

SONY®

DIGITAL AUDIO MIXER
DMX-R100



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The affordable, fully professional mixing console



Sony's digital innovations are at the heart of a wide range of professional and consumer audio products in use around the world. The DMX-R100 Audio Mixing Console is an outstanding example of Sony's development process, using the latest digital technology to fully address the challenging and creative needs of modern audio production.

The DMX-R100 provides an opportunity for the growing number of studio owner/operators to invest in a fully professional digital mixer that has been specifically designed for the production of high-quality stereo and surround sound projects. It inherits the control philosophy of the world-acclaimed Sony OXF-R3 Console – developed through a design partnership of Sony digital audio engineering teams working in Japan and the United Kingdom.

The result is a compact, 48-channel mixer with a comprehensive feature set that includes 25 motorized faders, a sophisticated control panel with touch-screen control, a fully integrated package of automation, a digital routing matrix and machine control. The DMX-R100 delivers superb sonic performance via its state-of-the-art processing technology, offering 24-bit quality and the ability to operate at both standard and double sample rates (44.1, 48, 88.2 and 96 kHz).

The DMX-R100, with its stunning sound performance, operability and flexibility, meets the creative needs of producers, artists and engineers in applications ranging from music studios to post production and audio pre-mastering.

Advanced operation

Sony has always been very conscious of the exacting operational requirements involved in professional audio production and the importance of providing highly usable control interfaces. The DMX-R100 control surface is derived from the world-renowned Sony OXF-R3 console and shares the same philosophy of eliminating operational barriers so that its use is both fast and intuitive.

Control surface ergonomics

Control panel ergonomics

Although the DMX-R100 is a highly cost effective mixer, it has a fully professional control surface with dedicated control knobs and switches for each individual parameter – emulating the best of traditional console ergonomics. A considerable amount of space is allocated to individual controls for fast, accurate, adjustment and they are laid out in a logical manner that reflects the way that they are used.



The color SVGA LCD touch screen – 21 cm wide, 16 cm high and with a resolution of 800 x 600 pixels – provides high-quality graphics pages accessed via an intuitive menu structure. These graphics pages include channel processing, input/output routing, automation and mixer set up, and others. For example, the Channel page gives simultaneous view and control of any one of the 48 channels. Another page, 'AUDIO OVERVIEW' gives a clear view of all 48 channels on two pages so that the operator knows instantly how the mixer is set up. The knobs, buttons, switches and LEDs are displayed on the touch screen with their size and position corresponding to the size and positions of the real controls on the control panel section. This links the visual information provided on the touch screen with the physical controls.

In addition to numeric indications, large and clear graphic representations of the Equalizer and Dynamics curves are displayed at the top of the touch screen.

An outstanding feature of this graphic/touch screen combination is the ability to 'zoom in' on specific control panel areas.

Color SVGA touch screen



High quality sound processing

Many audio professionals are attracted to the potential benefits of higher resolution audio signals – greater dynamic range and higher bandwidth. The DMX-R100 has been designed to deliver these benefits, so all appropriate inputs and outputs are 24 bit and both standard and double sampling rates are supported. Its 24-bit ADCs and DACs provide a high level of linearity for analog inputs/outputs.

The DMX-R100 also processes the full 24 bits of its digital AES/EBU I/Os without any truncation. Internal processing uses precise floating-point calculations to maintain the console's excellent sound quality.

This combination of highly linear conversion and highly accurate internal processing provides the DMX-R100 with a significant improvement in sound quality when compared to previous generations of digital mixing consoles that used lower resolution processing.

High quality and powerful sound processing



Channels, returns and buses

The DMX-R100 offers an extremely high level of processing power, 48 input channels and 8 Aux Returns are provided, making a total of 56 channels available for stereo mixdown. These channels can be routed to the 8 MTR Buses, 8 Aux Send Buses, Master L/R Buses or Solo/PFL Buses. As well as EQ and dynamic processing for all 48 input channels, the PGM, Aux Send and MTR outputs also have EQ and dynamics – useful functions typically found on high-end consoles.

Inputs/outputs

As standard, the DMX-R100 comes equipped with 24 analog inputs, the controls for which are physically aligned with the 24 channel faders. Other standard inputs include 8 Aux Returns (4 mono analog and 4 mono digital) and 2-track inputs (digital/analog). Analog inputs 1-12 have both an XLR type connector (IN-A) and a 1/4-inch TRS-type jack (IN-B). The XLRs are for microphone inputs and are provided with switchable 48 V phantom powering, the 1/4-inch TRS jacks accept line level signals. Inputs 13-24 feature Neutrik™ combo type connectors that accept either an XLR or a 1/4-inch TRS jack.

The standard outputs on the DMX-R100 include stereo program (analog and AES/EBU), Aux Send (8 analog and 4 mono AES/EBU), control room monitor (6 analog) and studio monitor (2 analog).

Model No./Description	Number of Channel	Connector Type
DMBK-R101 8 CH Analog LINE IN Board	8 inputs	XLR-3-31, balanced
DMBK-R102 8 CH Analog LINE OUT Board	8 outputs	XLR-3-32, balanced
DMBK-R103 8 CH AES/EBU DIO Board	8 mono inputs/outputs (AES/EBU)	Input: XLR-3-31, Output: XLR-3-32
DMBK-R104 Sampling Rate Converter DI Board	8 mono digital inputs (AES/EBU), 8 mono optical signal inputs (OPTICAL)	Digital signal: XLR-3-31, Optical signal: OPTICAL
DMBK-R105 Analog Insertion Board	8 send/return	1/4-inch TRS jack, unbalanced
DMBK-R106 Interface Board for ADAT	8 inputs/outputs	OPTICAL
DMBK-R107 Interface Board for TDIF	8 inputs/outputs	D-sub 25-pin female

For input/output expansion, the DMX-R100 has four option board slots. These option slots provide up to 32 additional inputs/outputs when the appropriate optional boards are installed. A selection of optional boards, as detailed in the chart, allow the DMX-R100 to be interfaced to all popular audio recorders.

Surround sound processing

Surround sound is increasingly required for areas such as DVD, film pre-mixing, audio postproduction, etc. As standard, the DMX-R100 can be used for both stereo and 5.1 surround sound. Six of the MTR buses are used to generate the 5.1 mix. Surround panning is accomplished via a page on the touch screen – simply by tracing the desired panning pattern with a finger-tip on the smooth surface of the screen. Alternatively, a PC mouse connected via a PS/2 connector on the back panel of the mixer can be used.

The control room monitor feature of the DMX-R100 has six outputs, so surround sound monitoring is achieved without sacrificing other outputs and without the need for external monitor switching.



Another standard feature of the DMX-R100 is its internal audio routing matrix. This provides comprehensive crosspoint switching for virtually every input and output, and avoids the need for a costly external patch bay.

The input section of the matrix allows any input signal to be routed to any channel. The same input signal can also be routed to multiple channels. Similarly, the output section allows bus signals to be assigned to any output including those on the four I/O slots and also allows the same signal to be assigned to multiple outputs.

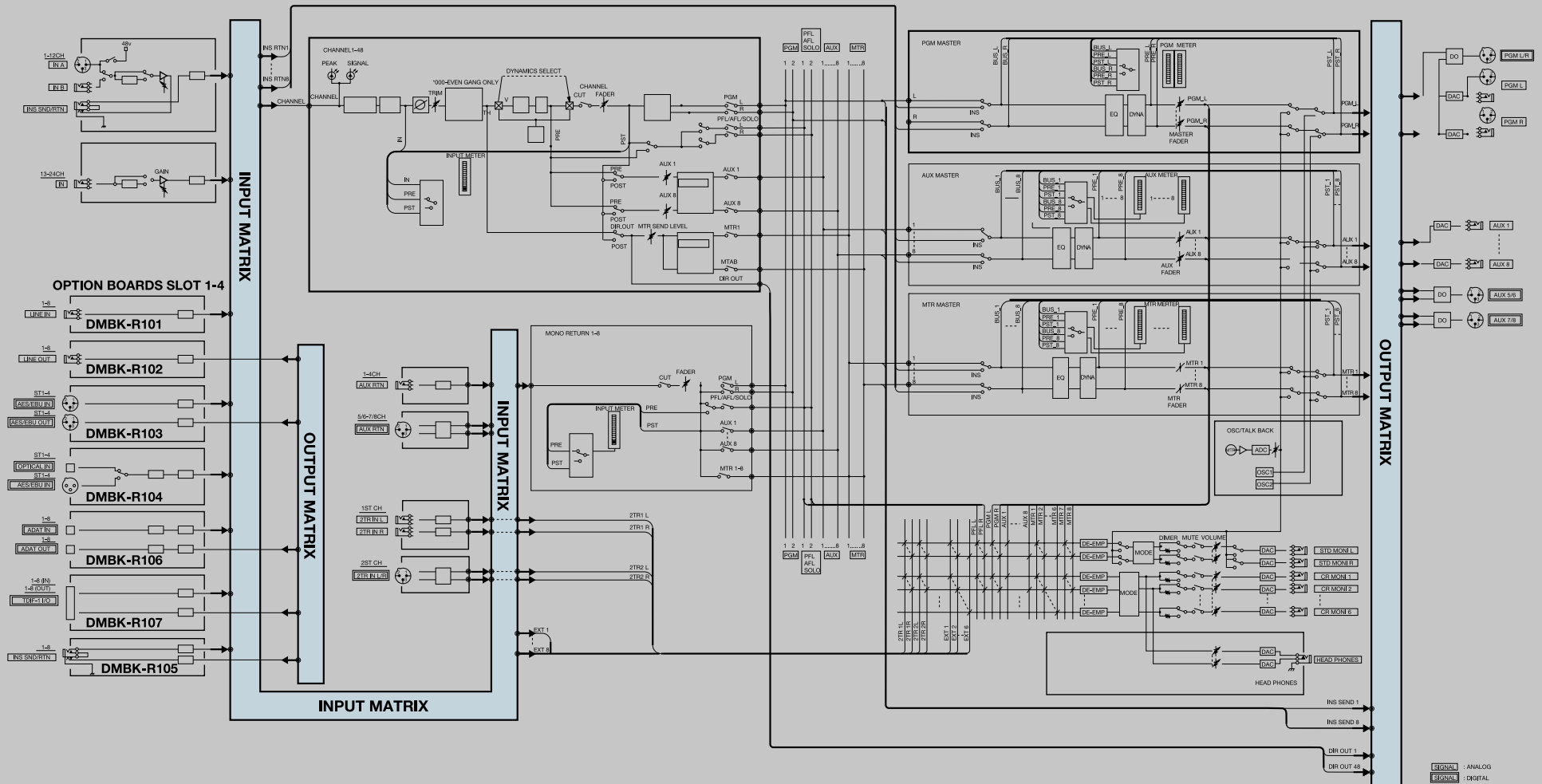
Flexible internal routing matrix

The routing matrix is controlled by two touch-screen pages, one for input signal assignment and one for output signal assignment. Both pages have two levels of access. The first level provides free assignment of inputs and outputs on an individual basis. The second level supports logical groupings of inputs and outputs. For example, the block of signals from one of the optional input boards can be assigned to a group of channels. Similarly, logical groups of mixer buses, Aux Sends for example, can be assigned to a range of mixer outputs. Using this second level to work with these logical groups enables the console's routing matrix to be set up very quickly.

Input matrix crosspoint assignments are stored in mixer snapshots. This means that a DMX-R100 can very quickly be reset to different projects by recalling snapshots that include the desired settings.



DMX-R100 Signal flow



Signal flow in 44.1 or 48 kHz.

Number of inputs and buses are reduced by one-half when operating in 88.2 or 96 kHz.



Sophisticated channel faders

The DMX-R100 has 25, touch sensitive, motorized faders (24 channel faders and one PGM fader). The 24 channel faders can be switched in three layers; two layers for the 48 input channels and one layer for master control, including MTR masters, Aux Send masters and Return inputs.

The faders are designed to give the operator a very professional 'feel'. Their 10-bit resolution provides precise level adjustment, as well as smooth and accurate replay of automation moves. Sony has chosen to use touch-sensitive faders in the DMX-R100 because they allow for excellent operator control of automation and level.

Fader control grouping is set up on a touch-screen page.

Enhanced parameter control

Channel strip design with assignable fader/pan pot

The 24 fader strips of the DMX-R100 combine the familiarity of traditional console design with additional features derived from the OXF-R3 console. By default, each fader controls the channel gain, but Select to Fader buttons allow them to control 10 additional level adjustments in the channel path, including the eight Aux Sends, I/P Trim and MTR Sends. Similarly, the Pan rotary control defaults to stereo mix pan but can be switched to provide the same 10 level control functions as Select to Fader. As different signal paths are selected, the faders automatically move to the correct position and a ring of LEDs around each Pan control indicates its current value. This arrangement of two level controls per fader strip provides a simple method of offsetting various channel levels – one of the most common adjustments made during any audio production.



Advanced snapshot and dynamic automation

The DMX-R100 includes 99 scenes of snapshot automation, making it possible to memorize and recall the state and values of virtually all mixer functions, including input matrix routing, Delay, Phase, Trim, Mode, Filter, EQ, Dynamics, Pan, Assign, Cut, Fader and Aux.

Additionally the DMX-R100 offers comprehensive dynamic automation of Faders, Pans, EQs and dynamic processing. The dynamic automation can be synchronized to both SMPTE time code and MTC (MIDI Timecode) and the additional TC Link function allows the snapshots to be recalled to programmable timecode cues.



As dynamic automation is such an important feature, touch-sensitive motorized faders are used. This typical high-end approach greatly simplifies writing and modifying the automation data.

The DMX-R100 can be switched in real time between two dynamic automation files (A and B) and automation moves can be written in Absolute or Trim modes. These high-performance automation features make the DMX-R100 very suitable for complex music and audio post mixing that requires extensive auditioning and scene changes.

Comprehensive synchronization as standard

The DMX-R100 is equipped with separate word and video reference input connectors, as well as having its own internal reference generator. It provides multiple machine control with its two Sony 9-pin and MIDI ports. These features mean that the DMX-R100 can be integrated into virtually any multimedia facility without the need for external synchronization equipment.

Silent operation

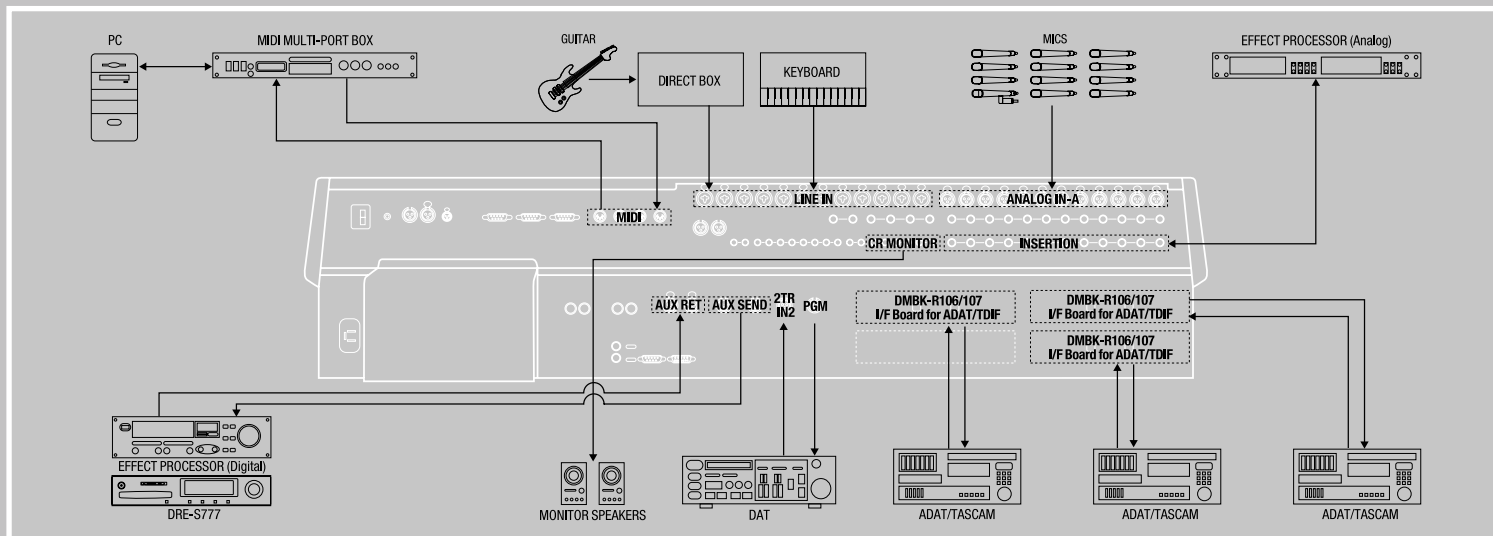
No cooling fans are used in the DMX-R100 so it does not generate any acoustic noise.

Cascade connection (future option)

It will be possible for two DMX-R100 consoles to be connected by optional i.LINK™ interface boards, creating a 96-channel mixer. This option will be retrofittable when available.

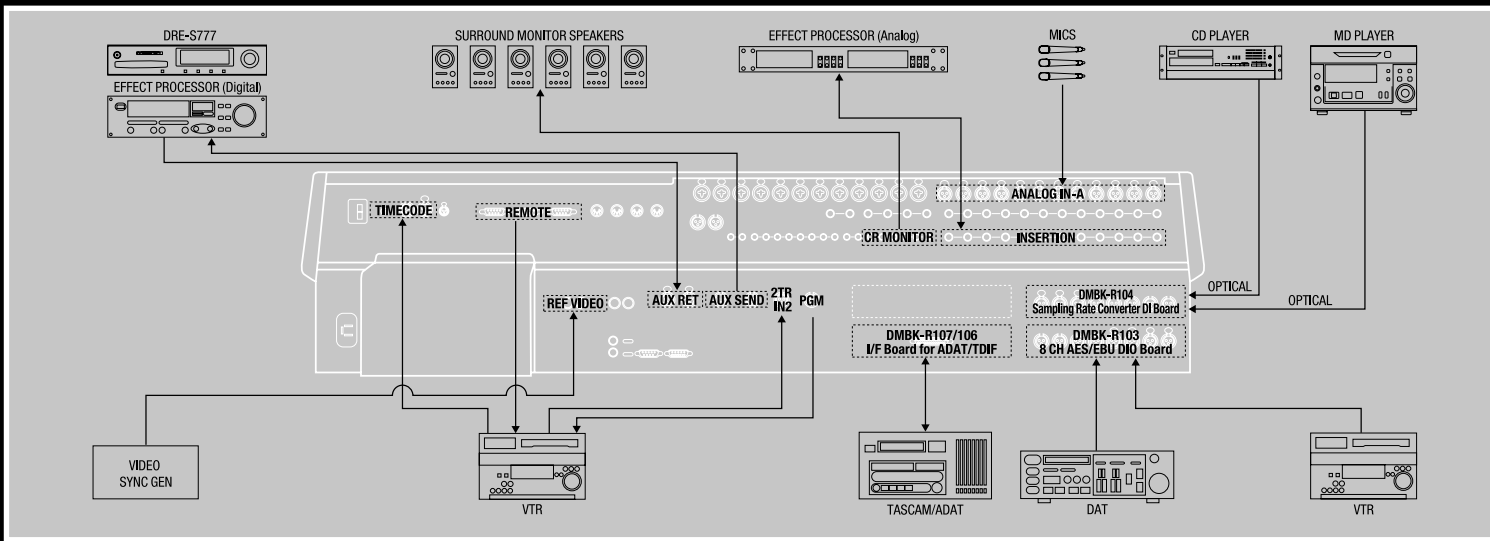


System configurations



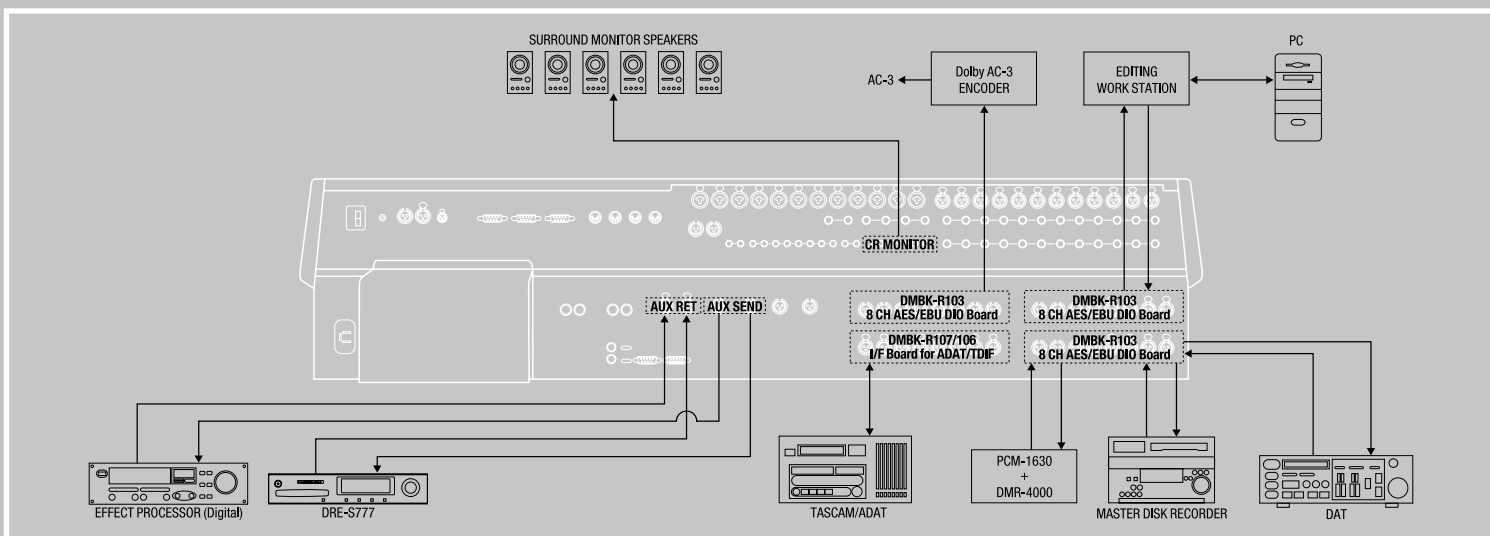
Example 1 Music Production/ Live Recording

Requires three DMBK-R106 (Interface Board for ADAT) or three DMBK-R107 (Interface Board for TDIF). Please find details on the 'Optional accessories' page.



Example 2 Video Postproduction

Requires one DMBK-R103 (8 CH AES/EBU DIO Board), one DMBK-R104 (Sampling Rate Converter DI Board) and one DMBK-R106 (Interface Board for ADAT) or one DMBK-R107 (Interface Board for TDIF). Please find details on the 'Optional accessories' page.



Example 3 Mastering

Requires three DMBK-R103 (8 CH AES/EBU DIO Board) and one DMBK-R106 (Interface Board for ADAT) or one DMBK-R107 (Interface Board for TDIF). Please find details on the 'Optional accessories' page.

Specifications

Inputs/Outputs

Digital Inputs	
AUX RETURN:	4 ch, AES/EBU, XLR-3-31 type (x 2)
2 TR IN 2:	2 ch (stereo), AES/EBU, XLR-3-31 type (x 1)
Digital Outputs	
PGM OUT:	2 ch (stereo), AES/EBU, XLR-3-32 type (x 1)
AUX SEND:	4 ch, AES/EBU, XLR-3-32 type (x 2)
Analog Inputs	
Analog IN-A:	12 ch, +24 dBu max., 4.7 k Ω , balanced, XLR-3-31 type (x 12)
Analog IN-B:	12 ch, +24 dBu max., 10 k Ω , balanced, 1/4" TRS jack (x 12)
LINE IN:	12 ch, +24 dBu max., 10 k Ω , balanced, combo coax (x 12)
2TR IN 1:	2 ch (stereo), +4 dBu (+24 dBu max.), 10 k Ω , balanced, 1/4" TRS jack (x 2)
AUX RETURN:	4 ch, +4 dBu (+24 dBu max.), 10 k Ω , balanced, 1/4" TRS jack (x 4)
Analog Outputs	
PGM OUT:	2 ch (stereo), +4 dBu (+24 dBu max.), 10 k Ω load, output impedance 150 Ω , balanced, 1/4" TRS jack/XLR-3-32 type (x 2 each)
AUX SEND:	8 ch, +4 dBu (+24 dBu max.), 10 k Ω load, output impedance 150 Ω , balanced, 1/4" TRS jack (x 8)
Control Room Monitor:	6 ch, +4 dBu (+24 dBu max.), 10 k Ω load, output impedance 150 Ω , balanced, 1/4" TRS jack (x 6)
Studio Monitor:	2 ch (stereo), +4 dBu (+24 dBu max.), 10 k Ω load, output impedance 150 Ω , balanced, 1/4" TRS jack (x 2)
Analog Insertion Signal	
INSERTION (SEND/RETURN):	12 ch, 0 dBu (+20 dBu max.), 10 k Ω load, input impedance: 10 k Ω , output impedance: 150 Ω , unbalanced, 1/4" TRS jack (x 12)
Control Signal Inputs/Outputs	
Word Sync IN/OUT:	Duty 50 %, TTL Compatible, 75 Ω , BNC (x 1, each)
Video Sync:	NTSC COLOR/BW, PAL, 75 Ω , with Loop-through, BNC (x 2), VB, BB/composite
Timecode Input/Output:	SMPTE/EBU, XLR-3-32, balanced/XLR-3-31 type
MIDI MTC/IN/OUT/THRU:	MIDI Standard, DIN 6-pin female (x 1, each)
Remote IN/OUT 1/OUT 2:	Sony 9-pin, D-sub 9-pin female (x 1, each)
PC Port:	MINI DIN 8-pin female (x 1)
Foot Switch:	Make-Point, phone jack (x 1)
Mouse:	PS/2, mini DIN 6-pin female (x 1)
Keyboard:	PS/2, mini DIN 6-pin female (x 1)
USB:	USB
Serial:	RS-232C, D-sub 9-pin male (x 1)
Monitor:	Analog RGB, D-sub high density 15-pin female (x 1)

Signal Processing Characteristics

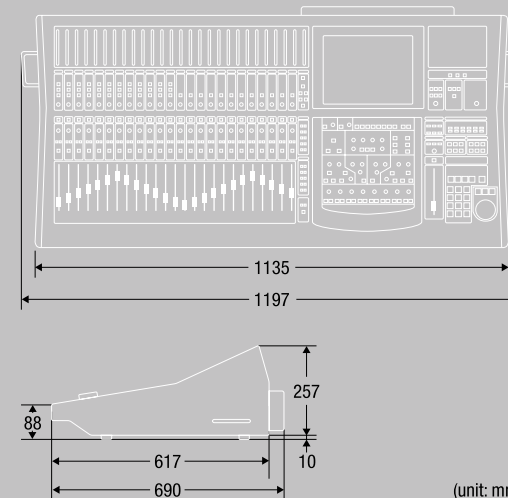
Signal Processing:	32/40-bit floating point
Equalizer	
High Frequency (Peak/Shelf):	1 Fs: 622 Hz to 19.9 kHz (61 points), 2 Fs: 622 Hz to 39.8 kHz (73 points), ± 20 dB (128 points, 0.25 to 0.5 dB step), Q = 0.5 to 16 (63 points)
High-mid Frequency (Peak):	220 Hz to 7.0 kHz (61 points), ± 20 dB (128 points, 0.25 to 0.5 dB step), Q = 0.5 to 16 (63 points)
Low-mid Frequency (Peak):	77.8 Hz to 2.5 kHz (61 points), ± 20 dB (128 points, 0.25 to 0.5 dB step), Q = 0.5 to 16 (63 points)
Low Frequency (Peak/Shelf):	27.5 Hz to 880 kHz (61 points), ± 20 dB (128 points, 0.25 to 0.5 dB step), Q = 0.5 to 16 (63 points)
Filter	
High Cut Filter:	1 Fs: 1.48 kHz to 22.35 kHz (48 points), 2 Fs: 1.48 Hz to 42.2 kHz (59 points), 12 dB/Octave
Low Cut Filter:	27.5 Hz to 415 Hz (48 points), 12 dB/Octave
Dynamics	
Compressor/Ducking:	Threshold: 0 dB to -60 dB (106 points), attack time: 20 μ s to 1 s (121 points), release time: 31.6 ms to 50.1 s (97 points), ratio: 1 : 1 to ∞ : 1 (31 points), range: auto, 0 dB to 15 dB (0.25 dB step), hold time: 20 μ s to 1 s (121 points)
Expander/Gate:	Threshold: 0 dB to -80 dB (126 points), attack time: 20 μ s to 1 s (121 points), release time: 31.6 ms to 50.1 s (97 points), ratio: 1 : 1 to 1 : 10 (31 points), range: 0 dB to 60 dB (1 dB step), hold time: 20 μ s to 1 s (121 points)
Oscillator:	Frequency: 20 Hz to 20 kHz (28 points), Level: $-\infty$ to 10 dB Fs (31 points)
Level Meter:	20 segment LED

Automation

Title Configuration	
Contents:	Sampling frequency, initial snapshot, timecode mode, output routing
Snapshot Automation	
Contents:	Input routing, delay, phase, trimming, input mode, filter, equalizer, dynamics, pan, assign, cut, fader, AUX
Number of Snapshots:	99 max.
Number of MIDI Events:	99 max.
Number of Cue Points:	99 max.
Number of Events per Cue Point:	1
Time Accuracy of Cue Linked Event:	± 1 frame
Dynamic Automation	
Contents:	Filter, equalizer, dynamics, pan, assign, cut, fader, AUX
Number of Temporary Buffers:	2 (A and B)
Fader Resolution:	10-bit (1024 steps)

Audio

Frequency Response	
LINE IN to PGM OUT:	20 Hz to 20 kHz, ± 0.2 dB (typical)
MIC IN to PGM OUT:	20 Hz to 20 kHz, ± 0.3 dB (typical)
Total Harmonic Distortion	
LINE IN to PGM OUT:	0.01%, at +4 dBs, 1 kHz (typical)
MIC IN to PGM OUT:	0.06%, at -60 dBs, 1 kHz (typical)
Noise Level	
LINE IN:	-104 dBu, 600 Ω terminated (-80 dBu, 4 dB standard) (typical)
MIC IN (E.I.N.):	-126 dBu, 150 Ω terminated (typical)
Crosstalk	
Between Input and Output Channels:	90 dB at 1 kHz
Dynamic Range	
LINE IN to PGM OUT:	104 dB
A/D Converter:	24-bit, x 128 oversampling
D/A Converter:	24-bit, x 128 oversampling
Total Delay:	2.5 ms (between LINE IN and PGM OUT), Fs = 48 kHz
Fader Resolution:	10-bit (1024 steps)
General	
Power Requirements:	AC 100 V (J), 120 V (UC), 240 V (CE), 50/60 Hz
Power Consumption:	200 W
Dimensions (W x H x D):	1197 x 267 x 690 mm (47 1/4 x 10 5/8 x 27 1/4 inches)
Mass:	55 kg (121 lb 4 oz)
Supplied Accessories:	Power supply cord (x 1), operational instructions (x 1)





DMBK-R101 – 8 CH Analog LINE IN Board

Connector: XLR-3-31 type, balanced (x 8)
 Reference Level: +4 dBu
 Max. Input Level: +24 dBu
 Input Impedance: 10 k Ω



DMBK-R102 – 8 CH Analog LINE OUT Board

Connector: XLR-3-32 type, balanced (x 8)
 Reference Level: +4 dBu
 Max. Input Level: +24 dBu
 Output Impedance: 150 Ω



**DMBK-R103 – 8 CH AES/EBU DIO Board
 (Inputs: 8 ch, Outputs: 8 ch)**

Connector: Inputs: XLR-3-31 type (x 4),
 Outputs: XLR-3-32 type (x 4)



**DMBK-R104 – Sampling Rate Converter DI Board
 (Digital Input: 8 ch)**

Connectors: XLR-3-31 type (AES/EBU) or
 IEC 958 optical (Optical) (x 4)

* Functions only when console and input source is set to 44.1K or 48K sample rate.

Optional accessories



**DMBK-R105 – Insertion Board
 (Send/Return: 8 ch)**

Connector: 1/4" TRS jack, unbalanced (x 8)
 Max. Input Level: Send: 0 dBu, Return: 0 dBu
 IO Impedance: Send: 150 Ω , Return: 10 k Ω



**DMBK-R106 – Interface Board for ADAT
 (Inputs: 8 ch, Outputs: 8 ch)**

Connector: Optical (x 2)

* Functions only when console and input source is set to 44.1K or 48K sample rate.



**DMBK-R107 – Interface Board for TDIF
 (Inputs/Outputs: 8 ch)**

Connector: D-sub 25-pin female (x 1)

* Functions only when console and input source is set to 44.1K or 48K sample rate.

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