Operating Instruction

AE-8155 myPower II 500

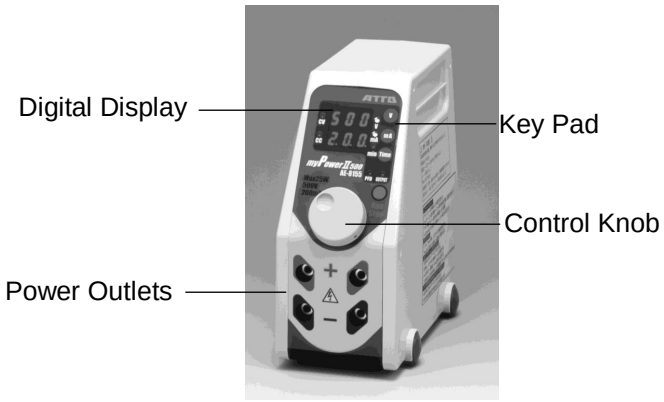
Safety Warning

- Prior to using this apparatus, operating and/or handling instructions of this apparatus and apparatus, reagents and/or chemicals that are used with this apparatus must have been understood.
- Use of this apparatus includes application of electricity, which may be fatal or injurious to human. Care should be taken against electricity when applying it to this apparatus.
- This apparatus outputs high voltage electricity, which may be fatal or injurious to human. Extreme care should be taken against outputted electricity when handling this apparatus and related apparatus connected to this apparatus.
- Use of this apparatus includes handling of reagents and/or chemicals which may be chemically hazardous or carcinogenic. Care should be taken for protection from hazardous or carcinogenic reagents and/or chemicals when handling them.
- Environments of high temperature, high humidity, dust, corrosive gas, excessive source-voltage fluctuation, excessive electrical noise, and physical shock or vibration should be avoided.
- This apparatus and apparatus that are used with this apparatus should be installed on a flat which is level, solid and stable.
- Prior to operating this apparatus, the apparatus and its components and/or parts should be thoroughly clean and dry. Caution should be exercised against water or moisture which may cause electrical hazards.

Section 1. Specifications

Constant output	1 to 500 VDC @ 1 V
	1 to 200 mA @ 1 mA
	Automatic crossover
Maximum output	25 VA
Output ripple	Less than 15 V (peak to peak) at 500 V, 25 VA
Output noise	Less than 1 V (peak to peak)
Meter accuracy	1% ± 0.5 V or better
	1% ± 0.5 mA or better
Timed output	1 to 999 minutes @ 1 minute with alarm buzzer, or continuous output
Digital meter	3 digits
	1 line for voltage
	1 line for current and time, selectable
Power outlet	2 pairs in parallel
Safety protection	Automatic output shutdown against short or open circuit with alarm buzzer
Power requirement	100-117 or 200-235 VAC, 50-60 Hz
	25 W
Dimensions (W × D × H)	7.4 × 17 × 17 cm, approx.
Net weight	0.74 kg (without AC cable), approx.

Section 2. Introduction



This instrument, called “power supply” hereafter, outputs constant voltage or constant current DC electricity for electrophoresis applications, under set output conditions.

Up to 500 V voltage, up to 200 mA current, and up to 999 minutes time of period are set with keys on the keypad, the digital display, and the control knob, after turning on mains electricity.

Output electricity is limited to 25 VA.

Output of electricity is manually started with a key on the key pad.

Electricity is output from the power outlets. 2 pairs of the power outlets are parallel. Electricity may be output from either of the 2 outlets, or the same, common electricity may be output from both the 2 outlets.

Output electricity is constant voltage at a set voltage, with a set current as the maximum current, or constant current at a set current, with a set voltage as the maximum voltage. Constant voltage and constant current may be automatically switched over by the automatic crossover function (refer to Section).

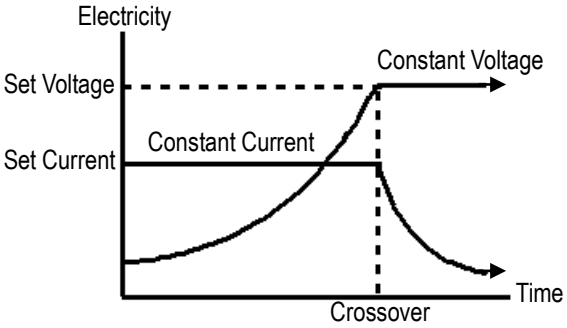
During output, either actual or set values of voltage, current and time may be read with the digital display.

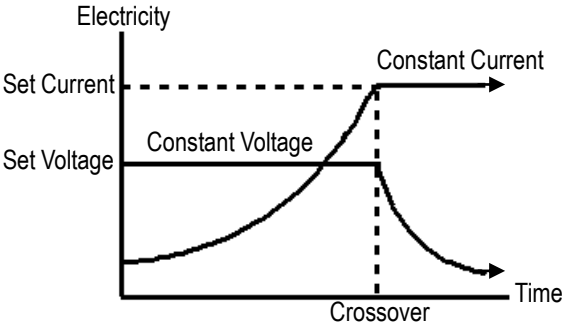
Output is automatically stopped upon expiration of a set time of period. Output may be manually stopped with the operation of a key.

Set voltage, current and time for a run of output operation are kept in memory after the run and turning off mains electricity, until different values are set.

In the event of an abnormal output condition during output, output is automatically shut down (refer to Section 4).

Section 3. Automatic Crossover





During electrophoresis, electric resistance of an electrophoresis system, which is connected the power supply to form an electric circuit, may increase or decrease. In case of an typical application of the Atto AE-6400 (discontinued), AE-6450 or AE-6530 mini PAGE system, as an example, a run for 2 gels would be started with 40 mA (20 mA per gel) constant current, and the initial voltage would be about 75 V. In the course of the run for about 80 minutes, voltage would rise to about 150 V due to increasing electric resistance of the system. In this case the following operation is considered.

1. To set 40 mA (for constant current) and 150 V (for voltage limit)

   Usually a run will be finished with the 40 mA constant current and 75 V or less voltage. But, in the event that electric resistance unusually increases, voltage will rise to 150 V. In the case, the power supply automatically switches output from 40 mA constant current to 150 V constant voltage, with its automatic crossover function. This lessens possible electrical hazard to operators and possibilities of damage of gels or the electrophoresis chamber (cell) which may caused from unnecessarily high voltge.

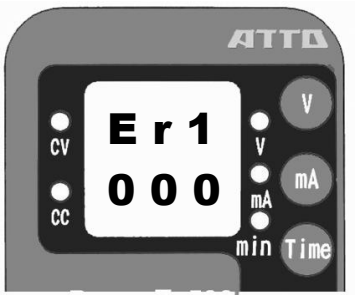
2. To set 40 mA (for constant current) and 100 V (for subsequent constant voltage)

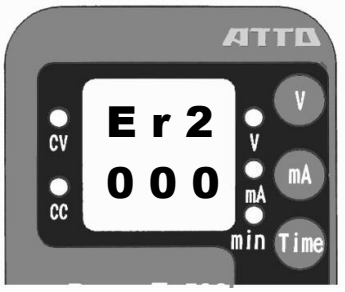
   For about 30 minutes from the start, a run will be made with 40 mA constant current, while voltage will gradually increase with increasing elecric resistance. When voltage rises to 100 V, the power supply will automatically switches output from 40 mA constant current to 100 V constant voltage. In the course of the constant voltage run, current will gradually fall and it will result in a longer run time while it will lessen heat generated which may possibly interfere with separation.

3. To set 40 mA (for current limit) and less than 75 V (for constant voltage)

   In case that voltage less than 75 V (usual initial voltage) is set, a run will be made with constant voltage at the set voltage through the run, unless current accidentally rise to 75 V. Constant voltage run would lessen heat generated which may possibly interfere with separation while it will result in a longer run time.

Section 4. Automatic Shutdown





In the event of an abnormal output condition during electricity output, the power supply automatically shuts down output, with alarm buzzer and the “Err 1” or “Err 2” (error) indication on the digital display.

Push any of the V, mA and Time keys, and the buzzer will stop both the voltage and current-time meters will read “000”.

Caution: In the event of automatic shutdown, output of electricity must not be restarted until the cause(s) of the abnormal output condition has been eliminated.

Abnormal output conditions:

1. “Er 1” Short Circuit or Over-current

   When the power supply detects current > 400 mA, it shuts down output.
   It usually is caused from a short circuit in the electrophoresis system, i.e. fault in the electrophoresis chamber (cell) or electrical connection of electric leads.

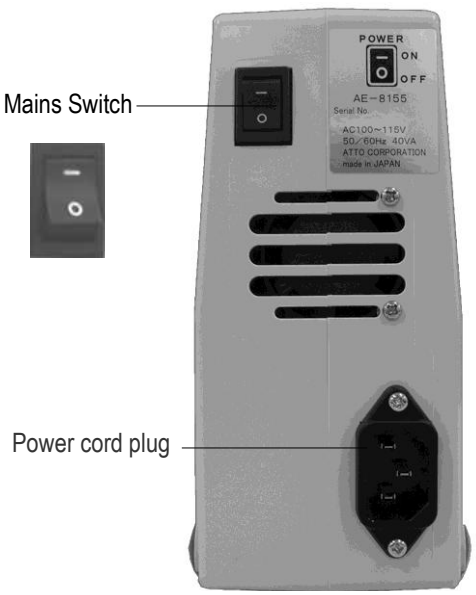
2. “Er 2” Open Circuit or No-load

   When the power supply detects open circuit which obstructs current or no-load, it shuts down output, provided current ≥ 10 mA is set. It usually is caused from faulty connection of electric leads or down electrical connectors and wires.

   In case that current ≤ 9 mA is set, the automatic shutdown is not functioned.

Section 5. Mains Switch & Connectors

1.Mains Switch & Power Cord (at the rear):



The plug of the power cord is connected to an electric receptacle which supplies source electricity.

Caution:
The power cord should be connected to a receptacle which provides grounding (earth) for safety.

Caution:
Prior to connecting or disconnecting the power cord, the mains switch should be turned off to the **O** position.

Turning the mains switch to the **-** position turns on mains electricity of the power supply. Turning the switch to the **O** position turns off mains electricity

Caution: Prior to turning on mains electricity, electrical connection of an electrophoresis system, i.e. connection of an electrophoresis chamber (cell) and the power supply with power leads should be completed.

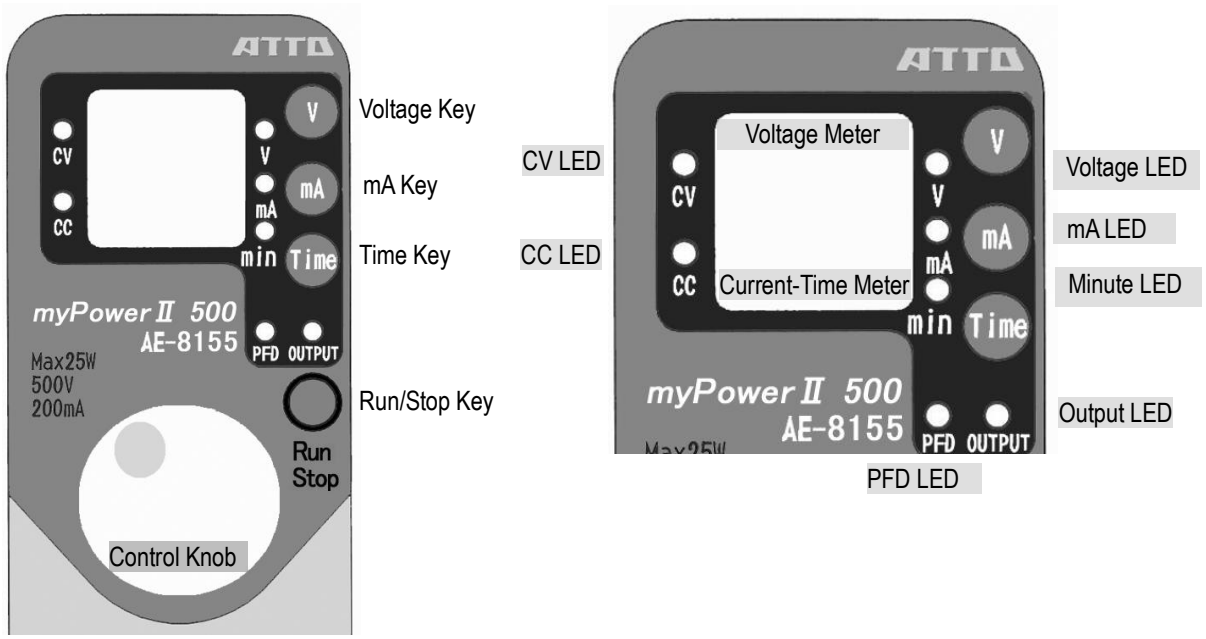
2. Power Outlets:

The power supply has 2 sets of power outlets, which are parallel. An upper female terminal marked **+** (positive) and a lower female terminal marked **-** (negative) forms a pair of power outlet.

The female terminals are designed to accept the male plugs of the power leads supplied with the electrophoresis chambers supplied by Atto, of which the metal tips (banana-shaped) have about 18 mm length and about 4.5 mm diameter at the maximum. In case that male plugs of power leads of electrophoresis chambers (cells) of other manufacturers do not fit the female terminals, plugs to replace such plugs are available from Atto or its distributors.

Caution: Prior to connecting power leads to the power outlet or disconnecting power leads from the power outlets, the mains switch (at the rear) should be turned off.

Section 6. Controls & Indicators



1. Voltage Meter, Voltage LED & Voltage Key

   The 3-digit voltage meter reads set voltage or actual voltage by the Volt When the meter reads voltage, the voltage LED lights. When the meter reads set voltage, 3 dots are displayed. When it reads actual voltage, the dots are not displayed.

   Pressing the voltage key alternates reading of set voltage and reading of actual voltage on the voltage meter. During power output, the meter reads actual voltage. When the voltage key is pressed during power output, the meter reads set voltage for 3 seconds, and it returns to reading of actual voltage.

   The voltage mete reads “Err 1” or “Err 2” when the power supply automatically shuts down output upon detecting abnormal output condition (refer to Section 4).

2. Current-Time Meter, mA LED, Time LED, mA Key & Time Key

   The 3-digit current-time meter reads current by the milli-ampere or time of period by the minute. When the meter reads current, the mA LED lights. When it reads time, the minute LED lights.

   Pressing the mA key while the current-time meter is reading time switches the meter for reading of current. Pressing the Time key while the meter is reading current switches it for reading of time.

   While the current-time meter is reading current, pressing the mA key alternates reading of set current and reading of actual current on the meter. When the meter reads set current, 3 dots are displayed. When it reads actual current, the dots are not displayed.

   While the current-time meter is reading time, pressing the time key alternates reading of set

time and reading of time elapsed on the meter. When the meter reads set time, 3 dots are displayed. When it reads time elapsed, the dots are not displayed.

3. Run/Stop Key & Output LED

   Pressing the run/stop key, while the power supply is not outputting power, starts output of power. While power is outputted, the output LED lights. Pressing the run/stop key, while the power supply is outputting power, stops output of power and turns out the output LED.

   Caution: Prior to pressing the run/stop key to start output, connection of the power supply and an electrophoresis chamber (cell) should be completed. Prior to connecting power leads to the power outlet or disconnecting power leads from the power outlets, the mains switch (at the rear) should be turned off.

4. CV LED & CC LED

   While the power supply is outputting constant voltage electricity, the CV (constant voltage) LED lights. While it is outputting constant current electricity, the CC (constant current) LED lights.

   Output of the power supply is limited to 25 VA. While 25 VA electricity is outputted, both LED of the CV and CC light.

5. Control Knob

   While the voltage meter or the current-time meter reading a numerical value with 3 dots, turning the control knob clockwise increases the value and turning it counterclockwise decreases the value, in order to set voltage, current or time.

Section 7. Installation

1. For operation of the power supply, secure an environment that is free from the following conditions.

   - Temperature lower than 1ºC or higher than 35ºC
   - Relative humidity higher than 90%
   - Dusty air
   - Corrosive gas
   - Inflammable or explosive gas
   - Adjacent instruments to cause intense electrical or electronic noise

2. For source electricity of the power supply, secure an electric receptacle which provides:

   - Voltage fluctuation within 10% of the nominal voltage
   - Grounding or earth against electric leakage

3. This power supply can be used in a cold room. However, care should be taken against dew which arises when moving it from cold environment to warm environment. When moving the power supply from a cold room to a warm room:

   1. Put it in a plastic bag or such, and seal the bag.
   2. Move it from a cold room to a warm room.
   3. Keep it being sealed and allow it to warm up to room temperature.
   4. After it has warmed up, take it out of the bag.

4. Install the power supply on a solid flat which is free from physical vibration or swing.

   Secure 5cm or more space around the power supply to allow it to radiate heat around it.

   Do not place any materials on the power supply.

Section 8. Connection

1. Check up the components in the electrophoresis chamber (cell) which lead electricity. Especially pay attention to the electrode wires, the electrode terminal, and connection of them. If there are any defects, repair them prior to operation.

2. Check up the power leads to be used for connecting the power supply and the electrophoresis chamber (cell) and their plugs. If there are any defects, such as injured coat of lead wires, or loose or deformed plugs, replace them with new ones or repair them completely prior to operation.

3. Check up dryness of the power supply, especially dryness of its power outlet terminals. Check up dryness of the power leads and their plugs. If there are any moisture, dry them completely prior to operation.

4. Ensure that the mains switch of the power supply is turned off. Connect the power supply and the electrophoresis chamber (cell) with the power leads. Check up complete connection. Especially pay attention to plug-to-receptacle and plug-to-plug connection. If there is any loose or incomplete connection, remedy it completely.

5. Ensure that the safety cover(s) or lid(s) of the electrophoresis chamber (cell) prevent operators from touching liquid in the chamber or the inside of the chamber.

Caution: For safety, always finish connection of the power supply and the electrophoresis chamber (cell), prior to operation of the power supply.

Caution: Don not allow any incomplete electrical connection, which may cause electrical hazard as well as fire by atmospheric electric discharge.

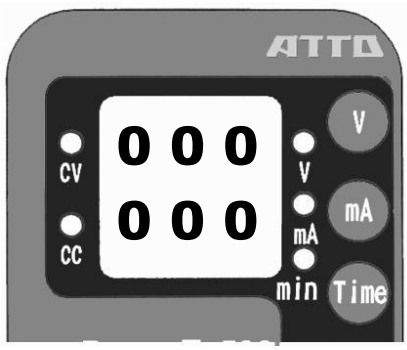
Section 9. Operation

Caution: Prior to operation, please read all the preceding sections, for safe and correct operation.

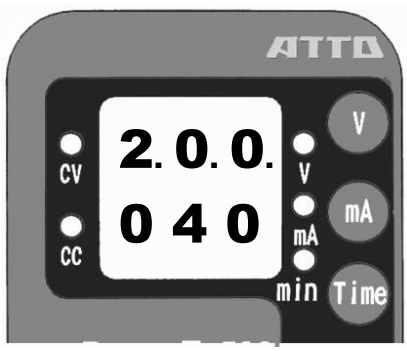
1. Install the power supply and the electrophoresis chamber(s) (cells) on an appropriate laboratory table, but withhold connecting the power cord of the power supply to an electric receptacle.

   If the mains switch of the power supply has been turned at the **-** position, once turn it to the **O** position. Place the safety cover(s) or lid(s) on the electrophoresis chamber(s). Connect the power supply and the chamber(s) with the power leads of the chamber(s).

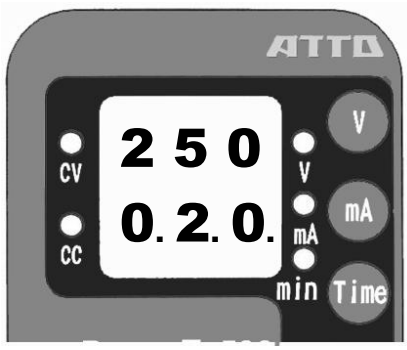
2. Turn the mains switch to the **-** position.



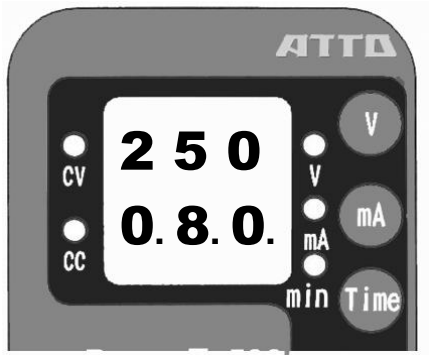
Upon turning on the mains switch, the voltage meter will read “000” with the V (voltage) LED lighting, and the current-time meter also will read “000” with the mA LED lighting.



Push the V (voltage) key, and the voltage meter will read voltage in 3 digits, with dots at the respective digits. The voltage being read is the voltage outputted on the last operation. If the same voltage is desired for the present operation, setting of voltage is not required. If different voltage is desired, adjust voltage by rotating the control knob.



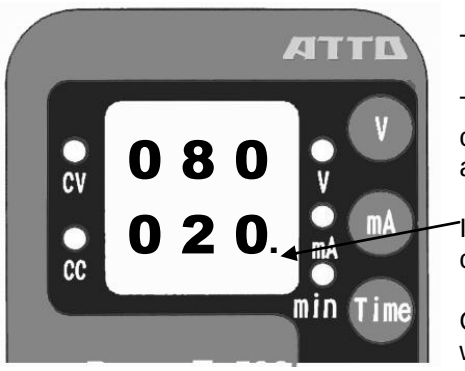
Push the mA (milli-ampere) key, and the current-time meter will read current in 3 digits, with dots at the respective digits. The current being read is the current outputted on the last operation. If the same current is desired for the present operation, setting of current is not required. If different current is desired, adjust current by rotating the control knob.



Push the Time key, and the current-time meter, with the min (minute) LED lighting, will read a time of period in 3 digits, with dots at the respective digits. The time being read is the tiem outputted on the last operation. If the same time is desired for the present operation, setting of time is not required. If different time is desired, adjust time by rotating the control knob.

In case that output is not to be turned off automatically but to be turned manually, set “000” minute.

3. To start power output, push the Run/Stop key.



Upon pressing the Run/Stop key:

The OUT (output) LED will light.

The voltage meter with the V LED lighting and the current-time meter with the mA LED lighting will read actual voltage and current being outputted.

In case that a time is set, a dot at the right end of the current-time meter will blink.

One of the CV and CC LED’s will light, i.e. the CV LED will light when voltage is constant or the CC LED will light when current is constant.

4. During power output:

   To read set voltage, push the V key, and the voltage meter will read set voltage with 3 dots for about 3 seconds. It is not available to change set parameter during output.

   To read set current, push the mA key, and the current-time meter will read set current with 3 dots for about 3 seconds. It is not available to change set parameter during output.

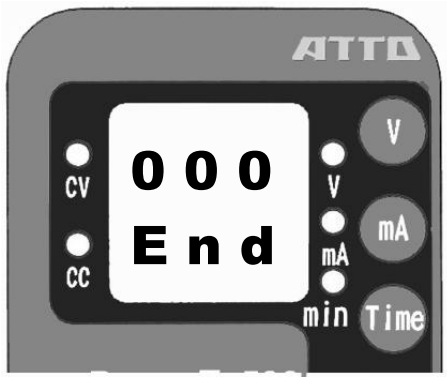
   To read time elapsed, push the Time key, and the current-time meter will read time elapsed. To read set time, further push the Time key, and the current-time meter will read set time with 3 dots for about 3 seconds. It is not available to change set parameter during output.

   Indication of constant output may change, from CV to CC, or from CC to CV, with automatic crossover of output due to change in electrical resistance of the electrophoresis system.

   Both LED of the CV and CC may light due to the 50 VA maximum output.

   Output may be automatically shut down with alarm buzzer and the “Err” (error) indication on the voltage meter, due to an abnormal output condition. Push any of the V, mA and Time keys, and the buzzer will stop both the voltage and current-time meters will read “000”. Then, once cease the operation, and do not restart output operation until cause(s) of abnormal output conditions have been solved.

5. Upon expiration of set time, output will be automatically turned off with alarm buzzer.



The output LED will be turned out. The CV or CC LED, which has been lighting, will be turned out. The voltage meter will read “000”, and the current-time meter will read “End”.

Output may be turned off manually by pushing the RUN/STOP key. In the case, alarm buzzer does not sound, the current-time meter reads “000”.

Turn off the mains to the **O** position.

Ensure that all the meters and LED’s have been turned out, disconnect the power leads from the power outlets of the power supply.

6. In the event of automatic shutdown due to abnormal output condition, push any of the V, mA or minute key to turn off the alarm buzzer, and turn off the mains to the **O** position.

   Trace cause(s) of short-circuit or over-current condition or open-circuit or no-load condition, by checking up all the materials to lead and connect electricity of the electrophoresis system. It is recommended to utilize a tester to examine electric conductance and resistance of such materials.

   It is possible that abnormal output condition is not caused from the electricity leading or connecting materials. In such case, check up gels, buffer and such materials, which may cause unusual conductance or resistance.

   After having solved cause(s) of the abnormal output condition, restart operation by turning on the mains switch and setting voltage, current and time again.

7. For cleaning of the power supply, use mild detergent with water and soft cloth.

   At times clear off any materials which may deposit on the female terminals of the power outlets and the plug of the power cord.

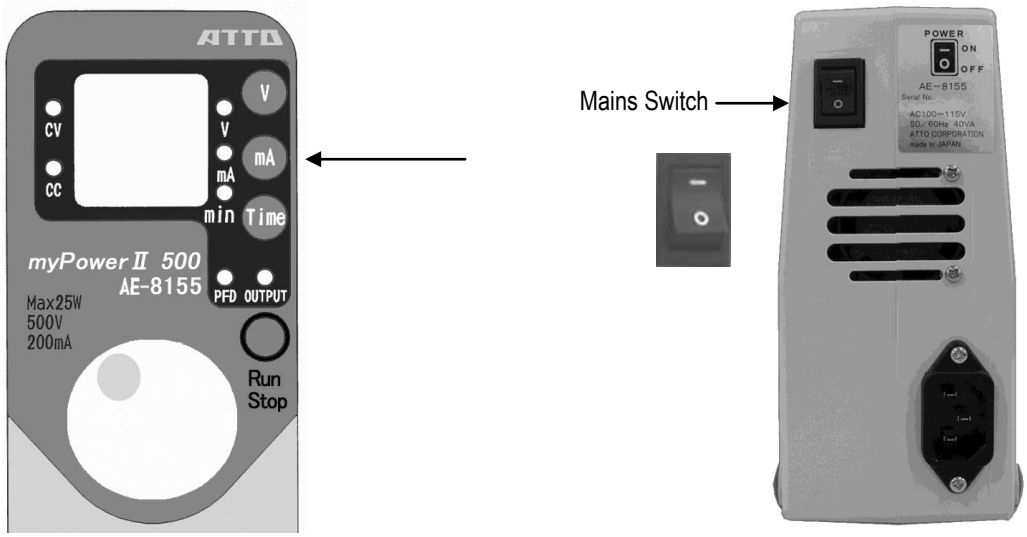
   In the event that any faulty or defective performance is noticed, operation and use of the power supply must be ceased. Consult Atto or its agent/distributor, with detailed information of operation conditions and symptoms and information of serial number of the unit. Repair actions without support information by Atto or its agent/distributor is not recommended. Atto or its agent/distributor will provide servicing information, replacement parts/components or repair, according to its warranty conditions and depending on status of the unit and situations of operation.

8. PFD function (Power Failed Detect function)

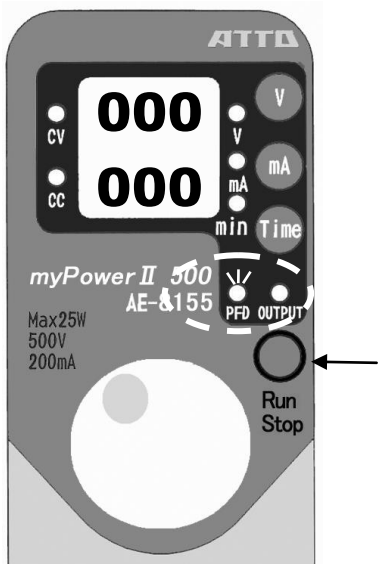
In case of PFD function and timer are on, the elapsed time is memorized if power failure is over 1 minute. After power return, it counts time following the memorized time and finish output when total output time is equal to set time.

Setting PFD function:

1). Press mA key and Main Switch at the same time to switch PFD function on or off.

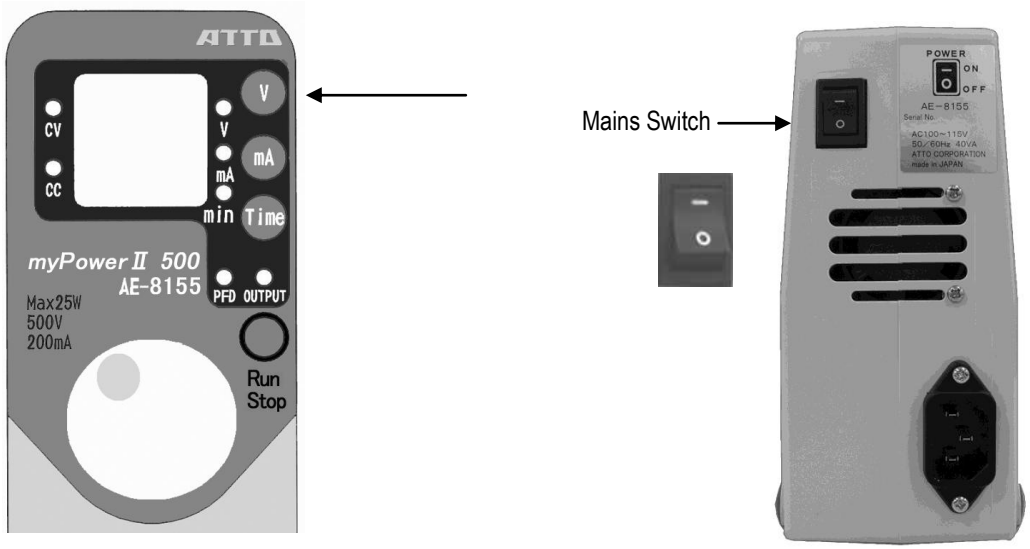


2). Electricity is provided to the equipment. it shows “000” on the Voltage Meter and Current-Time Meter. Voltage LED and mA LED light. If PFD function is on, PFD LED lights for 1 second. If PFD function is off, PFD LED does not light. There is no ON/OFF indicator.

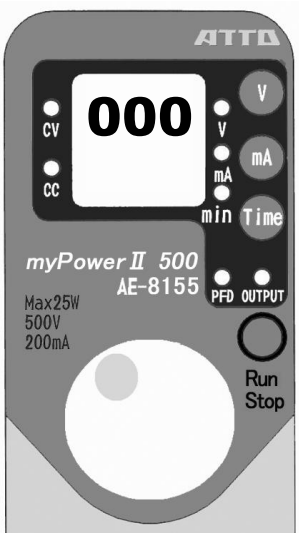


3). During output, if PFD function is on, PFD LED lights for 1 second when push Stop/Run button. PFD LED also lights when power return or finishing output.

9. Setting starting alarm for the moment of starting output
   1). Press Voltage key and Main Switch at the same time.



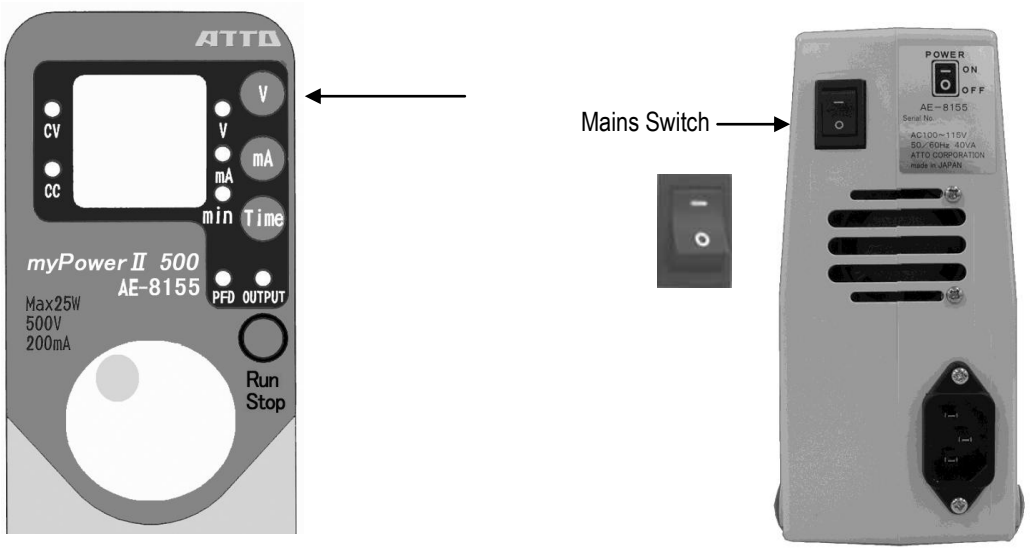
   2). Electricity is provided to the equipment it shows “000” on the Voltage Meter. Voltage LED and mA LED light.



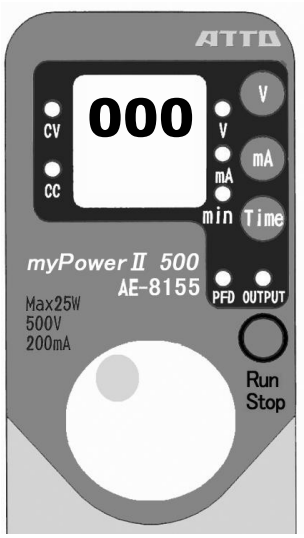
   3). Press Run/Stop key to switch starting alarm ON or OFF and the equipment return to normal mode for setting parameters. But it is not available to confirm starting alarm ON or OFF at the timing of setting it. Starting alarm ON or OFF can be confirmed at the timing of starting actual output.

10. Setting finishing alarm melody for the moment of finishing output by timer.

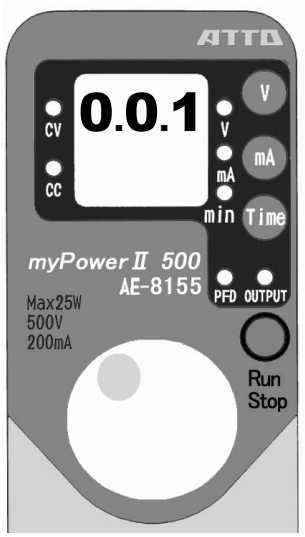
1). Press Voltage key and Main Switch at the same time.



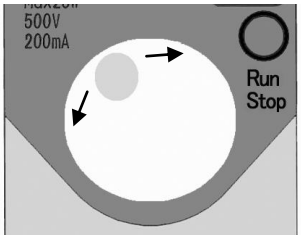
2). Electricity is provided to the equipment. it shows “000” on the Voltage Meter. Voltage LED and mA LED light.



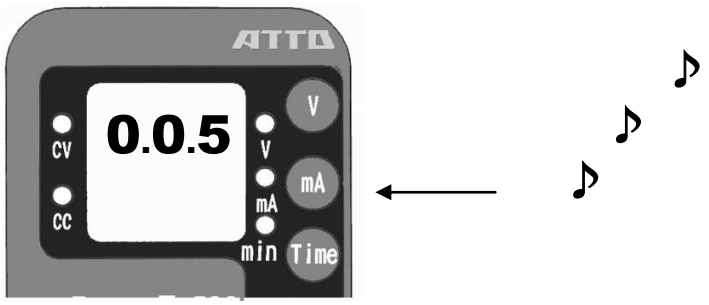
3). Press Voltage key. The equipment shows finishing alarm melody number set last time such as “001” on the Voltage Meter.



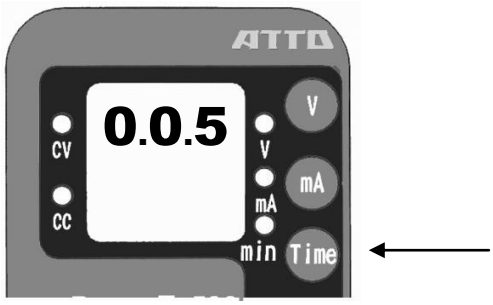
4). Select finishing alarm melody by turning Control knob.



5). Replay the finishing alarm melody selected by pressing mA key. 20 types of melody are selectable.



6). Press Time key to set finishing alarm melody and the equipment return to normal mode for setting parameters.



Warranty

Atto Corporation warrants all its products subject to the terms and conditions set forth below.

1. This warranty covers all new products that are sold by Atto Corporation (hereinafter called Atto).

2. Expendable items are not covered by this agreement.

3. Claims under this warranty are limited to defects in material and workmanship of the products.

4. Malfunction and/or damage due to neglect, abuse, operation or repair contrary to specifications and/or instructions presented by Atto are not warranted.

5. Atto shall not be liable to consequential damage, labor, loss or expense directly or indirectly arising from use of the products.

6. Damage due to transit is not covered by this warranty.

7. The warranty period is one (1) calendar year from a date when the products are shipped from Atto to an original purchaser.

8. This warranty is not applied to any defect that is reported to Atto later than one (1) calendar month from a date of warranty termination.

9. Atto Shall supply parts to replace faulty parts of defective products under this warranty, free of charge.

10. Atto shall repair defective products under this warranty, which cannot be repaired at field, free of charge.

11. Atto shall replace defective products under this warranty, which cannot be repaired, free of charge.

12. Freight charges for return and replacement shipments under this warranty are shared by Atto and a purchaser, that is one way by either party and another way by another party.

13. Warranty period of repaired products and replacement products or parts is three (3) calendar months from a date when the said products or parts are shipped from Atto, or a remaining term of an original warranty period of the defective products, whichever lasts longer.

14. Return of the products for credit or refund is not accepted unless otherwise agreed in writing by Atto.

Atto Corporation
1-5-32 Yushima, Bunkyo-ku
Tokyo 113-0034
Japan
Tel: +81-3-5684-6643
Fax: +81-3-5684-6646
E-mail: eig@atto.co.jp
URL: http://www.atto.co.jp

Distributed by: