Overview

The DSP-R10 is a powerful DSP engine that serves as the core for signal processing and system control required for the RIVAGE PM system.

Rear Panel

Features

- Superior capability of processing digital audio signals of up to 144 input, 72 MIX, 36 MATRIX, and two STEREO channels.
- Four HY card slots that are capable of transmitting/receiving up to 256 ins/outs of digital audio signals/control signals.
- A TWINLANe network card will work exclusively in HY card slot 1 or 2. The virtual sound check (VSC) function will work exclusively in HY card slot 4.
- Up to 8 RPio units can be connected to each TWINLANe ring. (Maximum 16 units in one RIVAGE PM system)
- Up to 48 Rio units can be mounted in one RIVAGE PM system.
- Up to 2 DSP engine units can be connected within one RIVAGE PM system.
- Up to 2 control surfaces can be connected within one RIVAGE PM system.
- Two MY slots to support various audio formats.
- Dual redundant power supply built-in
- Expansion Slots: HY Slots: 4, MY Slots: 2
- GPI Interface: 8-in/8-out
- Power consumption: 190 W
- Dimensions (W x H x D): 480 x 232 x 490.8 mm (5U rack size)
- Net weight: 20 kg

Specifications 1/2

Functional Specifications

Mixing Capacity	Input Mixing Channels		144 mono
	Mix Buses		72
	Matrices		36 (Input to Matrix supported)
	Stereo Buses		2
	Mono Buses		1
	Cue Bus		2
Local Connectors	Expansion Slot	HY	4
		MY	2
	GPI	IN	8
		ONT	8
	Word Clock		In / Out
	MIDI		In / Out
	External Redundant PSU		Built-in dual power supply
	Ethernet		Yes
	TC In		Yes
	Fault Output		Yes
	AC Inlet		2 (V-Lock Type)
Scene Memory	Number of Scenes		1000
	Recall Safe		Yes
	Focus Recall		Yes
	Fade Time		Yes (0s ~ 60s)
	Preview		Yes (V2.0 or later)
	Selective Load / Save		Yes (V1.5 or later)
	Global Paste		Yes (V1.2 or later)
	Event List		Yes (V2.0 or later with timecode trigger)
	Overlay		Yes (V1.2 or later)
	Isolate		Yes
	Tactile Control Keys		Yes
Input Channel Functions	Gain Compensation		Yes
	Silk		Yes (with RPio)
	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
	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
	Number of Inserts		4 slots on each 2 insert point
Plug-in	Number of Slots		384
	Number of Effect Programs		More than 50

GEQ Rack	Number of GEQ Racks	48
	Mountable Device	31BandGEQ / Flex15GEQ / 8Band PEQ (RTA overlay support) / Automixer
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)
Recording	USB Memory Recording	Yes
	DVS Recording	Yes (with HY144-D)
Broadcast Functions	5.1 Surround Panning	Yes (V2.0 or later)
	Surround Monitor	Yes (V2.0 or later)
	Mix Minus	Yes (V2.0 or later)
	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 (V1.5 or later)
	Dual Console	Yes (V2.0 or later)
	DSP Mirroring	Yes (V2.0 or later)
	Timecode Reader/Display	Yes (V2.0 or later)
	Timecode Chase (Event List)	Yes (V2.0 or later)
	GPI/MIDI	Yes
	RTA	Yes
	Output Port Delay	Yes (0ms ~ 1000ms)
	Mix/Matrix to Input	Yes
	Sub In	Yes
	Theatre Mode	Yes
Software	Editor	RIVAGE PM Editor
	StageMix	RIVAGE PM StageMix
	MonitorMix	Yes (V4.0 or later)
	Console File Converter	Yes

Specifications 2/2

General Specifications

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	WORD CLOCK 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	-	-	190	W
Heating Value	100-240V 50/60 Hz	-	-	164	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

Control I/O Characteristics

Terminal		Format	Level	Connector
MIDI	IN	MIDI	-	DIN 5P
	OUT	MIDI	-	DIN 5P
TC IN	SMPTE	SMPTE	0.3 Vpp(Min.) / 10.0 Vpp(Max.). 10kΩ	XLR-3-31 type (Balanced) *1
WORD CLOCK	IN	-	TTL/75Ω terminated	BNC
	OUT	-	TTL/75Ω	BNC
GPI		-	-	D-sub 25pin (Female) *2
REMOTE		-	RS422 / 232C *3	D-sub 9pin (Male)
FAULT OUTPUT	NO	-	< DC30V, < 1A	EuroBlock Connecter 3P
	C *4	-	-	
	NC	-	< DC30V, < 1A	
TO CONSOLE IN/OUT		-	1000BASE-T	EtherCON CAT5e *5 *7
NETWORK		IEEE802.3	10BASE-T/100BASE-TX	etherCON CAT5 *6 *7
NETWORK [PC]		IEEE802.3	10BASE-T/100BASE-TX	etherCON CAT5 *6 *7

*1 1= GND, 2= HOT, 3= COLD
*2 Inputs
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)
Outputs
CH1-7 Open drain output (max external supply voltage 12V, max. sink current/pin 75mA)
CH8 Relay contact (max. 1A/30VDC)
Power supply pin
Output voltage 5 V±5%, max. total output current 600mA
*3 Toggled by the switch.
*4 The C terminal normally short-circuits with the NC terminal, but it short-circuits with the NO terminal in the event that a fault is detected
*5 CAT5e or higher cables are recommended for connections.
*6 CAT5 or higher cables are recommended for connections.
*7 STP cables are recommended for connections.

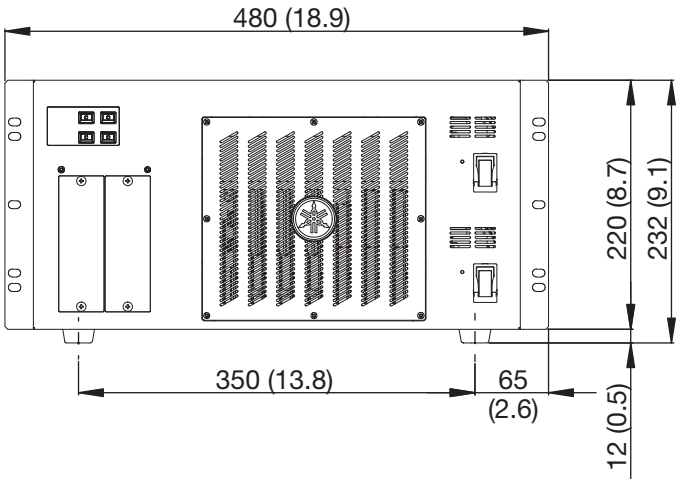
Others

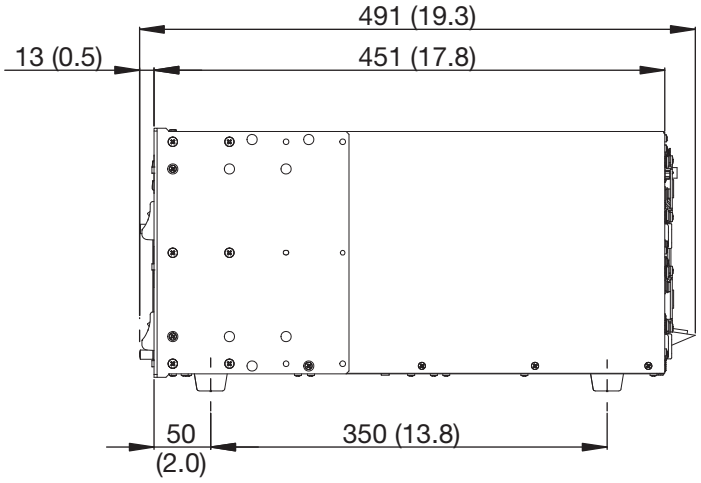
Dimensions (W x H x D), Weight	480mm x 232mm x 490.8mm (18.9" x 9.1" x 19.3"), 20kg (44lbs)
Accessories	Owner's Manual, AC power cords x 2, Euroblock plug (three-pin)
EIA Rack Mount Size	5U
NC Value	Low mode: NC=15 / High mode: NC=25 *1

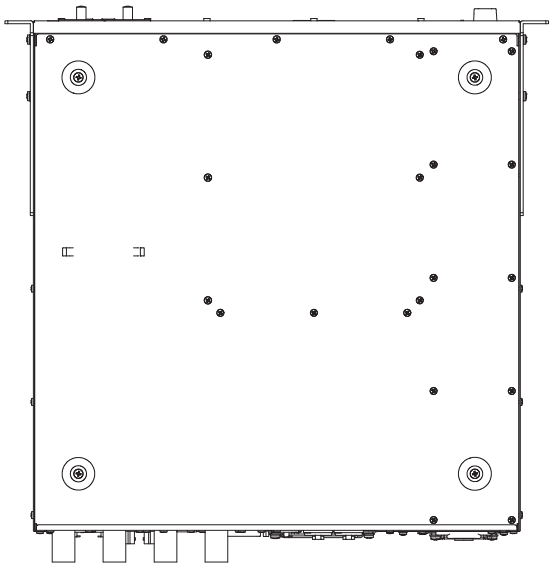
*1 Measuring position: 100cm away from the unit's from panel

Dimensions

Unit: mm (inch)







RIVAGE PM Components

- Control Surface CS-R10 / CS-R10-S / CSD-R7 / CS-R5 / CS-R3
- Signal Processor DSP-RX / DSP-RX-EX / DSP-R10
- I/O Rack RPio622 / RPio222 / Rio3224-D2 / Rio1608-D2 / RSio64-D / RMio64-D / Ri8-D / Ro8-D
- Audio Interface Card RY16-ML-SILK / RY16-DA / RY16-AE / HY256-TL / HY256-TL-SMF / HY144-D / HY144-D-SRC / HY128-MD

Software

- RIVAGE PM Editor
- MonitorMix
- Yamaha Console File Converter

Architectural and Engineering Specifications

The Yamaha DSP-R10 shall be a signal processpr for use with the Yamaha RIVAGE PM10 Digital Mixing System. DSP-R10 shall adopt TWINLANe network connectivity and it shall build a console network with low latency. DSP-R10 provides superior capability of processing digital adio signals of up to 144 input, 72 MIX, 36 MATRIX, and two STEREO channels. Local I/O shall include 4 HY Slots that are capable of transmitting/receiving up to 256 ins/outs of digital audio signals and 2 Mini-YGDAI slots to support various audio formats. It shall be Dual redundant power supply and power consumption shall be 190W. Dimensions shall be 480 (W) x 232 (H) x 490.8 (D) mm. Weight shall be 20 kg.

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