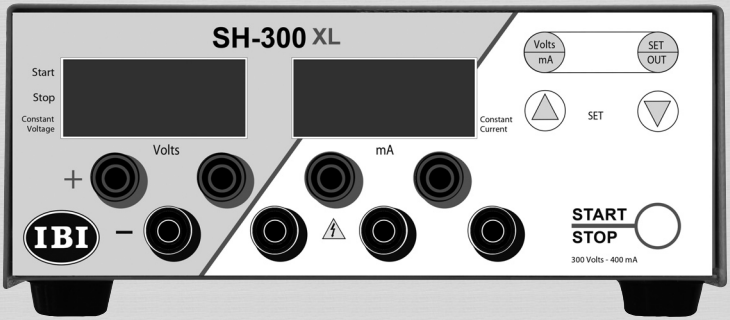
# User's Manual

## Electrophoresis Power Supplies




SH-300 XL
P. 7


SH-500 XL
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**Please retain all packaging materials until the warranty period has expired.**


IBI

## WARRANTY

IBI SCIENTIFIC warrants this apparatus against defects in materials and workmanship, under normal service; for one year from the date of receipt by the purchaser. This warranty excluded damages resulting from shipping, misuse, carelessness, or neglect.

IBI SCIENTIFIC liability under the warranty is limited to the repair of such defects or the replacement of the product, at its option, and is subject to receipt of reasonable proof by the customer that the defect is within the terms of the warranty. All claims made under this warranty must be presented to IBI SCIENTIFIC within one year following the date of delivery of the product to the customer.

This warranty is in lieu of any other warranties or guarantees, expressed or implied, arising by law or otherwise.

Under no circomstances shall IBI SCIENTIFIC be able for damages either consequential,, compensatory, incidental or special, negligence, strict liability, breach of warranty or any other theory, arising out of the use of the product listed herein.



IBI SCIENTIFIC makes no other warranty, expressed or implied, including warranties of merchantability of fitness for a particular purpose.

IBI SCIENTIFIC reserves the right to make improvements in design, construction, and appearance without notice.

## → Declaration of conformity and CE mark

The information outlined in this section applies only to customers located in the European Union (EU).

This laboratory apparatus is identified with the CE mark. This mark indicates that the product complies to the following EU Directives and Standards:

| | |
|---|---|
| 72/23/EEC | Low voltage directive |
| 89/336/EEC | Electromagnetic Compatibility |
| | EN 61010-1: 1993 Product safety |
| EN 50081-1: 1992 | Emissions |
| EN 50082-1: 1992 | Immunity |

A copy of the declaration of conformity certificate is available upon request.

## SAFETY PRECAUTIONS

**The power supplies are capable of delivering potentially dangerous voltage and are to be operated only by qualified technically trained personnel. Please read the entire user's manual thoroughly before operating this unit.**

**Take care as the mode of operation of the unit is continuous.**

If the power supply is used in a manner not specified by IBI SCIENTIFIC, then the protection systems of the equipment may be impaired.
For additional information, please call IBI SCIENTIFIC or your distributor Technical Resources Department.
Never attempt to remove the outer casing or make any repairs to the unit. Contact IBI SCIENTIFIC immediately if the need for repair or servicing should arise.

**The unit must be grounded. Use only the line cord supplied with the unit for safe operation. The use of a line cord other than this or one supplied by IBI SCIENTIFIC may result in user hazard.**



For UK users, check the mains plug of the line cord to make sure it is equipped with a protection fuse not exceeding 3 A. Connect the line cord directly into a properly rated, 210/250VAC 50/60Hz or 105/125VAC 50/60Hz wall outlet.

**For connection between the power supply and the electrophoresis equipment, use only safety output power cords equipped with Black and Red recessed plugs.**

Check the power cords and the black and red recessed safety jacks periodically to make sure that they are in good condition. Do not use cords which are cracked, nicked or in otherwise poor condition.
Always make all connections between the power supply and the electrophoresis equipment prior to start-up of the output.
Never place any objects other than high voltage connectors rated to 1000V into the output jacks.
Place the unit such that the rear panel has at least 10 cm of clearance to provide for adequate unit ventilation.

**The power supply must only be connected to electrophoresis equipment manufactured with built-in safety protected male plugs.**
**It is also recommended to use electrophoresis equipment that can only be connected when the protection lids are closed.**

## CLEANING

The power supply may be cleaned as required when the main supply is turned off.

Cleaning should be carried out with a cloth moistened with water or with tissues impregnated with 70% Iso-propyl alcohol.

No other cleaning solutions should be used.

## MAINTENANCE

There are no internal operator serviceable parts in this Power supply.

If the power should fail, the unit must be returned to the authorized Service center.

See troubleshooting guide (page 14).



## SHIPMENT

When shipment or transport of the power supply is required, use the packaging supplied with the unit and add the decontamination form clearly complied.

Store the unit in the packaging and in a dry area.

## DECONTAMINATION

Decontamination is required when the unit has to be returned for servicing. A declaration of contamination status form is attached to this manual and must be filled out prior to inspection servicing repair or return.

Please request a copy from IBI SCIENTIFIC or distributor and include with the equipment prior to return.

## NOTES

# User's Manual

## *SH-300 XL*

### Electrophoresis Power Supply




**Please retain all packaging materials until the warranty period has expired.**

# DESCRIPTION

## Microprocessor controlled switching Power Supply

- Last settings are automatically restored at power up.

- IBI SCIENTIFIC Power Supplies are equipped with an automatic restart system in case of power failure.
  When the power returns, an audible alarm sounds for 10 seconds and the power automatically restarts with the previous set values.
  If during the power failure the electrophoresis unit is disconnected from the power supply, the alarm still sounds when the power returns. Because no load is connected the power supply will immediately shut-down and set the output to zero.

- Direct reading of programmed set values and actual values before and during the cycle.

- Volt and mA adjustable during a cycle.



- Stabilization and automatic crossover between the parameters according to the set limitation values and when output limits are reached.
  2 LED indicate the constant mode.

- 2 operating modes: constant voltage - constant current.

- 2 LED Displays for set and output Volt, Current.

- Settings by tactile switches on moisture resistant membrane panel.

- Battery-backed memory feature "save" last output set values in the event of a power failure or when the run is terminated and the unit is turned off.

- 4 recessed safety output jacks allow simultaneous operation of 4 electrophoresis units.

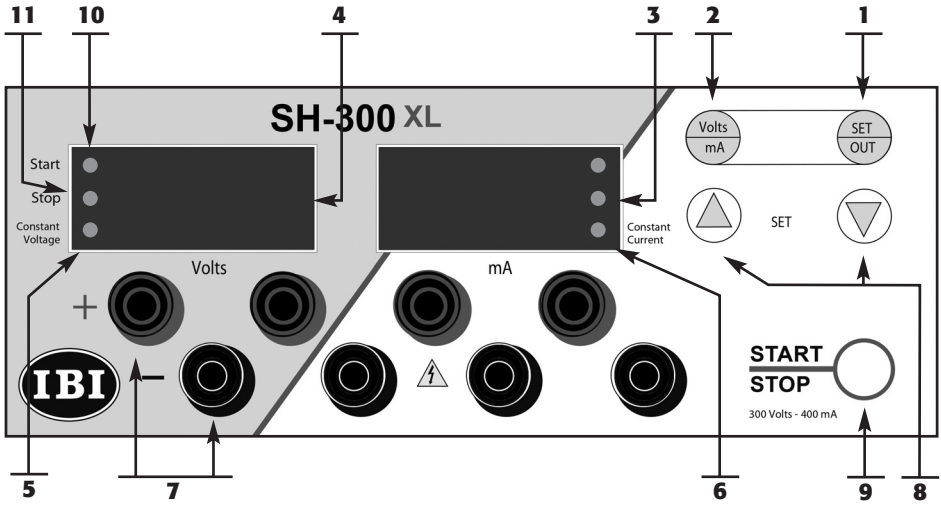
- Fault detection and 500µA current leakage detection or no load automatically shuts down output and indicates the fault by STOP LED blinking and audible alarm.

## SH-300 XL SPECIFICATIONS

**Power supply voltage fluctuations not to exceed ± 10% of the normal voltage**

| | |
|---|---|
| Power supply, 110V model | 90 - 130V; 50 - 60Hz; T4A fuses |
| Power supply, 220V model | 180 - 260V; 50 - 60Hz; T2A fuses |
| Fuse value in the mains plug (UK) | 3 A |
| Rated input power/current | 150 VA |
| ***SH-300 XL*** | |
| Volt range | 1 - 300 Volts; 1Volt step |
| Current range | 1 - 400 mA; 1mA step |
| Power | 0,6 - 120Watts |
| Mode of operation | Continuous |
| Switching frequency | 23 kHz |
| Output regulation stability | ± 0,2% FS ± 1/2 digit |
| Minimum output | 1 Volts; 15µA; 0,6 Watts |
| Value display accuracy | ± 0,2 FS ± 1/2 digit |
| Power failure during the run | Audible alarm and automatic restart with previous set values when power returns |
| Fault detection | Output supply stop, audible alarm STOP LED blinking |
| Fault status | Output to earth leakage<br>Output open circuit<br>Output short circuit<br>No regulation (Overheating, power circuit fault) |
| Ground leakage | Detection level 500µA |
| Output to ground impedance | 10MΩ min bypassed by 1nF max |
| Size | 21 cm x 18 cm x 11 cm (D x W x H) |
| Weight | 2 kg |
| Environmental conditions | Indoor use<br>Altitude up to 2000m<br>Temperature 10°C - 40°C |

Maximum relative RH 80% for temperature up to 31°C decreasing linearly to 50% RH at 40°C.




**1** Tactile switch for the selection of the following modes :
- OUT: Display of output values when the unit is running
- SET: Display of preset values



**2** Tactile switch for selection of parameter to set. Operating in SET mode
- Volts: Voltage
- mA: Current

**3** Current display (mA)

**4** Voltage display

**5** When blinking, this Led indicates that voltage value is in SET mode
When lit, this Led indicates that voltage is the constant parameter during the run

**6** When blinking, this Led indicates that curent value is in SET mode
When lit, this Led indicates that curent is the constant parameter during the run

**7** Four recessed safety output jacks

**8** Tactile switches for increasing/decreasing Volts and mA. Operating in SET mode

**9** START/STOP switch

**10** Led indicating the START status

**11** Led indicating the STOP status

# OPERATION

## Reminder that last set output values are memorized.

## A – Unit power up and immediate starting

1. Connect the AC line cord to a grounded, 3-prong wall outlet.
2. Connect the power supply to an electrophoresis device using the power cords supplied with electrophoresis device.
3. To turn the power supply on, press the main power switch located on the rear panel. The STOP LED **(#11)** illuminates, and the output LEDS will display zeros.
4. To display and check last set values, depress SET/OUT switch **(#1)**. As soon as one of these switches is activated, the output LEDS display last output set values.
5. If Volts and mA set values are correct, press START/STOP switch **(#9)** to start the run. The LED **(#10)** illuminates.
6. The actual values are immediately displayed. According to the settings and gel resistance, one of the constant modes LED will be lit: **(#5)** for constant voltage **(#6)** for constant current.
7. When separation is complete, press START/STOP **(#9)** to stop the run.
8. Turn off the power supply by using the main power switch on the rear panel.



## B – Adjusting output set values when unit is in STOP mode

1. Depress the SET/OUT switch **(#1)**. As soon as this switch is activated, the output LEDS display last output set values.
2. The volts LED **(#5)** is blinking first. Increase or decrease voltage by pressing the two SET switches **(#8)**.
3. Depress VOLTS/mA switch **(#2)** in order to select mA. The mA Led **(#6)** is blinking. Increase or decrease current by pressing one of the two SET switches **(#8)**.
4. Press SET/OUT switch **(#1)** for displaying the new actual values.

Maximum output values are as follow: **SH-300 XL**

**for 300 Volts - maximum current 400 mA (120 Watts)**

**for 400 mA - maximum voltage 300 Volts (120 Watts)**

## C – Adjusting output set values when unit is in START mode

1. While the unit is running, depress the SET/OUT switch **(#1)**. As soon as this switch is activated, the output LEDS display last output set values.
2. The volts LED **(#5)** is blinking at first. Increase or decrease voltage by pressing of the two SET switches **(#8)**.
3. Depress VOLTS/mA switch **(#2)** in order to select mA. The mA Led **(#6)** is blinking. Increase or decrease current by pressing one of the two SET switches **(#8)**.
4. Press SET/OUT switch **(#1)** for displaying the new actual values.
5. When separation is terminated, press START/STOP switch **(#9)** to stop the run.
6. Turn off the power supply by using the main power switch located on the rear panel.

## FURTHER INSTRUCTION

1. To view the set values during the run, depress the SET/OUT switch. The LED displays the set values as long as this switch is depressed. Once the SET/OUT switch is released, the LED will display the output values for three seconds, and then will switch back to displaying the actual output values.
2. It is possible to change the values during the run **without** depressing the STOP switch.
3. To change the output set values during the run or in STOP status:
   - Depress the SET/OUT switch **(#1)**. As soon as this switch is activated, the output LED display last output set values.
   - The volts LED **(#4)** is blinking at first. Increase or decrease voltage by the help of the two SET switches **(#8)**.
   - Depress V/mA switch **(#2)** in order to select mA. The mA Led **(#6)** is blinking.
   - Increase or decrease current by pressing one of the two SET switches **(#8)**.
   - After 3 seconds, the new actual output values are automatically displayed.
   - To immediately read the new actual values, press SET/OUT switch.
4. In START status, when the SET/OUT switch is depressed, the LEDS display the output set values for three seconds and then switch back to displaying the actual output values.
5. To establish the limiting (constant) mode for the particular experiment, set the controlling parameter to the output desired, and increase the other output set value until the appropriate mode LED (Constant voltage or Constant current) illuminates.

6. If the non-controlling output set values are reached during the course of the run, the power supply will automatically crossover to the new mode and control output relative to that mode.
   The appropriate mode LED (Constant voltage or Constant current) will illuminate.
7. If automatic crossover is desired during the run, adjust the output set value of the second controlling parameter to the maximum setting desired.
   When actual output relative to the second controlling parameter equals its output set value, the output will cross over from the first controlling parameter to the second.
8. When the run has been completed, depress the STOP switch to cease power output. Wait one minute before disconnecting the power cords from the gel unit.
9. Turn the main power switch off when the unit is not in use.

## FAULT

In a fault situation the unit will shut off power immediately.
Simultaneously, the message **"FLT"** appears on the display, the audible alarm rings and the led STOP blinks.
This automatic cut off indicates one of the following situations:



- Output to ground leakage,
- Output open circuit,
- Tank's leads disconnected or defective,
- Output short circuit,
- Overload.

- ✔ Press STOP to resume and to cease the audible alarm.
- ✔ Look for the cause of the fault and correct.
- ✔ Press START to run again.
- ✔ If the unit goes to the fault mode, contact IBI SCIENTIFIC or your supplier technical service.

## AUTOMATIC RESTART

**The power supply will automatically RESTART using the last set values when the power is operating again after a power failure or repetitive micro failures during a cycle.**

**Simultaneously, the message "STR" is displayed and the STOP LED blinks for 10 seconds before operating again.**

# TROUBLESHOOTING GUIDE

| CONDITION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Display fails to illuminate when the POWER switch is put on. | Fuses have blown. | See Warning below. |
| The desired MODE is not flashing. | One of the other parameters is limiting output. | Increase the output value of the limiting parameter until the desired output mode is controlling. |
| Two different modes are blinking alternatively. | Settings for both parameters are too close to the actual output. | Increase the set value for the mode you do not wish to be limiting. |
| Settings switches are not working. | SET mode is not operating. | Depress SET switch |
| Audible alarm at power up. | Automatic restart is coming. | Press STOP to stop this function. The unit has been previously cut off by the power switch when running. Unit must always be stopped by the STOP switch prior to cut off by the power switch. |
| Impossible to start the run, Unit is coming back on STOP mode with audible alarm. Message "Flt" displayed with audible alarm. | A fault situation avoid the START mode to operate. | Check the cause of the fault and rectify. (See page 13.) |
| Message "Str" displayed. | | See automatic restart paragraph page 13. |



## WARNING

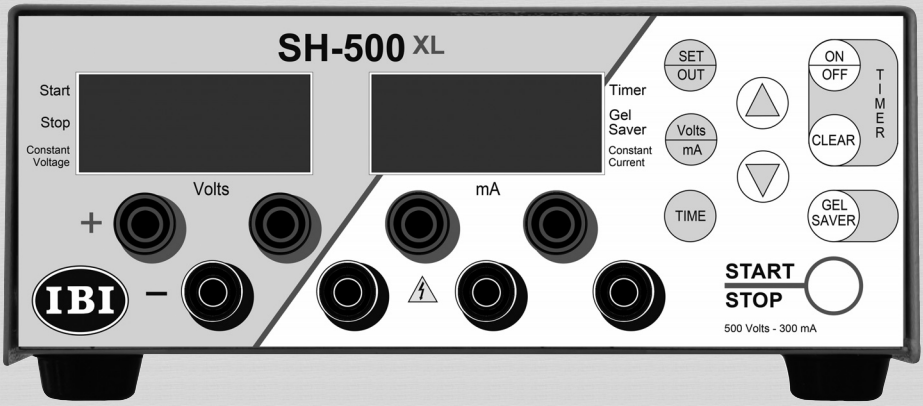
**Never attempt to remove the outer casing or make any unit repairs. Contact IBI SCIENTIFIC if the need for repair or servicing should arise.**
**Should the power supply fail, DO NOT remove the outer case of the unit and attempt any repairs.**

# User's Manual

## *SH-500 XL*

### Electrophoresis Power Supply





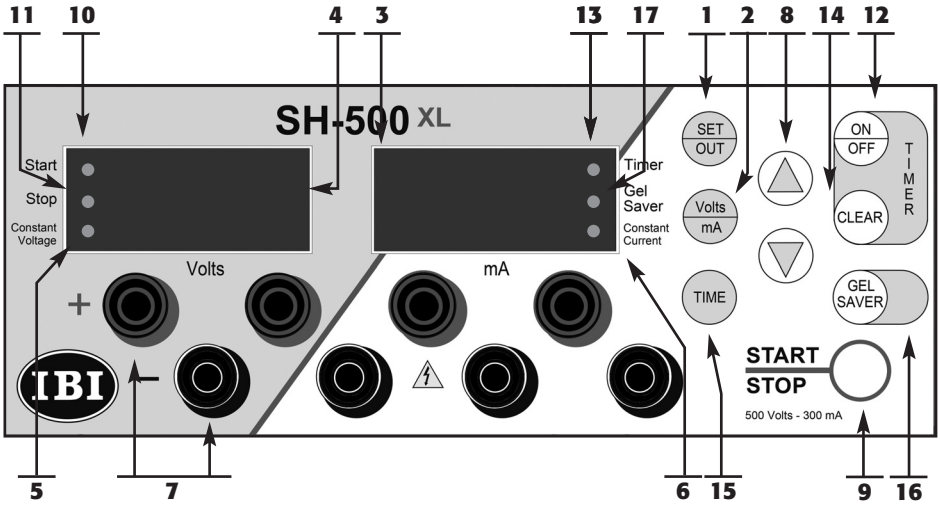

**Please retain all packaging materials until the warranty period has expired.**

# SH-500 XL SPECIFICATION

**Power supply voltage fluctuations not to exceed ± 10% of the normal voltage**

| | |
|---|---|
| Power supply, 110V model | 90 - 130V; 50 - 60Hz; T4A fuses |
| Power supply, 220V model | 180 - 260V; 50 - 60Hz; T2A fuses |
| Fuse value in the mains plug (UK) | 3 A |
| Rated input power/current | 150 VA |
| ***SH-500 XL*** | |
| Volt range | 1 - 300 Volts; 1Volt step |
| Current range | 1 - 500 mA; 1mA step |
| Timer range | 1 - 999 mn; 1mn step |
| Power | 0,6 - 150Watts |
| Mode of operation | Continuous |
| Switching frequency | 23 kHz |
| Minimum output | 1 Volts; 15µA; 0,6 Watts |
| Value display accuracy | ± 0,2 FS ± 1/2 digit |
| Mains failure during the run | Audible alarm and automatic restart with previous set values when mains returns |
| Fault detection | Output supply stop, audible alarm STOP LED blinking |
| Fault status | Output to earth leakage<br>Output open circuit<br>Output short circuit<br>No regulation (Overheating, power circuit fault) |
| Earth leakage | Detection level 500µA |
| Output to ground impedance | 10MΩ min bypassed by 1nF max |
| Size | 21 cm x 18 cm x 11 cm (D x W x H) |
| Weight | 2 kg |
| Environmental conditions | Indoor use,<br>Altitude up to 2000m<br>Temperature 10°C - 40°C |

Maximum relative RH 80% for temperature up to 31°C decreasing linearly to 50% RH at 40°C.




**1** Tactile switch for the selection of the following modes:
- OUT: Display of output values
- SET: Display of set values

**2** Tactile switch for selection of parameter to set:
- V: Voltage
- mA: Current

**3** Display for mA or minutes
**4** Display for Volts
**5** When blinking, this LED **(#5)** indicates that voltage is on set mode
When lit, this LED indicates that voltage is the constant mode during the run
**6** When blinking, this LED **(#6)** indicates that curent is on set mode
When lit, this LED indicates that curent is the constant mode during the run
**7** 8 recessed safety Output jacks
**8** Tactile switches for increasing/decreasing Volts, mA, minutes settings
**9** START/STOP switch
**10** LED indicating the START mode
**11** LED indicating the STOP mode
**12** Switch ON/OFF for the timer
**13** LED indicating that minutes are displayed or on set mode
**14** Switch for cancelling the elapsed time of a previous separation
**15** Switch for reading minutes instead of mA
**16** Switch for selection of the "GEL SAVER" mode
**17** LED indicating that the "GEL SAVER" mode is on

## FURTHER INSTRUCTION

### Important to read before operation !

If the unit alarms at power up, press the STOP switch. This situation is caused by a previous run stopped by the power switch instead of the STOP switch.

Never use the power switch to stop separations. Always press the STOP switch.

1. When you switch on the unit, remember that previous pre-set values are memorized. Settings are saved and restored at power up. No voltage is supplied at power up; The unit is automatically in STOP mode.
2. If the timer mode was selected during the previous separation, it will be restored at power up.
3. If the GEL SAVER mode was selected during the previous separation, it will be restored at power up.
4. When you switch on the unit, press the CLEAR switch to cancel the elapsed time of the previous separation. The pre-set time remains in the memory.
5. When you press START switch for beginning the run, if you have not pressed CLEAR before, the unit will stay in STOP mode with an audible alarm. Press STOP switch to cease the alarm, press CLEAR and START again.
6. Timer is ON and GEL SAVER is OFF:
   When the pre-set time has elapsed, the unit will stop automatically with 5 beeps and the word – End – is displayed on the display. Elapsed time is displayed. LED GEL SAVER will blink. 5 beeps are heard every minute.
7. Timer is ON and GEL SAVER is ON:
   When the pre-set time has elapsed, the unit will supply only 10% of the voltage set at the beginning of the run.
   Elapsed time is displayed on the right display. LED GEL SAVER will blink. 5 beeps are heard every minute.
8. Remember that LEDS **(#5 and #6)** are just indication modes.
   - **(#5)** Constant voltage mode (according settings and gel conditions),
   - **(#6)** Constant current mode (according settings and gel resistance),
   - **(#13)** Timer mode (ON or OFF selection),
   - **(#17)** Gel saver mode (alight during the run, it is blinking when activated after the separation time is elapsed).
9. To change settings using the switches **(#8)**, the unit must be in set mode press SET/OUT **(#1)**.
10. If no chamber is connected, the unit cannot start and will return on STOP mode. If the connecting lead(s) is defective, or a bad contact is existing in the electrophoresis tank, the unit cannot start and will return to STOP mode. An audible alarm rings and the message **"FLT"** (fault) is displayed on the display.

## FAULT

A fault prevents the START mode operating or immediately cuts the power supply during the gel run.

Simultaneously, the message **"FLT"** (fault) appears on the display, the audible alarm rings and the led STOP blinks.

This automatic cut off indicates one of the following situations:

- Output to ground leakage,
- Output open circuit,
- Tank's leads disconnected or defective,
- Output short circuit,
- Overload.

- ✔ Press STOP to resume and to cease the audible alarm.
- ✔ Look for the wrong situation.
- ✔ Press START to run again.
- ✔ If the unit returns to STOP mode, contact IBI SCIENTIFIC or your supplier technical service.



## AUTOMATIC RESTART

**The power will automatically RESTART with the set values when the power is operating again after a power failure or repetitive micro failures during a cycle.**

**Simultaneously, the message "FLT" is displayed and the STOP LED blinks for 10 seconds before operating again.**

## Without timer mode

### 1. Unit power up

- Connect the AC line cord to a grounded, 3-prong wall outlet.
- Connect the unit to the electrophoresis device using the safety connecting leads supplied with the electrophoresis device.
- Turn on the power switch located on the rear panel.
- The unit is automatically in STOP mode and the STOP LED **(#11)** will be lit. The voltage display **(#4)** and current/timer display **(#3)** indicate "000".

### 2. Adjusting Output set Values. Constant Voltage

- Press SET/OUT switch **(#1)** to select the SET mode. At first, the Volts LED **(#5)** blinks.
- Use switches **(#8)** for selection of the voltage value.
- Press V/mA switch **(#2)** for selection of mA parameter. The mA LED **(#6)** blinks.
- Use switches **(#8)** to increase current to the maximum value; 500mA to avoid constant current mode.



### 3. Adjusting Output set Values. Constant Current

- Press SET/OUT switch **(#1)** to select the SET mode. Press the V/mA switch **(#2)** until the mA LED **(#6)** blinks.
- Use switches **(#8)** to select the desired current value.
- Press V/mA switch **(#2)** for selection of Volt parameter. The Volt LED **(#5)** blinks.
- Use switches **(#8)** to increase Volts to the maximum value; 300 Volts to avoid constant voltage mode.

### 4. START mode

- Press START, the LED **(#10)** lights and the actual values are displayed on each display, left for voltage right for current.
- The actual constant mode is indicated by one of the LED **(#5 or #6)**.

## 5. Changing the settings when unit is working

It is possible to change the settings when the unit is working.
Proceed as follow:

- It is not necessary to press the STOP switch, leave the unit in START mode.
- Press SET/OUT switch **(#1)** to select the SET mode.
- Press V/mA switch **(#2)** to select Volt or mA depending on which parameter you need to adjust.
- Proceed as described in the above paragraph to change the settings.
- Once the new settings are entered, the unit will display the actual values after 10 secondes.

# Operation with timer mode and "Gel Saver" function

## 1. Unit power up

- Follow the same instructions described on page 21, paragraph 1. 2. 3.

## 2. Timer selection



- Press ON/OFF switch located in the timer area **(#12)**.
- The LED TIMER **(#13)** lights, showing that timer mode is selected.
- Press clear switch **(#14)** to cancel the previous elapsed time.
- Press SET/OUT switch **(#1)** to select the SET mode.
- Press the time switch **(#15)** until the minutes LED **(#13)** blinks.
- Use switches **(#8)** for selection of the desired separation time.

## 3. GEL SAVER mode

- This mode is possible when timer mode is selected.
- Press "GEL SAVER" switch **(#16)**.
- The LED "GEL SAVER" **(#17)** lights. The mode is ON until the STOP switch is pressed.
  - When set time has elapsed, the unit turns automatically to constant voltage and supplies 10% of the voltage set at the beginning of the run,
  - The mA/minute display **(#3)** shows the elapsed time,
  - The voltage display **(#4)** shows a value, indicating that 10% of the set voltage is supplied into the electrophoresis tank:

Example: 150 Volts was set at the beginning, 15 volts will be supplied when gel saver function will start to work after timing mode.

- When "GEL SAVER" is working, the LED **(#17)** blinks. 5 beeps are heard every minute.
- To stop the "GEL SAVER" mode, press the stop switch **(#9)**.
- It is possible to cancel the "GEL SAVER" option during the run by simply pressing the switch **(#16)**. The "GEL SAVER" LED **(#17)** turns off.
- It is possible to select the "GEL SAVER" mode during the run by simply pressing the "GEL SAVER" switch **(#16)**. The LED **(#17)** turns on.

## 4. Adjusting Output set values. Constant Voltage

- Follow the same instructions described on page 20, paragraph 2.

## 5. Adjusting Output set values. Constant Current

- Follow the same instructions described on page 20, paragraph 3.

## 6. START Mode



- Press START, the LED **(#10)** lights and the actual values are displayed on each display, left for voltage, right for current or minutes.
- To read minutes instead of mA or vice versa, press the TIME switch **(#15)** or VOLTS/mA switch **(#2)**.
- The actual constant mode is indicated by one of the LED **(#5 or #6)**.
- When set time has elapsed, the unit will turn on "GEL SAVER" option if this option has been selected, or in STOP mode with an audible alarm.
- If this option has been selected, and when set time has elapsed, the unit turns automatically to constant voltage and supplies 10% of the voltage set at the beginning of the run,
  - The mA/minute display **(#3)** shows the elapsed time,
  - The voltage display **(#4)** shows a value, indicating that 10% of the set voltage is supplied into the electrophoresis tank.

## 7. Changing the settings

- Follow the same instructions described on previous page 21, paragraph 5.

## Operation with timer, no "GEL SAVER " mode

## 1. Timer selection

- Press ON/OFF switch located in the timer area **(#12)**.
- The LED TIMER **(#13)** lights, showing that timer mode is selected.
- **Press the Gel saver switch (#16) until the LED (#17) turns off.**
- Press clear switch **(#14)** to cancel the previous elapsed time.
- Press SET/OUT switch **(#1)** to select the SET mode.
- Press the time switch **(#15)** until the timer LED **(#13)** blinks.
- Use switches **(#8)** to select the desired separation time.

When the preset time is elapsed, the unit automatically stops.
Simultaneously:
The message "end" appears on the left display.
The same preset and elapsed time appear and the right display **(#3)**.
The STOP LED **(#11)** is lit.

- Press STOP **(#9)** to cease the alarm.
- Press CLEAR **(#14)** to cancel the elapsed time.
- The unit is then ready for another run.



## 2. Other settings

- Follow the same instructions described on previous page.

# TROUBLESHOTTING GUIDE

| CONDITION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Display fails to illuminate when the POWER switch is put on. | Fuses have blown. | Contact IBI SCIENTIFIC servicing. |
| The desired MODE is not flashing. | One of the other parameters is limiting output. | Increase the output set value of the parameter controlling output until the desired output mode is controlling. |
| Two different modes are blinking alternatively. | Settings for both parameters are too close to the actual output. | Increase the set value for the mode you do not wish to be limiting. |
| Settings switches are not working. | SET mode is not operating. | Depress SET switch |
| Audible alarm at power up and "Rst" message is displayed. | Automatic restart is coming. | Let the unit restart or press STOP to cancel. |
| Message "Flt": impossible to start the run. Unit is coming back on STOP mode with audible alarm. | A fault situation avoid the START mode to operate or timer has not been reset. | See Fault paragraph page 19 or check the timer and press CLEAR switch in order to cancel the previous elapsed time. Turn off the timer if the timed mode is not needed. |
| Message "Str" with audible alarm. | | See automatic restart paragraph page 19. |
| Message "end" with audible alarm. | Preset time is elapsed and unit is on STOP mode. | Press STOP to cease the alarm. Press CLEAR in order to reset the timer. |

## NOTES