3

MISSION CYRUS ONE INTEGRATED AMPLIFIER

Manufacturer's Specifications

Power Output: 25 watts continuous per channel into 8 ohms, 40 watts continuous per channel into 4 ohms.

THD: 0.003% at 1 kHz and 0.015% at 20 kHz into 8 ohms, 0.004% at 1 kHz and 0.025% at 20 kHz into 4 ohms.

SMPTE-IM Distortion: MM phono, 0.003%; MC phono, 0.01%.

Frequency Response: Phono, "New RIAA" (see text) +0, −0.2 dB from 20 Hz to 20 kHz; line, +0, −3 dB from 1 Hz to 50 kHz.

S/N: MM phono, 84 dB; MC phono, 67 dB; line, 86 dB.

Input Sensitivity for 1-Watt Output: MM phono, 0.4 mV; MC phono, 0.04 mV; line, 65 mV.

Input Overload Level: MM/MC phono, 31 dB; line, infinite.

Input Impedance: MM/MC phono, 47 kilohms, 100 pF; line, 14 kilohms.

Maximum Tape Output Level: 11 V rms.

Dimensions: 8½ in. W × 3½ in. H × 14 in. D (21.6 cm × 8.9 cm × 35.6 cm).

Weight: 16 lbs. (7.3 kg).

Price: $599.

Company Address: 2461 Bellevue, West Vancouver, B.C., Canada V7V 1E1.

For literature, circle No. 92

Mission, true to its British audiophile heritage, has a very individual way of doing things. Whether you delight in or deplore that individuality exemplified in the Cyrus One will depend at least as much on your mind-set as on the properties of the component. If you approach it as a dandy little moderate-power integrated amp with remarkably simple controls and even more remarkable compactness, it should not disappoint. If sheer bench-test performance numbers are your bag, however, you may wonder how the Mission name has garnered such a sterling reputation.

These days, an integrated amp that can be balanced more or less comfortably on the palm of one hand is something of a phenomenon. The Cyrus One's front panel measures only about 8½ × 3 inches, and the chassis (ignoring the front panel's a.c. switch and the back panel's power-cord projection) is only 13½ inches deep. All the phono and line connections, and the banana jacks for the speaker connections, are mounted on a semi-recessed horizontal panel at the back, so the associated plugs need no clearance allowance.

The line connections are all standard RCA jacks (no DIN connectors, thank goodness!). A switch on the rear panel chooses between MC and MM modes for the single pair of phono inputs. The line inputs are marked "Tape," "Video," "AUX," and "CD." The omission of a tuner input is startling, but any unused line input can be pressed into service for the purpose. One output pair services the tape deck. You will need individual banana plugs on your speaker cables, because the output jacks will accept nothing else. They're even too closely spaced (less than the standard ¾ inch) to accept dual-banana plugs.

The RCA connections are all made directly to the single circuit board used in the design. Mission says it has taken special care in its choice of parts for the board—an unusual approach in a low-power model, where cost-cutting is the rule at most companies. Military-grade metal-film resistors

It's rare for a company to take a high-end approach to a low-power amplifier as Mission has done with the Cyrus One.

and polyester capacitors complement the short, straight-line signal paths, which contain a minimum of interruptions. There are no tone control circuits, for instance, and no pre/main jumpers for inserting an equalizer. Single-point grounding assures identical ground potential in all parts of the circuit.

The power-supply section is built around a toroidal transformer and employs what Mission claims are custom split-foil capacitors that deliver unusually steady current flow plus reduced interference with other electronic parts. Further reducing potential interference are the computer-aided design of signal paths and the "electrically transparent" chassis and cover (which, according to Mission, allow free passage of fields that could influence signal properties if they were reflected).

The front panel has one toggle switch (for the a.c.), a rotary "Volume/Balance" control (with an outer collar for the latter), and rotary "Listen" and "Record" selectors. Now *that's* simplicity. (Even a headphone jack, seen in some photos of the Cyrus One, was omitted in the final design.) Both selectors include "Mute" positions as well as positions for each of the available inputs, so you can defeat either the amp's output or the tape-out feed. The latter may be important, depending on the design of your deck, because the passive line circuits could be loaded by a deck whose power is off, affecting the listening signal.

Though the directness and intuitiveness of this control scheme is admirable, it has one flaw that could be preemptive if you're excessively disorganized in the way you use audio equipment. The inclusion of the "Tape" source option on the recording control permits feedback that could damage your speakers—or the amp itself—if you choose this option with the deck turned on and then switch to monitor the source—in this case, the deck itself.

The owner's manual warns you not to invoke this option, but omitting it in the first place would have made more sense. With provision for only a single deck (and therefore no possibility of tape dubbing), the sole objective served by its inclusion is the symmetry of the two selectors. Without the tape-source recording option, the recording control would have one fewer position, and the "Tape" legend on the panel would refer to the listening control alone. Somebody has gotten a bit carried away with the most superficial of design considerations, it seems.

Measurements

In general, the measurements performed by Diversified Science Laboratories document that the Cyrus One is a good product, but one with a number of unexpected quirks on the bench. Some of these will want careful consideration in the context of your overall system and objectives.

The power output data must be read in light of an addendum in the owner's manual stating that minimum speaker impedance should be 8 ohms. Since there are 4-ohm ratings on the spec sheet, the Cyrus One was tested with that load as well. Noticeable power-supply ripple did appear in the output by the time the 4-ohm rating had been achieved, and the onset of instability (rather than clipping, which had not yet occurred) was used as the criterion for the measurement of 2-ohm dynamic power.

The 8-ohm clipping output at 1 kHz was 28 watts, 0.5 dB above the rated power level of 25 watts. The 4-ohm output began to run out of steam 0.2 dB below the rating point, 38 versus 40 watts. In the dynamic power test (using the IHF pulsed signal), about 1 dB of headroom above the continuous power (clipping) output was measured, for the equivalent of 34 watts into 8 ohms and 48 watts into 4 ohms. With the 2-ohm load, output remained stable to 47 watts.

Output impedance of the power section proved quite unusual—a steady 100 milliohms at all measured frequencies, from 1 to 20 kHz, just as it was at 50 Hz. Usually, output impedance rises with frequency, to the consternation of those who believe that low impedance is even more important at high than at low frequencies, where it (or, rather, its reciprocal, damping factor) is traditionally measured. As a matter of fact, the Cyrus One's 50-Hz damping factor is 80. This number certainly is above reproach, though it's not as hefty as that of many an amp with higher high-frequency output impedance.

Driven at the 1-watt level, the amp produced negligible (less than 0.01%) harmonic distortion over most of the frequency band. The THD crept above this figure at frequencies above 4 kHz but never exceeded 0.034% at any test frequency. At rated output, THD remained below 0.02% throughout the critical midrange but increased noticeably toward the frequency extremes, to 0.035% at 20 kHz and 0.071% at 20 Hz. However, since normal music or speech signals are extremely unlikely to call for rated output at these extreme frequencies, there is little significance to these numbers. Probably more important is the predominance of the third and fifth harmonics in the distortion products at rated output but not at 1 watt, where the second harmonic predominated.

Channel separation was better than 67 dB, which is more than adequate. It decreased very gradually with frequency but still was almost 58 dB at 10 kHz.

The stepped volume control has 40 positions (in addition to full off), with graduated increments. The standard IHF test conditions resulted in a setting of 28 on this control and attenuated output by 17.1 dB (as measured in the left channel). Turning the volume lower produced increasingly large steps, beginning at 2.4 dB; turning it up produced ever finer steps, starting at 1.5 dB, jumping back to 1.7, then 1.5, then 1.0 dB, and so on, with no increment at all at the top step. While this behavior pattern (which basically mimics that of conventional tapered pots) is not as neat as one might ideally like, it is no cause for complaint either. With the balance control at its detent, output from the left channel was 0.94 dB higher than that from the right channel.

The Cyrus One amp is a joy to use and delivers better sound than you're likely to find in any other 25-watt amp on the U.S. market.

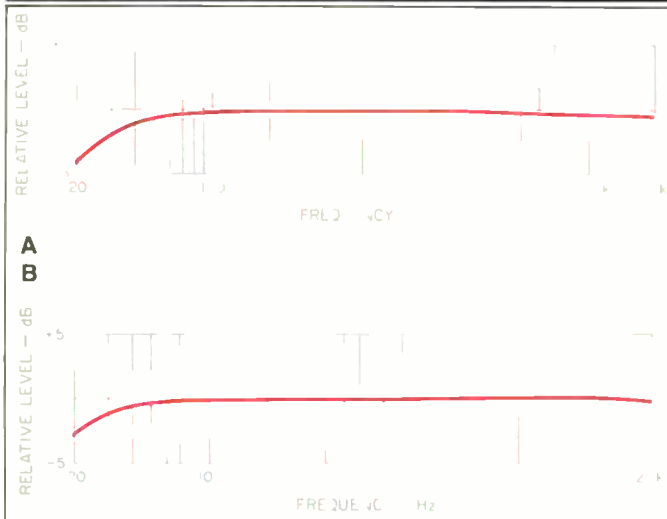

Fig. 1—Frequency response through phono section (deviation from RIAA equalization) for MC (A) and MM (B) settings. The bass roll-off is deliberate; see text.

Table I—Input and tape output characteristics.

Parameter	Input: Line ("CD")	Input: MM Phono	Input: MC Phono
S/N Ratio	88 dB	78 dB	66 dB
Sensitivity	66.4 mV	0.42 mV	42 μV
Input Overload	>10 V	78 mV	7.8 μV
Input Impedance	13 kilohms	48 kilohms	48 kilohms
Input Capacitance		260 pF	
Tape Output Level	485 mV	780 mV	780 mV
Tape Output Impedance	(Direct)	160 ohms	160 ohms

Other volume settings presumably would deliver other figures for channel balance.

The frequency response measurements proved somewhat mysterious. At the standard volume setting, output from a line ("CD") input measured +0, −0.25 dB from below 10 Hz to 17.7 kHz. The gentle high-frequency roll-off was down 0.5 dB at 24.1 kHz, 1 dB at 25.3 kHz, and 3 dB at 67.5 kHz. Turning down the volume by about 10 dB improves each of these figures (to −3 dB at 78.1 kHz, for instance), while turning it up generally shaves a bit off each—though not consistently. The differences are not large enough to be a source of concern, though the apparently erratic response is certainly a curiosity.

More startling, in a way, are the results for phono response (Fig. 1). A decade ago, there was a proposal to alter the RIAA equalization by building in a playback high-pass filter to attenuate energy generated by record warps. The proposal never was adopted in the United States, yet some manufacturers were misled into believing that it had been and designed their phono sections accordingly. When Mission refers to the "New RIAA" standard, this appears to be what it means. The high-pass filter certainly is there, in any event. It can be argued that this is either good or bad. Those who opposed including the filter in the standard saw it as an option that should be exercised only when needed—not imposed on everyone willy-nilly. In an extremely simple design like this one, however, a fixed filter probably is preferable to any intrusion of switching—let alone to the threat of power-sapping infrasonic surges on every warp. Here, the signal at 5 Hz (the heart of warp territory) is attenuated by a hefty 20 dB (slightly more for MC, slightly less for MM), which should be deeply appreciated in some systems.

Response was nearly identical for MM and MC phono. (In fact, the only significant difference between them appears to be 20 dB more gain for MC.) The roll-off at the bottom end was, of course, the top end of the high-pass filter. The MC curve fell off at a slightly higher frequency than did the MM curve: 1 dB down at about 40 and 30 Hz, respectively. The MC curve drifted off very gently above 1 kHz and was down 0.6 dB at 20 kHz. The MM option was even flatter, down 0.3 dB at 20 kHz and exhibiting a slight rise in the treble (up 0.1 dB in the region around 3 kHz). Just what these numbers will mean depends to a large extent on the nature of the cartridge feeding the section, of course.

Additional performance measurements for the phono and line inputs are given in Table I.

Use and Listening Tests

Simply put, the Cyrus One is a joy to use. Without a really good amp of similarly modest power to compare it to, its sound is hard to characterize. If I didn't hear quite the transparency or natural bloom that I associate with my standard comparison amp, that amp has much more power and costs much more (even without a preamp). And in most sonic respects, I found them well matched despite the disparity in price and power.

To approach it in a more positive light, the One will deliver better sound than I suspect you're likely to find in any other 25-watt integrated amp on the American market. Leave it to the British, who always have put astonishing care into what American audiophiles might consider "underpowered" amps, to do so with this unit. Cheap-and-dirty is the rule elsewhere.

What you make of the little quirks, like the omission of a tuner input (or, at least, of one *labelled* as such) or the nonstandard banana-jack spacing, is your business. You may find them charming, though I must admit I found them vaguely annoying. Even calling the built-in infrasonic filter (which can be a godsend in some systems) a new-standard phono equalization makes a potential virtue sound somehow devious.

What makes the Mission so satisfying to use, however, is the directness of its control scheme. It's one that (aside from the tape-feed problem discussed earlier) you simply don't have to think about. When you want to listen, you reach for the listening selector; when you want to record, you reach for the recording selector. It's that simple. In a world choking on technological kitsch, it's like a whiff of pure oxygen.

Robert Long with Edward J. Foster