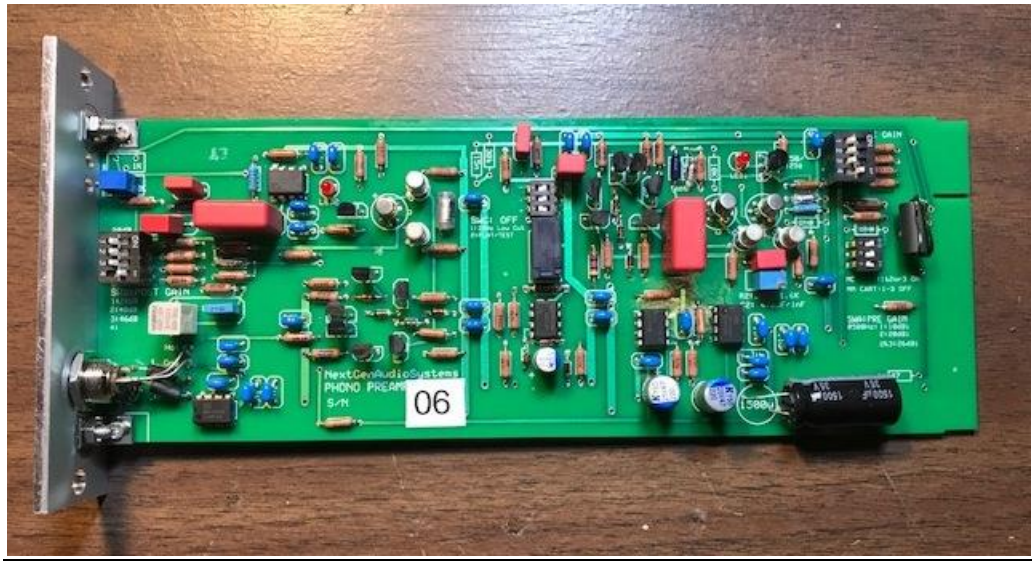
NextGen Audio Systems

NextGen Professional Phono Preamp Card: Description, Features, and Setup



The NextGen Professional Phono Preamplifier applies an information theoretic engineering and development approach to realize heretofore unmatched transparency and information retrieval from stereo and monophonic records, accepting and matching a very wide range of MM and MC phono cartridges directly, and that with the finest of decks, tonearms, phono cartridges and proper setup achieves a new standard in audiophile phono reproduction.

Main Features:

- Entirely discrete, DC coupled Class A amplifier stages, essentially identical to those used on the NextGen A80RC plug-in and outboard-standalone tape repro and record cards (currently available for the ATR-102 and Nagra T-Audio), which redefine what was thought possible from analog magnetic tape, and has received many accolades for its incredible transparency and information retrieval;

- Fully transformerless audio design, exceptionally low noise/high SNR that eliminates the need for a separate MC step-up transformer or headamp (and their usual adverse effects) for nearly any cartridge - even low output MC types - for the widest dynamic range and the lowest possible distortion; suitable for MC cartridges with rated outputs as low as 0.2mV RMS at 5cm/s;

- Apart from RIAA equalization capacitors themselves (precision polypropylene for ultralow dielectric absorption), only one similar polypropylene capacitor for the DC Servo; NO AC coupling capacitors used, time-smear all but eliminated;

- Utmost attention has been paid to realizing the most accurate possible complete cutter-head to cartridge-output time domain response, that is, accounting as well for the master disk cutting

process time domain characteristics itself to a degree (as far as we can tell) that has never been realized before;

- Separate switch-selectable Preamp/Equalizer stage AND Output stage gain settings to optimize BOTH signal to noise (SNR) ratio AND available dynamic range as needed depending on cartridge rated output levels and source impedance; maximum available gain is 37 dB (for Preamp/Equalizer) and 46 dB (for Output stage) for a total available gain of up to 83 dB at 500 Hz;

- Selectable cartridge loading, fine (+/- 2dB) front panel cartridge balance (gain) adjustment, switchable (15Hz) low-cut filter and "Flat" mode for use with constant velocity test records;

- Dual Outputs per channel: a Front Panel un-buffered Single-Ended (RCA) high-level phono output for highest possible audio quality where RFI/EMI environment and cable length circumstances permit, along with a Front-Panel un-buffered Balanced (XLR) output; high level outputs suitable for just about any modern preamplifier or integrated amplifier;

- A-Wtd SNR Ratio better than 83dB at 1mVRMS input with 3 ohm cartridge source impedance, and 1 Khz THD at that same level is less than 0.002% (-94 dB); A-Wtd SNR better than 69dB at 0.2mVRMS input with 3 ohm cartridge source impedance, and 1 Khz THD at that same level is less than 0.002%;

- RIAA conformance better than +/-0.6dB.

The NextGen Professional Phono Preamplifier Cards are designed to be installed and used in the NextGen Audio Systems standalone 19" 3U rack-mountable chassis and associated external 115/230VAC 50/60 Hz power supply. This same chassis and accommodate BOTH NextGen A80RC Tape Repro and Professional Phono Cards per channel if required.

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The NextGen Professional Preamplifier cards are designed to be installed and used in the NextGen Audio Systems standalone chassis and associated external power supply (identical to that used for the NextGen Audio Systems outboard Record/Repro Tape Electronics), and all specifications stated are so obtained.

Please read the following setup and use instructions carefully before attempting any settings adjustments to the product as received.

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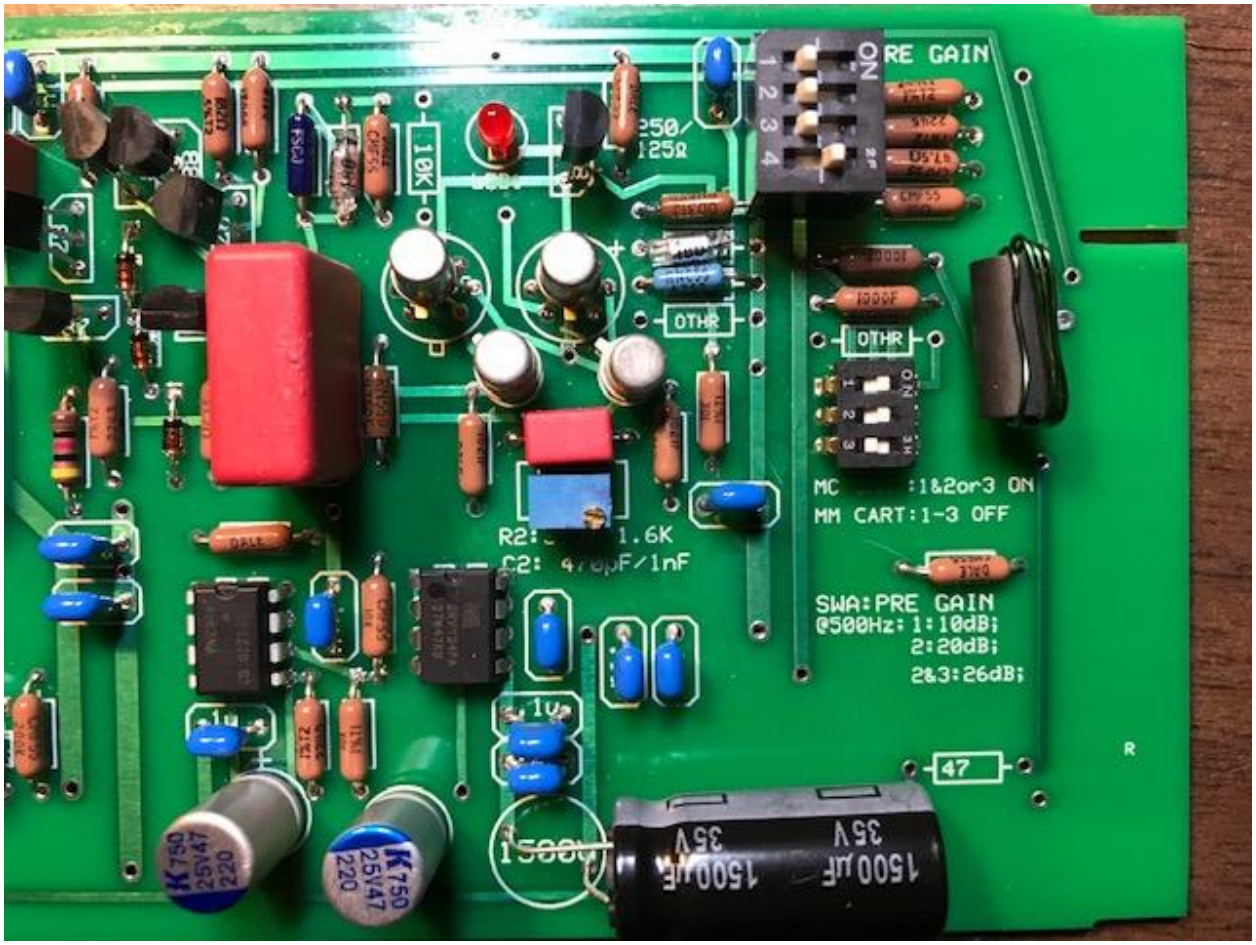
Instructions for Setup and Adjustment:

Setup consists of 4 distinct operations:

1. **Selecting Cartridge Type (MM or MC) ad loading**
2. **Selecting First Stage (Preamplifier/LF EQ) Gain**
3. **Enabling if required 15Hz Low Cut filter or Constant velocity filter**
4. **Selecting the Output Stage Gain**

Please ensure the unit is powered down prior to making changes in Gain settings.



1. Cartridge Type (MM or MC) and LOADING:

NOTE: Ignore the printed PCB indications for this DIP SWITCH; Instead please follow the instructions below:

MM: 1-3 OFF (47K ohms || 135pF cartridge Load)
MC: 3 AND 2 ON: 100 ohms || 235 pF cartridge load
MC: 3 AND 1 ON : user load resistor "OTHR" (if fitted) || 235pF cartridge load
MC: 3 AND 2 AND 1 ON: user load resistor "OTHR" (if fitted) in parallel with 100 ohms || 235pF cartridge load

2. Preamp/LF Equalizer Stage GAIN (500Hz):

Following are general recommendations for setting the NextGen Professional Phono Card preamplifier /LF EQ stage (i.e. INPUT STAGE) gain:

The setting that optimizes SNR will depend both on the specified cartridge output level at indicated reference velocity (typically specified for a 1 Khz sinusoid at 5cm/s recording velocity), as well as MC cartridge Coil resistance (which can also have impact on residual thermal noise); in general MC cartridges with lower coil resistance (fewer turns - usually for reduced moving mass and mechanical impedance) will also have correspondingly lower output levels at a given recording velocity. If in doubt start with a lower gain setting (i.e. 10 dB for MM, 20 or 26 dB for MC) and, and then set the separate OUTPUT STAGE gain next.

Note: setting this gain excessively high for a given cartridge can result in audible distortion; setting this gain too low can result in excess noise (hiss) at high listening volumes compared with record surface noise.

The objective should be that *record surface noise* (i.e. playing a "quiet groove") exceeds always system thermal noise at the nominal listening level. Simply put, this means that residual noise ("hiss') with tonearm lifted off the record should be less than that off the record playing a quiet groove. The NextGen professional phono preamplifier is capable of better than a 83dB A-Wtd Signal to Thermal Noise Ratio (SNR) for a 1.0 mVRMS input at 1Khz with a 3 ohm equivalent MC cartridge source (37dB gain setting), and 69dB A-wtd SNR at 0.2mVRMS input at 1 Khz with a 3 ohm equivalent MC cartridge source (37dB gain setting), which means that properly set up, preamplifier thermal noise will not meaningfully contribute to audible record surface noise.

Note that the Output Stage gain setting has very minimal impact on the thermal noise floor, and high impact on maximum undistorted output level; consequently, there is no benefit to be had by raising the preamplifier /LF EQ stage gain beyond that which masks thermal noise by the record surface ("quiet groove") noise.

Note: You can increase the Preamp/LF Equalizer Stage gain setting subsequently if needed, while reducing the Output Stage gain as may be needed to avoid distortion if it presents.

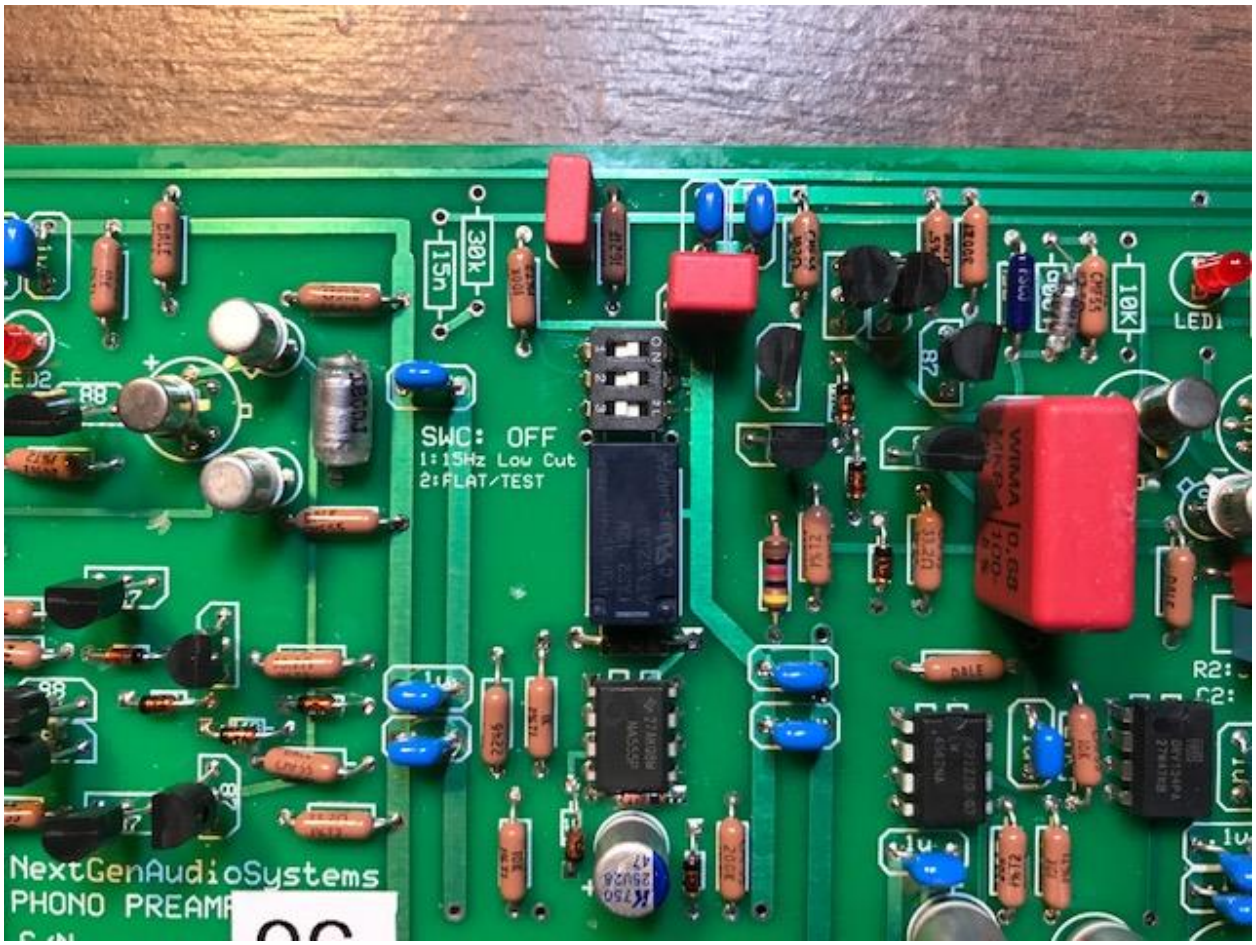
Please also NOTE the recommendation regarding Selecting the OUTPUT Stage Gain (4.) setting that summed Preamp/LF Equalizer Gain setting AND Output Stage Gain setting should NOT exceed 75 dB in nearly all circumstances.

Preamp/LF Equalizer Stage Gain Setting Table Follows:

Preamp/LF Equalizer Stage Gain Setting Table

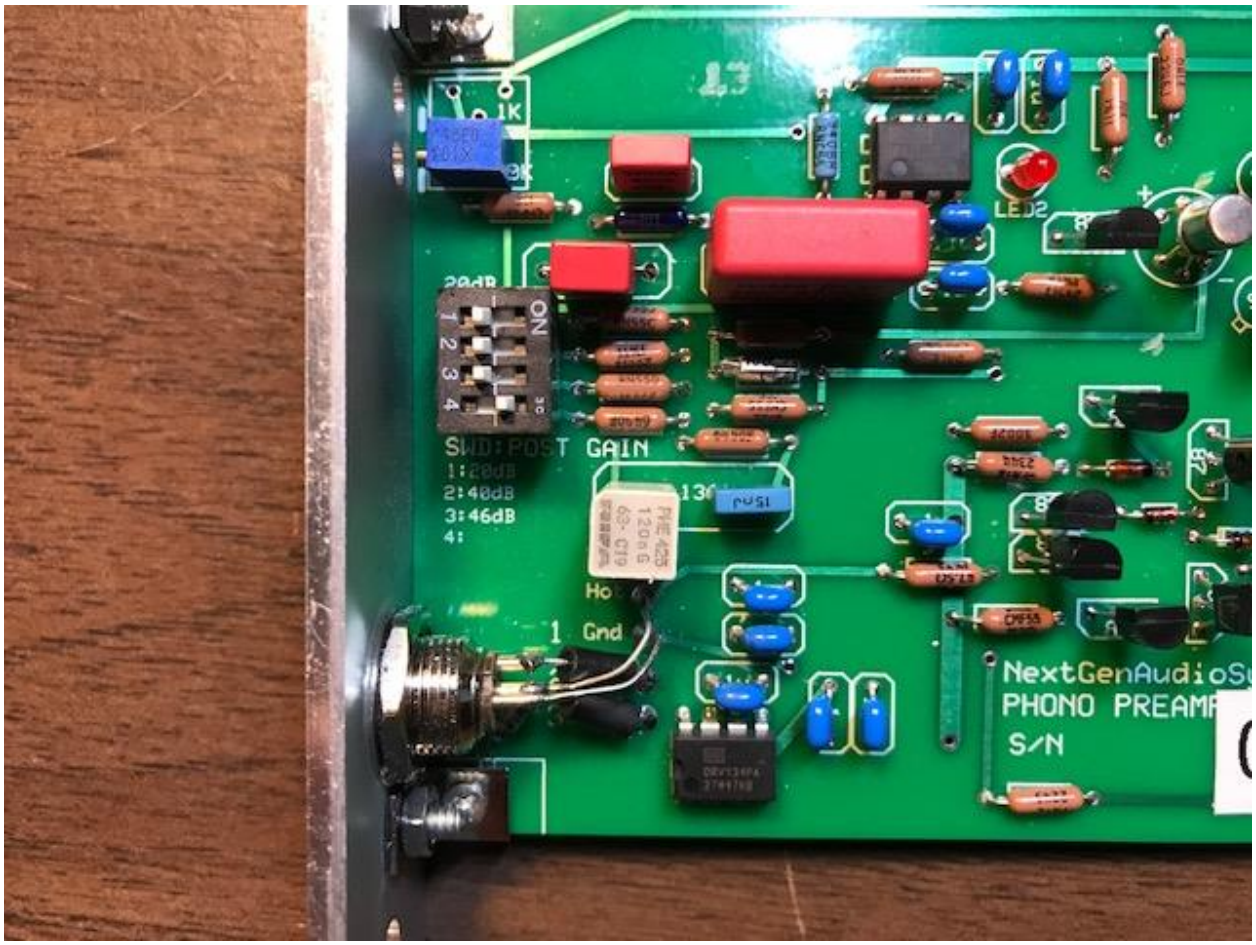
Recommended USE#	SW1	SW2	SW3	SW4	GAIN@500Hz
MM	ON	OFF	OFF	OFF	10dB
Low output MM, or High output MC	OFF	ON	OFF	OFF	20dB
Medium output MC	OFF	OFF	ON	OFF	26 dB
0.25-1mv @5cm/s MC	OFF	OFF	OFF	ON	34dB
0.15-0.7mV @ 5cm/s MC	OFF	ON	ON	ON	37dB

#: Optimal Setting depends as well on OUTPUT STAGE GAIN SETTING (see below) as well as Following High-Level preamplifier/Integrated amplifier available gain and listening volume control setting.



3. Enabling if required 15Hz Low Cut filter or Constant velocity filter:

Normal operation is SW1 and SW 2 ON and SW3 OFF
SW1 OFF: 15 Hz Low Cut Filter ON (use if needed if experiencing excessive loudspeaker amplitude excursions due to record or deck rumble, or insufficiently damped cartridge-tonearm LF resonance.)
SW2 OFF: Test Mode: Constant velocity above 1Khz for measurements using constant velocity test record measurements



4. Output Stage Gain settings: ONLY ONE SWITCH SHALL BE SELECTED ON AS FOLLOWS:

TYPICAL USE#	SW1	SW2	SW3	SW4	GAIN@500Hz
MM, High output MC	ON	OFF	OFF	OFF	20dB
MC	OFF	ON	OFF	OFF	40dB
MC	OFF	OFF	ON	OFF	46 dB
Low output MM, MC	OFF	OFF	OFF	ON	32dB

#: setting depends on NextGen Phono Preamplifier/LF EQ Stage GAIN SETTING (2.) as well as following High-Level signal amplifier gain, power amplifier gain, loudspeaker efficiency, and listening volume control setting.

NOTE: As a general rule, the OUTPUT Stage Gain setting summed with the Preamp/LF Equalizer Gain setting should NOT exceed 75dB in nearly all circumstances for best performance.