

User Guide

PreAmplifier

DIY PreAmplifier kit, a brief introduction

Thank you for purchasing the DIYclassD PreAmplifier kit, designed by Hypex Electronics.

We have designed a DIY PreAmplifier with great performance. Careful installation and correct use will help ensure that its full potential is achieved. Please read the safety instructions on the next page before assembling, installing and/or operating the DIY PreAmplifier kit.

This User Guide covers the general operation instructions, how to install and use the DIY PreAmplifier. For assembly instructions, please refer to the corresponding Assembly Instructions.

Included in the Basic kit

- 1x DIY PreAmplifier case
- 1x Main board
- 1x Front board
- 1x Headphones board
- 1x Supply board
- 1x Internal cable harness
- All required connectors and mounting materials
- User assembly guide
- 1x TX-10 / TX-20 and 1.5mm hex key
- 1x Hypex Remote Control incl battery
- This user guide

Included in the optional Digin kit

- 1x Digin board with DAC
 - 1x FusionConnect board
- 1x Bluetooth board
- 1x Headphones board
- 1x Internal cable harness
- All required connectors and mounting materials
- 1x TX-8 Key

Not included in the kit

- Power and trigger cables
- External audio and data cables
- Tools as described in the Assembly Instructions at page 2
- Raspberry Pi

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Safety precautions

This unit operates at mains voltage and carries hazardous voltages at accessible parts. These parts may never be exposed to inadvertent touch. Observe extreme care during installation and never touch module of the unit while it is connected to the mains. Disconnect the unit from the mains and allow all capacitors to discharge for 10 minutes before handling it.

Damage due to inappropriate handling is not covered by warranty. This product has no user-serviceable parts.

Warning: To reduce the risk of fire or electric shock, do not expose this device to rain or moisture.

Précautions de sécurité

Ce unité est sous tension secteur et certaines de ses pièces accessibles sont sous une tension dangereuse. Ces pièces doivent dans tous les cas être protégées contre contacts accidentels. Lors de l'installation, une prudence extrême s'impose. Ne jamais toucher les pièces du module quand celui-ci est relié au secteur. Isoler l'appareil du secteur et attendre 10 minutes pour laisser à tous les condensateurs le temps de se décharger avant de le manipuler.

Les dommages causés par un usage non approprié sont exclus de la garantie. Ce Produit ne contient aucune pièce devantêtre entretenue par l'utilisateur.

Avertissement: Pour réduire les risques de choc électrique, ne pas exposer cet appareil à la pluie ou l'humidité.



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



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



Use a grounded electrical outlet for this appliance.



Utilice un tomacorriente con conexión a tierra para este anarato



使用此设备的接地电源插座



Utilisez une prise électrique mise à la terre pour cet appareil.



Verwenden Sie für dieses Gerät eine geerdete Steckdose.



Gebruik voor dit apparaat een geaard stopcontact.

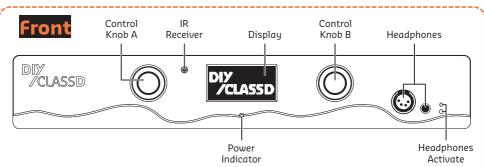
- 1. Read these instructions.
- 2. Keep these instructions
- 3. Head all warnings.
- 4. Follow all instructions.

- **5.** Never connect a power cord to this apparatus before the assembly is finished wich include:
 - Proper installation of all parts.
 - Correct connections of all cables.
- Firmly closed case.
- 6. Do not use this apparatus near water.
- 7. Clean only with a dry cloth.
- 8. Natural convection should not be impeded by covering the module (apart from the end applications housing). Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the protective earth / grounding mains inlet. Protective earth is provided for your safety.
- 11. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- **13.** Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as 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. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases or beer glasses, shall be placed on the apparatus.
- 16. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
- 17. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective earthing connection.
- 18. This apparatus has been equipped with a rocker-style AC mains power switch. This switch is located on the rear panel and should remain readily accessible to the user.
- 19. The MAINS plug or an appliance coupler is used as the disconnect device, so the disconnect device shall remain readily operable.
- 20. Do not run any cables across the top or the bottom of the module. Apply fixtures to cables to ensure that this is not compromised
- 21. Before using this product, ensure all cables are correctly connected and the power cables are not damaged. If you detect any damage, do not use the product.
- **22.** Changes or modifications not expressly approved by Hypex Electronics will void compliance and therefore the user's authority to operate the equipment.
- 23. Service or modifications by any person or persons other than by Hypex Electronics authorized personnel voids the warranty.



Correct disposal of this product: This symbol indicates that this product should not be disposed of with your household waste, according to the WEEE directive (2012/19/EU) and your national law. This product should be handed over to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, or your household waste disposal service.

1. Connections & Control



Control knob 'A'

- Input Select Rotate:

Press: - Menu - Menu Navigation - Select

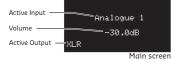
IR Receiver

Infrared Signal Receiver for included remote control.



Displau

- 2.7" Monochrome OLED Display
- Adjustable brightness and on-time



Power Indicator

White light with adjustable brightness.

Control knob 'B'

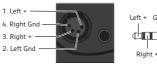
Rotate: Volume Up/Down - Power On Press.

- Volume Mute/Unmute

Long Press: Standby

Headphones Connections

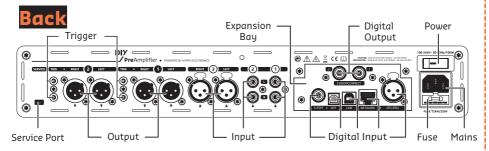
1x Female XLR 4-pole Balanced Stereo HP 1x 6.35mm (1/4") TRS Unbalanced Stereo HP



Headphones Activate

- Activate/de-activate the headphones outputs.
- White light with adjustable brightness.





Service Port

Mini-USB

Can be used to configure the PreAmplifier and update the firmware. This connection does not support USB audio.

Visit our website for software, firmware updates and update instructions.

Expansion bay

The optional DIGin Kit is installed in the expansion bay. This kit is not part of the Basic Kit. A blind panel is placed instead when the DIGin Kit is not installed.

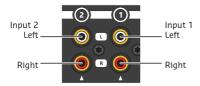
Mains inlet & Power switch

IEC60320/C14 (100 - 240Vac)

Fuse

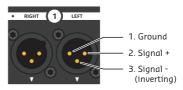
T2AH/250V (size 5x20)

Input 1 & 2 2x RCA Unbalanced Analogue In



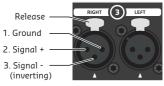
Output 1 & 2

2x Male XLR Stereo Balanced Analogue Out



Input 3

Female XLR Stereo Balanced Analogue In



Triager 1 & 2

2x dual 3.5mm (1/8") TS 12V/5mA_{max} Out. Each output has 2 trigger ports to activate 2 different devices simultaneously. The configuration handles both mono and stereo connectors.



S/PDIF & Optical Digital Input RCA Unbalanced 2-channel



Optical/Toslink 2-channel



FusionConnect 1& 2

2x RCA Unbalanced 2-ch. Digital Audio Out (S/PDIF).



AES₃ Digital Input XLR Balanced 2-channel 2. AES +

USB Digital Audio & Network

USB-B 2.0 RJ-45









Hupex FusionAmps can be connected to the FusionConnect outputs with an S/PDIF cable. It sends digital audio to the FusionAmps dependent of the selected source. If an analog source is selected it will be first digitized by the ADC on the FusionConnect board. The Fusion-Connect outputs also support communication with the FusionAmps. Supported commands are mute, volume, power-on and standby.

Bluetooth

Bluetooth Certified 5.2 Class 1 Supported codecs: aptX, aptX-HD, aptX-adaptive, AAC, SBC.

- 1: IR transmitter
- 2: Power on/off (Stby)
- 3: Input previous
- 4: Input next
- 5: Volume +
- 6: Volume -
- 7: Display activate
- 8. Mute
- 9: (not used)
- 10: (not used)
- 11: (not used)
- 12: (not used)



Rc5 Codes supported (Device code: 16)

Code	PreAmp Function	Hypex Remote
34	Reserved	Internal use
48	Reserved	OK
50	Power ON/OFF	ON/OFF toggle
51	Volume UP	Arrow Up
52	Volume DOWN	Arrow Down
53	Mute	Mute
61	Next input	Arrow right
18	Previous input	Arrow left
19	-	F1
20	-	F2
21	-	F3
22	1	F4

2. Function

On/Off/Standb

Power On

Use the power switch at the back to turn on the mains power.



Activate

Device: Press Control Knob 'B'.



Standbu

Device: Press and hold Control Knob 'B' for at least 2 seconds.



An icon may be displayed while pressing.



See 'Volume/Mute' for more information.

Remote: Press the power button. (1)



Remote: Press the power button.



The display will show the logo for 2 seconds before showing the main screen.

The power indicator will light up.*



The display will show 'Power off...' for 2 sec. before turning off.

The power indicator wil go off.*



Display Idle

The brightness of the display will dim after 1 minute of no operation.

To prevent burn-in, the display will turn off after a configured period and will be activated again by any action. The power indicator will

remain on in this case.*



Power Off

Use the power switch at the back to turn off the mains power. Any saved changes made in the menu will still remain.



* The brightness of the power indicator is set to 'full' by default. It is adjustable to 'half' and 'off' in the system configuration.

ume/Mu

Volume adjustments

The output volume can be set between -70.0dB and +13.0dB relative to the input signal.



Volume Mute/Unmute Device: Press Control Knob 'B'.



Volume up/down (stepsize 0.5dB) Device: Turn Control Knob 'B' left or right.



Remote: Press Mute-button.



Display:





Remote: Press - or +.



Headphones

Input Select

Input adjustments

Change the input by selecting between Analogue Input '1' up to '3'.



When the optional DIGin add-on is installed, the selection will include 6 more (digital) inputs.

Previous/Next

Device: Turn Control Knob 'A' left or right.

Remote: Press ◀ or ▶

Activate/De-activate Headphones (HP)

Device: Press the button to route the output signal to both HP connectors. The light will turn on* and the display shows 'HP'.



Press the button again to deactivate headphones.

* The brightness is set to 'full' by default. It is adjustable to 'half' and 'off' in the system configuration.

The HP assignment will remain active when the device goes to standby but returns back to XLR when the device is turned off



All trigger outputs will be temporarily turned off when Headphones outputs are active.

3. Configuration

Configuration Menu

Press Control Knob 'A' one time to enter the menu.





Navigate

The arrows tell the availability of a direction. Rotate Control Knob 'A' to jump to the desired option and press for confirmation.





Every (sub)menu ends with 'BACK' at the final position to return to the previous level in the menu and eventually to leave the configuration menu.

Adjusting values

When the vertical bar appears, this bar can be moved to the left and right according to the desired settina.



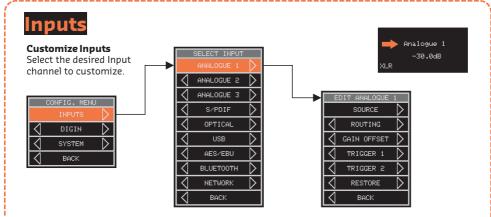
The effect is noticeable during the adjustments. Push Control Knob 'A' to confirm the value.

Saving changes

After the parameter is set, confirmation is needed to maintain this new value or discard to readjust to its previous setting.



Note: The menu items shown may differ depending on the hardware additions.

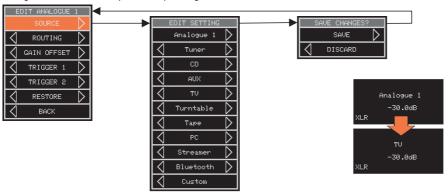


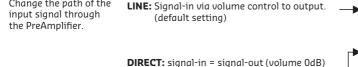
SOURCE

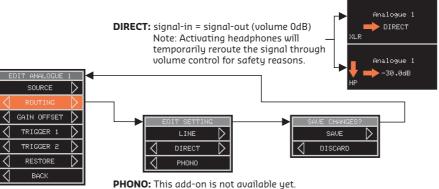
ROUTING

Change the path of the

Change the name of the input corresponding to the connected source.







Analogue 1

-30.0dB

GAIN OFFSET

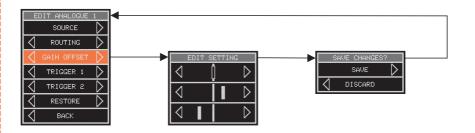
Adjust the input signal level to match the output volume at different input signals.

Scope

Centre: 0dB (default).

Range: -15dB (left) -> +15dB (Right).

Steps: 30 x 0.5dB.

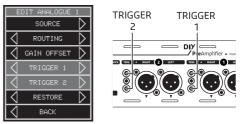


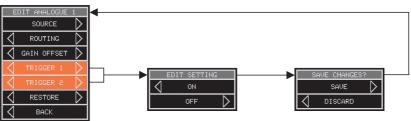
TRIGGER ON/OFF

Which trigger will go ON when the regarding input is active.*

Select the desired trigger to show the current status and to adjust it. This will affect both ports for each corresponding output (1 or 2). By default, the ports are set to ON for all inputs.

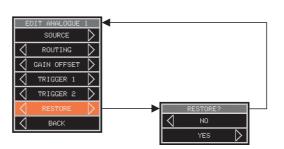
* The trigger ports are inactive when headphones are active.

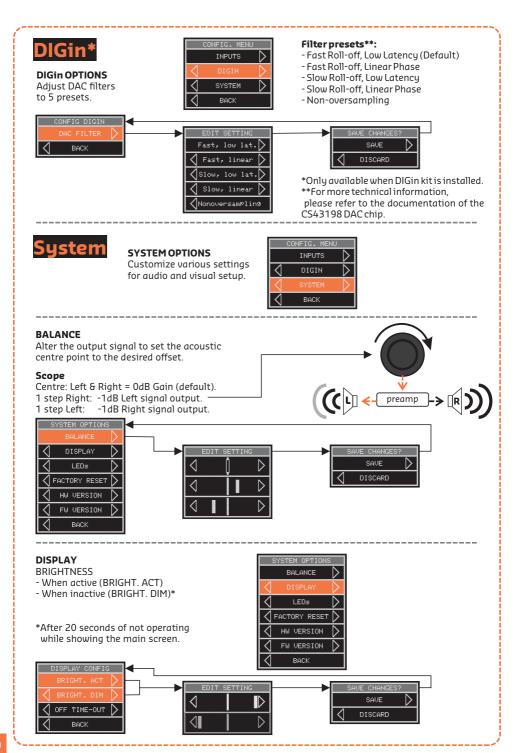




RESTORE DEFAULTS

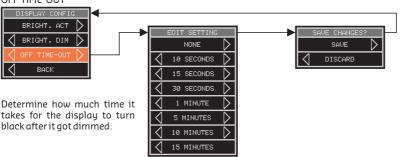
Restore any settings in Source, Routing, Gain Offset and Triggers to factory defaults. This applies only to the the current selected input: The other input and system settings will remain.



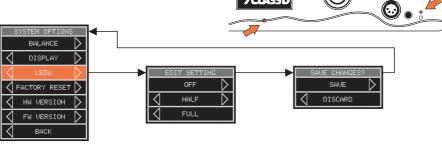




OFF TIME-OUT

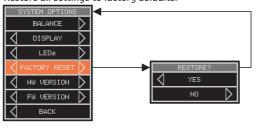


LEDSAdjust the brightness of the 2 indicator lights.



FACTORY RESET

Restore all settings to factory defaults.



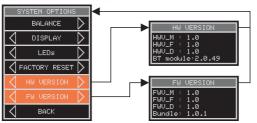
WARNING!

It is highly recommended to turn off any connected devices before executing the factory defaults to prevent any unintended effects due to unpredictable behaviour of external sources and amplifiers.

After a factory reset, each connected device should be configured as before when connected for the first time.

HW/FW VERSION

Information about the currently installed Hardware and Firmware.



HWV_M: Mainboard Hardware version.

HWV_F: Frontboard Hardware version. **HWV_D:** Digin Hardware version.

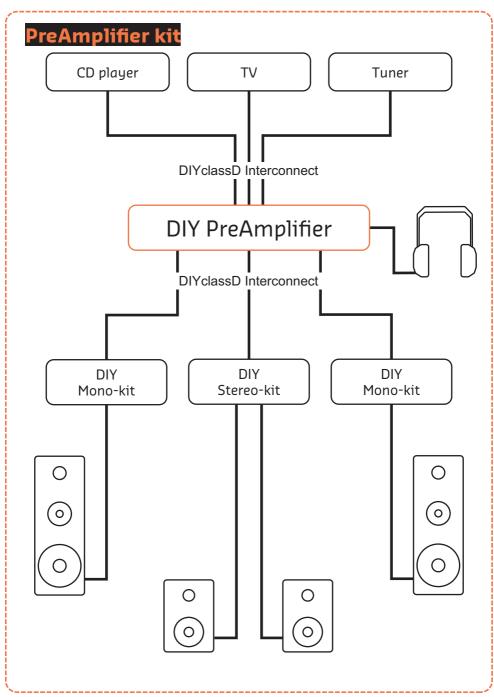
BT module: Bluetooth Hardware version.

 $\textbf{FWV_M:} \ \textbf{Mainboard Firmware version}.$

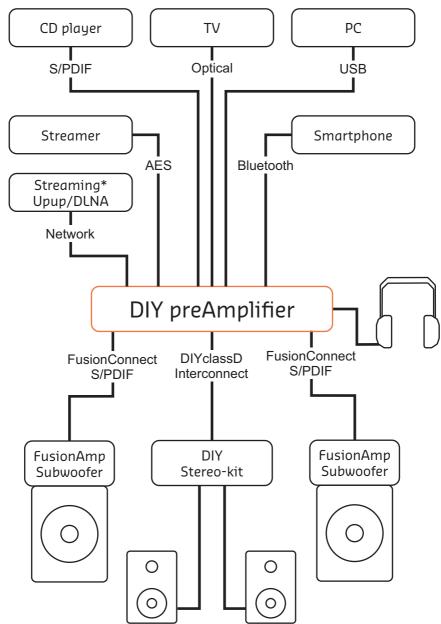
FWV_F: Frontboard Firmware version. **FWV_D:** Digin Firmware version.

Bundle: Firmware update bundle.

4. Setup Examples



PreAmplifier with DIY PreDIGin add-on



^{*}Network audio is only supported with Raspberry Pi (not included) installed in the preamplifier.

5. System information

Audio performance data Basic kit

All audio measurements are done with AES17 20kHz filter.

Item	Symbol	Min	Тур	Max	Unit	Notes
Input level	Vin			14.45	dBu	(4 V _{rms})
Output level	Vout			14.45	dBu	(4 V _{rms})
Output level	Vout_hp			19	dBu	(4 V _{rms})
Headphones						
Input impedance	Zin		100k		Ω	
Output impedance	Zout			44	Ω	
Output impedance	Zout_hp			<0.5	Ω	
Headphone connectors						
Noise voltage	Vn		3μ		V	Unweighted at unity gain
Noise voltage	V _n _hp		7.5µ		V	Unweighted at unity gain
Headphones						
Signal-to-Noise ratio	SNR		122		dB	
Gain range		-70		+13	dB	
Gain resolution			0.5	1	dB	
Bandwith	Fc	200k			Hz	
Distortion	THD			-140	dB	@1kHz, 4Vrms in, 0dB

Technical data

Item	Value	Notes
Supply voltage	90-135Vac / 180-270Vac (47-63Hz)	Auto Switching
Standby power	<0.5W	
Power consumption	10W	Basic configuration
Dimensions	417mm x 77mm x 340mm	(W x H x D) excl connectors
Weight	4 kg	

^{*} Operation beyond these limits may result in irreversible damage.

Audio performance data DAC

All audio measurements are done with AES17 20kHz filter and no weighting.

Item	Symbol	Min	Тур	Max	Unit	Notes
Output level	Vout			14	dBu	(4 V _{rms})
Distortion	THD+N			-117.5	dB	@0dBFS
Signal-to-Noise ratio	SNR			128.5	dB	
Dynamic Range	DR			127	dB	
Channel crosstalk				-147	dB	

Audio performance data ADC

All audio measurements are done with AES17 20kHz filter and no weighting.

Item	Symbol	Min	Тур	Max	Unit	Notes
Input level	Vin			14	dBu	(4.1 V _{rms})
Distortion	THD+N			-112	dB	@-1dBFS
Signal-to-Noise ratio	SNR			119	dB	
Dynamic Range	DR			119	dB	
Channel crosstalk				-139	dB	
Bandwidth	Fc			40	kHz	

Supported formats

#	Function	PCM support	DSD support	Notes
1	S/PDIF	Up to 192kHz/24bits	No	
2	Optical(Toslink)	Up to 192kHz/24bits	No	
3	AES/EBU	Up to 192kHz/24bits	No	
4	USB type B	Up to 384kHz/32bits	DoP: Up to DSD 256	
			Native: Upto DSD 256	
5	Network	Up to 384kHz/32bits	DoP: Up to DSD 256	Note 1
			Native: Upto DSD 256	
6	Bluetooth	48kHz/16bits	No	

Note 1: An additional internally installed streaming board is connected to an internal USB port of the digital input board. Supported formats depend on the chosen streaming board and software.

FusionConnect

#	Function	PCM support	DSD support	Notes
1	S/PDIF (Output)	93.75kHz/24bits	No	Note 2

Note 2: All formats, PCM and DSD, are converted to PCM 93.75 kHz

6. Additional system information

Connecting your PreAmplifier

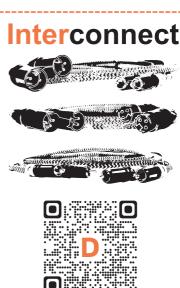
DIYclassD Interconnects are the perfect link between the DIYclassD DIY PreAmplifier kit and power amplifiers or active Fusion Amp powered loudspeakers.

The connectors are silver or rhodium plated to guarantee an optimal, uncolored signal transmission. DIYclassD Interconnects are the best protected audio signal cables in the industry because of their Silverplated conductors with PTFE tape-wrapped insulation, glass-fibre stabilizers and two layers of braided shield over a bonded carbon triboelectric charge drain layer. The DIYclassD Interconnects are Custom-made double shielded twisted-pair cables, specifically designed for the highest RFI immunity and lowest microphonic noise

Connecting your audio devices with High-End cables can now be done at a very affordable price.

Visit our webshop at www.diyclassd.com/products/interconnects/

or scan the QR-code.



Troubleshooting

No power

- · Check the power outlet.
- The AC-Terminal fuse may be blown. Disconnect power cables and determine its status. If blown: check all AC-cables for damage and correct connections and fix problems. Replace the fuse with a corresponding one.
- The internal fuse may be blown. This fuse is not user replaceable. Please contact Hypex Electronics for more information about service and repair.

No Sound

- A protection might be triggered. Is the module overheated? Try cycling the mains power.
- Check the volume and mute settings.
- Check if Headphones are activated.
- Check optional trigger settings.
- Check the source signal.
- · Check all the cables.

Poor sound or noise

- Check if the signal is not inverted. Inverted signals might cause one of your speakers to be out-of-phase.
- · Is the amplifier clipping?
- Check all connections.

Hum

- Use balanced connections for best system performance.
- Use grounded wall sockets.

Heat

 The PreAmplifier Kit will get warm/hot when used intensively, this is normal and therefore no reason for concern.

Balanced/unbalanced connections

 The PreAmplifier kit is equipped with balanced and unbalanced inputs. If all the unbalanced inputs are already in use and your source does not provide a balanced output but only an unbalanced output you can use one of our interconnects to connect both properly.

Frequently asked questions

I do not have any technical experience, can I build this amplifier kit myself?

A Yes! even without any technical experience you can build your own amplifier kit.

O Do I need to solder anything?

No! we have pre-fixed everything for you. It's just a matter of assembling all the parts with a few basic tools.

O gou offer a pre-assembled PreAmplifier kit?

A No, we only offer a DIY building kit. We do not offer any further assembly services.

O Does this DIY PreAmplifier work with my power amplifier?

A In basic this PreAmplifier works with all power amplifiers, certainly DIYclassD power amplifier kits.

What kind of quality can I expect from this DIY PreAmplifier kit?

Hypex Electronics is known for her outstanding sound quality, this DIY PreAmplifier kit represents that quality for DIYclassD.com as well. You may expect outstanding performance in a DIY format.

Support

We continuously work to improve your experience with our products. If you have suggestions, remarks or found a bug, please contact us.

If you have any problem with your PreAmplifier kit please consult this user guide. If this user guide is not sufficient in order to fix your problem please contact Hypex support department.

Do you need additional assistance with assembling your PreAmplifier kit? Watch our assembly instruction video at the product page on our website.

Visit our website!

The latest datasheets and user guides can be found there. Look into our FAQ and if you can not find the answer there, you can also contact us and we will be happy to assist you!

Limited Warranty

Hypex Electronics warrants this device for a period of two years after the original date of purchase against defects due to faulty workmanship or materials arising from Normal Use of the device. The warranty covers working parts that affect the function of the device. It does NOT cover cosmetic deterioration caused by fair wear and tear, or damage caused by accident, misuse or neglect. Any attempt to modify or take apart the device (or its accessories) will void the warranty.

If you discover a defect, notify Hypex Electronics during the warranty period. Claims under warranty must be supported by reasonable evidence that the date of the claim is within the warranty period. To validate your warranty, please keep your original purchase receipt together with these warranty conditions for the duration of the warranty period. Replacement products claimed under warranty are not entitled to renewed 2-year warranty coverage.

Date of purchase:

Revisions

Rev	ision	Comment	Date		
Doc.	HW.	Comment	Date		
01	01xx	First release	13-10-2022		
02	01xx	DIGin add-on release	31-07-2024		

Disclaimer

Hypex Electronics BV, its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Hypex Electronics"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet, user guide or in any other disclosure relating to any product.

This DIY PreAmplifier kit is designed for use of music reproduction only. No representations are made as to fitness for other uses. Except where noted otherwise any specifications given pertain to this DIY PreAmplifier kit only.

LIFE SUPPORT POLICY: Use of Hypex products in life support equipment or equipment whose failure can reasonably be expected to result in injury or death is not permitted except by explicit written consent from Hypex Electronics BV.

Notes



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Kattegat 8 9723 JP Groningen, The Netherlands +31 50 526 4993 sales@diyclassd.com www.diyclassd.com







