

## Input/output characteristics

### ANALOG INPUT CHARACTERISTICS

Input Terminals	GAIN	Actual Load Impedance	For Use With Nominal	Input Level			Connector
				Sensitivity* <sup>1</sup>	Nominal	Max. before clip	
OMNI IN 1-8	+66dB	7.5kΩ	50-600Ω Mics & 600Ω Lines	-82dBu (61.6μV)	-62dBu (0.616mV)	-42dBu (6.16mV)	XLR-3-31 type (Balanced)* <sup>2</sup>
	-6dB			-10dBu (245mV)	+10dBu (2.45V)	+30dBu (24.5V)	
TALKBACK	+64dB	10kΩ	50-600Ω Mics & 600Ω Lines	-70dBu (0.245mV)	-60dBu (0.775mV)	-40dBu (7.75mV)	XLR-3-31 type (Balanced)* <sup>2</sup>
	+20dB			-26dBu (38.8mV)	-16dBu (0.123V)	+4dBu (1.23V)	

\*1. Sensitivity is the lowest level that will produce an output of +4dBu (1.23V) or the nominal output level when the unit is set to maximum gain. (all faders and level controls are maximum position.)

\*2. XLR-3-31 type connectors are balanced. (1= GND, 2= HOT, 3= COLD)

\* In these specifications, 0dBu= 0.775 Vrms.

\* All input AD converters are 24bit linear, 128times oversampling.

\* +48V DC ( phantom power ) is supplied to ONI IN (1-8) and TALKBACK XLR type connectors via each individual software controlled switches.

### ANALOG OUTPUT CHARACTERISTICS

Output Terminals	Actual Source Impedance	For Use With Nominal	GAIN SW <sup>3</sup>	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)* <sup>1</sup>
			+18dB	-2dBu (61.6mV)	+18dBu (6.16V)	
PHONES	15Ω	8Ω Phones	-	75mW <sup>4</sup>	150mW	Stereo Phone Jack (TRS) (Unbalanced)* <sup>2</sup>
		40Ω Phones	-	65mW <sup>4</sup>	150mW	

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

\*2. PHONES stereo phone jack is unbalanced. (Tip= LEFT, Ring= RIGHT, Sleeve= GND)

\*3. There are switches inside the body to preset the maximum output level.

\*4. The position of the level control is 10dB lowered from Max.

\* In these specifications, 0dBu= 0.775 Vrms.

\* All output DA converters are 24bit, 128times oversampling.

### DIGITAL INPUT & OUTPUT CHARACTERISTICS

Terminal	Format	Data length	Level	Audio	Connector
Primary/Secondary	Dante	24bit or 32bit	1000Base-T	64ch Input/64ch Output @48kHz	EtherCON Cat5e

### DIGITAL OUTPUT CHARACTERISTICS

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

\*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
				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 (1-3) CHARACTERISTICS

Each I/O Slot accepts a mini-YGDAI card. Only Slot1 has a serial interface.

## CONTROL I/O CHARACTERISTICS

Terminal	Format	Level	Connector	
MIDI	IN	MIDI	-	DIN Connector 5P
	OUT	MIDI	-	DIN Connector 5P
WORD CLOCK	IN	-	TTL/75Ω terminated	BNC Connector
	OUT	-	TTL/75Ω	BNC Connector
GPI (SIN/SOUT)	-	-	-	D Sub Connector 15P (Female)*1
NETWORK	IEEE802.3	10BASE-T/100Base-TX	-	RJ-45
LAMP (CL5: x3, CL3: x2, CL1: x1)	-	0V-12V*2	-	XLR-4-31 type*2
USB HOST	USB 2.0	-	-	USB A Connector (Female)
DC POWER INPUT	-	-	-	JL05 Connector
METER (CL3/CL1 only)	-	-	-	D Sub Connector 9P (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 rating 5W. Voltage control by software.

## Electrical Characteristics

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

### Frequency Response.

Fs= 44.1 kHz or 48 kHz @20 Hz-20 kHz, referenced to the nominal output level @1 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600 Ω	GAIN: +66dB	-1.5	0.0	0.5	dB
	PHONES	8 Ω		-3.0	0.0	0.5	

### Total Harmonic Distortion.

Fs= 44.1 kHz or 48 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	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 1-8	600 Ω	Full Scale Output @1 kHz			0.02	%
	PHONES	8 Ω	Full Scale Output @1 kHz, PHONES Level Control: Max.			0.2	

\* Total Harmonic Distortion is measured with a 18 dB/octave filter @80 kHz

### Hum & Noise.

Fs= 44.1 kHz or 48 kHz, EIN= Equivalent Input Noise

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600 Ω	Rs= 150 Ω, GAIN: +66dB Master fader at nominal level and one Ch fader at nominal level.		-128		dBu
					EIN		
All INPUTS	OMNI OUT 1-8	600 Ω	Rs= 150 Ω, GAIN: -6dB Master fader at nominal level and one Ch fader at nominal level.			-79	dBu
						-79	
-	OMNI OUT 1-8	600 Ω	Residual Output Noise, ST Master Off			-88	
-	PHONES	8 Ω	Residual Output Noise, PHONES Level Control Min.			-88	

\* Hum & Noise are measured with A-weight filter.

### Dynamic Range.

Fs= 44.1 kHz or 48 kHz

Input	Output	RL	Conditions	Min.	Typ.	Max.	Unit
OMNI IN 1-8	OMNI OUT 1-8	600 Ω	AD + DA, GAIN: -6dB		108		dB
-	OMNI OUT 1-8	600 Ω	DA Converter		112		dB

\* Dynamic Range are measured with A-weight filter.

## Sampling Frequency

Parameter	Conditions	Min.	Typ.	Max.	Unit
External Clock	Frequency Range	-200		+200	ppm
	Jitter of PLL				
Internal Clock	Frequency			44.1	kHz
	Accuracy		-50	+50	ppm
	Jitter			4.429	ns
				4.069	ns

## 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	Preset 1 + User 199	200
Opt-2A		
EQ-1A		
Dynamic EQ		
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

Function	Parameter	
Dynamics 1	Release= 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 Out21-24 Ch1-STIN8R (8ch block)	
	Key In Filter: HPF/LPF/BPF	
	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	
Dynamics 2	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 Out21-24 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	
Matrix Send	Level: 1024 steps, ∞, -138 dB to +10 dB (Position L63 to R63, R63 to F63 for Surround)	
	8 Sends Matrix Send Point: Pre EQ/Pre Fader/Post On	
LCR Pan	Level: 1024 steps, ∞, -138 dB to +10 dB	
DELAY	CSR= 0% to 100% 0 ms to 1000 msec	

### Output Function

Function	Parameter
Attenuator	-96 dB to 0 dB

Function	Parameter
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 Out21-24 MIX24/ 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	Matrix Send Point: Pre Fader/Post On
Stereo to Matrix	Level: 1024 steps, ∞, -138 dB to +10 dB
Oscillator	Level= 0 to -96dB (1 dB step) On/Off= Software control

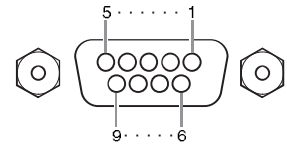
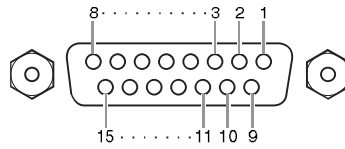
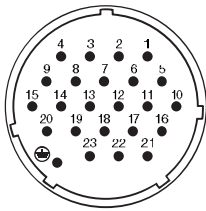
### Output Port

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 16(24) or 15 bands x 32(48) systems
PEQ	(8 bands PEQ + 3 notchs + HPF, LPF) x 32(48) systems
AUTOMIXER	8(16) channels
Effects	Stereo In/Stereo Out multi effector x 8 systems
Premium Rack Parameter	Stereo(Dual) In/Stereo(Dual) Out Premium Rack x 8 systems

## Pin Assignment



### DC POWER INPUT

Pin	Signal Name	Pin	Signal Name
1	+24V	13	GND
2	+24V	14	GND
3	+24V	15	GND
4	+24V	16	GND
5	+24V	17	GND
6	+24V	18	GND
7	+24V	19	CAUTION(+)
8	+24V	20	CAUTION(-)
9	+24V	21	DETECT A
10	GND	22	DETECT B
11	GND	23	DETECT GND
12	GND	⊖	Frame GND

### GPI

Pin	Signal Name	Pin	Signal Name
1	GPO1	9	GPO2
2	GPO3	10	GPO4
3	GPOS	11	GND
4	GND	12	GND
5	+5V	13	+5V
6	GPI1	14	GPI2
7	GPI3	15	GPI4
8	GPI5		

### METER (CL3/CL1 only)

Pin	Signal Name	Pin	Signal Name
1	RESET	6	+3.3LD
2	SDA	7	+3.3LD
3	DGND	8	LDGND
4	SCL	9	LDGND
5	+3.3D		