

welcome



Dr. Udo Zucker – Physicist, PhD in Science, designer of award-winning control electronics, dedicated audiophile and Chief Executive Officer of TAG McLaren Audio

Award-winning TAG McLaren technology - the TAG2000 F1 powertrain control system has been selected as a Millennium Product by the British Design Council



welcome to



TAG McLaren Audio exists with one aim in mind: to produce the very best high-end audio equipment in the world.

Like many people, I often have my best ideas when relaxing to a piece of music. For years, knowing the technical capabilities of TAG McLaren, I have nurtured the ambition to push sound reproduction to the absolute limit; that's why we formed TAG McLaren Audio.

At the core of our development team are highly experienced electronics engineers whose heritage of award-winning hi-fi and world-beating electronic control systems is envied by many and equalled by few.

TAG McLaren Audio Proteus F1-CA AvantGarde loudspeaker shown here with matching F1 AvantGarde loudspeakers



In addition to our experience in the world of hi-fi we are able to utilise our expertise in mechanical engineering, composite material technology, multi-layer printed circuit boards, fast digital signal processing, electronic noise suppression, radio frequency technology and software design to name but a few.

All these skills are sharpened to compete in the toughest of all technical sports: Formula One motor racing. We directly apply them to enhance our high-end audio products; for example composite material technology is used to make resonant - free loudspeaker cabinets, suspension

technology decouples electronics from the sound field and digital signal processing makes better home cinema products. The list is almost endless.

I have been an audiophile for more than 30 years, and have used and upgraded many, many audio systems in that time. Our aim is sonic perfection combined with aesthetic delight and solid build quality – a rare combination in hi-fi but one which TAG McLaren Audio is delivering.

It is our audio engineers' technical capability which provides outstanding sound quality and our stylists' ability to look into the future which makes the Proteus F1-CA AvantGarde loudspeaker so desirable.

welcome



*Thank you for purchasing the TAG McLaren Audio F1 Proteus loudspeaker.*

### Proteus F1-CA AvantGarde Loudspeaker

Proteus is a magnetically shielded, high performance, 3 way, fourth order reflex-loaded loudspeaker system capable of reproducing both music and movie soundtracks with outstanding clarity and transparency. The Proteus is ideal for all room sizes, including larger rooms which require greater sound pressure levels to recreate a performance with realistic volume levels. The combination of a unique enclosure with lowest distortion drive units and no-expense-spared crossovers generates sound reproduction at a level of transparency and clarity which is extremely rare to find.

### 'Composite Technology'

TAG McLaren pioneered the use of Composite Technology in F1 motor racing almost 20 years ago, at a time when only the most advanced aerospace programmes used carbon fibre composites exploiting their extraordinary combination of strength and weight.

The Proteus' cabinet is constructed using an open mould system with multiple split lines to allow the lamination of shapes with complex curvature. The enclosure walls are manufactured from a carefully chosen blend of glass fibres and slate-loaded epoxy resin to provide high stiffness with intrinsic damping. The enclosure is subdivided into two chambers. The midrange chamber is formed by a sub-enclosure being bonded directly onto the front baffle to provide further structural re-enforcement to the front baffle which holds the drive units. The internal geometry also ensures that there

are no parallel, reflective surfaces to avoid internal resonances. These measures prevent the enclosure from flexing and re-radiating energy thereby reducing distortion and colouration.

### optimised dispersion enclosure geometry

The smooth and irregular curvature of the enclosure has been carefully designed to optimise the dispersion of sound energy from the enclosure. The Proteus generates an even and consistent energy output both on and off axis resulting in a solid and accurate image within a very wide listening area. As a result, the Proteus will easily integrate into your room and, when used in conjunction with F1-RLA loudspeakers, will create a perfectly integrated Home Theatre loudspeaker installation.

### **drive unit technology**

Proteus is a three-way design using two 180 mm bass units, one 150 mm midrange unit and a 20 mm silk dome tweeter. The drive units have been optimised to maximise their performance within their respective operating bandwidths. A detailed description can be found in the technical data section at the end of this manual.

### **high quality vibration isolated crossover**

The crossover is mechanically de-coupled from the sub-structure of the loudspeaker to prevent microphony in the components. The crossover network is mounted in the underside of the main loudspeaker enclosure in its own separate sub-enclosure.

This no compromise crossover guarantees that sound energy is split between the drive units without affecting the purity of sound. More details can be found in the technical data section at the end of this manual.

### **OFHC loudspeaker connection terminals**

By fitting proprietary OFHC, gold plated binding posts, a clear sonic improvement has been achieved compared to the typically used alternatives employing high copper content alloys. Furthermore, no nickel plating has been used between the OFHC foundation and the gold finish as it adds distortion and colouration to the sound. Whilst this will lead, in the long term, to some discolouration of the binding post due to copper atoms partially diffusing into the anti-corrosion gold layer, the customary nickel plate interlayer is well known (as a ferro-magnetic and hard oxidised metal) to affect sound quality adversely and was therefore eliminated.

### **single input connection**

After extensive research into the sound quality of the F1 AvantGarde loudspeaker, it was discovered that the potential benefits of multi-wired terminal connections were outweighed by the losses incurred in their implementation, e.g. additional contact interfaces and electrical connection straps. In addition, even with top grade power amplifiers, star grounding improved the dynamics and transparency.

### **'Peripheral Slot Technology' reflex port**

The bass units are reflex tuned in their enclosure volume by a downward firing port tube employing 'Peripheral Slot Technology'. The low frequency sound pressure from the port is distributed into the room evenly through a slot to reduce standing waves) between the bottom of the enclosure and the top of the plinth. This prevents audible chuffing and higher

frequency harmonic distortion from the port that would otherwise degrade the sound quality of the system.

## installation

- installation** Proteus has been carefully packaged for safe transportation. If you have the storage space, please retain all the original packaging allowing you to transport your loudspeaker safely in the future.
- before you start** Make sure that all the components of your audio system are disconnected from the AC supply whenever you change any connections.
- loudspeaker connection** Use high quality loudspeaker cable such as those from our Cable AvantGarde range. For best sound quality, we only recommend that you use loudspeaker cables terminated with spade terminals. Unscrew the terminal enough to push the spade into the slot in the side of the terminal and then tighten the terminal. If you are unable to fully tighten the terminal, try pushing the spade connector in a clockwise (tightening) direction. Do not over-tighten the terminal as it is made from soft, gold plated, oxygen-free, high purity copper to ensure the best sound quality.
- room placement** Sound quality is dependent upon the placement of your loudspeakers in the listening room and the inherent acoustics of the room itself. You can place Proteus close to a TV set as it is magnetically shielded.
- The front of the Proteus should be aligned with, or placed slightly behind, the left and right speakers. Proteus has two crossover inputs reflecting the different acoustical requirements of a 'Free Space' or 'Floor' configuration. These two configurations are described in detail on the following pages.



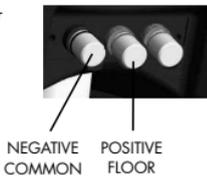
### 'floor' configuration (in front of a screen or tv)

If you want to locate Proteus on the floor, maybe in front of a tv or screen, then you should use the 'floor' connection of the crossover.

Connect the positive terminal marked 'floor' to ensure you optimise the performance of your system. This engages a filter that compensates for the increase in low frequency output that is generated by the loudspeaker's proximity to room boundaries and ensures optimum performance for this type of installation.



Proteus includes a Plinth Tilt Adjustment that allows you to tilt the loudspeaker upwards towards your listening position. Simply turn the adjustment wheel at the rear of the loudspeaker until the midrange's central axis points towards the ear height of the audience.



## installation

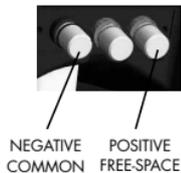
**'free-space'  
configuration**  
(behind a projection  
screen or on a stand)

If you want to place Proteus behind a sonically transparent screen and/or on stands, then you should use the 'free space' input to the crossover.

Connect the positive terminal marked 'free space' to ensure you optimise the performance of your system. This engages a filter that compensates for the decrease in low frequency output that is generated by the loudspeaker's proximity to room boundaries and ensures optimum performance for this type of installation.

For placement behind a transparent screen, it will be acoustically optimal if the Proteus midrange drive unit is located at approximately the same height as the midrange drive units of your main left and right loudspeakers.

Proteus includes a Plinth Tilt Adjustment (see page 9 for details) that allows you to tilt the loudspeaker towards your listening position.



**stereo installation**



A pair of Proteus loudspeakers can be used in a stereo installation. We would recommend that you adjust the angle of your Proteus' to reduce the protrusion of the rear foot to its minimum position such that the acoustic output is directed towards the seated audience.

We would also recommend that the 'floor' connection (see page 9) is selected to provide an even tonal balance with respect to the room boundaries.



**running in** The performance of your Proteus will improve during the first 70 hours of operation. You may wish to play some programme material at a moderate level continuously for this period of time before seriously listening to your Proteus. Your loudspeaker will continue to improve over the next 100 hours of use.

**warming up** Every time you use your Proteus, the performance will improve until the components have reached their operating temperature which is typically achieved within 5 - 10 minutes of operation, depending upon the music material and volume level selected.

**cleaning** In order to maintain the appearance of your Proteus, you can clean it as follows:

Any grease or dirt on the enclosure may be removed with a soft, lint-free cloth moistened slightly with a mild solution of warm water and detergent or washing-up liquid. Do not use any other solutions. Do not use any solvents or abrasives.

Take great care not to get any liquid inside the loudspeaker enclosure or on the drive unit diaphragms. If this happens, you should have your Proteus serviced.

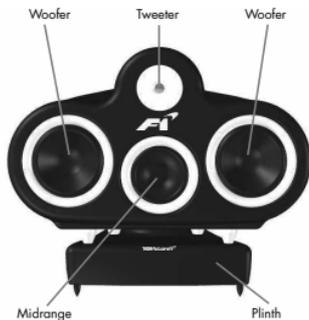
**service** Under no circumstances should you attempt to service your Proteus. All servicing should be carried out by one of our authorised service agents.

If service is required, please contact your authorised TAG McLaren Audio retailer. If your Proteus is still under guarantee, please refer to the guarantee card which gives you details on how to claim against the guarantee.

Please package your Proteus carefully when transporting or shipping. If you do not have the correct packaging at this time, please contact TAG McLaren Audio for assistance.



## technical data



The 180 mm bass units are manufactured into a die-cast aluminium chassis to prevent flexure and therefore to minimise energy transfer between the drive unit and enclosure. The combination of a low-loss rubber roll surround and linear spider ensure that DC offset is eliminated under extreme excursion conditions. This yields a very low 2nd order harmonic distortion content resulting in a clean and natural performance. The voice coil wire is wound on an aluminium former to provide maximum strength/weight ratio and allow high power dissipation. This feature prevents the voice coil from flexing under extreme acceleration forces.

technical data  
(cont'd)

The motor system incorporates three copper rings into its assembly in order to minimise effects of flux modulation caused by Eddy currents being generated as the voice coil moves through the magnetic field within the air gap. This Faraday loop suppresses Eddy current formation which minimises non-linearity and the associated 3rd order harmonic distortion. Carbon fibre-loaded pulp cones create a stiff yet well damped diaphragm that remains piston through the passband.

The 150 mm midrange unit uses a die-cast aluminium chassis. The geometry of this 'Grasshopper' chassis has been optimised to allow undisturbed airflow from the rear of the diaphragm. The distances between the diaphragm and the chassis coincides with wavelengths within the midrange bandwidth that the human ear is most sensitive to. It is therefore crucial to minimise any resonances that may occur around this bandwidth. As such, the diaphragm is manufactured from several paper 'petals' that are married to a visco-elastic interface. This eliminates spurious vibration and suppresses unwanted energy reflection up and down the cone profile.

The 20 mm tweeter is manufactured into a precision machined housing made from aluminium and steel. The cup and back plate form part of the screened magnetic circuit to prevent stray flux leakage. The faceplate is manufactured to the same exacting standards as the trim rings to provide the excellent aesthetic finish. The tweeter boasts an extremely low free-air resonance





**technical data  
(cont'd)**

achieved by damping and loading the rearward energy with three chambers. The result is a tweeter with negligible distortion.

The components used within the crossover are of the highest quality to ensure signal integrity and clarity. The inductors use OFHC copper wound on bobbin cores to improve saturation current limits, reduce d.c. resistance and minimise stray magnetic field leakage.

The capacitors are manufactured with polypropylene dielectric and have a 630 V DC rating due to the thicker, purer sounding dielectric used to achieve this rating.

The resistors are of flat, thick metal film construction as opposed to the common wire-wound variety. These non-inductive resistors are manufactured from cermet mounted upon an alumina base offering extremely high peak voltage operation without compression. The series gain adjustment resistors commonly found in loudspeaker crossovers have been completely eliminated for best transparency. The tweeter level is matched to the midrange using an auto transformer that is wound on the same bobbin as used for the inductors. This ensures that the sound remains uncompressed and transient detail is truly lifelike.

This section is for those of you who really want to know the 'insides' of your Proteus F1-CA AvantGarde loudspeaker. You will not miss out on any of the functions or performance of your Proteus F1-CA AvantGarde loudspeaker if you choose not to read any further.

**free space**

<b>frequency range</b>	25 Hz - 25 kHz, - 3dB (in-room)
<b>frequency response</b>	40 Hz - 20 kHz, +/- 1dB (anechoic)

**floor mount**

<b>frequency range</b>	35 Hz - 25 kHz, - 3dB (in-room)
<b>frequency response</b>	50 Hz - 20 kHz, +/- 1dB (anechoic)
<b>sensitivity</b>	87.5 dB/W/m
<b>impedance</b>	6 $\Omega$ nominal, 4 $\Omega$ minimum
<b>distortion</b>	<0.3% T.H.D. (Re. 1 W, 100 Hz - 20 kHz)

