

# Architects & Engineers Specification

## M-300 Digital V-Mixing System

The digital mixer shall be designed as an integrated system including Ethernet audio transmission, digital audio processing, integrated digital recording using an optional USB memory key, and digital mixing. The system shall have the ability to be expanded to a maximum of 320 physical inputs and 90 physical outputs presented to the mixing system over Cat5/6 cable.

The system shall have two bi-directional Ethernet transmission ports that can each be connected to a range of input options including an 8-input stage box, a 16-input stage box, a modular 40-channel input box or a merging box capable of merging up to 160 input channels, presenting 40 at a time to the mixing system. The inputs shall be of very high quality and accept both line and microphone level inputs with individually selectable phantom power. The input gains or trims shall be controllable in 1 dB increments and these settings, as well as their phantom power settings, shall be remotely controllable from the mixing control surface. The gain and phantom power parameters shall be stored with the channel settings for recall later.

The mixing system shall include a mixing control surface that includes 17 motorized moving faders. It shall also include 16 Mute buttons, 17 Solo buttons and 17 Select buttons. Pressing the Select button shall return the display to the selected channel or bus's Edit screen. There shall be 3 layer buttons that directly assign 16 of the faders to control channels 1-16, channels 17-32, or the buses, matrices and digitally controlled fader groups (DCAs). The fourth and fifth buttons shall assign the faders to control the individual User Fader settings for the selected User, which can consist of any combination of channels, buses, matrices or DCAs.

It shall also have a dedicated Sends on Fader button allowing fader control of each channel's send level to the selected bus.

It shall also have 3 knobs dedicated to adjusting the channel and bus EQ parameters. These knobs shall also control the parameters for the individual channel's Gate and Compressor parameters when the editing screens are selected.

It shall also have a knob dedicated to controlling channel panning and another to an input's preamp gain.

It shall also have 12 buttons dedicated to choosing any of the 12 Aux and Matrix buses.

It shall also have a Help button. This button shall be used to access built-in educational and instructional data for the system's main features. This button shall be context sensitive, allowing direct access to instructional text for most parameters using that parameter's button.

The mixing control surface shall have 2 Ethernet ports. These Ethernet ports, A and B, can be connected, using Cat5e or Cat6 cables, to stage units supporting 16 inputs and 8 outputs, 8 inputs and 16 outputs, or up to 40 inputs each. Using a

gigabit switch, both of the cables can be split to support up to 40 output audio paths. The A and B ports shall support 40 user output choices from any channels, buses or matrices and stage inputs.

The mixing control surface shall be able to mix up to 32 channels of audio to 12 Aux buses or a stereo Main bus and an additional Center Bus. Any channel or bus shall also be sendable, with full level control, to any or all of 4 Matrix buses.

The audio path from each channel shall be selectable from the pre phase, pre EQ, pre fader and post fader positions.

The mixing control surface shall have 4 XLR mic/line inputs, 4 TRS line-level inputs and 4 RCA type line-level inputs. It shall also have 4 XLR line level outputs, 4 TRS line-level outputs and one stereo digital output.

The control surface shall provide up to 4 external insert paths, available from any channel, bus or matrix; using the surface's XLR inputs and outputs. The mixing control surface shall provide 4 bands of fully parametric equalization on each of the 32 channels along with a high-pass filter, gate and compressor per channel. It shall also provide 8 bands of fully parametric equalization, a delay processor and a limiter on each of the 8 Aux buses, 4 Matrix buses and the Main LRC buses.

The mixing control surface shall include libraries for storing various channel, bus and system parameters. These libraries shall include a Channel library, Patchbay library, EQ library, and Gate and Compressor libraries. Each of these shall have at least 100 user storage patches.

The mixing control surface shall provide 4 stereo digital effects processors each of which can also be configured as a dual mono processor. These processors shall be assignable to any channel, bus or matrix as an insert or as loop effects using an Aux bus.

The mixing control surface shall include 300 scenes that store all of the channel, bus and processing parameters. It shall also provide 8 user buttons, providing access to 16 User Buttons that can be assigned to direct scene recall, the tempo parameter for a processor configured as a digital delay, and other parameters.

The mixing control surface shall also include a talkback function that can accept a microphone input from any of the console's inputs and shall be assignable to any or all Buses or Matrices. There shall also be an onboard tunable Oscillator assignable to any Buses or Matrices.

It shall also have a large, color, dimmable 800x480 TFT screen. The mixing control surface shall also have a USB slot that supports a USB storage key. The system shall support direct 16-bit, stereo, linear wav file recording or playback via a USB key connected to this port. The USB key shall also be used as storage for console parameters including all libraries and scenes.



The mixing control surface shall also support the creation of an Administrator password and an unlimited number of individual user profiles which shall be stored to, and require the use of, a USB key for access. The Administrator shall be able to restrict any user from accessing certain or all faders, and a range of mixing system parameters. Each user shall also have their own assignment for the 16 User buttons and the 32 User faders. These faders shall be accessible from two User Fader bank buttons.

The mixing control surface shall provide 4 mute groups and 4 DCA groups. The DCA groups shall provide level control from one DCA master fader of a user-assignable collection of channels and buses.

The mixing control system shall provide a balanced headphone output. This output shall be assigned to the Monitor bus, which shall also be available as an output to any of the physical outputs in the system. The headphone output shall have an individually adjustable output level control.

The mixing control surface shall also provide meter screens showing channel and bus levels. The channel levels shall be selectable with choices including post preamp, pre fader and post fader. Each fader shall also have a companion LED meter ladder that displays that channel's levels.

The mixing control surface shall have a USB port that, when connected to a PC computer loaded with control software, can be used to control the channel, bus, effects and other parameters of the mixing system.

The mixing control surface shall have an RS-232C port capable of controlling the mixing functions. It shall also have MIDI In and Out ports capable of controlling other systems from the mixer and allowing control of the channel mixing from video switchers using V-LINK technology.

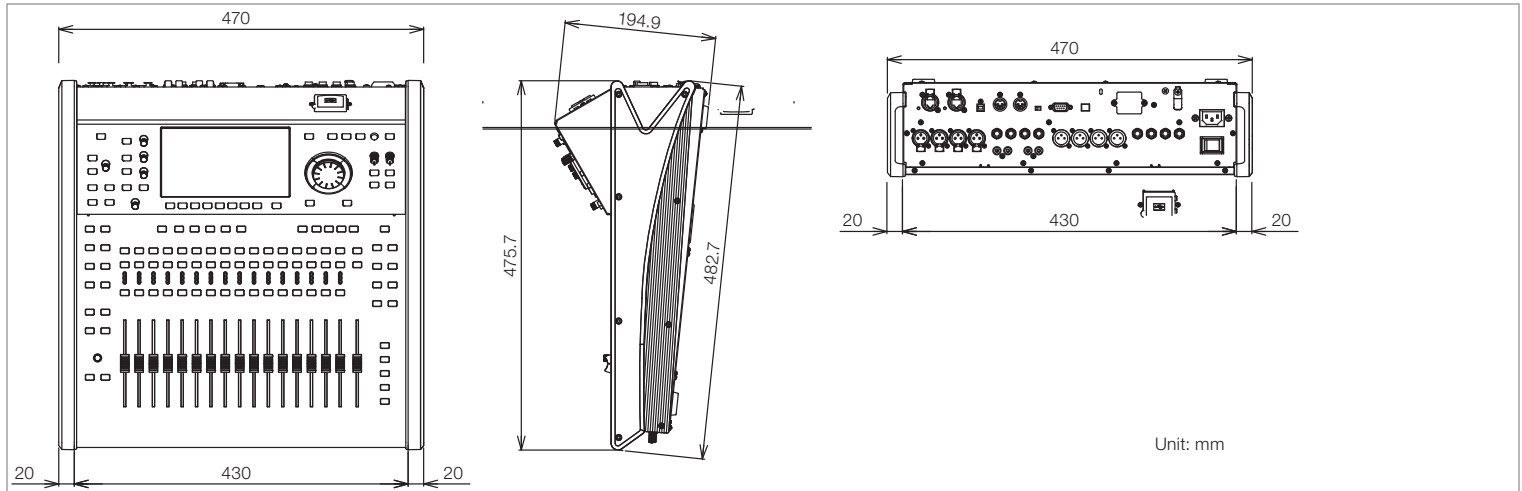
The mixing control surface shall be very compact, measuring 470 mm (18.5") wide and 483 mm (19") from front to back. It shall also have a rack mounting option.

The system shall be a Roland V-Mixing System including an M-300 mixing control surface and the appropriate input and output REAC modules.

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## M-300 Digital V-Mixing System

### V-Mixer M-300 Dimensions



### V-Mixer M-300 Main Specifications

V-Mixer M-300 SPECIFICATIONS	
<b>PROCESSING</b>	
<b>Number of Channels</b>	32 mixing channels/11 buses/4 MATRIX buses/Up to 92 inputs and 90 outputs when using REAC Devices
<b>AD/DA Conversion</b>	24-bit/48.0 kHz or 44.1 kHz
<b>Network Latency</b>	2.8 mS (typ.) *1 * Total System Latency of audio signal from S-1608 inputs to outputs via M-300's REAC ports (A or B). * Sample Rate: 48.0 kHz * Effects : No insert effects
<b>CONNECTORS</b>	
<b>CONSOLE INPUT jacks (1 to 4)</b>	XLR-3-31 type (balanced, phantom power)
<b>CONSOLE INPUT jacks (5 to 8)</b>	1/4 inch Phone type (balanced)
<b>CONSOLE INPUT jacks (9 to 12)</b>	RCA Pin type
<b>CONSOLE OUTPUT jacks (1 to 4)</b>	XLR-3-32 type (balanced)
<b>CONSOLE OUTPUT jacks (5 to 8)</b>	1/4 inch Phone type (balanced)
<b>PHONES jack</b>	Stereo 1/4 inch phone type
<b>DIGITAL OUT jack</b>	Optical type
<b>REAC port</b>	RJ-45 EtherCon type x 2
<b>USB port</b>	Type A x 1, Type B x 1
<b>Remote Connectors</b>	RS-232C connector: 9-pin D-sub type MIDI connectors (OUT/THRU, IN): 5-pin DIN type
<b>Other Connectors</b>	Grounding terminal AC INPUT connector
<b>INPUT/OUTPUT CHARACTERISTICS</b>	
<b>Frequency Response</b>	CONSOLE OUTPUT jacks (1 to 8): -2 dB / +0 dB (20k ohms load, +4 dBu) PHONES jack: -3 dB / +0 dB (40 ohms load, 150 mW)
<b>Total Harmonic Distortion + Noise</b>	CONSOLE OUTPUT jacks (1 to 8): 0.05 % (typ., +4 dBu) PHONES jack: 0.05 % (typ., 40 ohms load, 130 mW)
<b>Dynamic Range</b>	CONSOLE OUTPUT jacks (1 to 8): 105 dB (typ.)
<b>Crosstalk @ 1 kHz</b>	CONSOLE INPUT jacks (1 to 4): -80dB (Pad: ON, Input sens: +4 dBu, typ.) CONSOLE INPUT jacks (5 to 12): -80dB (Input sens: +4 dBu, typ.) CONSOLE OUTPUT jacks (1 to 8): -100 dB (typ.) * Sampling frequency is 48 kHz or 44.1 kHz.
<b>Nominal Input Level (Variable)</b>	CONSOLE INPUT jacks (1 to 4): -65 to -10 dBu (Pad: OFF) or -45 to +10 dBu (Pad: ON) CONSOLE INPUT jacks (5 to 12): -28 to +4 dBu
<b>Input Impedance</b>	CONSOLE INPUT jacks (1 to 4): 14 k ohms CONSOLE INPUT jacks (5 to 12): 10 k ohms
<b>Non Clip Maximum Input level</b>	CONSOLE INPUT jacks (1 to 4): +8 dBu (Pad: OFF) or +28 dBu (Pad: ON) CONSOLE INPUT jacks (5 to 12): +22 dBu
<b>Nominal Output Level</b>	CONSOLE OUTPUT jacks (1 to 8): +4 dBu (Load impedance: 10 k ohms)
<b>Output Impedance</b>	CONSOLE OUTPUT jacks (1 to 8): 600 ohms PHONES jack: 100 ohms
<b>Recommended Load Impedance</b>	CONSOLE OUTPUT jacks (1 to 8): 10 k ohms or greater PHONES jack: 8 ohms or greater
<b>Non Clip Maximum Output level</b>	CONSOLE OUTPUT jacks (1 to 8): +22 dBu (1 kHz, 10 k ohms load) PHONES jack: 150 mW + 150 mW (Typ., 1 kHz, 40 ohms load)
<b>Residual Noise Level (IHF-A, typ.)</b>	-88 dBu (All faders: Min)
<b>Equivalent Input Noise Level (E.I.N.)</b>	-126 dBu (Main Fader: Unity, Channel faders: Unity only one channel, Preamp gain: Max)
<b>OTHERS</b>	
<b>Display</b>	800 x 480 dots Wide VGA TFT color screen with backlight
<b>Power Supply</b>	AC 115 V, 117 V, 220 V, 230 V, 240 V (50/60 Hz)
<b>Power Consumption</b>	50 W
<b>Dimensions</b>	470.0 (W) x 482.7 (D) x 194.9 (H) mm 18-1/2(W) x 19(D) x 7-1/4(H) inches
<b>Weight</b>	9.8 kg 21 lbs 10 oz

(0dBu=0.775Vrms)

\* XLR type: 1 GND, 2 HOT, 3: COLD

\* phantom power: DC+48V(unloaded maximum), 14mA(maximum load) (All XLR type inputs)

\* When a REAC Splitter S-4000D or a switching hub is used in-line with REAC cables, the network latency will increase by the amount of processing delay introduced by the splitting device itself. The actual delay is dependant upon the specifications of the splitting device, though the maximum delay amount for a single splitting device should be about 200microseconds.