Owner´s manual

Millenium ADC

Analog/Digital Converter

Phono Input

LYNGDORF

LYNGDORF

Table of Contents

Unpacking the Millennium ADC

Carefully remove the unit and accessory kit from the carton, visually check for shipping damage. Contact both the shipper and your Lyngdorf Audio dealer immediately if the unit bears any sign of damage from mishandling. All Lyngdorf Audio equipment is carefully inspected before leaving our factory.

⚠️	Keep shipping carton and packing material for future use or in the unlikely event that the unit needs servicing. If this unit is shipped without the original packing, damage could occur and void the warranty.

Operating Voltage

The Millennium ADC is selectable to one of the following power ratings:

110V-120V~ at 50-60Hz with a power rating of 50W
220V-240V~ at 50-60Hz with a power rating of 50W

⚡	Connect the power input only to the AC source matching the setting shown on the voltage selector switch. The warranty will not cover any damage caused by connecting to inappropriate AC mains.

The Millennium ADC has three power modes:
1.   OFF
After Power off or Standby, the settings of Millennium ADC are retained. Please note that some parts of the mains entry section still carry live mains.

2.   STANDBY
In standby mode the Lyngdorf logo will be dimly lit.

3.   ON
In on mode the Lyngdorf logo will be fully lit.

Serial Number Registration

Please record the serial number of your product here for future reference. The serial number is engraved in the plaque on the Millennium ADC rear panel. You will need this serial number, should you ever require service on your Millennium ADC.

Millennium ADC serial number: _____

Introduction

Congratulations on your investment in the Lyngdorf Audio Millennium ADC (Analog to Digital Converter).

The Lyngdorf Audio Millennium ADC is a high-performance 2-channel Analog to Digital Converter with 4 line inputs. Using a combination of state-of-the-art analog circuitry and Digital Signal Processing to support the two balanced 24 bit converters per channel, the Millennium ADC sets new performance standards for analog to digital conversion.

The optional Lyngdorf Audio Phono Stage is a plug-in module for the Millennium ADC that allows a gramophone to be connected directly to the Millennium ADC.
The RIAA equalization in the Lyngdorf Audio Phono Stage is implemented with tight-tolerance polypropylene capacitors. To further improve de-emphasis possibilities, an additional 7 de-emphasis curves are available in the DSP for optimal playback of records made before implementation of the RIAA (Record Industry Association of America) standard.

5

LYNGDORF

Accessories

You should find the following accessories included:
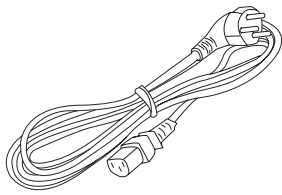
Mains cord

Millennium Link cable
(5 pin XLR)

RS-232 cable for firmware
upgrade from a PC

Remote control

Front Panel
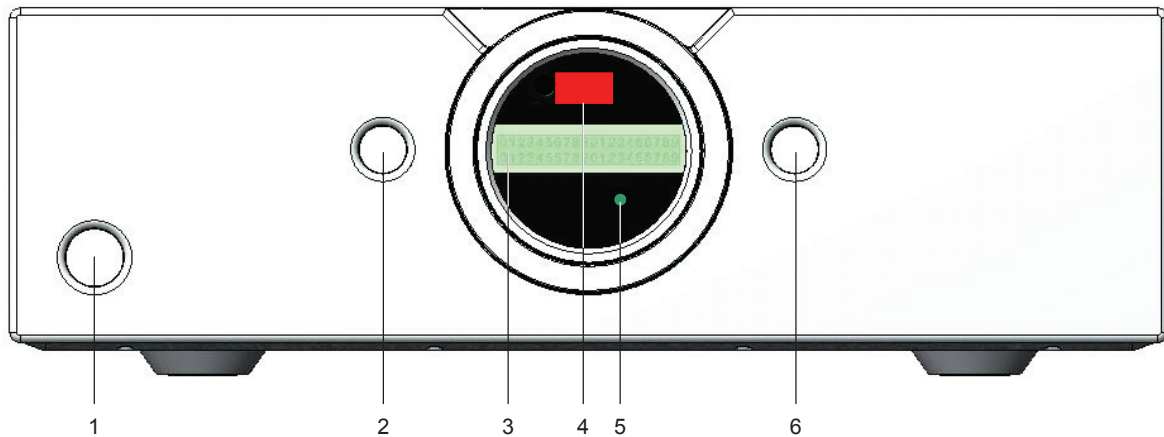
Figure 1: Millennium ADC front panel.

The buttons/controls on the front panel of the TDAI 2200 can all be operated either with direct presses or by operating the corresponding keys on the supplied remote control. All the keys on the front panel [except the Mains switch (1)] are duplicated on the remote control as well.
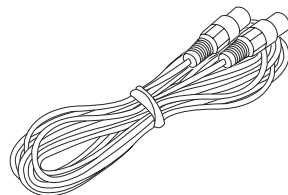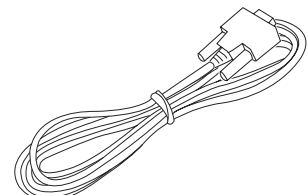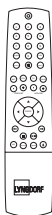
1. Mains switch
Turns the power to the Millennium ADC on or off.

2. Left control button.
Multifunction button for switching the product on/off, input selection and menu operation:
*   On/Stand by: Press to switch the Millennium ADC on from stand by. Press and hold the button to switch back to standby mode.
*   Input Selection: When the unit is switched ON press to toggle down
*   Menu Operation: Down/back button. Press to use the down function. Press and hold to use the return function. See chapter 9.b, Menu Operation, for a more detailed description.

3. Display.

4. Lyngdorf logo.
Dimly illuminated in standby mode. Brightly illuminated when the Millennium ADC is on.

5. Receiver for the infrared remote control.

6. Right control button.
Multifunction button for switching the product on, input selection and menu operation:
*   On: Press to switch the Millennium ADC on from stand by.
*   Input Selection: When the unit is switched ON press to toggle up
*   Menu Operation: Up/select. Press to use the up function. Press and hold to use the select function. See chapter 9.b, Menu Operation, for a more detailed description.

Rear Panel
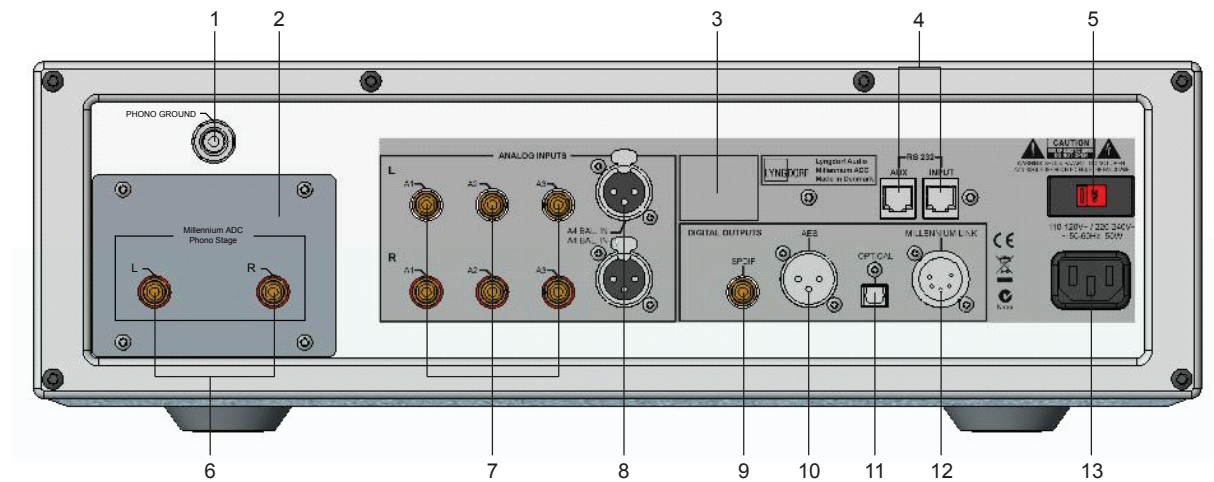
Figure 2: Millennium ADC rear panel.

1. Binding post for phono ground.

2. Optional phono stage module.

3. Millennium ADC serial number label.

4. RS-232 AUX and INPUT RJ45 connectors.
The RS-232 communication connectors are for connection to a computer for firmware upgrade. Please visit www.lyngdorf.com for instructions and available firmware.

5. Mains voltage input selector.
Selects the correct voltage for your location. This switch selects either 110-120 V or 220-240 V operation.

⚡	Always check that the correct voltage has been selected prior to connecting this unit to an AC power source. Failure to do so may result in serious damage to the unit. The warranty will not cover any damage caused by connecting to inappropriate AC mains.

6. Phono input RCA connectors.

7. Unbalanced analog input RCA connectors.

8. Balanced analog input XLR connectors.

9. Unbalanced digital output RCA connector.

10. Balanced digital output XLR connector.

11. Optical digital output Toslink connector.

12. Lyngdorf Audio Millennium Link XLR 5 pin connector.

13. Mains input IEC 320 connector.

Remote Control

The remote control is used to access the menu system and replicate the buttons directly accessible on the front panel.

The four buttons used for selecting which device to control are described below. To control the Millennium ADC the AMP key should be pressed.

	The functionality of the remote control depends on the products in your set-up. The below description applies to operation of the Millennium ADC only.

1. Standby
Toggles between on and stand-by mode.

2. Numerical buttons
No function.

3. Info
Shows the firmware version of the Millennium ADC.

4. Digital / Analog
No function.

5. Menu
Enters or exits the menu system.

6. Mute
No function.

7. AMP
Sets the remote for operation of the Millennium ADC as well as a Lyngdorf Millennium MK III/IV Amplifier.

8. RCS
No function.

9. CD
Sets the remote for operation of a Lyngdorf CD Player.

10. Tuner
No function.

11. Channel -/+
Toggles down/up between inputs.

12. Volume Up / Down
No Funtion.

13. Up / Down arrows
No Funtion.
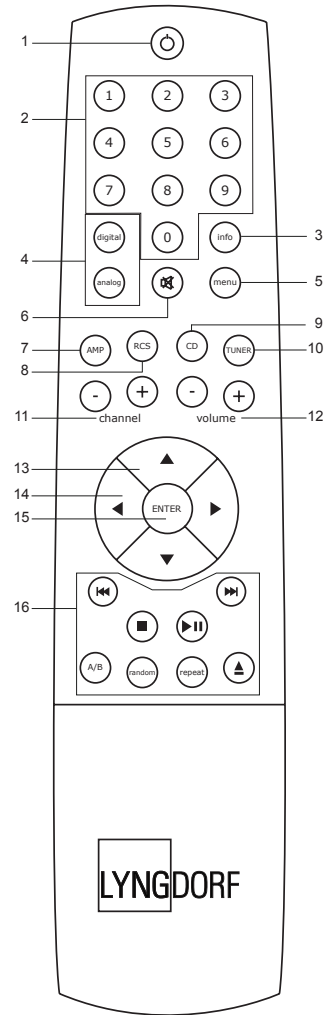
14. Left / Right arrows
Navigation / adjustment in the menu system
Pressing and holding the buttons changes the setting in some menus fast. E.g. Input Gain.

15. Enter
Selection in menu system.

16. Play/Pause, Stop, Skip etc.
No function.

Placement

The Millennium ADC should be placed well away from any source of magnetic fields like wall mains adapters. Also avoid placing on top of a power amplifier – instead place them 'side by side'.
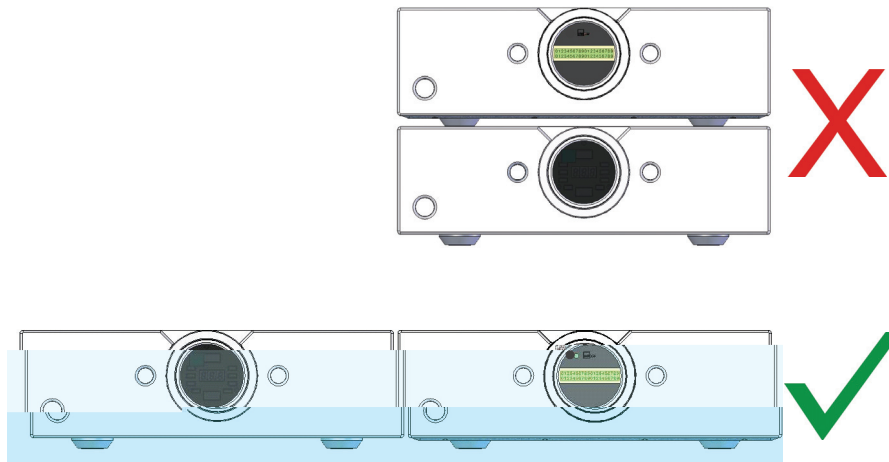
Figure 3. Recommended placing of the Millennium ADC.

Millennium Link Connection

By using the Millennium Link Connection between the Millennium ADC and a Millennium MkIII or MkIV amplifier (from firmware version 40) you are ensured the best possible integration of the two products – both in terms of sound quality and ease of use. They become 'one product'.

Connection:
1. Connect the two using the enclosed 5 pin XLR cable
2. Select the desired sample rate 48, 96 or 192 kHz. Please refer to the 'Sample rate' menu (9.c.i) of this manual.
3. Set the Millennium ADC remote control menu to 'Mill' to let the Millennium amplifier control operations (when you change the analog inputs on the Millennium amplifier, you will actually change the inputs on the Millennium ADC). Please refer to the 'Remote control' menu (9.c.v) of this manual.

Millennium MkI and MkII are not compatible with the Millennium Link Connection. In this case you have two options:
1. Connect the two using one of the digital outputs:
   • Unbalanced digital output RCA connector (SPDIF)
   • Balanced digital output XLR connector (AES)
2. Update your MkI/II to a MkIII version
   • Please contact your local Lyngdorf Audio dealer for further information.

Menu Tree

Common Menus

Input Related Menus ···· **Main Menu ADC**

| Dig. Samplerate | Comm. Address | Comm. Speed | Display Timeout | Remote Control | Factory Reset |

···· Input Related Menus

Phono Input Menus

Main Menu ADC

| High Pass Filter | De-emphasis | Select Cartridge | Setup Cartr. : 1 | Polarity |

···· Common Menus ····

| Exit Main Menu |

Phono Cartridge: 1

| Load Preset | DSP Cart. Filter | 50 kHz Zero | Cartridge Gain | Cartr. Balance | Cartr. Capacit. | Cartr. Impedance | Exit Cartr. Menu |

Analog Input 1 – 4 Menus

Main Menu ADC

| Input Gain | Polarity |

···· Common Menus ····

| Exit Main Menu |

Menu Operation

In the following the general menu operation is described with Display Timeout menu (used as an example only).

⚠️ The menus available depend on the selected input. All settings outside the common menus apply to the selected input only. Please refer to the menu tree.

When The Millennium ADC is switched on select the menu by pressing and holding the right control button until the menu appears or press Menu on the remote control.

```
        Main Menu ADC
    <      Input Gain        >
```

Pressing the Left / Right control buttons or Left / Right Arrow on the remote control toggles forwards / backwards between the different menus. When the requested menu is reached (in this case the Display Timeout menu).

```
        Main Menu ADC
    <    Display Timeout      >
```

Press and hold the right control button or press Enter on the remote control to access this menu.

```
        Display Timeout
    Curr: Off  New: Off
```

Now the setting can be adjusted by pressing the Left / Right control buttons or Left / Right Arrow on the remote control until the desired setting is reached. In this case Display Timeout is set to 'On'.

```
        Display Timeout
    Curr: Off  New: On
```

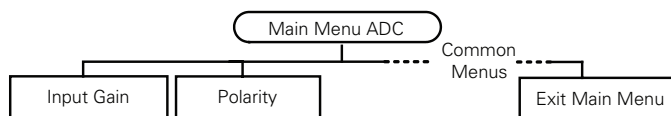To save the setting press and hold the right control button until the previous menu re-appears or press Enter on the remote control.

Pressing and holding the left control button or pressing Menu on the remote control, at any time, will exit the menu completely. If the actual setting was not saved first, you will exit the menu without saving the setting.

⚠️ The Millennium ADC will automatically exit the menu if it has not been operated for approximately 30 seconds.

Common Menus

Digital Sample Rate

Available sample rates are 48, 96 and 192 kHz.

Choice of sample rate depends on the compatibility with the actual amplifier. If your amplifier accepts all sample rates, we recommend you to test the different settings to find your personal preference. This is due to the fact that there is no simple answer as to what will result in the 'absolute best sound' – simply because it depends on many unknown parameters such as the recording, the source, the complete audio chain, the listening room and not least your personal preferences.

The Millennium MkI and MkII amplifiers are compatible with 48 and 96 kHz.

The Millennium MkIII and MkIV amplifiers are compatible with all of the above mentioned sample rates.

Please also refer to 'Millennium Link Connection' chapter, of this manual for connection to Millennium MkIII and MkIV amplifiers.

If using other amplifiers, please refer to its specifications to check sample rate compatibility.

Communication Address

The Comm. Address setting signals the Millennium ADC's identity to the PC interface. Addresses 0-99 can be used. When choosing an address it must differ from the address of other Lyngdorf Audio product – e.g. the Millennium amplifier is '1' and the Millennium ADC is '2'.

Communication Speed

The Comm. Speed setting is the RS232 Link interface speed. The default setting is 57600 baud. With different PC's and different lengths of cables the settings can be changed to 9600 or 115200 baud. The higher the speed the faster the communication – however in 'noisy' environments a lower, and thus less 'noise sensitive', speed can be preferable.

Display Timeout

Choosing the 'On' setting makes the display switch off approximately 10 seconds after the last operation. As soon as the Millennium ADC is operated the display switches on again for a new 10 seconds period.

Remote Control

Select 'Off' if you do not want the Millennium ADC to respond to it's remote control, 'On' if you want it to respond to the remote control (default setting) and Mill if you want it to respond to the control via a Millennium amplifier. Please also refer to chapter 8, Millennium Link Connection, of this manual for this connection.

Factory Reset

This restores the Millennium ADC to the factory settings. To avoid an unintentional reset you will be prompted one extra time if you are sure you want to do this. First when selecting 'Yes' and pressing/holding the right control button or pressing Enter on the remote control you are allowed to perform the 'Factory Reset'.

Phono Input Menus

High Pass Filter
The high pass filter can be chosen to filter away rumble and/or acoustic feedback. Available settings are 10, 15 or 20 Hz. This is referred to as the F2 point in fig. 4.

De-emphasis
Records made before 1955 were recorded with different emphasis curves, requiring different de-emphasis during playback. Some records specify the emphasis curve used on their cover, but in many cases you have to make an educated guess based on record label and year of release. Almost all records after 1955 are recorded with the RIAA emphasis.
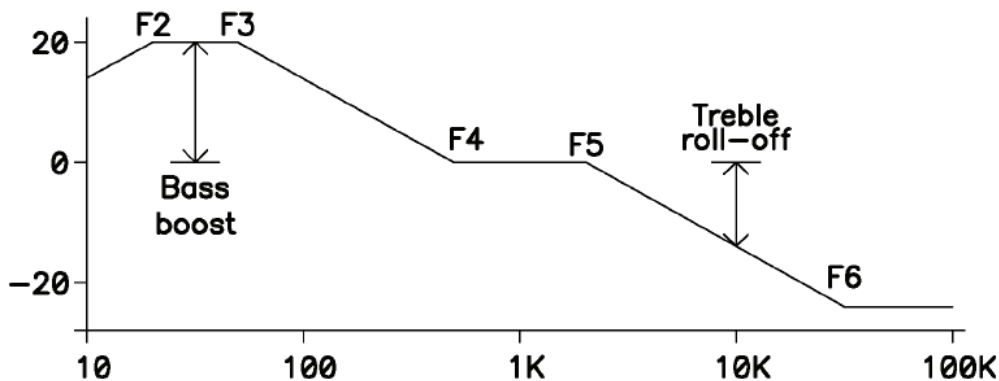
Figure 4. Definition of playback de-emphasis curve.

RIAA	
F2	Not used (the response is flat from F3 and down).
F3	3180 µS (50 Hz).
F4	318 µS (500 Hz).
F5	75 µS (2122 Hz).
F6	Not used (the response continues to fall with 6 dB/octave above F6)

Other de-emphasis curves available in the Millennium ADC are: AES, BSI, CCIR, CCIR 134, DIN 45533/36/37, IEC BS 128 and NAB.

Select Cartridge
The Millennium ADC allows you to make presets for up to 5 different cartridges. Select the Cartridge no. you wish to set up and continue with the Setup Cartridge menu.

Setup Cartr.: 1

Load Preset

If you use one of the pre-loaded cartridges you can load this directly which then automatically sets up the ADC to this cartridge (gain, capacitance, impedance and DSP cartridge filter). If you have a different cartridge, you need to make these settings manually.

If you at a later stage wish to de-select a pre-loaded cartridge, simply select 'Default' in this menu to set this cartridge back to the factory default settings.

DSP Cart. Filter (only available for pre-loaded cartridges)

The DSP Cartridge filter compensates the frequency response of the pre-loaded cartridges.

So, listening without the filter gives you the 'raw' sound of the cartridge whereas listening with the filter compensates for non-linearities.

When selecting a pre-loaded cartridge the DSP cartridge filter is default switched on.

50 kHz Zero

As can be seen from the de-emphasis curve (fig 6) the treble rolls of from the F 5 point.

If the 50kHz Zero setting is set on you will add the F6 point at 50kHz resulting in a less pronounced treble roll of.

Cartridge Gain

The Cartridge Gain can be used in two ways:

1. The higher the setting the better the S/N ratio. It should of course always be observed that no clipping occurs!
2. Allows you to adjust the sensitivity of the actual cartridge to match other cartridges and/or sources.

The Cartridge Gain can be adjusted from +28 to +82dB in 0.1db steps. This allows you to achieve full scale output even with cartridges of very low sensitivity.

Please refer to the specifications of the cartridge and then use the table in fig. 5 as a guide when setting the Cartridge Gain.

⚠️	Setting the Cartridge Gain too high will result in distortion. So, always use your ears when adjusting this. If the 'Phono Clipping' message appears on the display when you play back a record you need to decrease the gain.

💡	The easiest/fastest way to adjust the Cartridge Gain is to press and hold the Left/Right arrow on the remote control.

When you save the Cartridge Gain setting, the sound will be muted for approximately 5 seconds until the new gain is stabilized.

LYNGDORF

Input sensitivity versus cartridge output specification

The output voltage of cartridges are generally specified at a stylus velocity of 5 cm/sec. High performance turntable/tone arm/cartridge combinations can track up to 50-75 cm/sec resulting in an output of 10 to 15 times the output voltage specified for the cartridge. The input sensitivity specified for the Millennium ADC is the voltage required for full-scale output.

In the guide (fig 5) we have calculated the settings with a track ability of 50cm/sec.

Example:

Cartridge output voltage specification: 4 mV at 5 cm/sec. Assuming the cartridge has a track ability of 50 cm/sec this gives a peak maximum output voltage of 40 mV(50/5*4), and the proper setting for the Millennium ADC's input sensitivity is 40mV relating to a Cartridge Gain of +41dB.

Assuming the cartridge has a track ability of 60 cm/sec this gives a peak maximum output voltage of 48 mV (60/5*4), and the proper setting for the Millennium ADC's input sensitivity is 50mV (closest higher value) relating to a Cartridge Gain of +39dB.

Cartridge Output @ 5cm/sec.	Input sensitivity	Cartridge Gain [dB]	Cartridge Output @ 5cm/sec.	Input sensitivity	Cartridge Gain [dB]
18mV	180mV	+28	800uV	8mV	+55
16mV	160mV	+29	700uV	7mV	+56
14mV	140mV	+30	600uV	6mV	+57
12mV	120mV	+31	550uV	5.5mV	+58
11mV	110mV	+32	500uV	5mV	+59
10mV	100mV	+33	450uV	4.5mV	+60
9mV	90mV	+34	400uV	4mV	+61
8mV	80mV	+35	350uV	3.5mV	+62
7mV	70mV	+36	300uV	3mV	+64
6mV	60mV	+37	250uV	2.5mV	+65
5,5mV	55mV	+38	200uV	2mV	+67
5mV	50mV	+39	150uV	1.5mV	+70
4,5mV	45mV	+40	100uV	1mV	+73
4mV	40mV	+41	90uV	900uV	+74
3,5mV	35mV	+42	80uV	800uV	+75
3mV	30mV	+43	70uV	700uV	+76
2,5mV	25mV	+45	60uV	600uV	+77
2mV	20mV	+47	55uV	550uV	+78
1,5mV	15mV	+49	50uV	500uV	+79
1mV	10mV	+53	45uV	450uV	+80
900uV	9mV	+54	40uV	400uV	+81

Figure 5. Guide for setting of Cartridge Gain.

Cartr. Balance

The Cartridge Balance adjustment enables you to compensate for differences between left and right channel. The balance is adjusted by decreasing the left or right channel between 0 - 3dB.

Cartr. Capacit.

The cartridge capacitance can be set to 100 or 430pF.

Pls. refer to the specification of your cartridge to find the correct setting.

💡	For MM cartridges start with 100pF. If this setting sounds too 'bright', use 430pF. For MC cartridges use 430pF unless otherwise specified.

Cartr. Impedance

The cartridge impedance can be set to 20, 100, 200 or 47k Ohm. 20 – 200 Ohm is typically used for moving coil cartridges and 47kOhm for moving magnet cartridges.

Pls. refer to the specification of your cartridge to find the correct setting.

💡	For MM cartridges the normal setting is 47k Ohm. For MC cartridges start with 200 Ohm. If this setting sounds too 'open' select 100 or 20 Ohm until you are satisfied with the sound.

Polarity

With the polarity setting you have the possibility of compensating should the connection somewhere in the 'chain' not be in phase. It is recommended to correct any 'out of phase' connections and use this feature as a phase check only.

Available settings are:

• Left + Right +: Normal mode
• Left + Right - : Used if the right channel is out of phase
• Left - Right +: Used if the left channel is out of phase
• Left - Right - :Used to change to total phase 180 degrees

To test if left and right channels are in phase is quite easy. You just listen for the setting giving the most bass – this is also the setting where all instruments are at 'the right places' in the sound stage.

Analog Input 1- 4 Menus

Input Gain

The Input Gain enables you to match levels from different sources as well as obtaining full scale output on your amplifier. The Input Gain can be adjusted up to +18dB in 0.1 dB steps.

Please refer to the output level specifications of the source and then use the table in fig. 6 as a guide when adjusting relative input gain.

⚠️	Setting the Input Gain too high will result in distortion. Use the table below as a guide but always use your ears when setting the Input Gain.

💡	The easiest/fastest way to adjust the Input Gain is to press and hold the Left/Right arrow on the remote control.

When you save the Input Gain setting, the sound will be muted for approximately 5 seconds until the new gain is stabilized.

Source Output Level	Input Gain [dB]
4.4V	0
4V	+1
3.5V	+2
3V	+3
2.5V	+4
2V	+7
1.75V	+8
1.5V	+9
1.25V	+11
1V	+13
750mV	+15
550mV	+18

Figure 6. Guide for setting of Input Gain.

Polarity

With the polarity setting you have the possibility of compensating each input should the connection somewhere in the 'chain' not be in phase. It is recommended to correct any 'out of phase' connections and use this feature as a phase check only.

Available settings are:

- Left + Right +: Normal mode
- Left + Right - : Used if the right channel is out of phase
- Left - Right +: Used if the left channel is out of phase
- Left - Right - :Used to change to total phase 180 degrees

To test if left and right channels are in phase is quite easy. You just listen for the setting giving the most bass – this is also the setting where all instruments are at 'the right places' in the sound stage.

Technical Specifications

Analog inputs

Parameter	Value	Note
Balanced input connectors	3 pin XLR female, gold plated	Case=Gnd, Pin1=Gnd, Pin2=Hot(+), Pin3=Cold(-)
Balanced input CMRR	-40dB	20 Hz-20 KHz.
Unbalanced input connectors	RCA (phono) jack, gold-plated.	Case=Gnd, Tip=Hot(+)
Input impedance	10K Ohm	
Input sensitivity	550mV to 4.4V	For full-scale output.
L/R crosstalk, 20 Hz-20 KHz	-111dB	
Frequency linearity L/R, 20 -20k Hz	±0.07dB	
Frequency response (-3dB)	<10 – 45k Hz	
THD+N Ratio, A wgt (0dbFS)	0.0002% / 114dB	Gain 0dB
S/N Ratio:THD +N, A wgt (-60dBFS)	124dB	

Phono input

Parameter	Value	Note
Unbalanced input connectors	RCA (phono) jack, gold-plated.	Case=Gnd, Tip=Hot(+)
Input load resistance	20, 100, 200 or 47k Ohm	
Input load capacitance	100 pF or 430 pF	
Input sensitivity	400 uV to 204 mV	For full-scale output.
L/R crosstalk, 20 Hz-20 KHz	-100dB	
Frequency linearity L/R, 20 -20k Hz	±0.02dB	
Frequency response (-3dB)	<10 – 39k Hz	
THD+N Ratio, A wgt (0dbFS)	0.0003% / 113dB	Gain 28
S/N Ratio:THD +N, A wgt (-60dBFS)	72 -122dB	Gain 82 – 28dB

Millennium interface

Parameter	Value	Note
Millennium Interface connector	5 pin XLR male, gold-plated	Case=Gnd, Pin1=Gnd, Pin2=18 V, Pin3=Comm, Pin4=RefClk, Pin5=Audio
Output sample rate	48kHz, 96kHz or 192kHz	
Output protocol	SPDIF	

Digital outputs

Parameter	Value	Note
Balanced output connector	3 pin XLR male, gold-plated	Case=Gnd, Pin1=Gnd, Pin2=Hot(+), Pin3=Cold(-)
Balanced output impedance	110 ohms	Transformer isolated output.
Balanced output voltage	1.7Vpp	With 110 Ohm load.
Balanced output jitter	350pS	With 110 Ohm load
Unbalanced output connector	RCA (phono) jack, gold-plated.	Case=Gnd, Tip=Hot(+)
Unbalanced output impedance	75 ohms	Transformer isolated output.
Unbalanced output voltage	0.5Vpp	With 75 ohms load.
Unbalanced output jitter	400pS	With 75 ohms load
Optical output connector	Toslink	
Optical output jitter	350pS	
Output sample rate	48, 96, 192 kHz	
Output protocol	SPDIF, Toslink (consumer), AES/EBU (professional)	

Mains

Parameter	Value	Note
Mains input connector	IEC 320	
Mains voltage range	110-120 V AC, 50–60 Hz	
Mains voltage range	220-240 V AC, 50-60 Hz	
Internal mains fuse	1 Amp	
Power consumption	1.5W	STANDBY mode.
Power consumption	50W	OPERATE mode, no output.

Mechanical

Parameter	Value	Note
Width	450 mm (17.72")	
Depth	430 mm (16.9")	Including connectors.
Height	145 mm (57")	Including feet.
Net weight	12.9 kg (28.4lb)	
Shipping weight	17.2 kg (37.9lb)	

LYNGDORF

www.lyngdorf.com

Free Manuals Download Website

http://myh66.com

http://usermanuals.us

http://www.somanuals.com

http://www.4manuals.cc

http://www.manual-lib.com

http://www.404manual.com

http://www.luxmanual.com

http://aubethermostatmanual.com

Golf course search by state

http://golfingnear.com

Email search by domain

http://emailbydomain.com

Auto manuals search

http://auto.somanuals.com

TV manuals search

http://tv.somanuals.com