

Cyrus Electronics

Design Philosophy

The design of a good amplifier remains more obscure and more complex than the design of any other component in the high fidelity chain. In recent years the requirements for the operation of a good amplifier have been the subject of extensive research by academics and manufacturers alike, resulting in a new understanding of some of the more important parameters. The problem is somewhat compounded by the substantial improvements made to front-end inputs such as advanced 'turntable-arm-cartridge' combinations, digitally synthesised FM tuners and, of course, the advent of quality compact disc players such as the Mission 7000. Additionally, modern loudspeakers have become far more complex in terms of load factor than their predecessors making the job of the amplifier increasingly more difficult. Hardly any amplifier designed in the 1970s is capable of driving such sophisticated loudspeakers as the Mission Argonauts. Indeed, you will find that the small Cyrus One drives complex speaker loads better than many amplifiers with ten times the power output and sometimes costing ten times as much! The secret lies in appreciation of fundamental design parameters, as well as intuitive, somewhat inspirational application of 'black art'.

You see, there are serious differences between live music and hi-fi. At first people thought these could be dealt with by improving 20 or 30 simple specifications, but as these improved many listeners became more aware of the shortcomings and less satisfied with hi-fi. Indeed, improvements made to certain specifications have ironically turned out to be detrimental to the ability of the amplifier to reproduce music. A prime example of this is the power output specification. For the last 20 years Japanese companies and other commercial designers have been obsessed with giving you more 'Watts' for less money – and always at the expense of the current capability of the amplifier! That is to say, for any given power supply you have a 'see-saw' relationship between power output and current drive. For example, we could at no extra cost to you or ourselves, have designed the Cyrus One with power output in excess of 100 Watts per channel, and of course at the expense of the current capability of the amplifier. In fact, this is exactly how commercial manufacturers satisfy the irrelevant and superficial specifications drawn up by their marketing departments – who have little or no interest in the sonic excellence of their products. Amplifiers with poor current delivery are simply not capable of driving the modern loudspeaker, and unfortunately the problem doesn't just stop there.

Whereas years ago, using poor front-end inputs and highly distorted loudspeakers, people could not hear the subtle and, at the same time, important differences between equipment, today such differences are being noticed by a great many. Whereas years ago we were obsessed with such superficial problems as distortion, colouration and power output; today we have the sophistication to research into musical notes themselves. The coherent reproduction of music is a function of such subtle and ethereal qualities that many listeners find hi-fi gives a different, somewhat disembodied interpretation of the original live performance.

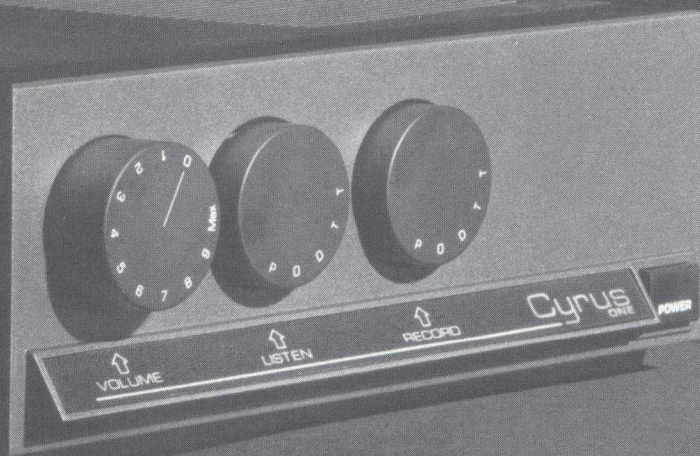
For example, music may sound detailed and 'open' but nevertheless sterile and lacking in feeling. At the first encounter with such ideas the less knowledgeable reader may find the phenomena non-scientific and even absurd. However, through careful research carried out by the designers of Cyrus Electronics we can demonstrate both scientifically and musically the validity of these phenomena. For instance, the above mentioned problem of amplifier 'sterility' is associated with, among other causes, amplifier hysteresis due to poor circuit design, incompetent topology, or the use of low-grade components. Take a musical note with a given decay characteristic. One high fidelity system would shorten the decay, cutting the continuity of the note, whilst another would over decay to such a degree that it would cause transient response delay to the leading edge of the

next note. The net effect of either aberration would be music which although not muddled, coloured and distorted, nevertheless may sound uncommunicative, incoherent and disembodied. You see, whereas in the 1970s we placed great emphasis on detail and information retrieval, today we have moved on beyond such simplistic concepts and are investigating the true art of the reproduction of music.

If we review another area of subjective performance our explanation will become more lucid. Take two amplifiers, one with uncontrolled, overblown, rather boomy bass and the second with over-damped, rather restricted bass. The subjective difference between these two amplifiers is that the first sounds rather slow and sluggish whilst the second initially sounds fast and impressive. However, both of them, in the long run, will sound quite boring and non-musical. The subjective reason here is simply that neither amplifier is capable of reproducing the musical time correctly. The first slows down the subjective beat and tempo in the music resulting in a tired and sluggish performance, whilst the second hastens the subjective musical time to such a degree that the reproduction loses elegance and majesty.

The important issue here is that music in itself is abstract, intangible and immeasurable, and the high fidelity chain extremely complex. The fundamentals of processing music signals through such a cumbersome series of components, materials, interfaces, conversion of energies etc. are not clearly understood. Laboratory designs, mathematical models and conventional measurements appear to be totally inadequate. To design on subjective grounds alone would also be dangerous. Therefore what is needed is a design that satisfies both criteria, and more importantly introduces the musical dimension.

The genius of Cyrus designs lies in their ability to transcend the classical pedestrian ideas of dealing in simplistic specifications, meet the stringent requirements of the musical community, and incorporate music's spiritual and emotional dimension. In a tired world dominated by commercialism, consumerism, designed obsolescence and so much mediocrity your Cyrus amplifier will touch your mind and bring you breathtaking musical experience for many years to come.



Cyrus I

A British critic wrote "... the stunned look on the face of people who first heard the Cyrus One amplifier ..."; a leading Dutch reviewer went on to say: Cyrus One is probably the best amplifier at any price; a most respected American reviewer added: the more subtle qualities of Cyrus One can only be matched by the finest of American tube amplifiers; and the French critics simply awarded Cyrus with 'Decibel D'Honneur'. Since then we have continued to read extraordinary independent test-reports from critics all over the world on this genius of a product. We have learned of astonished music critics replacing their costly 'super-amps' with the little Cyrus One. One can therefore only conclude that in its short history, since its introduction, the Cyrus One has become both a Reference and a living legend.

The Cyrus One is based on a revolutionary circuit design philosophy, details of which are beyond the scope of this brochure and in any case well guarded secrets. The design is then implemented with careful attention to circuit topology in order to minimise the number of components in the signal path and reduce their harmful effects. This 'straight-line' design is then manufactured to the very highest standards using components and materials beyond the reach of most competition. The power transistors, for example, are military grade, ultra-fast and very linear devices especially manufactured for Cyrus Electronics. The driver transistors are equally products of a British military semiconductor manufacturer. World class German produced passive components have been selected including extravagant polypropylene capacitors, polystyrene capacitors, and metal film resistors. The casing for the amplifier is precision injection moulded from a 'non-magnetic', 'non-electroconductive' metal substitute produced by Space Division of American General Electric.

All spurious and harmful stages, such as tone-controls and filters, headphone and loudspeaker switching, protection circuits and balance controls have been eliminated to make the amplifier a 'straight-line', no compromise, state-of-the-art design. The quality control standards are amongst the highest in the industry where every amplifier is tested along nearly 100 parameters on the most sophisticated Hewlett-Packard CAD-CAM systems available. The result is an extraordinary achievement called the Cyrus One integrated amplifier, elegant in appearance, without gimmicks, and capable of producing a breathtaking and spectacular sound stage when used with quality ancillary equipment.

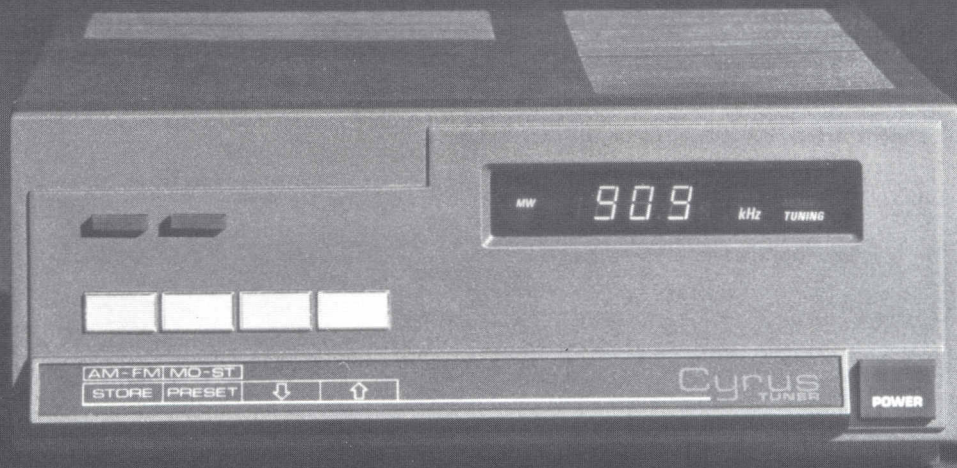
Cyrus Two

The Cyrus Two is an even more sophisticated amplifier with a similar philosophy to that of the Cyrus One. The major differences between the two amplifiers are in the area of greater power output and even more importantly, superior current delivery capabilities. Furthermore, Cyrus Two incorporates one truly exceptional moving coil stage with emphasis on noise and hysteresis factors. Indeed, the MC stage is designed to work with esoteric cartridges often costing many times the price of Cyrus Two. Another unique feature of Cyrus Two is its ability to accept the PSX optional outboard power supply (not available for use with Cyrus One) and, when configured with the PSX, Cyrus Two is capable of competing directly with the finest and most esoteric American 'super-amps'. Independent test reports have frequently suggested that the only problem with Cyrus Two is its modest price tag, which may prejudice the most discerning of audiophiles who tend to look only at very expensive equipment. We suggest that you audition the Cyrus Two, possibly combined with the PSX, against the world's most esoteric equipment before you make your final decision.

Cyrus PSX

Given that the circuit philosophy is capable of reproducing magic and that really is what music is all about, and given that as we have already stated, Cyrus Two uses state-of-the-art components and manufacturing techniques throughout, there is only one other area of potential improvement – and that is in enhanced power supply capabilities.

Whereas the Cyrus Two has a superb internal power supply of its own, capable of unbelievable current delivery of 60 amps peak-to-peak, nevertheless the addition of the PSX can only improve things further. The PSX is manufactured in a similar case to the Cyrus Two, and plugs into the back of the Cyrus Two via an umbilical cord terminated with an XLR connector. The PSX transformer has been the subject of two years research and development and is the ultimate in toroidal transformer technology. The power supply reservoir capacitance is substantial and again the finest available components have been used. We are confident that the discerning music lover will not be able to better the performance of the Cyrus Two, using optional PSX outboard power supply, at any price.



Cyrus Tuner

The advent of digitally synthesised tuners has substantially improved the reception quality of FM broadcasts. A few problems however continue to persist in the design of most FM tuners. The most serious of these problems we consider to be sibilance in high frequencies and poor low-frequency performance. It is common knowledge that the low-frequency performance of tuners lacks authority, control, definition, and articulation – especially when compared to the latest generation CD players.

The objectives of Cyrus Electronics have been to produce an outstanding tuner where the FM section does not suffer the nagging problem of 'spitting' sibilance, and to give bass notes their rightful and necessary musical weight, tempo, and authority. The Cyrus Tuner is manufactured in a case of identical dimensions and appearance to the rest of the Cyrus range, and will suit the requirements of the perfectionist audiophile who owns either a Cyrus One or a Cyrus Two.

The design is based on microprocessor controlled digital frequency synthesised tuning, and provides 19 FM and 9 MW presets with C-MOS memory back-up. The unit provides variable speed up/down scanning, automatic search, as well as manual

tuning. Automatic FM mute is provided to eliminate irritating interstation noise. Quartz-locked tuning system is adopted for ultimate tuning accuracy and minimal frequency drift. An informative Fluorescent Tube Display electronically generates digital frequency readout, 'Tuning' indication, 'Stereo' reception and, when selected, preset channel number. For finest reception quality under adverse signal conditions the Cyrus Tuner has FET front-ends (dual-gate with automatic gain control on FM). The FM mixer oscillator is buffered to ensure high immunity to interference, and Ceramic filters are incorporated for high selectivity on both AM and FM wavebands. The Cyrus Tuner offers 'Sliding Stereo' decoder maintaining full channel separation on strong signals, and changing gradually to mono for fullest noise suppression on weak signals. PLL decoder circuitry produces a stable audio signal with optimum channel separation, and an SISC filter cuts out interference on stereo broadcasts.

Note: As mentioned earlier the products of Cyrus Electronics exclude harmful protection circuitry to ensure maximum signal integrity. Please be extremely careful not to short the speaker outputs on installation.

Note: Combinations of any two Cyrus products produce the standard rack width of 430mm to match your other equipment.



Specifications

Cyrus I Amplifier

Preamp Section:

		Cyrus I
Input Sensitivity (Ref. 1W O/P)	Phono MC	0.04 mV
	Phono MM	0.400 mV
	Line	65 mV
Input Overload (1 kHz)	Phono MC	27 dB
	Phono MM	27 dB
	Line	Infinite
Maximum Output Level	Tape Out	11 V rms
	Power Amplifier	17 V rms
Input Impedance	Phono MC	47 kOhms + 100 pF
	Phono MM	47 kOhms + 100 pF
	Line	14 kOhms
Output Impedance	Tape Out	10 Ohms + 2.2 μ F
	Power Amplifier	0.08 Ohms
Frequency Response		
	\pm 0.2 dB - 3 dB points	Phono (Ref. new RIAA) 20 Hz - 20 kHz Line 1 Hz - 55 kHz
Distortion (Total Harmonic)	Phono MC	0.02%
	Phono MM	0.005%
	Line	0.004%
Distortion (SMPTE IMD)	Phono MC	0.02%
	Phono MM	0.005%
	Line	0.005%
Signal to Noise (A-Weighted @ 1W)	Phono MC	66 dB
	Phono MM	82 dB
	Line	86 dB

Poweramp Section

Continuous Average Power	30 Watts per channel both driven into 8 Ohms 40 Watts per channel both driven into 4 Ohms
Current Delivery	10 amps rms continuous 40 amps peak to peak instantaneous
Damping Factor	100 (20 Hz - 20 kHz)
Dynamic Headroom	1.4 dB
Slew Factor	10 (input filter by-passed)
Distortion	Full power into 8 Ohms 0.004% (1 kHz) 0.01% (20 kHz)
	Full power into 4 Ohms 0.005% (1 kHz) 0.015% (20 kHz)
Net Weight	4 kgs approx.
Dimensions (wxhxd)	215mm x 85mm x 340mm

Cyrus Tuner

AM Section

Frequency Range	513-1611 KHz (186-584m)
Audio Output	0.3V RMS
Sensitivity 26 dB S/N	130 μ V
Selectivity	58 dB
MF Suppression	52 dB
Image Frequency Suppression	58 dB
Aerial Input	External Loop Aerial and External Connection Socket

FM Section

Frequency Range	87.5-108 MHz
Frequency Response	20 Hz - 15 kHz \pm 1 dB
Audio output	1 V RMS
Sensitivity (75 ohm input)	
	mono, 26 dB S/N stereo, 46 dB S/N
Selectivity	72 dB
IF Suppression	100 dB
Image Frequency Suppression	57 dB
Pilot Tone Suppression	43 dB
Stereo Separation (1 kHz)	36 dB
Signal to Noise Ratio mono/stereo	73 dB/71 dB
T.H.D. mono/stereo	0.15%/0.4%
Aerial Input	75 ohm coaxial
Net Weight	2 kgs approx.
Dimensions (wxhxd)	215mm x 85mm x 340mm

Cyrus II Amplifier

Preamp Section:

		Cyrus II
Input Sensitivity (Ref. 1W O/P)	Phono MC	0.022 mV
	Phono MM	0.31 mV
	Line	50 mV
Input Overload (1 kHz)	Phono MC	24 dB
	Phono MM	27 dB
	Line	Infinite
Maximum Output Level	Tape Out	11 V rms
	Power Amplifier	24 V rms
Input Impedance	Phono MC	470 Ohms + 6.8 nF
	Phono MM	47 kOhms + 100 pF
	Line	14 kOhms
Output Impedance	Tape Out	10 Ohms + 2.2 μ F
	Power Amplifier	0.08 Ohms
Frequency Response		
	\pm 0.2 dB - 3 dB points	Phono (Ref. new RIAA) 20 Hz - 20 kHz Line 1 Hz - 55 kHz
Distortion (Total Harmonic)	Phono MC	0.01%
	Phono MM	0.004%
	Line	0.004%
Distortion (SMPTE IMD)	Phono MC	0.01%
	Phono MM	0.004%
	Line	0.004%
Signal to Noise (A-Weighted @ 1W)	Phono MC	77 dB
	Phono MM	84 dB
	Line	87 dB

Poweramp Section

Continuous Average Power	60 Watts per channel both driven into 8 Ohms 80 Watts per channel both driven into 4 Ohms
Current Delivery	15 amps rms continuous 60 amps peak to peak instantaneous
Damping Factor	100 (20 Hz - 20 kHz)
Dynamic Headroom	1.4 dB
Slew Factor	10 (input filter by-passed)
Distortion	Full power into 8 Ohms 0.004% (1 kHz) 0.008% (20 kHz)
	Full power into 4 Ohms 0.004% (1 kHz) 0.012% (20 kHz)
Net Weight	5 kgs approx.
Dimensions (wxhxd)	215mm x 85mm x 340mm

Cyrus PSX Option

Output Voltage	-40V - 0 - +40V
Output Impedance	< 1 Ohm
Ripple	< 750 mV peak top peak @ 140 watts into 8 Ohms
Noise	< 300 μ V
Transformer Regulation	3% @ 500 VA
Total P.S. Capacity	Typically 0.1 Farad
Continuous Average Power when used with Cyrus II	70 Watts per channel both driven into 8 Ohms 125 Watts per channel both driven into 4 Ohms
Net Weight	7 kgs approx.
Dimensions (wxhxd)	215mm x 85mm x 340mm

Cyrus Mechanic

Cyrus Electronics also manufacture other outstanding components including the worlds most advanced tonearm – an expression of British engineering excellence and the ultimate statement in analogue disc reproduction.

No further description or specification will be released, but your Cyrus dealer will be pleased to arrange a demonstration by appointment.

