KLOTZ
MEDIA SOLUTIONS

integra

production platforms

integra

production platforms

Introduction

Due to their increased functionality compared to conventional broadcast mixers, we refer to **integra** consoles as production platforms.

The two variants, **s-integra** and **x-integra** have many similarities.

x-integra is a sophisticated digital broadcast audio mixer, suitable for both production and broadcast (on-air) applications, particularly those requiring multiple cleanfeeds such as complex outside broadcasts.

With a more compact footprint, and fewer inputs and outputs, **s-integra** is perfect for use in OB vehicles and situations where space is at a premium or budgets are tight.

Both versions comprise a rack-mounting 'audio engine' -the APC, which contains audio inputs, processing and outputs, to which are connected various combinations of control surfaces.

An HD monitor is used to configure the system, and to provide customisable user controls and displays, for metering, monitor, mode and format selection, as well as for user-specific functions such as studio change-over switching or profanity delay control.

Unlimited user settings may be saved and stored, either on a dedicated external PC, via a compute-stick mounted in the monitor, or via the Mixer App which can run on the associated playout system's PC.

Intuitive Controls

Unlike many mixers, **integra's** control surfaces are deliberately uncluttered – to minimise the chances of operator error.

Access to lesser used controls, and configuration tools, is via the associated Control Screen (ICC – Integra Control Centre). Navigation to these screens is via four colour-coded menu buttons, offering rapid access.

Further advantages of this approach are the ability to add customer specific controls and displays, to integrate with other studio components and systems – such as studio change-over systems, profanity delay control and even launching social media apps. Language-specific ICCs may also be created.

For this purpose there are 7 customisable buttons and indicators at the bottom of the ICC window.

Formats

FORMATS allow each presenter, or each show, to create and store a unique combination of personalised settings, ensuring optimum performance, operator comfort and ease of use.

Modes

MODES allow different combinations of bus-routings to be stored and instantly recalled, for example to route audio from the studio playout system directly to the transmission feed, thus allowing the mixer to be used for production purposes during automated broadcasts, or to create specific combinations of bus-routings to simplify the recording of telephone interviews.

The ICC (Integra Control Centre)

integra mixers have associated screens for metering and monitoring, Format and Mode selection, clocks and indicators. The main ICC panel is always visible, shown below.

The four coloured 'Navigator Buttons' open new windows to the left of the meter panel, allowing selection of new sources, Formats, and adjustment of mixer parameters, in conjunction with the control surfaces.

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core components

ICC Display Screen

Optionally ‘touch’

Control Surfaces

S-Integra 12 Fader ‘inline’ configuration shown here

Controller PC

Either a dedicated mini PC or Compute-stick, or the studio’s playout PC

Audio Processing Centre (APC)

S-APC shown here

Audio inputs and outputs

GPIO Interfaces

Optional AoIP Interface

Optional Guest Controllers

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APC specifications

APC SPECIFICATION: x and s integra

MIC INPUTS			
Input Impedance		1.5kohms, electronically balanced	
Input Balance		Typically> 60dB @ 1kHz	
Gain adjustment range		20 to 60dB (Preset) +/-12dB (User)	
Maximum input (for onset of clip)		0dB at 20dB gain, fader at 0dB	
		-21dB at 45dB gain, fader at 0dB	
		-46dB at 70dB gain, fader at 0dB	
THD @ +18dB @ any output		<0.03% 100Hz-10kHz at any gain setting, gain trim at 0dB, fader at 0dB	
Frequency Response, any output		+/-0.5dB (DYN, EQ and filters OUT) 40 – 16kHz	
Offness, any output, 100Hz-10kHz		>90dB, with either fader down, or Channel OFF, or bus-de-routed	
Noise		<-82dB at 20dB gain, fader at 0dB, rms 20-20kHz, 150R source	
		<-75dB at 45dB gain, fader at 0dB, rms 20-20kHz, 150R source	
		<-56dB at 70dB gain, fader at 0dB, rms 20-20kHz, 150R source	
ANALOG LINE INPUTS			
Input Impedance		>10kohms, electronically balanced	
Input Balance		Typically> 60dB @ 1kHz	
Gain adjustment range		-32 to +20dB (Preset) +/-12dB (User)	
Maximum input (for onset of clip)		+24dB at 0dB gain, fader at 0dB	
THD @ +20dB @ any output		<0.03% 100Hz-10kHz at any gain setting, fader at 0dB	
Frequency Response, any output		+/-0.5dB (DYN, EQ and filters OUT), 20-20kHz	
Offness, any output, 100Hz-10kHz		>90dB, with either fader down, or Channel OFF, or bus-de-routed	
Left-Right Crosstalk	(stereo channels)	<-90dB 100Hz-10kHz	
Noise		<-80dB at 0dB gain, fader at 0dB, rms 20-20kHz, 150R source	
AES INPUTS			
Data Format		IEC958, AES3	
Gain Control Range		+/-10dB (User)	
Input Signal Range		200mV to 7V Peak	
Input Impedance		110ohms	
SRC		24bit, 24-100kHz	
EQUALISATION (Mic and TBU Inputs)			
LF Band	Boost/Cut: +/-10dB	Frequency Range: 20Hz – 300Hz	Q: 0.5 – 2
MF Band	Boost/Cut: +/-10dB	Frequency Range: 400Hz – 5kHz	Q: 0.5 – 2.5
HF Band	Boost/Cut: +/-10dB	Frequency Range: 8kHz – 12kHz	Q: 0.5 – 2
High Pass Filter	Frequency Range: 20Hz – 200Hz		
DYNAMICS PROCESSING (Mic and TBU Inputs)			
Compressor Threshold		-40dB to 0dB	
Compressor Ratio		1:1 (out) to 20:1 (hard limit)	
Compressor Attack Time		0.4mSec to 120mS	
Compressor Decay Time		50mS to 10 seconds	
Limiter Threshold		0dB to +30dB	
Limiter Decay Time		50mS to 10 seconds	

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APC specifications

ANALOG LINE OUTPUTS	
Output Impedance	<50ohms
Output Balance	Typically >55dB at 1kHz
Maximum Output	>+24dB, no load
Output Noise, any output	<-80dB, no inputs routed, rms, 20-20kHz
AES OUTPUTS	
Output Impedance	110ohms
Gain adjust	+/- 12dB
HEADPHONE OUTPUTS	
Headphone Impedance	Nominally 32ohms
Frequency Response	40Hz – 15kHz +/-0.5dB
Maximum Output	+8dBU (at onset of distortion)
DYNAMICS PROCESSING (Main program outputs)	
Limiter Threshold	0dB to +40dB
Limiter Decay	50mS to 10 seconds
POWER	
Mains Input	100V t0 240V 50/60Hz
Power Consumption	Approximately 60W
Mains Fuse	2A H
PHYSICAL	
Weight	6kg (excluding packing and any option modules)
Front Panel	3RU
Depth	450mm (excluding connectors)

integra

ICC
integra control centre

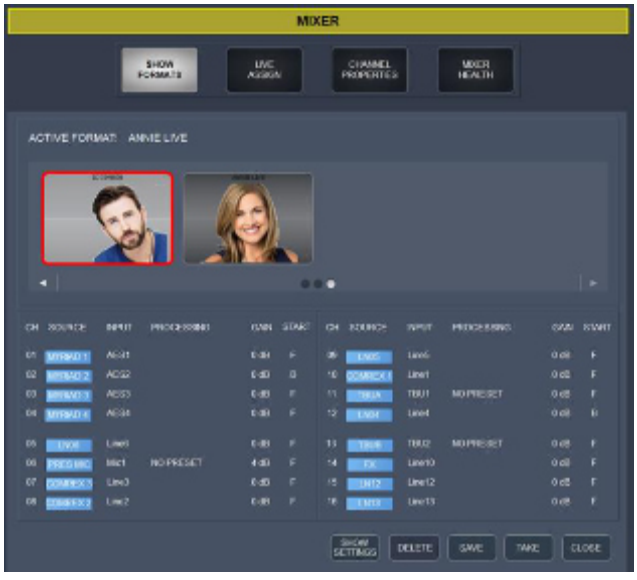
ICC Control Screen

integra mixers have associated screens for metering, Format and Mode selection, clocks and indicators, as well as for adjusting mixer control surface parameters. The Control Screen is driven from an external PC, which also stores unlimited numbers of individual User Presets or Formats. This PC could easily be the one used for the playout system, driving a dedicated 'mixer' screen. When active, these windows appear to the left of the main ICC panel, and provide a very intuitive, easy to use operational interface.

FORMATS

Each and every presenter may create a 'Format' which includes the sources which they require for their 'show', in the preferred positions on the control surfaces, with preset EQ and dynamics processing (optimised for their individual voices) and fader/button control preferences.

Formats can be saved with individual presenter names and icons, or by show. It is possible to create and edit new Formats very easily, minimising the need for technical support to presentation staff.



MODES

MODES allow different combinations of bus routings to be saved and recalled to allow what would otherwise be complex operations to be undertaken at the touch of a button.

Three Modes are supplied as standard – LIVE ASSIST, AUTO and TELREC.

In AUTO the studio playout channels get routed directly to the PGM1 output, so that the mixer can be used for recording and other production work, without risk of interfering with the broadcast signal.

TELREC allows preset sources to have their bus assignments changed to facilitate live phone-in recording whilst playing a music segue or other pre recorded content.

In future ICC releases it will be possible for users to create their own additional Modes.

It is also possible to preview Formats, ahead of selection, to ensure correct choice, and any changes to settings that are made within a Format can be optionally saved, or a new Format created, prior to making a new selection.

Within the MIXER windows it is also possible to change individual Channel Properties, as shown in the next page.

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ICC
integra control centre

LIVE ASSIGN

Selecting this option opens a window which shows which sources are currently assigned to which channel strips, and which sources are unallocated. Changes can easily be made even by operators with no technical knowledge.

CHANNEL PROPERTIES

The Channel Properties window can be opened from either the ICC screen or via the ASN button on the corresponding control surface channel strip.

For the active Channel Strip, this allows adjustment of key parameters, or the recall of pre-configured settings (PRESETS), which can be unique to each presenter e.g. EQ and Dynamics, selected from drop-down menus.

The screenshots below show PROCESSOR adjust (left) – allowing EQ and DYNAMICS parameters to be adjusted for the selected channel strip, and INPUT parameters, such as BUS Routing, Phase and FADER/BUTTON Control (to the right).

It is possible to create, save and one-click load unlimited numbers of processor settings for individual presenters, ensuring optimum and consistent mic sounds.

MIXER HEALTH

Should any of the essential APC parameters go out of limit, for example, temperature, humidity or a voltage rail, a warning indicator appears on the ICC prompting an operator to check the MIXER HEALTH page, and, if necessary, call an engineer.

integra

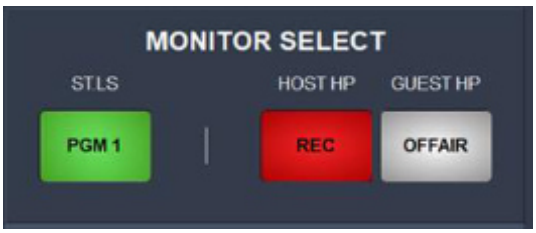
monitoring and talkback

MONITORING

integra consoles have comprehensive monitoring for control room and an associated talks studio, supporting both Tech-Op and Self-Op styles of operation.

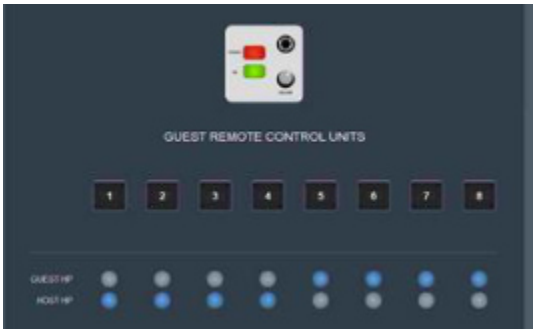
In addition to a headphone feed for the mixer operator, **integra** has a dedicated headphone feed which can be associated to each Guest or Host mic position.

Monitor feeds for Studio Speakers, Host and Guest headphones are selected on-screen using the ICC. Selection of which 'ring' Host and Guest headphones belong to is set-up in an ICC MIXER window.



Pressing any of the Monitor Select buttons opens another window, shown below, which allows further selection.

Monitor selection for these feeds automatically switches to REC when the Telrec or Auto MODES are entered.



The Control Room and Mixer Operator's Headphone feed are elected by buttons on the Master Module of the control surface. This includes APF (Automatic Prefade) and SPLIT modes of operation. The Mixer Operator's Headphone feed always receives active PreFade overide.

TALKBACK

Talkback to 'internal' destinations is controlled by buttons on the control surface Master Module.

This allows talkback from the control surface TB mic (or any other nominated mic) to the Studio Speakers, to the HOST and GUEST TB rings, to a second control room and top the AUX mix bus.

For sources which have associated return-paths, which may be cleanfeeds, Talkback is via the TB/ASSN button on the control surface Channel Strip.

This applies to CFA and CFB, normally associated to the two dedicated TBU inputs, and to CF1-6, stereo outputs, which are typically used with codecs to provide two-way communication to external locations or OB sites.

DIAGNOSTICS

In addition to the functions provided by the MIXER HEALTH CHECK, the APC contains a number of front-panel mounted bi-colour led indicators, showing a variety of boot, update and static status conditions, for easy identification of faults.

Remote connection via a USB connection to the Control PC allows remote diagnostics to anywhere where there is a robust internet connection.

To the left of these leds, on the APC front panel, are jack sockets for Line Inputs 11, 12 and 13, two unbalanced mini-jacks and one pair of balanced ¼" jacks, as well as a record output, for rapid and convenient temporary connection. (**x-integra** only)

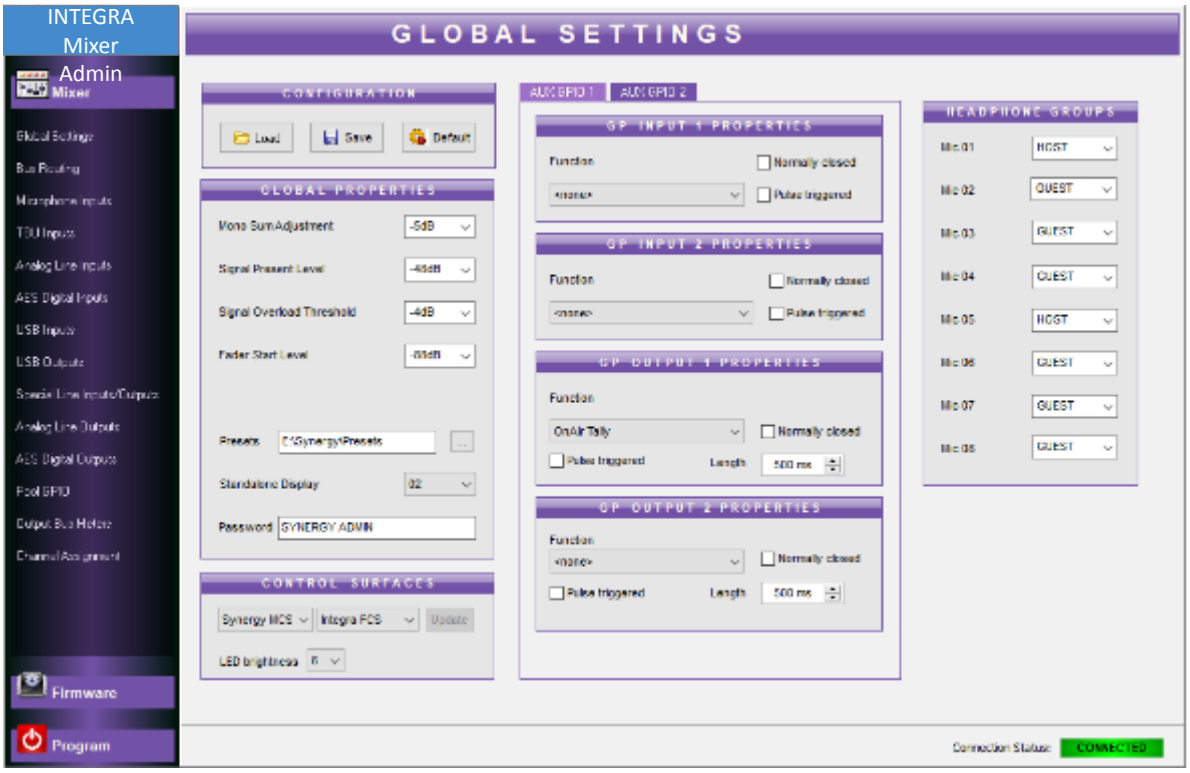
integra

mixer admin tool

Mixer admin tool

integra mixers are supplied with a very powerful Mixer Administration Tool, which allows users to configure the system according to their specific requirements – and to ensure maximum integration with external equipment.

Once a system has been configured – which does not require any specialist expertise - the Mixer Admin Tool is only required when system changes are needed, or if external equipment is added or different makes/models deployed..



A selection of Mixer Admin screens

x-integra

control surfaces

Control Surface Modules

x-integra control surfaces are made up from two module types, a Fader Module with four identical 'channel strips', and a Master Module. These can be combined to create a number of different layouts, in either 'in-line' or 'split' formats.

FADER MODULE

- PGM1, PGM2 and REC Bus Routing Indicators
- A multi-function 8 character 2 row LCD display, which defaults to the channel SOURCE name
- A multi-function rotary encoder with push- switch, for adjustment of GAIN, PAN/ BALANCE and AUX Send
- A Signal Present/Overload Indicator
- A Long throw fader
- An illuminating PF Button
- A bi-coloured illuminating TB/ASN button – blue if the source has an associated cleanfeed (allowing talkback to that source), red when the channel assign mode (ASN) is selected
- Illuminating Channel ON Button
- Illuminating Channel OFF Button

MASTER MODULE

The **x-integra** Master Module contains Monitor and Talkback controls, plus Navigation Buttons and a number of user definable 'function' buttons.

Four rotary encoders allow adjustment of EQ and Dynamics processing (for mono inputs), with parameters and values displayed on the ICC screen.

This this module contains a small loudspeaker for Cue/ Incoming Talkback (RTB), and an XLR socket for a talkback microphone. Studio loudspeaker and Host/Guest monitor selectors are accessed via the ICC.

x-integra

APC
audio processing centre

Audio Processing Centre

The 3U rack-mounting, fanless APC is the 'brains' of the system, containing input and output amplifiers (of various formats), mixing, signal processing, GPIO and control interfaces.

Inputs

As standard, the APC has inputs for:
4 x MICS, with EQ and Dynamics Processing
2 x TBUs (external), with EQ and Dynamics Processing
11 x Stereo analog lines (balanced)
2 x stereo analog lines (unbalanced)
4 x AES3 inputs(stereo)
8 x USB inputs (stereo)

Mix Buses

Main: PGM1, PGM2, REC, AUX, all stereo
Cleanfeed: 1-6, stereo; A+B, mono
Prefade, stereo

Outputs

As standard, the APC has he following outputs:

Analog:	PGM1, PGM2, REC, AUX, CF1-6, all stereo
	CFA+B, PGM1, mono
AES:	8 user assignable
USB:	8 stereo

Monitoring

The APC has dedicated outputs for:
Control Room LS – balanced
Mixer Operators Headphones
Studio LS – with talkback
4 x Guest Headphones
(with talkback, assignable to Host or Guest groups –with optional Guest Remote Control Units (GRCU))
Dedicated External Monitor input (stereo, analog, balanced)

GPIOs

- Analog line inputs 1-6 and AES Inputs 1-4 each have 2 pairs of isolated GP ins and GP outs
- TBU inputs A and B each have 2 pairs of isolated GP ins and GP outs
- There are 16 pairs of assignable GP ins and GP outs
- Mic inputs each have 2 pairs of isolated GP ins and GP outs, typically for use with GRCUs
- Isolated MIC LIVE contacts are available following both control room and studio muting.
- Note that 8 of the assignable GPIOs are pre-configured to drive mic live leds on Yellotec mic arms (8 off)

Options and Accessories

The following modules are available:

- **Mic Expander** – adds a further 4 mic inputs (with processing) plus 4 additional guest headphone amplifiers with GRCU ports
- **AES Expander** – adds a further 4 AES3 inputs and an additional 4 AES3 outputs
- **AoIP Interface** – adds 16 inputs and 16 outputs, either Dante or AES67
- **GRCU** – Host/Guest panel, with volume control (amp is in APC), Talkback and Cough buttons, Mic Live and Cue indicators
- **Ext PSU** – a multi-rail external 1U PSU providing a high degree of redundancy
- **Motorised Faders** – bank of 4, with AutoMix software
- **Rj45 Breakout** cable adapters

Refer to Options and Accessories page at end of document.

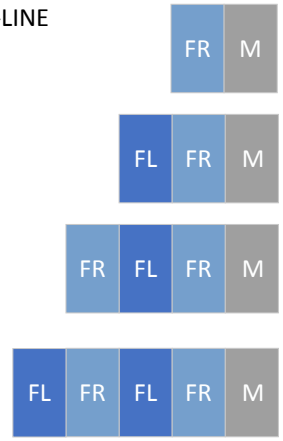
x-integra

configurations

In addition to the Master/Monitor Module, there are two types of fader modules, Left and Right; these have identical functionality but use different electronics internally; consoles should be configured in accordance with the layouts shown below.

CONTROL SURFACE COMBINATIONS

IN-LINE



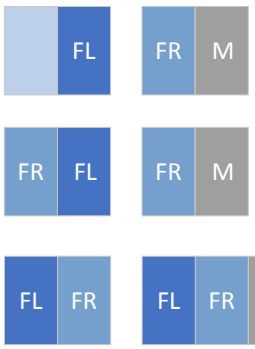
4 Faders
MFX2

8 Faders
MFX3

12 Faders
MFX4

16 Faders
MFX5

SPLIT

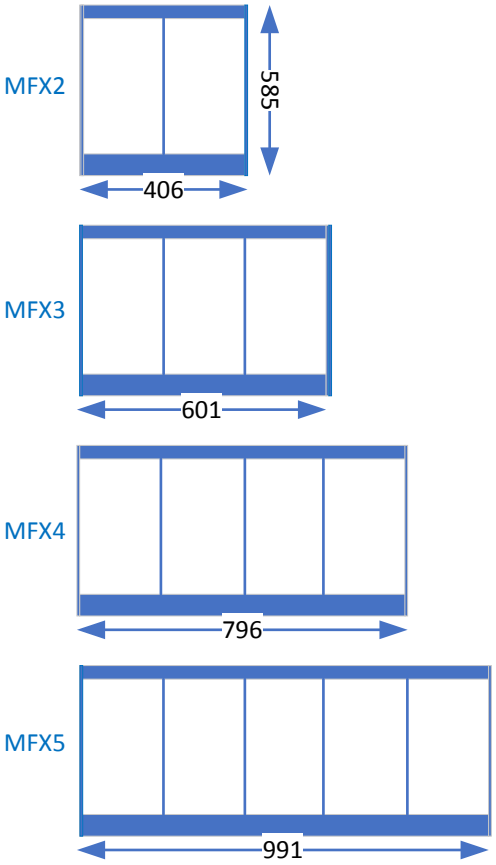


8 Faders
MFX2+MFX2

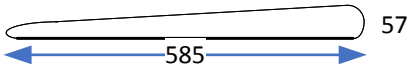
12 Faders
MFX2+MFX2

16 Faders
MFX2+MFX3

MAINFRAME DIMENSIONS



SIDE ELEVATION



s-integra

control surfaces

Control Surface Modules

There are 3 types of **s-integra** control surfaces, which can be combined to create five different configurations. The MCS4S (shown below) is made up of four identical channel strips plus a master talkback/monitor section (to the right).

The MCS8S is similar, but has eight channel strips, and the FCS8 surface contains just eight identical channel strips. This allows mixers with 4, 8, 12 or 16 faders to be created.

Each **s-integra** channel strip has the following controls:

- LED indicators showing routing to main buses – PGM1 and REC
- A multi-function 8 character 2 row LCD display which defaults to display the channel SOURCE name
- A rotary encoder for GAIN adjustment of the selected source
- A bi-colour signal present/overload indicator
- A long throw fader (100mm)
- An illuminating channel PF (prefade) button
- A bi-coloured illuminating TB/ASN button – blue if the source has an associated cleanfeed (allowing talkback to that source), red when the channel assign mode (ASN) is selected
- Illuminating Channel OFF button
- Illuminating Channel ON button

The **s-integra** Master Section contains controls for monitoring and talkback.

Four colour coded rotary encoders allow adjustment of EQ and Dynamics processing (for mic inputs only), with parameters and active values displayed on the ICC screen.

This section of the module also contains a small loudspeaker for Cue/Incoming Talkback (RTB), and an electret talkback microphone.

Studio and Guest/Host Talkback source selection is via the ICC, and there are two independent headphone rings.

s-integra

APC
audio processing centre

Audio Processing Centre

The 3U rack-mounting, fanless APC is the 'brains' of the system, containing input and output amplifiers (of various formats), mixing, signal processing, GPIO and control interfaces.

Inputs

As standard, the APC has inputs for:
4 x MICS, with EQ and Dynamics Processing
8 x Stereo analog lines (balanced)
4 x AES3 inputs(stereo)

Mix Buses

Main: PGM1, REC, AUX, stereo
Cleanfeed: 1-4, stereo
Prefade, stereo

Outputs

As standard, the APC has he following outputs:
Analog: PGM1, REC, AUX, CF1-4, all stereo
AES: 4 user assignable

Monitoring

The APC has dedicated outputs for:
Control Room LS –balanced
Mixer Operators Headphones
Studio LS – with talkback
4 x Guest Headphones
(with talkback, assignable to Host or Guest groups – with optional Guest Remote Control Units (GRCU))

Dedicated External Monitor input (stereo, analog, balanced)

GPIOs

- Analog line inputs 1-6 and AES Inputs 1-4 each have 2 pairs of isolated GP ins and GP outs
- TBU inputs A and B each have 2 pairs of isolated GP ins and GP outs
- There are 16 pairs of assignable GP ins and GP outs
- Mic inputs each have 2 pairs of isolated GP ins and GP outs, typically for use with GRCUs
- Isolated MIC LIVE contacts are available following both control room and studio muting.
- Note that 8 of the assignable GPIOs are pre-configured to drive mic live leds on Yellotec mic arms (8 off)

Options and Accessories

The following modules are available:

- **Mic Expander** – adds a further 4 mic inputs (with processing) plus 4 additional guest headphone amplifiers with GRCU ports
- **AES Expander** – adds a further 4 AES3 inputs and an additional 4 AES3 outputs
- **AoIP Interface** – adds 16 inputs and 16 outputs, either Dante or AES67
- **USB Interface** – with 8 stereo inputs and 8 stereo outputs
- **GRCU** – Host/Guest panel, with volume control (amp is in APC), Talkback and Cough buttons, Mic Live and Cue indicators
- **Ext PSU** – a multi-rail external 1U PSU providing a high degree of redundancy
- **Motorised Faders** – bank of 4, with AutoMix software
- **Rj45 Breakout** cable adapters

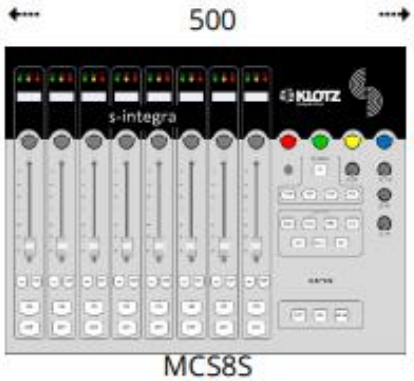
Refer to Options and Accessories page at end of document.

s-integra

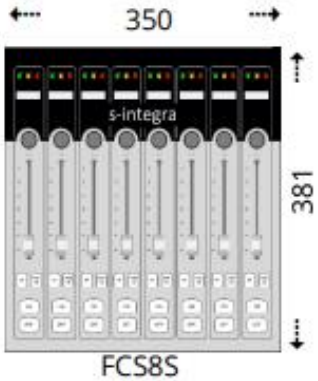
configurations

CONTROL SURFACE COMBINATIONS AND DIMENSIONS

MCS4S



MCS8S



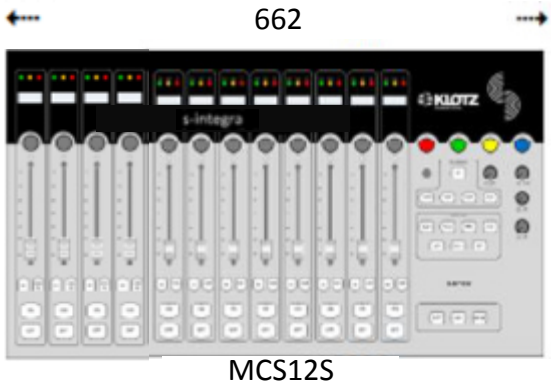
FCS8S

FCS8S +

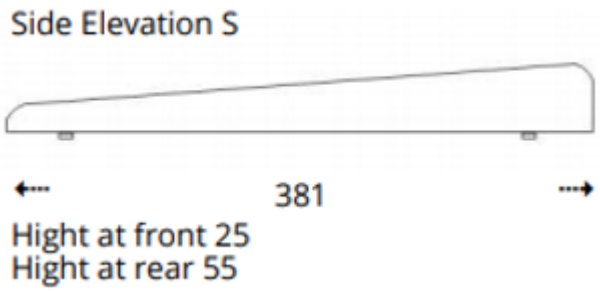
MCS4S

FCS8S +

MCS8S



MCS12S



integra

options and accessories

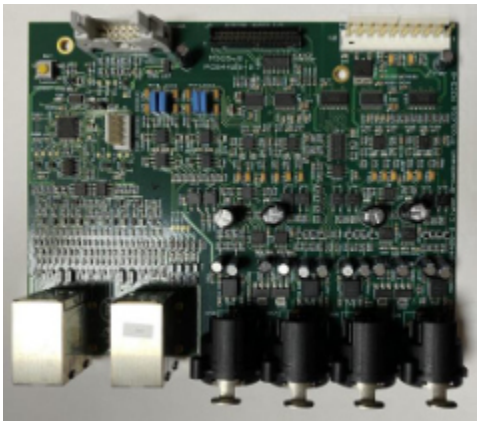
GRCU3- Guest Remote Control Unit

Each of the APCs microphone inputs may have an associated guest control unit, which is located adjacent to the mic position in the studio. This allows each guest to individually control their headphone level (the amplifiers are within the APC), and has two illuminating buttons.

The COUGH button, when activated, mutes the audio in the associated mixer's channel and the TB button allows the guest to speak to the mixer operator 'off-air' – i.e. with the corresponding fader down, using the mixer's prefade system. The COUGH button illuminates red whenever the associated channel fader is open – providing individual MIC LIVE status indication.

When the TB button is pressed the associated TB indicator on the mixer channel strip also illuminates, giving the mixer operator a visual cue as to who is speaking.

USB Interface Module



MIC Expander Module

MIC Expander Module

This module provides an additional four microphone inputs, with identical specifications and features to MIC inputs 1-4, standard in all APCs.

This includes EQ and DYNAMICS processing, and associated with each input is an RJ45 port for connection to a Guest Remote Control Panel.

Mics can be located in the control room or adjacent studio, as determined by the Mixer Admin tool.

AES Expander Module

AES Expander Module

This module provides an additional four AES3 inputs and four AES3 outputs.

AoIP Module

USB Module

This module provides 8 stereo USB inputs and 8 stereo USB outputs – it is essentially an 8 channel soundcard for connecting multi-channel audio to/from a playout PC.

AoIP Module

This module provides 16 mono inputs and 16 mono outputs to either the Dante or AES67 audio over IP standard, for connection to other compatible AoIP equipment via an ethernet connection..

External PSU

The 1U rack-mounting external PSU provides total power redundancy. The INTEGRA external PSU provides individual back-up for ALL of the APC's internal power rails, with comprehensive PSU status indication and remote diagnostics.

RJ45 Breakout Adaptor

Providing neat and convenient connections to the APC, this breakout adapter allows standard CAT5 cables to be plugged into the rear of the APC, with the adapter 'tails' made-off to whichever type of connector that the remote equipment requires e.g. XLR, D-type or jack.

integra

production platforms

Our local partner:

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