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ULTRAFiDE

U500DC

Ultra Fidelity Audiophile
Power Amplifier.

Operators Manual



Thank you for choosing an ULTRAFIDE/MC² product for your application, it really is appreciated.

Please spend a little time reading through this manual, so that you obtain the best possible performance from the unit and become familiar with its operating requirements.

All ULTRAFIDE/MC² products are carefully designed and engineered for world-class performance and reliability. If you would like further information about this or any other product, please contact us:
hello@ultrafideaudio.co.uk

We wish you many years of enjoyment from your new amplifier and look forward to hearing from you in the near future.



Scan the QR code or visit our website www.ultrafideaudio.co.uk to find out more about us.

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DECLARATION OF CONFORMITY

We, the manufacturer:

**XTA Electronics Ltd
(TRADING AS MC² Audio, Ultrafide)
Units 6-7 Kingsgate
Heathpark Industrial Estate
Honiton, Devon
England
EX14 1YG**

acknowledge our responsibility and self-certify the following products:

Kind of equipment: Audio amplifier
Commodity Code: 8518400090
Type Designation: U500DC
and all OEM/variants of this model

are manufactured in accordance with following norm(s) or document(s): **EMC Directive 2014/30/EU (CE and UKCA)**, in compliance with the

Technical Regulations: EN55032:2015 (Emissions)
EN55032:2017 (Immunity)

and in accordance with the: **Low Voltage Directive 2014/35/EU (CE and UKCA)**
in compliance with the following norm(s) or document(s):

Technical Regulations: EN/IEC62368-1:2020 (Audio, Video & Communication Safety)

and in accordance with the **Directive 2011/65/EU** on the restricted use of certain Hazardous Substances in Electrical and Electronic Equipment (**RoHS2**). We certify that the above-mentioned products are deemed compliant according to the details given in the directive.

Signed:

Name: Alex Cooper
Position: Research and Development Manager
Date: May 2022

Introduction

The Ultrafide U500DC is a high-end dual channel power amplifier with two integral power supplies and single mains connection, it is suitable for the most discerning stereo Hi Fi, or can be used in multiples for bi-amplified stereo or home theatre applications.

Designed from the ground up for the most demanding home listening environments the U500DC efficiently provides crystal clear dynamic response with what feels like endless power, grace, and ease.

The U500DC utilises two of our very latest high speed push pull output stage (“Sigma”) amplifiers combined with separate dual power supplies fed from the mains via a single gold plated 10 Amp connection and a massive bespoke shielded toroidal transformer that provides total safety isolation.

The amplifier provides dual binding posts for each output allowing independent wiring for tweeters and woofers plus dual inputs; unbalanced RCA and balanced XLR.



IMPORTANT SAFETY INSTRUCTIONS



CAUTION: RISK OF ELECTRIC SHOCK.
DO NOT OPEN



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: Apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with a dry cloth.
- 7) Do not block any ventilation openings, install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources, such as radiators, heat registers, stoves or other apparatus that produce heat.
- 9) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- 10) The mains circuit breaker shall remain readily accessible.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from a tip over.
- 13) Disconnect this apparatus during lightning storms or when unused for a long period of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as if the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 15) Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
- 16) To completely disconnect this equipment from the AC mains, disconnect the power cord from the mains circuit breaker.
- 17) Where the amplifier is mounted in a rack and permanently connected to the mains, then the rack should be installed with a readily accessible connector or an ALL POLE circuit breaker with 3mm breaking distances.
- 18) This unit is fitted with a C13 Mains IEC inlet. For safety reasons, THE EARTH LEAD SHOULD NOT BE DISCONNECTED IN ANY CIRCUMSTANCE.

INSTRUCTIONS DE SECURITE IMPORTANTES



ATTENTION: RISQUE DE CHOC ELECTRIQUE.
NE PAS OUVRIR



Le symbole représentant un éclair fléché dans un triangle équilatéral a pour but d'alerter l'utilisateur de la présence d'une "tension dangereuse" non isolée à l'intérieur du boîtier, pouvant être d'une force suffisante pour constituer un risque d'électrocution.



Le point d'exclamation dans un triangle équilatéral a pour but d'alerter l'utilisateur de la présence d'instructions importantes concernant le fonctionnement et la maintenance, dans la documentation qui accompagne l'appareil.

ATTENTION: Appareils de construction de CLASSE I doit être raccordé au réseau électrique via une prise de courant reliée à la terre.

ATTENTION: Pour éviter toute blessure, cet appareil doit être solidement fixé à la torture, conformément aux instructions d'installation.

- 1) Lisez ces instructions.
- 2) Conservez ces instructions.
- 3) Tenez compte de tous les avertissements.
- 4) Suivez toutes les instructions.
- 5) N'utilisez pas cet appareil près de l'eau.
- 6) Nettoyez uniquement avec un chiffon sec.
- 7) Ne pas bloquer les ouvertures de ventilation, installer conformément aux instructions du fabricant.
- 8) Ne pas installer à proximité de sources de chaleur telles que radiateurs, registres de chaleur, poêles ou autres appareils produisant de la chaleur.
- 9) Protégez le cordon d'alimentation contre les piétinements ou les pincements, en particulier au niveau des fiches, des prises de courant et du point de sortie de l'appareil.
- 10) Le disjoncteur secteur doit rester facilement accessible.
- 11) N'utilisez que les fixations/accessoires spécifiés par le fabricant.
- 12) Utilisez uniquement avec le chariot, le trépied, le support ou la table spécifié par le fabricant ou vendu avec l'appareil. Lorsqu'un chariot est utilisé, faire preuve de prudence lors du déplacement de la combinaison chariot/appareil pour éviter les blessures en cas de renversement.
- 13) Débranchez cet appareil pendant les orages ou lorsqu'il n'est pas utilisé pendant une longue période.
- 14) Confiez tous les entretiens à un personnel de service qualifié. Une réparation est nécessaire lorsque l'appareil a été endommagé de quelque manière que ce soit, par exemple si le cordon d'alimentation ou la fiche est endommagé, si du liquide a été renversé ou si des objets sont tombés dans l'appareil, si l'appareil a été exposé à la pluie ou à l'humidité, ne fonctionner normalement ou a été échappé.
- 15) N'exposez pas cet équipement aux gouttes ou aux éclaboussures et assurez-vous qu'aucun objet rempli de liquide, tel que des vases, n'est placé sur l'équipement.
- 16) Pour déconnecter complètement cet équipement du secteur, débranchez le cordon d'alimentation du disjoncteur du secteur.
- 17) Lorsque l'amplificateur est monté dans un rack et connecté en permanence au secteur, le rack doit être installé avec un connecteur facilement accessible ou un disjoncteur ALL POLE avec des distances de coupure de 3 mm.
- 18) Cet appareil est équipé d'une entrée secteur IEC C13. Pour des raisons de sécurité, LE FIL DE TERRE NE DOIT EN AUCUN CAS ÊTRE DÉBRANCHE.

Installing

Installing Your Amplifier: Electrical Considerations

The amplifier has been manufactured to comply with your local power supply requirements, but before connecting the unit to the supply, ensure that the voltage (printed on the rear panel label) is correct and corresponds with that of the local supply.

The amplifier is fitted with a 115/230V tapped transformer and is internally set (from factory) according to customer requirements. Make sure power outlets conform to the power requirements listed on the back of the unit. Damage caused by connecting to improper AC voltage is not covered by the warranty.

Installing Your Amplifier: Mechanical Considerations

The U500DC should be used horizontally and placed on a stable surface or other mounting that is commensurate with the weight of the amplifier.

The mounting must also allow adequate ventilation of the external surfaces and air flow through the ventilation holes on the underside and at the rear of the amplifier.

Do not place in a closed cabinet or over radiators or other heat sources.

The U500DC should not be placed close to other equipment that is sensitive to magnetic fields and performance may be degraded if it is used in close proximity to other equipment that radiates high radio frequency fields.



SAFETY WARNING

Where a MAINS plug or appliance coupler is used as the disconnect device, it should remain readily operable. Where the amplifier is mounted in a rack and permanently connected to the mains, then the rack should be installed with a readily accessible connector or an ALL POLE circuit breaker with 3mm breaking distances. This unit is powered using a 3-wire power cord (C13 IEC). For safety reasons, **THE EARTH LEAD SHOULD NOT BE DISCONNECTED IN ANY CIRCUMSTANCE**. If ground loops are encountered consult the section on XLR connections on page 9.

The wiring colours are:

230v areas		115v areas	
Earth	Green/Yellow	Earth	Green
Neutral	Blue	Neutral	White
Live	Brown	Live	Black

DO NOT USE THE UNIT IF THE ELECTRICAL POWER CORD IS FRAYED OR BROKEN.

The power supply cord should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs and the point where they exit from the appliance.

ALWAYS OPERATE THE UNIT WITH THE AC GROUND WIRE CONNECTED TO THE ELECTRICAL SYSTEM GROUND.

Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.

DO NOT REMOVE THE COVER.

Removing the cover will expose you to potentially dangerous voltages. There are no user serviceable parts inside.

Basic Connection & Set Up / AC Mains Power

Basic Connections & Set-up Explained

The U500DC receives power from the mains via an IEC C13 AC connection and can also be connected or disconnected from the mains by a rocker switch on the rear panel. Position 1 makes the connection and 0 breaks the connection. When mains power is connected the amplifier is ready to be used and it may be put into standby or powered up fully by pressing the standby switch on the front panel.

The amplifier should be powered off fully when making any other connections to the rest of the audio system.

Audio input connections can be made at the rear of the amplifier via a pair of XLR's and a pair of RCA connectors that will interface directly to most other domestic audio equipment. These are both active (on) at all times, so it is possible to set up two alternate sources (or even mix them should there be a circumstance when that is desirable).

Speaker connections are also made on the rear of the amplifier and provided on 4 pairs of binding posts to allow simple or more advanced wiring options.

Mini Jacks are provided on the rear panel that allow DC signals (5-12v) to remotely control the standby/power up status of the amplifier. Two are provided to allow daisy chaining with other parts of the system. They are "edge triggered" which allows the remote control to override the front panel switch or vice versa (whichever is used last).

Connection Setup Tips

All audio system equipment should be sited reasonably close together if possible so that wire lengths can be kept quite short. This approach inherently reduces ground loop (hum) noise (by reducing the loop area) and other interference that can be induced in the cables although it's not the only way***. All equipment should also be powered from the same mains source if possible and certainly from the same mains phase (which is normal in domestic house wiring).

AC Mains Power

The Ultrafide U500DC is set up to operate from either 230V nominal or 115V nominal, 50 - 60Hz AC mains. The mains cable must contain a Safety Earth conductor and the connection to earth must not be defeated or tampered with in any way.

In theory the mains Live and Neutral power conductors are inherently current balanced and therefore no current flows in the earth conductors; however stray capacitance, other coupling and mostly filter components used for compliance to EMC standards does cause a small current to flow in most mains earth systems. This is the source of the ground loop hum that may need to be addressed when wiring an audio system.

Remote Standby Connectors

Mini Jack cables are used for remote power up control and use the tip and outer ring for connectivity. A positive going edge will take the amplifier out of standby and a negative going edge will put it back into standby. The system will work with 5V to 12V signals.

XLR Connectors

As a simple rule of thumb input connections are best made balanced on the U500DC XLR's because balanced systems inherently reject ground loop noise and, in the unlikely event that hum does prove to be a problem, it is also possible to break the ground connection on Pin 1 of the XLR at one end which usually resolves the problem simply and does not compromise safety in any way. Signals of 2.2V rms will put the amplifier close to full power. The standby switch will flash red if this is exceeded.

RCA Connectors

Some audio system equipment may be battery powered or double isolated (with no earth wire) and typically these will provide RCA outputs that will operate perfectly well (without hum) on the U500DC RCA inputs, which also provide a low impedance ground for the cable shield. Signals of 2.2V rms will put the amplifier close to full power. The standby switch will flash red if this is exceeded.

The RCA inputs can also be used, if preferred, with other grounded equipment, but the use of short cables and common mains source becomes critical in order to remove/reduce

ground loops. Sometimes additional ground bonding cables may be necessary to suppress ground loops.

***Another trick, that is counter intuitive but can be useful, is to run the audio signals alongside the mains cables. If the mains is all supplied from a single source this can be thought of as a "star point". If all audio cables run alongside the mains cables and pass close or over the star point, then the ground loop area is massively reduced eliminating the hum.

Mixed XLR and RCA Connectors

Unbalanced RCA sources can be connected to the balanced XLR inputs and benefit from the hum rejecting properties of balanced systems, providing two conductor cables with an overall shield are used. For floating sources (battery powered or double isolated equipment) the Pin 1 shield conductor should be connected to the signal reference conductor at the RCA end. For grounded sources this connection may not need to be made (some experimentation may be needed to minimise hum from potential ground loops).

Balanced XLR sources can sometimes be connected to RCA inputs, but this depends on the nature of the driving circuit. If the manufacturer of the balanced source states that the signals are floating, or that unbalanced operation is possible, then the cable can be wired exactly as above, and again the pin 1 connection can be optionally connected to the signal reference conductor at the RCA end.

Basic Connection & Set Up / AC Mains Power

Binding Posts

Two pairs of binding posts are provided for connection to loudspeakers. This allows separate conductors for Tweeter and Woofer. The Red binding posts are positive (+) voltage, and the Black binding posts are negative (-) voltage; they should be connected to the red and black or + and - connectors on the loudspeaker. For convenience the binding posts accept 4mm “banana” connections, but bare wire termination is recommended for permanent installations when the binding post terminal can be screwed down into place directly onto the cable conductors.

Cable Types Required

The IEC C13 Main’s connector and cable should be high quality 10A rated with three core’s including a ground connection which must not be disconnected under any circumstances.

Mini Jack cables work with 3 pin or 2 pin style connectors. Cables should be shielded but no other special requirements are needed.

All RCA-to-RCA connections should use high quality cable with a single central conductor for the signal and a braided outer conductor that behaves as a ground reference and as a shield against radio interference.

All XLR-to-XLR connections should use high quality cable with a dual, twisted central conductors for the signals (or signal and ground reference) and a braided outer

conductor that behaves as a shield against radio interference.

All RCA-to-XLR connections should use high quality cable with a dual, twisted central conductors for the signal and ground reference plus a braided outer conductor that behaves as a shield against radio interference. The shield needs to be connected at the XLR end and may optionally be connected to the ground reference conductor at the RCA end.

All Binding Post connections should use high quality speaker cables with paired conductors that are capable of delivering high currents (10A or more) and maintaining low impedance over the cable run.

Other Controls

The Ultrafide U500DC has no volume controls or any other components that may degrade the sound quality of the signals it receives. This even extends to the internal joining of the various amplifier sections which are all DC coupled, eliminating the use of any capacitors in the signal path. The resulting soundscape is true and clear with ample power for any domestic speaker systems. However, for some, the desire for some of the colouration traditionally associated with older class AB amplifiers may still be there, and a switch is provided on the rear of the amplifier to change the Timbre to that older style. It's a matter of personal preference and we like to think we can accommodate both tastes with this switch.

Internal Gain Calibration Control

Internal Gain Calibration Control
The U500DC will happily deliver 500W per channel into 4R load but this reduces to 250W into 8R. For those wanting every ounce of power they can get at 8R it is possible to override the output clipping protection and increase the gain by 3dB so that the amplifier will deliver 300W into 8R. It is not recommended to use this setting for connection to 4R speakers. For more information on how to carry out this change please contact us.

Internal Mains Calibration

It is possible to configure the U500DC for use with nominal 230V or nominal 115V mains and this should already have been done prior to shipping to you. These adjustments should only be carried out by qualified personnel and information will only be provided to accredited dealers and service engineers.

Operation and Maintenance

Apart from switching on and off there is no need for any further operational instructions. However, some consideration should be given to other factors.

Do not operate the amplifier in wet conditions or spill liquid into it, as this may cause damage or endanger life.

It is often considered good practice to use an amplifier with greater power capability compared to the loudspeakers because that allows for plenty of headroom, but if that's the case then obviously sensible volume levels need to be used for both protection of your hearing and of the loudspeakers.

Cleaning should be done using a light duster or in more severe cases of dirt build up use a damp (not wet) cloth while the system is powered down.

The U500DC self protects against all "normal" fault conditions (short circuit open circuit etc.) but this does not extend to connection of the wrong mains voltage or to connection mains voltages anywhere other than to the IEC mains inlet.



**5 YEAR
WARRANTY**

WARRANTY INFORMATION

All ULTRAFIDE products are guaranteed for a period of FIVE (5) years from date of manufacture against faulty materials or workmanship under normal conditions of use.

All units under warranty claim should be returned to the seller (carriage-prepaid) with a clear fault description. Units repaired under warranty will be returned to the seller from MC² Audio / ULTRAFIDE prepaid.

MC² Audio / ULTRAFIDE will only support warranty repairs if the unit in question has not been subjected to:

- Unauthorised repair work or alteration
- Damage including shipping accidents
- Any use not covered in the operator's manual
- Exposure to moisture or harmful weather conditions
- Normal wear and tear.

Units on which the serial number has been removed or defaced will not be eligible for warranty service. MC² Audio / ULTRAFIDE's responsibility is limited to the product itself and the company accepts no responsibility for any incidental or consequential damages, including any loss due to cancellation of any events, or rent of replacement equipment or costs due to third party's or customer's loss of profit, or any other indirect cost or losses however incurred.

Technical Specifications

Audio Channels (quantity)	2	2 RCA (Single Ended)
Audio Inputs	4	2 XLR (Balanced)
NOTE: Both input types are always active; thus 2 sources can be summed if desired		
Input Impedance	10k	RCA and XLR
Input RFI Filtering Capacitance	550pF	RCA and XLR
Audio Outputs	4 pairs	Binding Post
NOTE: Double channel connectors allow separate Tweeter and Woofer cables if desired		
Output Impedance	25mR	
Maximum Voltage	70V	
Maximum Current	30A	(pulsed testing)
Voltage Gain	26dB (standard factory setting)	29dB
Current Gain	50,000	94dB
Sensitivity	2.2 Volts	
Dynamic Range	115dB	Un-Weighted 22-22kHz
Inter-stage Coupling	DC Coupled	
Frequency Response	5 to 20kHz	+0.3dB
Distortion	0.003% at 5W	0.008% at 200W
Rise/Fall Time	10uS	
Stability	Unconditional	
RMS Power into 4R	500W	600W at high gain setting
RMS Power into 6R	333W	400W at high gain setting
RMS Power into 8R	250W	300W at high gain setting
RMS Power into 12R	166W	200W at high gain setting
NOTE: Amplifier is stable into 2 ohm loads but with no increased power.**		
Power Supply Connector	10A Furutech C13 IEC	
Fuse	10A	
Nominal Power Supply Voltage	230Vac (50Hz)	or 120Vac (60Hz)
Power Voltage Selector	Internal	
Power Isolation Switch	On Rear Panel	
Standby Switch	On Front Panel	
Remote Standby	Connector on Rear Panel	
Power Consumption operational	200W average	1,000W max
Power Consumption Idle	15W	
Power Consumption Standby	1W	
Current Consumption	230v – 1A nominal (5A max)	120v – 2A nominal (10A max)
Power Indicator	Green for Out of Standby	
Fault Indicator	Red Led illuminates if clipping or protection is active	
Product size / weight (packed)	590(L) x 405(W) x 152(H)mm	14.65kg (GROSS)
Product size / weight (unpacked)	382(L) x 325(W) x 97(H)mm	13.05kg (NET)

Quick Start Guide



PLEASE NOTE:

This quick start guide is an overview to get you up and running quickly and easily. It contains basic information required to operate the U500DC.

It is not a substitute for reading the manual, that contains lots of important information with regards to safety and setup requirements. Please take time to read the complete manual and familiarise yourself with its content. For any questions please contact us, we would love to hear from you.

The U500DC has 5 different connection types on the rear panel:



- A** C13 IEC AC Mains connection (x1)
- B** XLR balanced signal inputs (Female x2)
- C** RCA unbalanced signal Inputs (Female x2)
- D** Binding post loudspeaker outputs (x4 pairs - 2 per channel for bi-wiring)
- E** Remote Trigger (x2 3.5mm Jack plugs wired in parallel)

Positioning

Please ensure there is sufficient ventilation around the U500DC at all times.

DO NOT PLACE THE UNIT IN ENCLOSED SPACES OR COVER ITS VENTILATION HOLES AT ANY TIME.

Power

An appropriate C13 IEC mains connector must be fitted to the unit to suit the available mains supply voltage and according to the requirements as stipulated on the chassis rear voltage label. The correct IEC is supplied in the box with the unit. This unit must be earthed.

Use the mains rocker switch, on the rear of the unit, to turn the unit on/off. Use the front standby switch to put the unit out of, or into standby mode. Please note: There is a short delay upon using the standby switch. The U500DC can also be put in and out of standby with DC signals on the remote trigger connectors. The amplifier will accept voltages from 5-12v. Looping this connection out to other U500DC's is also possible for power sequencing of other units in the system.

Timbre

For those wanting a more vintage type of sound delivery a "TIMBRE" switch on the rear changes the input circuits from "PURE" to "VINTAGE" to operate more like traditional class AB amplifiers.

Connections

The U500DC is equipped with binding posts that can accept bare wires, banana plugs, or spade connections. There are 2 pairs of connectors for each output channel to allow bi-wiring (separate tweeter/woofer connections if desired). The Red binding posts are positive (+) voltage, and the Black binding posts are negative (-) voltage; they should be connected to the red and black or + and - connectors on the loudspeaker.

PLEASE NOTE: The minimum nominal impedance of loudspeakers that can be connected to the U500DC is 4 ohms. Driving loads with a nominal impedance below 4 ohms is not recommended as it may cause overheating but driving speakers with 2 ohm impedance dips that only occur at specific frequencies will not cause any problems. The U500DC remains stable into any load including a dead short, however, shutdown protection will occur if the output current exceeds 35A, which is highly likely at impedances below 2 ohms.

The U500DC can accept balanced XLR (recommended) or unbalanced RCA input signals. For reference when using balanced XLR signal cables the pin configuration is as follows: Pin 1: Ground | Pin 2: Signal Positive + | Pin 3: Signal Negative -

Always make sure that the U500DC is powered off from the AC mains supply when connecting/disconnecting any loudspeaker or signal cables. Always make sure that partnering equipment (pre-amplifier/DAC etc) are also set to minimum volume before any powering up or down. The U500DC does have protection for any startup noises, but it's always good practice to set the volume to minimum on partnering equipment upon power sequencing.



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