cadac

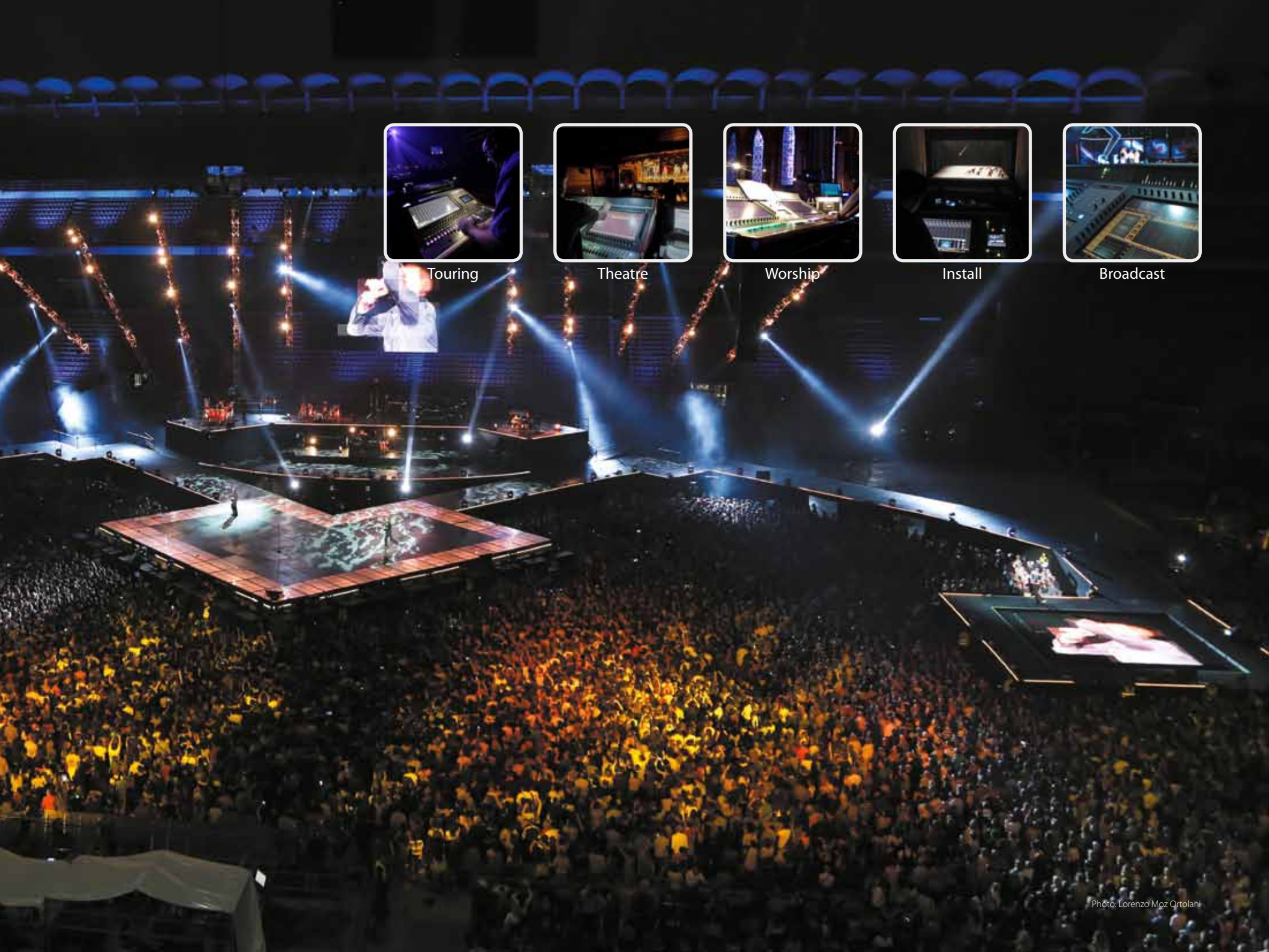
Intuitive, Elegant Engineering

Designing Audio Mixing Consoles Since 1968

cadac

cadac

Designing
Audio Mixing Consoles
Since 1968


Touring
Theatre
Worship
Install
Broadcast
Photo: Lorenzo Moz Ortolani

cadac

The Cadac name has been synonymous with premium quality audio mixing consoles for over 45 years.

From the earliest recording studio desks in the late 1960s, which recorded classic tracks from major international artists, through to the live sound consoles found in prestigious theatres and on global concert tours, Cadac has always set the benchmark for quality. In fact there are few brands that can match Cadac's unparalleled pedigree in the world of professional audio.

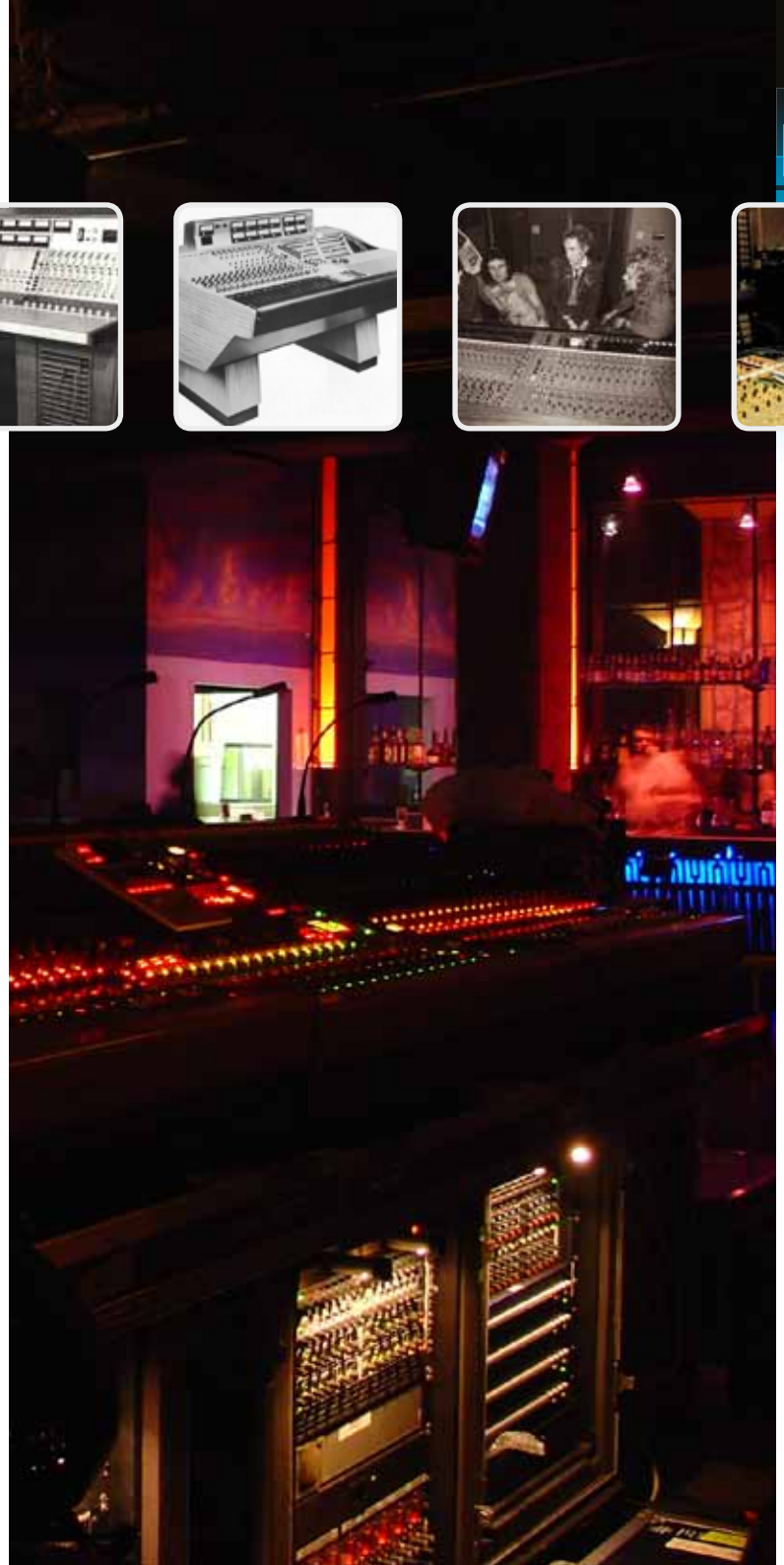
History

In 1967 Clive Green started working with Adrian Kerridge at London's Lansdowne Studios, working on replacing all the valve parts for an old EMI desk with solid state technology and modifying the desk for multitrack recording.

In 1968 Terry Brown, a sound engineer at Lansdowne and Olympic Studios, was asked by Barry Morgan and Monty Bason to set up the new Morgan Studios. Morgan Studios wanted to buy the designs for the new desk that Clive and Adrian had built for Lansdowne. Clive suggested that it would be a better idea if he built the desk for Terry. Clive together with Adrian, David Bott, an engineer from "TVT", and Charles Billet of Audix, who made the frames for the desks, formed a separate company - Cadac. The name was derived from the first letter of each of their Christian names; Clive, Adrian, David And Charles – hence Cadac. This was also the beginning of a long relationship between Cadac and Morgan Studios. The new desk was an 8 track split console design with transformer balanced inputs and outputs.

Even today many Cadac recording desks are still in operation in studios all over the world with the last ever studio desk being installed, and still working, at Air Edel Studios in London.

In 1984 a sound engineer, Martin Levan, from Morgan Studios was asked to put on a live show, Little Shop of Horrors and this resulted in the first Cadac desk built for live theatre. The spec for the console dictated that is should be of "studio quality audio" and that the front-to-back dimension could not be deeper than a row of seats. This allowed for one row of seats to be taken out for the console and another for the engineer.



This was the start of Cadac dominating the theatre market with nearly 70% of theatre shows using Cadac desks. Performances included: Billy Elliot, We Will Rock You, Hairspray, Jersey Boys, Lion King, and Wicked and on Broadway: 13, Avenue Q, Chicago, Guys and Dolls, Gypsy, Hairspray, Jersey Boys, Lion King, Mary Poppins, Pal Joey, South Pacific and Wicked. The longest continually serving Cadac console in London was on Phantom of the Opera where it was used from 1984 until 2008, providing 24 years continuous service!

Not all Cadac consoles were found in recording studios and theatres, they were also the console of choice for concert touring for many internationally acclaimed and diverse artists such as The Rolling Stones, Pavarotti, The Beach Boys, Tom Jones and Bryan Adams.

Today, Cadac have a range of both analogue and innovative digital consoles aimed at the live sound market and the company is continually investing heavily in research and engineering to develop the next generation of digital consoles. Currently Cadac's flagship digital console the CDC eight has been deployed in a variety of applications ranging from theatre shows and major stadium tours to House of Worship and broadcast. Cadac are redefining customer expectations of digital mixing by designing consoles with previously unachievably low latency, audio quality, and ease-of-use.

cadac

Cadac's analogue mic-amps have been universally acclaimed as the premium mic-amp in the industry. The design brief for a digital console was simple and consistent with the brand's ethos for over 45 years – **audio first**.





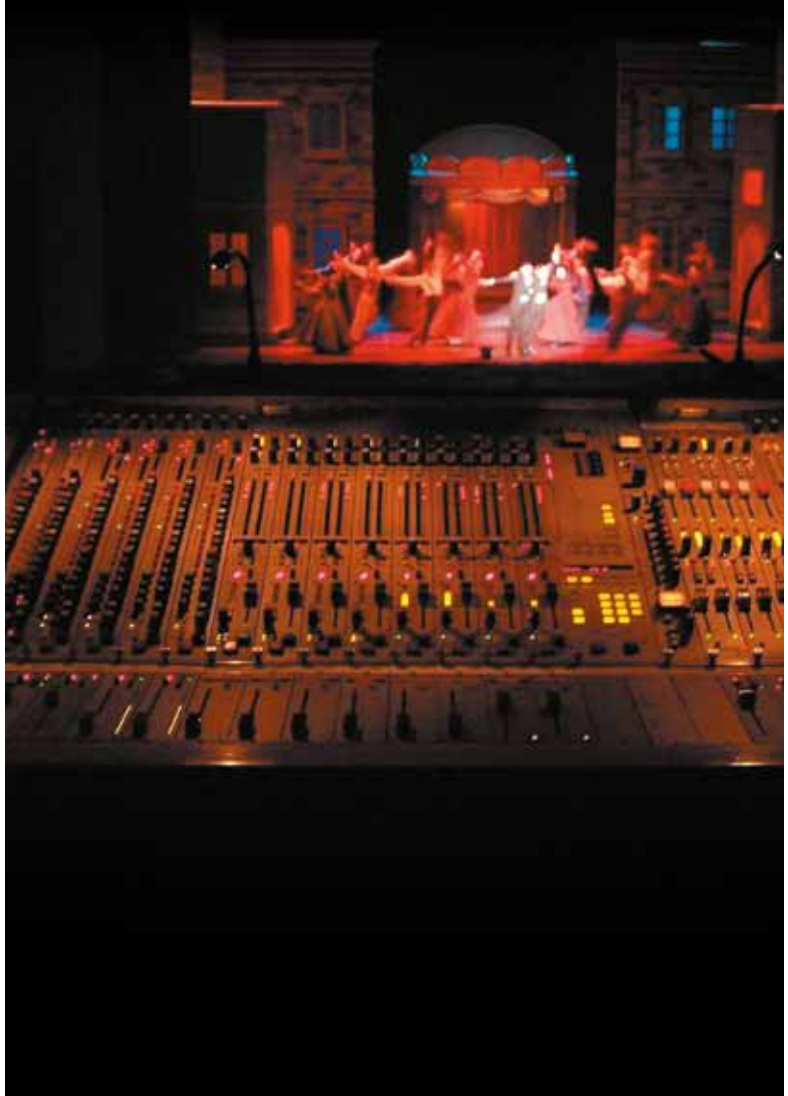
Cadac Audio Quality

Cadac's digital consoles bear the hallmark of their analogue origins which can be traced back beyond the now legendary J-Type, which itself is still in production after nearly 25 years, to those classic consoles of the golden age of recording studios. The audio performance still retains its traditional wide dynamic range and low noise floor through a combination of unique analogue emulating algorithms and the latest 24-bit / 96 kHz Delta Sigma AD/DA convertors.

Another key to the Cadac sound is the attention paid to latency management – a major factor in digital audio performance and overlooked by a majority of other digital consoles.

All digital consoles take time to process audio. When combining signals with different paths and processing, most digital consoles when summing the multiple signals will be partly out of phase. Cadac digital consoles have an extensive automatic latency management system which manages all internal routing and associated processing latency, which means that all audio samples are synchronised before summing, resulting in absolute phase coherency at all outputs.

All Cadac digital consoles use Cadac's own MegaCOMMS audio digital protocol. This results in a latency of under 0.4 milliseconds from analogue inputs on stage, through the console to analogue outputs on stage, making it perfect for in-ear monitoring. All inputs and all outputs are time aligned to sample accuracy - no matter the routing or where they are located in the network.



Feature Summary

- Over 45 years of Cadac audio knowledge and experience
- Classic Cadac microphone pre amps
- Comprehensive and automatic latency management system with sub 0.4 millisecond latency from analogue inputs on stage, through the processing on the CDC six, to analogue outputs on stage
- 24-bit / 96 kHz Delta Sigma AD/DA convertors

cdc seven

The Cadac CDC seven is the latest in Cadac's digital console lineup.

It takes the CDC six format a step further by providing dual screens, increasing the number of faders to 36 and expanding the input count to 96. It still retains the incredible ease of use with the minimal learning curve of the CDC six, but provides the user with the luxury of an expanded physical user interface.

Overview

The CDC seven retains the familiar feel of the CDC six but provides the added flexibility of dual 23.5 inch 16:9 high definition LCD touch screens. These incredibly bright, high contrast screens display the exceptionally intuitive "high agility" swipeable graphical user interface. The encoders to the right and bottom of both screens further encourage the instinctive use of gesture - touch and swipe - to navigate and operate the console.

The major advantage of the dual screens is the ability to display, and control, multiple tasks simultaneously; for example the VCAs can be displayed on one screen while the inputs to the VCAs are displayed on the other. The faders and encoders naturally follow the GUI displayed on the individual screens, resulting in further increases in the speed and flexibility of the workflow.

The CDC seven is not only physically larger than its sibling the CDC six, but it also has a greater channel count, with 96 input channels compared to 64 on the CDC six. They both however, have 48 configurable busses and share the same operating system and feature set.

All 36 faders on the CDC seven feature stereo metering, with a full colour user definable OLED display above the fader to make channel identification fool proof.

Due to the impact of the latency inherent with existing audio protocols Cadac designed its own - MegaCOMMS, a digital audio network developed to meet the increasing performance demands of live sound. MegaCOMMS allows the CDC seven to have a total through-system propagation delay from inputs on stage to outputs, including all console processing and A-D / D-A conversions, of 37 samples (@ 96 kHz), or just under 400us.

As a result of Cadac's innovative user interface and latency management, the CDC seven is an incredibly attractive proposition for those who want something that stands head and shoulders above the norm.

Hardware Summary

- Intuitive, clear graphical user interface
- Proprietary DSP mix platform
- 32/40 bit floating point SHARC processors
- Dual 23.5" flush mounted 16:9 high definition LCD touch wide screen
- 6.5" LCD touch screen for system control
- 40 user definable colour OLED displays
- 20 segment stereo channel metering
- 36 touch sensitive 100mm motorised faders
- 4 AES3 inputs and 4 AES3 outputs
- 8 fully programmable line inputs and outputs
- External PSU

Feature Summary

- Classic Cadac mic-pres
- Sub 0.4 millisecond latency from analogue inputs on stage to analogue outputs on stage
- 96 input channels
- 56 busses, 48 are assignable as Group, Stereo Group, Aux, Stereo Aux or Matrix
- Unique Cadac Monitor Mode
- Custom Fader Layers
- 4 band fully parametric EQ
- Extensive dynamics
- 16 VCA groups including 'VCA unfold' navigation
- 16 assignable buttons with OLED displays
- 16 stereo on-board effects
- 31 band graphic equaliser on all outputs as well as 4 band fully parametric EQ
- Compressor/limiter on all outputs
- Input and output delays
- Snapshot automation system
- User definable languages for console labelling

cdc seven


23.5" 16:9 Optically Bonded
High Definition LCD Touch Screen
Power Button
with Status LEDs
6.5" LCD Touch Screen
for System Control
and Automation
USB File
Import/Export
Touch Sensitive
Digital Encoders
with Push Function
OLED Displays
Solo
Channel ON
100mm Touch Sensitive
Motorised Faders
GEQ
Fader
Follow
Layer
Selection
Output Faders
16 User
Assign
Buttons
OLED
Displays


Fast Access Keypad
8 x Analogue Inputs
8 x Analogue Outputs
Lamp
GPIO In / Out
AES3
4 x Inputs
4 x Outputs
Independent
Word Clock In
MIDI In/ Out
VESA Mount
Word Clock
Out
2 pairs of
MegaCOMMS
Ports
External
Dual Redundant
PSU Connectors
Dual USB Ports
Video Out
Dual Network
Ports
Waves SoundGrid
Interface
20 Segment Stereo Dimmable
LED Metering

cdc six

The compact Cadac CDC six, with its 64 input channels, 56 busses of which 48 are assignable, has been designed to provide a truly intuitive user interface, with class leading audio performance, at a very competitive price.

Based on a further evolution Cadac's 'high agility' operating system, the CDC six is far less menu dependent in operation than other equivalent console, resulting in an easier learning curve and faster work flow.

Overview

As with the CDC seven the visually the most striking feature of the CDC six is the optically bonded 23.5 inch 16:9 high definition LCD touch screen, with digital encoders to the bottom and the right of the screen. Cadac's unique combination of a large touch screen displaying a clear GUI plus traditional encoders, naturally leads to an instinctive use of touch and swipe, with the faders following the GUI on the screen.

Not only is the CDC six intuitive to use, it has a number of features designed to aid the work flow and allow the engineer to creatively mix, rather than be hindered and limited by the console. These includes Cadac's unique Monitor Mode with Mix Focus, as well as the ability to create custom fader layers. All designed with the sole purpose to increase the speed of the work flow.

CDC six not only comes with its own 16 creative on board stereo effects but it also comes preconfigured with an integrated 64 x 64 Waves interface. This allows direct connection to a Waves MultiRack SoundGrid server and with it access to the Waves' library of effects and it also enables multitrack recording to a laptop.

The CDC six uses Cadac's MegaCOMMS digital audio network which has been designed to meet the requirements of the most challenging applications. Cadac's audio protocol allows total through-system propagation delay from inputs on stage to outputs, including all console processing and A-D / D-A conversions, in 37 samples (@ 96 kHz), or just under 400us.

The combination of an exceptional user interface, legendary Cadac mic-pre's, state-of-the art DSP and FPGA processing technology, with incredibly low latency, makes the CDC six an incredible proposition for those who do not want to be faced with either audio or creative compromises.

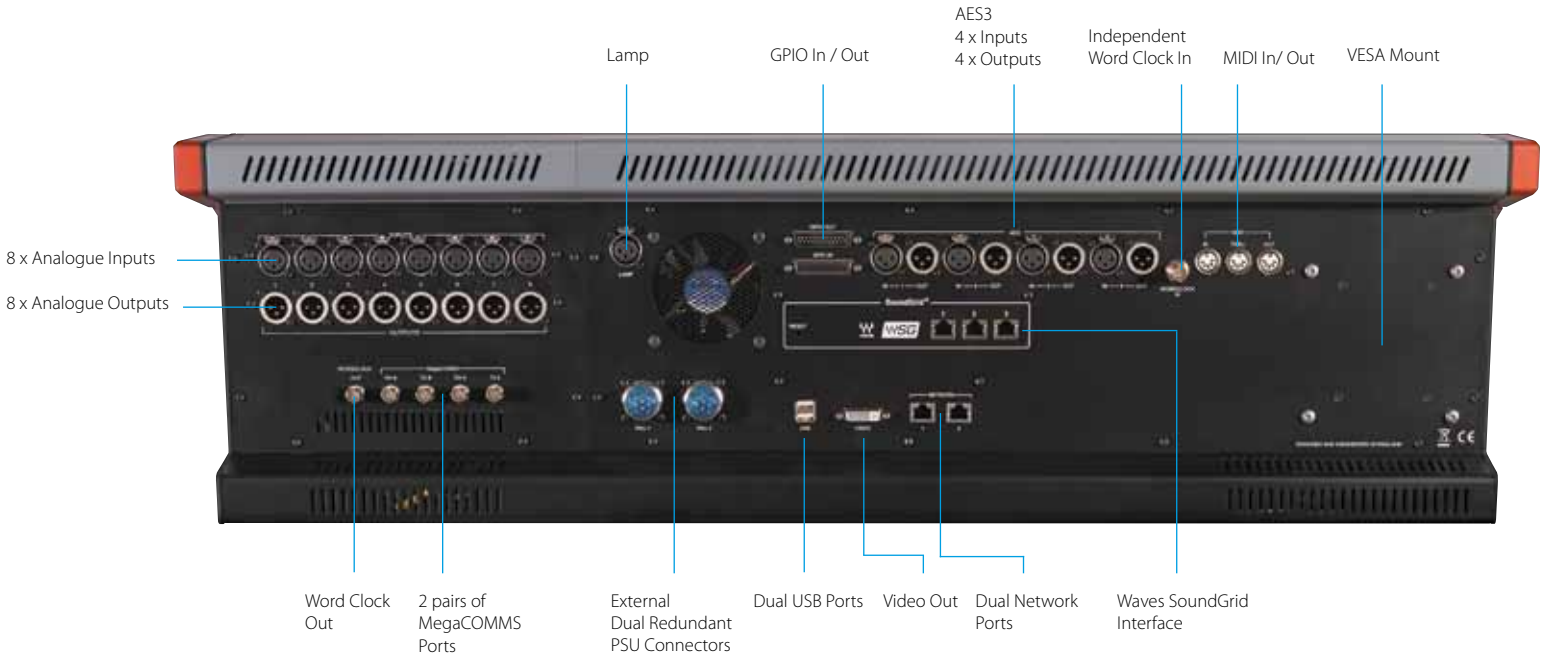
Hardware Summary

- Intuitive, clear graphical user interface
- Proprietary DSP mix platform
- 32/40 bit floating point SHARC processors
- 23.5" flush mounted 16:9 high definition LCD touch wide screen
- 6.5" LCD touch screen for system control
- 24 user definable colour OLED displays
- 20 segment stereo channel metering
- 20 touch sensitive 100mm motorised faders
- 4 AES3 inputs and 4 AES3 outputs
- 8 fully programmable line inputs and outputs
- External PSU

Feature Summary

- Classic Cadac mic-pres
- Sub 0.4 millisecond latency from analogue inputs on stage to analogue outputs on stage
- 64 input channels
- 56 busses, 48 are assignable as Group, Stereo Group, Aux, Stereo Aux or Matrix
- Unique Cadac Monitor Mode
- Custom Fader Layers
- 4 band fully parametric EQ
- Extensive dynamics
- 16 VCA groups including 'VCA unfold' navigation
- 16 assignable buttons with OLED displays
- 16 stereo on-board effects
- 31 band graphic equaliser on all outputs as well as 4 band fully parametric EQ
- Compressor/limiter on all outputs
- Input and output delays
- Snapshot automation system
- User definable languages for console labelling

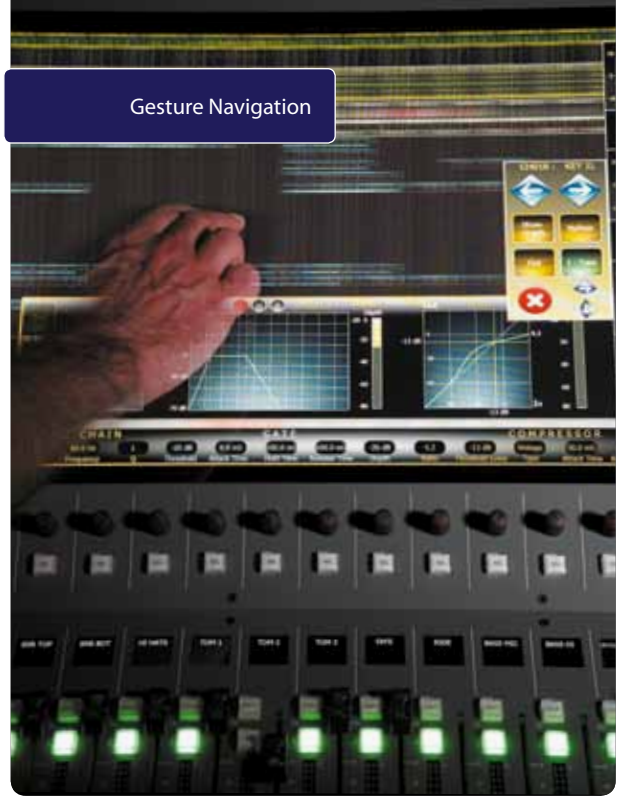
cdc six


Lamp
GPIO In / Out
AES3
4 x Inputs
4 x Outputs
Independent
Word Clock In
MIDI In/ Out
VESA Mount
8 x Analogue Inputs
8 x Analogue Outputs
Word Clock
Out
2 pairs of
MegaCOMMS
Ports
External
Dual Redundant
PSU Connectors
Dual USB Ports
Video Out
Dual Network
Ports
Waves SoundGrid
Interface


23.5" 16:9 Optically Bonded
High Definition LCD Touch Screen
Power Button
with Status LEDs
USB File Import/Export
6.5" LCD Touch Screen
for System Control
and Automation
Fast Access Keypad
Touch Sensitive
Digital Encoders
with Push Function
OLED Displays
Solo
Channel ON
OLED
Displays
16 User
Assign
Buttons
100mm Touch Sensitive Motorised Faders
20 Segment Stereo Dimmable
LED Metering
GEQ
Fader
Follow
Layer
Selection
Output Faders

CDC Software

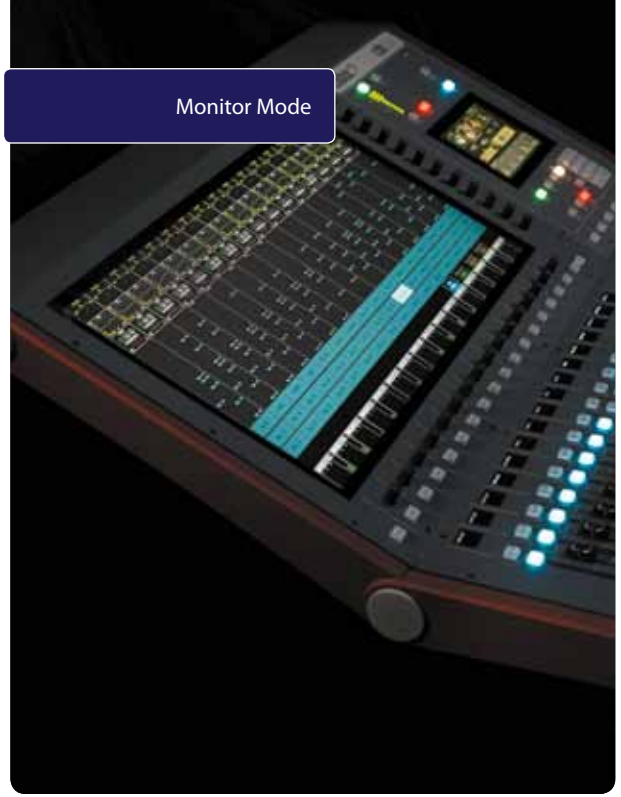
Gesture Navigation



The flush mounted, optically bonded, 23.5 inch 16:9 true HD LCD touch screen provides the engineer with an exceptionally clean and intuitive graphical user interface (GUI). The channel selection is a simple case of swiping the screen to move the channels seamlessly either left or right. Once the desired channel is reached a touch of the screen brings up the clear, logical GUI of the required function. No layers to navigate, or pointing devices to operate, thereby reducing the learning curve to a minimum and enabling fast setup and operation.

The CDC console software has many intuitive, time saving features such as the Move Channels function. This allows Input channels to be inserted in any position or replace existing channels, either singularly or in groups, by simply selecting and then dragging and dropping to the desired location in the Channel Settings page.

- Swipe to scroll through all channels
- Intuitive touch operation, minimal learning curve
- Clean and logical graphical user interface
- Intuitive features such as the "drag and drop" Move Channels function
- Fast console setup



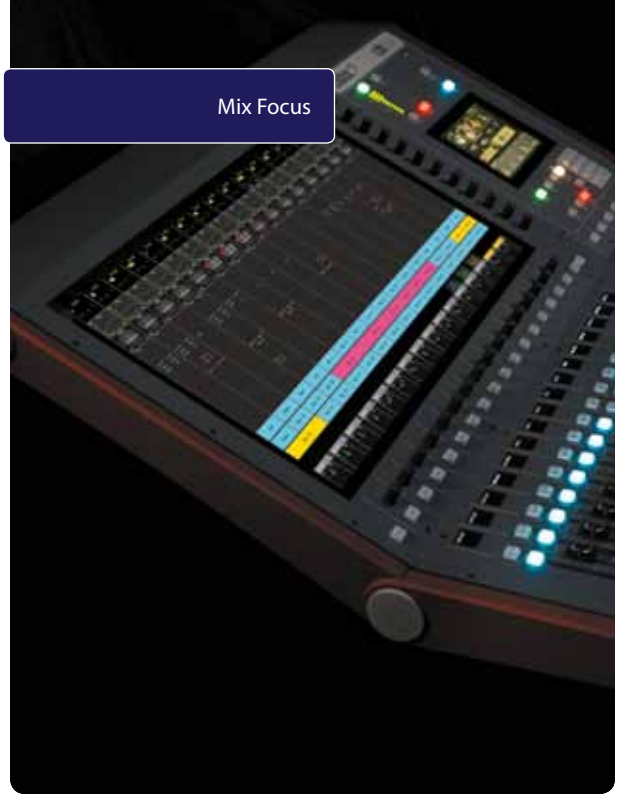
Monitor Mode

A unique Cadac feature is Monitor Mode. This has been developed to tackle the specific requirements of the monitor engineer, which is often an after-thought on many of today's digital consoles.

When Monitor Mode is enabled, it gives the engineer the ability to access any of the 48 user-assignable busses, and their respective contribution channels in 'sends on fader' mode, with a single touch of the screen. This allows fast and easy mixing of a large number of monitor feeds.

Add to this the 'Mix Focus' feature, which when enabled means that when any mix is 'flipped' into sends on faders mode, the console will only present the user with the channels that are contributing to the selected mix. This negates the need to navigate through all of the inputs.

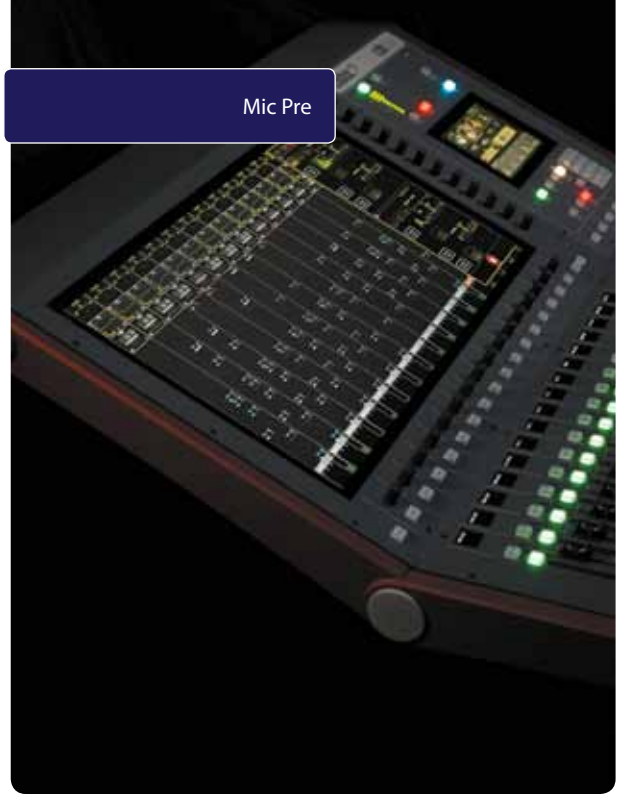
It is also possible to select an input channel and 'flip' the outputs onto the faders, allowing a single channel to be sent to multiple destinations simultaneously via the faders.



Mix Focus

All this, combined with the incredibly low latency, makes the CDC series a formidable weapon of choice for the discerning monitor engineer!

- Specialised mode dedicated to monitor applications
- Fader flip in both directions
- Access to all 48 busses simultaneously
- Mix Focus for speedy navigation within fader flip
- Incredibly low latency – ideal for in-ear monitoring



Mic Pre

For decades Cadac's analogue mic-amps have been considered by many to be the premium mic-amp in the live sound industry. Cadac's digital consoles proudly bear the hallmark of their analogue origins which can be traced back beyond the now legendary J-Type to those classic Cadac consoles from the golden age of recording studios.

Cadac's digital audio performance actually improves upon its analogue forebears. An astonishingly wide dynamic range and low noise floor has been achieved through a combination of unique analogue emulating algorithms and the latest 24-bit / 96 kHz Delta Sigma AD/DA convertors. The result is the classic Cadac sound - clean, transparent, and ready to adapt to any musical style.

- 45 years of Cadac engineering heritage
- Wide dynamic range
- Low noise floor
- 24-bit / 96 kHz Delta Sigma AD/DA convertors

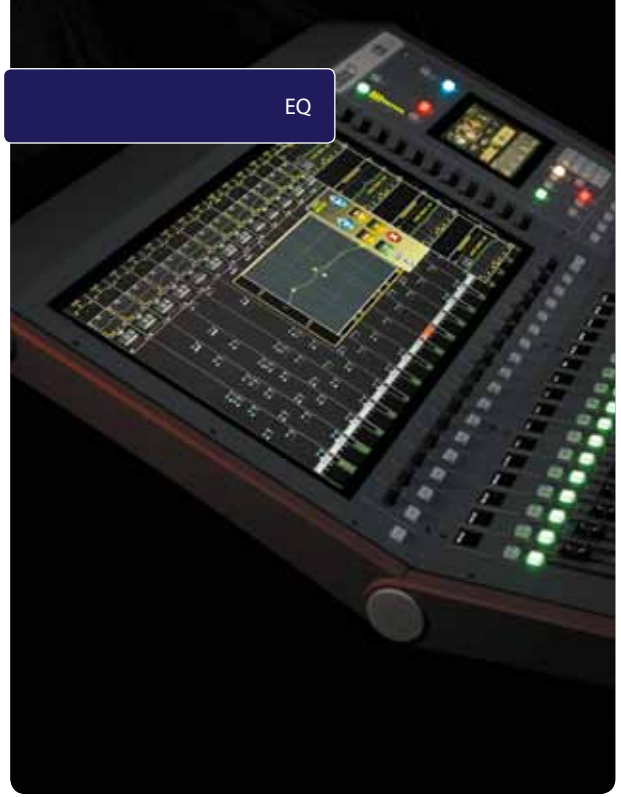
CDC Software

Phase Coherency

A major contributor as to why Cadac digital consoles sound so clean and transparent is the attention paid to latency management – a major factor in digital audio performance and over looked by a majority of other digital consoles. It has to be remembered that all digital audio takes time to process, and that differences in latency of less than 0.1ms will have a hugely detrimental effect on audio quality.

When combining signals with different paths and processing most digital consoles will be summing multiple signals, which will be partly out of phase. Cadac digital consoles have an extensive automatic latency management system which manages all internal routing and associated processing latency, resulting in all audio samples being synchronised before summing and providing absolute phase coherency at all outputs.

- Automatic latency management
- Absolute phase coherency
- Sample-accurate summing
- Sub 0.4 millisecond latency from analogue inputs on stage, through the audio processing, to analogue outputs on stage



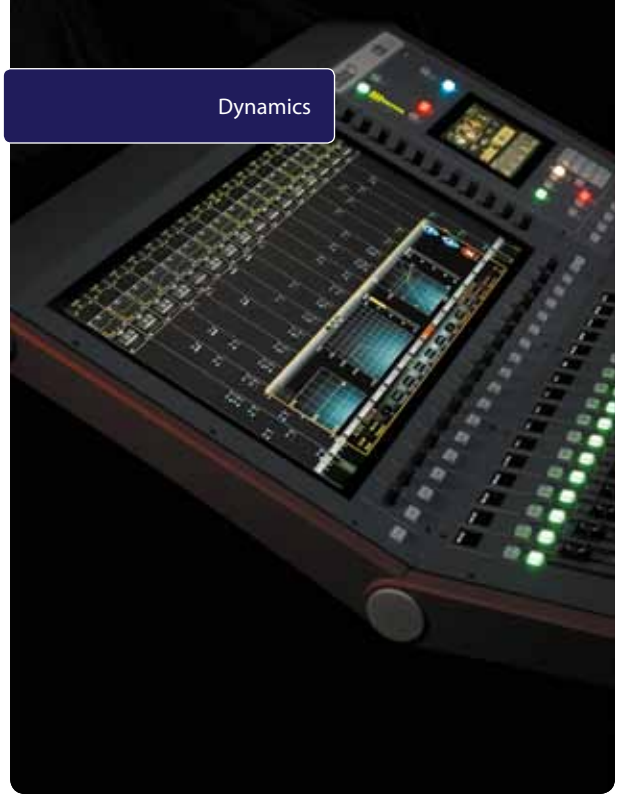
EQ

All the input and output channels feature 6 band EQ, comprising a four band fully parametric section and variable low and high pass filters.

All 6 bands can be independently switched in and out or the whole EQ can be bypassed with a master EQ bypass. The LF and HF bands of the EQ feature a Bell/Shelf option, and the EQ can be configured to either emulate the response and behaviour of the classic J-Type analogue filters, or to provide 4-band fully parametric operation on a per - channel basis.

All output channels feature a 1/3rd octave GEQ in addition to the 6-band EQ.

- 4 band fully parametric EQ
- J-Type analogue filter option
- Low and high pass filters
- EQ settings can be stored in a User Library

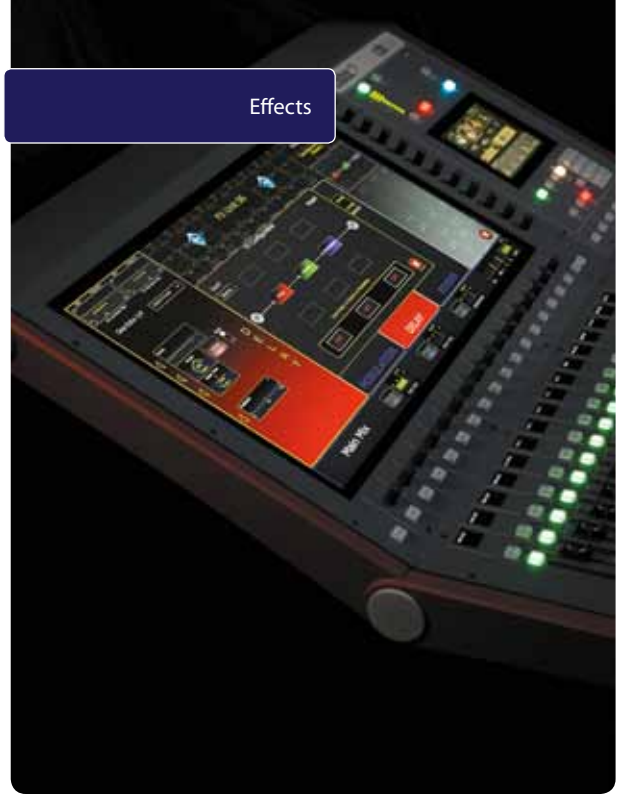


Dynamics

The dynamics processing has been designed to provide a broad scope of possibilities to maximise the creative potential. The input dynamics consists of a gate and dual-mode compressor with side chain filtering, with a choice of both classic or vintage modes of operation. Output dynamics processing features compression and limiting.

Control is achieved by simple touch access which will populate the screen with only relevant, concise control and visual information. The need to fiddle with sub menus or small, confusing graphics found on other digital consoles has been removed by the use of large touch friendly icons, thereby increasing the overall speed of operation and improving the workflow.

- Dual-mode compressor, gate and side chain filtering
- Dynamics settings can be stored in a User Library
- Clear graphical interface
- Simple workflow
- All phase coherent and time aligned



Effects

There are 16 stereo on-board effects units including various types of reverb, delay and modulation effects. These have been specially designed by our own software engineers to provide a pallet of superlative room, hall and plate reverb simulations, comprehensive tap-delay effects and rich, luscious modulation programs.

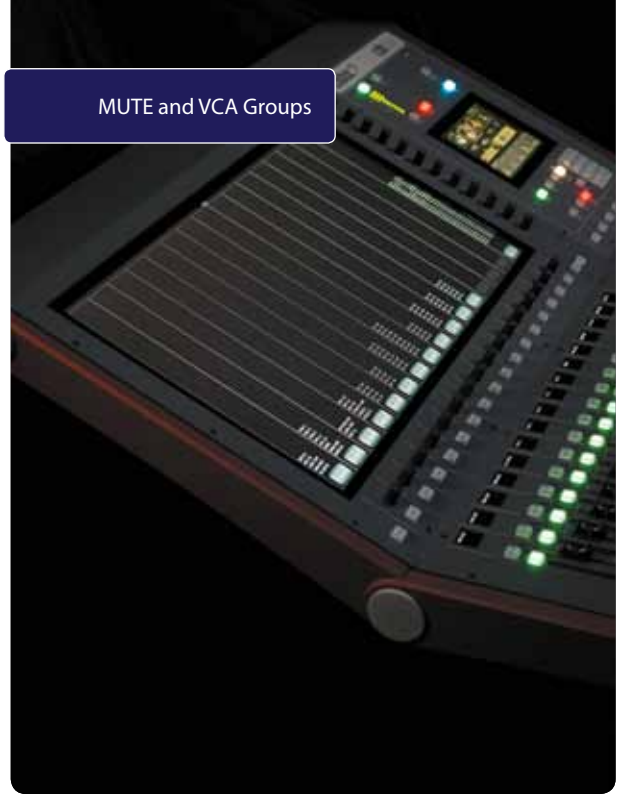
The 16 stereo effect "slots", each with reverb, modulation and delay elements, can be used simultaneously and freely configured by the user. The 3 elements within each effect slot can be arranged in either series or parallel, and in any order, using a simple and intuitive 'drag and drop' method. Effects can be patched as inserts on any channel, or in-line on an aux send/return basis.

A Waves interface card is fitted as standard which provides direct, low latency connectivity to the Waves MultiRack server, allowing any Waves plug-ins to be used together with the console's own DSP effect options. The Waves GUI is displayed on the console's touchscreen for viewing and editing.

- Range of on-board effects
- On-board effects can be daisy chained
- All phase coherent and time aligned
- Effects settings can be stored in a User Library
- Waves Integration for additional processing options

CDC Software

MUTE and VCA Groups

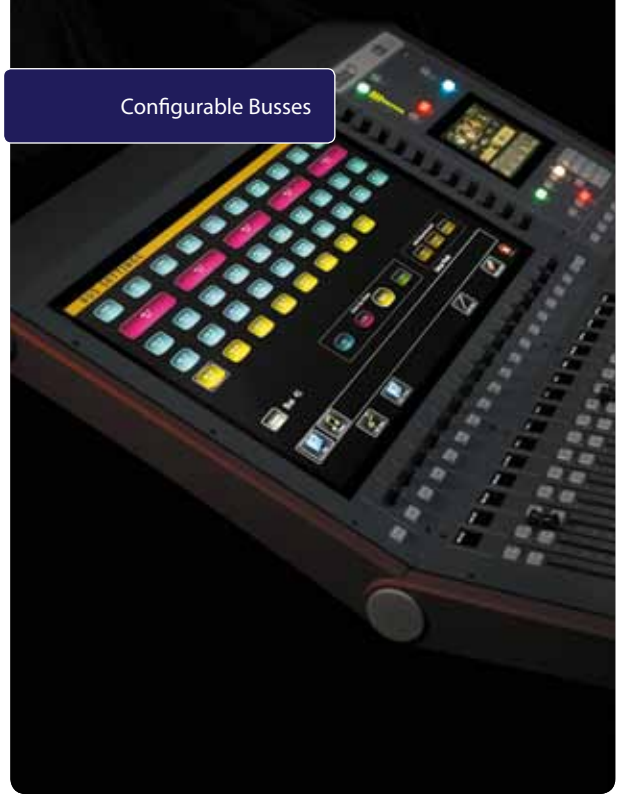


There are 16 VCA groups and 8 mute groups with OLED displays for assignment labelling. Cadac's unique approached to the user interface means that creating these user definable groups has been made incredibly intuitive. Any input can be assigned to any VCA or MUTE group, or to multiple groups, with a simple touch of the screen. Both the input and the groups can be named using the labels from the console's library or by using the on-screen keyboard.

The CDC console software features enhanced VCA navigation with VCA unfolding. This allows the members of the selected VCA to be deployed on the faders, giving instant access to all of the inputs' control parameters. In addition, whilst a VCA is 'unfolded' all 16 labelled VCA select buttons remain on the screen, allowing the user to jump from one VCA group directly to another, without reverting to the VCA master page – fewer button-presses, faster workflow.

To give a clear picture of the structure of the VCA groups all 16 can be easily viewed on an overview screen, showing all of the members of each VCA along with their post-fade input meters. Clearly displaying your entire mix – at a glance!

- Up to 8 MUTE groups with simple configuration
- 16 VCA groups with simple configuration
- VCA unfolding for quick access to VCA contributions
- VCA overview screen with input contribution meters
- OLEDs above fades display channel VCA assignment

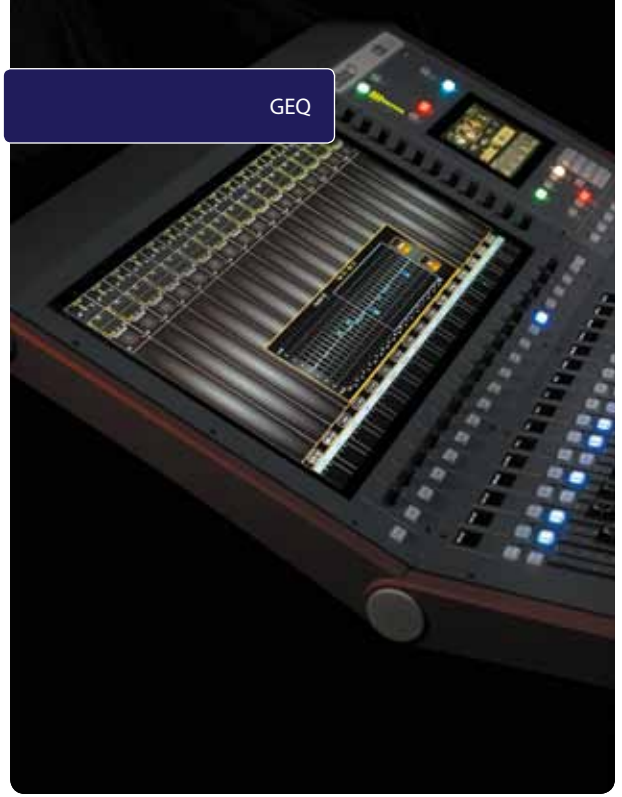


Configurable Busses

There are a total of 56 busses of which 48 are configurable. All of the configurable busses can be assigned as any combination of auxiliaries, groups, stereo auxes, stereo groups or matrix outputs depending upon the application with a simple touch of the screen.

The bus sends can be individually set as Pre EQ, Pre Fader or Post Fader, and pre or post VCA. To help workflow the busses can be renamed from the pre-set library or with user defined names by using the soft keyboard.

- 48 configurable output busses
- Assignable as Groups, Stereo Groups, Auxes, Stereo Auxes or Matrices
- User definable naming



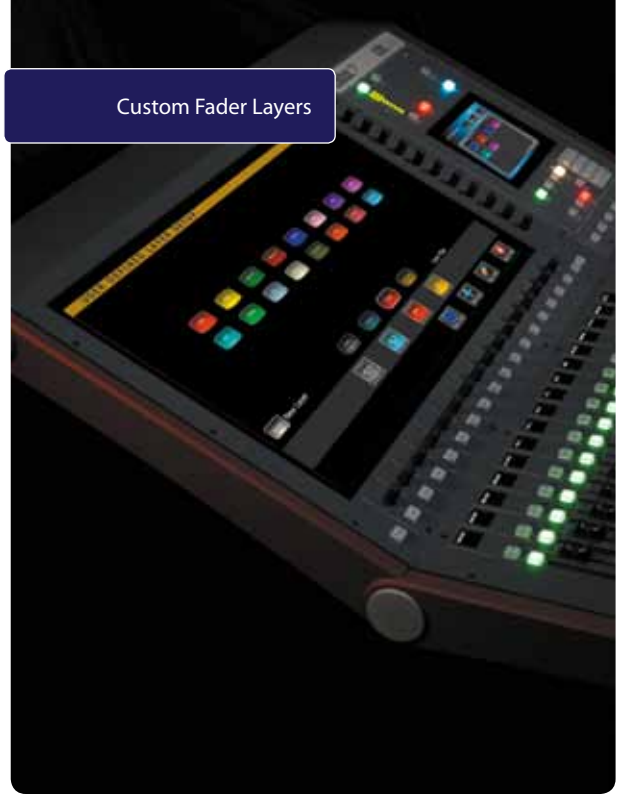
GEQ

All output busses feature 4-band fully parametric EQ, plus variable HPF and LPF plus a 1/3 octave GEQ.

All parametric and graphic EQ's can be used simultaneously, without any concern about available processing power or tonality compromise. GEQ parameters can be easily viewed on the 23.5" touch screen in the form of a virtual GEQ, and adjustments made quickly using the consoles 100mm faders.

Additional features include GEQ in/out, an "instant flat" switch and a bypass function for individual GEQ filters.

- 1/3 octave GEQ on all output busses
- On screen GEQ graphical user interface
- Control via 100mm faders



Custom Fader Layers

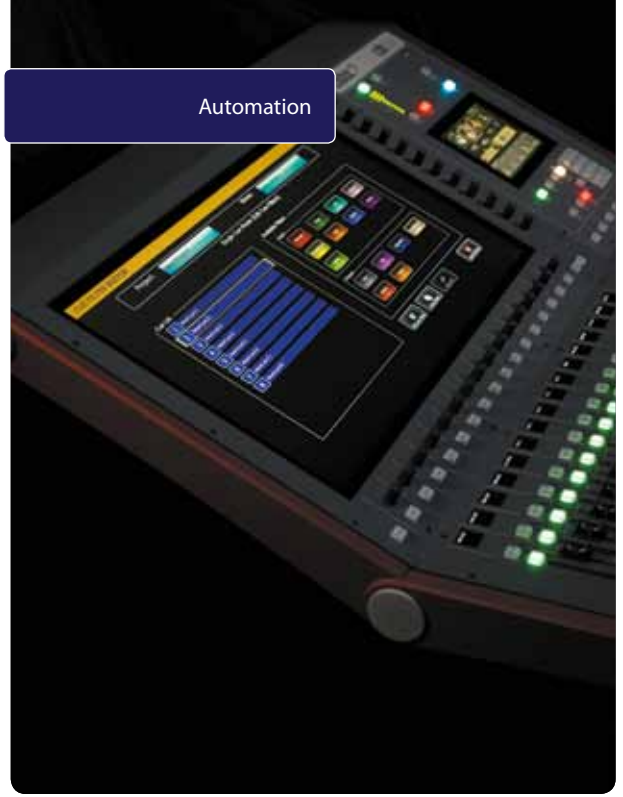
CDC console software provides the ability to create Custom Fader Layers or CLFs. The current implementation allows the creation of user definable layers, or groups, of any mixture of inputs, busses, VCAs and Monitor faders, which can then be deployed on to the output fader bank.

Each CFL can be named and colour coded. Members of the CFL are selected by dragging and dropping from the relevant input, bus, VCA or Monitor page on the large 23.5" screen. Assess to the CFL is done via the 6.5" system control screen, and the Custom Fader Layer display can be viewed and edited on the screen by assigning it to one of the 16 hardware user assignable buttons.

- Any combination of inputs, busses, VCAs and Monitor faders on one layer
- Custom Fader Layers are deployed on to the four output faders
- Access can be assigned to a user definable button
- Custom Fader Layers can be named and coloured coded
- A virtually unending number of layers can be created

CDC Software

Automation



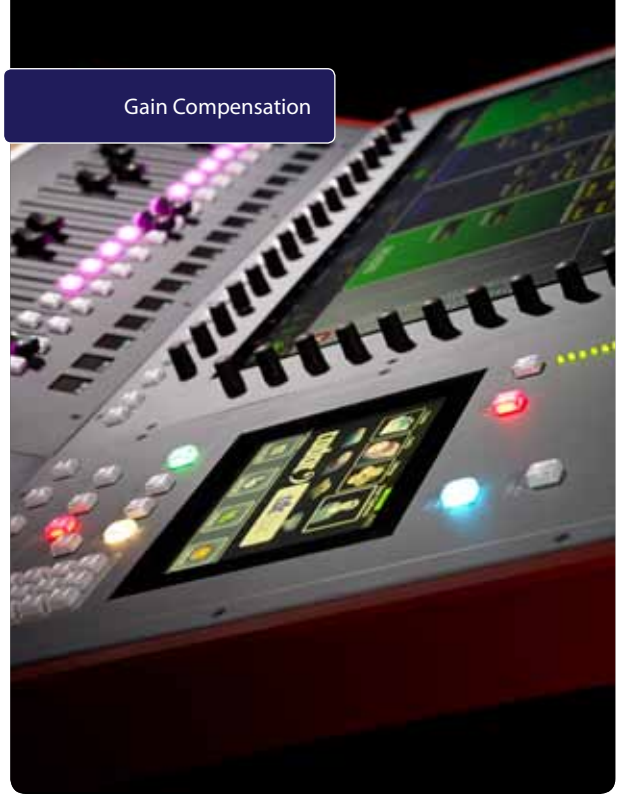
CDC console software features, as you would expect from Cadac, a comprehensive cue-based automation system, which is capable of storing hundreds of Cues within each Show file and there can be a number of Show files in a single Project.

When using the console automation each Cue contains every setting and parameter value for every input and output channel in the console. Due to the dynamic nature of live events, the sound engineer will need the ability to intervene in the recall process as changes to the programme occur in real time. To facilitate this in the simplest possible way, the on-board automation includes three discrete levels of automation isolation or "safe" status.

The Project files can be exported or imported via USB key.

- Cue-based automation system
- Three levels of automation Safe
- Extensive MIDI control
- Keypad for direct access to Cues
- Input and export show files via USB

Gain Compensation

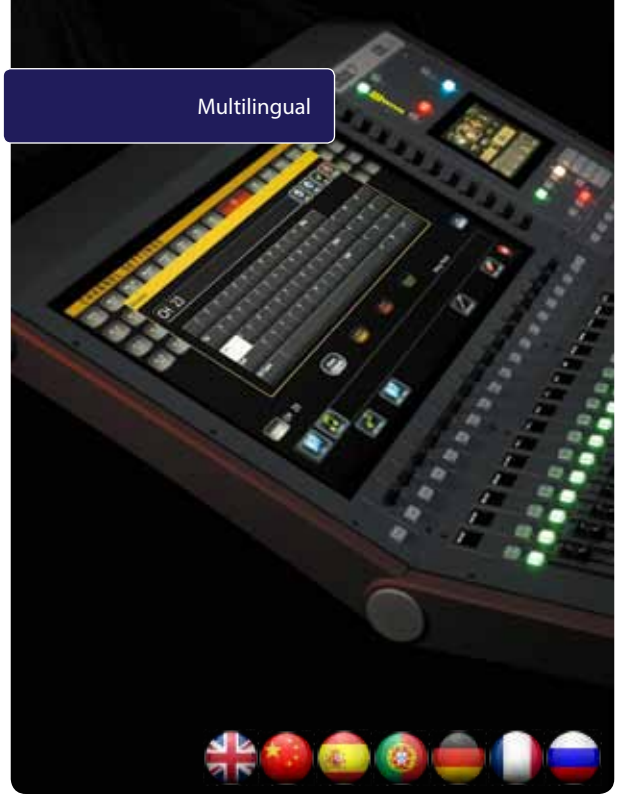


In large MegaCOMMS audio networks where there are multiple consoles networked via a CDC MC Router, the gain compensation is automatically applied by the CDC MC Router.

The CDC MC Router ensures that any adjustment in gain from the master console has zero effect upon the gain, or audio quality, of any other console in the same MegaCOMMS audio network. All this is done automatically and with out any need for any direct input from any of the consoles on the network.

- Console gain compensation automatically handled via the CDC MC Router
- CDC MC Router can handle up to 12 MegaCOMMS devices

Multilingual



The console has a library of languages for user definable console labelling. By simply selecting the preferred language, inputs, busses and VCAs etc. can be labelled in the users preferred language, making the console a much friendlier place to work and improving workflow.

- Library of languages for user definable labelling including English, French, German, Portuguese, Russian, Spanish and Chinese - with more to be added
- Ability to have user definable labelling in one language and control labelling in another

I/O

The consoles come preconfigured with fixed format local I/O consisting of four AES3 inputs and four AES3 outputs, alongside eight fully programmable line inputs and outputs.

Cadac also offers three fixed format stageboxes, with MegaCOMMS connectivity, which provide inputs and outputs remotely from the console. These include the CDC I/O 3216, which has 32 mic inputs and 16 analogue outputs, and the CDC MC AES3 that provides a total of 18 AES3 inputs / outputs. Plus there is the larger CDC I/O 6448 which features 64 mic inputs and 48 analogue outputs.

Two stageboxes can be connected directly to the rear of the console but up to eleven MegaCOMMS units can be added via the CDC MC Router, creating a much larger MegaCOMMS audio network.

The CDC console software automatically detects the I/O units, and patching is simply achieved by a touch on the screen. Each input / output on the unit can be "flashed" from the console making identification incredibly easy on the stage.

- 4 x AES3 inputs and 4 x AES3 outputs
- 8 x fully programmable line inputs and outputs
- Fixed format stageboxes with up to 64 inputs and 48 outputs
- Network up to 11 stageboxes via a CDC MC Router

MegaCOMMS

Cadac's MegaCOMMS digital audio network has been designed to meet the requirements of the most challenging applications. With an unbelievable sub 0.4ms latency, a comprehensive choice of local I/O cards, stageboxes and audio network bridges plus a dedicated 3,072 channel router to handle the dynamic management of audio, a MegaCOMMS network can be as complex or as simple as required.

MegaCOMMS Digital Audio Protocol

All Cadac digital audio is transmitted using Cadac's proprietary MegaCOMMS digital interconnect protocol which provides less than 0.4 millisecond latency from analogue input on stage, through the CDC six and all its processing, to analogue output on stage, plus robust error correction and advanced system clocking.

The protocol provides up to 128 bidirectional channels of 96 kHz / 24-bit audio, along with all control data and clock synchronisation. This is all carried on a pair of coaxial cables (send and return) with runs of up to 150 meters (492 feet) from the console or CDC MC Router, or up to 2 km (6,561 feet) with optical cables via the CDC MC Optical bridge. The benefit of combining audio, control, and clock into one single network simplifies connectivity, shortens set-up time and reduces investment in cabling infrastructure.

Cadac have a variety of network products to take advantage of the power and flexibility of the network. This includes a MegaCOMMS router where a single router can connect up to 12 MegaCOMMS devices, handle up to 3072 channels whilst managing the gain compensation between any consoles on the network.

A MegaCOMMS network includes consoles plus I/O stageboxes and audio network bridges which can be freely distributed in multiple locations around an auditorium or theatre, on stage and at Front of House or remotely in a broadcast suite. The MC network bridges allow MADI and Dante protocol based products to be seamlessly integrated in to the MegaCOMMS network, allowing third party networks and hardware to make use of those superlative Cadac mic-pres. The CDC MC Optical bridge extends MegaCOMMS runs up to a very impressive distance of 2 km (6,561 feet) from bridge to bridge via an optical link.

A MegaCOMMS network is clocked at 96 kHz, but Cadac do provide for SRC (sample rate convertor) to other clock speeds.

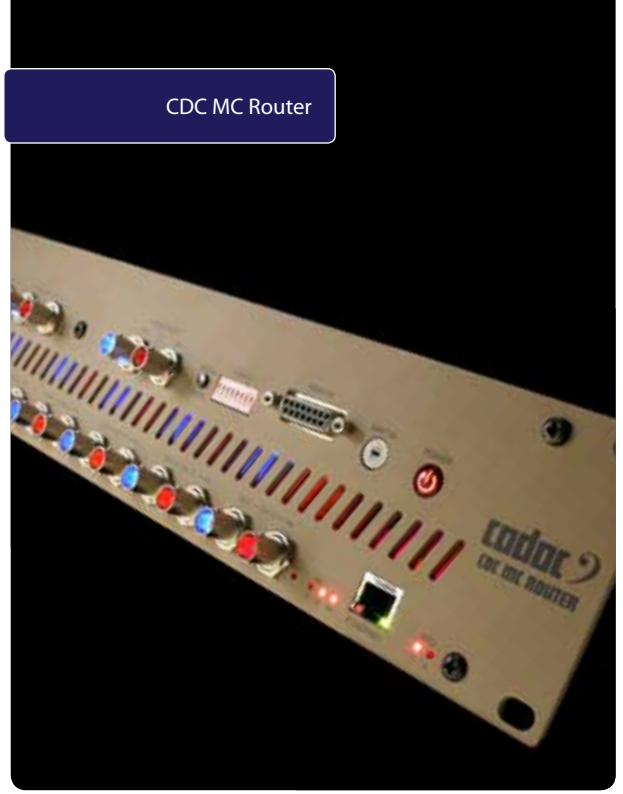
Feature Summary

- Up to 128 bidirectional channels of 96 kHz / 24-bit audio
- A time division multiplex (TDM) system
- RG6 coaxial cable runs of up to 150 meters / 492 feet
- Optical runs of up to 2 km / 6,561 feet
- Sub 0.4 millisecond latency from analogue inputs on stage, through either the CDC seven or CDC six and all the console's processing, to analogue outputs on stage
- A range of network products available from consoles to audio network bridges

MegaCOMMS

Photo: Lorenzo Moz Ortolani

CDC MC Router



The CDC MC Router provides the routing capability for the MegaCOMMS network. The 2U unit has 12 pairs of MegaCOMMS ports which can handle an audio network of 3072 channels.

The CDC MC Router PC software gives the ability to the end user to design their own Router maps via a simple graphical user interface that allows fast and intuitive creation of powerful MegaCOMMS networks. The Router will auto detect the attached MegaCOMMS units and the software GUI will show the individual unit's MegaCOMMS connectivity capabilities - along with the software and firmware versions of the unit.

The Router also handles gain compensation between consoles, automatically compensating for any adjustment in gain from the master console without affecting the gain, or audio quality, of any other console in the same network.

- 2U MegaCOMMS router
- 12 pairs of MegaCOMMS ports capable of handling 128 bi-directional channels of 96 kHz / 24-bit audio per pair of ports
- 8 user definable maps stored locally on the unit
- PC software available for user definable router mapping
- Adds less than 0.01 milliseconds to a MegaCOMMS network
- MegaCOMMS ports glow either red (Rx) or blue (Tx)
- Dual PSUs as standard

CDC MC Optical

The CDC MC Optical 1U bridge allows MegaCOMMS runs of 128 channels of 24-bit 96 kHz audio up to a distance of 2 km (6,561 feet) from bridge to bridge.

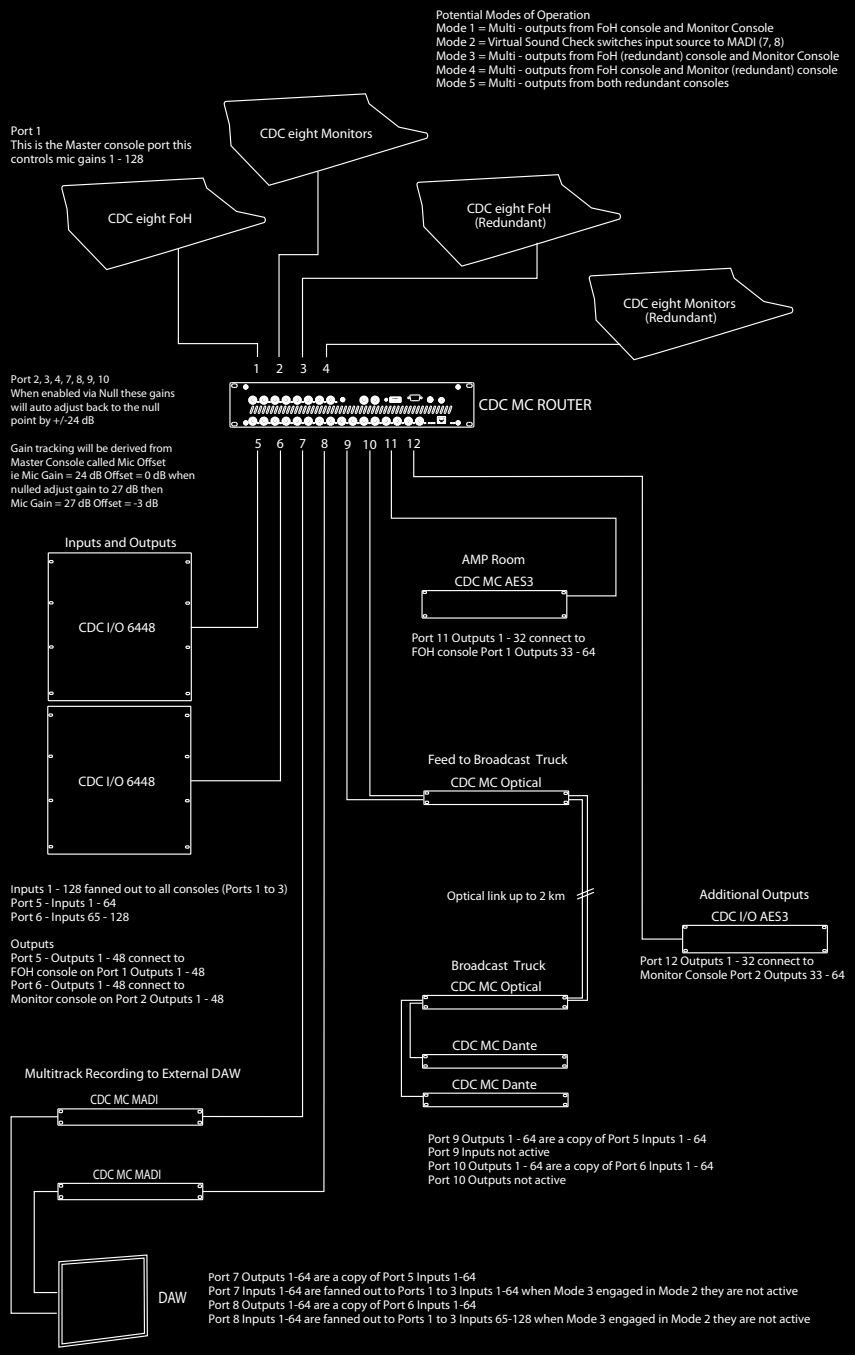
The unit has 4 pairs of MegaCOMMS ports (Tx, Rx) with a duplex optical LC port per pair allowing up to 512 channels of audio to be transmitted. Each of the four MegaCOMMS pairs are independent of each other allowing for complete flexibility to suite any application.

The unit is also fitted with redundant PSUs as standard.

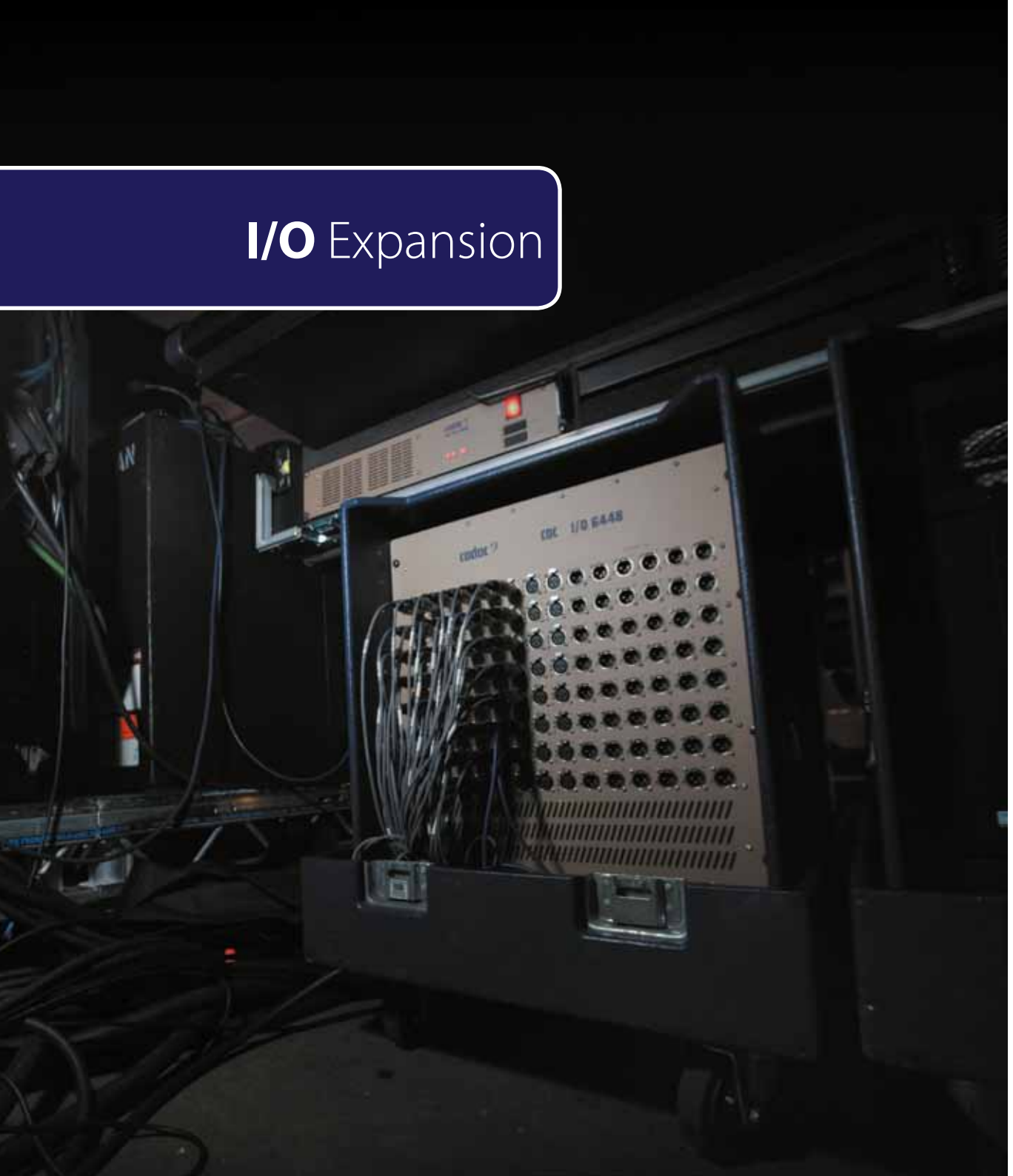
- 1U MegaCOMMS optical bridge
- 512 channels can be sent up to 2 km (6,561 feet) from one unit
- 0.011 millisecond of latency over 2 km
- 4 pairs of MegaCOMMS ports (Tx, Rx)
- 4 duplex multi-mode or single mode SFP LC optical ports
- MegaCOMMS network ports glow either red or blue for Rx (receive) or Tx (transmit)
- RG6 cable runs to the unit of up to 150 meters / 492 feet – optical run between CDC MC Optical bridges up to 2,000 meters (6,561 feet)
- Dual PSUs as standard

MegaCOMMS Network

Example of a MegaCOMMS Network Diagram



I/O Expansion



I/O Expansion

The CDC seven and CDC six feature fixed format local I/O consisting of four AES3 inputs and four AES3 outputs, alongside eight fully programmable line inputs and outputs.

The consoles also come pre configured with two pairs of MegaCOMMS ports as standard. These ports allow connection to a combination of MegaCOMMS equipped stage boxes, network bridges and a router. Each pair of ports is capable of transmitting 128 bidirectional channels of 96 kHz / 24-bit audio.

The stageboxes currently available include the CDC I/O 3216, with 32 mic inputs and 16 analogue outputs, the CDC I/O 6448 which features 64 mic inputs and 48 analogue outputs and the CDC MC AES3 that provides a total of 18 AES3 inputs / outputs. Up to two stageboxes can be connected directly to the rear of the console but up to 11 units can be added with the CDC MC Router. Both consoles automatically detect I/O units and patching is simply achieved with a touch on the screen.

- Up to 128 bidirectional channels of 96 kHz / 24-bit audio per pair of ports
- Network up to 12 MegaCOMMS units with a CDC MC Router
- Fixed format stageboxes with up to 64 inputs and 48 outputs
- RG6 cable runs of up to 150 meters / 492 feet

CDC MC AES3

The CDC MC AES3 is a 2U stagebox that provides a total of 18 AES3 inputs / outputs via D-Sub and XLR connectors.

All the inputs and outputs have SRC on a connector to connector basis; 44.1 kHz, 48 kHz and 96 kHz (192 kHz on inputs only) with conversion to 96 kHz.

It can sync with an external Word clock (3V3 and 5V0), AES11 or via its internal clock.

The unit is also fitted with redundant PSUs as standard.

- 2U AES3 stagebox
- 36 audio inputs / outputs in total running at 96 kHz internally
- 4 x 25 way D-Subs: 4 AES inputs / outputs (8 audio inputs / outputs) per D-Sub
- 2 x XLR AES inputs (4 inputs) 2 x XLR AES outputs (4 outputs)
- All inputs have SRC and are transformer isolated
- MegaCOMMS network ports glow either red or blue for Rx (receive) or Tx (transmit)
- RG6 cable runs of up to 150 meters / 492 feet
- Dual PSUs as standard

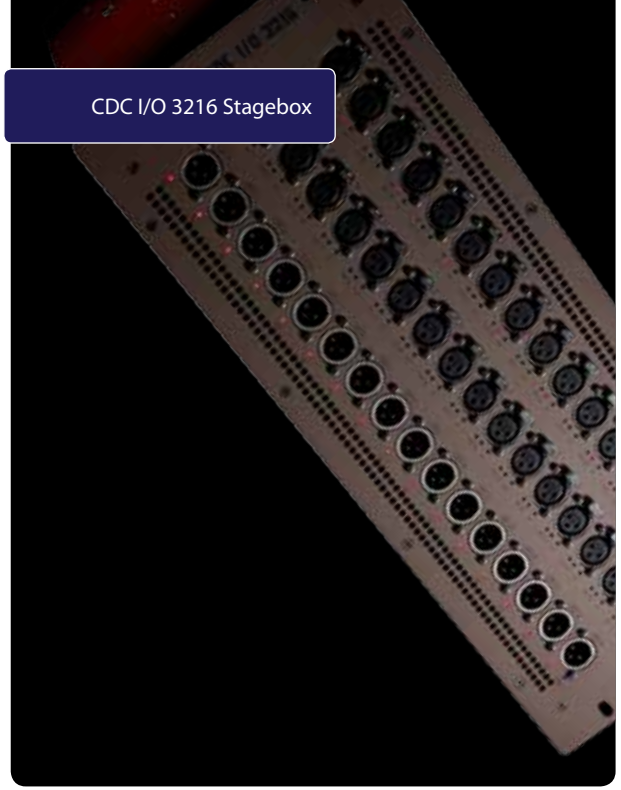
CDC I/O 6448 Stagebox

The CDC I/O 6448 is an 11U fixed configuration stagebox featuring 64 highly acclaimed Cadac mic-amps and 48 analogue XLR outputs. The stagebox is connected to the console using Cadac's MegaCOMMS network protocol allowing the I/O unit to be located up to 150 meters from the mixer on RG6 coaxial cable. The CDC I/O 6448 has two pairs of MegaCOMMS send and receive ports on the rear for redundancy.

The Cadac mic-press can be controlled remotely from the console along with output assignments. To complete the user interface there is signal present, clip and phantom power indication plus mute indication for the outputs. Larger networks can be created by using the MegaCOMMS router which can currently connect up to 4 consoles with up to 8 MegaCOMMS units.

For that extra peace of mind there is also the option for adding an additional power supply to safe guard against PSU failure.

- 11U fixed configuration
- 64 Cadac mic / line inputs
- 48 line outputs
- 2 pairs of MegaCOMMS ports
- Redundant power supply option



CDC I/O 3216 Stagebox

CDC I/O 3216 is a 4U fixed configuration unit featuring 32 mic / line analogue inputs and 16 XLR analogue outputs. The stagebox is connected to the console by using Cadac's propriety low latency MegaCOMMS audio network protocol. The CDC I/O 3216 can be located up to 150 metres (492 feet) away from the console using just a pair of RG6 coaxial cables.

All functions of the mic-pre's can be controlled remotely from the console. The comprehensive front-panel indicators include signal present, clip and phantom power status. There is also mute indication featured on all CDC I/O 3216 outputs.

- 4U fixed configuration
- Provides an additional 32 Cadac mic / line inputs on stage
- Provides 16 line outputs on stage
- Single pair of MegaCOMMS port

Integration

iPad App

The Cadac's iPad App - Cadac Remote – provides the perfect solution for controlling wirelessly the key functions of the CDC six, CDC seven and CDC eight consoles via an iPad.

Once a wireless router is connected to the desk and the iPad linked to the network, the App automatically detects the active console type(s) allowing the user to select the appropriate console.

Cadac Remote allows you to monitor in real time both the input and output metering, as well as providing the freedom to remotely EQ the PA whilst controlling the major features of the console.

The App also enables simultaneous use of multiple iPads. Each iPad can be locked to a single mix so artists can create, via the intuitive graphical interface, their own monitor mixes without changing any other console settings.

Cadac Remote is free to download from Apple's App Store.

- Simple setup - auto detect of console type
- Real time control of the console
- Intuitive graphical interface
- Allows multiple iPads on a single network

CDC Offline Editor

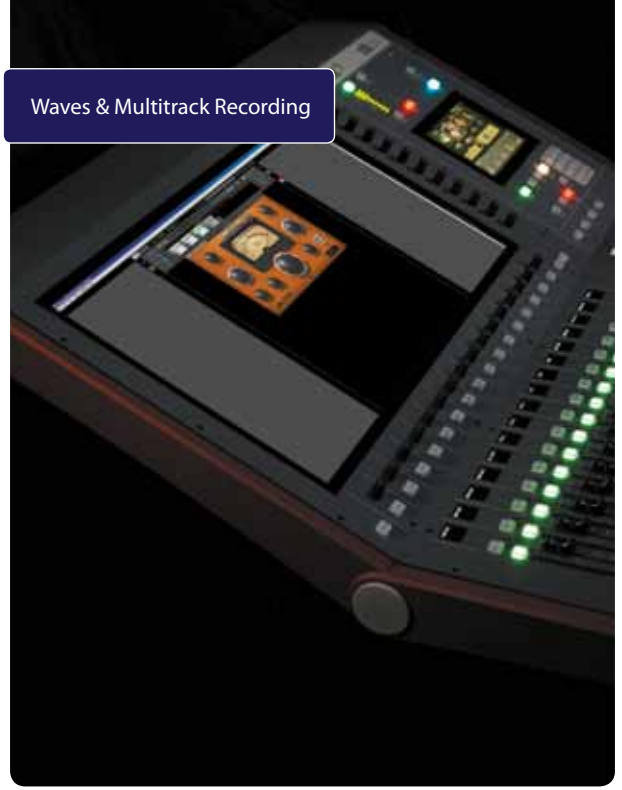
The CDC Offline Editor software mirrors the CDC console software, with an identical graphical user interface, enabling show file editing and creation offline on a Mac®.

With the ability to edit and save all key operating parameters, as you would on the CDC consoles' touch screen, makes the Offline Editor software an essential preparatory tool.

All show files, whether newly created or edited versions, can be uploaded to, or downloaded from, the console via a USB key.

- Mirrors the console's graphical interface
- Edit and save all key operating parameters
- Mac based software
- Download / upload via USB

Waves & Multitrack Recording



Both CDC seven and CDC six feature an integrated Waves interface card which provides connectivity to Waves MultiRack SoundGrid.

This allows up to 64 channels of Waves studio-grade plug-ins to simultaneously run alongside the console's own native effects options. There is the added advantage of the Waves GUI being displayed on the console's 23.5" touchscreen for control. Audio is streamed from the integrated interface card to the SoundGrid server, processed, and then streamed back to the console via Cat5e.

As well as providing direct connectivity to a Waves SoundGrid server, the interface can connect directly to a standard laptop computer, which, once the Waves SoundGrid Studio application has been installed, will connect to just about any DAW software. This permits the use of your favourite 3rd party plug-ins, multitrack recording, playback and "virtual sound check".

The Waves processing is patched in the same way as the existing Cadac I/O racks, and can be used as a send and return for effects processing, or alternatively can be patched and used as inserts, giving great flexibility.

Virtual Soundcheck

When the console's Waves SoundGrid interface is connected to a suitable laptop or desktop computer with Waves "Tracks Live" installed, it can record over 60 tracks of 24-bit, 96 kHz audio. With Waves' Studio App installed on your computer, any DAW can be used for multitrack recording.

Each of the console's input channels features two inputs. These can easily be configured as mic/playback and switching between them globally achieved at the touch of a screen.

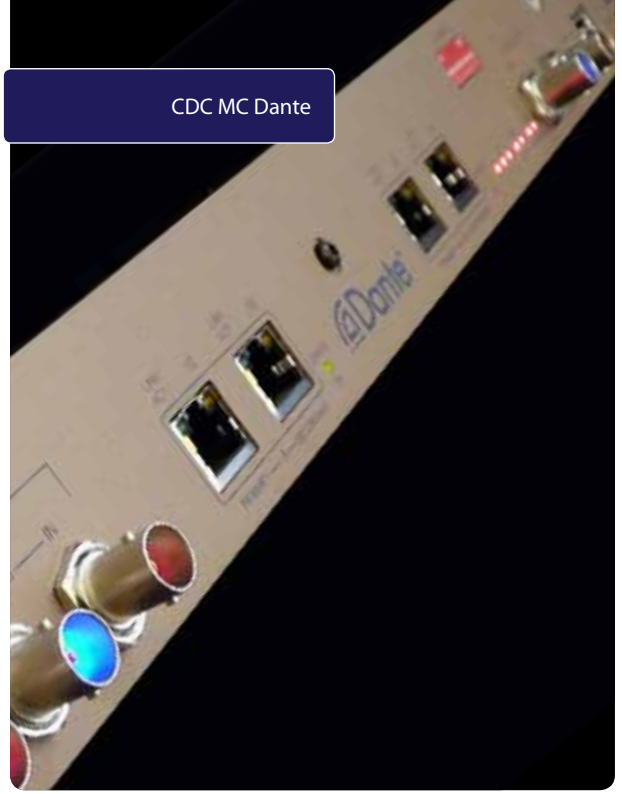
- Standard integrated Waves card for MultiRack SoundGrid server
- Up to 64 channels of Waves processing
- Control via CDC six's touch screen
- Multitrack recording direct to laptop via Waves SoundGrid Studio App

CDC MC MADI

The CDC MC MADI is a MADI to MegaCOMMS audio network bridge allowing the seamless integration of MADI audio streams into a MegaCOMMS audio network. The 1U unit can operate at 96 kHz or 48 kHz and can handle up to 64 inputs and outputs and is equipped with 128 channels of SRC as well as its own independent word clock.

The MC MADI comes as standard with dual PSUs ideal for mission critical applications. The MADI audio connections are handled via coaxial and optical. To aid with configuring the MegaCOMMS network the unit's coaxial ports glow either red or blue for Rx (receive) or Tx (transmit) – a real boon for speeding up low light set-up.

- 1U MegaCOMMS to MADI audio network bridge
- 96 kHz or 48 kHz operation
- Up to 64 inputs and outputs
- Coaxial and optical audio connections
- Independent word clock synchronisation
- MegaCOMMS network coaxial ports glow either red or blue for Rx (receive) or Tx (transmit)
- Dual PSUs as standard



CDC MC Dante

The CDC MC Dante is a 1U Dante to MegaCOMMS audio network bridge enabling Dante units to be incorporated in to the MegaCOMMS audio network. The unit can work at either 96 kHz or 48 kHz and can handle up to 64 inputs and outputs.

The MC Dante also has 128 channels of SRC as well as its own independent word clock with audio connections via coaxial plus dual PSUs as standard for extra peace mind when used in critical applications. As with the CDC MC MADI unit the coaxial ports glow either red or blue for Rx (receive) or Tx (transmit) – enabling fast and accurate configuring of the MegaCOMMS network especially in low light.

- 1U MegaCOMMS to Dante audio network bridge
- 96 kHz or 48 kHz operation
- Up to 64 inputs and outputs
- Coaxial and RJ45 audio connections
- Independent word clock synchronisation
- MegaCOMMS network coaxial ports glow either red or blue for Rx (receive) or Tx (transmit)
- Dual PSUs as standard

External PSU

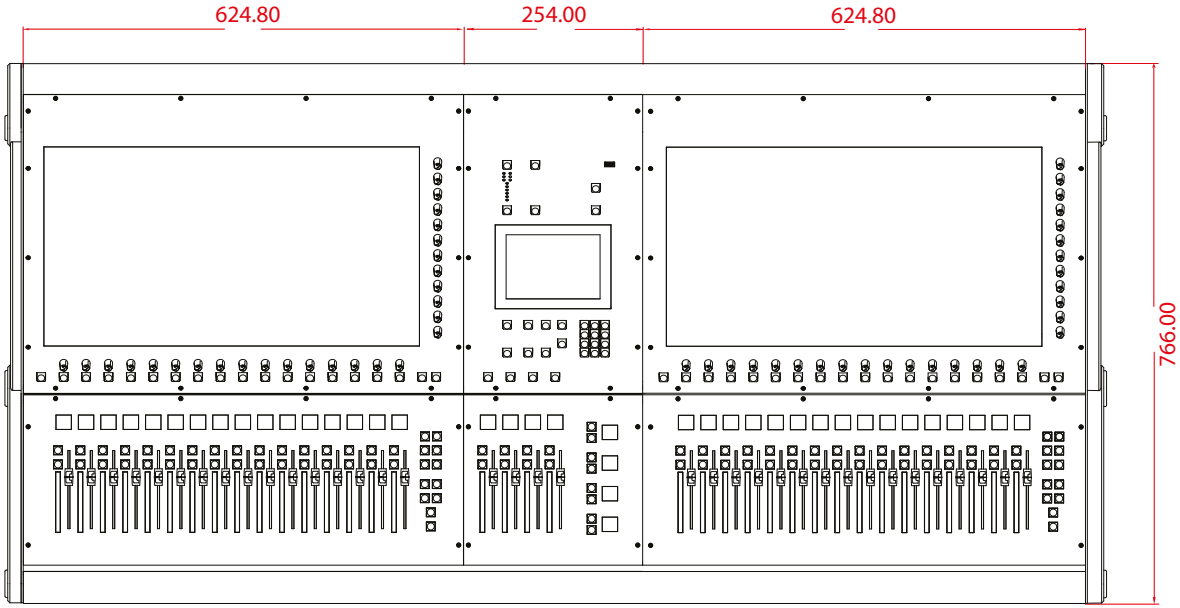
CDC six features an external, 19" rack mount power supply. This means that high AC voltages are kept out of the console itself, reducing noise, heat, and increasing reliability and longevity of internal components. An optional second spare PSU can be connected to the console, which provides seamless redundancy of both PSU and connecting cable.

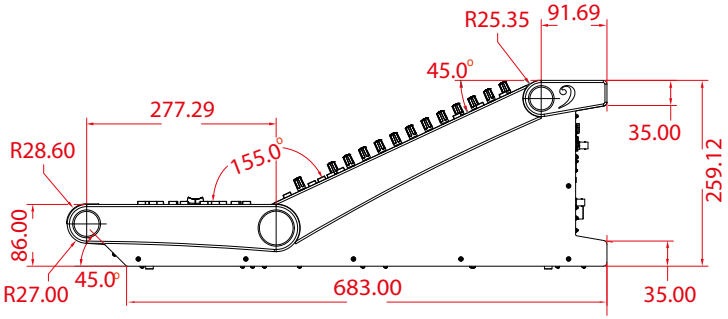
PSU 4800 is auto-voltage sensing and will operate on AC voltages between 90 and 250 volts at 50 or 60 Hz.

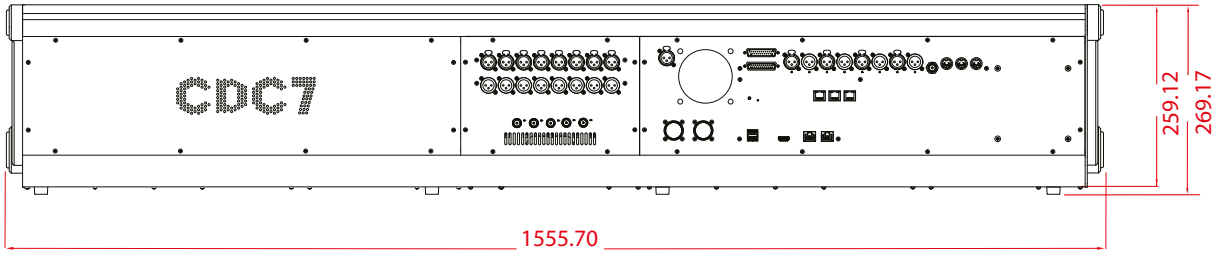
- 2U auto-switching PSU
- Compatible with CDC eight, CDC six and CDC I/O 6448

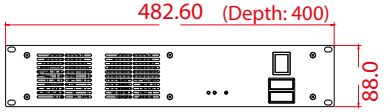
Line Drawings

CDC seven digital audio mixing console







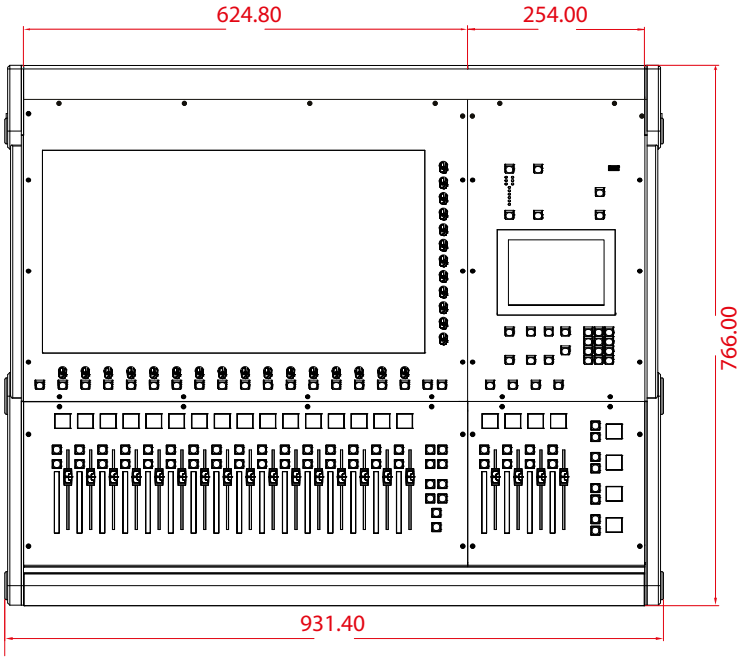


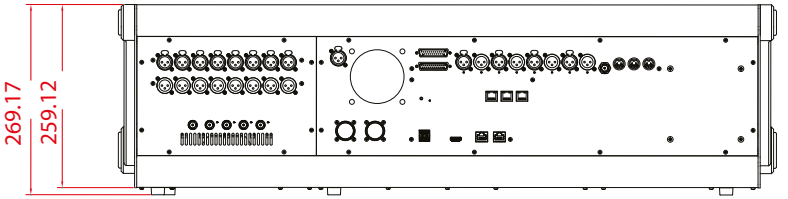
CDC PSU 4800 external power supply

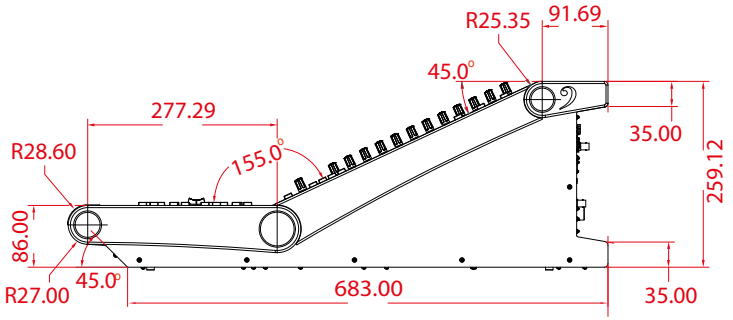
All measurements in millimetres

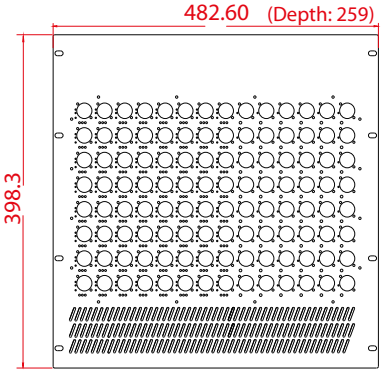
Line Drawings

CDC six digital audio mixing console



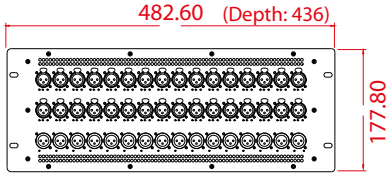




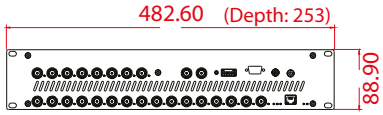


CDC I/O 6448 remote stagebox

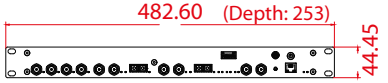
CDC MC AES3 remote stagebox



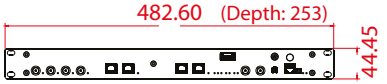
CDC I/O 3216 remote stagebox



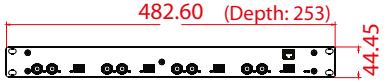
CDC MC Router



CDC MC MADI network bridge



CDC MC Dante network bridge



CDC MC Optical bridge

Weights

CDC seven	60.0kg / 132.27lb
CDC six	40.0kg / 88.18lb
CDC PSU 4800	10.0kg / 22.05lb
CDC I/O 6448	13.5kg / 29.76lb
CDC I/O 3216	10.9kg / 24.03lb
CDC MC AES3	5.5kg / 12.13lb
CDC MC MADI	4.5kg / 9.92lb
CDC MC Dante	4.5kg / 9.92lb
CDC MC Router	5.5kg / 12.13lb
CDC MC Optical	4.5kg / 9.92lb

All weights and dimensions are approximate and out of packaging / flight cases

All measurements in millimetres

Notes

Cadac Holdings Ltd
One New Street
Luton
Bedfordshire
LU1 5DX
United Kingdom

Head Office Tel: +44 1582 404 202
Sales / Marketing Tel: +44 1299 488 808

www.cadac-sound.com

01-08-2016 : CDC seven-six Brochure