Yamaha O3D
Digital Mixing Console

Yamaha's 03D has been around for some time now, and can be
found in some interesting places. Michael Gissing takes a second look,
and discusses some of its uses outside music recording and production.

Over the past eight years, Yamaha have had the
small digital mixer market to themselves. From
the humble eight channel DMP7D to the 32
channel O2R, the product range has grown, although the
price has not. My first DMP7D cost me more than the
current O2R, although the O2R is more powerful and far
more sophisticated in features. Other manufacturers like
Tascam and Mackie are now entering the booming
'small' digital mixer market. But out of left field, Yamaha
have released the O3D. Smaller than the industry
standard O2R, the O3D is obviously aimed at the large
niches that have opened in the growing market claimed
by the O2R. So where are these niches? Where does the
O3D fit in?

At Digital City Studios, we've used four Yamaha
digital mixers over the past eight years (the DMP7D,
DMR8, DMC1000, and O2R). I have not bought an
O3D, as our minimum requirement is for 32 digital
inputs, interfaced with a dSP hard disk editor. The O3D
is 24 input and only eight of those inputs can be
digital. However, the facility that I share floor space
with has bought one. Visualeyes Productions is a
broadcast video post production facility and, with a
recent investment of over $600,000 to install an Edit
Box non-linear video editing facility, they chose the
O3D as the audio interface. The fact that the desk
could connect to the digital inputs of the Edit Box and
a digital Betacam, plus convert the analogue inputs
from a variety of other sources, made the O3D the
perfect mixer/router for this type of facility. Overseas,
some comparable facilities have installed O2R's,
although the 02R is too big for the requirement. The
irony of one of the most expensive video devices (Edit
Box) interfacing to perhaps the cheapest digital mixer
(03D), was not lost on the people at Quantel, the Edit
Box agents. They admitted that the Edit Box manufac-
turers had been thinking of making their own digital
mixer when the O3D appeared. Immediately, they
realised that Yamaha had made the perfect mixer for
their needs.

The price of the O3D makes it perhaps the most
cost-effective digital mixer available. That is why it can
be also found in the most modest home studio environ-
ment. There are very few products that fulfil the needs of
both the cheap and expensive ends of the market. So
what's the fuss about?

Overview

The O3D is a 26 input digital mixer featuring four-band
parametric EQ on all channels. Each channel can be
routed to four subgroups and four auxiliary sends, plus
the stereo bus. Direct outs on the first eight channels give
a total of 18 outputs. Ten digital inputs are possible, eight
via an interface card that slots into the single expansion
slot on the rear of the desk, and either an AES/EBU or
S/PDIF stereo input that can be used for monitoring, or
routed through the mixer. Options for the eight channel
digital interface card include AES/EBU I/O, Yamaha Y2
I/O, TDIF-1 I/O and ADAT optical I/O. This slot can
also be used for a cascade card to link multiple O3Ds
together. However, as there is only the one slot, this
reduces the number of useable inputs. Naturally the desk
offers a number of word clocking options, ranging from a
BNC word clock to selecting individual inputs on the
digital I/O card. A display shows the status of the digital
inputs, and setups like word length and dither are
available. Also, the operator has comprehensive routing
control over the card's digital output signals.

Physically, the O3D is nineteen inches wide
(460mm) and can be rack mounted. Nineteen short-
throw motorised faders handle all level controls for
input, aux sends and returns. The familiar fader flip
button lets you get to the other channels, plus the aux
and bus masters. The short throw is a bit of a worry
and, like the O2R, the faders chatter when motorised –
but hey, this whole desk costs less than a spare set of
faders for any other desk! The first eight analogue input
channels have XLR connectors for mic/line (with
switchable 48V phantom power for use with mics), and
analogue insert points on 6.5mm stereo jacks (these can
also be as direct outs). Analogue input channels nine to
16 are balanced 6.5mm jacks, as are the analogue
outputs for auxiliary send, bus out and monitor out.
Stereo output is via XLR connectors.

This desk principally operates at +4dBu levels,
although there are 'rec out' phono jacks for a domestic
amplifier or tape deck. The back panel has one YGDAI
slot for the various digital I/O cards, along with
AES/EBU and S/PDIF input and output connectors,
BNC word clock, Midi in/out/thru sockets, mouse port,
a 'To Host' connector and, as a big clue to Yamaha's
intentions for this baby, a nine pin serial port called 'To
Editor'. Even though the O3D seems to be a baby O2R,

be prepared for some surprises. Much is familiar, but it's
the differences that make for interesting speculation.

Four-band parametric EQ is available on all channels,
including stereo input, stereo output, bus outputs,
auxiliary outputs and on-board effects returns. The EQ
is the same as the O2R although the spec sheets says
that it is 44-bit processing, not 32-bit as in the O2R.
To save space and money, the O3D doesn't have
pots for the adjustment of the EQ parameters,
so adjustment is made with the cursor keys
and a single data wheel. From an operator's
viewpoint this is annoyingly slow and,
even though the O3D boasts EQ
libraries that can be recalled quickly,
it becomes annoying on any project
that requires lots of tweaking.
Realising that the removal of prac-
tically every rotary pot on the O3D
will annoy people, Yamaha have added a
mouse port. The mouse can be used on the menu
screens to switch buttons and drag values up or down. It
is also integral to the surround panning, which we'll
discuss later.

The LCD display screen is very similar to the menu
system of the O2R. There are some refinements like
header tags that show you the menus behind the one you
are looking at. This is much better than all previous
menu systems on the Yamaha desks, as you can see all
the sub menus without having to toggle through them
only to discover that the menu you want is hidden
somewhere else. Simple stuff, really, and I hope we will
see it on the O2R. The mouse also lets you select a
menu by clicking on the tab at the top of the display.
This means no more clicking through menus to get to
the one you want. The screen on the O3D takes on a
more important role than on the O2R. Because the EQ,
panning and routing have no dedicated buttons, they can
only be adjusted via the menu screens. It seems that this
desk was not designed for high speed mixing.

Because the 03D has many similarities with the 02R,
it may be more appropriate to discuss the differences
between them. This will also provide an insight into
developments for the O2R.

Surround sound panning

The most striking difference between the O2R and the
O3D is the panning. It is not normal to find surround
sound panning on a mixing desk with only 24 inputs and
four subgroups. Normally a desk the size of the O2R,
with eight subgroups and six auxiliaries, would be the
minimum requirement. To find it on the O3D before the
O2R was a surprise. There are a number of third party
vendors who have made surround panners for the O2R,
with perhaps the most useable being the dSP hard disk
automation interface and its touch screen panning con-
troller. But why on the O3D? I suspect that it is software
initially developed for the O2R, but using the O3D devel-
opment to test it out. I've been told the same software is
available for the O2R (Version 2.0).

In practical use, the panning options range from

stereo, 2+2, 3+1
and 3+2+1. Basically this
means that the desk can pan for stereo
front and rear (2+2); standard surround for Dolby type
encoding with left, centre, right, and mono surround
(3+1); or the new standard for cinema and DVD, with
left, centre, right, left surround, right surround and sub
woofer. You select the panning option on the LCD. A
display showing a view of a listener from above with
speakers arranged for the option chosen is then
displayed. To adjust the position of the panning the
channel has to be selected, followed by a choice of
left/right or front/back. The mouse makes this choice
quicker, but it is not very useful for dynamic movements
at an angle. To solve this problem, there is a surround
pan trajectory window which lets you select from six
different types of trajectory, including left/right,
front/back, diagonals and curves. By turning the data
wheel, the rate and direction of panning is determined.
Compared to a joystick or touch screen panner, this is a
clumsy device and again not good for the types of
dynamic mixing common in video and film post.

Effects

The on-board effects of the O3D differ from the O2R.
Familiar Yamaha effects like the standard Delay,
Chorus, Flange types are included, but there is a subtle
difference in the Reverb parameters. The various halls,
rooms and plate programs now have an integrated gate
with adjustable threshold, attack, hold and decay para-
meters. There are also some new effects like Amp
Simulate and Freeze. Freeze is fairly obvious, a loopable
sample with Midi control. Amp Simulate is for grunge.
The type of amplifier to be simulated can be selected
from a choice of 10. Names like Thrash and Stk-M1
(my guess is Marshall Stack), give some clue as to the
intended use. Gate, distortion and cabinet parameters
can all be adjusted.

Just for fun I put a female voice through the Amp

Simulate. I was trying to create an effect for a Sci Fi short film based on 'Blade Runner'. A woman, perhaps android, is skating through the streets and calling on a headset mobile phone. The director was hoping to process and distort the sound. A combination of pre EQ and the Thrash distortion on the Amp Simulate gave the desired effect. The cabinet parameters in this case had to be set appropriately as we did not want our android to sound like she was in a box! I can see these effects being used effectively for guitar and other applications.

Video editing

The other area that is new is the inclusion of a serial 'To Editor' connector, for use in the video editing environment. Yamaha's DMC1000 had a similar ESAM connector, but to my knowledge it was never fully implemented. Yamaha have advised that ESAM II software is now available for the 03D as an optional package (it may not be applicable for audio-only studios). The software enables channel levels, muting, panning, delays and crossfading to be controlled by a video editor. Once the O3D is setup in the Utility menu for the correct frame rate and communication parity, the rest of the settings are in the extended Automix menu. These settings are for the type of source VTR, specifically two channel or four. Crossfade type can be set with seven different patterns and three different slopes. A handy feature is the automatic level setting option. At the head of every video tape should be a 1kHz reference tone. The O3D can automatically set its channel output to a specified level by detecting the input level of this tone and adjusting up or down as required. This is a task that editors normally have to do manually, and I expect them to be excited by this feature. When enabling the ESAM II on the O3D, automix and surround panning are disabled. This is a sensible move as they are not applicable features in the video editing environment.

Remote control

The other feature of the O3D that is bound to attract some attention is the remote control of other mix engines. We all know that some hard disk systems use on-screen software mixers, and I have always felt sorry for the operators of these 'mouse mixers'. It seems Yamaha do to, because the O3D can be used to remotely drive software mixers. Obviously, ProTools users will be delighted to find a cheap controller that has the added bonus of digital inputting and multi AD converters.

I know of some ProTools owners who are using the O2R as an input device. The O3D, like the O2R, has Midi send/receive, and it also broadcasts its status via the 'To Host' port. Both desks can also be externally automated through these ports. All up, this provides the essential two-way communication needed for automated mixing. The O3D has also been setup specifically to map various hard disk mixers, saving the 03D owner from manually attempting to do this, as one must on the O2R. There are other Midi mix controllers on the market, but they are not mixers with real inputs and don't all have motorised faders to show accurate return status of mix levels. The

ability to mix on a real mixer rather than a mouse will have great appeal, although the short throw faders are again a limitation of this desk.

Yamaha inform me that, to date, they have sold over 300 O2Rs and, already, 150 O3Ds. This came as some surprise, as I hadn't expected the O3D to have done so well in such a short time. Mark Amory, from Yamaha, also agreed with my assessment that the O3D seems to fit in at the extreme ends of the market, plus a few spots in between. The Australian hard disk editor manufacturer, dSP, has included the O3D automation interface in their system, as the O3D is a consideration for radio studios running smaller eight track systems.

Summary

With the 03D, Yamaha continue their trend of surprising the market with affordable digital consoles. They have solved the problem of technology obsolescence by being so cheap that they are truly disposable. Before that inevitable day, the O3D will prove to be as useful and reliable as all the previous Yamaha digital mixers. (On the topic of reliability, an ABC technician visited my studio a few years ago to do a technical assessment of Yamaha's DMC1000, and asked me for the maintenance schedule. I told him this was the first time the desk had been opened and that, after five years of hard work, nothing had failed. He was stunned, and quickly looked for a problem. "Tsk Tsk," he muttered, "Japanese capacitors… They're only reliable for fifteen years!". Who says the ABC can't produce good local comedy?)

My initial impression of the O3D was that it was too small, had limited digital inputs, and not enough control pots. I was comparing it to the O2R and judging it from my needs in the studio. Seeing it in action at Visualeyes, I realise that the O3D fills a niche that needs a small footprint. Ten digital inputs are enough in this environment and the need to constantly change EQ and other settings was minimal. After setting up named snapshots for the video editors, they love to be able to recall settings, and don't want to fiddle. They tell me that the lack of pots is good, because it does not confuse them. There are improvements over the O2R, with better screen displays and the convenience of the mouse. As always, the most astounding feature is the price. The O3D offers much more than half the features of an O2R, and yet it is nearly half the price. At approximately $5000, it is rapidly filling the gaps left in the market by the O2R. It is interesting that Yamaha has seen those gaps and responded before other manufacturers can. While I can see some competition looming for Yamaha in the larger digital desk market, I don't see any competition for the O3D.   ⒜