



Well Tempered Lab

INSTRUCTION MANUAL

WTL Phono

A word from the Chief Engineer

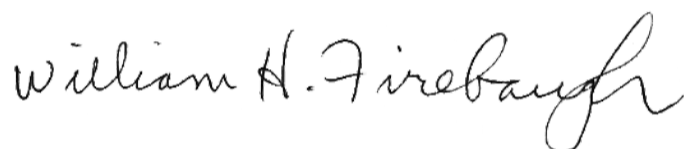
The Well Tempered Phono stage is designed to accommodate both moving magnet (MM) and moving coil (MC) cartridges and has a maximum gain of 68 dB for MC cartridges and the gain is switched for MM cartridges. The necessary break points for the RIAA equalisation are distributed throughout the circuit in order to ensure optimum overall time response of the circuit as well as to ensure the necessary frequency response. Normally, the RIAA equalisation is effected with an arrangement of interconnected resistors and capacitors. Since the RIAA recording process requires that the treble frequencies be substantially boosted relative to the bass frequencies, control of the time response is an important requirement.

The MM/MC Phono circuit employs state-of-the-art operational amplifiers. Using these devices ensures a low noise, high gain, stable and predictable design result.

I prefer using resistors of the carbon film type although metal film resistors might have an edge for noise considerations. I prefer capacitors with polypropylene dielectric.

The input shows a switch selected resistor to accommodate both MM and MC cartridges. In my experience, MC cartridges loaded with 47K ohms yield an excellent result and 47K is what I have used for some time now.

Testing of the Well Tempered Phono Stage will reveal excellent results both in the frequency response and the time response. Testing with square waves equalised for the RIAA recording characteristic (the inverse of the RIAA playback) will yield excellent results, verifying overall performance.



William Firebaugh
Chief Engineer

Description

The Well Tempered Lab Phono is a William Firebaugh designed Phono Preamplifier suitable for all cartridges both Moving Magnet (MM) and Moving Coil (MC)

Important Safety Instructions

1. Read the instructions

The safety and operating instructions should be read before using the Phono.

2. Retain Instructions

The safety and operating instructions should be retained for future reference.

3. Follow Instructions

All operating and use instructions should be followed.

4. Location

The Phono should be installed in a stable location with ample ventilation. We recommend that this phono preamplifier be placed at a suitable distance away from all amplifiers.

5. Water and Moisture

As with any electrical equipment, this phono stage should not be used near water and moisture.

Connection and Operation

The Well Tempered Lab Phono is powered from a dedicated power supply (Supplied with the unit) or for Well Tempered Lab owners with the Well Tempered Lab Ctrl there is the in-built facilities to power the Well Tempered Lab Phono eliminating extra cables etc.

Connect the Well Tempered Lab Phono to either the dedicated power supply or Ctrl with the correct umbilical cable supplied.

Output Connections: One set of single ended (RCA) type connectors labelled 'Output' are supplied. Ensure correct polarity.

Input Connections: One set of single ended (RCA) type connectors labelled 'Input' are supplied. Ensure correct polarity.

Important: Use the best available interconnects and ensure correct polarity is maintained throughout the system.

Earth: A dedicated earth terminal is supplied on the rear of the Well Tempered Lab Phono. Some experimentation may be required to achieve optimum earthing but normally the earth wire from the turntable or tonearm will connect to the earth terminal.

The Well Tempered Lab Phono has a shielded chassis but it is not recommended that it is placed close to the turntable or cartridge.

Note: The Well Tempered Lab Phono requires a 24V DC power supply. Use only dedicated Well Tempered Lab power sources (24VDC).

Impedance and Gain

The Well Tempered Lab Phono is equipped with micro switches on the underside to facilitate both loading and gain. There are many factors that contribute to the optimum loading for phono cartridges that include cables, preamplifier etc. and we recommend starting with the lowest impedance setting closest to the manufacturers recommendations.

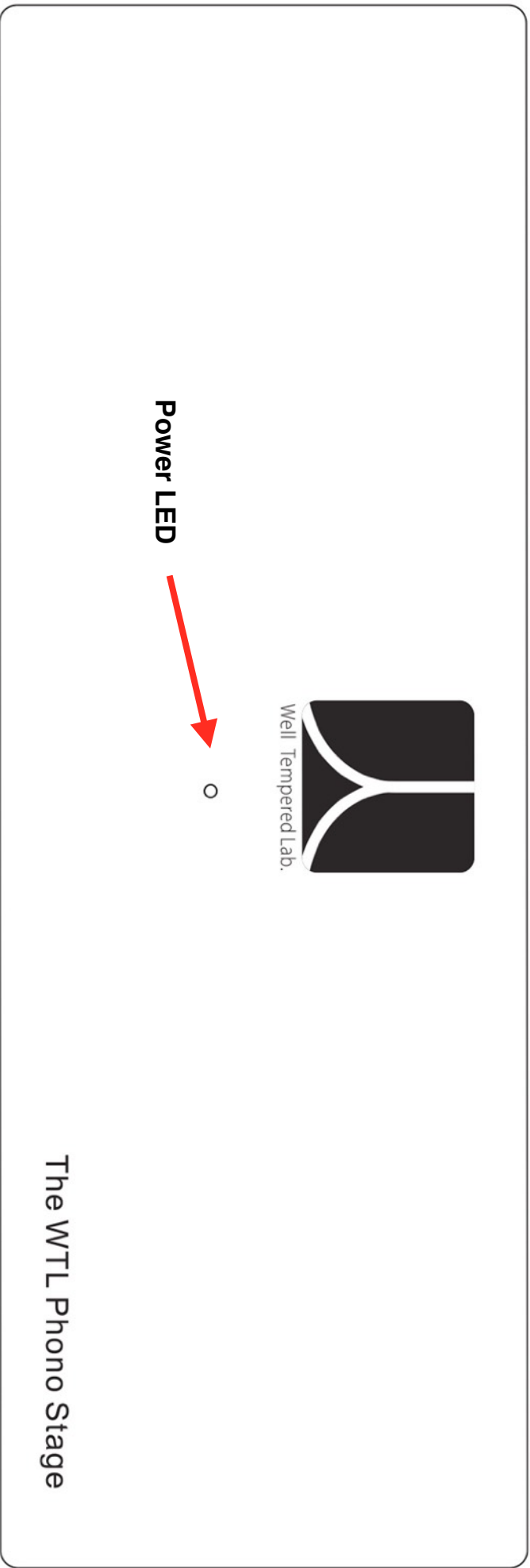
Following is a table of settings available on the Well Tempered Lab Phono:

	1	2	3	Gain	4	5	6	Impedance
Switch #	ON	OFF	OFF	43dB (MM)	ON	OFF	OFF	300Ω
	OFF	ON	OFF	58dB (MC)	OFF	ON	OFF	150Ω
	OFF	OFF	ON	62dB (MC)	OFF	OFF	ON	47Ω
	ON	ON	OFF	58dB (MC)	ON	ON	OFF	143Ω
	ON	OFF	ON	63dB (MC)	ON	OFF	ON	46Ω
	OFF	ON	ON	65dB (MC)	OFF	ON	ON	36Ω
	ON	ON	ON	66dB (MC)	ON	ON	ON	30Ω
	OFF	OFF	OFF	38dB (MM / MC)	OFF	OFF	OFF	47KΩ

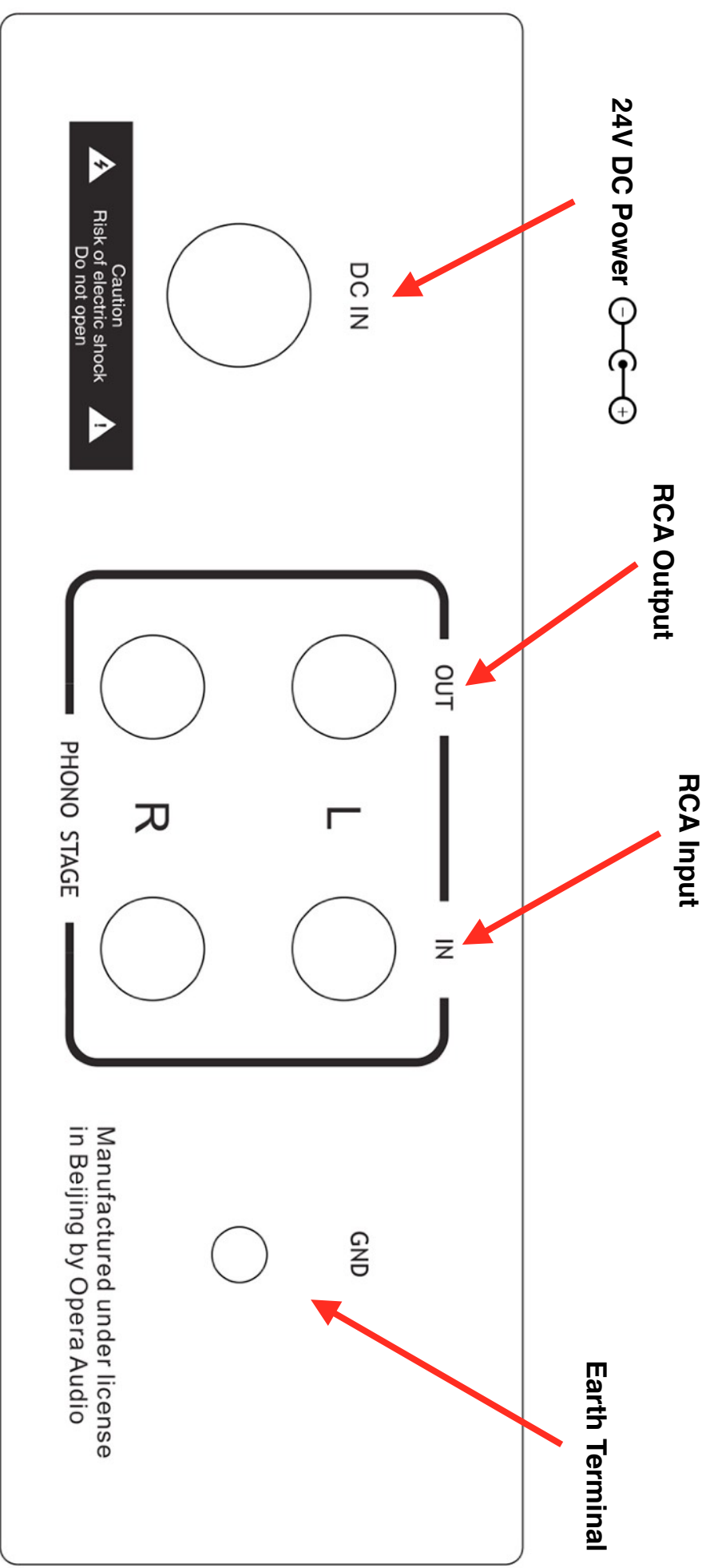
Specifications

- Harmonic Distortion (2V RMS Output)
0.001%
- Input Impedance
Variable (See table)
- Input Gain
Variable (See table)
- Input Connectors
1 group RCA
- Output Connectors
1 group RCA
- Ground Connector
Screw terminal
- Signal/Noise
96 dB
- Consumption
20 watts
- Dimensions (H x W x D)
105 x 150 x 260 mm, 220 x 360 x 440 mm (Shipping)
- Weight
7.6 kg, 8.6 kg (Shipping)

Front Panel



Rear Panel



Warranty & Service

Valid on completion of warranty card and confirmed date of purchase. Details can be registered at www.welltemperedlab.net/welltemperedlab/contact/ or mailed to: Well Tempered Lab, P.O. Box 2650, Christchurch, New Zealand.

This Well Tempered Lab product is warranted against defects in material and workmanship for one year from date of purchase.

This warranty does not cover normal wear and tear and is void if the Well Tempered product has been subject to mis-use, accident or negligence or if it has been tampered with or modified in anyway. Spillage of any fluids supplied by the Well Tempered Lab is not covered within the scope of this warranty.

Warranty is restricted to the territory in which the product was purchased. Our distributors and dealers are under contractual obligation to service under warranty products only sold through them. They are entitled to make a non refundable charge for service to products purchased outside the territory if required.

Claims Under This Warranty

The product should be returned to the dealer or nearest Well Tempered distributor, complete with warranty card and confirmed date of purchase.

The European Waste Electrical and Electronic Directive

This product can be recycled. Products bearing this symbol must NOT be thrown away with normal household waste. At the end of the product's life, take it to a collection point designated for recycling of electrical and electronic devices. Find out more about return and collection points through your local authority.

The European Waste Electrical and Electronic (WEEE) Directive was implemented to dramatically reduce the amount of waste going to landfills, there by reducing the environmental impact on the planet and on human health. Please act responsibly by recycling used products. If this product is still useable, consider giving it away or selling it.





Well Tempered Lab

Registration Card

Name	_____	
Address	_____	

City	_____	
State	Post Code (Zip)	_____
Country	_____	
Phone	Email	_____
Model	Serial No.	_____
Dealer	_____	
	Date of Purchase	_____