

Through its work on the synchronization of sound and image with its in-camera time-recording system, Aaton has always been attuned to the needs of sound mixers.

With the spread of RF mikes, recordists were telling us they needed a machine with six to eight tracks, light and comfortable on the shoulder, sturdy, high autonomy, cosy on the cart, you-name-it.

As well, post-production people told us that they would embrace this new technology only if the dailies process was smooth and efficient.

Aaton, with its long experience in designing and manufacturing 16 and 35mm cameras plus its deep expertise in digital audio-post with its Indaw workstation, was in a good position to offer the sound professionals what they were dreaming of.

Cantar-X



A work of art for the hands and eyes

Every detail of Cantar has been honed to perfection to make the task of a location-recorder as easy as possible, while providing the utmost flexibility.

The five mics, four lines analog rotary faders as well as the six linear track faders are positioned on the upper surface of the machine in such a way that operator's hand rests on them in a perfectly natural position, allowing convenient control of the knobs, whether the recorder is on the shoulder strap or on the cart. With its twelve-degree slanted upper surface, Cantar is as easy to use as a studio mixing console.

Another practical consideration: the faders as well as the limiter and filter actuators still are at operator's fingertips when Cantar is inside a carrying pouch holding four RF mike receivers.

Cantar's three circular read-outs and alphanumeric panel constitute the largest control surface of any known portable recorder; all fundamental operational parameters are plainly visible at a glance. The display panel can be swiveled to provide the optimal viewing angle for the operator.

Audio quality second to none

The electronic circuitry of Cantar's mic inputs received particular attention: first of all, for hum and interference protection and higher signal-to-noise ratio, all five mic inputs are equipped with the high quality isolation transformers used in the best standalone mixers. Since these transformers handle up to +10dBu signals, they can also be used as balanced line inputs. The second priority was to insure high dynamic range without pre-conditioners: to this end Aaton developed a special three stage proprietary amplifier. Third essential point: the limiters and high-pass filters (-6 or -12dB slope, from 30 to 180 Hz) are merged into the analog stages and can be ganged in the same way as the analog faders. Point four: a generous Phantom 48V power supply guarantees an 8mA feed to each of the five mics.

Another important point is the high sensitivity (-25 +8dB) of the four line inputs, it allows direct RF mic connection and makes Cantar a nine mic input machine! Any input pair (AES, mic or line) can be declared as an MS couple; MS to A-B decoding is automatic during record and playback. This declaration can be used later on the mixing consoles, since it is stored in the file name of each track.

Adult-sized controls

The adult hand – even with gloves on! – was the starting point for the design of Cantar's mechanical controls. A large rotating knob (Nagra III style) is used for play-stop-test-record, and two concentric ones placed on the left side, scan the headphone routing to check input solos, director's and script's audio feeds, M/S decoding – automatically applied to up to four designated track couples –, mix-down output, etc.

The five mic rotary faders, well separated from each other can be activated by the thumb rolling over rubber 'o' rings. For longer life and reliability the knobs incorporate their own friction pad and blocking stops to protect the potentiometer

inner from rough treatments. Another unique feature of Cantar is its built-in six track linear fader panel, real-look-and-feel mechanical faders – dustproof - clearly showing both the mix-down composition and the dynamic gain applied to each track. The gain values are stored in XML files and can later be fine-tuned on Cantar during playback; embedded with the audio files, they will serve as a guide for the post-prod mixer.

Protective niche for cables and plugs

Cantar is not just another box with cables protruding every which way: its in and out cables fall neatly to the rear, keeping the connectors out of harm's way. The radio mic receiver cables make a U-turn without even getting out of the carrying bag. Since the cables and connectors are all oriented downwards when Cantar is used on the shoulder strap, they are by definition protected from the weather. In addition, all the knobs and faders being dustproof, waterproof and snowproof, Cantar is at ease whatever the location on earth.

Highly informative readouts

The circular modulometer readouts – two tracks each – are particularly easy to comprehend: the eye responds better to changing angles (ten o'clock, five o'clock, etc...) than to varying lengths of straight lines.



The peak value is accurate to the sample and the ballistics perfectly emulate needle galvanometers.

The central part of the modulometers permanently displays the activity of the three discs, the number of activated tracks, the configuration in use, MS devoted tracks, confidence mode, etc. Remaining disk space (minutes and Gb) is visible at all times.

A unique feature of Cantar is its ability to mix any number of its 18 inputs (they are ALL simultaneously active), and to route the result to any track of the machine.

The modulometer tracking dots and icons are so abundant that they can provide on-demand display of the most complex input-to-track routing as well as the pan pot attenuation values.

Long carefree hours

The power consumption of a portable recorder is a potentially stressful issue on location. Cantar takes this load off the recordist's mind by going well beyond the two hour autonomy offered by other machines. In addition to the mental security of 10 to 15 hours' operation, Cantar's twin batteries offer mechanical protection: elastically suspended on either side of the unit, they function as shock absorbers protecting the hard-drive housing. To guarantee that the operator is never taken by surprise in the middle of a shoot, the second battery automatically takes over when the first one is depleted.



Wherever he or she is on the set, you can ask the script assistant to key-in the Scene & Take Ids for you. As soon as Cantar is put to Record it calls the assistant's PDA and stores the metadata in the BWF file description field. Note that while playing back the files you can still add and/or correct these entries.

more time wasted in post-mirroring. Through FireWire also, Cantar burns the day's two-track mixdown onto CD-Rs. With the bi-directionality of FireWire, the internal hard disk is directly accessible from a Mac/PC desktop to install software updates, to make audio file copies for transmission to a server, to load pre-recorded sounds to be played back during recording – a quite useful feature for music videos and natural looking phone conversations.

Bluetooth. This universal RF system allows a PDA to remote-control all Cantar functions, displays and configurations. Scene & Take ID plus various metadata can be entered from the PDA. Bluetooth can also be used for wireless connection to an external eight track P&G console... or a simple keyboard.

Given the software controlled structure of Cantar, the PDA is an incredibly convenient way for sound mixers to store all their custom configurations so as to recall them at any time, even on another machine. Rent a Cantar, push 'Config Upload', and you are in front of a machine which is exactly configured like yours!

AES special

The 8 AES inputs are on sturdy BNC connectors; only the outputs share a subD9. Each one features a sample rate converter, thus allowing Cantar to be a frame-rate independent machine. The camera frame rate can, however, be stored in the description field of the BWF files for those who need to sync the sound to 23.98 or 29.97 VTRs. Should an AES channel carry a mono signal only, it may be routed to a single track, thus saving a track for something more useful.

Ubiquitous medias

No single media today can match the pervasiveness of CD-Rs as a means to carry audio files into any computer on earth. They are so inexpensive that there is no reason not to burn a two track mixdown for the telecine transfer and the Avid or FCP room at the end of the day, and some others for the final mix suite later.

Links to the external world

FireWire. Truly hot-plug and bi-directional, FireWire allows Cantar to record audio files simultaneously on the internal hard-drive and on two external disks. No

Technical Specifications

Media

- 2.5" 60GB internal FireWire connected hard drive, FAT32 formatting allows for up to 127GB, i.e. 5 to 60 hours depending on number of tracks (1 to 8) and sample rate (48K or 96K).
- Simultaneous recording on the internal hard disk and two FireWire connected drives; three drives at a time controlled by the lightning fast Aaton disk operating system.
- Fast copy to external hot-swappable drives powered by Cantar through FireWire: LaCie Databank, Zip drive, DVD-Ram, etc., or to the on board CD-R / DVD R burner.
- Not using a proprietary format nor compressed files, the Cantar internal hard disk is directly accessible through FireWire from a portable PC or Mac to make file modifications, copies to other medias, and for TCP/IP transmission.

Audio Format

- AES31 independent Monophonic tracks directly readable on any computer or mixing console with no deinterleaving nor decompressing delays.
- Built-in CD-R burner delivers ISO 9660 Poly or Mono files for rushes and editing two track mixdown.
- If need be, the Pyramix LRC® 'Lossless Real-time Coding' can be activated to burn – on a single CD-R – the two-track mixdown of a three hour multitrack recording.
- 16 and 24 bit, 47.952KHz to 96.096KHz sampling rates in & out.
- Working day based session recording.
- AES31 (BWF) audio file format and open XML metadata.
- Recording of several projects on the same disk.
- Files sorted on a day to day basis.
- Automatic 'unique identifier' file name generator.

Inputs

- Five ultra low noise mic preamps (XLR-3) with isolation 10dBu transformers, each with its own Phantom 48V@8mA supply, HP filter and limiter.
- Two gangable pairs (same gain, same HP filter values, majority limiter).
- Four analog, -25 to +8 dB line inputs (2 x XLR-5).
- Eight AES inputs (4 x BNCs).
- File Playback from the internal disk.

Mixer and outputs

All 18 inputs can be mixed and routed to:

- One to 8 tracks
- Stereo 1/4" headphone (MS decoding).
- Two symmetrical analog line (XLR-5).
- Two asymmetrical analog wireless IFB (mini-jack).
- Eight AES (dB9).
- Mix-down from 6 to 2 tracks through built-in linear faders, dynamic gain values are stored in XML metadata files.

Metering

- Dial shaped modulometers with 1 dB increments with peak, clip and limiter-in-action indicators.
- User-selectable ballistics.
- High contrast LCD displays highly visible in direct sunlight. Adjustable back-lighting.
- Swivelling display panel optimizes visibility for shoulder strap and cart.



Timecode & Chase

- 1ppm Tcxo reference internal clock, eight hours before re-jamming.
- Dual Smpte and AatonCode jamming.
- Timecode i/o through Lemo-5.
- SMPTE LTC chase: video-synced, sample rate converted AES outputs for on-location dubbing onto digital video tapes @23.98 -24 -25 -29.97 -30 fps.

Power

- 1.8V driven CPU and Aaton's operating system insure low power operation: 500mA in test with all inputs activated, ultra-fast cold start-up (<5 sec), and fail-safe disk control.
- Two identical on board quick release Aaton batteries (4 pin XLR) insure seamless switchover during recording (NPIs can be used too).
- Depending on the number of activated inputs and the "test-to-record" ratio, an on board battery set lasts from 10 to 15 hours.

Miscellaneous

- 2 to 15 second pre-record.
- Immediate playback of the last recorded file.
- Play back scrub, in-points markers and slate markers.
- Softwares and pre-configured routings can be downloaded from Aaton's servers and transmitted to the core OS.
- Built-in slate mic and tone generator.
- Modular structure for easy maintenance work.
- RS422 for VTR remote control through Sub D-15 serial com.
- Wireless Bluetooth link to and from Palm PDAs.

Physical

- Housings made of molded aluminium.
- Dimensions: 230 x 310 x 80 mm.
- Weight: 2.8 kg without battery (4 kg with two 2.7 Ah batteries).

AATON

bp 3002, 38816 Grenoble CdxI France
tel (33) 4 7642 9550 fax (33) 4 7651 3491
www.aaton.com/cantar