YAMAHA

03D

DIGITAL MIXING CONSOLE

Full-featured, fully automated, and fully compatible, it's the Yamaha O3D Digital Mixing Console.

If you're ready for a compact, comfortably priced, full-featured digital mixer one especially made for professional project and post production studios relying on modular digital multitrack recorders such as TASCAM, ADAT, AES/EBU and YAMAHA digital formats then you're ready for the 03D Digital Mixing Console. Nestled between the popular ProMix 01 famed for bringing affordable digital mixing to the masses and the award-winning, industry-standard 02R Digital Recording Console revered for defining a new age in cost-effective professional digital mixing the rackmountable 03D is a self-contained, 26-input/18-output fully-automated digital mixing console in its own right, destined to set new standards of its own. The 03D features an intuitive user interface, ease of operation and a long list of essential professional engineer's tools including fast 32-bit internal digital audio processing, versatile analog and digital I/O configuration with 20-bit ADs and DAs, 32-bit onboard multi-effects processors with freeze (sampling) and guitar amp simulation effects, motorized faders, fader and mute grouping, surround sound mixing, scene snapshot memories, onboard automation, MIDI remote capabilities, plus convenient cascading options which make it the ideal companion for an 02R or another 03D.

Options

CD8-TDII

CD8-AT

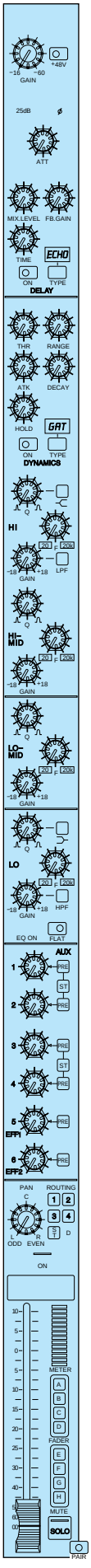
CD8-AE-S

CD8-CS KIT

Options		Model	Connector
I/O Interface Card	TASCAM	CD8-TDII	D-sub 25pinx1
	ADAT	CD8-AT	OPTICALx2
	AES/EBU	CD8-AE-S	D-sub 25pinx1
	YAMAHA	CD8-Y	D-sub 25pinx1
Digital Cascade Kit*		CD8-CS KIT	D-sub 25pinx1

*...2xDigital Cascade Card, 1xD-sub Cascade Cable

Options	Model
Rack Ear	RK124



Streamlined but naturally intuitive, the 03D provides instant access to and easy manipulation of parameters via onboard controls or a PC-compatible mouse (optional), plus a large, backlit 320 x 240 dot fluorescent graphical display. Four user-defined switches are ideal for controlling external multitrack recorders via MMC (MIDI Machine Control).

Balanced analog inputs and outputs, individual phantom power switches on channels 1-8, stereo AES/EBU and coaxial digital inputs and outputs, TO HOST and MIDI terminals, YGDAI (Yamaha General Digital Audio Interface) slot and more make the 03D suitable for virtually any professional mixing application. Direct connection of a PC-compatible mouse (available separately) permits even quicker navigation and parameter editing.

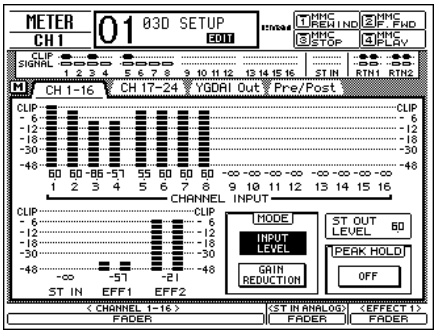
The 03D provides all the familiar features of a traditional analog mixer channel strip, plus the digital convenience and flexibility of scene storage and recall, EQ, dynamics, channel and effects libraries, full onboard automation, and much more.

26-inputs and 18-outputs with highly flexible digital I/O

The 03D's flexible configuration of analog and digital inputs and outputs makes it suitable for a wide range of professional mixing applications. Included are 24 input channels and a fully-featured stereo input for a total of 26 inputs plus 4 bus outputs, 4 auxiliary (and 2 internal) effect sends, a main stereo mix bus and a solo bus. Stereo digital inputs and outputs, plus 8 digital inputs and outputs (optional, via a YGDAI slot), provide a total of 10 digital inputs and 10 digital outputs.

Input channels 1-8 have mic preamps, XLR and balanced stereo 1/4" phone connectors, and individual phantom power switches, and can accept input levels from -60dB to +10dB. Inputs 9-16 feature balanced stereo 1/4" connectors and support line level signals between -20 and +10dB. All 16 channel inputs feature input gain controls with 30 detents for precise and repeatable setting. Channels 1 and 2 include analog inserts for connecting external dynamics processors. Aux sends and bus outputs can be paired together for stereo operation and can be routed to the control room monitors for cue mixes, with onboard effects returns included. The four bus and four aux send signals are output via balanced stereo 1/4" connectors.

Coaxial and AES/EBU stereo digital I/O connectors permit direct connection to DAT recorders and other compatible digital devices. The stereo digital input signals can be routed to the stereo bus for submixing, or to the stereo input channel for mixing and processing. The number of inputs can be increased by digitally cascading two 03Ds together, with both sharing bus, aux, stereo, and solo busses. The 03D can also be digitally cascaded with an 02R.

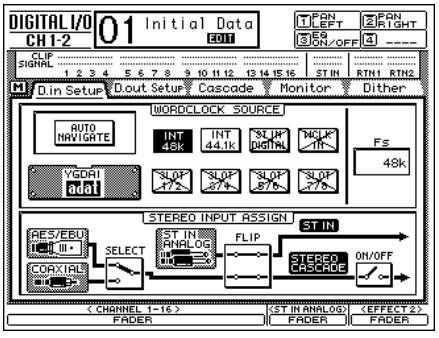


METER screen pages display all channel, stereo in and effect 1 and 2 input levels visually, as well as aux and bus output levels.

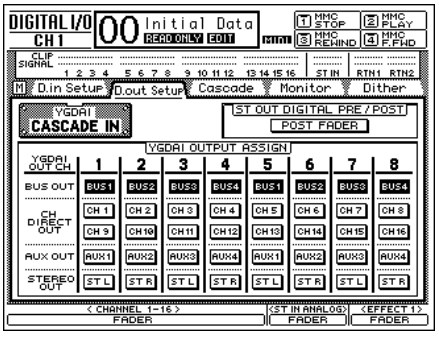
Maximum compatibility through YGDAI open system

The 03D's YGDAI (Yamaha General Digital Audio Interface) slot which accepts the same single-size YGDAI cards as the 02R provides 8 digital inputs and 8 digital outputs for direct digital connection to all major modular digital multitrack recorders (including Alesis ADAT, Tascam DA88 and DA38), disk-based recording systems, and AES/EBU and Yamaha format systems.

The YGDAI digital outputs can be configured as bus outs, aux sends, direct outs, or stereo outs so although the 03D is essentially a four-bus mixer, you can assign the four busses and four aux sends to the YGDAI slot's eight outputs to achieve eight-track simultaneous recording.



The Digital In Setup screen permits easy setting and confirmation of word clock source, stereo input assignment and monitoring word clock locking status.

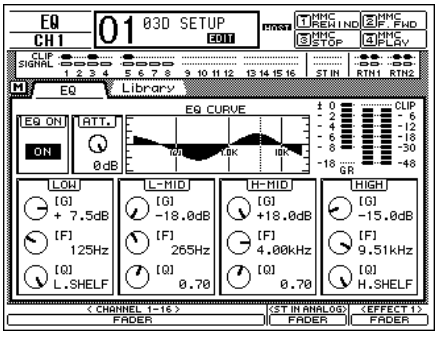


The Digital Out Setup screen permits easy setting and confirmation of YGDAI output assignments, bus channel direct, aux and stereo output.

Individual channel PEQ and dynamics processors

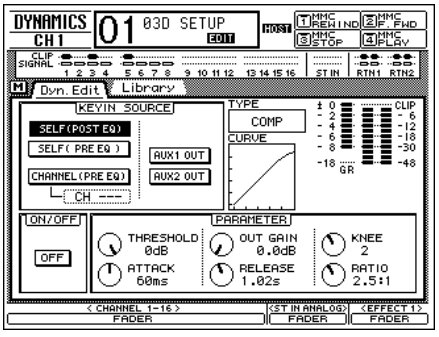
The 03D features an uncompromising array of onboard parametric EQs and dynamics and effects processors, with signal processing performed by Yamaha's custom 32-bit DSP chips same as in the 02R and available parameters selected in collaboration with professional sound engineers. Comprehensive libraries of preset EQ and dynamics settings provide a great place to start or for reference, and plenty of user programs are available to store your own. 40 four-band parametric EQs and 40 dynamics processors are available for all 26 individual channel inputs, the 2 onboard stereo effects returns, the 4 bus outputs, 4 aux sends, and main stereo outputs.

Each EQ band has a range from 20 Hz to 20kHz which can be adjusted in 1/12 octave steps and a 0.1-10 Q range. High and low EQ bands can be configured as shelving or peaking, with the high band capable of being configured as LPF, and the low band as HPF. EQ gain settings range from -18 to +18dB. EQ settings can also be copied between channels via the equalizer library. The EQ library's collection of 40 preset EQ programs include specific settings which can be applied to everything from acoustic and electronic instruments to percussion to vocals. Including the 40 memories for storing your own EQ settings, a total of 80 EQ programs are available.



The four-band EQ features a "quick-draw" graphic EQ curve, providing the engineer with a clear and visual image of the channel EQ.

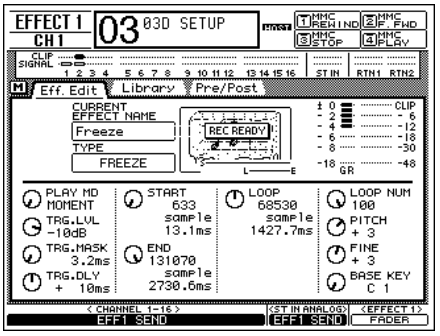
The onboard dynamics processors include compressor, expander, gate, ducker and compander functions, and a total of 80 dynamics memories. Any input channel (1-24 or stereo input) can be used as a key trigger, and AUX 1 or AUX 2 can be used as a key-in signal for any channel. The dynamics library's collection of 40 preset dynamics programs include settings appropriate for the mixing of strings, brass sections, sampled percussion, vocals and more, and 40 user dynamics programs are available for storing your own.



The 03D allows fine-tuning of all dynamics parameters, complete with gain reduction metering and a graphic curve for visual monitoring of applied processing.

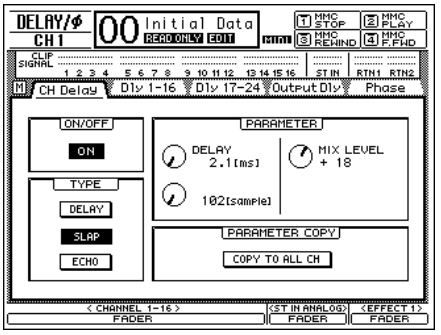
2 effects processors with Freeze and Amp Simulator

The 03D's two powerful new sets of effects processors which utilize the same DSP and some of the same algorithms as Yamaha's ProR3 and REV500 feature 64 basic presets, with various reverb, delay, echo, chorus, flange, pitch shifting and other effects to choose from, as well as the new freeze (sampling) and amp simulator, or guitar preamp, effects. Including the 32 user memories, a total of 96 effects are on hand.



New Freeze (sampling) and Amp Simulator (guitar preamp) effects greatly expand the 03D's onboard sound processing power.

The 03D also features channel input delays of up to 200ms which is useful for microphone-placement compensation for live recording and video editing. Channel delays can also be mixed with the dry signal to provide delay and echo effects. Output delays, for the stereo and 4 buses, of up to 40ms are useful for applications which require delay-compensation on the outputs.



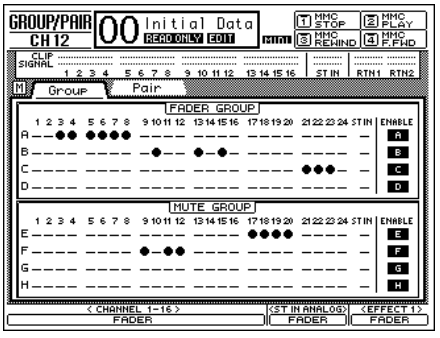
DELAY/ø screen pages allow access to channel input and output delay parameters as well as channel phase settings.

50 scene memories

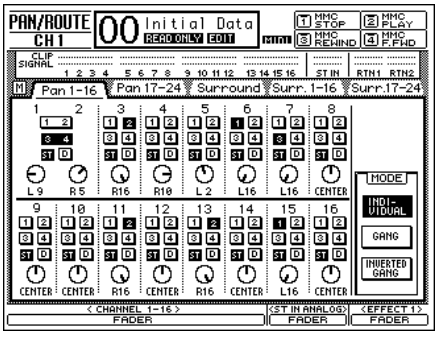
Mix snapshots of entire setups, or scenes, consisting of approximately 2000 parameters including all input channel-to-bus routing and output configurations, fader and pan positions, EQ and dynamics settings everything can be stored and recalled instantly using the 50 scene memories. Scenes can be recalled manually, by MIDI, or using the automix function. A Recall Safe feature permits selected channels to be isolated from scene memory recalls. An UNDO/REDO function permits undoing and redoing of scene memory recall operations.

Motorized faders, and fader and mute grouping

The 03D's quick-response, positive-feel 60mm motorized faders function as conventional mixer faders, auxiliary send level controls, and on-board effects aux send level controls, depending on current status. When a scene memory is recalled, the faders position themselves automatically to the levels stored. During playback of an automix, fader movements are replayed automatically in synchronization with MIDI time-code. Adjacent odd/even number channels can be linked in pairs, with panning either independent or ganged. You can control two adjacent channels paired in stereo using only one fader.



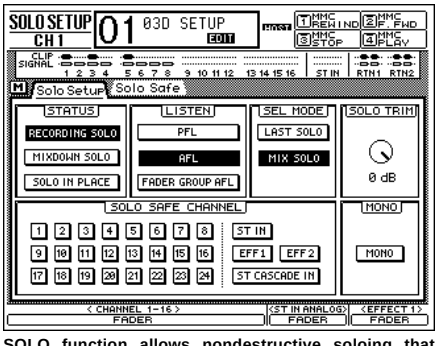
4 fader groups and 4 mute groups work independently to let you build up complicated mixes fast.



Panning and output bus assignments are displayed graphically and are easily accessed.

Crossfade, auto-fade, and solo in place

A crossfade time of up to 10 seconds, in 0.1-second steps, can be set for faders as part of a scene memory. You can auto-fade the stereo output fader using the built-in automation based on MTC time-code, or by setting a crossfade time in a scene memory.

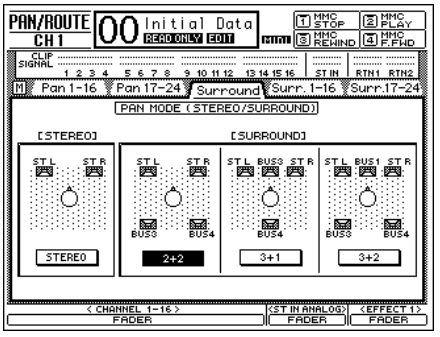


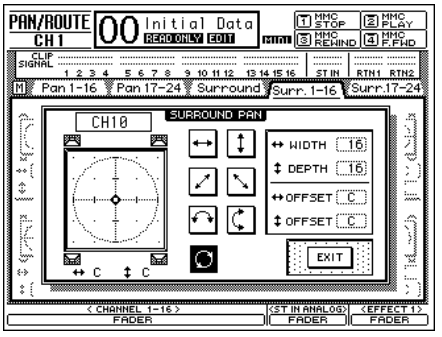
SOLO function allows nondestructive soloing that doesn't affect the main stereo mix, plus Mixdown Solo and Solo in Place.

Comprehensive monitoring functions include Recording Solo mode, where the SOLO bus feeds the monitor output, allowing nondestructive soloing that doesn't affect the main stereo mix. There's also Mixdown Solo mode, where the stereo output is connected to the monitor output, so solo affects the stereo output. And there's Solo in Place, where the SOLO bus is connected to the monitor output, and also solo affects the stereo output.

Surround sound mixing

With the 03D, surround sound mixing suitable for CD-ROM and DVD productions as well as audio post applications is built right in. Three types of surround sound configurations are available. The dedicated pan page provides precise control.



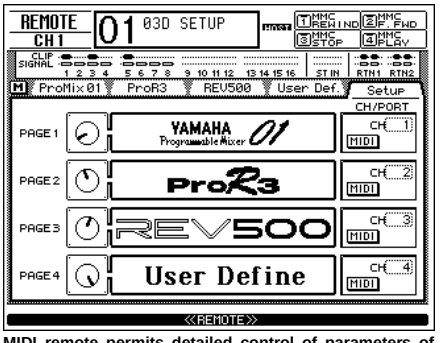


MIDI remote control

MIDI IN, OUT and THRU terminals permit control of all parameters (approximately 2,000) in realtime using MIDI Control Change and System Exclusive messages. The 03D's MIDI remote function is extremely powerful. MIDI remote allows the 03D's motorized faders to remotely control the internal levels in a digital audio workstation, or the faders can be used to edit the internal parameters of an outboard effects processor or synthesizer.

03D faders and four user definable buttons can be used to control other MIDI devices such as digital audio recorders and processors via MMC (MIDI Machine Control). A TO HOST (RS422) port permits direct connection to a personal computer without a MIDI interface.

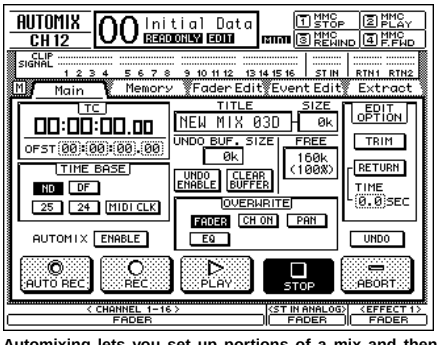
Scene, EQ, dynamics, effects and channel library user memory, and automix data can be saved using MIDI bulk dump operations to a MIDI data filer (such as the Yamaha MDF2 MIDI Data Filer) or MIDI sequencer.

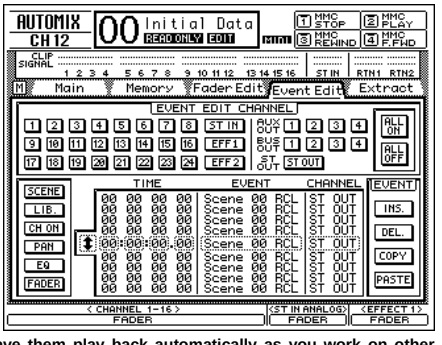


MIDI remote permits detailed control of parameters of external devices.

MTC time-code based "automixing" provides full onboard automation

The 03D also allows full onboard dynamic automation unprecedented for a mixer in its price range of all faders (including the AUX send faders) as well as channel on / off, EQ, pan and surround pan, and scene, EQ, dynamics, effects and channel libraries, can be automated by snapshot. You can easily and quickly update dynamic changes in realtime, and even insert and modify parameters "off-line" using the Event Edit function. There are four automix memories and one current memory. Recording and mixdown automation can be synchronized to external MIDI time-code (30NDF, 29.97NDF, 30DF, 29.97DF, 25, and 24).





Automixing lets you set up portions of a mix and then have them play back automatically as you work on other automix dubbing. You can also insert and modify specific parameters "off-line".

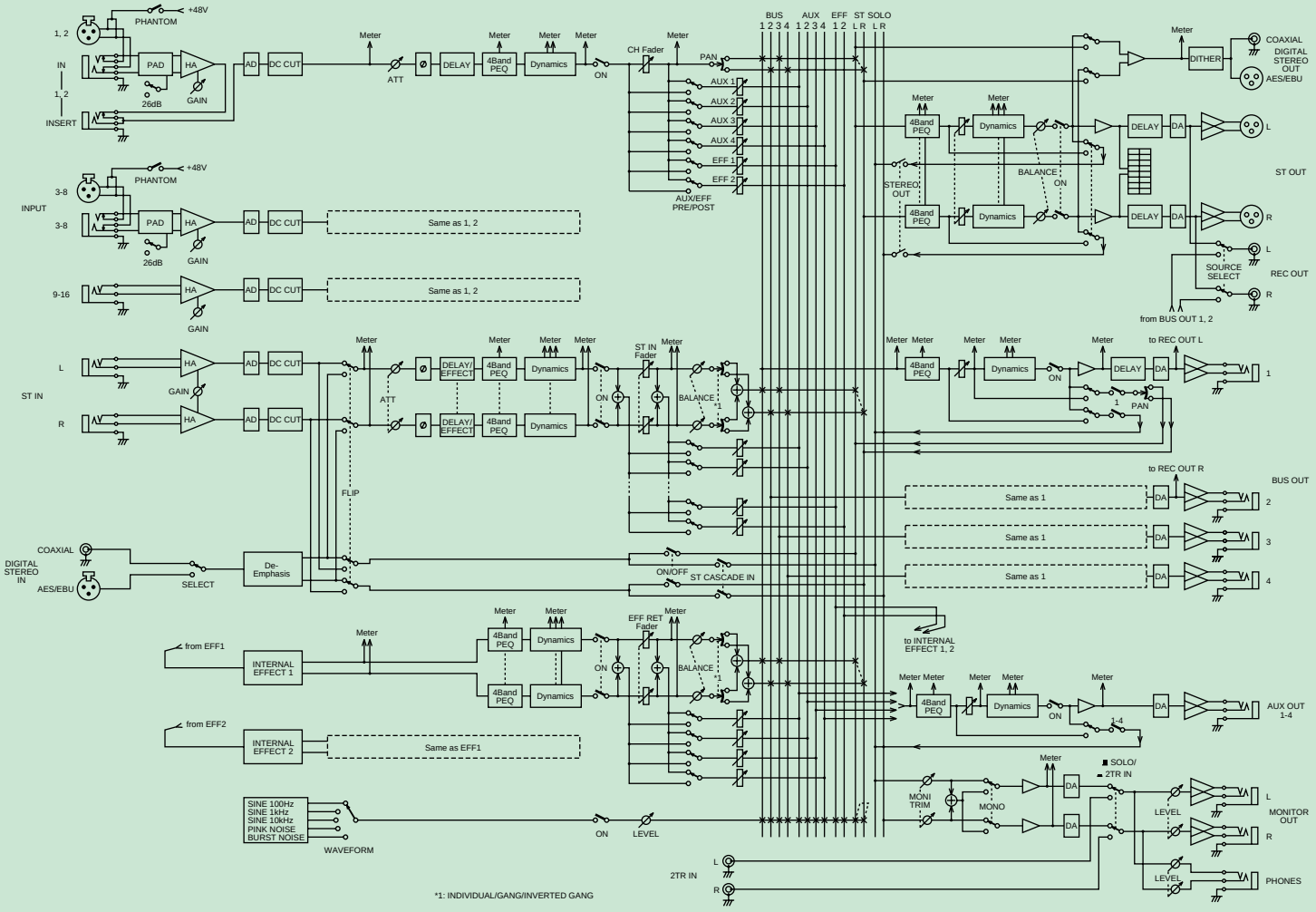
Twin RISC CPUs with 32-bit DSP processing, and 20-bit AD/DA

The 03D's twin RISC CPUs ensure fast and reliable control of LCD graphics, faders and automix. Internal audio processing is performed at 32 bits by the powerful Yamaha DSP chip, providing a dynamic range of 192dB. Uncompromising sonic quality and performance are guaranteed by 20-bit, 64-times oversampling AD converters on each input and 20-bit, 8-times oversampling DA converters on the stereo output and monitor output. Bus outputs and aux send outputs use 18-bit, 8-times oversampling DA converters. The audio dynamic range is an impressive 105dB for analog input to analog stereo output.

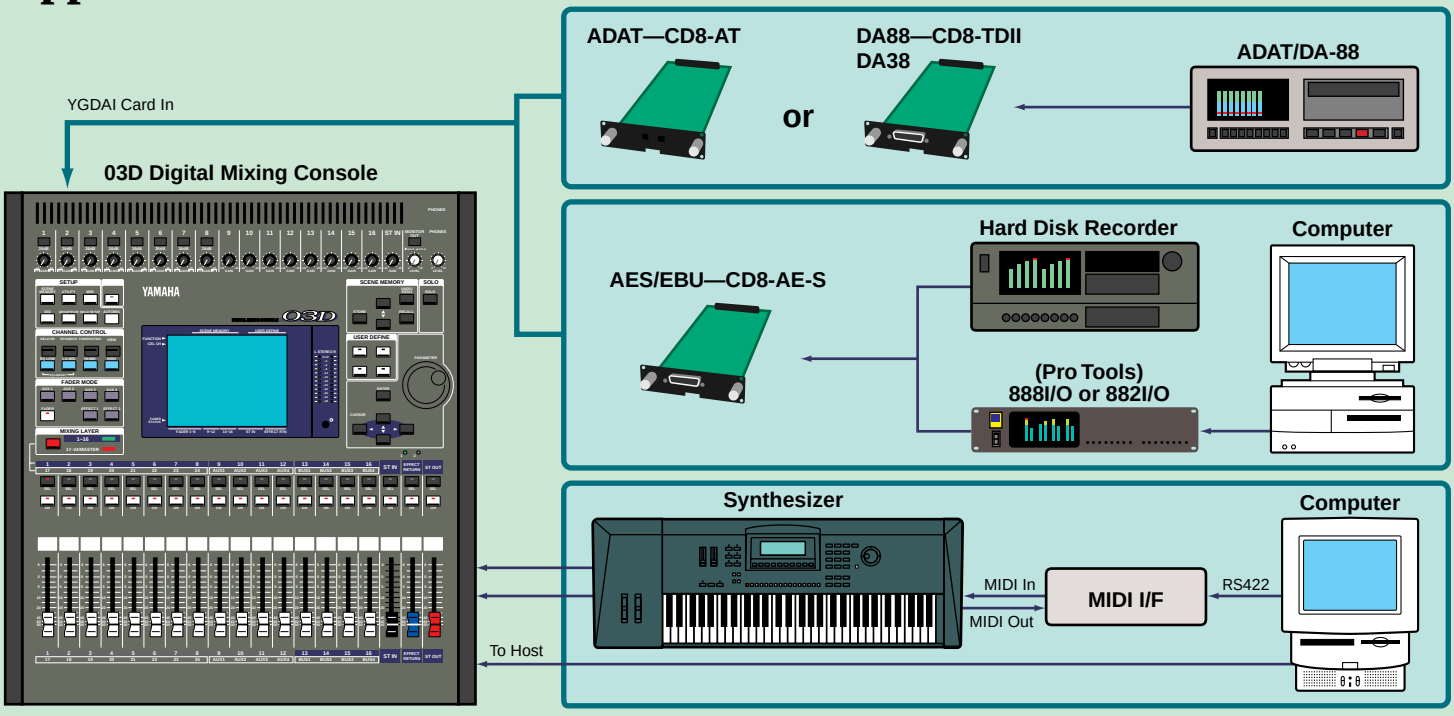
YAMAHA 20 BIT AD/DA

YAMAHA 32 BIT PROCESSING

Block Diagram



Applications



Specifications

General Specifications

Frequency Response		20 Hz–20 kHz+1, –3 dB (+4 dB into 600 Ω)
Dynamic Range		110 dB min. STEREO OUT D/A converter
		105 dB typ. STEREO IN to STEREO OUT (AD/DA)
		100 dB min. STEREO IN to STEREO OUT (AD/DA)
THD (Total Harmonic Distortion)		Less than 0.1% (20 Hz-20 kHz @ +14 dB into 600 Ω)
		Less than 0.01% for STEREO IN to STEREO OUT (1 kHz @ + 18 dB into 600 Ω)
Hum & Noise* (20 Hz-20 kHz) Rs = 150 Ω, input gain = max. input pad = off, input sensitivity = –60 dB		–128 dB equivalent input noise
		–94 dB regidual output noise from STEREO OUT (STEREO OUT = OFF)
		–94 dB (98 dB S/N) STEREO OUTPUT. Master fader at nominal level and all CH faders at minimum.
		–64 dB (68 dB S/N) STEREO OUTPUT. Master fader and one CH fader at nominal level.
Maximum Voltage Gain		76 dB CH IN to STEREO OUT/BUS OUT
		76 dB CH IN to AUX OUT (pre fader)
		12 dB STERTEO IN to STEREO OUT
		76 dB CH IN to MONITOR OUT (via Stereo bus)
Crosstalk	**Adjacent Channels**	–70 dB (1 kHz)
	Input to Output	–70 dB (1 kHz)
Sampling Rate	**Internal**	48 kHz/44.1 kHz
	External	32 kHz–48 kHz ±6%
Signal Delay		Less than 2.5 ms input to output (fs = 48 kHz)
Digital Output Dither		16–24 bit
Faders	**Type**	60 mm motorized
	Resolution	+6 to –90, –∞ dB
Display		320 x 240 dot backlit LCD (with contrast control)
EQ	**High**	±18 dB, 20 Hz–20.1 kHz, HPF, peaking, shelving
	High-Mid	±18 dB, 20 Hz–20.1 kHz, peaking
	Low-Mid	±18 dB, 20 Hz–20.1 kHz, peaking
	Low	±18 dB, 20 Hz–20.1 kHz, LPF, peaking, shelving
Memories/ Libraries	**Scene**	51 (1 preset, 50 user)
	Channel	51 (2 preset, 49 user)
	EQ	80 (40 preset, 40 user)
	Effects	96 (64 preset, 32 user)
	Dynamics	80 (40 preset, 40 user)
Steteo Output Meters		12–segment LED meter x 2
Power Requirements	**USA & Canada**	120 V AC, 60 Hz
	European	230 V AC, 50 Hz
Power Consumption		85 W
Dimensions (W x D x H)		460 x 516 x 204 mm (18.1" x 20.3" x 8")
Weight		16 kg (35.3 lbs)
Free-air operating temperature		10°C to 35°C (50°F to 95°F)
Relative Humidity		25%–80%

* Hum and noise measured with a 6 dB/octave 12.7 kHz filter; equivalent to a 20 kHz filter with an infinite dB/octave attenuation.

Analog Input/Output Specifications

Input Terminals	Pad	Gain	Actual Load Impedance	For Use with Nominal	Input level: Sensitivity*	Input level: Nominal	Input level: Max. before Clip	Connector in Console
CH INPUT CH 1-8	0	–60	3kΩ	50–600Ω Mics & 600Ω Lines	–72 dB (0.194 mV)	–60 dB (0.775 mV)	–46 dB (3.88 mV)	XLR-3-31 type** or TRS Phone Jack**
	0	–16			–28 dB (30.9 mV)	–16 dB (0.123 V)	–2 dB (0.616 V)	
	25	–16			–2 dB (0.616 V)	+10 dB (2.45 V)	+24 dB (12.3 V)	
CH INPUT CH 9–16		–20	10kΩ	600Ω Lines	–32 dB (19.4 mV)	–20 dB (77.5 mV)	–6 dB (0.388 V)	TRS Phone Jack**
		+10			–2 dB (0.615 V)	+10 dB (2.45 V)	+24 dB (12.3 V)	
ST IN (L, R)		–20	10kΩ	600Ω Lines	–32 dB (19.4 mV)	–20 dB (77.5 mV)	-6 dB (0.388 V)	TRS Phone Jack**
		+10			–2 dB (0.615 V)	+10 dB (2.45 V)	+24 dB (12.3 V)	
CH INSERT IN CH 1, 2			10kΩ	600Ω Lines	–8 dB (0.309 V)	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack***
2TRACK IN (L, R)			10kΩ	600Ω Lines	–10 dBV (0.316 V)	–10 dBV (0.316 V)	+4 dBV (1.58 V)	RCA Pin Jack***

Output Terminals	Actual Source Impedance	For Use with Nominal	Output level: Nominal	Output level: Max. before Clip	Connector
STEREO OUT (L, R)	150Ω	600Ω Lines	+4 dB (1.23 V)	+18 dB (6.16 V)	XLR-3-32 type**
BUS OUT 1-4	150Ω	10kΩ Lines	+4 dB (1.23 V)	+18 dB (6.16 V)	TRS Phone Jack**
AUX OUT 1-4	150Ω	10kΩ Lines	+4 dB (1.23 V)	+18 dB (6.16 V)	TRS Phone Jack**
CH INSERT OUT CH1, 2	600Ω	10kΩ Lines	+4 dB (1.23 V)	+18 dB (6.16 V)	Phone Jack***
REC OUT (L, R)	600Ω	10kΩ Lines	-10 dBV (0.316 V)	+4 dBV (1.58 V)	RCA Pin Jack***
MONITOR OUT (L, R)	150Ω	10kΩ Lines	+4 dB (1.23 mV)	+18 dB (6.16 V)	TRS Phone Jack***
PHONES	100Ω	8Ω Phones	1 mW	25 mW	Stereo Phone Jack***
		40Ω Phones	3 mW	75 mW	

* The lowest level will produce an output of +4dB (1.23V) or the nominal level when the unit is set to maximum gain.
** Balanced.
*** Unbalanced.
• 0dB=0.775 Vrms, 0dBV=1Vrms

Digital Input/Output Specifications

Terminals	Format	Level	Connector
DIGITAL STEREO IN AES/EBU	AES/EBU	RS-422	XLR-3-31 type
DIGITAL STEREO IN COAXIAL	S/P DIF *	0.5 Vpp/75Ω	RCA Pin Jack
DIGITAL STEREO OUT AES/EBU	AES/EBU	RS-422	XLR-3-32 type
DIGITAL STEREO OUT COAXIAL	S/P DIF *	0.5 Vpp/75Ω	RCA Pin Jack
TO HOST	——	RS-422	Mini DIN 8pin
MIDI (MTC**) IN-OUT-THRU	——	——	DIN 5pin
MOUSE	(MS)	——	D-SUB 9pin male
TO EDITOR (REMOTE)	——	——	D-SUB 9pin female
WORD CLOCK IN	——	TTL/(75Ω IN/OUT)	BNC
WORD CLOCK OUT	——	TTL/75Ω	BNC

* IEC958, EIAJ CP-1201 (Consumer)
** IN only
• To HOST and To EDITOR connectors cannot be used at the same time.

Specifications and appearance subject to change without notice.

For details please contact:

YAMAHA
YAMAHA CORPORATION
P.O.BOX 1, Hamamatsu Japan

For more information about the 03D Digital Mixing Console, other Yamaha products, dealer network and more, visit:

Yamaha PA Web Site—http://www.yamaha.co.jp/product/proaudio/homeenglish/

LPA377 97150 Printed in Japan