Thank you for purchasing the Miyachi Technos Inverter-Type Welding Transformer ITB-780A6.

- This operation manual explains its method of operation and precautions for use.
- Before using this Transformer, read this operation manual carefully until you have familiarized yourself with it.

After reading save the manual in place where operators can refer to it at any time.
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 voltage is applied to the “Terminal block”, it is very dangerous to touch it unnecessarily. When connecting or disconnecting a cable, be sure to turn off the power.

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

Never disassemble, repair or modify the Transformer.
These actions can cause electric shock and fire. Consult your distributor or Miyachi Technos Corp. for repair and maintenance.
**WARNING**

**Do not put your hands between the electrodes.**
When welding, keep your fingers and hands away from the electrodes.

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

**Use the rated voltage.**
Applying a voltage exceeding rated voltage can cause abnormal heat and fire.

**Do not touch +/- terminal, secondary cable, any welded part or electrodes during welding and just after welding finished.**
These parts are very hot. Do not touch them; otherwise you may be burnt.

**Securely connect only specified cables.**
Use of a cable of insufficient capacity or loose connection can cause fire and an electric shock.

**Do not damage the connecting cables.**
Do not tread on, twist or tense any cable. The connecting cables may be broken, and that can cause electric shock, short and fire. When repairing or replacing, consult Miyachi Technos Corp. 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 Miyachi Technos Corp. or your distributor.

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

**Persons with pacemakers must stay clear of the welding transformer.**
A person who uses a pacemaker must not approach the welding transformer or walk around the welding shop while the welding transformer is in operation, without being permitted by his/her doctor. The welding transformer 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.
CAUTION

Do not use this Transformer for any purpose other than welding. Use of this Transformer in a manner other than specified can cause electric shock and fire.

Use proper tools (wire strippers, pressure wire connectors, etc.) for termination of the connecting cables. Do not cut the wire conductor. A flaw on it can cause fire and electric shock.

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

Do not splash water on the Transformer. Water splashed over the electric parts, can cause electric shock and shortcircuits.

Do not place a water container on the Transformer. If water spills, insulation will deteriorate, and this may cause electric leak and fire.

Keep combustible matter away from the Transformer. 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 this Transformer with a blanket, cloth, etc. Do not cover this Transformer with a blanket, cloth, etc. while you are using it. The cover may be heated and burn.

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

Use ear protectors. Loud noises can damage hearing.

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

- Install this Transformer securely on a firm and level surface. If it is inclined malfunction may result.

- Do not install this Transformer in the following places:
  Damp places (where humidity is 90% or higher), dusty places, places where chemicals are handled, places near a high-frequency noise source, hot or cold places (where temperatures are above 40 °C or below 5 °C), and places where water will be condensed.

- Do not block up the vent slits and provide the clearance of 10cm minimum for better radiation.

- Do not put a screw, a coin, etc., through the slits on the enclosure, since they can cause a malfunction.

- Clean the outside of the 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 Transformer.

- Operate the Transformer according to the method described in this operation manual.

- The Transformer is dedicated to the Miyachi Technos Inverter-Type Welding Power Supply IPB-5000A and cannot be used with other power supplies.

- Verify that contents of the container agree with the kit list.
  If you see any damage, please contact Miyachi Technos Corp.

### Shipment Kit List

<table>
<thead>
<tr>
<th>Packaged Kit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITB-780A6</td>
<td>1</td>
</tr>
<tr>
<td>Operation Manual</td>
<td>1</td>
</tr>
<tr>
<td>Voltage-sensing cable</td>
<td>1</td>
</tr>
</tbody>
</table>
【2】Name and Function of Each Section

Front panel

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

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

③ [V-SENS] connector
Connect the plug of the attached voltage-sensing cable. Connect the other side of this cable to the screws near the electrode of the welding head.

④ [SENS] connector
Connect the dedicated SENS cable (separately sold) to our inverter power supply.

⑤ Terminal block
Connect the dedicated output cables (separately sold) to these terminals and to our inverter power supply.

⑥ Terminal cover
This cover is installed so that a worker will not touch the terminal block directly. Keep this cover installed normally.

Rear panel

INVERTER WELD TRANSFORMER
ITB-780A6: 300V/600V 5kHz

SPECIFICATION
- PRIMARY VOLTAGE
- SECONDARY VOLTAGE
- SECONDARY CURRENT
- DUTY CYCLE
- INVERTER POWER SUPPLY

MADE MIYACHI TECHNOS CORP. JAPAN
NO. SERIAL

SENS
[3] Installation and Connection

● Place for installation
Slits are provided on side of the ITB-780A6 for higher heat radiation efficiency. Install this transformer in a well-ventilated place and make a clearance of at least 10 cm from the surrounding walls to extract the full performance.

![Install on firm, level floor](image)

- Condensation
- Dust
- Dirt
- Hot
- Cold
- Chemical
- 10 cm min.

● Connection
After selecting a proper place for installation of ITB-780A6, connect it to the other devices according to the explanatory drawings on page 3-1 to 3.

**Notice**
MIYACHI TECHNOS welding head MH-21A and welding power supply IPB-5000A is used in the 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. Make sure to disconnect the power supply before connecting work.

● Connecting jumper plate
When an input voltage to the inverter power supply is 200V to 240VAC, connect the attached jumper plates to the terminals 1 and 2, and the terminals 3 and 4 as shown in the illustration (A); when, 380V to 480V, two jumper plates to the terminals 2 and 3 as shown in the illustration (B).
The terminals are factory-wired as shown in (B).

(A) 1 2 3 4
Jumper plates

(B) 1 2 3 4
Two jumper plates stacked
Use 2 attached jumper plates together to short 2 and 3.
Securely connect secondary cables to [+ ] terminal and [- ] terminal with special bolts.

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

Securely connect secondary cable connecting screws on rear panel.

Referring to this page and the next, connect to the peripheral devices. When connecting to ITB-780A6 to other than MH-21A, refer to the instruction manual for it.
Pass [START] cable through terminal cover and connect.

# 5 # 6
(For SCHEDULE 1)

NOTE: Shown above is jumper plate connection for 200 to 240VAC of input voltage. For detail, see "Connecting jumper plate" on page 3-1.

Pass [OUTPUT] cable through terminal cover and connect.

MP-5000A

ITB-780A6
【4】Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating ambient temperature</td>
<td>5 ℃ ~ 40 ℃</td>
</tr>
<tr>
<td>Rated capacity</td>
<td>17.4 kVA</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>300 V (When input voltage to inverter power supply is 220VAC)</td>
</tr>
<tr>
<td></td>
<td>600 V (When input voltage to inverter power supply is 440VAC)</td>
</tr>
<tr>
<td>Frequency</td>
<td>5 kHz</td>
</tr>
<tr>
<td>No-load secondary voltage</td>
<td>13 V</td>
</tr>
<tr>
<td>Max. output current</td>
<td>6000 A</td>
</tr>
<tr>
<td>Max. duty cycle</td>
<td>2.5% (at 6000A)</td>
</tr>
<tr>
<td>Cooling method</td>
<td>Forced air cooling</td>
</tr>
<tr>
<td>Protection</td>
<td>Built-in thermostat switch (100 ℃)</td>
</tr>
<tr>
<td>Outline dimensions</td>
<td>183(H) × 190(W) × 376(D)mm (Not including projections)</td>
</tr>
<tr>
<td>Mass</td>
<td>Approx. 13 kg</td>
</tr>
<tr>
<td>Accessories</td>
<td>Operation manual × 1</td>
</tr>
<tr>
<td></td>
<td>Voltage-sensing cable × 1</td>
</tr>
</tbody>
</table>

【5】Troubleshooting

<table>
<thead>
<tr>
<th>Contents</th>
<th>Cause</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body of ITB-780A6 becomes hot abnormally</td>
<td>Fan motor does not work.</td>
<td>Consult Miyachi Technos Corp. or your distributor.</td>
</tr>
<tr>
<td>Current does not flow.</td>
<td>Secondary cables are not connected correctly.</td>
<td>Check that all cables are connected correctly.</td>
</tr>
<tr>
<td></td>
<td>Output cable attached to power supply is not connected correctly.</td>
<td></td>
</tr>
<tr>
<td>Current is reduced.</td>
<td>Contacts of secondary cables are oxidized.</td>
<td>Disconnect secondary cables and polish their contacts.</td>
</tr>
<tr>
<td></td>
<td>Internal trouble of transformer</td>
<td>Consult Miyachi Technos Corp. or your distributor.</td>
</tr>
</tbody>
</table>
【6】Outline

Terminal screw M5 x 12mm

<With terminal cover removed>

(Dimensions in mm)
【7】Duty Cycle Graph

Ambient temperature : 40 ℃
Cooling water temperature : 30 ℃
Warranty

1. Warranty Period
   The warranty period is one (1) year from the date of shipment.

2. Warranty Service in Japan
   If the product is defective within the warranty period under customer’s normal use of the product in accordance with the precautions of the operation manual, labels attached to the products and so on, we repair the product free of charge. There will be no charge for warranty repair services performed at Miyachi Technos Corporation, Japan or the customers’ location in Japan.

   Example
   • Repair at Miyachi Technos Corporation: No shipping charges
   • Repair at customers’ location: No traveling costs for serviceman to and from the customers’ location

3. Overseas Warranty Service
   (1) Products that are purchased at overseas Miyachi affiliated companies (listed on the last page) or at authorized overseas distributors are warranted in accordance with the warranty contract of those companies or distributors where the product was purchased. Customer must contact the purchasing company or distributor regarding the product warranty.

   (2) When a Miyachi Technos Corporation product is being set up for operation at an overseas facility under the presence of a serviceman of Miyachi Technos Corporation or overseas Miyachi affiliated companies, Miyachi Technos Corporation will warrant the product for the warranty period under the described conditions below. Product repair will be at the option of Miyachi Technos Corporation.

   Conditions:
   a. Repair at customers’ location by Miyachi Technos Corporation serviceman
      Miyachi Technos Corporation will repair or replace, at its option, defective parts and/or unit free of charge except for our travel related costs (Round-trip air ticket, local transportation costs, man-hour charge for inbound and outbound traveling, hotel, meals, etc.). Advance notice is required.
b. Repair at customers’ location by overseas Miyachi affiliated companies
Miyachi Technos Corporation will repair or replace, at its option, defective parts and/or unit free of charge except for our travel related costs (Round-trip air ticket, local transportation costs, man-hour charge for inbound and outbound traveling, hotel, meals, etc.). Advance notice is required.

c. Repair by customer
Miyachi Technos Corporation will be responsible for the cost of parts and/or unit plus shipping to the customer’s designated location within Japan only. No overseas shipments. Replaced defective parts and/or unit must be returned or discarded according to the instructions of Miyachi Technos Corporation, Japan.

d. Repair at Miyachi Technos Corporation, Japan
Miyachi Technos Corporation will repair or replace, at its option, defective parts and/or unit free of charge except for inbound and outbound shipping costs. If a customer requests Miyachi Technos Corporation to ship the repaired product within Japan, Miyachi Technos Corporation will send it to the customer’s designated location free of charge. The customer is required to pay for any overseas shipping.

• In case of repair at overseas Miyachi affiliated companies, Miyachi Technos Corporation will repair or replace, at its option, defective parts and/or unit free of charge. All freight charges are responsibility of the customer. Miyachi Technos Corporation will send it to the customer’s designated location and charge the customer for all shipping costs.

(3) When a Miyachi Technos Corporation product is being set up for operation at overseas facility without the presence of a serviceman of Miyachi Technos Corporation or overseas Miyachi affiliated companies, the warranty expires in principle within the warranty period of one (1) year.
If a product is defective, Miyachi Technos Corporation or overseas Miyachi affiliated companies will repair the product and charge to the customer in principle according to the content of the defect and customer’s location.
However, if the customer sends the product, freight pre-paid, to Miyachi Technos Corporation or overseas Miyachi affiliated companies, Miyachi Technos Corporation will warrant it as follows. Then, ask Miyachi Technos Corporation where to send.

• In case of repair at Miyachi Technos Corporation, Japan, Miyachi Technos Corporation will repair or replace, at its option, defective parts and/or unit free of charge. If a
customer requests Miyachi Technos Corporation to ship the repaired product within Japan, Miyachi Technos Corporation will send it to the customer’s designated location free of charge. The customer is required to pay for all shipping charges to overseas locations.

- In case of repair at overseas Miyachi affiliated companies, Miyachi Technos Corporation will repair or replace, at its option, defective parts and/or unit free of charge. Miyachi Technos Corporation will send it to the customer’s designated location and will charge the customer for all shipping costs.

4. Although products are within the warranty period, they are repaired *with a charge in the following cases*:
   (1) Defect or damage due to improper use, incorrect repair or modification by customer
   (2) Defect or damage due to improper handling such as dropping or shock in transportation and moving after delivery
   (3) Defect or damage caused by the external causes such as earthquake, fire, salt water, storm, lightning, other natural disasters, war, terrorism, other rebellion, or abnormal voltage, etc.
   (4) Defect or damage caused by the use of this product in combination with the product of other company or by any surrounding equipment
   (5) Damage due to crack, discoloration, dirt and deficiency on storage in use
   (6) Exchange of consumable items

5. Responsibility of our Company
   Miyachi Technos Corporation is responsible for restoring the status of its products due to failure by repair in case of defect.
   Miyachi Technos Corporation is not liable for any direct or indirect damage arising from any defect or use of its products.

6. Repair after Warranty Period
   If the performance of a product can be recovered and maintained by repair, and a customer requests it, Miyachi Technos Corporation will repair the product and charge the customer for repair.
   Miyachi Technos Corporation will warrant parts and/or unit replaced with a charge for three (3) months from the date of replacement or repair, except for consumable items.

7. Stock Period of Parts and Unit
   Miyachi Technos Corporation will stock the necessary parts and units of its products for
repair for at least seven (7) years after production is discontinued.

In the case of a computer and its peripheral equipment, Miyachi Technos Corporation will stock the parts and units for repair for at least six (6) years in principle after production is discontinued. Miyachi Technos Corporation will provide hardware replacement options based on commercially available components or parts.

8. After-Service
If you have any question or request for repair and purchase of parts or units, please contact a distributor or representative of Miyachi Technos Corporation.

Please inform us of the model, serial number, problem and distributor’s name where you purchased the product with your request for repair.
Attention

- Do not duplicate, partially or entirely, the operation manual.
- Miyachi Technos Corporation reserves the right to change the content of the operation manual at any time without notice.
- Although Miyachi Technos Corporation created the operation manual with making assurance doubly sure, if you find incomprehensible matters, mistake, typographical errors, etc., please inform us of them immediately.

For customer’s use:

<table>
<thead>
<tr>
<th>Date of Purchase</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributor’s Name and address at purchase</td>
<td></td>
</tr>
<tr>
<td>Serial No.</td>
<td></td>
</tr>
</tbody>
</table>

For your memory, please fill in the above box.

Please contact the sales department of Miyachi Technos Corporation or the local distributor at your purchase if you have any request for after-service or other questions regarding our products.
Miyachi Technos Corporation, Japan

http://www.miyachi-gr.co.jp/

**Head Office / Factory**
95-3, Futatsuka, Noda-city, Chiba 278-0016 Japan
TEL 04-7125-6177  FAX 04-7125-6170  TEL +81-4-7125-6177(Key Number)

**Sales Headquarter / Tokyo Sales Office / Application Laboratory**
Koyosha Building, 5-48-5, Higashi-Nippori, Arakawa-ku, Tokyo 116-0014 Japan
TEL 03-3891-2211  FAX 03-3891-7887  TEL +81-3-3891-2211(Key Number)

**Osaka Sales Office / Application Laboratory**
Shin-Osaka Meiko Building, 6-9-27, Nishi-Nakashima, Yodogawa-ku, Osaka-city, Osaka 532-0011 Japan
TEL 06-6305-2211  FAX 06-6305-3870  TEL +81-6-6305-2211(Key Number)

**Nagoya Sales Office / Application Laboratory**
4F Kumada Shirakawa Bldg, 2-11-19, Sakae, Naka-ku, Nagoya-city, Aichi 460-0008 Japan
TEL 052-201-3330  FAX 052-201-3380  TEL +81-52-201-3330(Key Number)

**Overseas Miyachi affiliated companies**

**Miyachi Korea Corp.**
D-510, Pundang Techno-Park, 151, Yatap-Dong, Pundang-Gu, Songnam-city, Kyunggi-Do, Korea
TEL +82-342-707-5855  FAX +82-342-707-5857

**Miyachi Trading (Shanghai) Co. Ltd.**
6F, Building 64, No.421 Hong Cao Road Shanghai, 200233 China
TEL +86-21-6485-9595  FAX +86-21-6485-9797

**Unitek Miyachi Corp.**
1820 South Myrtle Ave., Monrovia, CA 91017-7133 U. S. A.
TEL +1-626-303-5676  FAX +1-626-358-8048

**Miyachi Technos Europe GmbH**
Pleidelsheimer Strasse 11, D-74321 Bietigheim, Germany
TEL +49-7142-9752-0  FAX +49-7142-9752-27

May 24, 2004