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, burned voice coils, 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. This includes running a speaker system with the ISC leads disconnected, or with a non-ARX crossover, or with the wrong processor.

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.

Or you can Email us at: info@arx.com.au

AFW 30

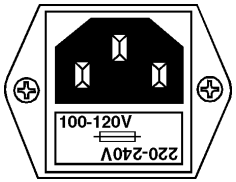
Anti-Feedback Workstation

OWNER'S MANUAL

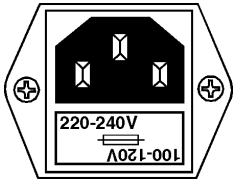
ARX Systems Pty Ltd, PO Box 15,
Moorabbin, Victoria 3189, Australia
Phone: (03) 9555 7859 **Fax**: (03) 9555 6747
International Fax: +61-3 -9555 6747
On the Web: www.arx.com.au
Email: info@arx.com.au

IMPORTANT - PLEASE READ THIS FIRST

This is a dual voltage unit. It is essential that you check that the voltage on the fuseholder cover below the AC connector on the rear of the chassis is set correctly before connecting it to AC power.



THIS IS SET FOR
100 V AC TO 120 V
AC OPERATION



THIS IS SET FOR
220 V AC TO 240 V
AC OPERATION

To change, pull fuseholder out and rotate 180º, then push in again. Do not insert power cable into unit until voltage has been correctly set. Do not plug power cable into AC power until voltage has been correctly set

WARNING SYMBOLS USED ON THIS EQUIPMENT

This symbol is intended to alert you to the presence of important operating instructions contained in this owner's manual

This symbol is intended to alert you 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.

This symbol indicates that a Slow Blow fuse is used in this equipment. Replace with same type and value only

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER OR BACK OF UNIT
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

WARNING
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

ATTENTION
RISQUE DE CHOC ÉLÉCTRIQUE - NE PAS OUVRIR

CE N1819

Complies with 89/336/EEC EMC Directive, amended by 92/31/EEC and 93/68/EEC and meets the following standards:EN 55013 : 1990, Sections 3.2 and 3.5 EN 55020 : 1988, Sections 4.3, 5.4, 6.2, 7.0, 8.0.
Complies with Australian Standard AS/N25 1053

would cause the feedback points to change, the Anti Feedback section should be reset.

Most Important The AFW30 should not be RESET during a program. The system's master volume should always be set to a minimum volume before clearing the filters. Otherwise high volume feedback may occur, with potentially damaging results.

Active/Bypass switches

The FBX Bypass switch in the ANTI FEEDBACK section of the front panel will bypass the Anti Feedback, the Limiter control, and the Output level control, leaving just the EQ section active.

The Active switch in the STATUS section is a true hardwire bypass for the complete unit, and and if switched out connects the inputs directly to the outputs, bypassing all circuitry.

AFW30 Specifications

Input Impedance	40 K Ohm Balanced
Output Impedance	300 Ohm Balanced
Nominal Operating Level	0dB
Maximum Input Level	+20 dB
Maximum Output Level	+20 dB EQ only, +10 dB FBX in
Dynamic Range	113 dB EQ only, 92 dB FBX in
Gain	∞ to +10 dB, user variable
Signal to Noise Ratio	-93dB Unweighted EQ only -82dB Unweighted FBX in
Distortion	0.004% EQ only, 0.02% FBX in, @ 1KHz, +4 dB
Frequency Response	20 Hz to 20 KHz, 0.5 dB
Equalizer Filters	30 x 1/3rd octave Constant Q on standard ISO frequencies
Equalizer Range	±10dB cut or boost
FBX Filters	6 fixed, 3 dynamic
FBX Filter Range	51Hz to 17 KHz
FBX Filter Width	Switchable 1/5th or 1/10th octave
FBX Filter Depth	0dB to -40dB
Peak Limiter Threshold	-10 dB to +10 dB, user variable
Limiter Status Metering	Red LED: Limiter Active
AC requirements	90-120 or 220-240 VAC, 50-60Hz, 18 VA
Size	482 x 88 x 205 mm, 19"W x 3½"H x 8"D

The Anti Feedback section

The Anti Feedback section of the AFW30 is essentially a computer controlled parametric equalizer which continuously searches for feedback. Once feedback is detected, it extinguishes the feedback automatically by inserting a very narrow notch filter directly on the feedback frequency, only as deep as necessary to control the feedback. It finds and eliminates feedback typically in less than one second.The result is that the overall program gain is increased 6 or more dB and provides much clearer and more natural sounding speech and music. And since it is fully automatic, no operator is required.

The digital filters inside the AFW30 are switchable between 1/5th octave and 1/10th octave. 1/5th is recommended for speech applications, such as conferences, speeches, etc, and 1/10th is recommended for music applications.

Before changing this switch, you must first power down the system. Then switch the filter to the setting required. Power up the system again, and during its turn on self test the AFW30 will change the filter setting. The system should be RESET after doing this, by following the Setup procedure detailed below.

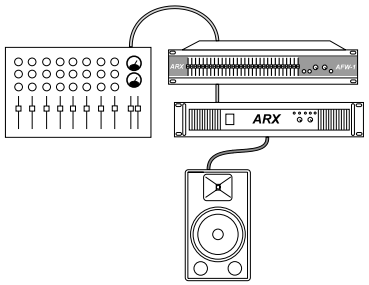
About the Filters

The Anti Feedback section has two types of filters - fixed and dynamic.

Fixed filters retain their frequency center points in memory until the unit is reset by the user. These filters are set in the AFW30 initialization procedure by the strongest resonating frequencies to provide the system's gain before feedback.

Dynamic filters control intermittent feedback that comes and goes throughout the performance, such as feedback from moving wireless microphones, getting too close to speakers, monitors, that sort of thing. They are automatically reassigned to new frequencies as feedback occurs on a first in - first out protocol.

The Anti Feedback section circuitry has a total of 9 filters; 6 fixed and 3 dynamic filters. This has proven to be the best combination for most applications.



Where To Install The AFW30 In The Signal Path.

The AFW30 can be placed anywhere in the system that a line level signal is available. However, best results are obtained if it is placed last in the chain before the power amplifiers.

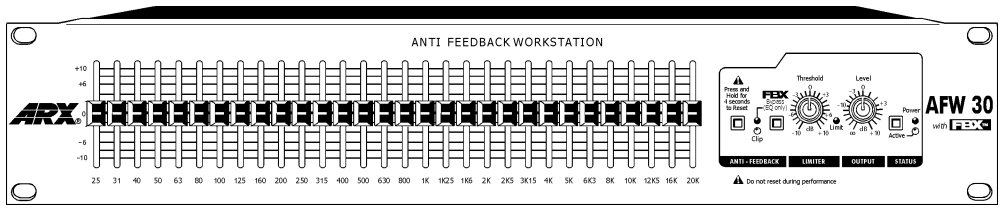
If you are using a 2 or 3 way or more system, with an active crossover before the amps, then naturally the AFW30 will go before the crossover

The Limiter Section

The Peak Limiter in the AFW30 has been included to let you set an absolute ceiling on the output level.

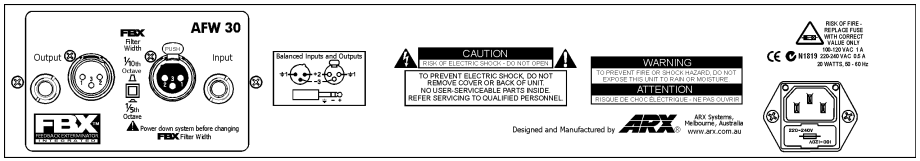
Its attack and release times are program dependent and have been optimized to appear as transparent to the ear as possible.

However, remember that it ***is*** a Limiter, and should be set at a level that coincides with the onset of clipping in the system, where ideally it is not going to be active for the bulk of the time.



Front Panel Controls

1. 30 Extended Resolution long-throw, centre grounding sliders per channel, on standard ISO frequencies
2. Reset control for Feedback Exterminator circuitry
3. Clip LED indicates imminent clipping, monitored at all vital stages throughout the AFW30
4. Active/Bypass switch for Feedback Exterminator, Limiter and Output level controls
5. Limiter Threshold control and Limit LED
6. Level control, from oo to +10 dB
7. Hardwire Active/Bypass switch and status LED
8. Power LED indicates AFW30 is connected to AC power



Rear Panel Connectors

1. Balanced Input TRS socket. Tip + HOT, Ring — COLD, Sleeve GROUND
2. Balanced Input XLR type. Pin 2 + HOT, Pin 3 — COLD, Pin 1 GROUND
3. Balanced Output XLR type (same wiring as Input)
4. Balanced Output TipRingSleeve jack socket (same wiring as Input)
5. Feedback Exterminator filter width switch. POWER DOWN AFW30 before changing
6. IEC 3 pin AC connector and integral fuseholder. RISK OF FIRE - Replace fuse with correct value only: 90 - 120 V AC 1 amp, 220-240 V AC 0.5 amp. Please also refer to voltage details on Page 2

Setting up the AFW30

Setting up the AFW30 correctly requires that certain steps are taken, in a particular order. Technical people may call this the System Initializing Procedure, but we'll just call it Setup.

1. To install the AFW30 in a sound system, connect it wherever a Graphic EQ would go. For example, between the Mixing console and the Power amps. If you are using multiple AFW30's in a monitor rig, then connect one between each monitor send and crossover/amplifier
2. Place the speakers and microphones in the positions where they will be used during the performance. Don't place the microphones facing into the speakers!
3. Turn on the system
4. Set the Limiter Threshold at -10dB. The process of setting up the AFW30 will induce feedback rings, and the limiter will keep these from damaging the system
5. Check that the FBX Bypass and Status Bypass switches are not pressed IN
6. Adjust the EQ section of the AFW30 to set the system curve that you want. DO NOT NOTCH FOR FEEDBACK. The EQ sliders should form a smooth curve
7. Set the channel levels on the console at the performance level. Reduce mixing console master levels
8. Press and hold down the switch marked 'PRESS AND HOLD FOR 4 SECONDS TO RESET' on the front of the AFW30 for 4 seconds to clear out filters set previously.
9. Place the AFW30 in the active mode by releasing the RESET switch.
10. SLOWLY bring up the console's master sliders until feedback starts to occur. The AFW30 will detect and quickly remove it
11. Continue slowly raising the system master volume until the system is just over the level required for the performance. Now back off the master volume slightly so the system is not on the brink of another feedback point
12. The AFW30 is now ready for use. It will lock these fixed filters on the feedback frequencies, and leave a further 3 filters 'floating', to pull out any other feedback during the performance if it occurs
13. Reset the Limiter at say, +3dB, or the maximum safe level of your system
14. The Clip LED may flash on transients - this is normal. But if it is lit continually, then the level through the unit is too high and should be reduced. To do this, bring down the master faders on the console a little, and bring up the output gain of the AFW30 by the same amount. Perhaps you have the Limiter set too low, so it's continually on. You could also make sure the amplifiers are on their maximum level. Or you may have too little system for the sound pressure level you want in too big a room. That's one thing we can't fix!

Non-Volatile Memory

A complete record of the Anti Feedback filter settings is stored automatically in the AFW30 when you power down the system. Upon power-up, the system automatically reloads the filters and returns them to the same position and depth as they were when the power was turned off.

Filter Reset

If the sound system's setup has changed, such as a different venue, change of equipment, significant movement of microphones or speakers, or any other change that

Introduction

Thank you for choosing this ARX AFW30 Anti-Feedback Workstation. It's a great product, and we hope you enjoy using it as much as we enjoyed creating it. As with all ARX equipment, it has undergone extensive factory calibration and 'burn in' before shipping. Since it involves a few radical departures from the normal way that we think of equalizers, for continued trouble free use please familiarise yourself with the contents of this manual before using the AFW30 Anti-Feedback Workstation.

About the AFW30

Tuning a live sound system, whether it's a concert or a conference or all points in between, is a complex procedure at the best of times! Stopping feedback is only a part of it - you still need to adjust the actual sound of the system in the room.

In the ideal world you'd have an equalizer to set the system curve, something to eliminate feedback, and something else to keep the system level under control.

So, we'd like to introduce you to the ARX contribution to the ideal world - the all-new ARX AFW30 Anti Feedback Workstation. A single channel unit incorporating a 30 band graphic equalizer, a smooth sounding peak limiter, and onboard genuine Sabine FBX Feedback Exterminator circuitry.

The ARX AFW30 Anti Feedback Workstation has an application for every mode of live audio: Monitors, Front of House, Church installations, TV audience monitors, Conferences; in fact, anywhere there's a live microphone, there's a need for the AFW30.

In the next few pages you'll discover how to set up your AFW30, where to use it, and how to get the most out of it.

AFW30 Reference Guide

Let's work our way through the operation of the AFW30, from start to finish.

The Equalizer Section

The EQ section of the AFW30 features ARX 'Constant Q' circuitry. Constant Q is a true WYSIWYG (What You See Is What You Get) design concept that allows far greateraccuracy in EQ control.

Its 30 long throw, XR Extended Resolution sliders can be adjusted to give a maximum of 10dB cut or boost. The Q of the filter has been specifically optimised to allow easy combining of the filters. This enables you to set up a musical, notch free system curve.

The idea of the EQ section is to 'tune' the room to the system, and to 'tweak' the response a little so that it sounds good. We're not going to use it to notch out feedback - we've got the Anti Feedback section for that - but to adjust the overall sound of the system so it doesn't sound 'boomy' or 'harsh'. So, play a tape or CD that you're very familiar with, and adjust the sliders on the EQ section so that the system sounds 'just right'.

Note that a little EQ is a lot, so use each fader gently. Avoid any sudden dips or peaks - that's not what it's there for. The look of the sliders should resemble a smooth curve. If you don't need to move it, then leave it.

Avoid too much boost at lower frequencies. Very few systems can deliver much response below 30 Hz, so it's pointless pushing those sliders up. However 50 to 100Hz can often benefit from a little boost, as can 10KHz. Between those points it should be a smooth succession of gentle curves.