Overview

The CSD-R7 Digital Mixing Console is the core component of any RIVAGE PM7 system, with 96 kHz processing, 120 monaural inputs, and a versatile complement of mixing busses (60 MIX, 24 MATRIX, and 2 STEREO). The console has three 12-faders bays for flexible setup and configuration, and dual power supply units are built in for enhanced reliability.

Rear Panel

Features

- Fader configuration: 38 (12+12+12+2) faders.
- Touch Screen: 15" x 2
- Local I/O: 8 in, 8 out.
- Yamaha's industry-standard Selected Channel concept, providing direct access to parameters of any channel selected via its SEL key.
- Up to 8 I/O rack units can be connected to each console.
- Seamlessly integrated remote control and offline editing via an Apple iPad® or other computer.
- Data exchangeable using Console File Converter.
- Direct 2-track recording to standard USB flash drives, or serious multitrack recording to a DAW via Dante.
- Multitrack recordings can be used for "virtual sound checks" when the performers aren't available.
- Expansion Slots: HY Slots: 3, MY Slots: 2
- GPI Interface: 8-in/8-out
- Other features: comprehensive Fader Bank section with recallable custom banks, editable channel names and colors, user defined keys and user defined knobs, 1000 scene memories, input and output delays, ample EQ and dynamics processing, 24 DCA groups, 12 mute groups, multiple user defined key and knob, and more.

Specifications

Functional Specifications

Mixing Capacity	Input Mixing Channels	120 mono
	Mix Buses	60
	Matrices	24 (Input to Matrix supported)
	Stereo Buses	2
	Mono Buses	1
	Cue Bus	2
Local Connectors	Analog Input	8
	Analog Output	8
	HY Slots	3 (CSD-R7)
	MY Slots	2 (CSD-R7)
	Digital In	4 (AES/EBU)
	Digital Out	4 (AES/EBU)
	GPI IN	8 (CSD-R7)
	GPI OUT	8 (CSD-R7)
	Word Clock I/O	In / Out (CSD-R7)
	MIDI I/O	In / Out (CSD-R7)
	USB	4 (File Save/Load), 1 (2 Track Rec/Play)
	External Redundant PSU	Built-in dual power supply
	Meter Bridge	On screen
	Ethernet	Yes
	Lamp	4
	Talkback In	Yes
	Video Out	Yes
	TC In	Yes (CSD-R7)
	Fault Output	No
	Phones	2 connectors (CSD-R7)
	AC Inlet	CSD-R7: 2 (V-Lock Type)
Scene Memory	Number of Scenes	1000
	Recall Safe	Yes
	Focus Recall	Yes
	Fade Time	Yes (0s ~ 60s)
	Preview	Yes
	Selective Load / Save	Yes
	Global Paste	Yes
	Event List	Yes
	Overlay	Yes
	Isolate	Yes
	Tactile Control Keys	Yes
Input Channel Functions	Gain Compensation	Yes
	Silk	Yes (with RPio and OMNI IN)
	Digital Gain	Yes (-96dB ~ +24dB)
	ATT	No
	HPF	20Hz~2000Hz, -6/-12/-18/-24dB/oct Selectable
	PEQ	4 Band Full PEQ (4 algorithms, RTA overlay support)
	Dynamics 1	Legacy Comp / Comp260 / Gate / De-Esser / Expander / Ducking
	Dynamics 2	Legacy Comp / Comp260 / Gate / De-Esser / Expander / Ducking
	Input Delay	Yes (0ms ~ 1000ms)
	Pan	Center Nominal
	DCA Group	24 (Output DCA support)
	DCA Rollout	Yes
	MUTE Group	12

Input Channel Functions	Number of Inserts	4 slots on each 2 insert point
	Direct Out	Yes
Output Channel Functions	PEQ	8 Band Full PEQ
	GEQ	Plug-in
	Dynamics 1	Legacy Comp / Comp260 / Gate / De-Esser / Expander / Ducking
	Output Channel Delay	Yes (0ms ~ 1000ms)
	MUTE Group	12
Plug-in	Number of Slots	384
	Number of Effect Programs	50 or more
GEQ Rack	Number of GEQ Racks	48
	Mountable Device	31BandGEQ / Flex15GEQ / 8Band PEQ (RTA overlay support)
TWINLANe	Number of I/O Channels	256 in / 256 out (with HY256-TL)
Dante	Number of I/O Channels	144 in / 144 out (with HY144-D or HY144-D-SRC)
Recording	USB Memory Recording	Yes
	DVS Recording	Yes (with HY144-D or HY144-D-SRC)
Broadcast Functions	5.1 Surround Panning	Yes
	Surround Monitor	Yes
	Mix Minus	Yes
	L-Mono / R-Mono / LR-Mono	No
Monitor	Solo Mode	Yes
	Oscillator	Sine Wave 1ch / Sine Wave 2ch / Pink Noise / Burst Noise
Other Functions	Port to Port	Yes
	Dual Console	Yes
	DSP Mirroring	No
	Timecode Reader/ Display	Yes
	Timecode Chase (Event List)	Yes
	GPI/MIDI	Yes
	RTA	Yes
	Output Port Delay	Yes (0ms ~ 1000ms)
	Cascade	No
User Interface	Display	15 inch Touch Panel x2
	Centralogic Section	Yes
	Faders	12+12+12+2
	Selected Channel Encoders	All Parameters
	Channel Encoder	Yes
	Channel Name / Color Display	Yes
	Custom Fader Banks	Yes (6 x 2 on each bay)
	User Defined Keys	12 (x 4 banks)
	User Defined Knobs	4 (x 4 banks)
	Touch and Turn Knob	Yes
	Monitor Level Knob	Yes (2: A and B)
	Wooden Arm Rest	Yes
Software	Editor	RIVAGE PM Editor
	StageMix	RIVAGE PM StageMix
	MonitorMix	Yes (Future Update)
	Nuendo Live: Control integration	Yes (Future Update)
	Console File Converter	Yes

Specifications 2/3

General Specifications

At the time of measurement, all faders are set to nominal. Output impedance of the signal genrator is 150Ω.

Frequency Response

Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz @20Hz-20kHz, reference to the nominal output level @ 1kHz

Inputs	Outputs	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600Ω	GAIN: +66 dB	-0.8	0.0	0.5	dB

Total Harmonic Distortion *1

Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz

Inputs	Outputs	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600Ω	+4 dBu@20 Hz-20 kHz, GAIN:+66 dB			0.12	%
OMNI IN 1-8	OMNI OUT 1-8	600Ω	+4 dBu@20 Hz-20 kHz, GAIN:-6 dB			0.05	%
Internal OSC	OMNI OUT 1-8	600Ω	Full scale output@1 kHz			0.02	%
Internal OSC	PHONES	8Ω	Full scale output@1 kHz, phones level control: max			0.2	%

*1 An 80kHz, 18dB/octave low pass filter is used to measure total harmonic distortion.

Hum & Noise *1

Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz

Inputs	Outputs	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600Ω	RS= 150Ω, GAIN: +66 dB Master fader at nominal level and one Ch fader at nominal level.		-128 EIN*2		dBu
					-62		dBu
OMNI IN 1-8	OMNI OUT 1-8	600Ω	RS= 150Ω, GAIN: -6 dB Master fader at nominal level and one Ch fader at nominal level.		-90	-85	dBu
All Inputs	OMNI OUT 1-8	600Ω	RS= 150Ω, GAIN: -6 dB Master fader at nominal level and all OMNI IN 1-8 faders at nominal level.			-76	dBu
-	OMNI OUT 1-8	600Ω	Residual output noise, ST master off.		-92		dBu
-	PHONES	8Ω	Residual output noise, phones level control min.			-88	dBu

*1 An IHF-A filter is used to measure hum & noise level.
*2 EIN stands for Equivalent Input Noise.

Dynamic Range *1

Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz

Inputs	Outputs	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600Ω	AD +DA, GAIN: -6 dB		114		dB
-	OMNI OUT 1-8	600Ω	DA Converter		116		dB

*1 An IHF-A filter is used to measure dynamic range.

Crosstalk *1

@1 kHz Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz

From/To	To/From	Conditions	Min.	Typ.	Max.	Unit
OMNI IN n	OMNI IN (n-1) or (n + 1)	OMNI IN 1-8 adjacent inputs, GAIN:-6 dB			-100	dB
OMNI OUT n	OMNI OUT (n-1) or (n + 1)	OMNI OUT 1-8, input to output			-100	dB

*1 A 22kHz, 30 dB/octave low pass filter is used to measure crosstalk.

Sampling Frequency

		Conditions	Min.	Typ.	Max.	Unit
External Clock	Frequncy Range	Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz	-1000	-	+1000	ppm
	Jitter of PLL *1	DIGITAL IN Fs=44.1kHz, 48kHz, 88.2kHz, 96kHz	-	-	10	ns
Internal Clock	Frequency	Word clock:int 44.1 kHz Word clock:int 48 kHz Word clock:int 88.2 kHz Word clock:int 96 kHz"	-	44.1 48 88.2 96	-	kHz
	Accuracy	Word clock: int 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz	-50	-	+50	ppm
	Jitter *2	Word clock:int 44.1 kHz Word clock:int 48 kHz Word clock:int 88.2 kHz Word clock:int 96 kHz	-	-	4.5 4.1 2.3 2.1	ns

*1 Input clock jitter must be 1 ns or less.
*2 Measured at the WORD CLOCK OUT connecter.

Power Requirements

	Conditions	Min.	Typ.	Max.	Unit
Power Consumption	100-240V 50/60 Hz	-	-	415	W
Heating Value	100-240V 50/60 Hz	-	-	360	kcal/h

Power Cable Length and Temperature Range

	Conditions	Min.	Typ.	Max.	Unit
Powe Cord Length		-	250	-	cm
Temperature Range	Operating Temperature Range	0	-	40	˚C
	Storage Temperature Range	-20	-	60	˚C

Specifications

Analog Input Characteristics *1 *2 *3

Input Jack	GAIN	Input Impedance	Source Impedance	Input Level			Connector
				Sensitivity*4	Nominal	Max. before Clip	
OMNI IN 1-8	+66dB	10kΩ	50-600Ω Mics & 600Ω Lines	–82dBu (61.6μV)	–62dBu (0.616mV)	–42dBu (6.16mV)	XLR-3-31 type (Balanced)*5
	-6dB			–10dBu (245mV)	+10dBu (2.45V)	+30dBu (24.5V)	
TALKBACK	+54 dB	10kΩ	50-600Ω Mics & 600Ω Lines	–70dBu (245μV)	–50dBu (2.45mV)	–30dBu (24.5mV)	XLR-3-31 type (Balanced)*5
	-6 dB			–10dBu (245mV)	+10dBu (2.45V)	+30dBu (24.5V)	

*1 0dBu= 0.775 Vrms for all specifications
*2 All AD converters are 24bit linear.
*3 OMNI IN jacks 1-8 and the TALKBACK XLR jack feature +48V DC phantom power which is switchabel for each jack individually from the unit's software.
*4 Sensitivity is defined as the input level required to produce an output of +4dBu (1.23V) or the nominal output level when all faders and level controls are set to maximum.
*5 Connectors are balanced. (1= GND, 2= HOT, 3= COLD)

Analog Output Characteristics *1 *2 *3

Output Jacks	Output Impedance	Load Impedance	Max Output Level Select Switch *3 *4	Output Level		Connector
				Nominal	Max. before Clip	
OMNI OUT 1-8	75Ω	600Ω Lines	+24dB (default)	+4dBu (1.23V)	+24dBu (12.3V)	XLR-3-32 type (Balanced)*6
			+18dB	–2dBu (0.616V)	+18dBu (6.16V)	
			+15dB	–5dBu (0.436V)	+15dBu (4.36V)	
PHONES A,B	15Ω	8Ω Phones	–	75mW*5	150mW	Stereo Phone Jack (TRS) (Unbalanced)*7
		40Ω Phones	–	65mW*5	150mW	

*1 0dBu= 0.775 Vrms for all specifications
*2 All DA converters are 24bit linear.
*3 The unit features an internal switch to change the maximum output level.
*4 The 24dBu switch position can be changed for fee so that the output level will be + 20dBu.
*5 These measurements were obtained when the PHONES A/B LEVEL knobs are set 10 dB lower than the maximum.
*6 Connectors are balanced. (1= GND, 2= HOT, 3= COLD)
*7 Connectors are unbalanced. (Tip=LEFT, Ring= RIGHT, Sleeve= GND)

Digital Input & Output Characteristics

Jack	Format	Data Length	Level	Connector
AES/EBU IN 1/2, 3/4, 5/6, 7/8 *1	AES/EBU	24bit	RS422	XLR-3-31 type (Balanced)*2
AES/EBU OUT 1/2, 3/4, 5/6, 7/8 *1	AES/EBU	24bit	RS422	XLR-3-32 type (Balanced)*2

*1 Features sampling rate converters.
Input SRC
Supported input frequency (conversion source): 44.1 kHz-4%-200ppm - 96 kHz+4.1667%+200 ppm
Output SRC
Supported output frequency (conversion source): 44.1 kHz-4%-200ppm - 96 kHz+4.1667%+200 ppm
*2 Connectors are balanced. (1= GND, 2= HOT, 3= COLD)

Control I/O Characteristics

Terminal		Format	Level	Connector
WORD CLOCK	IN	-	TTL/75Ω terminated	BNC
	OUT	-	TTL/75Ω	BNC
MIDI	IN	MIDI	-	DIN 5P
	OUT	MIDI	-	DIN 5P
TC IN	SMPTE	SMPTE	0.3Vpp(min)/10.0Vpp(max), 10kΩ	XLR-3-31 type *7
USB 1-4		USB 2.0 Host	USB	USB A Connector (Female)
RECORDING *1		USB 2.0 Host	USB	USB A Connector (Female)
VIDEO OUT		-	DVI-D	DVI
NETWORK [PC]		IEEE802.3	10BASE-T/100BASE-TX	EtherCON CAT5 *2 *3
CONSOLE NETWORK IN/OUT		-	1000BASE-T	EtherCON CAT5e *3 *4
GPI *5		-	-	D Sub Connector (25P Female)
NETWORK		IEEE802.3	10BASE-T/100BASE-TX	EtherCON CAT5 *2 *3
LAMP 1-4		-	0V-12V	XLR-4-31 type *6

*1 Supported file formats are WAV and MP3.
*2 CAT5 or higher cables are used for connections.
*3 STP cables are recommended for connections.
*4 CAT5e or higher cables are used for connections.
*5 Input pin
CH1-7 TTL level (input voltage 0-5V)
CH8 Photo coupler (input voltage 0-24V, low level: 1V or lower, high level: 5V or higher)
Output pin
CH1-7 Open drain output (max supply voltage 12V, max. sink current/pin 75mA)
CH8 Relay contact (max. 1A/30VDC)
Power supply pin
Output voltage 5 V±5%, max. output current 600mA
*6 4-pin=+12V, 3-pin=GND; Up to 5 W is supported for lamp rating.
*7 1= GND, 2= HOT, 3= COLD

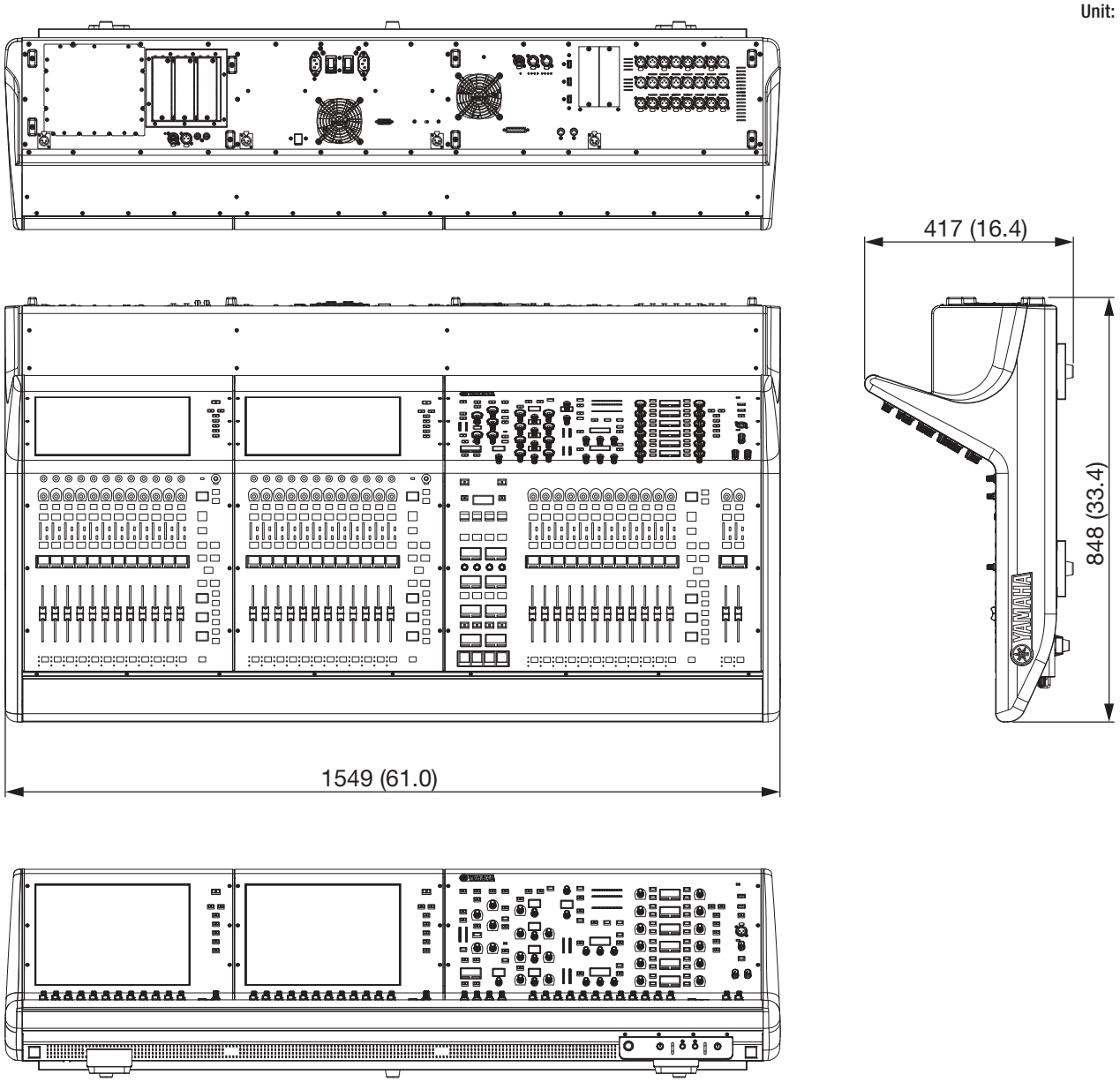
Others

Dimensions (W x H x D), Weight	1549mm x 417mm x 848mm (61.0" x 16.4" x 33.4") *1, 94kg (207lbs)
Accessories	System set up guide, AC power cord x 2, Dust cover Gooseneck Lamp LA1L x 4
Fader	Touch-sensitive 100mm motorized fader: resoution +10dB to -138dB, -∞dB (1024 steps)
NC Value	Low mode: NC=20 / High mode: NC=25 *2

*1 Including the rubber feet
*2 Measuring position: 30cm horizontally away and vertically up from the unit (front pad)

Dimensions

Unit: mm (inch)

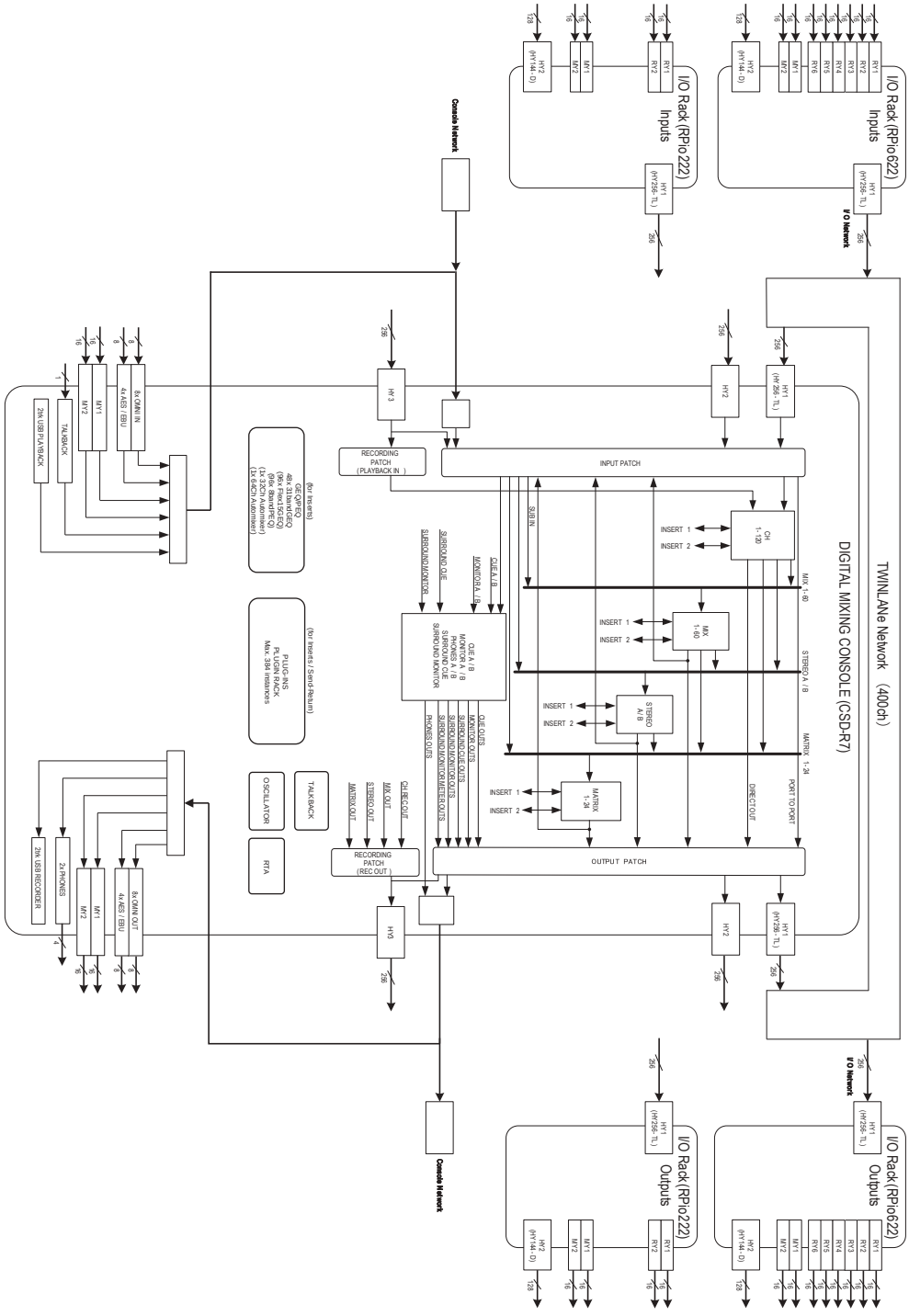


Architectural and Engineering Specifications

The Yamaha CSD-R7 shall be a control surface for use with the Yamaha RIVAGE PM Digital Mixing System. It shall provide 96kHz processing 120 inputs, and a versatile complement of mixing busses (60 MIX, 24 MATRIX, and 2 STEREO). CSD-R7 shall adopt TWINLANe network connectivity and it shall build a console network with low latency. Selected Channel shall provide direct access to parameters of any channel selected via its SEL key. It shall include 12 faders in the left section, 12 faders in the center section, and 12 fader in the right section plus 2 master faders. All the faders are touch-sensitive 100mm motorized faders. The CSD-R7 shall provide functions for fast, efficient mixing via an intuitive interface. It shall include a 2 x 15" touch-screen Multi Function Display. Physical controllers other than faders shall include the Selected Channel controllers, 12 x 4 banks User Defined Keys, 4 x 4 banks User Defined Knobs, and 2 Touch and Turn knob provides directly and intuitively controllability. Local I/O shall include 8 analog microphone/line inputs and 8 outputs, 4 AES/EBU inputs and output (with SRC), 3 HY slots, 2 Mini YGDAI slots, GPI ports (8 in/8 out), word clock I/O, MIDI I/O, network port, 5 USB (1 for 2-track recording), and Video Out (DVI-D). It shall be Dual redundant power supply and power consumption shall be 415W. Dimensions shall be 1549 (W) x 417 (H) x 848 (D) mm. Weight shall be 94 kg.

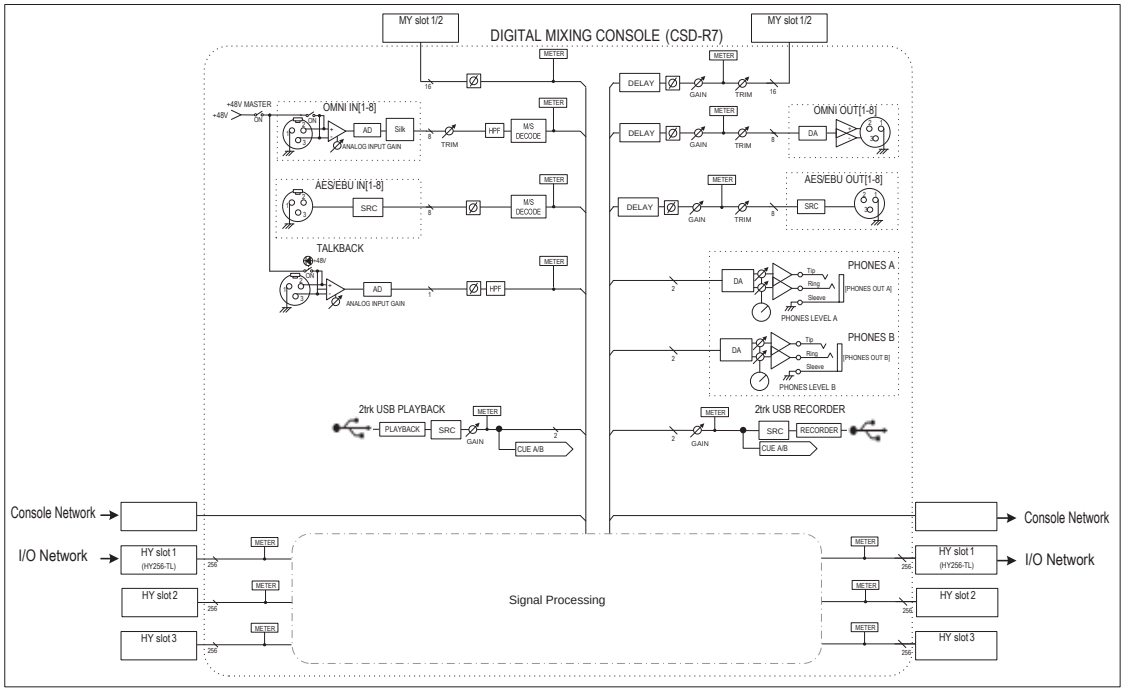
Block Diagrams

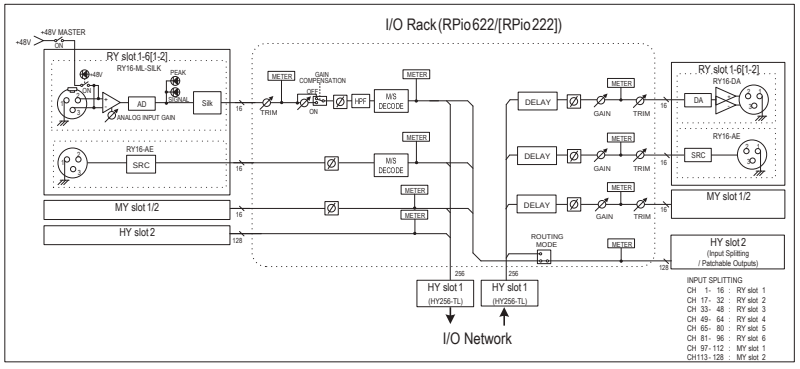
System Overview



Block Diagrams

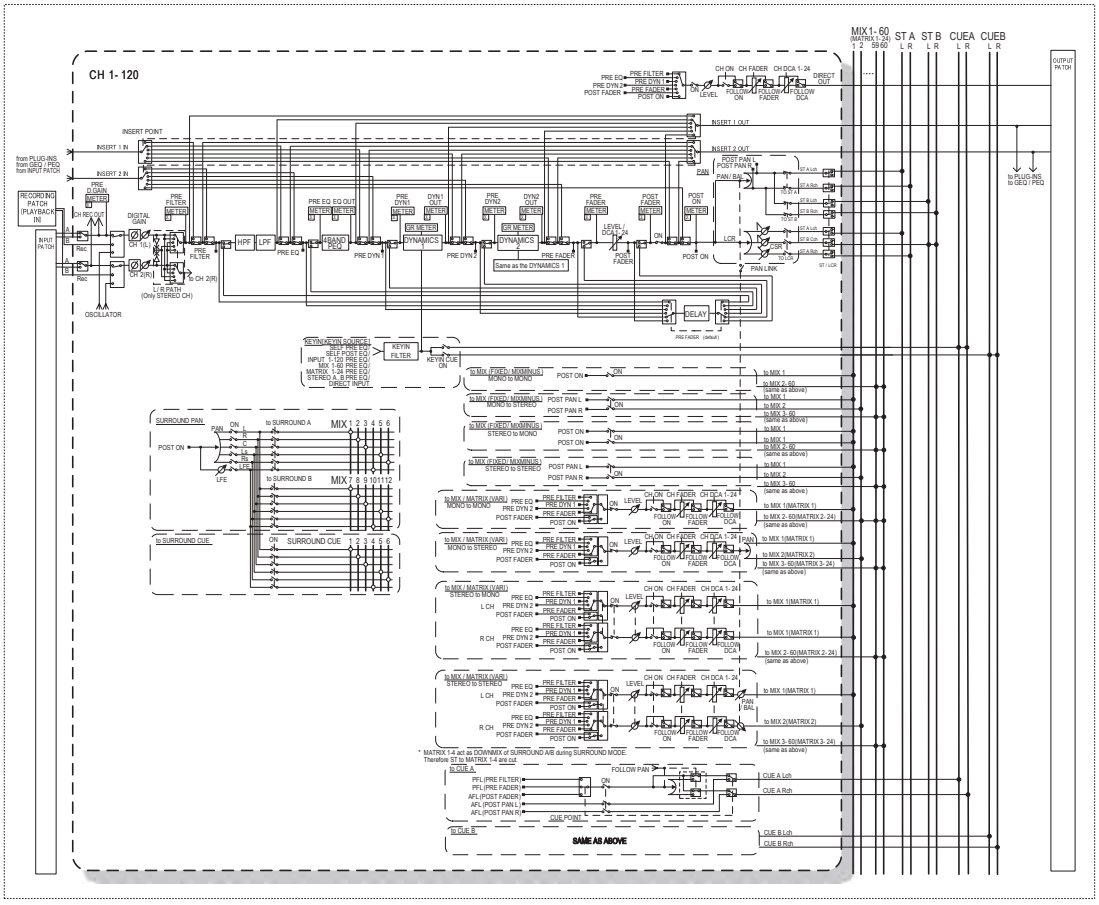
Digital Mixing Console, I/O Rack





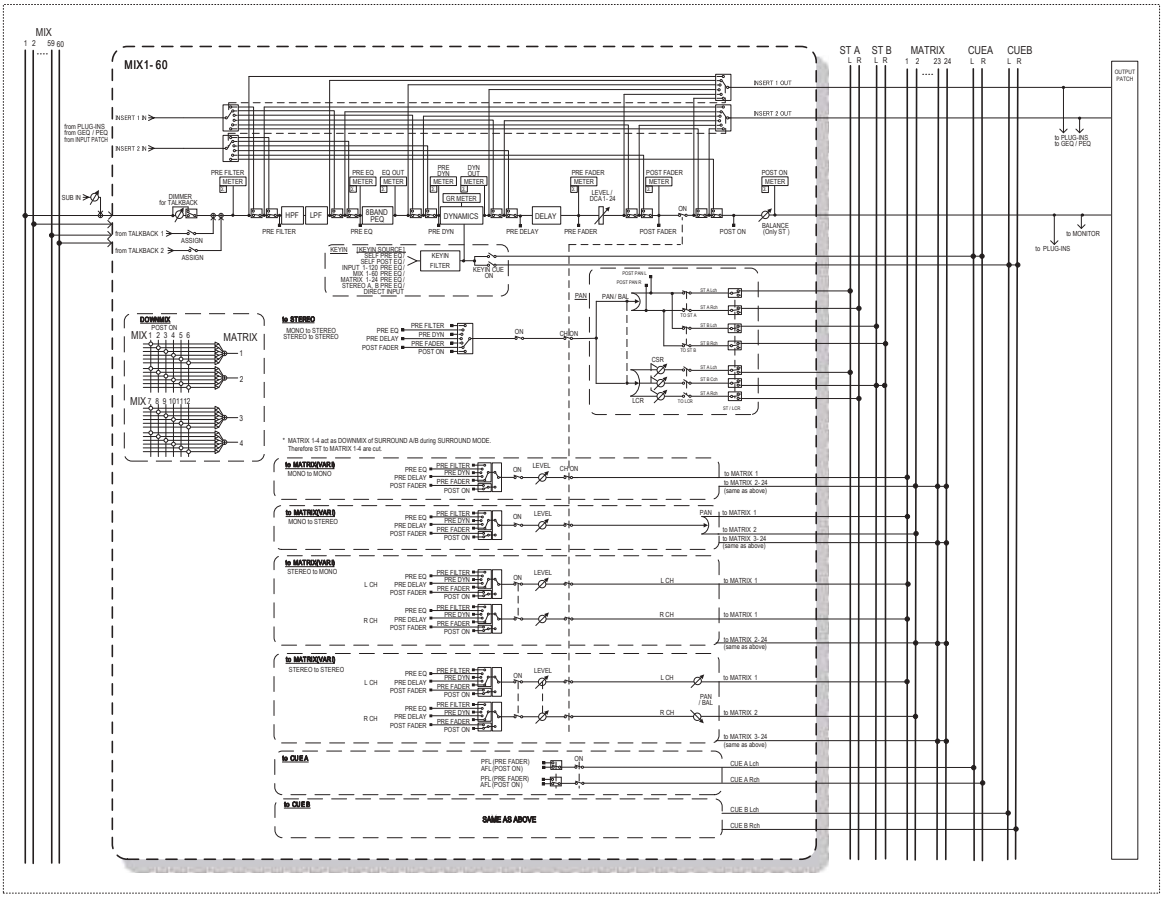
Block Diagrams

CH 1-120



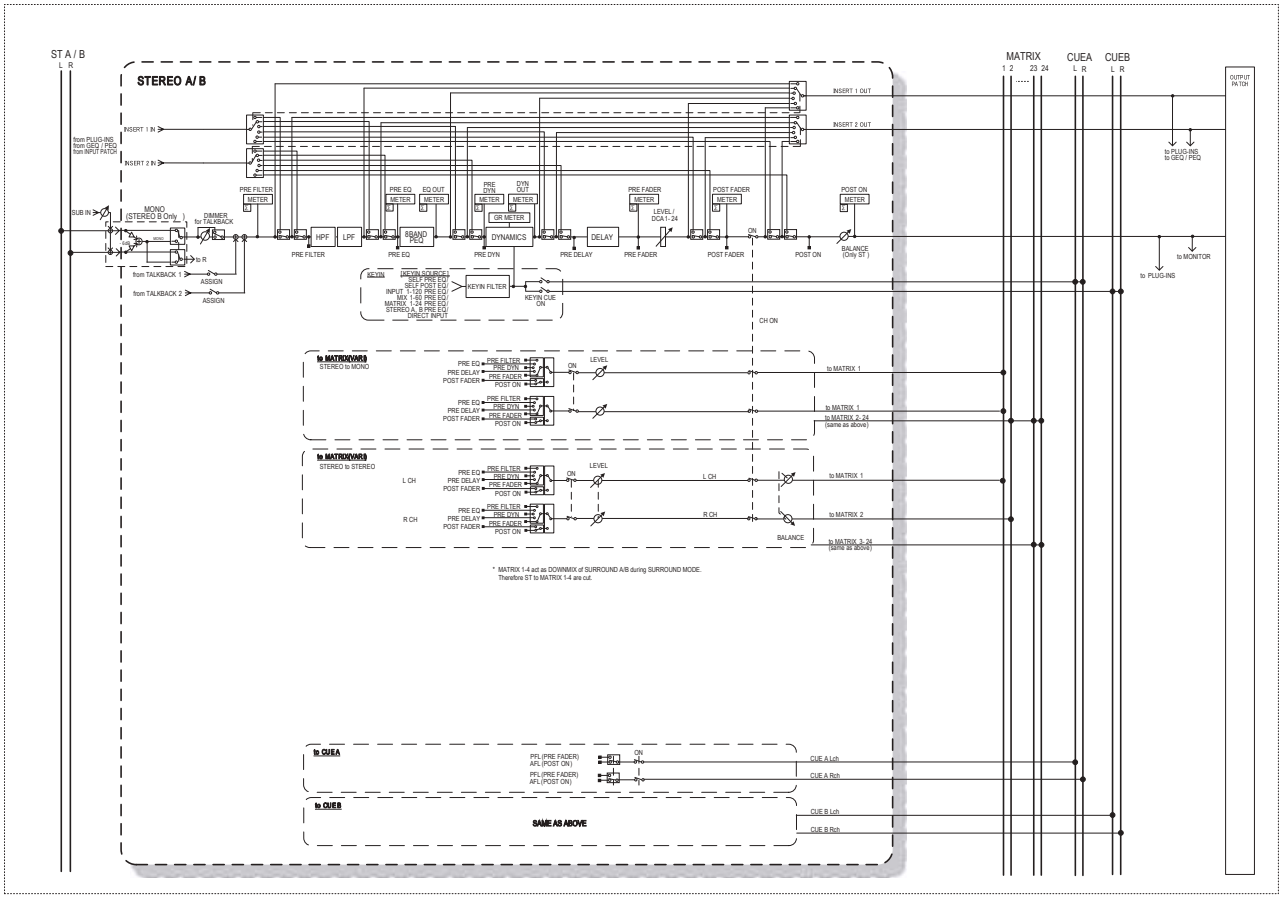
Block Diagrams

MIX 1-60



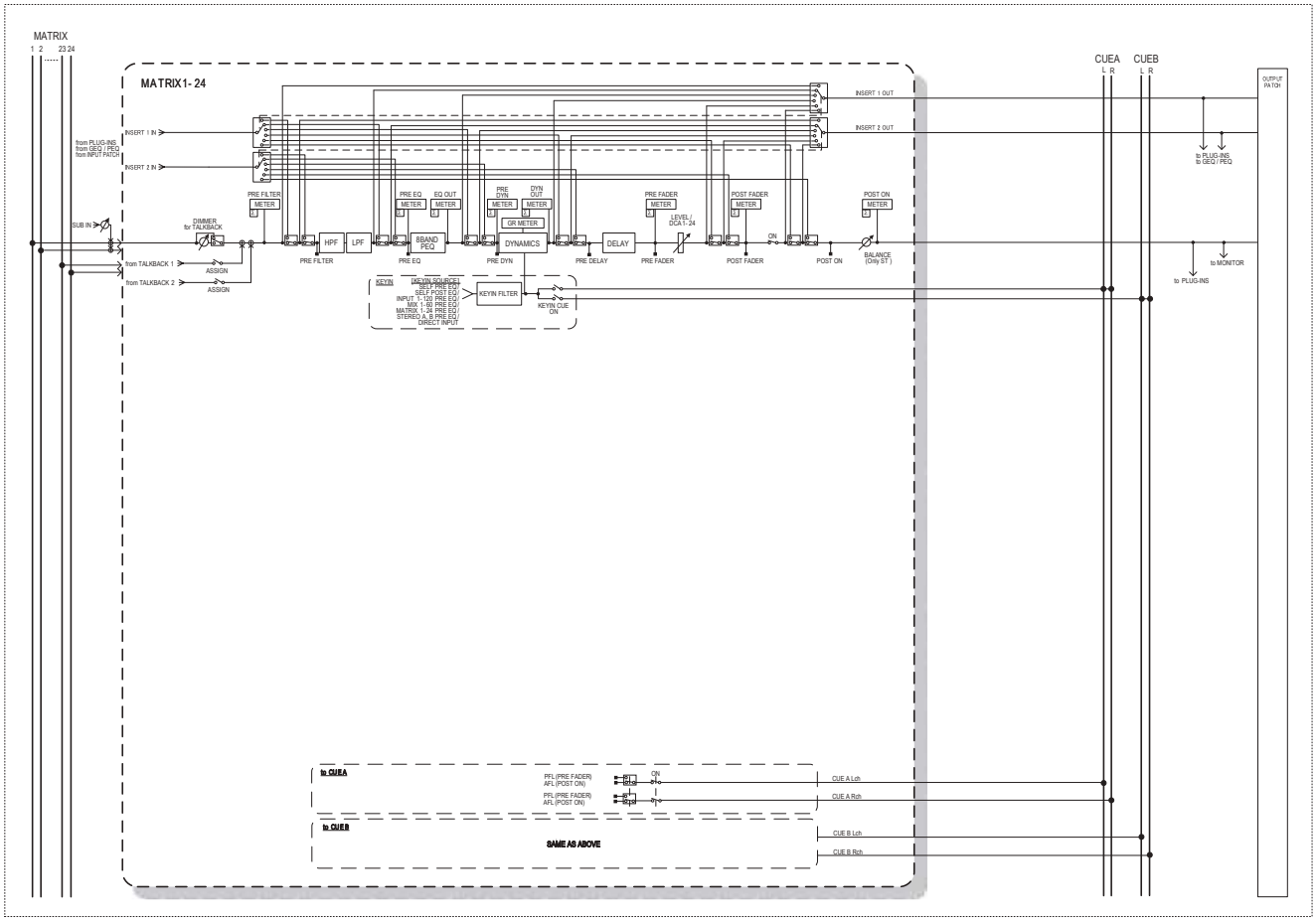
Block Diagrams

STEREO A/B



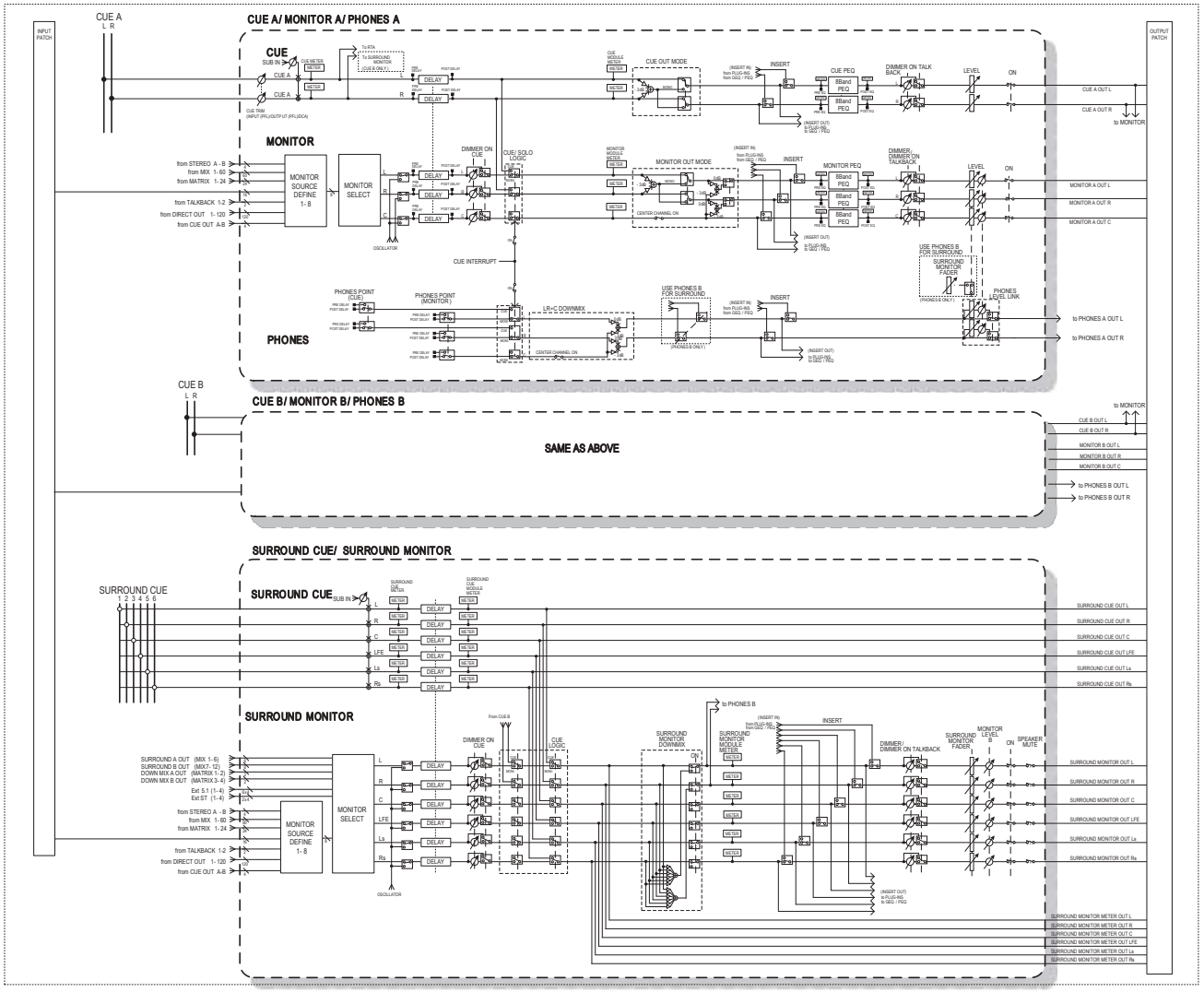
Block Diagrams

MATRIX 1-24

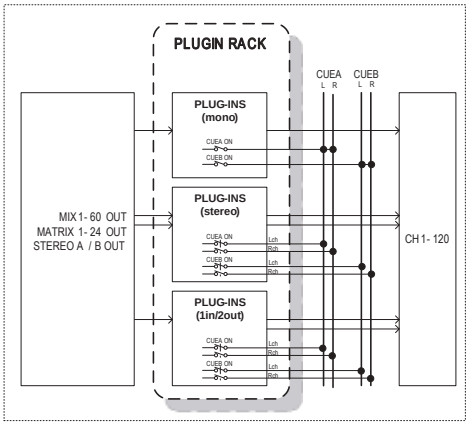


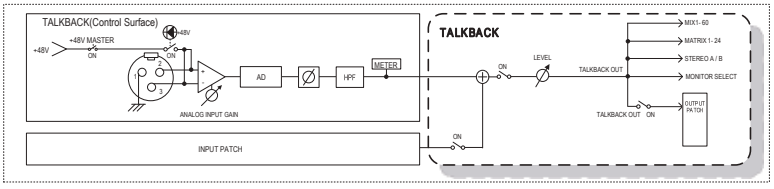
Block Diagrams

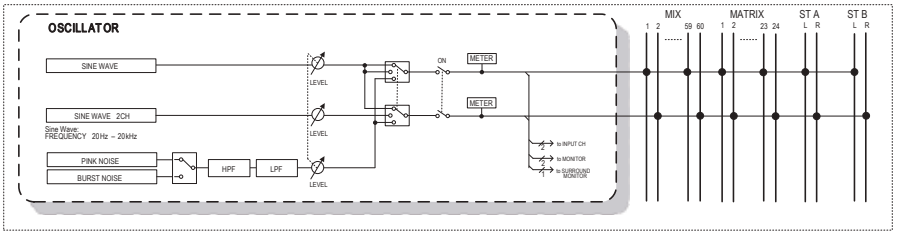
CUE/MONITOR/MISC.



Block Diagrams

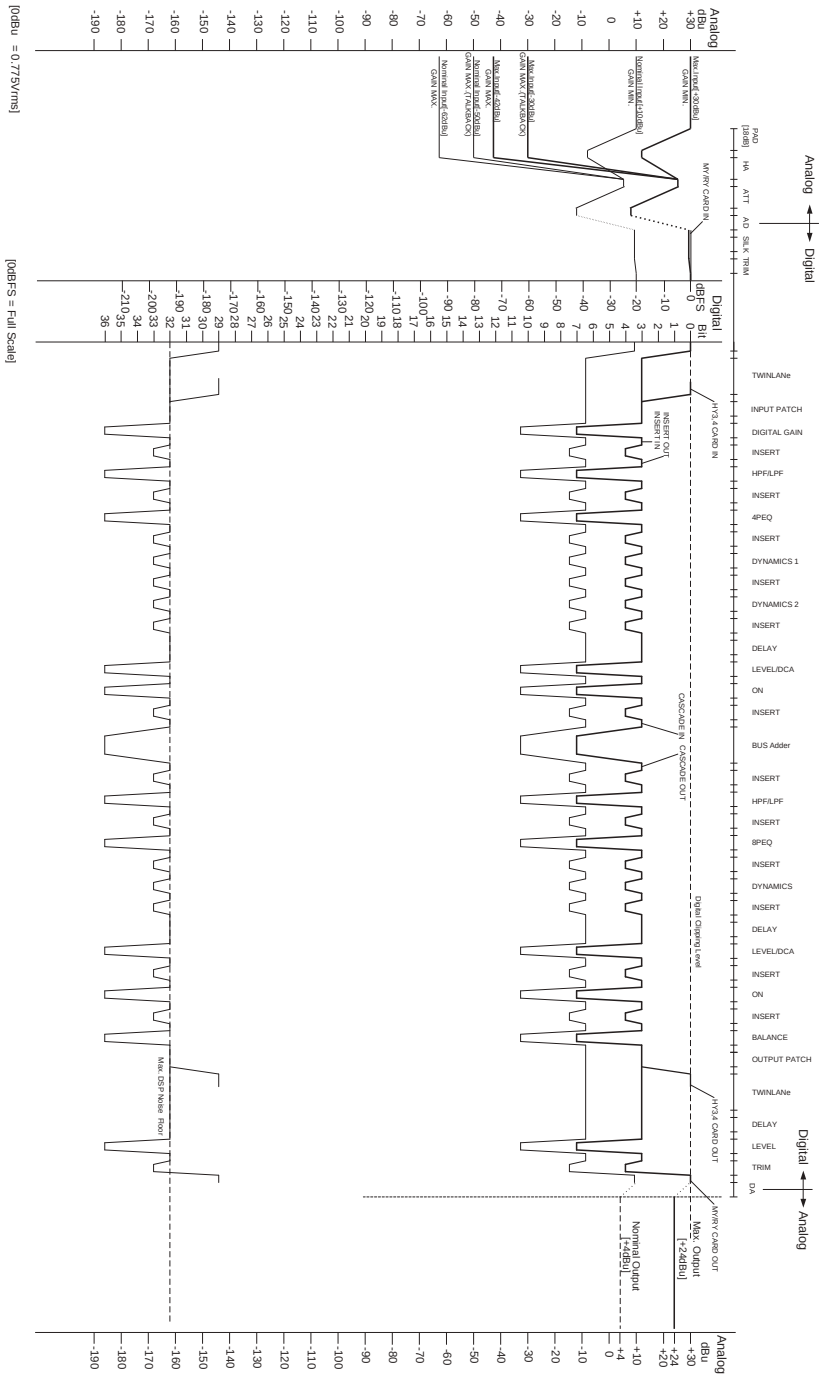






Block Diagrams

Level Diagram



*All information subject to change without notice.
*All trademarks and registered trademarks are property of their respective owners.
Created in March, 2020

YAMAHA CORPORATION
P.O.BOX 1, Hamamatsu Japan
www.yamaha.com/proaudio/