P4 FOUR – WAY MONOBLOCK AMPLIFIER

USER GUIDE

LOUDSPEAKER TECHNOLOGY LTD.

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1. **Read instructions** – all the safety and operating instructions should be read before the appliance is operated.

2. **Retain these instructions** – the safety and operating instructions should be retained for future reference.

3. **Heed warnings** – all warnings on the appliance and in the operating instructions should be adhered to.

4. **Follow instructions** – all operating and other instructions should be followed.

5. **Water and moisture** – the appliance should not be used near water, for example near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement or near a swimming pool etc..

6. **Ventilation** – the appliance should be situated so that its location or position does not interfere with its proper ventilation. For example the appliance should not be situated on a bed, sofa, rug or similar surface that may block the ventilation openings. Similarly, the appliance should not be built into an installation, such as a bookcase or cabinet, that may impeded the flow of air through the ventilation openings.

7. **Heat** – the appliance should be situated away from heat sources such as radiators, stoves or other appliances that produce heat.

8. **Power sources** – the appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

9. **Power cord protection** – power supply cords 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 at plugs, convenience receptacles and the point where they exit the appliance.

10. **Cleaning** – the appliance should be cleaned only as recommended by the manufacturer.

11. **Unattended periods** – the power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

12. **Object and liquid entry** – care should be taken so that objects do not fall into and liquids not spilled into the inside of the appliance.

13. **Damage requiring service** – the appliance should be serviced y qualified service personnel when:

    i. the power supply cord or the plug has been damaged

    ii. objects have fallen or liquid has been spilled into the appliance

    iii. the appliance has been exposed to rain or other serious liquid exposure

    iv. the appliance does not appear to operate normally or exhibits a marked change in performance

    v. the appliance has been dropped or the cabinet damaged

14. **Servicing** – the user should not attempt to service the appliance beyond those measures described in the operating instructions. All other servicing should be referred to qualified service personnel.

15. **Grounding or polarisation** – the precautions that should be taken so that the grounding or polarisation means for the appliance is not defeated.

Welcome to the world of ATC monitors, they are a result of many years research and development and given the right opportunity will deliver exceptional audio performance. Please read the following manual carefully – it will help you realise their full potential.

Founded in 1974, ATC has had one objective and that is to build the finest loudspeakers money can buy. Bill Woodman, the company's founder and Managing Director, originally had the idea for our monitors in 1970. He felt that both HI-FI loudspeakers and studio monitors needed improvement. The best HI-FI loudspeakers have reasonable sound quality and limited dynamic range, while studio monitors have plenty of dynamic range but relatively poor sound quality. This was true then and still today.

The ATC system will equal, or better, the acoustic performance of the best HI-FI, and has the dynamic range of big horn loaded studio monitors.

To achieve this requires some of the world's most expensive and highly specified hand made drive units, and the sympathetic design of appropriate audio electronics. All major components are designed and manufactured by ATC.

ATC monitors have been available in recognisable form since 1980, followed by a breakthrough in 1985 when the top end systems became active, with the introduction of the active amplifier pack developed by Tim Isaac. Although it is generally accepted that active systems have the potential for superior audio performance, they have been slow to catch on in HI-FI circles where considerable sums of money have been spent on amplifiers.

The active approach allows the use of one amplifier for each loudspeaker drive unit. One each for the tweeter and the bass, each amplifier is rated according to the drive unit it is attached to, allowing the tweeter and bass amplifier to be set to run class A to high levels. The filter networks within the amplifier process the signal for each output amplifier and present no additional loading on the signal. Included into the design of the amplifier is the adjustment for phase of the bass amplifier, thus ensuring that the system is in phase at the crossover point (impossible in a passive system). Other features include momentary gain reduction circuits which prevent clipping by rounding the waveform, these circuits protect the drive units from damage and will cause less stress to the amplifier. Since these circuits are very fast they only introduce harmonic distortion at the instant they operate, they are normally undetectable. Many users of conventional amplifiers will be aware of amplifier clipping when playing at high levels. It is therefore relevant to note that high levels of output are obtained without the audio cue of clipping.

SYSTEM OVERVIEW

The P4 four – way monoblock has been developed for the most demanding studio installation. It will release the full potential of an ATC monitor by providing an integrated solution to amplification.

Incorporated into the P4 are all the necessary phase control, crossover and protection circuits required to give accurate and lasting performance under the most demanding conditions.

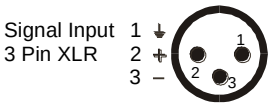
Four amplifiers provide drive to two bass outputs, one midrange output and one H.F. output. A total system output of 850watts RMS power is available. All amplifiers are class AB while the Mid and H.F. amplifiers run at class A to high levels to provide a very clean dynamic performance. The class A operation is accommodated by a large heatsink kept at a controlled temperature by three low speed fans.

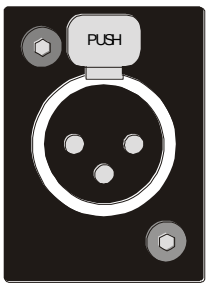
This fully integrated package has the major benefits of high power in a space saving and cost effective package when compared with using individual amplifiers, crossover and protection circuits.

Other features of the P4 include simple front panel indication and control, single locking four way speaker connection, remote status output and control. System performance (includes the monitors) is set at the factory allowing a plug and go setup.

CONNECTIONS

Only three connections per monitor are required, one for main power, one for the input signal and one speaker connector. The mains connection should only be made with the cable provided, this cable meets the approved standard for the region to which the monitor is supplied. **NOTE: The mains connection Must Always be Earthed**. The signal cable (not necessarily supplied) should be of a good quality XLR balanced configuration (unbalanced configuration is explained later). The XLR pin configuration is :





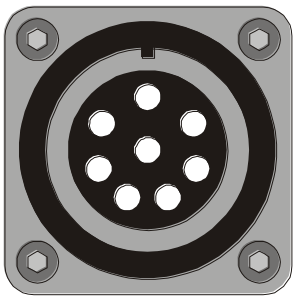
pin 1 ⟶ Screen

pin 2 ⟶ Signal+ (hot)

pin 3 ⟶ Signal – (return)

Ready made speaker cables are supplied with the amplifier, recommended length is up to 10mtrs and 5mtrs is supplied as standard. If greater cable lengths are required then the supplied cable can be cut 500mm from the connector and a larger 4mm^2 cable can be spliced onto the ends to increase the length, 4mm^2 being sufficient width for up to 20mtrs.

Speaker output



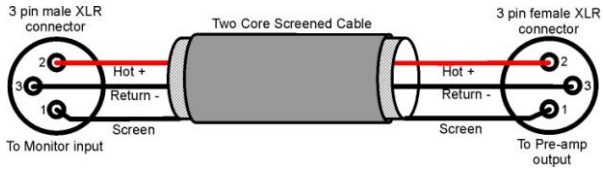
Speaker Connector
Type: CON-UN-06103

A:Bass 1+	G:Bass 1-
B:Bass 2+	H:Bass 2-
C:Mid+	F:Mid-
D:HF+	E:HF-

Speaker Connections are made via an 8-pin high capacity connector as shown above.

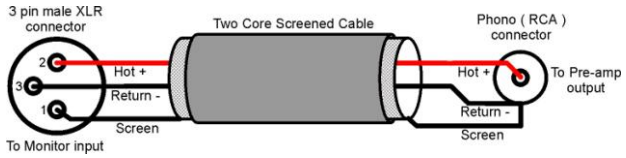
SIGNAL CABLE OPTIONS

The two figures below show the normal connections for a balanced and an unbalanced configuration. A balanced XLR to XLR connection will have very few problems. With an unbalanced XLR to Phono connection, it is possible that there may be problems with earth loops causing hum. There are many ways to eliminate this problem. A good starting point is to disconnect the screen from the phono end. This may help on pre-amps that are double insulated (ie: have no earth). OR disconnect the screen at the monitor XLR. This will make the pre-amp the reference for the earthing



BALANCED CABLE

UNBALANCED CABLE



PLACEMENT

Perfection is not an option here, often the monitors will be installed in rooms which are comfortable to sit and talk in. A mixture of carpets, curtains and soft furnishings will see to it that middle and high frequencies are reasonably well controlled. There may however be low frequency problems, either too much or too little bass. To avoid or minimise these effects the monitors should be kept away from corners or walls – start with 1 metre from the side walls and 2 metres from the back. All rooms vary and it is a good idea to experiment with both the listening and speaker position until a good compromised is reached. For professional installations the requirements are often very different. Please consult with an experienced acoustician.

INSTALLATION

The P4 is designed to be free standing or rack mounted (using suitable shelving). Consideration should always be taken to ensure adequate ventilation. The cooling of the amplifier is achieved by forced ventilation at the rear of the amplifier with an exhaust vent at the front of the amplifier. DO NOT obstruct either front or rear vents or enclose the amplifier.

When switching from standby to normal operation it is expected that you will hear a mild thump from the amplifier as the main power transformer energises. If more than one amplifier is to be connected to the same power outlet it is recommended that they are switched on in sequence – important if switching by remote.

COOLING

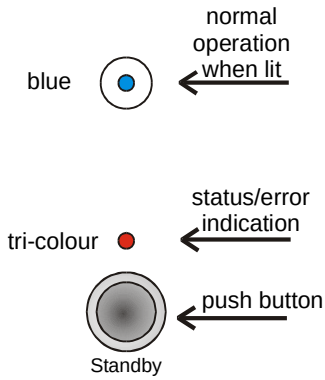
The fans will only run when the heatsink temperature reaches approximately 30°C and they will continue to run even in standby mode until the temperature has dropped to approximately 20°C.

CONTROLS

Control and operation of the P4 is simple once all connections have been made.

Mains power is isolated by a toggle switch on the rear of the amplifier and must be in the on position to allow operation. To activate the amplifier press the standby button once, this will start the power up sequence :-

Front Panel Controls



1. Button pressed
2. Green LED turns to Orange
3. Blue LED starts flashing (protection circuit checks)
4. Orange turns Red (mute circuit released)
5. Red extinguishes
6. Blue LED stays constant (normal operation)

Failure to start will be indicated by a steady orange LED only, this state can be caused by a high temperature or DC in one of the amplifiers, if neither of these conditions are true then a control failure has happened and service is required.

During normal operation the Blue LED will remain lit. If the amplifier is being driven hard a RED indication will show operation of the gain reduction circuits. Any other fault will cause the amplifier to shutdown showing an orange indication with no blue LED.

If a fault has occurred the amplifier can be restarted by pressing the standby button, in the case of an over-temperature the amplifier will have to be left to cool down before a restart.

The amplifier can be returned to standby be pressing the standby button, the blue LED will extinguish and only a green LED will be displayed.

CARE AND MAINTENANCE

High technology material finishes are used in this product. Surfaces are durable and with a little care can be kept as good as new under conditions of heavy use. Normally a dry duster will be all that is required to keep the finishes clean.

Heavy soiling can be remedied using an almost dry cloth that has been slightly moistened with a non-abrasive household cleaner.

There are no components within the speaker that could be considered expendable, or that would benefit from regular maintenance. There is no requirement for any kind of routine service work and there is no schedule for preventative maintenance.

In the unfortunate event of any malfunction, as there are no user replaceable parts within the speaker, repair should be referred to either the supplying dealer or consultant, the relevant importer, or ATC. ATC has every confidence in the quality of each product that it manufactures; please consult your local dealer or importer for applicable warranty terms.

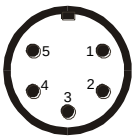
REMOTE OPERATION

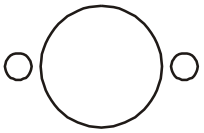
Special facility for remote operation of the P4 is catered for by the inclusion of 5-pin DIN connector on the rear panel. ATC does not supply a remote operation unit, but the connections required to make use of this function are as follows:

- Pin 1 - acts as 0 Volts / logic ground
- Pin 2 - Standby / operate mode can be toggled by momentary grounding of pin 2.
- Pin 3 - will be at 5 Volts when the amplifier is in normal operating condition
- Pin 4 - will be at 5 Volts when the amplifier is in standby
- Pin 5 - will be at 5 Volts on any error including drive limit
- Pins 3,4 & 5 have a series resistance of 240R allowing sensing or drive of LED's only.

Remote

1	0 Volt		
2	standby	-	control
3	pwd up	-	out
4	standby	-	out
5	error	-	out





OUTPUT POWER (RMS)	
HF	100 WATTS INTO 6 OHMS
MF	200 WATTS INTO 16 OHMS
LF	275 WATTS X 2 INTO 8 OHMS
INPUT SENSITIVITY	1 VOLT
INPUT IMPEDANCE	10K OHMS
AMPLITUDE RESPONSE	5 HZ – 20 KHZ ± 0.1dB
SIGNAL / NOISE RATIO	BETTER THAN 105dB
CROSSTALK	BETTER THAN 90dB
POWER REQUIREMENTS	100, 115, 230 VOLTS @ 50/60 HZ (REGION DEPENDENT FACTORY SET)
POWER CONSUMPTION	150 VA (STANDBY MINIMUM), 1200 VA (MAXIMUM)
OVERLOAD PROTECTION	ACTIVE FET MOMENTARY GAIN REDUCTION
DIMENSIONS	19 INCH RACK MOUNTABLE (5U HIGH)
OVERALL DEPTH	545 MM
FRONT PANEL & HANDLES	75 MM
REAR HANDLES	40 MM
AMPLIFIER BODY	430 MM
OVERALL WEIGHT	40 KG (45 KG WHEN PACKED)