Overview

This I/O rack offers Dante, USB and analog input/output jacks and ports, and is useful in a wide range of situations. Use this product in conjunction with the bundled VST Rack Pro software to create a flexible, stable plug-in environment.

FRONT

REAR

Features

- Analog: 2 inputs, and 2 outputs
- Dante: 16 inputs, and 16 outputs
- USB: 18 inputs, and 16 outputs
- High-quality microphone preamp
- Bypass switch for preventing unexpected issues
- Rack-mountable (using the M4-size screw holes on the underside of the product)
- Includes VST Rack Pro software
- Dimensions (W×H×D): 180 × 42 × 121 mm (7.1" × 1.7" × 4.8")
- Weight: 1.0 kg (2.2 lbs)

Specifications 1/2

General Specifications

Local Connectors	Analog Inputs	2 Mic / Line (XLR)
	Analog Outputs	2 (XLR)
	Phones Output	1 (TRS Phone)
	Dante I/O	2 (etherCON: Primary / Secondary)
	USB 2.0 (PC)	1 (USB Type-C)
	DC Power Input	1 (USB Type-C)
Sampling Frequency		44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
Signal Delay		Less than 250 µs, Analog INPUT to Analog OUTPUT @Fs = 96 kHz Bypass USB mode
Power Requirements		5 V / 1.5 A
Power Consumption		7.5 W
Dimensions (W x H x D)		180 mm x 42 mm x 121 mm (7.1" x 1.7" x 4.8") (without rubber feet)
Weight		1.0 kg (2.2 lbs)
Operating Temperature Range		0 – 40°C
Storage Temperature Range		-20 – 60°C
Included Accessories		USB 2.0 Cable (Type-A to Type-C, 1.5 m), USB 2.0 Cable (Type-C to Type-C, 1.5 m), Cable hook, Rubber feet, Owner's Manual, VST Rack Pro Download Information

Technical Specifications

At the time of measurement, all levels are set to nominal. Output impedance of the signal generator is 150 Ω. 0 dBu is referenced to 0.775 Vrms.

Frequency Response

@ 20 Hz – 20 kHz, reference to the nominal output level @ 1 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 15, 16	OUTPUT 15, 16	10 kΩ	Gain: max, PAD: off	-1.5	0.0	+1.0	dB

Total Harmonic Distortion

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 15, 16	OUTPUT 15, 16	10 kΩ	+4 dBu @ 20 Hz – 20 kHz, Gain: min, PAD: on	–	–	0.02	%
INPUT 15, 16	PHONES	40 Ω	100 mW (Max.before clip level) @ 1 kHz, Gain: min, PAD: off	–	–	0.05	%

* Total Harmonic Distortion is measured with 22 kHz low pass filter.

Hum & Noise

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 15, 16	OUTPUT 15, 16	10 kΩ	Rs = 150 Ω, Gain: max, PAD: off	–	-128 EIN	–	dBu
				–	-64 NOISE	–	dBu
–	OUTPUT 15, 16	10 kΩ	Residual output noise, output level control min.	–	-95	–	dBu
–	PHONES	40 Ω	Residual output noise, phones level control min.	–	-102	–	dBu

* Hum & noise is measured with A-weighting filter equivalent to a 20 kHz filter with infinite dB/octave attenuation.
* EIN = Equivalent Input Noise

Dynamic Range

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 15, 16	OUTPUT 15, 16	10 kΩ	AD + DA, Gain: min, PAD: on	–	110	–	dB
			DA Converter	–	118	–	dB

* Dynamic range is measured with A-weighting filter equivalent to a 20 kHz filter with infinite dB/octave attenuation.

Crosstalk

@1 kHz

From/To	To/From	Conditions	Min.	Typ.	Max.	Unit
INPUT 15/16	INPUT 16/15	Gain: min (INPUT 15) > Gain: min (INPUT 16) Gain: min (INPUT 16) > Gain: min (INPUT 15)	–	–	-100	dB
		Gain: max (INPUT 15) > Gain: max (INPUT 16) Gain: max (INPUT 16) > Gain: max (INPUT 15)	–	–	-80	dB
		Gain: min (INPUT 15) > Gain: max (INPUT 16) Gain: min (INPUT 16) > Gain: max (INPUT 15)	–	–	-80	dB

* Crosstalk is measured with a 30 dB/oct filter @ 22 kHz.

Specifications 2/2

Analog Input Characteristics

0 dBu is referenced to 0.775 Vrms. +48 V DC (Phantom power) is supplied to both INPUT 15 and INPUT 16 connectors by using +48 V switch.

Input Terminals	PAD	Gain Trim	Actual Load Impedance	For Use with Nominal	Input Level		Connector	Balanced / Unbalanced
					Nominal	Max. before Clip		
INPUT 15, 16	0 dB	+64 dB	3 kΩ	50 – 600 Ω Mics	-60 dBu (0.775 mV)	-40 dBu (7.75 mV)	XLR-3-31 *1	Balanced
		+20 dB			-16 dBu (123 mV)	+4 dBu (1.23 V)		
	-26 dB	+38 dB		600 Ω Lines	-34 dBu (15.5 mV)	-14 dBu (155 mV)		
		-6 dB			+10 dBu (2.45 V)	+30 dBu (24.5 V)		

*1 XLR Jack pin assign: 1 = GND, 2 = HOT, 3 = COLD

Analog Output Characteristics

0 dBu is referenced to 0.775 Vrms.

Output Terminals	Actual Source Impedance	For Use with Nominal	Output Level		Connector	Balanced / Unbalanced
			Nominal	Max. before Clip		
OUTPUT 15, 16	75 Ω	10 kΩ Lines	+4 dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32 *1	Balanced
PHONES	10 Ω	40 Ω Phones	2.5 mW	100 mW	Stereo Phone Jack (TRS) *2	Unbalanced

*1 XLR pin assign: 1 = GND, 2 = HOT, 3 = COLD
*2 Stereo Phone Jack pin assign: Tip = LEFT, Ring = RIGHT, Sleeve = GND

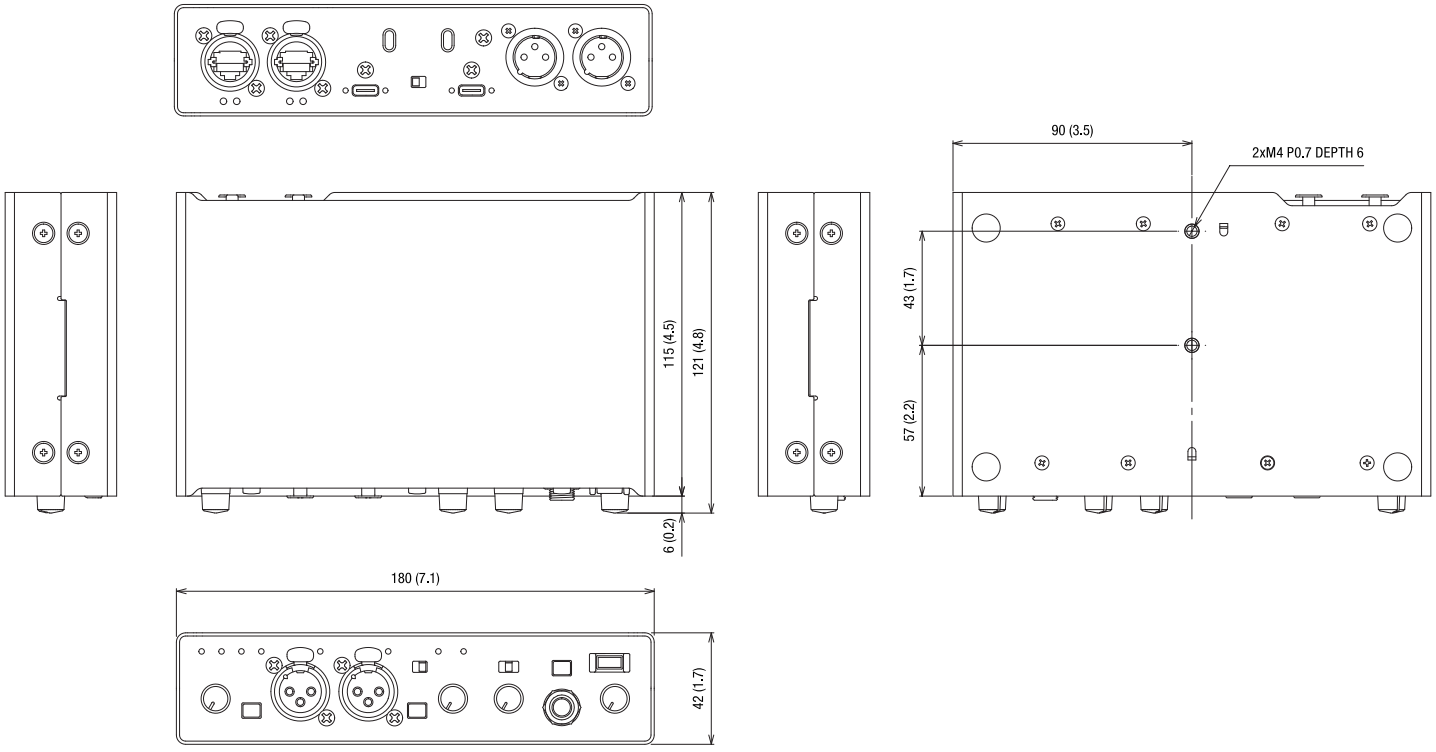
Digital I/O Characteristics

Terminal	Format	Data Length	Level	Audio	Connector
Dante Primary/ Secondary	Dante	24 bit / 32 bit	1000 Base-T	16 ch input (From other devices) 16 ch output (To other devices)	etherCON (CAT5e) x 2 *1 *2
USB 2.0 (PC)	USB 2.0	24 bit	480 Mbps	18 ch input (From PC) 16 ch output (To PC)	USB Type-C

*1 CAT5e or higher cable is used for connection.
*2 STP cable is recommended for connection.

Dimensions

Unit: mm (inch)



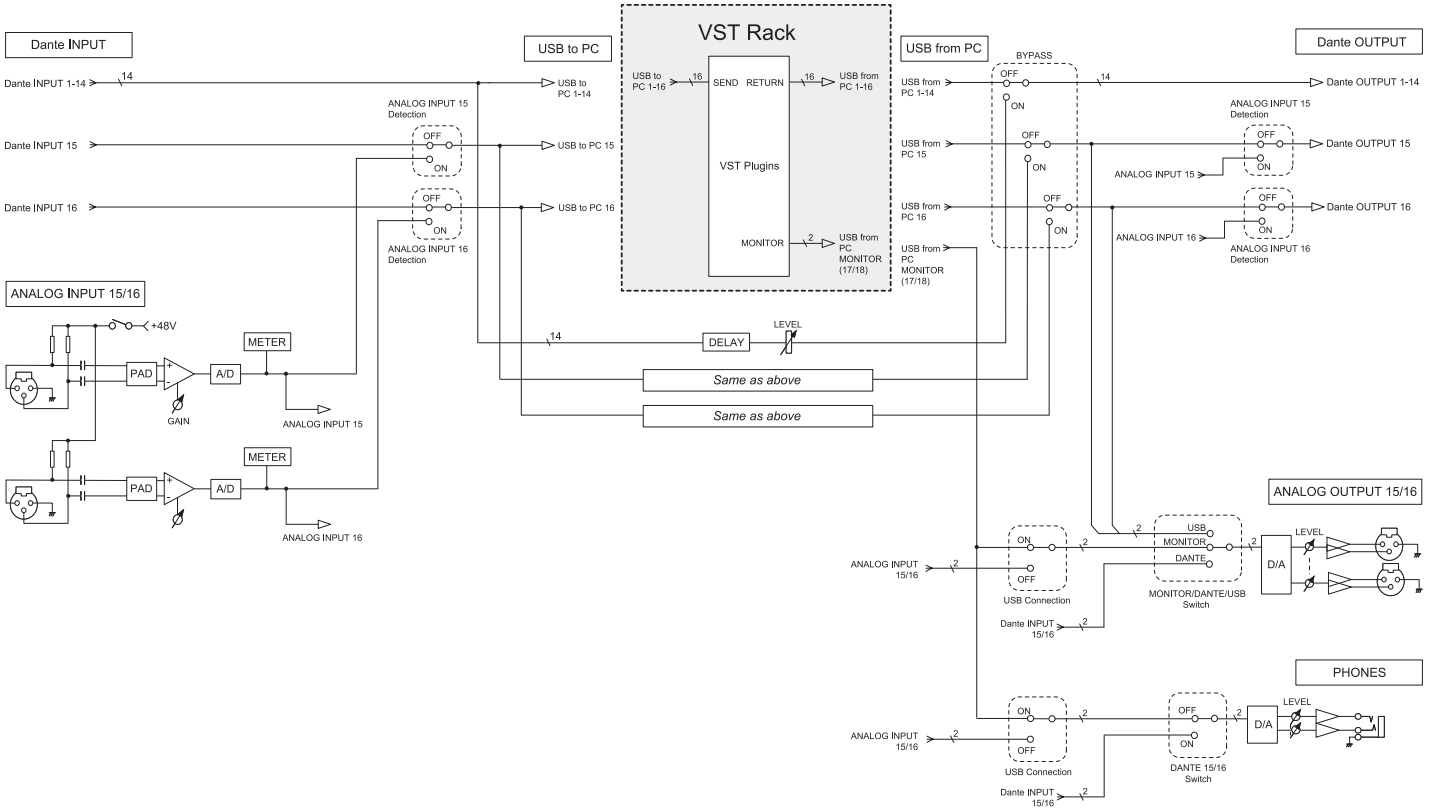
Software

- VST Rack Pro

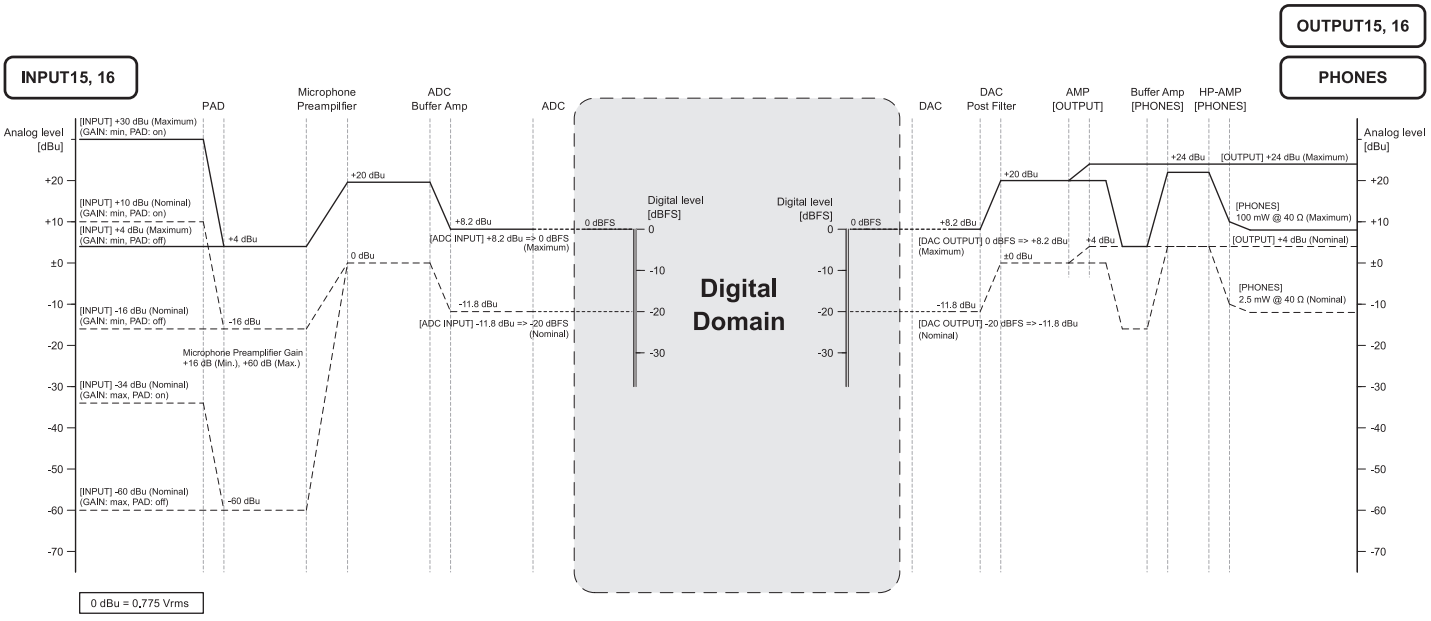
Architectural and Engineering Specifications

The Yamaha RUio16-D shall be a low-latency Dante-Analog-USB audio interface and plug-in support platform intended primarily for live sound applications. In addition to hardware interface functionality, the RUio16-D shall be bundled with and work in combination with VST Rack Pro software that shall make a wide range of VST audio processing plug-ins accessible to compatible digital mixers.
The RUio16-D shall provide 16 digital audio input and output channels via Dante audio networking, 18 digital audio input and 16 digital audio output channels via USB for connection to a computer, and two built-in analog audio inputs and outputs. The two analog inputs shall have switchable +48V phantom power, independent 26dB pads, and independent gain controls. The analog outputs shall have a Monitor/Dante/USB source selector switch and level control. A headphone jack with a level control and USB/Dante Input 15-16 source selector shall also be provided. A Bypass USB switch shall be provided to allow quick bypassing of the USB audio path when computer-based processing is not required, or a computer problem occurs.
Dante digital audio network connections shall be available via Primary and Secondary etherCON connectors. USB connectivity shall be provided via a USB 2.0 port. Power shall be supplied either via the USB bus or a separate USB power adapter or USB mobile battery connected to a switchable power-only USB (5V DC IN) connector.
The VST Rack Pro software bundled with the RUio16-D shall run on a computer connected to the RUio16-D via USB, providing access to a large number and variety of VST plug-ins for audio processing via analog and Dante connections. The VST Rack Pro software shall initially come supplied with a number of VST plug-ins. Other VST3 plug-ins can be added as needed.
The RUio16-D shall be 180mm wide x 42mm high x 121mm deep, and it shall weigh 1.0 kg.

Block Diagrams



Level Diagrams



*All information subject to change without notice.
*All trademarks and registered trademarks are property of their respective owners.
Created in October, 2021

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