Input/Output Specifications

Analog input specifications

Input Connectors	Gain	Input Impedance	Source Impedance	Input Level			Connector
				Sensitivity*1	Defined Level	Maximum Non-Clip Level	
INPUT 1-32 *6	+66dB	7.5 kΩ	50-600 Ω Mics & 600 Ω Lines	–82dBu (61.6μV)	–62dBu (0.616mV)	–42dBu (6.16mV)	XLR-3-31 type (Balanced)*2
	–6dB			–10dBu (245mV)	+10dBu (2.45V)	+30dBu (24.5V)	

*1. The sensitivity is the input level required for output at +4dBu (1.23V) or at the defined level when all the faders and level controllers are set to the maximum value.
*2. XLR-3-31 connectors are balanced jacks (1=GND, 2=HOT, 3=COLD).
*3. 0dBu=0.775 Vms for all specifications.
*4. All the AD converters use 24-bit linear/128-times oversampling.
*5. The INPUT connectors have +48V DC (phantom power) jacks, each of which can be turned on/off individually from the console software.
*6. QL1: INPUT1-16

Analog output specifications

Output Connectors	Output Impedance	Load Impedance	Maximum Output Level SW*5	Output Level		Connector
				Defined Level	Maximum Non-Clip Level	
OMNI OUT 1-16*7	75 Ω	600 Ω Lines	+24dB (default)	+4dBu (1.23V)	+24dBu (12.3V)	XLR-3-32 type (Balanced)*1
			+18dB	–2dBu (616mV)	+18dBu (6.16V)	
PHONES	15 Ω	8 Ω Phones	–	75mW*6	150mW	Stereo Phone Jack (TRS) (Unbalanced)*2
		40 Ω Phones	–	65mW*6	150mW	

*1. XLR-3-32 connectors are balanced jacks (1=GND, 2=HOT, 3=COLD).
*2. The PHONES connectors for stereo headphones are balanced jacks (Tip=LEFT, Ring=RIGHT, Sleeve= GND).
*3. 0 dBu=0.775 Vms for all specifications.
*4. All the DA converters use 24-bit linear/128-times oversampling.
*5. The console has an internal switch for toggling the maximum output level.
*6. This is a value measured with the PHONES LEVEL knob set to 10 dB below the maximum position.
*7. QL1: OMNI OUT 1-8

Digital input/output specifications

Connectors	Format	Data Length	Level	Audio	Connector
Primary/ Secondary	Dante	24bit or 32bit	1000Base-T	64ch Input/64ch Output @48kHz*1	etherCON CAT5e

*1. QL1: 32ch Input/32ch Output@48kHz

Digital output specifications

Connectors		Format	Data Length	Level	Connector
DIGITAL OUT*1	AES/EBU	AES/EBU Professional Use	24 bit	RS422	XLR-3-32 type (Balanced)*2

*1. Channel Status of DIGITAL OUT

Byte	Bit	Field Name	Fixed/Variable	Data	Description
0	0	Block Format	fixed	1	professional use
	1	Mode		0	audio
	2-4	Emphasis		0x4	off
	5	Fs Lock		0	lock
	6-7	Sampling Frequency	variable	0x0	others
				0x3	32 kHz
				0x2	44.1 kHz
				0x1	48 kHz
1	0-3	Channel Mode	fixed	0x1	2ch mode
	4-7	Users Bit Management		0x0	-
2	0-2	Use of AUX	fixed	0x1	24 bits Audio Data
	3-7	Source		0x00	-
3	0-7	Multi Channel	fixed	0x00	-
4	0-1	Digital Audio Reference Signal	fixed	0x0	-
	2	-		0	
	3-6	Sampling Frequency	variable	0x0	others
	7	Sampling Frequency Scan Flag	fixed	0	-

*2. XLR-3-32 type connectors are balanced. (1= GND, 2= HOT, 3= COLD)

I/O SLOT (1-2) specifications

A Mini-YGDAI card can be inserted into slots 1-2.
Only slot 1 supports serial interfaces.

Control I/O specifications

Connectors		Format	Level	Connector
MIDI	IN	MIDI	–	DIN Connector 5P
	OUT	MIDI	–	DIN Connector 5P
WORD CLOCK	IN	–	TTL/75 Ω terminated	BNC Connector
	OUT	–	TTL/75 Ω	BNC Connector
GPI (5IN/5OUT)		–	–	D Sub Connector 15P (Female)*1
NETWORK		IEEE802.3	10BASE-T/100Base-TX	RJ-45
LAMP (QL5: x2, QL1: x1)		–	0V-12V	XLR-4-31 type*2
USB HOST		USB 2.0	–	USB A Connector (Female)

*1. Input pin: TTL level, w/ internal pull-up (47kΩ)
Output pin: Open drain output (Vmax=12V, maximum sink current/pin=75mA)
Power supply pin: Output voltage Vp=5V, Max. output current Imax=300mA
*2. 4 pin=+12V, 3 pin=GND, Lamp nominal power: 5W, Brightness (voltage) can be adjusted from the software.

Electrical characteristics

All faders are nominal when measured. Output impedance of signal generator: 150 ohms

■Frequency Response.

Fs= 48 kHz @20 Hz–20 kHz, referenced to the nominal output level @1 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-32*1	OMNI OUT 1-16*2	600 Ω	GAIN: +66dB	–1.5	0.0	0.5	dB
	PHONES	8 Ω		–3.0	0.0	0.5	

*1. QL1: INPUT 1-16
*2. QL1: OMNI OUT 1-8

■Total Harmonic Distortion.

Fs= 48 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-32*1	OMNI OUT 1-16*2	600 Ω	+4 dBu @20 Hz–20 kHz, GAIN: +66dB			0.1	%
			+4 dBu @20 Hz–20 kHz, GAIN: –6dB			0.05	
Internal OSC	OMNI OUT 1-16*2	600 Ω	Full Scale Output @1 kHz			0.02	
	PHONES	8 Ω	Full Scale Output @1 kHz, PHONES Level Control: Max.			0.2	

*1. QL1: INPUT 1-16
*2. QL1: OMNI OUT 1-8
*3. Total Harmonic Distortion is measured with a 18 dB/octave filter @80 kHz

■Hum & Noise.

Fs= 48 kHz, EIN= Equivalent Input Noise

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-32*1	OMNI OUT 1-16*2	600 Ω	Rs= 150 Ω, GAIN: +66dB Master fader at nominal level and one Ch fader at nominal level.		–128 EIN		dBu
					–62		
			Rs= 150 Ω, GAIN: –6dB Master fader at nominal level and one Ch fader at nominal level.		–84	–80	
All INPUTs	OMNI OUT 1-16*2	600 Ω	Rs= 150 Ω, GAIN: –6dB Master fader at nominal level and all INPUT 1-32*1 in faders at nominal level.			QL5: –64 QL1: –67	
—	OMNI OUT 1-16*2	600 Ω	Residual Output Noise, ST Master Off			–88	
—	PHONES	8 Ω	Residual Output Noise, PHONES Level Control Min.			–88	

*1. QL1: INPUT 1-16
*2. QL1: OMNI OUT 1-8
*3. Hum & Noise are measured with A-weight filter.

■Dynamic Range.

Fs= 48 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
INPUT 1-32*1	OMNI OUT 1-16*2	600 Ω	AD + DA, GAIN: –6dB		108		dB
—	OMNI OUT 1-16*2	600 Ω	DA Converter		112		dB

*1. QL1: INPUT 1-16
*2. QL1: OMNI OUT 1-8
*3. Dynamic Range are measured with A-weight filter.

■Sampling Frequency

Parameter		Conditions	Min.	Typ.	Max.	Unit
External Clock	Frequency Range	Fs= 44.1 kHz Fs= 45.9375 kHz (44.1 kHz +4.1667%) Fs= 44.1441 kHz (44.1 kHz +0.1%) Fs= 44.0559 kHz (44.1 kHz –0.1%) Fs= 42.336 kHz (44.1 kHz –4.0%)	–200		+200	ppm
		Fs= 48 kHz Fs= 50 kHz (48 kHz +4.1667%) Fs= 48.048 kHz (48 kHz +0.1%) Fs= 47.952 kHz (48 kHz –0.1%) Fs= 46.080 kHz (48 kHz –4.0%)				
	Jitter of PLL	DIGITAL IN Fs= 44.1 kHz DIGITAL IN Fs= 48 kHz			10	ns
Internal Clock	Frequency	Word Clock : Int 44.1 kHz		44.1		kHz
		Word Clock : Int 48 kHz		48		
	Accuracy	Word Clock : Int 44.1 kHz	–50		+50	ppm
		Word Clock : Int 48 kHz				
	Jitter	Word Clock : Int 44.1 kHz			4.429	ns
		Word Clock : Int 48 kHz			4.069	

Mixer Basic Parameters

Libraries

Name	Number	Total
Scene Memory	Preset 1 + User 300	301
Input CH Library	Preset 1 + User 199	200
Output CH Library	Preset 1 + User 199	200
Input EQ Library	Preset 40 + User 159	199
Output EQ Library	Preset 3 + User 196	199
Dynamics Library	Preset 41 + User 158	199
Effect Library	Preset 27 + User 172	199
GEQ Library	Preset 1 + User 199	200
Premium Rack Library Portico5033 Portico5043 U76 Opt-2A EQ-1A Dynamic EQ	Preset 1 + User 199	200
Dante Input Patch Library	Preset 1 + User 10	11

Input Function

Function	Parameter
Phase	Normal/Reverse
Digital Gain	–96 dB to +24 dB
L, R-MONO	L-MONO/R-MONO/LR-MONO/STEREO IN
HPF	Slope= –12dB/Oct, –6dB/Oct
	Frequency= 20 Hz to 600 Hz
Attenuator	–96 dB to 0 dB
4 Band Equalizer	Frequency= 20 Hz to 20 kHz
	Gain= –18 dB to +18 dB
	Q= 0.10 to 10.0
	Low Shelving (Low Band)
	High Shelving, LPF (High Band)
	Type I/Type II
Insert	Insert Point: Pre EQ/Pre Fader/Post On
Direct Out	Direct Out Point: Pre HPF/Pre EQ/Pre Fader/Post On
Dynamics 1	Type: Gate/Ducking/Comp/Expander
	Threshold=Gate: –72 dB to 0 dB Others: –54 dB to 0 dB
	Ratio= 1:1 to ∞:1
	Attack= 0 msec to 120 msec
	Hold= 48 kHz: 0.02 msec to 1.96 sec 44.1 kHz: 0.02 msec to 2.13 sec
	Decay= 48 kHz: 5 msec to 42.3 sec 44.1 kHz: 6 msec to 46.1 sec
Dynamics 1	Releace= 48 kHz: 5 msec to 42.3 sec 44.1 kHz: 6 msec to 46.1 sec
	Range= Gate: –∞ dB to 0 dB Ducking: –70 dB to 0 dB
	Gain= 0.0 dB to +8dB
	Knee= Hard to 5 (soft)
	Key In: Self Pre EQ/Self Post EQ/Mix Out13-16 Ch1-STIN8R (8ch block)
	Key In Filter: HPF/LPF/BPF
Dynamics2	Type: Comp/De-Esser/Compander H/Compander S
	Threshold= –54 dB to 0 dB
	Ratio= 1:1 to ∞:1 Compander: 1:1 to 20:1
	Attack= 0 msec to 120 msec
	Release= 48 kHz: 5 msec to 42.3 sec 44.1 kHz: 6 msec to 46.1 sec
	Gain= –18 dB to 0 dB, 0 dB to +18 dB
	Knee= Hard to 5 (soft)
	Key In: Self Pre EQ/Self Post EQ/Mix Out13-16 Ch1-STIN8R (8ch block)
	Width= 1 dB to 90 dB
	Frequency= 1.0 KHz to 12.5KHz
	TYPE= HPF, BPF
	Q= 0.10 to 10.0
Fader	Level: 1024 steps, ∞, –138 dB to +10 dB
On	On/Off
Pan/Balance	Position L63 to R63 Pan Mode: Pan/Balance
DCA Group	16 Groups
Mute Group	8 Groups
Mix Send	24 sends
	Fix/Variable can be set each two mixes (Surround Pan can be set 1 to 6 mixes)
	Mix Send Point: Pre EQ/Pre Fader/Post On
	Level: 1024 steps, ∞, –138 dB to +10 dB (Position L63 to R63, R63 to F63 for Surround)
Matrix Send	8 Sends
	Matrix Send Point: Pre EQ/Pre Fader/Post On
	Level: 1024 steps, ∞, –138 dB to +10 dB
LCR Pan	CSR= 0% to 100%
DELAY	0 ms to 1000 msec

Output Function

Function	Parameter
Attenuator	–96 dB to 0 dB
4 Band Equalizer	Frequency= 20 Hz to 20 kHz
	Gain= –18 dB to +18 dB
	Q= 0.10 to 10.0
	Low Shelving (Low Band)
	High Shelving, LPF (High Band)
	Type I/Type II
Insert	Insert Point: Pre EQ/Pre Fader/Post On
Dynamics 1	Type: Comp/Expander/Compander H/Compander S
	Threshold= –54 dB to 0 dB
	Ratio= 1:1 to ∞:1 Compander: 1:1 to 20:1
	Attack= 0 msec to 120 msec
	Release= 48 kHz: 5 msec to 42.3 sec 44.1 kHz: 6 msec to 46.1 sec
	Gain= –18 dB to 0 dB, 0 dB to +18 dB
	Knee= Hard to 5 (soft)
	Key In: Self Pre EQ/Self Post EQ/Mix Out13-16/ MTRX1-8/STIN LR/MONO(C) (8ch block)
	Width= 1 dB to 90 dB
Fader	Level: 1024 steps, ∞, –138 dB to +10 dB
On	On/Off
Pan/Balance	Position L63 to R63
DCA Group	16 Groups
Mute Group	8 Groups
Mix to Matrix Stereo to Matrix	Matrix Send Point: Pre Fader/Post On
	Level: 1024 steps, ∞, –138 dB to +10 dB
Oscillator	Level= 0 to –96dB (1 dB step) On/Off= Software control

Output Port

Function	Parameter
Out Port Delay	0 msec to 1000 msec
Out Port Phase	Normal/Reverse
Gain	–96 to +24 dB

Processor

Function	Parameter
GEQ	31 bands x 8(16) or 15 bands x 16(32) or 16 ch Automixer x1 or 8 ch Automixer x1
PEQ	(8 bands PEQ + 3 notchs + HPF, LPF) x 16(32) systems
Effects	Stereo In/Stereo Out multi effector x 8 systems
Premium Rack Parameter	Stereo(Dual) In/Stereo(Dual) Out Premium Rack x 8 systems