



**Owner's Manual V 1.0, 5/2004**

**Software version 016**

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Introduction .....	3
Installation .....	4
Technology .....	5
Fuctions and Operation .....	6
Rear Panel/Connections, External Power Supply .....	8
Specifications .....	9
Warranty .....	10

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## Introduction

### Dear Customer,

thanks for using the PQ Mastering Equalizer. We wish you have as much fun working with it as we had during the development of this extraordinary equalizer.

### Supplied parts

- PQ Recording Equalizer
- External power supply transformer including both power cords
- Owner's Manual

### Key features

- Pure analog, discrete Class A equalization circuitry
- Constant Q and proportional Q modes, selectable per filter band
- 124 V internal operating voltage for clean, consistent audio
- Discrete SPL SUPRA op-amps with 150 dB dynamic range
- Channel link mode for all switching functions (e. g. for stereo operation)
- As with all SPL products, the PQ is conceived, designed and hand-built in Germany

# Installation

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**BEFORE SWITCHING ON POWER SUPPLY AND PQ, THE PQ MUST BE CONNECTED TO THE POWER SUPPLY WITH THE SUPPLIED MULTICORE LEAD. PAY ATTENTION TO A SECURE CONNECTION.**

The PQ and the external power supply should be situated away from heat sources and direct sunlight. PQ and power supply need sufficient air circulation. Avoid installation in environments exposed to vibrations, dust, heat, cold, moisture or electrical and magnetic fields.

Do not install the unit in proximity to power amplifiers or digital processors. You may consider placing it in a rack containing other analog gear. Such placement can prevent interference from Word Clock, Smpte, MIDI, etc.

- Do not open the case. You may risk electric shock and may damage your equipment.
- Leave repairs and maintenance to a qualified service technician. Should foreign objects fall inside the case, contact your authorized dealer or support person.
- To avoid electric shock or fire hazards do not expose your unit to rain or dampness.
- In case of lightning unplug the power supply. Please unplug the cable by pulling on the plug only; never pull on the cable.
- Never force a switch or knob.
- To clean the case use a lint-free cloth. Avoid cleaning agents as they may damage the chassis.
- Please support the back of the unit whenever it is being mounted into a 19 inch rack (especially important when touring).

## Setting the appropriate supply voltage

The appropriate supply voltage (115 V/230V) must be set on the rear panel of the external power supply. The fuse block (left from the power cord socket) can be inserted in two positions to meet your country's power requirements. Refer to the marks on the fuse block (triangles for both voltages) and insert the block with the appropriate triangle pointing to the white line on the fuse block case.

The power supply is fitted with 3,5 A fuses, slow blow.

## Power-up sequence

It takes about four seconds until the power-up sequence is completed. During this procedure, all potentiometers will move to the center (12 o'clock) position and a test routine checks all 32 relays (you will notice 32 clearly audible relay clicks).

After finishing the power-up sequence the unit is ready to operate.

## Ground Lift switch

A switch labelled „GND LIFT“ is placed on the rear panel of the power supply. It serves to eliminate hum problems. This switch physically separates chassis ground from AC ground; GND LIFT is activated (=chassis ground separated) when the switch points downwards.

### SPL High Gain Technology

SPL is constantly pushing analog signal processing to its limits by combining the best possible components with perfectly optimized circuit design. As our latest achievement in this ongoing process, SPL's High Gain Series surpasses the hitherto accepted limits of audio signal processing and combines truly unparalleled analog sound quality with the control and convenience of digital units.

Together with the MMC1 multi-channel mastering console, the parametric equalizer PQ, both as recording or mastering version, was the first product of SPL's new High Gain Series. Further High Gain projects are in planning, including a microphone preamplifier and a compressor, although no availability projections can be made for these currently.

The PQ is a fully parametric, dual-channel 5-band equalizer. As with all SPL High Gain units, the PQ has an operating voltage of 120 V and is constructed with the best analog components available.

### Power for sound: SPL SUPRA components

The central component of the PQ is a fundamentally new amplification design: discrete, custom made Class A audio operational amplifiers which run on a 120 V operating voltage (+/- 60 V). This amounts to over three times the operating voltage found in most high quality audio gear (+/- 15-20 V) and about twice as much as the highest voltages used in the best units currently available.

This extremely high voltage allows the circuitry to process an astonishing dynamic range of ca. 150 dB and an amazing +34 dB of headroom, virtually eliminating overloading of individual filter stages—even when processing extremely high-level signals.

For the first time, transistor circuits with such an impressive degree of stability and freedom from harmonic distortion can be realized. After the revival of tube units in the early '90s, we feel that the time may be ripe for a revival of the „transistor sound“ in the near future.

### Additional construction features

All crucial resistors in the I/O and filter circuits are subject to ultra-tight tolerances of 0.001% to ensure clean and accurate amplifier stage performance. All circuit board tracks are double-width (1 mm) and double-thickness (70 micrometers), guaranteeing stable high-gain operation with minimum resistivity. A separate grounding track is placed between signal track pairs, virtually eliminating crosstalk for maximum signal separation.

The individually switchable filter bands are self-contained on separate circuit boards. Contrary to most conventional equalizers, the bands are not summed via a central stage, so that the signal passes only through those filter stages which are activated.

### Constant Q and proportional Q modes

Each frequency band consists essentially of two fully parametric equalizers: one for constant Q mode and one for proportional (or variable) Q mode, selectable per band. The PQ is the first equalizer to offer both modes, endowing it with double equalization power for demanding corrective and creative applications.

In constant Q mode, the selected bandwidth remains unaffected by the amplitude setting, making it the best choice for corrective applications (e.g. to eliminate unwanted frequencies). In proportional Q mode, the amplitude is reduced as the bandwidth is raised and vice versa. With the smallest bandwidth setting, the maximum amplitude reaches +/- 11.5 dB, while it is reduced to +/- 2.5 dB with the broadest bandwidth setting. The Proportional Q mode is better suited for creative, sound-shaping applications, as a bandwidth-related amplitude allows for sensible, musically suggestive operation – with raising bandwidths, higher amplitudes are increasingly less useful.

### Con. Q Keys

These keys switch in the constant Q mode (illumination on) for each filter band. In proportional Q mode, illumination is off.

PLEASE NOTE: It is impossible to activate the ON and Con. Q keys simultaneously, please always press one key after another.

### Link mode

All switching functions can be linked to operate both channels from one master channel. This is particularly recommendable for stereo operation. Both channels can be specified as master channel. Pressing the central key with the arrow in left direction activates link mode with the left channel as master, pressing the key with the arrow in the right direction activates link mode with the right channel as master. If the link mode is activated, you can bypass the complete PQ electronics by deactivating the ON key of the master channel (signals are routed from inputs to outputs), because the ON key of the master channel also activates the ON key of the linked channel. Deactivating the ON key of the linked channel only bypasses this channel, while the master channel remains active.

### Amplitude

Amplitude settings are freely adjustable from  $\pm 15$  dB in proportional mode and from  $\pm 20$  dB in constant Q mode.

### Frequency

Each channel provides five fully parametric frequency bands covering 10 Hz to 28 kHz. Each band overlaps its neighbor by one octave and can be independently activated and deactivated.

The following frequency bands are provided:

LF (Low Frequencies): 10 Hz - 235 Hz  
LMF (Low Mid Frequencies): 35 Hz - 720 Hz  
MF (Mid Frequencies): 330 Hz - 7.1 kHz  
HMF (High Mid Frequencies): 670 Hz - 16 kHz  
HF (High Frequencies): 1.2 kHz - 28 kHz

### Bandwidth

Bandwidth is adjustable between 0.1 and 3.7 Q in proportional Q mode and between 0.7 and 15 Q in constant Q mode. The extremely high maximum bandwidth in constant Q mode enables tight, selective control in precision applications.

### Illuminated keys

The PQ features illuminated keys that illuminate brightly when activated. The final software version will provide dimly lit keys (25% brightness) when deactivated for ease and security of operation. The current software version (240H) switches illumination off when keys are deactivated.

### LF, LMF, MF, HMF and HF keys

These keys activate (key lamps lit) or deactivate (lamps off) the 10 filter bands.

## Rear Panel/Connections

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Audio inputs and outputs are provided as balanced XLR connectors.

Connect the included external power supply to the multi-pin socket in the upper left corner, ensuring that the connection is secure.

**Please note:** To ensure secure connections, stable operation and optimal audio quality, always use professional-grade cables and connectors.

## External Power Supply

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The PQ comes with an external linear power supply featuring a toroidal transformer for optimal audio quality and dramatically reduced inductive disturbance/interference.

Input voltage: 110-120V/60 Hz or 220-240V/50 Hz

Noise: > -100 dBu (@ +/- 60 V)

Dimensions: Width: 15 cm (5 9/10 inch)  
Depth: 24,5 cm (24 1/2 inch)  
Height: 7 cm (2 3/4 inch)

Weight: 4,2 kg (9,24 lbs)



Input impedance (balanced): <i>(Welwyn precision resistors; transformerless)</i>	20 kOhm
Output impedance (balanced): <i>(CMR trimmers, transformerless)</i>	< 600 Ohm
Overload resistance: <i>(Band 1-5 = ON, B/C = 0)</i>	+34 dB
Harmonic distortion:	@-30 dBu: 0.2% @-20 dBu: 0.05% @0 dBu: 0.01% @+10 dBu: 0.002% @+30 dBu: 0.0005%
S/N: <i>(Band 1-5 ON, B/C = 0, each Q = Q1, Band 1 = 10 Hz, Band 2 = 100 Hz, Band 3 = 1 kHz, Band 4 = 10 kHz, Band 5 = 28 kHz)</i>	-90 dBu (A-weighted; -88 dBu w/o Filter)
Transmission bandwidth: <i>(-3 dB, Band 1-5 = ON, B/C = 0)</i>	10 Hz-100 kHz
Processed frequency range:	10 Hz-28 kHz
Phase:	@ 10 Hz: +5.5° @ 1 kHz: 0° @ 10 kHz: -1.23° @ 100 kHz: -8.8° @ 200 kHz: -11.25°
CMRR: <i>(Max. Gain +34 dBu, Band 1-5 ON, B/C = 0)</i>	> 75 dB @ 1 kHz
Housing & mounting dimensions:	Standard EIA 19 inch rack chassis, 4 units 482 x 176 x 390 mm W x H x D ca. 189 3/4 x 69 3/10 x 153 1/2 inch W x H x D
Weight:	18,25 kg/40,15 lbs

## Warranty

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SPL electronics GmbH (hereafter called SPL) products are warranted only in the country where purchased, through the authorized SPL distributor in that country, against defects in material or workmanship. The specific period of this limited warranty shall be that which is described to the original retail purchaser by the authorized SPL dealer or distributor at the time of purchase.

SPL does not, however, warrant its products against any and all defects:

- 1) arising out of materials or workmanship not provided or furnished by SPL, or
- 2) resulting from abnormal use of the product or use in violation of instructions, or
- 3) in products repaired or serviced by other than authorized SPL repair facilities, or
- 4) in products with removed or defaced serial numbers, or 5) in components or parts or products expressly warranted by another manufacturer.

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All remedies and the measure of damages are limited to the above services. It is possible that economic loss or injury to person or property may result from the failure of the product; however, even if SPL has been advised of this possibility, this limited warranty does not cover any such consequential or incidental damages. Some states or countries do not allow the limitations or exclusion of incidental or consequential damages, so the above limitation may not apply to you.

Any and all warranties, express or implied, arising by law, course of dealing, course of performance, usage of trade, or otherwise, including but not limited to implied warranties of merchantability and fitness for particular, are limited to a period of 1 (one) year from either the date of manufacture. Some states or countries do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state, country to country.

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