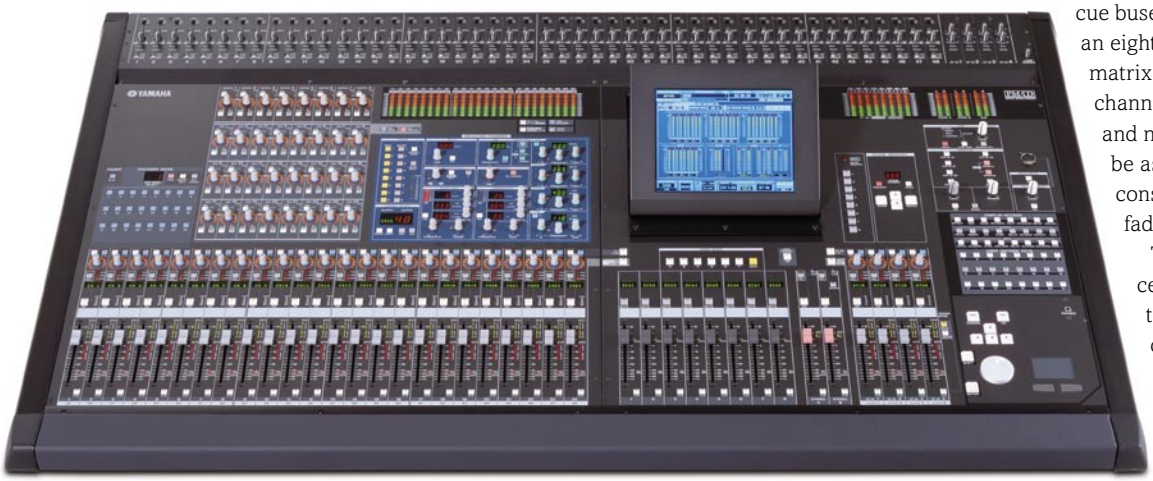
Yamaha PM5D

Yamaha's new mid-priced live sound digital mixing console looks to be creating a market all its own. Christopher Holder finds out what two pros *really* think of the new board.

Yamaha's new PM5D live sound digital console couldn't really have had a more auspicious start. If you read Issue 35 cover to cover you'll be aware that the first two consoles off the production line were snapped up by Australia's Norwest Productions for use at the Athens Olympics opening and closing ceremonies. What an endorsement! It's a bit like Michael Schumacher backing up a new Ferrari F1 onto the Monaco Grand Prix starting grid without so much as a test lap. Indeed it's worth noting how digital consoles seem to have finally broken down the barrier of conservatism in one-chance, mission critical applications like high profile live sound and broadcast work. Until recently every engineer had 'a friend' who was in the middle of mixing FOH for U2/REM/Pope John Paul (depending on who you talk to) when their digital console went into meltdown like a Sunny Boy on a summer footpath, forcing the aforementioned 'friend' to run for his life for fear of being lynched. In short, digital consoles needed to earn their stripes before those earning a crust from live sound mixing would gladly take the risk. I think it's safe to say that those reservations have largely evaporated. Yes, a digital console may crash. There again, analogue consoles have been known to 'go west' as well. There's always the risk of something unforeseen and catastrophic happening, but digital is no more a liability than analogue. So the time is ripe for the PM5D. A console that seems to be priced (starting at around $100k) and spec'ed for wide appeal – any rental company or installation with a few bob in their pocket will doubtlessly be taking a careful look at this console.



Just to sum up the PM5D's features: It's a digital console that can handle as many as 130 input connections (48 channel inputs, four stereo inputs, five two-track inputs and four mini YGDAI slots for your choice of digital inputs) to simultaneously mix up to 64 inputs to stereo (or LCR) and 24 mix buses. There's a hefty amount of on-board DSP power that runs the equivalent of a road case full of SPX2000 multi-effects processors (56 gates, 92 compressors, 97 delays, 12 graphic EQs and eight units of multi-effects). Being digital, the PM5D is fully recallable with a 500-scene memory. Also being digital it's a mere trifle to route any physical input to any fader(s) or output(s).

In terms of the routing, you have the aforementioned 24 mix buses that can function as submasters or aux sends, in addition to the stereo A and B (or LSC) and cue buses. There's also an eight-output mix matrix. Any of the input channels, mix buses and matrix buses can be assigned to the console's eight DCA faders.

Thanks to the centrally positioned channel controls you can instantly get a handle on how this console deals with assignability. Hit a channel's SEL key (on one of the two layers of 24 faders) and you have access to that channel's parameters. The corresponding details are automatically called up on the LCD. Take a look at the accompanying picture for the parameters on offer.

The other major thing to note is the two 5D versions – the PM5D and the PM5D-RH. The RH stands for Recallable Head amps. The standard 5D uses the same preamps as found on the DM2000 while the RH version uses the superior pre's from Yamaha's flagship PM5000 analogue board. As the name suggests, the RH's preamps' gain settings are stored in memory for

instant recall while the preamps on the regular version are the only aspect of the console that can't be recalled in a snapshot. Otherwise the two versions are identical.

Real Opinion

I know that's a very brief synopsis of a very sophisticated console, but I figure you can have a look at the accompanying images of the work surface and if you want more info then you're probably likely to download the 'guided tour' pdf of the PM5D off the Yamaha website, and/or organise a personal demo. So, instead of me prattling on about every last button on the console I thought I'd use the space for this article to canvass the views of a couple of high profile professionals who have recently had cause to use the PM5D in two very different settings. Firstly, there's Michael Waters who's been setting up the biggest theatre systems in the country for years and now works for Jands Production Services – he's recently configured a PM5D-RH for work on the new hit musical, *Dirty Dancing*. Michael also has been one of the first to use the optional Channel Strip plug-ins. Then there's Chris Pyne (who's been kept particularly busy over the last few years mixing FOH for Kylie) – Chris took a PM5D out on the Guy Sebastian tour of late 2004.

Michael Waters – Theatre Sound

Other than the mics, *Dirty Dancing* is a full-blown digital affair – what with the PM5D and three DM1000 sidecars for band submixing duties. Given theatre has been one of the last bastions of analogue consoles and processing, this has been somewhat of a watershed. I spoke to Michael Waters at Sydney's Theatre Royal after another popular matinee performance – these are his thoughts, listed out for ease of reading.

First Impressions – My impressions were almost uniformly favourable. It's versatile, it sounds great, and it's very compact – which are probably the three main criteria for a theatre console.

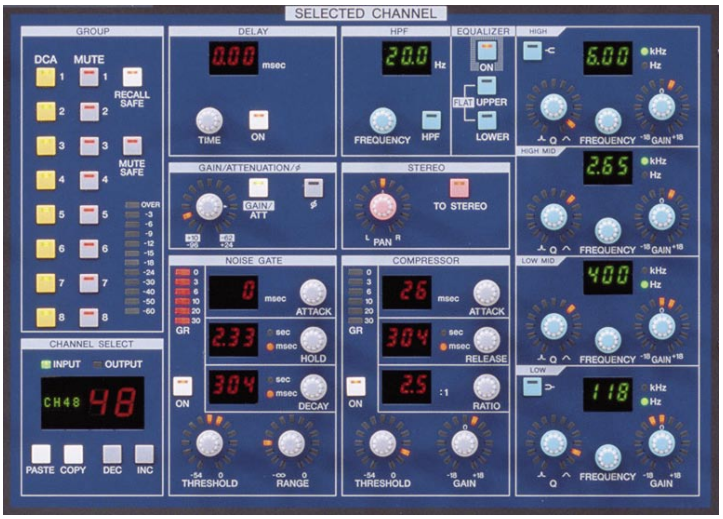
Learning Phase – This is a very easy-to-use console, but like any digital device you have to spend the time to get to know the operating system and interface. The biggest thing for me was the fact that there are multiple ways of interrogating different parameters on the display, so you need to settle on the way that best suits your purposes. For example, if you want to get to an effect and get to the parameters of an effect, there are a number of ways to get to that screen. Learning to access a scene quickly was the first hurdle. Once you work out where you're going and settle on a means to get there, then you're set.

Two Fader Layers – For this job, having just the two fader layers has actually been an advantage. We've managed to put all the radio mics of the singers and actors onto one layer, and the second layer comprises stereo returns from three DM1000s and eight special effects returns from the laptops.

I/O Constraints – The PM5D is obviously not a large format console like a Cadac J-Type or a Midas XL4, and the most noticeable indication of that is the fact you're limited to 24 mix outputs. For my purposes that's the main constraining factor of the PM5D. There are more than enough inputs but it's the bussing that forces me to think carefully about how to organise my outputs.

The Display – Unlike large format digital consoles the PM5D has only the screen. The screen automatically switches to whatever channel you're dealing with – it's an intelligent approach that works well. For theatre, I think it would be handy to have another monitor output to display a cue list on a separate screen which would function independently of the on-board screen.

Operating System – Being Yamaha, this console



Selected Channel Controls

Group – This section controls channel to DCA and Mute group assignments. The Group section also includes Recall Safe and Mute Safe assign keys that engage or disengage recall safe and/or mute safe status for the currently selected input channel.

Channel Select – Used to select the channel to which the Selected Channel controls will apply. Copy and Paste function are also included, allowing you to copy all parameters from one channel to any other channel.

Delay – Turns the channel delay on or off, and sets the delay time from 0 to 1,000 milliseconds for the selected input channel.

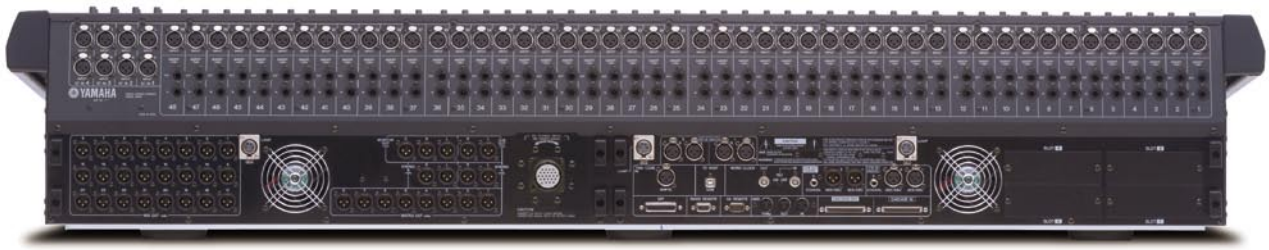
Gain/Attenuation/Ø – When the Gain/ATT key is on, the encoder adjusts the gain of a recallable microphone preamplifier patched to the input of the selected channel. When the Gain/ATT key indicator is off, the encoder adjusts attenuation for the selected channel. The Ø key inverts the phase of the selected channel.

Noise Gate – For noise suppression, ducking, and other gate functions. Control is provided by independent threshold, range, attack, hold, decay parameters, keyins and keyin filters.

Equaliser & HPF – A four-band equaliser section with high and low bands switchable for shelving or peaking response, variable frequency and Q on all bands, and an independent variable-frequency HPF. Since eight-band EQ is provided for output channels, Upper and Lower keys are provided to assign control to the upper or lower four bands.

Stereo – The Stereo section allows the currently selected channel signal (input, stereo input, effect return, mix) to be routed to the stereo bus with pan control.

Compressor – A full-featured compressor/expander/compander module with independent threshold, range, attack, release, knee and ratio parameters. Like the noise gate section, the compressor section includes a six-segment gain reduction meter.



is rock solid. Yamaha is renown for its reliable and mature operating system.

Flexibility of Digital – Working with a fully automatable digital console in theatre has a lot of advantages. We're doing some interesting stuff that would be simply unmanageable with an analogue console. For example, we have a few scenes where a couple of words are said from side of stage – drawing people's attention away from the main action at centre stage. So Colin, the operator, is able to hit the next cue and those mics for that little vignette are panned far right for a couple of seconds then panned back immediately to the centre. Also, there are a couple of instances where we've needed to apply radical EQ and processing and the scene automation has made that possible. They're simple things, but difficult to achieve conventionally, simply because the operator spends most of his energy paddling the faders of the dialogue radio mics ensuring every word is heard and other open mics are dropped down – there's really no time to be fiddling about with pan and EQ during the show.

Dominance of Analogue in Theatre – People have been scared of digital. In the earlier days of digital there were cases of consoles locking up etc, and people just couldn't afford to take that risk. People are now becoming more comfortable trusting digital consoles as the reliability has increased.

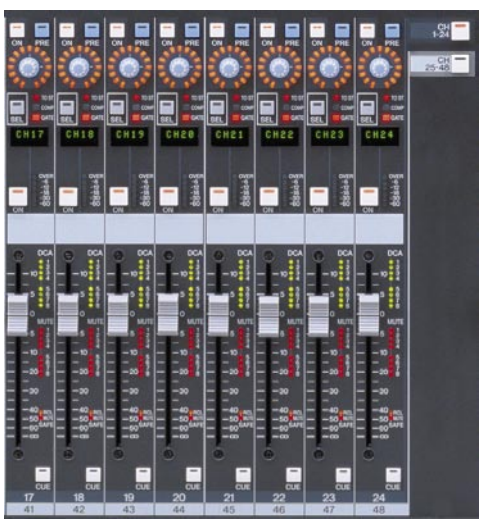
Head Amps – We have the PM5D-RH with the PM5000 head amps and they sound great, as do the converters. For theatre, the main demand is for clean, clear and dynamic sound. If a punter complains about a song being too loud, what they're actually complaining about is distortion – the stuff that hurts their ears. If it's clean and loud then you won't hear a grumble. Our final number on this show peaks at 110dB and we haven't had a single complaint.

On-board EQ & Dynamics – Very hard to fault. The first thing I had to get used to was how sensitive the pots are – you only have to breathe on them. The gates are really good. You don't get that click which a lot of high-quality outboard devices will give you free of charge… so stick one on the kick and you don't get that click. You can make them really tight without distortion. Same with the compressors. In fact they can kick in

Channel Strip Controls

Layer Select Keys – The CH 1-24 and CH 25-48 layer select keys determine whether the console's 24 physical mono channel strips control channels 1 through 24 or 25 through 48.

Encoder On Key (Upper) – Turns encoder-assigned functions on or off. For example, it can be used to switch the send to the mix bus on or off.



Pre Key – Selects pre or post mix send.

Rotary Encoder – The channel strip rotary encoders are multifunction and user defined. They can function as mix send level controls, channel pan controls, head amplifier gain or attenuation controls, or as alternate-layer level controls.

To Stereo, Gate, & Comp Indicators – The To Stereo indicator lights when the channel signal is feeding the stereo mix bus. The Gate indicator lights when the channel gate is on, lights dimly during gate attack or decay, and goes out when the gate is open. The Comp indicator lights when the channel compressor is applying gain reduction, lights dimly during compressor attack or decay, and goes out when no gain reduction is being applied.

SEL Key – Assigns the corresponding channel to the console's Selected Channel control section and to the built-in LCD. The SEL keys can also be used to assign channels as stereo pairs.

Channel Name Display – This four-character display shows the assigned name for the corresponding channel. The name dims when the channel is muted.

CH On Key (Lower) – Turns the corresponding input channel on or off.

Meter – A six-point LED meter displays the channel input level.

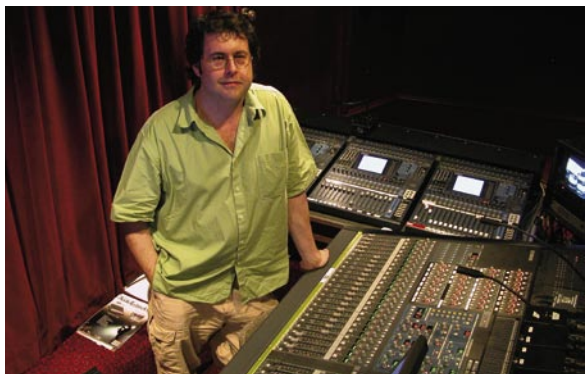
DCA Indicators – The console's input channels can be assigned to any of eight DCA. The DCA LEDs indicate the DCA faders to which the channel is assigned.

Mute Indicators – Input channels can be assigned to eight mute groups for mute control. The Mute LEDs indicate the mute groups to which the corresponding channel is assigned.

RCL & Mute Safe Indicators – The RCL Safe LED lights when the channel is set to the Recall Safe mode so that it will not be affected by scene recall operations. The Mute Safe mode prevents the channel from being affected by mute group operations.

Channel Fader – 100mm motorised faders control and display the channel input level, or the send level to the selected mix bus when the Fader Flip mode is on.

Cue Key – Sends the channel signal to the cue bus for monitoring according to the currently selected cue mode: Last Cue, Mix Cue, or Solo and various function settings.



Michael Waters behind the PM5D-RH used for the world premiere of Dirty Dancing. Behind him are three Yamaha DM1000s taking care of the band submixes.

really quickly – you have to be careful about not overdoing it.

Optional Add-on Effects – We're running the option Channel Strip suite of four compressors and EQ. It's just a matter of loading up the effects and assigning it to an effects engine. The compressors emulate the likes of the Urei 1176 and they sound fantastic – transparent and interesting and very different to the onboard compressors. We use Channel Strip on our featured vocalist and the bass.

Outboard Rack? – The beauty of going fully digital is we've completely eliminated outboard gear. All we have in the rack is playback equipment and a headphone amp. It's quite a watershed… in fact we were actually turning stuff down. Normally you need to make a strong case for extra gear, but this time: no, no, keep it. I mean, you've got 16 effects engines sitting here in the 5D, so if you can't make a sound out of that, you've got a problem.

Interrogation – For us, if there's a problem it'll be on the first fader layer of radio mics – whether it's a faulty transmitter, a hair in a capsule or whatever. Every channel has a meter so you're not left scratching your head about where any bangs or pops are coming from. And because of the small footprint of the PM5D it's easy to reach for something quickly – you're not running from one end of the board to the other. Needless to say, the producers love the size of the console as well. The compact size means more room for seats, and for a sell-out show like *Flashdance*, that translates into big money.

Chris Pyne – FOH Sound

As mentioned earlier, Chris Pyne was one of the first engineers in Australia to take the PM5D out on tour on the occasion of Guy Sebastian's inaugural trans-Australian jaunt. I caught up with Chris while he was in Perth in the midst of an *Australian Idol* tour.

Initial Impressions – It's a neat console. I went with the PM5D almost sight unseen. I'm quite familiar with the 5D's big brother (the PM1D) so I figured it wouldn't take much to get to know. As it goes, anyone who's used a Yamaha '0' Series mixer or a DM2000 will already have a fair idea of how to get around the console.

Sound – It's pretty clean and clear. There's nothing that struck me as out of the ordinary. Although there was one

aspect of the gain structure that I didn't initially understand. When I set up my input gains everything was too hot, and as a result there was quite a bit of hiss. It turned out that there are two levels of gain adjustment: there's the gain on the preamp, then there's channel attenuation control – which I thought was very strange. I understand that Yamaha is going to tweak that aspect and in the end it wasn't an issue… but it's certainly a trap for new players.

On-board Effects & Processing – There's a lot of very usable on-board effects and processing. I still used an Avalon voice channel for Guy's vocal and it's a little too soon to drag me away from my Drawmer noise gates, but I used the on-board effects and dynamics for everything else.

Automation – I had five days of production rehearsals for the Guy Sebastian tour and I was able to store songs, cue and EQ changes, and fader moves. The arrangements were quite complex and busy, so the 5D's recallability was invaluable.

Single Screen Approach – Personally I don't think one screen is enough. I know lots of people will dispute that and in the end it's about budgets and 'horses for courses', but I just don't think the one screen gives you enough information in real time. Yamaha has done well in that there's enough metering and indicators to drive the console without much recourse to the screen, but when you've got gates, compressors, graphics, reverbs etc etc all functioning under the one bonnet it's slightly unnerving not to be able to see all those pumping away simultaneously in the rack. I think that observation is particularly true in applications where all hell can break loose. I'm more of a seat-of-the-pants engineer so I like to have as much info in front of me as possible.

Two Fader Layers – Initially I tried to configure the desk up with 'set and forget' stuff on the second layer but I was quickly getting the hang of switching between fader banks so it wasn't an issue. On that front Yamaha has a neat feature where you can set up a stereo pair of faders with the second fader hidden underneath the first fader. Which is very clever. But on the other hand they do something weird like not allowing you to stereo link an even-numbered fader next to an odd-numbered fader – for example, fader 1 and 2 is fine, but you can't link fader 2 and 3. So you have to be careful how you plug in your inputs.

Ergonomics – Ergonomically, the PM5D represents a learning curve for anybody. But that's true of the Digico or the Innovason consoles – digital consoles require a certain amount of homework. With an analogue board you can have your eyes shut, thinking about the mortgage payments and still be able to operate the console. With the PM5D it's more like – I've got to do this, then this, then this. So you've got to actively train yourself to think in a different manner to operate it properly. That's a purely ergonomic issue, it's nothing more than that. The longer you stay with it, the faster you get.

Perfect for… – As it was explained to me the PM5D is a $100k 'entry-level professional' digital console. It's not a $250k console, like a D5, and it's not a $40k DM2000. I mean, I have colleagues in Europe who have been using the DM2000 for FOH duties and the PM5D is a definite step up from that. But equally, it's not designed to be a drop-in replacement for a console three times the price. If you're a PA company thinking about buying a digital console, but can't afford a quarter-of-a-mill for a D5, or more for a PM1D, the PM5D is the perfect choice. And it's particularly suitable for theatre shows and more structured-format shows where you can store each cue… it's perfect for that type of application. You can change and store any parameter that you want. And the onboard effects, dynamics and EQ are great. Just don't expect to be able to wheel it into position and think the uninitiated engineer is going to 'get it' without preparation and some coaching.

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Price

- *PM5D Tourpack: $85,000; PM5D-RH Tourpack: $110,000 (Tourpack includes console and 2 x power supplies, all fully roadcased)*