B**, connect it to the other devices according to the explanatory drawings on pages 3-3 and 3-4.

ATTENTION

Our welding head **MH-31AC** and welding power supply **IP-400B** are used in the following explanatory drawings.
The connection varies with the type and using method of the devices to be used. When connecting them, refer to their instruction manuals.

DANGER



When connecting, turn off the power supply to avoid an electric shock.

WARNING



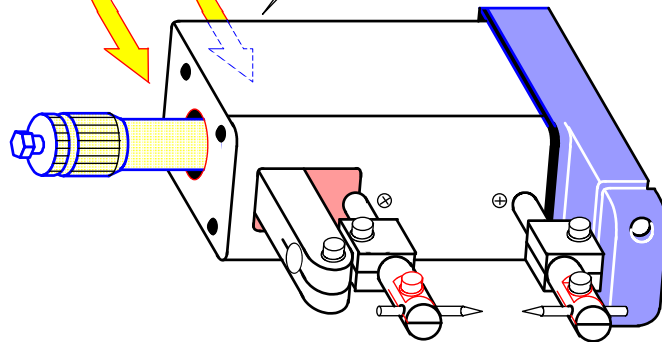
Connect the specified cables securely.



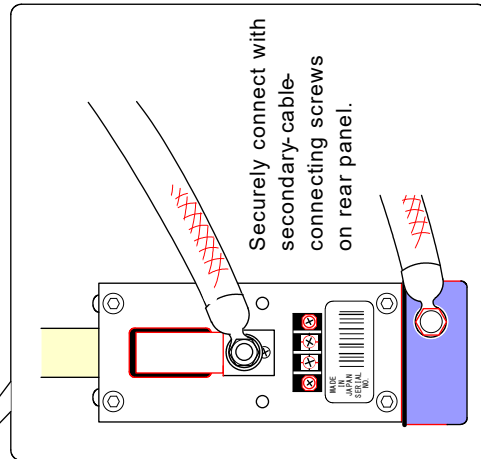
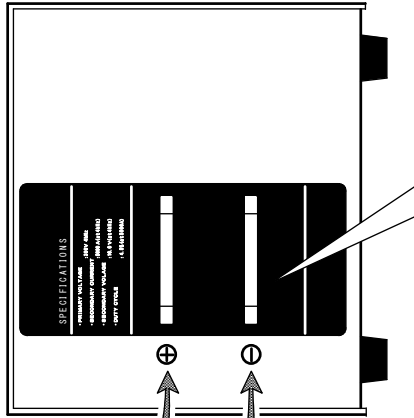
Connect the grounding wire to the grounding terminal located near the grounding mark.

Referring to this page and the next, connect **IT-513B** to the peripheral devices.
When connecting to other than **MH-31AC**, refer to the instruction manual for it.

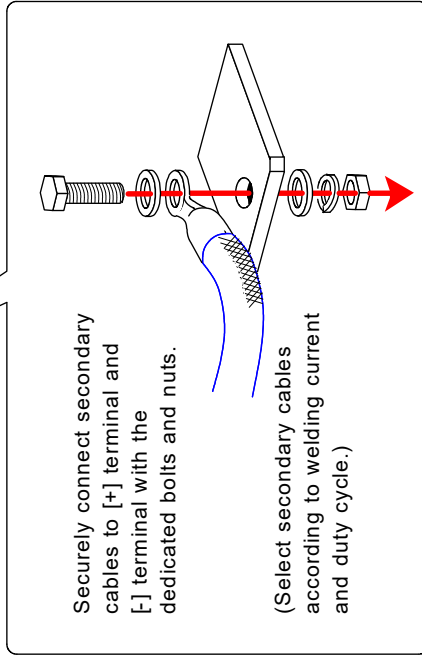
MH-31AC



Secondary cable

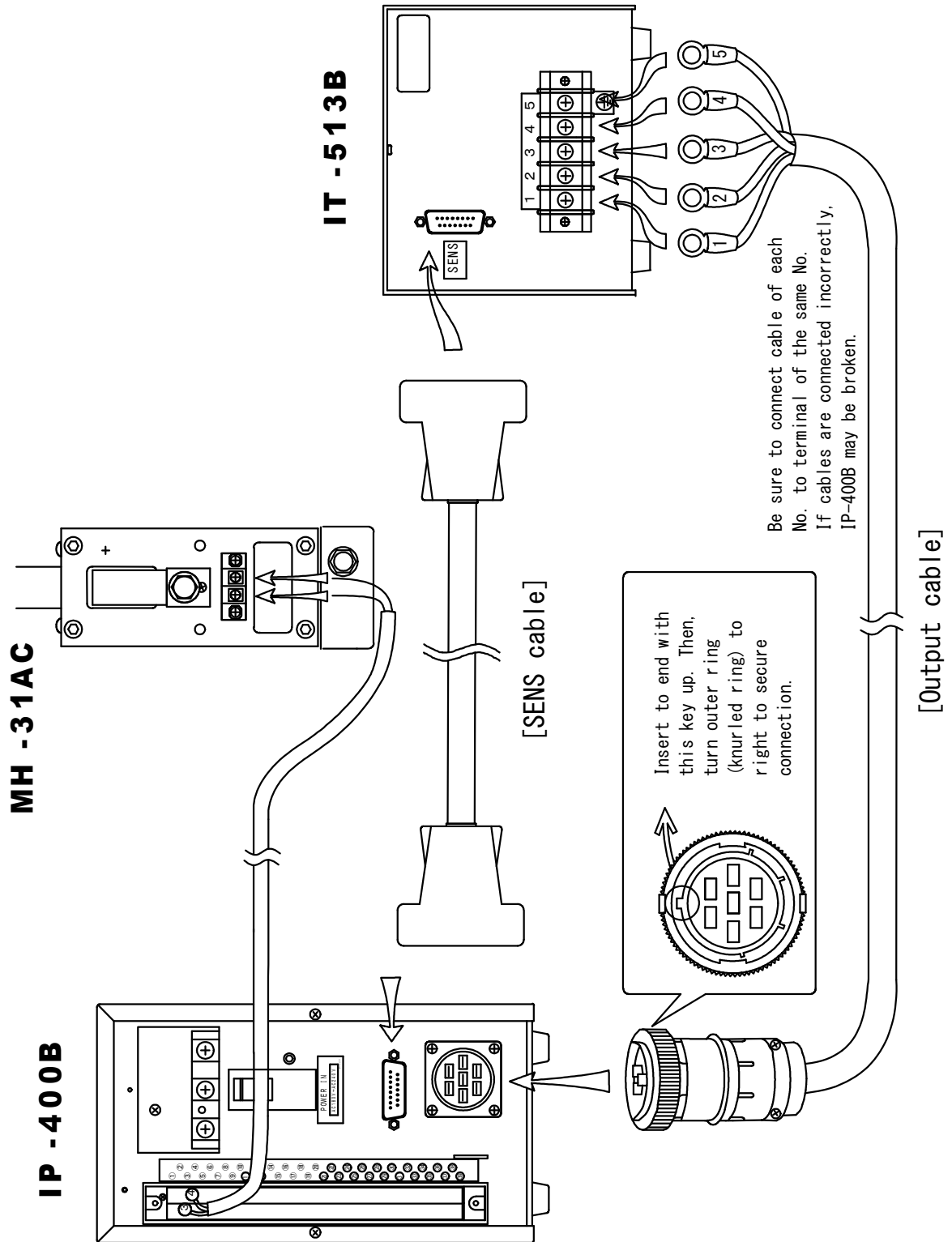


Securely connect with secondary-cable-connecting screws on rear panel.



Securely connect secondary cables to [+] terminal and [-] terminal with the dedicated bolts and nuts.

(Select secondary cables according to welding current and duty cycle.)



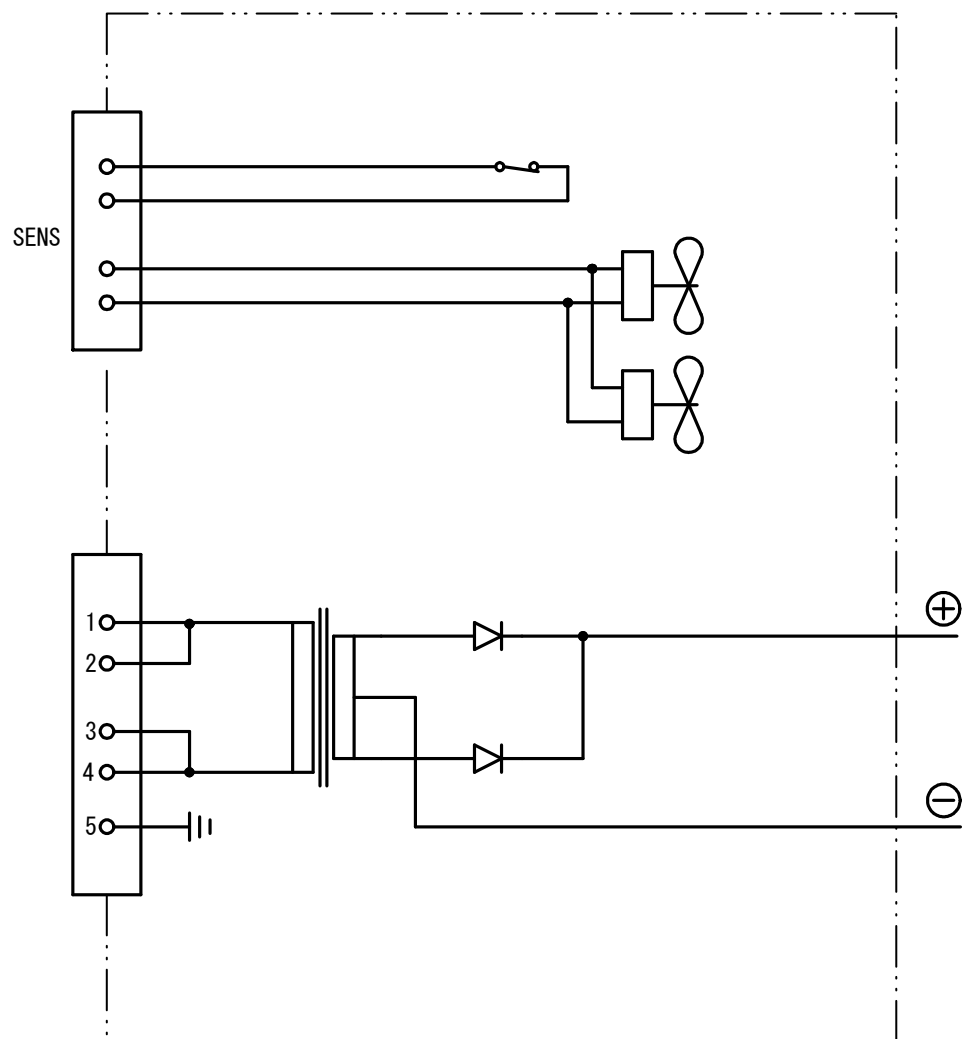
4. Specifications

Rated capacity	15.0 kVA
Input voltage	200–240 V AC of welding power supply : 300 V, 4 kHz
No-load secondary voltage	10.0 V
Turn ratio	30:1
Maximum output current	5.00 kA
Max. duty cycle	4.5% (at 5.00 kA) 6.0% (at 4.00 kA) 8.0% (at 3.00 kA) 12.0% (at 2.00 kA)
Cooling method	Forced air cooling
Protection	100°C thermostat switch (built-in)
Operating environment	Temperature 0°–40°C, Humidity 90% or less (Dew condensation not allowed), Altitude 1000 meters or lower Caution: Use this product in the environment without conductive dust. If conductive dust enters in the product, this may result in a failure, electric shock, or fire. When using this product in this environment, make contact with us.
Storage environment	Temperature -10°–55°C and dew condensation not allowed
Heat-resistant class	F
Case protection	IP20
Outline dimensions	182.7 mm (H) x 189.9 mm (W) x 400 mm (D) (Not including projections)
Mass	Approx. 15 kg

■ Major Components List

Item	Q'ty
Fan motor	2
W transformer	1
Thermal protector	1
SBD module	3

■ Schematic



5. Troubleshooting

Contents	Cause	Measures
The IT-513B transformer becomes hot abnormally.	Fan motor does not work.	Consult us or your distributor.
Current does not flow.	Secondary cables are not connected correctly.	Check that all cables are connected correctly.
	Output cable supplied to power supply is not connected correctly.	
Current is reduced.	Contacts of secondary cables are oxidized.	Disconnect secondary cables and polish their contacts.
	Internal fault of transformer.	Consult us or your distributor.

7. Duty Cycle Graph

