

# XL8 TECHNICAL SPECIFICATION



## XL8 General Statistics

Dedicated XLR Connections	4 x 6U rack Splitters house 96 x Splitter mic/line inputs 2 x 96 Splitter outputs 1 x 96 transformer isolated Splitter outputs
Configurable XLR Connections	5 x 3U rack configurable I/O Boxes house 120 x I/O slots in 15 x 8 wide blocks of:- 8 x mic/line inputs or 8 x line outputs or 4 (stereo) AES3 in and 4 (stereo) AES3 out
Typical Configuration (assumes all analogue I/O)	96 x mic/line inputs with splits 16 x mic/line auxiliary inputs (total mic input count of 112) 32 x aux/group outputs 16 x matrix outputs 1 x stereo master outputs 1 x mono master output 2 x stereo local monitor outputs 49 x assignable I/O
Input Audio Processing	96 x dual slope hi & low pass filters 96 x 4 band para EQ with 3 shelf modes 96 x 4 mode creative input compressors 96 x input gates
Mix/Output Audio Processing	51 x output 6 band para EQ with shelf and multiple hi & low pass modes 51 x 5 mode creative output dynamics 16 x assignable Klark Teknik output GEQs
Assignable Audio Processing	16 x assignable stereo effects (that can be set as additional stereo GEQs)
Mixing Control Assistance	8 x auto mutes 8 x surface population groups 12 x VCA faders 12 x VCA associated population groups 1000 scene snapshot automation
Resilience	N+1 and fault tolerant modular system with dual redundant system interconnections

## XL8 General Specifications

Sampling Frequency	96kHz
Latency Delay	< 2mS Input to Master (no compensation)
Dynamic Range	110dB 22Hz – 22kHz (no pre emphasis)
Maximum Voltage Gain	85dB Inputs to Sub Groups and Masters 91dB Inputs to Aux and Matrix
Crosstalk @ 1kHz	-100dB physically adjacent input channels
Crosstalk @ 10kHz	-100dB physically adjacent input channels
Fader/Pan cut off @ 1kHz	-100dB
Fader/Pan cut off @ 10kHz	-100dB
Display Screens	5 x 15" daylight viewable colour screens

LCD Switch	70 x RGB colour
Motorised Faders	71 x touch sensitive (+31 on GEQ Rapide)
Fader Resolution	1024 steps
Encoders	258 x touch sensitive
Encoder Resolution	512 steps
Dimensions	XL8 Control Centre 1875 x 1054 x 421mm DL431 Splitter 6U x 410mm deep DL451 I/O Box 3U x 410mm deep DL461 Router 3U x 410mm deep DL 471 DSP 1U x 410mm deep
Net Weight (standard install)	Control Centre - 160Kg 4 x DL431 - 86Kg 5 x DL451 - 63Kg 2 x DL461 - 23Kg 10 x DL471 - 67Kg Total - 399Kg
Power Requirements	100V to 240V, 50 to 60Hz
Operating Temperature Range	+5 to +40 degrees C
Storage Temperature Range	-20 to +60 degrees C

## XL8 Audio Performance Specifications

### Frequency Response

Input	Output	Gain	20Hz	20kHz
431 Splitter	431 A Out	0dB	0dB to -0.5dB	0dB to -0.5dB
431 Splitter	431 A Out	40dB	0dB to -0.5dB	0dB to -0.5dB
431 Splitter	431 B Out	0dB	0dB to -0.5dB	0dB to -0.5dB
431 Splitter	431 B Out	40dB	0dB to -0.5dB	0dB to -0.5dB
431 Splitter	431 C Out	-6dB	0dB to -1.0dB	0dB to -1.0dB
431 Splitter	451 I/O Box	0dB	0dB to -1.0dB	0dB to -1.0dB
431 Splitter	451 I/O Box	40dB	0dB to -1.0dB	0dB to -1.0dB
451 I/O Box	451 I/O Box	0dB	0dB to -1.0dB	0dB to -1.0dB
451 I/O Box	451 I/O Box	40dB	0dB to -1.0dB	0dB to -1.0dB

### Gain Error at 1kHz

Input	Output	Gain	Max	Min
431 Splitter	431 A Out	0dB	+0.5dB	-0.5dB
431 Splitter	431 A Out	40dB	+0.5dB	-0.5dB
431 Splitter	431 B Out	0dB	+0.5dB	-0.5dB
431 Splitter	431 B Out	40dB	+0.5dB	-0.5dB
431 Splitter	431 C Out	-6dB	+1.0dB	-1.0dB
431 Splitter	451 I/O Box	0dB	+1.0dB	-1.0dB

431 Splitter	451 I/O Box	40dB	+1.0dB	-1.0dB
451 I/O Box	451 I/O Box	0dB	+1.0dB	-1.0dB
451 I/O Box	451 I/O Box	40dB	+1.0dB	-1.0dB

### Input CMRR

Input	Output	Gain	100Hz	1kHz
431 Splitter	431 A Out	0dB	80dB	80dB
431 Splitter	431 A Out	40dB	90dB	90dB
431 Splitter	431 B Out	0dB	80dB	80dB
431 Splitter	431 B Out	40dB	90dB	90dB
431 Splitter	431 C Out	-6dB	110dB	90dB
431 Splitter	451 I/O Box	0dB	80dB	80dB
431 Splitter	451 I/O Box	40dB	90dB	90dB
451 I/O Box	451 I/O Box	0dB	80dB	80dB
451 I/O Box	451 I/O Box	40dB	90dB	90dB

### Distortion at 0dBu

Input	Output	Gain	1kHz	10kHz
431 Splitter	431 A Out	0dB	0.01%	0.01%
431 Splitter	431 A Out	40dB	0.03%	0.03%
431 Splitter	431 B Out	0dB	0.01%	0.01%
431 Splitter	431 B Out	40dB	0.03%	0.03%
431 Splitter	431 C Out	-6dB	0.01%	0.01%
431 Splitter	451 I/O Box	0dB	0.01%	0.01%
431 Splitter	451 I/O Box	40dB	0.03%	0.03%
451 I/O Box	451 I/O Box	0dB	0.01%	0.01%
451 I/O Box	451 I/O Box	40dB	0.03%	0.03%

### Distortion at +20dBu

Input	Output	Gain	1kHz	10kHz
431 Splitter	431 A Out	0dB	0.03%	0.03%
431 Splitter	431 A Out	40dB	0.03%	0.03%
431 Splitter	431 B Out	0dB	0.03%	0.03%
431 Splitter	431 B Out	40dB	0.03%	0.03%
431 Splitter	431 C Out	-6dB	0.03%	0.03%
431 Splitter	451 I/O Box	0dB	0.03%	0.03%
431 Splitter	451 I/O Box	40dB	0.03%	0.03%

451 I/O Box	451 I/O Box	0dB	0.03%	0.03%
451 I/O Box	451 I/O Box	40dB	0.03%	0.03%

### Mixing Noise (all buss types) 22-22kHz Un-weighted

No of Inputs	Gain	Fader Pos	Pan	Output Noise
12	0dB	- infin	central	-91dBu
12	0dB	0dB	central	-84dBu
24	0dB	- infin	central	-91dBu
24	0dB	0dB	central	-81dBu
48	0dB	- infin	central	-91dBu
48	0dB	0dB	central	-78dBu
96	0dB	- infin	central	-91dBu
96	0dB	0dB	central	-75dBu

### Signal Path Noise 22-22kHz Un-weighted (inputs 150R terminated)

Input	Output	Gain	Output Noise	EIN
431 Splitter	431 A Out	0dB	-98dBu	-98dBu
431 Splitter	431 A Out	40dB	-88dBu	-128dBu
431 Splitter	431 B Out	0dB	-98dBu	-98dBu
431 Splitter	431 B Out	40dB	-88dBu	-128dBu
431 Splitter	431 C Out	-6dB	-123dBu	-117dBu
431 Splitter	451 I/O Box	0dB	-89dBu	-89dBu
431 Splitter	451 I/O Box	40dB	-87dBu	-127dBu
451 I/O Box	451 I/O Box	0dB	-89dBu	-89dBu
451 I/O Box	451 I/O Box	40dB	-87dBu	-127dBu

### Dynamic Range 22-22kHz Un-weighted

Input	Output	Gain	Max Output	Dynamic Range
431 Splitter	431 A Out	0dB	+26dBu	124dB
431 Splitter	431 A Out	40dB	+26dBu	114dB
431 Splitter	431 B Out	0dB	+26dBu	124dB
431 Splitter	431 B Out	40dB	+26dBu	114dB
431 Splitter	431 C Out	-6dB	+21dBu	144dB
431 Splitter	451 I/O Box	0dB	+21dBu	110dB
431 Splitter	451 I/O Box	40dB	+21dBu	108dB
451 I/O Box	451 I/O Box	0dB	+21dBu	110dB
451 I/O Box	451 I/O Box	40dB	+21dBu	108dB

# XL8 System Inputs and Outputs

## DL451 Splitter Analogue Inputs

Connector	3 pin XLR balanced
Phantom Power	48 Volt with local switch and remote control from XL8 control centre
Gain Control A	-2.5dB to +45dB analogue gain in 2.5dB steps with local and remote control; plus a further + or -20dB of hi resolution interpolated DSP trim
Gain Control B	Independent second channel identical to above
Filter A	30Hz high pass with local defeat switch and remote control from XL8 control centre
Filter B	Independent second channel identical to above
Meter (Qty 24)	7 segment -18dBu to +24dBu
Meter A/B	Meters can be switched to monitor A or B pre amplifiers
AD Converter A	24 bit, 96k and 128 times over sampling
AD Converter B	Independent second channel identical to above

## DL431 Splitter Analogue Outputs

Connector A	3 pin XLR balanced
Connector B	Independent second channel identical to above
Connector C	Independent third channel on front mounted 3 pin XLR, balanced and transformer isolated (with fixed gain of -6dB)
Headphone Connector	1/4 inch jack
Audio Monitor	3 pin XLR balanced

## DL431 Splitter Digital (System) Outputs

System Connector A	AES50 (24 channels of digital audio) on Ethercon XLR
System Connector B	Independent second channel identical to above
Duplicate Connector A	AES50 (24 channels of digital audio) on Ethercon XLR providing dual redundant back up of A channels
Duplicate Connector B	AES50 (24 channels of digital audio) on Ethercon XLR providing dual redundant back up of B channels

## DL451 I/O Box Inputs

Connector	3 pin XLR balanced
AD Converter	24 bit, 96k and 128 times over sampling

## DL451 I/O Box Analogue Outputs

Connector	3 pin XLR balanced
DA Converter	24 bit, 96k and 128 times over sampling

### DL451 I/O Digital Inputs

Connector	AES3 (two channels of digital audio) on 3 pin XLR
Sample Rates	Accepts any frequency 32k - 96k
Bypass	Sample rate converter can be bypassed

### DL451 I/O Digital Outputs

Connector	AES3 (two channels of digital audio) on 3 pin XLR
Sample Rate	48k, 96k or auto tracking to Inputs
Bypass	Sample rate converter can be bypassed
Word length	16, 20 or 24 bit

### DL451 MIDI & GPIO

MIDI Connector	In, out and through on 5 pin DIN
GPIO IN Connector	25 pin D TYPE (opto isolated)
GPIO OUT Connector	25 pin D TYPE (opto isolated)

### DL451 I/O Digital System Inputs and Outputs

System Connector	AES50 (24 channels of bi directional digital audio) on Ethercon XLR
Duplicate Connector	AES50 (24 channels of bi directional digital audio) on Ethercon XLR providing dual redundant back up of channels

### DL461 Router Digital Audio System Inputs and Outputs

System Connector	AES50 (24 channels of bi directional digital audio) on Ethercon XLR
Duplicate Connector	AES50 (24 channels of bi directional digital audio) on Ethercon XLR providing dual redundant back up of channels
Snake Connector (copper)	Sony HyperMac (192 channels of bi directional digital audio) on Ethercon XLR
Snake Connector (fibre)	Sony HyperMac (192 channels of bi directional digital audio) on Opticon XLR

### DL461 Router Control Data System Inputs and Outputs

System Connector	Ethercon XLR
Duplicate Connector	Ethercon XLR providing dual redundant back up

### DL461 Router Misc Inputs and Outputs

Word Clock IN Connector	BNC
Word Clock OUT Connector	BNC
AES3 Sync IN Connector	3 pin XLR

AES3 Sync OUT Connector	3 pin XLR
Ethernet Tunnel 1 Connector	Ethercon XLR
Ethernet Tunnel 2 Connector	Ethercon XLR
Expansion Ethernet Connector	Ethercon XLR
Expansion Gigabit Connector	Ethercon XLR

### **XL8 Control Centre Analogue Audio System Inputs**

Monitor Connector	3 pin XLR balanced
Intercom Connector	3 pin XLR dual channel (bi directional) RTS
Talk Connector	3 pin XLR balanced with 48V phantom
Meters (Qty 24)	20 segment -36dBu to +21dBu

### **XL8 Control Centre Analogue Audio System Outputs**

Monitor Connector	3 pin XLR balanced
Talk Connector	3 pin XLR balanced
Intercom Connector	3 pin XLR balanced
Headset Connector	5 pin XLR (stereo)
Headphone Connector	1/4 inch Jack (stereo)
Meters (Qty 39)	20 segment -36dBu to +21dBu

### **XL8 Control Centre Digital Audio System Inputs and Outputs**

System Connector	AES50 (24 channels of bi directional digital audio) on Ethercon XLR
Duplicate Connector	AES50 (24 channels of bi directional digital audio) on Ethercon XLR providing dual redundant back up of channels
Snake Connector (copper)	Sony HyperMac (192 channels of bi directional digital audio) on Ethercon XLR
Snake Connector (fibre)	Sony HyperMac (192 channels of bi directional digital audio) on Opticon XLR

### **XL8 Control Centre Control Data System Inputs and Outputs**

System Connector	Ethercon XLR
Duplicate Connector	Ethercon XLR providing dual redundant back up

### **XL8 Control Centre Misc Inputs and Outputs**

Word Clock IN Connector	BNC
Word Clock OUT Connector	BNC
Duplicate Word Clock IN	BNC providing dual redundant back up
Duplicate Word Clock OUT	BNC providing dual redundant back up

AES3 Sync IN Connector	3 pin XLR
AES3 Sync OUT Connector	3 pin XLR
Duplicate AES3 Sync IN	3 pin XLR providing dual redundant back up
Duplicate AES3 Sync OUT	3 pin XLR providing dual redundant back up
Ethernet Tunnel 1 Connector	Ethercon XLR
Ethernet Tunnel 2 Connector	Ethercon XLR
Duplicate Ethernet Tunnel 1	Ethercon XLR providing dual redundant back up
Duplicate Ethernet Tunnel 2	Ethercon XLR providing dual redundant back up
Monitor Input Connector	3 row 15 pin D TYPE - analogue VGA
KVM Input Connection	Screen 3 row 15 pin D TYPE (analogue VGA) and USB keyboard/mouse
USB Host Connection Line I/O + Mic Splitter	USB 2.0 full speed (12.0Mbs) 500mA max load
USB Slave Connection Line I/O + Mic Splitter	USB 2.0 full speed (12.0Mbs)
USB Host Connection Surface	USB 2.0 full speed (12.0Mbs) 1A max load

## XL8 Input and Output Characteristics

### Analogue Input Characteristics

Input Type	Load Z	Gain	Max Level	Connector
431 Splitter	5k	-22.5dB to +65dB	+24dBu	XLR
451 I/O Box	10k	-25dB to +60dB	+26dBu	XLR
Talk Mic	600R	+15dB to +60dB	+6dBu	XLR
Headset Mic	375R	+60dB	0dBu	XLR (5 pin)
Monitor	10k	0dBu	+24dBu	XLR

### Analogue Output Characteristics

Output Type	Source Z	Gain	Max Level	Connector
431 Splitter (Main)	150R	0dB	+24dBu	XLR
431 Splitter (Isolated)	75R	-6dB	+18dBu	XLR
451 I/O Box	50R	0dB	+21dBu	XLR
Talk	50R	0dB	+24dBu	XLR
Monitor	50R	0dB	+24dBu	XLR
Headphones	10R	+10dB	750mW	¼ inch jack
Headset	10R	+10dB	750mW	XLR (5 pin)

### Digitl I/O Characteristics



Type	Chan	Data Length	I/O	Description Notes	Connector
AES3	2	24 bit	input	conforms to AES3 -2003	XLR
AES3	2	24 bit	output	conforms to AES3 -2003	XLR
AES50	24	24 bit	bi / direct	conforms to AES50 -2006	Ethercon XLR
HyperMac	192	24 bit	bi direct	CAT6, Gigabit Ethernet physical layer	Ethercon XLR
HyperMac	192	24 bit	bi direct	850nM, laser module 1.25Gb/s 1000 base-SX physical layer on 50/125 multimode fibre	Opticon XLR

## Misc Digital Characteristics

Type	I/O	Description Notes	Connector
Word Clock	IN	accepts TTL level, 96kHz square wave; impedance 75 Ohms	BNC
Word Clock	OUT	provides a TTL level, 96kHz square wave	BNC
AES Sync	IN	accepts a 96kHz digital audio signal conforming to AES3 - 2003	XLR
AES Sync	OUT	provides a 96kHz grade II reference signal conforming to AES3 - 2003	XLR
Ethernet Tunnel		CAT5 , Auto MDIX, 00Mbps Fast Ethernet physical layer.	Ethercon XLR

## XL8 Main Processing Functions

### Input Channel Functions

Input Channel Hi Pass	30Hz 12dB/Oct in analogue domain
Input Channel Hi Pass	10Hz to 400Hz swept in digital domain Slope selectable 12dB/Oct or 24dB/Oct
Input Channel Lo Pass	1kHz to 20kHz swept in digital domain Slope selectable 6dB/Oct or 12dB/Oct
Input Channel Treble	<p>Parametric Operation  Frequency 1kHz to 25kHz swept  Gain +16dB to -16dB  BW 0.1 Oct to 3 Oct</p> <p>Shelf Operation  Frequency 1kHz to 25kHz swept  Gain +16dB to -16dB  Soft, Classic or Bright (minimum harmonic disruption) curves</p>
Input Channel Hi Mid	Parametric Operation Frequency 320Hz to 8kHz swept Gain +16dB to -16dB BW 0.1 Oct to 3 Oct
Input Channel Lo Mid	Parametric Operation Frequency 80Hz to 2kHz swept Gain +16dB to -16dB BW 0.1 Oct to 3 Oct
Input Channel Bass	Parametric Operation Frequency 16Hz to 400Hz swept Gain +16dB to -16dB BW 0.1 Oct to 3 Oct

	<p>Shelf Operation  Frequency 16kHz to 400Hz swept  Gain +16dB to -16dB  Warm, Classic or Deep (minimum harmonic disruption) curves</p>
Input Channel Compressor	<p>Peak, Linear, RMS, Vintage modes  Thresh -50dBu to +20dBu  Attack 200uS to 20mS  Release 50mS to 3 Sec  Ratio 25:1 to 1:1  Knee 4dB, 12dB or 40dB  Gain 0dB to +24dB</p> <p>Side chain source selectable + filter  Frequency 50Hz to 15kHz swept  Bandwidth 1/3, 1 or 2 Oct</p>
Input Channel Gate	<p>Peak mode  Thresh -50dBu to +20dBu  Attack 10uS to 20mS  Hold 2mS to 2 Sec  Release 2mS to 2 Sec  Range 100dB to 0dB</p> <p>Side chain source selectable + filter  Frequency 50Hz to 15kHz swept  Bandwidth 1/3, 1 or 2 Oct</p>

## Output Channel Functions

Output Channel Band 6	<p>Parametric Operation  Frequency 16Hz to 25kHz swept  Gain +16dB to -16dB  BW 0.1 Oct to 3 Oct</p> <p>Lo Pass Operation  Frequency 16Hz to 25kHz swept  Slope 6dB/Oct or 12dB/Oct</p> <p>Shelf Operation  Frequency 16Hz to 25kHz swept  Gain +16dB to -16dB  Mode soft curve</p>
Output Channel bands 3,4,5	<p>Parametric Operation  Frequency 16Hz to 25kHz swept  Gain +16dB to -16dB  BW 0.1 Oct to 3 Oct</p>
Output Channel Band 2	<p>Parametric Operation  Frequency 16Hz to 25kHz swept  Gain +16dB to -16dB  BW 0.1 Oct to 3 Oct</p> <p>Hi Pass Operation  Frequency 16Hz to 25kHz swept  Slope 24dB/Oct</p>
Output Channel Band 1	<p>Parametric Operation  Frequency 16Hz to 25kHz swept  Gain +16dB to -16dB  BW 0.1 Oct to 3 Oct</p> <p>Hi Pass Operation  Frequency 16Hz to 25kHz swept  Slope 6dB/Oct or 12dB/Oct</p>

	Shelf Operation Frequency 16Hz to 25kHz swept Gain +16dB to -16dB Mode soft curve
Output Channel GEQ	16 available in place of PEQ (above) 31 Bands. 1/3 Oct. Proportional Q Lo Pass Frequency 2kHz to 20kHz swept Slope 6dB/Oct or 12dB/Oct Hi Pass Frequency 20Hz to 500Hz swept Slope 6dB/Oct or 12dB/Oct
Output Channel Dynamic	Pk, Linear, RMS, Vintage, Shimmer modes Thresh -50dBu to +20dBu Attack 200uS to 20mS Release 50mS to 3 Sec Ratio 25:1 to 1:1 Knee 4dB, 12dB or 40dB Gain 0dB to +24dB Dry mix 0% to 100%  Side chain source selectable + filter Frequency 50Hz to 15kHz swept Bandwidth 1/3, 1 or 2 Oct  Output Clipper Thresh 0dBu to +20dBu

## Effects Channel Functions

Stereo Effects Channel	16 available configurable as Stereo or mono in, stereo out Modulated delay effects Complex delay, reverbs Advanced dynamics RTA and advanced measurements
Effects Channel Stereo GEQ	16 available in place of effects (above) 31 Bands. 1/3 Oct. Proportional Q Lo Pass Frequency 2kHz to 20kHz swept Slope 6dB/Oct or 12dB/Oct Hi Pass Frequency 20Hz to 500Hz swept Slope 6dB/Oct or 12dB/Oct

## XL8 Status Functions

### Meters

Splitter Meters	96 x 7 LED from -18dBu to +24dBu
Control Centre Meters	39 x output 20 LED -36dBu to +21dBu 24 x input 20 LED -36dBu to +21dBu 48 x gain reduction 7 LED 4 x direct level meter 7 LED
Screen Metering	135 x 20 segment signal level meters 192 x 7 segment gain reduction

### Screens

Quantity	5 x full colour daylight viewable screens
Size	15 inch (diagonal)

Resolution	1024 x 768 pixels
External screen	5 x output connectors for remote screens

### Screen Functions

Source	Each screen can be switched to source either the local console or an external input
KVM	Screen 4 can be switched to operate up to 3 external computers utilising the console track ball and keyboard
Internal GUI	Advanced interpolated graphics support all console functions

### LCD switches

Quantity	70 x RGB colour display switches
Size	18mm x 12mm display area
Resolution	36 x 24 pixels