

FARAD

p o w e r s u p p l i e s

Super10 Owner's manual



Important Safety Information

WARNING: There are no user serviceable parts inside. Refer all servicing to qualified service personnel.

WARNING: To reduce the risk of fire or electric shock, be sure that the apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed near or on the apparatus.

Do not allow foreign objects to get into the enclosure. If the unit is exposed to moisture, or a foreign object gets into the enclosure, immediately disconnect the power cord from the wall. Take the unit to a qualified service person for inspection and necessary repairs.

Read all the instructions before connecting or operating the component. Keep this manual so you can refer to these safety instructions. Heed all warnings and safety information in these instructions and on the product itself. Follow all operating instructions.

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Do not place the unit on a bed, sofa, rug, or similar surface that could block the heatsink airflow. If the component is placed in a bookcase or cabinet, there must be ventilation of the cabinet to allow proper cooling. Keep the component away from radiators, heat registers, stoves, or any other appliance that produces heat.



The unit must be connected to an ac power source only of the type and voltage specified on the rear panel of the unit as described in the chapter AC power input on page 6. Connect the power supply to the power outlet only with an earthed IEC power supply cable or an exact equivalent in a mains socket with protected earthing connection.

The primary method of isolating the device from the mains supply is to disconnect the mains plug. Ensure that the mains plug remains accessible at all times. Unplug the AC power cord from the AC outlet if the unit will not be used for longer time.

Do not attempt to defeat grounding and/or polarization provisions. Do not use extension cords. Do not route the power cord where it will be crushed, pinched, bent at severe angles, exposed to heat, or damaged in any way. Pay particular attention to the power cord at the plug and where it exits the back of the unit.

Immediately unplug and stop using the component and have it inspected and/or serviced by a qualified service agency if:

- The power supply cord or plugs have been damaged.
- Objects have fallen or liquid has been spilled into the unit.
- The unit has been exposed to rain.
- The unit shows signs of improper operation.
- The unit has been dropped or damaged in any way.
- When the product exhibits a distinct change in performance. This indicates a need for service.

When replacement parts are required outside the guarantee period, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit.

Farad power supplies products are designed and build to comply with international directives on the Restriction of Hazardous Substances (RoHS) in electrical and electronic equipment and the disposal of Waste Electrical and Electronic Equipment (WEEE). The products must be appropriately recycled or processed in accordance with these directives.



IMPORTANT NOTE: Always switch off and mute devices when connecting or disconnecting the Farad power supply.

When you have any questions about our power supplies, please contact us at info@Faradpowersupplies.com with serial number stated at the back (see figure 1, position 8) of the power supply. We will reply to you as soon as possible.

Warranty

Scope and duration of warranty

Subject to the terms and conditions stated below, Farad Power Supplies warrants to the original owner that this product shall be free from defects in workmanship or materials for a term of 24 months from the date when it was purchased from an Authorized Farad Power Supplies Dealer or directly from Farad Power Supplies. Moveable property and parts used in moveable property which have not been produced/fabricated by the seller himself but are produced/fabricated by a third party have the warranty provided by the third party.

Limitations on Persons and Products Covered by this warranty

This warranty and all rights provided here under are limited to the original owner. In the event that the original owner transfers ownership of the Product prior to expiration of the 24 months term, this warranty shall terminate in its entirety upon the date of such transfer. In addition, Farad Power Supplies does not warrant in any way products which are purchased from anyone who is not an Authorized Farad Power Supplies dealer or which have not been

purchased directly from Farad Power Supplies. Therefore this warranty is void and inapplicable if this Product has been purchased from someone other than an Authorized Farad Power Supplies Dealer, directly from Farad Power Supplies.

Proof of purchase in the form of a bill of sale or receipted invoice, which is evidence that this product is within the warranty period, must be presented to obtain warranty service. This warranty is void and inapplicable if the factory applied Serial Number has been altered or defaced from this product;

What the Consumer must do

To obtain warranty service, please contact the Farad Power Supplier authorised dealer from which you purchased this product. If your dealer is not equipped or you purchased directly from Farad Power Supplies, it can be returned by you or the dealer to Farad Power Supplies or an authorised Farad Power Supplies service Agent. Please pack the product very carefully, preferable in the original packing, to be sure no damage can be done during shipment.

Limitations on Third Party Services and Data Sources

Certain Farad Power Supplies products include an interface that enables access to services (including data) that are provided by third parties unrelated to Farad Power Supplies. Some of these services require separate customer subscriptions and some do not; and some may be supported by and compatible with the Farad Power Supplies Product while others may not. Merely providing the capability to access such services is not to be construed as making Farad Power Supplies the provider of, or responsible for, the services or for continuing to support or make such access available; and Farad Power Supplies expressly disclaims such responsibility. Because Farad Power Supplies cannot control the providers of such services or the services themselves, and similarly cannot control the communication systems and networks that connect the Products interfaces to the services, Farad Power Supplies cannot and does not warrant against and shall have no liability of any kind for, any of the following that are related to third party services, the providers of those services, or the systems or networks by which the Farad Power Supplies Product communicates with the services: (i) unavailability, lack of compatibility or functionality, interruption, discontinuance, or loss of service, or other unsatisfactory performance, act, or omission; (ii) loss or unauthorized use or disclosure of, or damage to, personal information, recordings, or other data; (iii) reduced functionality of the Farad Power Supplies Product; or (iv) any other loss or damage of any kind. Farad Power Supplies likewise does not warrant against, and shall have no liability for, any failure of its Products to satisfactorily process any externally sourced data where such failure is attributable in whole or in part to the makeup of the data itself or to a non-Farad Power Supplies product, system, or service that is the source of the data or that provides access to the data.

What Farad Power Supplies Will do under the warranty

In the event of any defect covered by this warranty, Farad Power Supplies shall without charge provide all parts, material and labour necessary to restore the Product to its original specifications. After repair, Farad Power Supplies, shall return the Product. Farad Power Supplies handles a "carry in" warranty, so all costs for shipping hence and forth will have to be paid by customer. In the alternative, Farad Power Supplies may at its sole option either replace the Product without charge, or if replacement is not commercially practicable or repair or replacement cannot be accomplished within a reasonable time, Farad Power Supplies may refund the purchase price of the Product, subject where appropriate to reasonable depreciation for actual use in accordance with applicable laws, in full satisfaction of its warranty obligations. Farad Power Supplies or its authorized Farad Power Supplies dealer will undertake to complete the repair and return of the Product as soon as circumstances permit, unless prevented by causes beyond their reasonable control.

What does this warranty not cover

This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of, or to any part of, the product. This warranty does not cover damage due to improper operation, maintenance or installation, or attempted repair by anyone other than Farad Power Supplies or an authorized Farad Power Supplies Dealer or authorised service agent which is authorised to do Farad Power Supplies warranty work. Any unauthorised repairs will void this warranty.

This warranty does not cover products sold as is or with all faults. Repairs or replacements as provided under this warranty are the exclusive remedy of the consumer. Farad Power Supplies shall not be liable for any incidental in this product. Except to the extent prohibited by law. This warranty is exclusive and in lieu of all other express and implied warranties whatsoever including, but not limited to. The warranty of merchantability and fitness for a practical purpose.

Some countries and US states do not allow the exclusion or limitation of incidental or consequential damages or implied warranties so the above exclusions may not apply to you. This warranty gives you specific legal rights and you may have other statutory rights, which vary from state to state or country to country. For any service, in or out of warranty, please contact your dealer.

Getting started

The Super10 is a top level low noise dual linear regulated supercapacitor power supply. It is capable of delivering a maximum of 10A current at its rated voltage output.

Operating features

- Double regulated super capacitor linear power supply
- High inductance double shielded toroidal power transformer
- Pi-filter supply input with up to 25.000uF of standard electrolytic capacitors
- Always over 4.5F of supercapacitors, running up to 16F for lower voltage outputs (see table 2, page 12)
- Low noise output regulator, post filtered with a Hf pi-filter with ultra-low ESR foil capacitors
- Fully microprocessor controlled protection against short circuit, over- and undervoltage, reversed voltage, over-temperature and surge currents.

A few precautions

Please read this manual carefully. In addition to the installation and operating instructions it gives more information about how to use this power supply optimally in your (audio) system. Please contact your Farad power supplies dealer, or Farad power supplies directly at info@Faradpowersupplies.com if you have any questions or comments about our products.

Be sure to keep the original sales receipt of your power supply. It is your best record of the date of purchase, which you will need in the event warranty service is ever required. When you have any problems with our equipment, please always let us know the serial number which can be found on the backside of the power supply (see figure 1, position 8).

Placement

Some parts of this power supply can get hot. The heatsink and enclosure of the power supply are designed to dissipate this heat. Any obstruction of this dissipation can result in damage, or damage to devices near or connected to the power supply. There should be at least 10 cm or 4 inches of clearance around the power supply. Do not place any flammable material, like wood, plastic, cloth or anything else, directly above the power supply. Take care there is enough space for air to freely flow around the power supply. Take care the shelf or cabinet the power supply is placed in are stable and capable of supporting its weight.

Breaking in

Like all devices in audio, the Farad power supply and cables will show break in behavior the first 500 hours on AC voltage. The character and quality of this supply will show immediately, but will improve during this period. Sound will become more tight, more at ease and fluent. Always keep this in mind when evaluating the power supply during this period.

AC Power input

The Farad power supplies Super10 has a Furutech FI-09 NCF IEC C14 power input. Be sure to only use power cables with the same connectors. There can be a large difference in sound between power cables, tuning them definitely will improve the power supplies performance. Farad supplies a range of power cables for even better performance of the Super10. Please see our website for more information about this.

The transformer of the Super10 have been checked for polarity, and are connected such that with the phase connected to the (L) IEC connector pin the residual transformer leakage voltage is minimum. This can be very important when installing high-end equipment. If all devices are tuned for the lowest residual leakage voltage, normally sound will get more open en detailed, giving a wider stage. Still it is recommended to always try out different polarities, since it is not always absolute science.

The Super10 is configured for a certain AC outlet voltage and frequency as it is manufactured. This is 100-120Vac/50-60Hz (115 at the back, figure 1, position 6) or 220-230Vac/50Hz (230 at the back, figure 1, position 6). Do only use the power supply unless you are sure the stated voltage and frequency matches with the AC voltage and frequency coming from you AC outlets.

Should you move your power supply to a country with other voltages or frequencies, it is possible to reconfigure the power supply to these voltages. Do not attempt this change of configuration yourself, unless you are fully qualified. Inside the Supoer10 are lethal high voltages, which only must be handled by fully qualified personnel.

Like all power supplies, Farad power supplies are always active when the AC is plugged in. This means there is voltage on most circuits internally, and voltages are present and standby.

If you are away for a long time it is a sensible precaution to turn the power supply totally off by unplugging the AC cable.

First use

Take care the Trigger mode and earth connection are made properly. Plug in the power cord in the IEC connector (figure 1, position 7) and the other end in an appropriate AC outlet. The led will flash blue and red a couple of times, and after that starts fading on and off red, it is charging the supercapacitors. The LED will turn solid blue after the supercapacitors are fully charged and the supply output gets active. This will take normally about 15-30 seconds depending on output voltage.

If the LED does not light up at start up, or behaves strangely press the RES button at the back.

If the LED flashes red after charging, the device is in "error mode", please see chapter Error to find out what might be the problem.

If the LED turns on faded blue, the supply is in trigger mode and standby.

Output Voltage

The Super10 super-cap module and transformer are fully optimized at a factory fixed voltage output. This output is mentioned at the back, see figure 1, position 3. **Always check and double check** that this output voltage matches the voltage input of the device it will be connected to. If these do not match connecting the power supply can result in permanent damage of the device it is connected to. Farad power supplies refuses every liability for damage to equipment due to an incorrect connected DC output voltage.

Current rating of the Farad power supply should be higher than the factory recommended current. If the manufacturer does not give this value, it can be calculated from the power figure, as $\text{max current} = \text{max power} / \text{rated voltage}$. If this does not work, it also can be obtained by reading the original adapter. Please keep in mind adapter values are mostly very overrated, so mostly will give a far too high value. At the Farad website you can find a list of confirmed devices with proper voltage and connector ratings.

If you are not sure, you can always try out with a Farad power supply, it is fully protected, so nothing will be damaged if too much current will be drawn. If it works it is ok. If you don't feel safe about us, please ask your dealer, or directly at Farad, we are there to help you!

Output Cable

The power supply has a gold plated GX25-4 output connector. We have connected the + voltage output to pin 1 and 3 and the GND to pin 2 and 4.

The Super10 is standardly delivered with a Level 2 copper DC power cable, this can be upgraded to a silver cable. The Level 2 copper cable contains 2x18 times 24 AWG tin plated copper wires, the silver cable uses 12x2 0.4mm 99.9999% pure silver wire. Both cables are terminated with gold plated Oyaide 5.5/2.1 mm or 5.5/2.5 mm barrel connectors or other connectors at your choice.

Any other connector (within normal connector prices) will be delivered at request at the same price as the stock cables. Since this cable needs to be specially made for you delivery time is about 2-4 weeks after order.

Changing the DC output cable during operation

When comparing DC output cables, it is best to use the reset button at the back side. When the reset button is pushed, the Farad Super10 enters the start-up sequence (fading red led) and during this time the output is de-activated, so no voltage is present anymore. In this time take out the connector at either the supply or the load. There now is no coupling anymore and the cable can be removed safely for both devices.

Now connect the new DC cable to either the supply or the load. Push the reset button again and during the start-up sequence (red fading led) make the connection to the other device. When the led turns blue again, the Super10's output voltage comes up controlled again and everything should work with the new cable.

Replacing the fuse

The Super10 is delivered with a high-end version fuse. This improves detail and precision, and overall performance of the power supply. For replacing the fuse you need to remove the top cover of the power supply.

The Super10 needs a 6.3A slow blow 5x20 mm fuse for the 230Vac version and a 10A slow blow fuse for the 115Vac versions.

Please only do this if you know what you are doing, otherwise we strongly recommend to let it do by a qualified technician. Our dealers or Farad power supplies technicians are always willing to help you with the replacing free of costs when the supply is taken to our workshop.

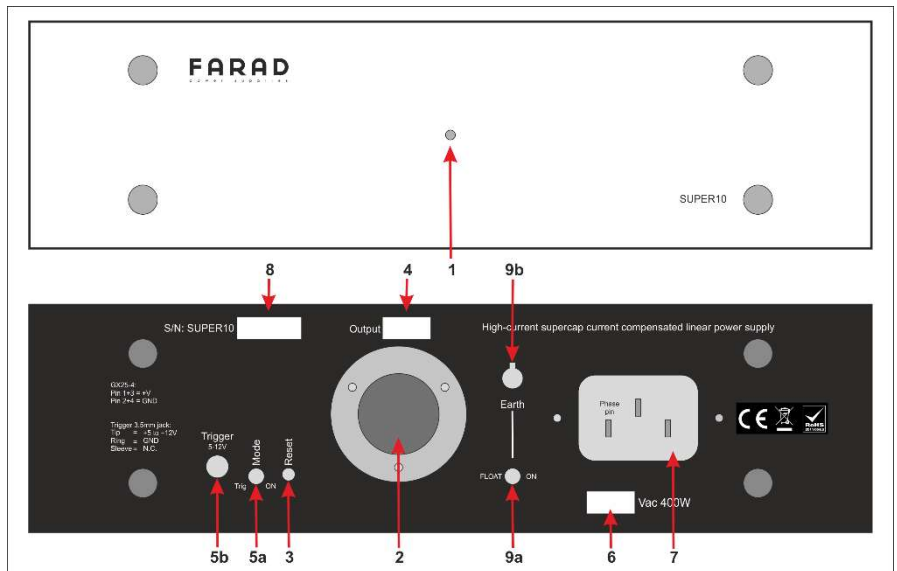
WARNING: Please be absolutely sure the power cord is removed from the power supply before unscrewing and lifting the cover

WARNING: Super capacitors contain a lot of charge and will keep this charge long after the device is powered off. Making any shorts inside the device can result in injury and serious damage to you and the device. So always take care not to touch anything except the fuse itself.

WARNING: When the fuse is blown out, please take the power supply to a qualified technician, a Farad power supplies dealer, or Farad power supplies directly. It probably indicates a failure and the need for service. Replacing the fuse for a new one and starting the device up again might result in even worse damage, dangerous voltages in the device and even fire.

Identification of controls

FIGURE 1: Front and back of the SUPER10 power supply, controls and connections



- 1) **Indicator LED.** The front LED has several modes:
 - a) Solid blue: Power supply is ready, voltage present at output
 - b) Fading red: Power supply is charging supercapacitor banks at startup
 - c) Flashing red: Power supply error. Led flashes fast and then slowly with error code.
 - d) No LED. Power supply is disabled or in reset, or fuse broken
- 2) **DC output connector.** We use a gold plated GX25-4 connector. Plus is connected to pin 1 and 3 and minus to pin 2 and 4. This output delivers the rated voltage (stated at position 4) at 10A maximum current.
- 3) **Reset switch.** This switch resets the power supplies microprocessor. After a reset the supply will start a new startup sequence. It can be used to reset the supplied device, or when changing between different devices. Also when an error has occurred and the supply needs restart. It is recommended to reset the power supply before each use.
- 4) **Rated output voltage.** In this box the factory fixed output voltage is noted
- 5) **Trigger.** The Super10 can be trigger activated.
 - 5a) **Trigger mode:** Trig means the supply is put standby and on by the trigger input. An active supply will show a blue led, standby mode will show a faded blue led. ON means the supply output is always active normally.
 - 5b) **Trigger input:** Trigger input uses a 3.5mm stereo jack connector, +5V to +12V on the tip, and GND on the ring. The GND of the jack is not connected.

- 6) **Mains voltage indication.** When noted “115”, the power supply is configured for 100-120Vac, 50-60Hz voltage range. If noted “230”, the power supply is configured for 220-230Vac/50-60Hz mains voltage range
- 7) **Mains IEC connector.** Place mains power cord at this connector. The power supply is optimized such that lowest leakage current will be present when AC phase is applied to the (L / phase pin) pin of the connector
- 8) **Serial number.** Always refer to this number in any communication with your dealer or Farad power supplies directly.
- 9) **Earth connector.** External earthing of the Super10.
9a) Float switch: The earth connector can be connected to the output GND by a 10R resistor parallel to a choke (ON), or disconnected to make a floating power supply (FLOAT). For safety line earth is always connected to the Super10 housing.
9b) Earth connector: You can connect an external earth or earth box here, the earth connector takes a bare wire, small spade and banana.

IMPORTANT NOTE: Always switch off and mute devices when connecting or disconnecting the Farad power supply.

When you have any questions about our power supplies, please contact us at info@Faradpowersupplies.com with serial number stated at the back (see figure 1, position 8) of the power supply. We will reply to you as soon as possible.

Trouble Shooting

Most problems in audio systems are the result of poor or wrong connections or cabling. Always check if the mains power connector and the DC power connector are plugged in tight and correctly. Also check if the cables are functioning properly, and there are no loose wires. When not sure, try a different cable, and see if this solves the problem.

Below are some common failures. If you encounter another problem, or the below solutions do not solve the problems, please contact your dealer, or contact us directly at info@Faradpowersupplies.com.

Front LED does not light up (in any color), or strange vague signaling

Microprocessor needs reset. Press reset switch at position 3 for two seconds.

If this does not help, there is no AC mains power on the power supply. Check if mains cables and power cables are plugged in tight and correctly, and if AC voltage is present at the wall outlet. If this is the case and led still does not light up, please go to your Farad dealer or contact Farad power supplies directly.

There is no output voltage, and no red error led

DC output cable is not properly plugged in the power supply or the device where the power supply is connected to. Also check if the right connector is used, for example a 2.5 mm DC barrel connector on a 2.1 pin input will probably not work.

Front LED stays fading red and does not turn blue at startup

Error in the super capacitor charging circuit, or too low input voltage. Check power cable and AC mains power. If this is ok, please go to your dealer or contact Farad power supplies directly.

Front LED flashes red

Error detected. LED flashes a number of time and then is off for 3 seconds, then flashes again. The number of flashes (1 to 8 times, see table 1) indicates the error. If an error occurs disconnect the DC power connector and reset (position 3), if the error re-occurs, contact your dealer, or Farad directly at info@faradpowersupplies.com.

If the error is solved without anything connected, please check the device on which the SUPER10 was connected or the DC cable, probably there is a problem there.

Table 1: Error codes (number of flashes red led)

1	Too low unloaded DC input voltage for Supercap supply (error in AC input voltage, power cable, or rectifying + smoothing circuits)
2	Too low loaded DC input voltage for Supercap supply (error in AC input voltage, power cable, or rectifying + smoothing circuits)
3	Too high voltage on Supercaps (Error in supercap pre-regulation)
4	Too low voltage on Supercaps (Error in supercap pre-regulation or balancing)
5	Output voltage too high (Error in output regulation, or wrong connection / rest voltage load)
6	Output voltage too low (Error in output regulation, or output short / too high load)
7	Error in primary regulator control (Bad regulator or controlling circuitry)
8	Error in secondary regulator control (Bad regulator or controlling circuitry)

Specifications

Power input:	Factory configured 100-120Vac / 50-60Hz (115Vac version) or 220-230Vac / 50-60Hz (230Vac version)
Dimensions:	260 (10.2") x 320 (12.6") x 70 (2.8") mm (W x D x H)
Net weight:	7.6 kg (16.6 lbs)

Table 2: Overview factory configurable voltages and rating

Output voltage	Capacitance	Max power consumption
5	16.7F	150W
7	12.5F	170W
9	10.0F	190W
12	8.3F	220W
15	7.1F	250W
19	5.6F	290W
24	4.5F	350W

Any other voltage between 5V and 24V available on special request

All specifications are an indication and valid at the time of printing of this manual. Farad power supplies reserves the right to make any changes at any time without notice.

www.Faradpowersupplies.com

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