About Sound Cards

Nearly every computer these days comes with a sound card. They vary immensely in sound quality, features and fall into two distinct groups - consumer and professional. Professional (or 'prosumer' - an in between category) cards often have multiple inputs and outputs, and are usually bought later as an add-on. As an audio professional, your audio needs are rather different from someone who just needs sound to enhance computer games. Do some hard disk recording and pretty soon you'll begin to realise why people pay very large amounts of money buying microphone preamps!

Professional audio equipment runs at a nominal level of +4dB, consumer at -10dB. Sound cards that are designed to link to other pro equipment will run at +4dB, and have greater headroom (accept a louder signal without clipping) than a -10dB consumer card. Pro cards usually have LINE inputs only, leaving the Mic pre-amp option open for users to choose.

But no matter what type of card you have, the *e*-**pre** will work with it

e-pre Specifications

Input Impedance	*Microphone:* 2 K Ohms Balanced; XLR type Pin 1 Audio Ground, Pin 2 +, Pin 3 – *Line:* 25 K Ohms Balanced, ¼" TRS jack Tip +, Ring – , Sleeve Audio Ground
Phantom Power	Switchable +48 V DC on XLR Pins 2 and 3
Max Input Level	Microphone +15 dB, Line +20 dB
Input Gain	10 dB Minimum, variable to 60 dB Maximum
Output Level	-10 dB variable through 0 dB to +4 dB
Overload Indicator	Measured at all Gain points throughout the circuitry
Output Noise	-90 dB Unweighted, -97 dB 'A' weighted (Measured with Gain nominal 20 dB, Output level -10 dB)
Frequency Response	20 - 20 KHz ± 0.25 dB
Distortion	100 Hz 0.0085%
	1 KHz 0.008%
	10 KHz 0.0083%
	(Measured with Mic Gain 20 dB, Output 0 dB)
Power Requirements	12 V DC from either computer supply or external supply
Size	148mm W x 42mm H x 150mm D (5¾" W x 1¾ H x 6" D)
Construction	All steel shielded chassis, lid and front panel; fibreglass pcb
Weight	1 Kilo (2.2 lbs)

ARX
www.arx.com.au ®

Our policy is one of continuous improvement, and therefore designs may change without notice. However, unless otherwise stated, specifications will always equal or exceed those previously given. ARX® is a Registered Trade Mark of ARX Systems Pty Ltd.

The *e*-**pre** logo device is a trade mark of ARX Systems Pty Ltd. Any other names and trademarks are used for information purposes only, and no other intent is expressed or implied

e-preTM

Single Channel Microphone pre-amp for use with computer sound cards

OWNER'S MANUAL

ARX
www.arx.com.au ®

IMPORTANT - PLEASE READ THIS FIRST

This unit is designed to be connected to a 12 volt DC (Direct Current) power supply **ONLY**. It is not designed to be connected direct to mains AC power. Doing so will (a) void the warranty, and (b) probably kill you. Use the power supply in your computer, or an electrical authority approved wall mounted 12 V DC power supply.

INTERNATIONAL LIMITED WARRANTY

ARX Systems (ARX) warrants to the first purchaser of any ARX equipment that it is free from defects in materials and workmanship under normal use and service. ARX's sole obligation under this warranty shall be to provide, without charge, parts and labour necessary to remedy defects, if any, which appear within twelve (12) months from date of purchase, and for a further twelve (12) months supply parts only.

This is our only warranty. It does not cover finish or appearance items, or if the equipment has been, in ARX's sole judgement:
• Subjected to misuse, abuse, negligence or accident;
• Repaired, worked on, or altered by persons not authorized by ARX;
• Connected, installed, adjusted or used for a purpose other than that for which it was designed.
Some states do not allow the exclusion or limitation of incidental or consequential damages so some of the above exclusions may not apply to you. This warranty gives you and us specific legal rights and you may also have other rights which may apply.

Warranty Service Procedure

Should it become necessary to have your equipment serviced under the terms of the warranty, please follow these steps:
1. Call your ARX distributor for a Return Authorization (RA) number;
2. *Carefully* repack the unit, in its original packaging where possible, including a note with a description of the problem, and a copy of the receipt showing date of purchase. Attach these to the actual unit itself. Don't forget to write your name and address clearly, and include a phone number where you can be contacted during normal business hours. Make it easy for our service technicians to contact you if they have a question. Also, use *plenty* of packing material - better to be safe than sorry.
3. Send the unit freight prepaid to ARX Systems, at the address given you with your RA number. We will pay the return freight when the serviced unit is returned to you.
4. We strongly recommend you insure the package. We can't fix it if it gets lost! Send it by UPS, Fedex, or any similar service that can track the package. Parcel Post is *not* recommended
If Warranty Registration Card is missing, please write to ARX in the country of purchase, stating model and where purchased, or to ARX, PO Box 15, Moorabbin, Victoria 3189, Australia.
*You can Email the factory at:* **info@arx.com.au**

2

It's a Single channel unit, so why left and right outputs?

Multitrack recording lays down a series of mono tracks that are mixed and panned to stereo at the mixdown stage. This is not what computers are historically designed to do, since both the Windows and Macintosh generic audio drivers are stereo, so will require an input into the Left and Right channels (unless you want a lot of wasted disk space).
However, audio software programs offer the option of converting each stereo track to a mono either during or after recording, reducing both the disk space required and processing demands on the CPU.

Using the *e* pre with a laptop/notebook computer
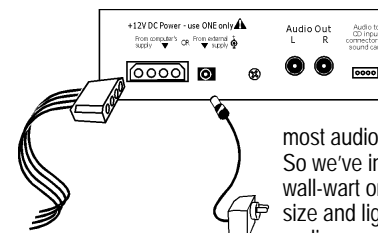
Inspiration doesn't always strike when you're at home in front of your desktop machine, and a lot of people like to do recordings in the field, well away from it all.
The mini jack output on the front panel of the *e*-pre matches up with the mini jack LINE input found on most audio-ready notebook computers
So we've included a DC input jack for a 12V DC power supply (either a wall-wart or battery) so that the *e*-pre can be used mobile. Its compact size and light weight means that the *e*-pre is the perfect tool for the audio-recordist on the go.

DC connector wiring + ⊙ −

Using the *e* pre without a computer

The *e*-pre is a true professional Microphone pre-amp, and has the flexibility that audio professionals expect. Although it is in a compact, computer friendly package, it does not have to be used with a computer. It can be used to record to any recording media - DAT, ADAT, Audio for Video, MiniDisk, reel-to-reel or cassette. The ¼" (6.5mm) stereo output jack on the front panel, or the dual RCA's on the rear, can be used with a number of adapter leads to link to any piece of recording equipment, and deliver the same flawless sound that it would to a computer's hard disk.
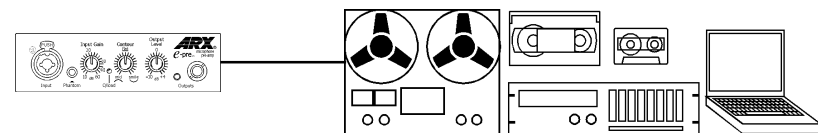
The *e*-pre is the essential audio tool for today's world of recording. We hope you have as much fun using it as we had designing it.

Complete online documentation is available at our website: www.arx.com.au/e-pre.htm
Specific queries can be emailed to the factory at info@arx.com.au

7

Front Panel
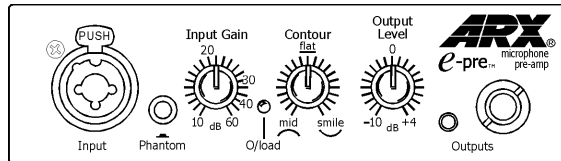
Combo Input connector. This has both 3 pin Balanced XLR type for Mic input, wired 1G,2+,3–, and a ¼″ TRS (TipRingSleeve) balanced jack for Line (will happily accept unbalanced guitar jack)

Phantom Power Switch. Provides 48V DC on XLR pins 2 and 3 for powering condenser microphones

Input Gain control. Adjusts the level of the signal coming into the *e*-pre
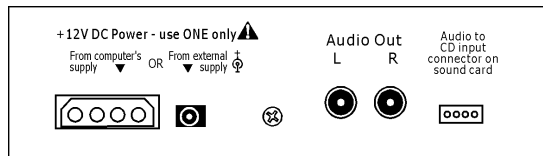
Overload LED. Will light up if any part of the *e*-pre circuit is about to clip (and distort the signal)

Contour control. Provides a range of EQ curves or a flat response

Output Level control. Adjusts the level of the signal going out of the *e*-pre, from -10dB to +4dB

Outputs. Minijack (3.5mm) and ¼″ (6.5mm) output connectors

Rear Panel

DC connectors. Accepts DC power from either the computer's power supply or 12V wall-wart. (Use one or the other - **NOT BOTH!)**

Audio Out. Dual RCA (phono) connectors, wired in parallel with the front panel outputs
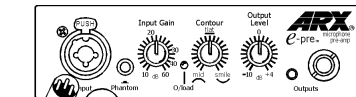
Audio to Soundcard. A lead from this connector can be plugged into the internal CD IN connector of your sound card (if fitted) for a super neat installation with no external leads. Wired 1L-2G-3G-4R.
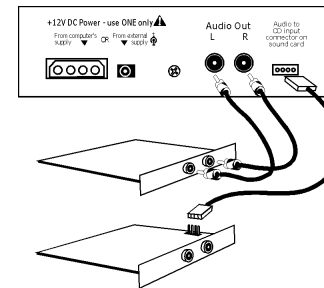
Connecting a microphone
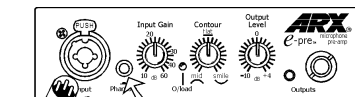
PUSH PHANTOM SWITCH IN

A **Condenser** microphone needs Phantom power to make it work, so press in the Phantom switch on the front panel

A **Dynamic** microphone needs no phantom power and will just plug into the front panel

4

Choosing which Outputs to use

If you have the lead and the CD **audio in** connector on the sound card, then this is a useful option, although it will stop your CD playing audio through the sound card (but will play OK through the CD ROM headphone out)

If you have a Sound card with RCA (phono) connectors on it, then use the RCA outputs on the back of the *e*-pre. You will need to find a hole to route the leads out of the back of the computer.
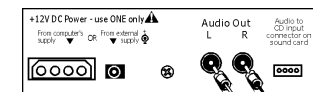

ROUTE LEADS TO OUTSIDE OF COMPUTER
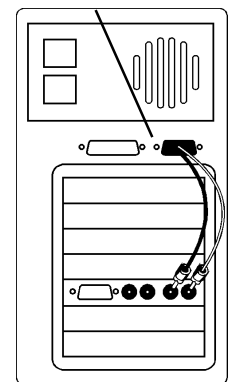
Suggestions are - use one of the punch out serial/parallel port holes on the rear of the computer chassis; the PS-2 port next to the mouse serial port (or if you use a PS-2 mouse, then use the unused serial port 1 hole after removing the connector)

If you have a sound card with a mini jack Line Input, then the *e*-pre Front panel mini jack output is ideal. Just make sure you connect it to the LINE input of the card, not the MIC.

The front panel ¼″ jack can be used with an adaptor lead to suit any kind of input, or to a recording unit (eg DAT, ADAT, MiniDisk, Cassette, Reel to reel recorder) if you are not using the *e*-pre with a computer.
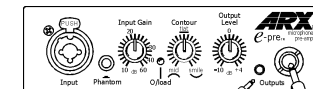

TO LINE INPUT OF SOUND CARD

OUTPUT TO ALTERNATIVE RECORDING MEDIUM

Starting Recording

1. Connect the microphone to the *e*-pre. If it is a condenser mic needing Phantom power, press the phantom switch IN. If it is a dynamic Mic, then don't. If you are unsure of what type you have, here's the rule: *If it works OK without Phantom power, then it's a dynamic microphone*

2. If you have a card with a *...blaster* name, then set the output level at -10 dB. If you don't know what kind of card is in your computer, then set it initially at 0dB. If you have a pro card like a DAL CardD+ or similar which is set to +4dB, then turn the output control to that setting. Many high end cards have internal jumpers to set the nominal level, so check your documentation

5
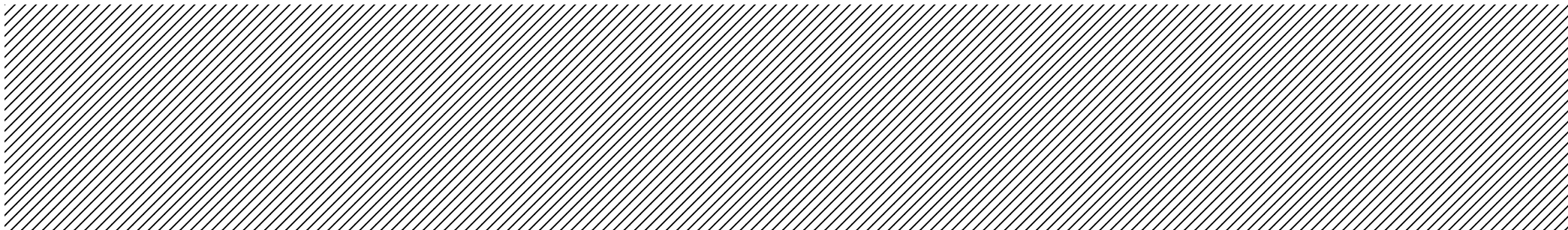
3. Open up the Control Panel/Multimedia/Audio (in Windows, or similar utility on Macs) and check the settings on the Audio Properties/Recording. Set the volume slider at around 75% (¾ way to the Right) as a starting point, and make sure that the Preferred Quality is set to CD Quality (44.1 KHz)

4. Set the *e*-**pre** Input Gain at 20 - 30 dB as a starting point, then open up your audio software and start the RECORD process. If you're using Sound Forge be sure to have the MONITOR option checked, so you can see the meters.

5. Try the traditional sound engineer's "Check 1 - 2" into the microphone, and watch (a) the levels on the screen, and (b) the Overload LED on the front of the *e*-**pre**. If it lights up, reduce the Input Gain. If the levels are too low on the screen, increase the Input Gain slightly until the level improves. If the onscreen levels are still too low, and the Input Gain is around 30-40+, increase the Output level on the *e*-**pre** until the level gets better. It's a matter of trial and error initially, until you are used to the interaction between the *e*-**pre,** sound card, and the audio software.

6. Different microphones will require different Input Gain settings, as will singers with louder and softer voices, and louder and softer instruments. It's a good idea to create a page of different settings that you can refer back to for speed. Tweaking the *e*-**pre**'s Contour control will affect the level, as turning to the left will gradually boost the midrange frequencies and to the right will boost the low and high frequencies. A pop filter would definitely be useful if you have a lot of 'smile' curve dialled up.

7. You can use the jack input of the combo connector to plug a line input (eg guitar) into the *e*-pre. You can either go in direct - straight out of the guitar, or through any effects pedals you have. Just be aware of the extra noise these devices can add, which may require some subtle noise-gating once you have the track recorded.

8. Don't worry about getting maximum level on to the hard disk. You just need a good sounding clean signal that is loud enough, but not so loud that you risk going into the red/overload state. See 'About Digital Recording' below

About Digital Recording (a VERY short primer!)

If you've ever recorded on to a tape deck or cassette deck, you'll be aware that it's usually OK to let the needles bounce into the red OCCASIONALLY. In fact, it often sounds bigger and fatter this way, thanks to the soft analog tape distortion.

Digital recording is different. Once the level hits the red that's TOO MUCH. Digital audio has no analog type headroom. Maximum level is just that - maximum, which means absolutely no more. Any attempt to go over 0dB will result in a horrible crackling sound, which is probably not the effect you're looking for! Your mission, Jim, is to get the cleanest, best sounding signal you can onto the hard disk, and leave the audio massaging and sweetening to the mixing/post-production process.

Most audio recording programs have extensive compression, limiting, EQ, pitch control, tube-sound and other filters built in, so you can do and re-do all this until you find the magical sound you're looking for. The ARX *e*-pre is designed to be there when inspiration strikes, ready and waiting in your computer to capture that magic.

Introduction

Thanks for choosing the *e*-**pre** by ARX - the ultimate microphone pre-amp for hard disk recording. It's so much a part of your system that it fits right into a spare 5¼" slot in your computer case!

e- pre features

1. **Superlative sound quality**. The *e*-**pre** is designed by audio professionals, not by computer engineers. And, as we all know, audio people hear things that ordinary mortals don't! The *e*-**pre** is a studio quality microphone pre-amp using the same internal components as high end mixing consoles, built into a compact, computer friendly package

2. **Control.** The more control you have over the audio going into the computer, the closer the finished sound will be to your original idea. The *e*-**pre** gives you total control over every aspect of audio.

3. **Input Gain** - fully variable from 10dB through to 60 dB to suit all types of microphones, plus genuine switchable 48 volt DC Phantom power to enable those condenser mics to deliver the goods.

4. **One knob Contour control** provides fast, easy access to a multitude of EQ options

5. **Variable Output level control** matches the *e*-**pre**'s output to the input of the sound card. From -10 dB for consumer cards through to +4 dB for professional cards, the *e*-**pre** can handle it.

6. **Multiple output connectors** to suit all possible requirements: mini-jack, phone jack (¼"/6.5mm), RCA connectors (phono plugs), and an MPC3 socket for connecting to the internal audio input (CD in) of the sound card if fitted. The XLR combo input on the front panel accepts both professional 3 pin mic inputs and also guitar jack line inputs.

6. **Needs no external power supply** - connects to a spare power connector from your PC's power supply.

e- pre installation

Note: We are making the assumption that you already have your sound card installed and your audio software configured. If you haven't, then it's a good idea to do that first so you can check that you have wired your *e*-**pre** correctly by testing it with your software.

1. Unpack the *e*-**pre** from its packaging

2. Make sure your computer is turned OFF, pop the cover off (this may require a screwdriver) then find an empty 5¼" slot on your computer chassis. The one you used to have your 5¼" floppy drive in will do just fine

3. Slide the *e*-**pre** into the spare slot. There are screw holes on each side of it. Use the screws supplied to firmly locate the *e*-**pre** in the slot (One screw per side is enough. If access to both sides of the slot is awkward, then two screws on one side will be OK)

4. Decide which output connections from the *e*-**pre** you are going to use, and connect a lead from them to the LINE input(s) of your sound card.

5. Plug a spare computer power supply connector (a big flat one with 4 round pin holes) into the rear of the *e*-**pre**, then close the lid of the computer.

Next it's time to find out what each control on the *e*-**pre** does.