The Product Book
Let's get talking

CALREC



Introduction

Calrec is a leading designer and supplier of audio broadcast mixing equipment, relied on by the world's most successful broadcasters.

Formed as a microphone manufacturer in 1964, Calrec's reputation for build quality, reliability and audio performance has made it an industry benchmark across the world.

Now, broadcasters demand even more versatility and integration from their audio equipment. In this highly progressive era, TV companies want to ensure that their systems can produce programmes increasingly efficiently and to exacting specifications.

For their audio systems to achieve this, greater consideration has to be given to networks as a whole, and how efficiently they can be controlled.

Calrec understands modern broadcast facilities, and works alongside broadcasters to keep ahead of the changing needs of the broadcast environment.

Calrec is at the heart of changing broadcast requirements with its range of broadcast mixing consoles, remote production and audio networking solutions, its understanding of AoIP and IP Infrastructures, and its work with third-party integration.

All Calrec products are designed, engineered and tested at Calrec's Nutclough Mill headquarters in Hebden Bridge, West Yorkshire, England.

From customer research through to R&D, production and test departments, every element of product development is in-house. This ensures the integrity of the entire process and guarantees a quality standard unsurpassed in the broadcast console marketplace.

Calrec is a broadcast specialist and over the last 60 years, has earned a reputation for innovation with a history of technological world firsts:

Calrec is part of the Audiotonix family alongside Allen & Heath, DiGiCo, DiGiGrid, Fourier Audio, Harrison, KLANG:technologies, Slate Digital, Solid State Logic, Sonible and Sound Devices.

CALREC

60 YEARS OF PUTTING SOUND IN THE PICTURE

1964

Before the turn of the decade, founders build a recording studio in Hebden Bridge, West Yorkshire, to record local artists and choirs.



Calder Recordings Ltd forms and microphone production begins, producing high quality capacitor based designs for music recording and broadcast operations.



1972



Calder Recordings Ltd becomes known as Calrec Audio Ltd and the first stereo radio broadcast console, the J Series, is designed for BBC radio which launches Calrec's reputation as a console manufacturer.

1974

Calrec makes its first TV broadcast console, the K Series for Tyne Tees Television.

1977

Calrec supplies two prestigious consoles for BBC Lime Grove and later that year, the world's first stereo broadcast console to BBC Television Centre Studio 1.

1978



The Calrec Soundfield microphone is the world's first single point-source microphone capable of recording sound in three-dimensions for surround-compatible playback.

1980

Calrec launches the M Series broadcast range.



Also in 1980, Calrec invests in a CAD system, one of only three in the country which vastly improves their design throughput and quality.

1981

Calrec creates the VCS console, the world's first digitally controlled assignable mixing console. This pioneering technology pre-empts the move to separate the control surface from the processing core by over two decades!



1983



Calrec delivers the first full turn-key audio installations at Limehouse Studios, Britain's biggest independent television centre.

1984



Calrec's first music console, the UA8000 for Polar Studios (ABBA), Stockholm.

1989



Calrec moves to Nutclough Mill in Hebden Bridge where all Calrec products are still designed and engineered to this day.

1993



Calrec introduces the T Series, a third generation digitally controlled analogue live production and live to air console.



1996



Calrec introduces the Q2 console, designed for use in outside broadcast in the US market where it gains immediate success.

1997



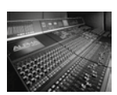
The first all digital product from Calrec, the X Series radio on-air console.

1998

An all digital version of the T Series console is shown at NAB.



1999



The Alpha 100, Calrec's first fully digital TV desk launches and wins one of only ten awards given at NAB.

Also in 1999, the M3 small format console launches at the AES convention in Munich, Germany.

In the 90s, Calrec shifts its focus to larger international sporting events in a bid to expand its global reach, with large-format analogue consoles giving more control to broadcasters. By the end of the decade, Calrec's journey to becoming the de facto standard for sport and entertainment in the US is well underway.

2002

The Sigma console, Calrec's second digital television production console, débuts at NAB.

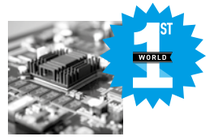
2003



Zeta launches alongside the launch of the Hydra audio network which enables I/O resources to be shared throughout the entire family of Calrec digital consoles.

2006

Calrec launches Bluefin, the world's first implementation of Field Programmable Gate Array (FPGA) technology for full DSP processing, providing enough processing on one DSP card to power an entire mixing console, running surround-sound productions.



2009

APOLLO

ARTEMIS

HYDRA2



Calrec launches the Apollo platform and introduces Bluefin2, the next generation of Calrec's award-winning Bluefin technology.

The Apollo platform quickly leads to the development of Artemis.

Calrec launches Hydra2, allowing the construction of complex routing networks with control software.

2013

SUMMA



Calrec launches the Summa live broadcast console at IBC, a simple and straightforward user interface, focused on workflow simplicity.

2016

brio.36



Calrec launches Brio, a super-compact 36-fader surface with more faders in a given footprint than any other audio console, built in I/O and DSP and an integrated touch-screen UI.

Also in 2016, Calrec makes remote production possible with the RP1, a 2U core that enables a console surface at one facility to control all mixing functionality for an event in a different location.

2018

TYPE R



Calrec launches the Type R console, its first native IP product. Type R is a modular system which can be tailored to operator needs with just four hardware panels to create a variety of system types and can provide mix facilities for up to three independent mixers on one system core.

2020



Calrec launches the Calrec Sound Institute providing thousands of people with free certified training on Brio, Type R and Summa, as well as a comprehensive IP course and immersive mixing course in conjunction with Dolby Atmos™.

2021

Calrec switches to a renewable electricity supplier.

2022

ARGO

Calrec launches Argo Q and Argo S, a new approach to audio mixing, designed to adapt to changing production needs. Built around a robust ImPulse core and Calrec Assist interface, Argo provides more of what you need, wherever you need it.

Also in 2022 Calrec switches to zero carbon gas.

2023

Calrec unveils ImPulse1 IP audio processing and routing engine. Designed for small to medium single mixer applications.

IMPULSE1



Also in 2023 Calrec launches a reduced height variant of Argo S, perfect for compact installation sites, such as outside broadcast, where space is at a premium.

2024

60 YEARS

NAB SHOW PRODUCT OF THE YEAR 2024 WINNER

In our 60th anniversary year, Calrec scoops a third Argo win with NAB Show Product of the Year 2024 Award for the new variant of Argo S.

Also in 2024 Calrec leverages cloud technology. Following its development preview at NAB, Calrec's ImPulseV cloud-based DSP processing core makes its debut at IBC. Delivering the same audio quality and feature set as Calrec's hardware-based ImPulse processing cores, ImPulseV is hosted entirely in a public cloud environment like AWS, which can be accessed from anywhere in the world.

IMPULSE V



IMPULSE

Also in 2018 at IBC, Calrec launches ImPulse, a powerful, IP-based, processing and routing engine which is compatible with existing Apollo and Artemis control surfaces, providing a simple upgrade path for existing Calrec users.



Also in 2018, Calrec launches Calrec Assist, a HTML-based remote-control UI for a range of Calrec consoles.

Argo

ARGO Q



Designed to adapt to changing production needs, Argo is a new approach to audio mixing with a flexible control philosophy that breaks the traditional geographic tie lines between processing and control.

Flexible

Fully modular and with interchangeable hardware panels, Argo is built around Calrec's time-served Assist UI. This means that whether you are on physical panels or a remote GUI, the user interface is both familiar and easy to drive.

Argo's panel system encourages broadcasters to adapt surface hardware to meet their unique requirements, with two mid-level rows of interchangeable panels on the larger Argo Q model, and one mid-level row on the Argo S model. Calrec has also introduced a comprehensive system of user templates to instantly change the hardware user interface to meet changing requirements or user preferences.

Powerful IP Core

Built around an expanded version of Calrec's ImPulse technology means the location of the control surface is not tied to the processing core. It can power up to four independent mix environments, including headless mixers accessed via public internet.

User Friendly

Argo's control surface uses optically bonded touchscreens to provide unrivalled visual feedback and speed of access.

Soft panels provide a richer user experience and hardware panels allow users to build definable functions and apply these as templates - this helps operators move around the surface faster and makes it more intuitive.

Maximum Uptime

Argo builds on Calrec's broadcast-specific and industry-leading surface resilience. All control elements can be accessed on any section, so an operator can use any panel to access inputs and controls.

I/O on the Fly

Argo includes optional AoIP I/O modules which can be fitted directly into the control surface, with a variety of I/O options. These can be fitted into every section of the console to give the operator a variety of options, make cabling more efficient and save I/O space.

Immersive

With immersive content on the increase and broadcasters adding value to productions with increasingly complex immersive output formats, Argo provides tools to make everything simpler to organize and manage.

Multi-channel sources can be controlled on a single fader but spilled out onto more faders for fine control; Argo allows spill faders to be placed anywhere on the control surface, on any layer and in any position to free up space and make the workspace more adaptable to individual needs.

SUPPORTS TRUE CONTROL 2.0

ARGO S



MEDIA ENTERTAINMENT BEST IN MARKET 2022 WINNER TVB EUROPE

NAB SHOW PRODUCT of the YEAR 2023 WINNER

NAB SHOW PRODUCT of the YEAR 2024 WINNER

Calrec's multi-award winning Argo technology and design philosophy is validated by customers and is well-established in the industry at large. The Argo range has won NAB Show Product of the Year Awards in 2023 and 2024 along with a Media & Entertainment Best in Market Award in 2022.

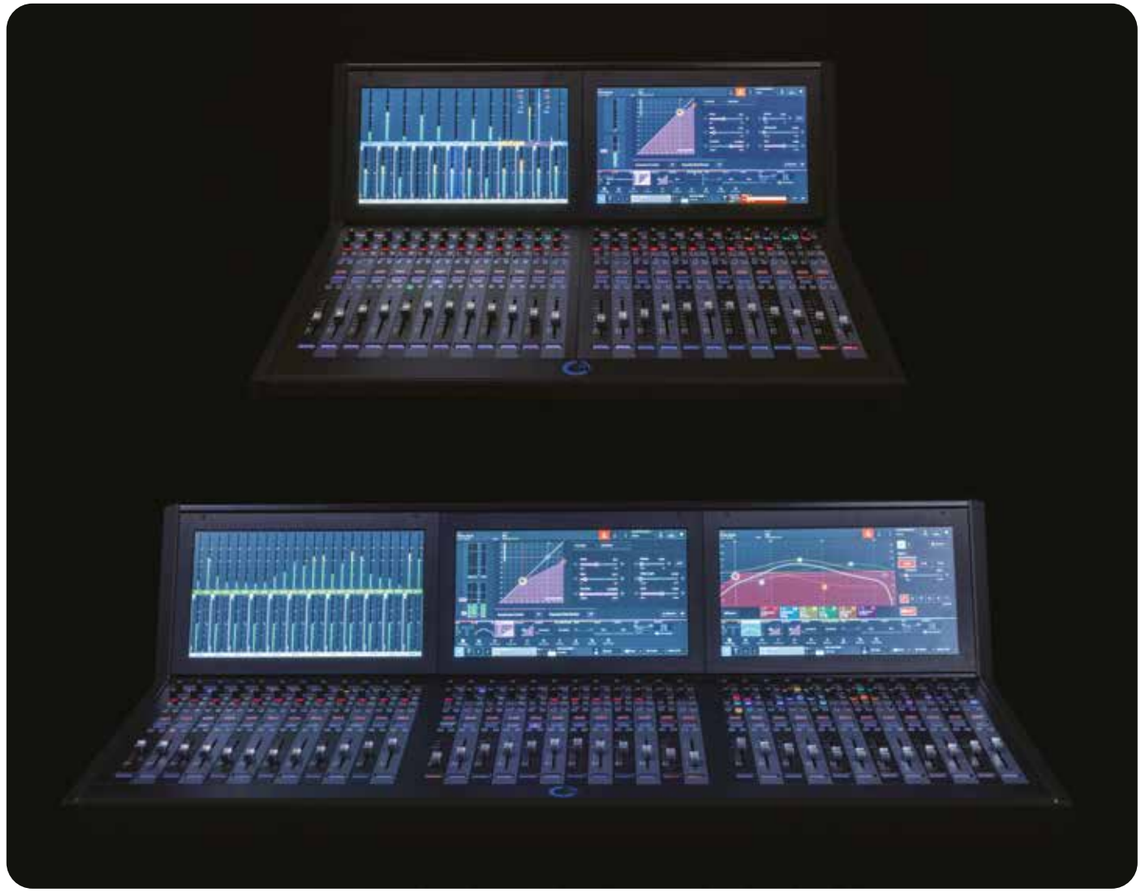


Award-winning reduced height Argo S

SUPPORTS TRUE CONTROL 2.0

Argo M – All of Argo in a compact package

ARGO M



Built on the same multi award-winning technology that powers Calrec's established Argo platform, the new Argo M brings the exact same feature set and operational familiarity as the larger Argo Q and Argo S consoles in a compact 24- or 36-fader footprint. Designed for small to medium applications, Argo M is a plug-and-play console with SMPTE 2110 connectivity.

Argo M features integrated DSP processing and no networking or PTP sync required for independent operation. It has built-in analogue I/O, digital I/O and GPIO. It benefits from 3 x modular I/O slots for further expansion with options including Dante and SDI, and an SFP slot for MADI. In addition, it also has native SMPTE 2110 for optional networking and I/O expansion.

Argo M supports 5.1.2, 5.1.4, 7.1.2 and 7.1.4. immersive paths for input channels, busses, metering and monitoring as standard, and the same familiar Calrec Assist UI for remote control on a standard web browser.

It is available with 304 or 356 internal DSP processing paths, while external ImPulse and ImPulse1 processing cores can expand processing capacity to 432 DSP paths as well as provide additional redundancy. This enables customers to expand Argo M as their production demands grow.

With up to four Argo surfaces able to share access to a pair of redundant ImPulse cores, Argo M can also connect to an existing ImPulse core alongside other Argo surfaces to create multi-console environments. While the introduction of ImPulseV gives Argo M access to cloud-based DSP packs, with scalable and secure cloud-native DSP processing software.

Meanwhile, the Calrec Connect AoIP stream manager makes IP streams easy to manage and adds essential broadcast functionality.

SUPPORTS TRUE CONTROL 2.0

	Argo Q and Argo S	Argo M
Total DSP paths	Up to 2384	Up to 432
Input channels	Up to 2048	Up to 256
Mains	Up to 16 from a pool of 192	Up to 16 from a pool of 96
Groups	Up to 48 from a pool of 192	Up to 48 from a pool of 96
Auxes	Up to 48	Up to 32
Tracks	Up to 96	Up to 48
Max Faders	240	36
Track sends per ch/gp path	4	4
Direct/Mix minus Output leg pool	1024	256
Direct/Mix-minus Output per ch/gp path	4	4
Mix-minus busses	1	1
Insert leg pool	1024	128
Inserts per ch/gp/mn/ax/tk path	2	2
Input delay leg pool	256	128
Output delay leg pool	256	128
Path delay	All legs of all path types, switchable pre EQ, pre fader & post fader (up to 5.4s)	
Delay time	Up to 5.4 secs on each input, path and output delay block	
EQ	6 band parametric on every channel group, main, aux and track 6 and 12db per octave slope options on any band operating with shelf response 6, 12 and 18db per octave slope options on bands 1and 2 when set to HF/LF filter response	
Dynamics	2 x compressor/limiter + 1 x expander/gate/ducker on every channel, group and main* 2 x compressor/limiter on every aux and track	
Sidechain EQ	2 x bands sidechain EQ on every channel's dynamics (1 x comp/lim + exp/gate/ducker) 1 x band sidechain EQ on every group and main dynamics (1 x comp/lim + exp/gate/ducker)	
Key Input (sidechain source selection)	Compressor 1 + expander/gate/ducker on channels/groups/mains can be keyed from audio on any mono path Up to 64 mono paths can be used as keys at any given time	
Automixer	8 x Automixer each controlling an unlimited number of mono or stereo paths	
Autofader	Advanced Autofader (AFV) functionality on all faders	
Monitoring	2 x control room LS (with AFL), 3 x PFL and AFL busses, 4 x misc monitor outputs	
Built in I/O	–	24 Mic/line inputs
	–	16 Line outputs
	–	8/8 AES I/O
	–	8/8 GPIO
	–	1 SFP MADI
	–	3 Modular I/O slots

** No ducker on main*



36-fader Argo S, Whisper, Cymru Broadcast Centre, Wales

Cymru Broadcast Centre in Cardiff have installed an Argo S broadcast audio console paired with redundant ImPulse1 processing routing cores.

The centre, which is one of the most accessible, state-of-the-art, remote production hubs in Europe and the first of its kind in Wales features everything needed to deliver global remote productions on a large scale as well as facilitating a wide range of high-quality efficient production solutions.

60-fader Argo S, Ross Productions, USA

Ross Production Services (RPS), a division of Ross Video, has upgraded its Connecticut facility by integrating three new 60-fader Argo S consoles. The consoles are housed within the facility's three REMI control rooms that produce events for clients like CBS, ESPN, Athlete's Unlimited and EA Sports. Working with the company's existing Calrec technology, the consoles are part of RPS' first foray into IP at the Connecticut location, representing a milestone for the company.

"The touchscreen interfaces and modern UI are similar to the Brio and quick to learn. The flexible fader layouts and the option to rearrange panels are also huge plusses, along with modular I/O ports on the back of the surface and the ability to pair faders with our existing RP1 system."

Nick Minore, Business Manager at RPS





96-fader Argo Q, NEP, Australia

NEP has installed Calrec Argo consoles in three new production suites in Sydney, which significantly expands the company's remote production resources. At the heart of the expansion is a Calrec 96-fader Argo Q, which sits in what is now Australia's largest remote production suite, ACR7 as well as two 60-fader Argo S consoles in the other two, new suites, ACR5 & ACR6.

The consoles are primarily being used for mixing National Rugby League games alongside a variety of other top-tier sports productions.

"The power and flexibility of Calrec's cutting-edge Argo consoles greatly enhances our remote mixing capabilities, providing the flexibility and DSP paths we need to continue expanding way into the future. The consoles are also easy to understand and use, essential in the fast-paced world of sports broadcasting. The consoles easily interface with our existing Lawo technology, courtesy of integration work carried out by both parties, which is of huge benefit to us.

"Further, the Argo consoles work seamlessly with our pre-existing, NEP-developed control system, TFC, which we meticulously designed to meet the demands of our high-level work. The integration of the Calrec technology gives us complete control over our workflow and even enables the consoles to control Lawo technology installed in each truck, and vice versa. It's incredibly flexible and aligns perfectly with our vision."

Marc Segar, Director of Technology for NEP Australia

Reduced height 36-fader Argo S, DVB, Slovenia

DVB Production, a major supplier of outside broadcast (OB) services in Slovenia and Central Europe, has integrated Calrec's all-IP Argo S audio console and two ImPulse1 cores into its OB Vehicle 1. It's the first European customer to deploy Calrec's reduced-height Argo S, and now benefits from the flexibility and scalability IP brings to the truck's audio capabilities.

"The fact that we own a future-proof product that also supports all types of immersive audio configurations makes us feel very confident with our decision. Because this is an IP system, the cabling is also way simpler, with substantial changes in OB truck weight, and the installation and integration with already-installed, non-IP, technology was easier than ever before. From order to commissioning was only 14 weeks, which was very impressive by Calrec."

Daniel Cof, CEO of DVB Production



Apollo



Surface

- 100mm faders with mechanical PFL overpress
- 12 A/B layers, providing 24 possible assignments for each fader
- Colour-changing rotary knobs to indicate function
- Touch screens controlling I/O, monitoring and routing
- 3 x independent user sections with independent monitoring
- All channels and groups have 6-band parametric EQ
- All channels, groups and mains have full dynamics
- 2 x compressor/limiter
- 1 x expander/gate
- 2 x sidechain EQ/filters on every channel
- 1 x sidechain EQ on mains and groups
- 256 x inserts
- Up to 2.73s delay per output from a pool of 256 channels
- Up to 2.73s delay per input from a pool of 256 channels
- All paths have 2.73s delay in addition to in and out delay
- 12 fader layers, each with its own A and B paths
- 8 x Automixers, each controlling an unlimited number of mono paths
- Advanced Autofader (AFV) functionality on all faders

Processing

- 1292 DSP paths
- 1020 input channels
- Up to 16 x stereo or 5.1 surround main outputs from a pool of 128
- Up to 48 x mono, stereo or 5.1 surround audio groups from a pool of 128
- 96 x multi-track buses for IFB or recording
- 4 x track sends per path
- 48 x auxiliary buses
- Up to 4 x direct outputs/mix minus sends per path
- Direct outputs can be pre-EQ, pre-fader or post-fader

Networking

- Integral 8192² router
- 16/32 router ports
- All I/O provided over Hydra2 network via a comprehensive range of Hydra2 I/O boxes
- Cat5e or fiber connectivity

Resilience

- Highly resilient – all modules are hot-pluggable
- Automatic redundant PSU, DSP, control processor, router module, I/O expansion module
- Independent DSP operation ensures audio continuity in the event of a PC or control reset
- Low power consumption and heat generation

Apollo+



Apollo+ is built on the hardware architecture of the Apollo surface, and combines it with the power and flexibility of Calrec's ImPulse IP processing core, the third generation of Calrec's award winning Bluefin DSP.

Existing Apollo consoles can be upgraded with ImPulse core to be made compatible with IP environments.

Apollo+ has the option of five different DSP pack sizes and enables broadcasters to connect four independent mixing environments onto a single core.

It has native SMPTE 2110/AES67 connectivity and is compatible with existing Apollo control surfaces providing a simple upgrade path for existing Calrec customers.

Apollo+ also provides 3D immersive paths up to 7.1.4 wide and panning for next generation audio applications. Height and 3D pan controls are provided, with flexible panning and downmixing built in.

Processing

- Contains next generation “Bluefin3” DSP
- Up to 1458 DSP paths
- Up to 1122 input channels
- Up to 16 x stereo or 5.1 surround main outputs from a pool of 192
- Up to 48 x mono, stereo or 5.1 surround audio groups from a pool of 192
- Delay legs increased to 5.4s
- Supports 3D immersive path widths for next generation audio
- Input channels, groups and main paths support mono, stereo, 5.1, 5.1.2, 5.1.4, 7.1, 7.1.2, 7.1.4 width plus 0.0.2 and 0.0.4 height buses
- Immersive paths have an additional “height” legs to produce a 3D soundfield
- Height and 3D pan controls are provided with flexible panning and downmixing built in
- Monitoring and metering provided immersive content



160-fader Apollo, MLB Networks, USA

Covering live Major League Baseball and National Hockey League, MLB Network use two Apollo consoles linked to a router core to create a powerful and flexible network.

"The interface between the operator and the console/network is logical, which allows mixers to adapt to changes that happen with our live, sports-highlight programming."

Mark Haden, Vice President of Engineering and IT, MLB Network

128-fader Apollo, SS22, NEP, USA

NEP Supershooters' SS22 high-definition mobile production truck is designed for quick set-ups and increased efficiencies. NEP is a trusted and valued Calrec customer with multiple Calrec consoles.

"We had a very significant requirement from ESPN for a very large audio console with extra faders for their NBA coverage. We have been very focused and deliberate about our audio requirements."

George Hoover, CTO NEP Broadcasting





56-fader Apollo, AMP, France

France's AMP Visual TV installed Apollo and Artemis consoles into its Millennium Signature 12 (MS12) remote production unit.

Boasting the world's largest surface area at 76-sq-m, MS12 hosts a 56f Apollo, a 24f Artemis Light, and a 16f Artemis sidecar that can be used to extend the other two.

"We wanted to be able to maximize the equipment for any size of international production. The flexibility and modularity of the Calrec desks made them a perfect fit for this vision. The consoles offer full redundancy to give us peace of mind for major events, and their plug-and-play operation simplifies productions and gives us even more versatility. "Calrec is renowned for technology excellence in OBs. We know we've made a great choice."

Emmanuel Le Marquand , AMP Visual TV Audio Operations Manager

80-fader Apollo, TV Tokyo, Japan

Replacing an analogue console, TV Tokyo's Tennozu studio was upgraded with an Apollo as part of a major update to the broadcaster's flagship studio and was the second Apollo in TV Tokyo's inventory.

"TV Tokyo's challenge was to source a desk that could match their old console in sound quality. The Apollo more than exceeds TV Tokyo's expectations for pristine sound, and its impressive feature set is also a huge improvement."

Yosuke Maruyama of Hibino Corporation



Artemis

ARTEMIS



	Artemis Shine	Artemis Ray	Artemis Beam	Artemis Light
– DSP paths	904	680	564	384
– Input channels	680	456	340	240
– Main outputs	Up to 16 from pool of 128	Up to 16 from pool of 128	Up to 16 from pool of 128	Up to 16 from pool of 72
– Groups	Up to 48 from pool of 128	Up to 48 from pool of 128	Up to 48 from pool of 128	Up to 48 from pool of 72
– Aux buses	Up to 32	Up to 32	Up to 32	Up to 24
– Track buses	Up to 64	Up to 64	Up to 64	Up to 48
– AFL systems	3	3	3	3
– PFL systems	3	3	3	3
– Inserts	Pool of 256	Pool of 256	Pool of 256	Pool of 128
– Chan/grp direct/ mix minus outputs	Up to 4 per path from pool of 512	Up to 4 per path from pool of 512	Up to 4 per path from pool of 512	Up to 4 per path from pool of 256
– Input delay	256 legs of 2.73s	128 legs of 2.73s	128 legs of 2.73s	128 legs of 2.73s
– Output delay	256 legs of 2.73s	128 legs of 2.73s	128 legs of 2.73s	128 legs of 2.73s
– Path delay	2.73s per path	2.73s per path	2.73s per path	2.73s per path
– Track sends/chan or grp	4	4	4	4
– EQ 1-4	4 band para	4 band para	4 band para	4 band para
– EQ 5-6	2 band para	2 band para	2 band para	2 band para
– Sidechain EQ	2 band para	2 band para	2 band para	2 band para
– Dynamics 1	Comp/lim and exp/gate	Comp/lim and exp/gate	Comp/lim and exp/gate	Comp/lim and exp/gate
– Dynamics 2	Comp/lim	Comp/lim	Comp/lim	Comp/lim
– Max faders	72	72	64	56
– Layers	12 dual layers	12 dual layers	12 dual layers	12 dual layers
– Automixers, each controlling an unlimited number of mono paths	8	8	8	8
Router Ports	16/32	16/32	16/32	8
Networking	Integral 8192² router	Integral 8192² router	Integral 8192² router	Integral 4096² router

All I/O provided over Hydra2 network via a range of Hydra2 I/O boxes. Cat5e or fiber connectivity

Surface

- 100mm faders with mechanical PFL overpress
- 12 A/B layers, providing 24 possible assignments for each fader
- Colour changing rotary knobs to indicate function
- Touch screens controlling I/O, monitoring and routing

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- Monitoring and metering provided immersive content



32-fader Artemis, Al Jazeera Balkans, Bosnia

As part of an expansion and upgrade project, Bosnia's Al Jazeera Balkans installed a Calrec router core, two Artemis audio consoles, and a Summa console.

"We chose Calrec because they offer very powerful, rock-solid consoles built with broadcasters in mind. That's why Calrec is at the heart of our audio infrastructure."

Mirad Isakovic, Manager of the Broadcast Technology Department, Al Jazeera Balkans

32-fader Artemis, Hedgehog, Lebanon

Hedgehog installed a 32-fader Artemis Light console into Lebanon's first HD OB truck. It can handle up to 14 HD cameras and houses a full production setup to meet the demand for HD television production.

"Not only do we have Lebanon's first HD OB truck, but it is also the first OB truck in Lebanon to have this degree of audio power. Calrec was an obvious choice because it has a long, successful history in OB trucks."

George Moufarrej, Hedgehog CEO and Managing Director





56-fader Artemis, Full Sail University, USA

Full Sail University expanded its world-class performance venue, Full Sail Live, with Calrec's Artemis and Brio36 consoles. The consoles are available to both students and external clients.

"By choosing Calrec's Artemis and Brio36 consoles for the venue, we now have the ability to grow the system and scale it towards the events in that space. Calrec is providing us with a lot more room to grow in terms of the number of busses, channels and networks."

Scott Dansby, Director, Industry Relations, Full Sail University

48-fader Artemis, Tilt, Spain

Madrid-based Tilt, a bespoke audio and video broadcast service provider, installed an Artemis Light console following considerable business growth with customers across sports, music, commercials and documentaries.

"We have a modest budget, so price point measured against performance was very important to us. We also didn't want to have to worry about channel count and to know that we always have all the capacity that we need; we have more than satisfied that requirement with this Calrec install."

Jaume Bordoy, Manager at Tilt



Summa



Surface

- 100mm faders with PFL overpress
- Six surface layers
- Built-in talkback microphone
- Stereo headphone output

Processing

- Up to 300 DSP paths
- Up to 180 input channels
- 4 x main outputs (mono, stereo or 5.1)
- 8 x audio sub-groups (mono, stereo or 5.1)
- 32 x track outputs (mono or stereo)
- 16 x auxiliary outputs (mono or stereo)
- 1 x direct output per channel* (pre EQ, pre fader or post fader)
- 1 x mix minus output per channel* (can be fed from auto minus, auxes, tracks or off Air conference bus)
- 1 x auto minus bus
- 1 x off air conference bus
- 1 x insert on every channel, group, main and console monitor output
- 152 x external monitor and meter inputs
- 4 x Automixers, each controlling an unlimited number of mono paths
- Unlimited VCA groups
- 6-band parametric EQ on every channel, group, main
- Dynamics processing on every channel, main, group, aux and track (2 x compressor/limiter, expander, gate, sidechain EQ/filters)
- 2.73s of delay within every channel, group, main, aux and track
- An additional pool of 128 legs of assignable input delay (2.73s each)
- An additional pool of 128 legs of assignable output delay (2.73s each)
- 5.1 console monitor output (with dedicated small LS and PFL/RTB outputs)
- 3 x 5.1 studio monitor outputs
- Advanced Autofader (AFV) functionality on all faders

Networking

- Integral 4096² router
- 8 redundant router connections for networking consoles and connecting I/O boxes
- All I/O provided over Hydra2 network via a wide range of I/O formats
- Cat5e or fiber connectivity

Resilience

- Highly resilient. PSU, DSP, control processor and router Modules are hot-swappable and have automatic redundancy
- Independent DSP operation ensures audio continuity in the event of a surface reset
- Low power consumption and low heat generation

** From a pool of 188 mono resources shared between direct outputs and mix minus outputs.*



24-fader + 8-fader Summa, University of Missouri, USA

Calrec's Summa drives professional broadcast-quality sound for the University of Missouri Athletics department (Mizzou Athletics).

"The improved audio quality definitely makes our live broadcasts stand out. But the Summa also plays a big role in helping us prepare our students for the workplace."

Stan Silvey, Assistant Athletic Director, Broadcast Operations, Mizzou Athletics

24-fader + 8-fader Summa, Kuwait TV, Kuwait

Kuwait Television (KTV), part of the Kuwaiti Ministry of Information, installed a Summa into an OB van to give KTV the flexibility to cover a wider variety of programming.

"The Summa enables us to take our audio coverage to new heights, and its advanced audio capabilities mean less reliance on third-party companies and on other departments."

Waleed Hamadah, TV Broadcast Engineer, TV Engineering Division, Ministry of Information



Brio 12 or 36

Standard:
SL6351: 36
SL6480: 12

Slim trims:
SL6484: 36
SL6489: 12





brio.12

Comes with internal Hydra2 connectivity and 64 input channels as standard

brio.36 duet

Comes with internal Hydra2 connectivity, comprehensive built-in IO and 96 input channels as standard

brio.36 medley

Comes with internal Hydra2 connectivity, comprehensive built-in IO and 96 input channels as standard, plus a Dante 64 card or MADI I/O module and an external Br.IO box with an additional 24 mic/line inputs, 16 analogue outputs & 8 AES I/O

Surface

- 12 or 36 x dual layer faders - 100mm, motorised, with PFL overpress
- Compact footprint:
- Brio 36 only 892mm wide x 892mm deep x 270mm high
- Brio 12 only 484mm wide x 892mm deep x 270mm high
- 1 x user assignable rotary control per strip
- 2 x user assignable buttons per strip

DSP

- Freely configurable on the fly, operates at 44.1, 48, 88.2 and 96kHz:
- Up to 96 legs assignable as mono, stereo, or 5.1 input channels*
- 36 legs assignable as mono, stereo or 5.1 mains or groups
- 24 legs assignable as mono or stereo auxes
- Up to 96 legs assignable as Insert sends and returns*
- Up to 96 legs assignable as direct, or mix-minus outputs*
- Automatic mix-minus
- Off-air conference for mix-minus

Dynamics

- Every input channel and group path:
- Expander/gate/ducker, with key input and sidechain EQ
- Compressor with key input and sidechain EQ
- Multiband compressor
- Expander/gate/compressor on every aux
- Single band multi band compressor on every channel
- 2 x Automixers available to all mono input channels and groups

EQ

- 6 band EQ available on every input channel, group, aux and main path:
- 4 band full PEQ
- 2 band LF/HF filters, 12 or 24dB/octave

Delay

- Delay available on every path with selectable position
- Up to 64 legs assignable as path delay
- Up to 64 legs assignable as output delay
- Up to 64 legs assignable as input delay

Monitoring/Metering

- 3 x monitor outputs
- Surround capable metering within each strip
- Configurable meter screen output (DVI)
- Loudness meters

Remote/Automated Control

- Remote/automated control
- 8 x GPI + 8 x GPO built-in**
- Autofaders for Audio Follows video style control
- CSCP mixer control protocol interfaces with a variety of video switchers and production automation systems
- SW-P-08 'Pro-Bel' router control protocol
- EMBER

I/O

- 24 x mic/line inputs**
- 16 x Analogue outputs**
- 8 x AES3 inputs**
- 8 x AES3 outputs**
- 3 x expansion slots to increase standard built-in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc
- Hydra2 module allows for further I/O to be connected, and to network audio with other consoles

** Up to 64 legs on Brio 12*

*** Brio 36 only*



Brio 36, Ravensbourne University, UK

Ravensbourne University, who specialise in digital media and design, chose Brio for their television and broadcasting studio due to its exceptional capability and smaller footprint.

"The Calrec Brio, partnered with an I/O frame populated with analogue and digital I/O modular cards, was the perfect fit, connected together with a Hydra2 hub. This set up will enable us to accommodate AoIP, Dante and MADI as we grow the system over time... The ability for the desk to output its UI onto an external monitor will complement the teaching delivery and make the learning far more effective. Particularly as the Brio packs such a large amount of functionality and configuration into its small footprint."

Howard Austen, Senior Media Services Engineer, Ravensbourne University London

Brio 36, WhitebaitMedia, New Zealand

WhitebaitMedia, the producers of New Zealand's longest running kids show, "What Now," chose the Calrec Brio36 as its new mobile broadcast console.

"The Calrec Brio was the logical choice, because it was the only one to offer the power and flexibility of a larger broadcast console, but at the budget and size of the smaller consoles."

Tim Murdoch, WhitebaitMedia's Technical Manager



Type R



Type R is a modular, expandable, IP-based mixing system for TV and radio which utilises standard networking technology and combines it with soft panels that can be tailored to operator needs.

Simple customisation across networks, open control protocols and surface personalisation means Type R can be used with or without a physical surface. Up to three independent mixing environments can be operated remotely from just one core. Control and setup can be via Calrec's browser-based Assist application and it is fully compatible with automated systems. Broadcast specific control is clear and concise across the system. Bussing, including the creation of mix-minus feeds, is quick to assign, while EQ and dynamics control is clear and fast. And as you would expect from Calrec, Type R is a resilient console system designed for reliable professional use, with all the requisite power, function and scalability to keep your station on-air for many years to come.

Processing

- Multiple sample rates; operates at 44.1 and 48kHz. All DSP facilities available at all sample rates
- Up to 120 input channels
- Up to 3 x (mono / stereo / 5.1) main outputs
- Up to 8 x (mono / stereo / 5.1) a groups
- Up to 16 (mono or stereo) aux outputs
- 4 band full parametric EQ and LF/HF filters with 24db/octave slopes on every channel/ main/group/aux
- Compressor/limiter on every channel
- Expander/gate/ducker with sidechain EQ on all channels and groups
- De-esser on all channels
- Automixer on every mono channel/group
- 1 x insert sends and return per channel/ group/aux/main (mono, stereo or 5.1)
- 1 x assignable direct output per channel/group
- 1 x assignable mix-minus output per channel/group
- 11 x mono mix minus buses
- 1 x off-air stereo conference bus
- Unlimited VCA groups
- 5.4s input delay per channel from a pool of 48 legs
- 5.4s path delay for every path
- 5.4s output delay per output including direct outputs from a pool of 48 delay legs
- 48 x external monitor/meter inputs

SUPPORTS TRUE CONTROL 2.0

The touch-screen soft panels are designed around simple and colourful control elements and can be customised as multi-function panels from show-to-show. The Talent Panel (below) can be easily added and is an IP endpoint.



MU6411



MU6410



MY6583



IM6143



ML6585



Type R, RTM, Malaysia

Radio Television Malaysia installed six Type R consoles as part of a move to implement a new IP audio network infrastructure at Perlis FM. The facility is now the reference for all future upgrades to RTM's other regional stations.

The complete radio system included a full IP network and visual radio technology to support video streaming to social media and other online platforms.

The IP native Type R consoles are located in Perlis FM's Main Conty, Standby Conty, Edit (1 & 2), Ingest, News Depot Studios and Master Control Room respectively.

Type R, Boîte à Outils Broadcast, France

Calrec's Type R console was used as a remote console over ST2110 and installed at home by the sound engineer. Remote control was achieved using Calrec's virtual mixing UI Calrec Assist via Google Chrome, giving access to console features such as aux sends, Automix and monitor feeds.

"Calrec's Type R is a modular mixer with ST2110 compatibility. All of the faders or screen are connected via IP to the core and stageboxes are connected to the core with a ST2110 feed.

"This mixer fitted perfectly with this use case because it's made for IP. Having the ability to network multiple IP devices for each console is very useful.

"Consoles are managed via a web Interface, and in the case of a network problem at the Sound Engineer's home, we can take control from the control room using the web GUI or a physical fader panel."

Marine Martignac, Freelance Audio Technician



Type R, Radio and Television Montenegro (RTCG), Montenegro

RTCG capitalised on Calrec's ability to provide seamless hybrid IP networks with a comprehensive upgrade of its Radio Montenegro and Montenegro Television facilities.

For TV, the broadcaster has installed three Artemis consoles, a router core, a Brio36 and two Type R consoles. For its radio operation it now uses five native IP Type R consoles, a Brio36, and a Hydra2 router. It uses Calrec's H2 IP Gateway technology to seamlessly integrate the proprietary and AoIP networks. The Calrec technology is being used on four TV stations and two radio channels within RTCG.

"This was a quantum leap for us as we moved to our current facilities in 1985 and haven't reengineered them since then. Calrec's audio technology is super-stable and fully featured, but above all it seamlessly supports analogue, AES and AoIP, which means we now have a true hybrid workflow which is completely transparent to users.

"This hybrid workflow helps us make better use of our resources and prepare our programming faster. Calrec's Gateway technology is really the enabler for us to have both worlds — traditional and IP technology seamlessly integrated. It gives us peace of mind in that we have a robust, familiar technology which is futureproof at the same time, without compromising on the flexibility of what the system can do. We can now work on both large, complex productions and small-scale projects equally easily. We are really happy,"

Dejan Vujovic, Deputy General Manager for Technology, RTCG



Type R, Vibez.Live, South Africa

Vibez.Live, an internet broadcaster is taking advantage of Type R's power, flexibility and sound quality. The station, which launched two years ago, now has a six-fader, AoIP-based Type R with dual-layer functionality, which gives it extra faders at the touch of a button. Vibez.Live also added a Type R large soft panel with feature sets pre-loaded for more control.

"Having used a variety of equipment for the first 18 months after we launched, including an analogue desk, we knew that we needed to upgrade to enhance our capabilities. We spoke to Calrec's partner about Calrec's AoIP-based Type R for Radio system and were immediately impressed. While the Type R core has enough I/O for our current needs, we also purchased a Type R analogue I/O box that provides an additional 16 mic/line inputs and six general purpose input/output interfaces."

John Badenhorst, Co-Founder and Host, Vibez.Live



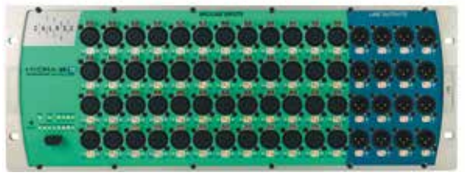
Fixed Format I/O



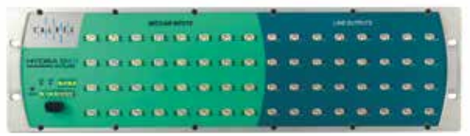
AD5782
Analogue mic/line 12 in/4 out – XLR (Hydra2 and IP)*



AD5781
Analogue mic/line 24 in/8 out – XLR (Hydra2 and IP)*



AD5780
Analogue mic/line 48 in/16 out – XLR (Hydra2 and IP)*



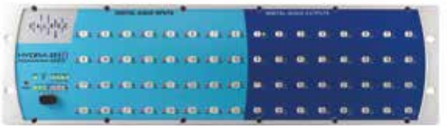
AE5743, AE5991, AE5992
Analogue mic/line 32 in/32 out – EDAC (Hydra2 and IP)*



JB5606
AES3 16 in/16 out – BNC (Hydra2 and IP)*



JB5783
AES3 32 in/32 out – BNC (Hydra2 and IP)*



JB5962
AES3 rear mount 32 in/32 out – BNC (Hydra2 and IP)

** Optional 8 x GPI and 8 x GPO*

Type R I/O



JD6503
Type R IP AES I/O Interface box – AES 8 in/8 out, 6 x GPI and 6 x GPO ports



AD6502
Type R IP Analogue I/O Interface box – Analogue mic/line 16 in/16 out, 6 x GPI and 6 x GPO ports



AD6501
Type R IP Combo I/O Interface box – AES 4 in/4 out, analogue mic/line 8 in/8 out, 6 x GPI, 6 x GPO ports and 2 x stereo headphone outputs



WY6584
Type R IP GP I/O Interface box – 32 x opto-isolated GPI, 32 x relay driven GPO

Modular I/O

Digital I/O



JX5869
4 x AES input (XLR)



JB5860
4 x AES input (BNC)



JX5868
4 x AES output (XLR)



JB5837
4 x Digital AES output (BNC)



JD5842
8 in/8 out AES (D-type)



JM6199
1 x Madi in/out – AES10 (BNC/SFP)

SDI, GPIO, AoIP



VI5872
2 x SDI Embedder (BNC)



VO5841
2 x SDI De-Embedder (BNC)



WY5858
GPIO, 8 in/8 full changeover out (D-type)



WY5859
GPIO, 8 in/16 out (D-type)



BI6192
Dante with network redundancy (RJ45)



BI6218
Waves Soundgrid (RJ45)

Analogue I/O



AD5840
4 x Mic/line in (XLR)



AL5870
2 x Mic/line in with splits (XLR)



AD6057
8 x Analogue mic/line level inputs (D-type)



AD5838
8 x Analogue line level inputs (D-type)



DA5839
8 x Analogue line out (D-type)



DA5867
4 x Line out (XLR)



AD6365
4 x Transformer mic/line in (XLR)



EE5833
Modular 3U I/O box enclosures with 20 x I/O card slots (Hydra2 and IP)

Br.IO*



AD6300

- 24 x Mic/line inputs
- 16 x Analogue outputs
- 8 x AES3 digital inputs
- 8 x AES3 digital outputs

** Only available for Brio and Summa consoles*

Fieldbox & H2Hub*



AD6217

- 8 x Mic/line inputs
- 8 x Line outputs
- Compact 220mm x 384mm, 1u high
- AC and DC input power



RY6211

- Portable hub for a Hydra2 network
- Connect up to 4 I/O boxes or other hubs
- Potential to daisy-chain up to 3 x H2Hubs
- Primary and secondary SFP slots for redundancy

** Only available for Hydra2 consoles*

VP2 Headless console

Calrec's VP2 virtualised mixing system has no physical control surface and uses Calrec's Assist software for setup and control.

This enables a station to reap many of the benefits of using a Calrec console, but without a physical control surface.

VP2's 4U core comes in 3 DSP sizes; 128, 180 and 240 input channels.

Assist can be accessed via a web-browser, giving instant control to both the engineering level and the production area.



An expanded feature set provides a comprehensive interface; CSCP allows VP2 to be controlled by an automation system and a low cost, third party fader pack.

Operators can control functions using the automation system/fader pack, and an engineer can fine tune the setup or recall set-ups as needed.

RP1 – Remote production

EE6279



RP1 is a broadcast mixing system in a 2U rackmount box, containing Calrec's award-winning Bluefin2 processing.

It provides local DSP to enable the generation of monitor mixes and IFBs with no latency and gives an operator in a remote studio direct control over channel functions such as mic gains, aux send/monitor mix levels and fader levels.

It also provides a mechanism to embed audio into existing backhaul technologies, such as SDI or MADI for backhaul connectivity.

With all DSP for monitor mixes taken care of on-site, the studio transmission console is able to concentrate purely on the main programme mix.

True Control provides remote control for Argo, Apollo and Artemis by mapping the RP1 channels to the surface. RP1 Assist provides local and remote control via a web-served GUI.

RP1 can embed all the transmission audio into existing video transport mechanisms, ensuring no synchronisation issues. Its modular I/O backbone accepts any of Calrec's I/O cards.

The studio console mixing the transmission is able to assign these signals where required on the desk, so workflows are exactly the same as any other broadcast.

- 72 virtual control faders
- 3 x expansion slots to increase standard built in I/O, or to provide interface to other formats, including SDI, MADI, Dante etc
- Hydra2 module allows for further I/O to be connected
- 8 x GPI + 8 x GPO built in

DSP

- Up to 96 mono equivalent channel paths
- Up to 24 aux send paths
- Up to 96 direct outputs

Case Study: Calrec equips NBC Olympics with consoles and RP1 during its coverage of the Tokyo Games

NBC Olympics, a division of the NBC Sports Group, selected Calrec to provide a range of audio consoles, alongside remote production technology, for its production of the Games of the XXXII Olympiad, which took place in Tokyo, Japan, from July 23 – August 8, 2021.

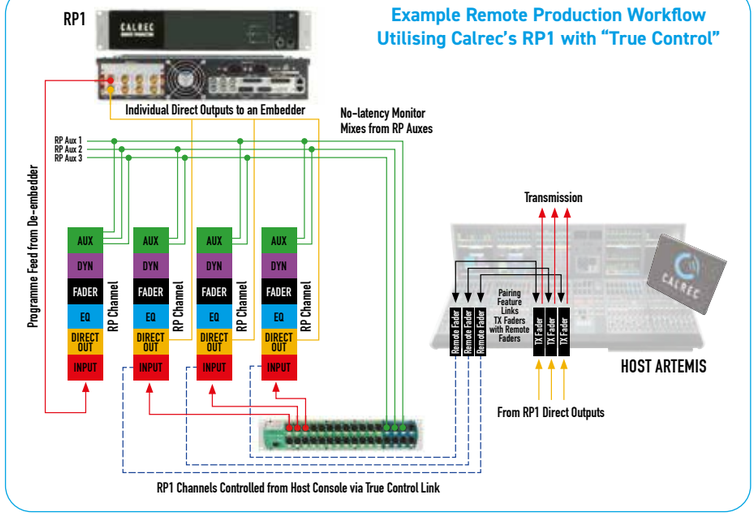
Calrec provided a mix of Artemis and Brio consoles as well as six RP1 remote broadcast mixing systems to expand NBC Olympics coverage over a wider number of events while maintaining the same high quality.

For the remote production workflow, six RP1 units connected NBC Olympics studios in the IBC with Stamford control rooms, as well as two studios on-site in Tokyo, basketball and volleyball venues to their home control rooms. Two Brio consoles were also in use at the downtown studios splitting the audio for redundancy between RP1 and Brio.

Karl Malone, Director, Sound Design, NBC Sports & NBC Olympics, said at the time:
"NBC Olympics are very fortunate to, once again, have Calrec support us during our Olympic Games broadcast this summer in Tokyo. The quantity of Calrec Artemis consoles in use between our Olympic broadcast centers in Stamford and Tokyo is only matched by the number of Calrec Remote Production (RP1) units we have in use. Calrec consoles and technologies are the preferred choice for all NBC Audio mixers for reliability and ease of use."

Henry Goodman, Director of Product Management at Calrec added:
"Our RP1 units enable a workflow that overcomes challenges like latency and control that have previously been barriers for remote production models. Having RP1 used for NBC Olympics production of the world's premier sporting event, illustrates perfectly the direction the industry is headed in."

Example Remote Production Workflow Utilising Calrec's RP1 with "True Control"



True Control 2.0

TRUE CONTROL 2.0

Calrec's True Control 2.0 builds on Calrec's RP1 True Control implementation to provide expanded levels of control in two key areas.

Firstly, it provides users with far greater levels of remote control without the limitations of mirroring or parallel controlling, with control of an expanded feature-set including EQ, dynamics, routing, direct outputs and delay.

More fundamentally, it gives broadcasters unparalleled flexibility to scale their remote productions as needed by expanding the number of products it works with.

Where RP1 allows for a number of Calrec consoles to be the 'Controller' of the RP1 core, True Control 2.0 further enables any True Control 2.0 enabled product to control any other True Control 2.0 enabled product.

The following Calrec products are True Control 2.0 enabled:

- Argo Q
- Argo S
- Argo M
- Type R
- ImPulse V

Multi-venue

True Control 2.0 can control multiple consoles across different venues.

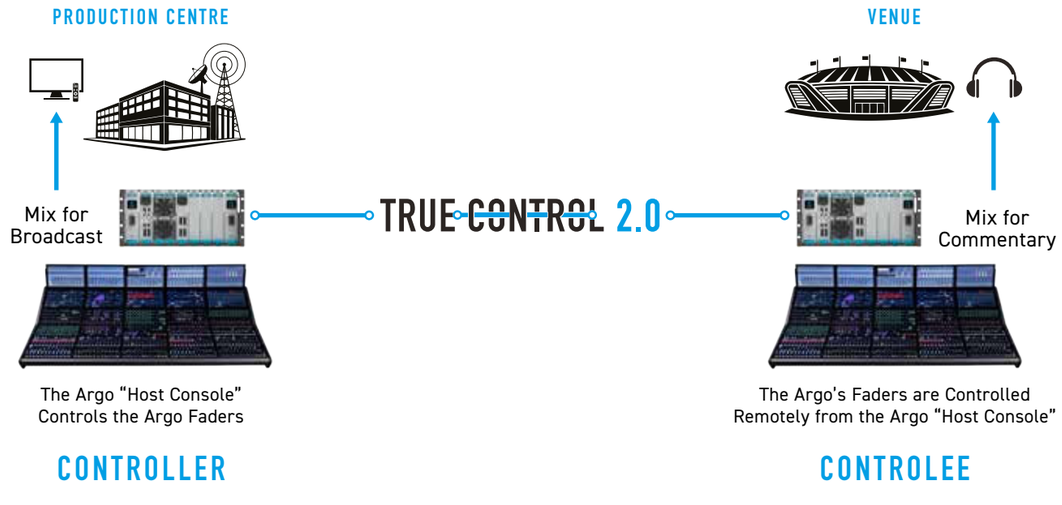
A True Control 2.0 enabled 'Controller' can control multiple True Control 2.0 enabled 'Controlees', with one 'Controller' able to control up to five 'Controlees' simultaneously. A True Control 2.0 enabled 'Controlee' can only be controlled by a single 'Controller'. In cases where a 'Controller' is a console with different capabilities to the 'Controlee', the feature set of the least capable console is available to the user.

Increased remote control with wider feature-set

Where the RP1 core offers remote control over Faders & Cuts, Input Controls, Aux Send On/Level and Aux Send Pan controls, True Control 2.0 expands this set of controls to also include the following:

- Route to mains and groups
- Route to tracks
- Pan to main and groups
- Pan to tracks
- EQ
- Dyn 1 comp/lim
- Dyn 1 exp/gate/duck
- Dyn 2 comp/lim
- Automixer controls
- Input delay
- Path delay
- Insert on/off
- Spill faders
- Downmix faders
- Auto faders
- Direct outputs

Example showing True Control 2.0 with Argo ('Controller') and Argo ('Controlee')



ImPulse core

IMPULSE

Calrec is committed to helping broadcasters with their evolving workflows in the transition to IP. Calrec has a range of surfaces and DSP sizes to suit your application.

ImPulse is a powerful audio processing and routing engine with SMPTE 2110/AES67 connectivity and is compatible with Calrec's next-gen IP consoles: Argo Q and Argo S – and fully compatible with Apollo+ and Artemis+ consoles, either as an upgrade or for new applications.

ImPulse has a robust and scalable DSP platform, giving Calrec customers a defined upgrade path as they transfer to IP workflows.

Using the next generation of Calrec's award-winning Bluefin DSP technology – Bluefin3 – ImPulse has the most powerful DSP engine on the planet and is offered in eight different user-upgradable DSP packs. ImPulse allows up to four independent DSP mix engines and control systems to run independently on a single core at the same time. It offers a cost-effective back end for multiple-mixer environments, with scope for virtualisation.

- Additional main and group capacity allows immersive content to be produced
- Integrates with Calrec Assist web-UI
- Integrates with major broadcast control systems and production automation systems
- SW-P-08 remote control over router and cross-point switching
- Ember+
- CSCP (Calrec serial control protocol for production automated systems)
- Supports "Headless" operation – no surface required

ImPulse also provides 3D immersive path widths and panning for next generation audio applications. Height and 3D pan controls are provided, with built-in automatic downmixing.

- Contains next generation Bluefin3 DSP
- Supports 3D immersive path widths for next generation audio
- Immersive paths have additional height legs to produce a 3D soundfield
- Input channels, groups and mains support mono, stereo, 5.1, 5.1.2, 5.1.4, 7.1, 7.1.2, 7.1.4 widths plus 0.0.2 and 0.0.4 height buses – monitoring and metering provided for immersive content
- Up to 2384 processing paths
- Native SMPTE 2110/AES67 connectivity with ST2022-7 redundant connections
- Built-in support for NMOS IS-04 advertisements & IS-05 connection management
- Up to 4 router cards
- Max router capacity of 16,384
- Router cards can operate in 1 or 10Gbps mode
- Each ST2110 stream can pass between 1 to 80 audio channels
- Full hardware redundancy
- Redundant pairs of cores can be physically remote from each other
- Surface connectivity is via IP, so surfaces can be physically remote or connected over COTS networks



ImPulse1 core

IMPULSE1



UR6700

The ImPulse1 IP engine is a smaller, yet powerful cost-effective version of the industry-established ImPulse.

ImPulse1 features include a 1U enclosure with dual AC PSUs. Two cores for failover redundancy or optional non redundant single core are available. It runs a single mixer with SMPTE ST2110/AES67 connectivity and can be controlled by Argo surfaces, and/or Calrec Assist, web UI, a browser-based GUI, ideally suited to remote working or headless operation.

ImPulse1 is offered with a DSP license of 304 processing paths. With a small overall form-factor of 2 x 1U unit, it's immediately attractive for compact installation sites, such as outside broadcast and fly pack applications, where space is at a premium. Furthermore, it doesn't compromise on features and DSP power with options ranging from 304 to 672 processing paths and benefits from the DSP features from the larger, ImPulse core.

- Supports control from Argo Q, Argo S and Argo M control surfaces via IP, so surfaces can be physically remote, connected over COTS networks and supplemented with Assist web UI for multi operator, remote or headless use
- Up to 672 processing paths
- 1U fully self-contained DSP core
- Native SMPTE ST2110/AES67 connectivity
- ST2110 connections can operate in 1 or 10Gbps mode
- ST2022-7 redundant connections
- Built-in support for NMOS IS-04 advertisements & IS-05 connection managements
- Max router capacity of 2,048 x 2,048
- Up to 512 ST2110 streams – each stream can pass between 1 to 80 audio channels
- Dual AC PSUs
- Dual core for failover redundancy that can be physically remote or optional non-redundant single core available

ImPulseV

IMPULSE V



Suitable for broadcast audio production workflows, delivering premium audio quality and Calrec's full broadcast feature set, ImPulseV cloud-based DSP processing software may be hosted in a public cloud environment or on prem, which can be accessed from anywhere in the world.

ImPulseV is optimised for low latency throughput, providing real-time responsive, efficient and deterministic audio processing, control, routing and mixing.

Using the same interfaces that Calrec users are already familiar with, it can be controlled either through the Calrec Assist web UI or directly from a Calrec Argo console.

ImPulseV enables broadcasters to deploy audio mixing instances as needed to meet the demands of a range of events, including allowing broadcasters to move to an OpEx cost model, enabling coverage of second and third-tier sports which may not have been economically viable.

Calrec Cloud Mixer Control Options

ImPulseV can be controlled in three different ways via:

1. Assist Web-GUI utilising ImPulseV as a mixer

The user can operate Assist in the same way as when Assist is served from an ImPulse Core and accessed through a different IP address.

2. Argo Q, Argo S and Argo M control surface link

Any Argo control surface can be directly connected to the ImPulseV cloud instance.

3. True Control 2.0

True Control 2.0 allows ImPulseV Cloud DSP channels to be mapped to faders on Argo Q, Argo S, Argo M and Type R consoles alongside local DSP channels.

256 DSP Pack

- 256 processing paths
- 128 input channels
- Up to 8 mains from 32 main paths
- Up to 16 groups from 32 group paths
- 32 auxes
- 32 tracks
- Mono, stereo, surround (5.1, 7.1) and immersive (5.1.2, 5.1.4, 7.1.2 7.1.4) support for channel, group and main paths
- 64 direct outputs
- 1 mix-minus bus
- 128 inserts
- 64 external inputs
- Path delay on all channels, groups, mains, tracks and auxes
- 128 input delays
- 128 output delays
- One monitoring system (up to 7.1.4) – 1 PFL (up to 7.1.4), 1 AFL (up to 7.1.4), 4 misc monitor selectors & outputs, 4 user meters,128 assignable meters

SUPPORTS TRUE CONTROL 2.0

Type R Core

SUPPORTS TRUE CONTROL 2.0

Type R has a simple 2U core at its heart with integrated I/O resources to get you up and running immediately. A single core can power up to three independent mixing environments.

The Type R 2U Core provides:

- 4 x AES input ports
- 4 x AES output ports
- 8 x analogue mic/line with 48v phantom power indication
- 8 x analogue line level output
- 12 x GPI, 12 x GPO ports
- 2 x stereo headphone outputs
- Optional ST2110 boards
- Optional dual-core redundancy

UR6500



IP Gateway

SL6353-2: Single 256 Channels
SL6554-2: Dual 512 Channels



The broadcast industry has undergone huge infrastructure changes, and much of the discussion has been around the move from proprietary infrastructures, like Calrec's Hydra2, to IP networks.

There are pros and cons with either option – but broadcasters don't need to choose between the two. In fact, there are countless other options. Broadcasters need not choose one or the other.

Calrec is helping many broadcasters leverage their existing equipment to benefit from the efficiencies of an IP domain. Lots of broadcasters are still using proprietary systems where they have made major investments, but that doesn't mean they can't benefit from the efficiencies of IP at the same time.

Calrec's H2-IP Gateway provides an interface between a Hydra2 network and an AoIP network.

Control

IP Gateway awards an extra control level that allows audio labels to be passed in both directions between the two networks along with control data.

This gives Hydra2 users the ability to control the gain of Calrec IP mic inputs, and IP users can control gain of Hydra2 mic inputs.

The IP Gateway provides:

- Label exchange
- Mic gain
- 48v phantom power indication
- SRC

It is SMPTE 2110/AES67 compatible and expands Calrec's range of AoIP solutions.

The 1U gateway can pass either 256 or 512 channels of audio in each direction and multiple gateways can be used to increase capacity or to connect with multiple networks.

Calrec Sound Institute

Join our growing certified Calrec community!

Speak to us about your in-person training needs or take advantage of our FREE online courses, IP whitepaper and IP primer.

Brio, Type R & Summa Audio Mixing Console Training

Our certified training series for Brio and Type R and Summa training videos are designed to get an operator up and running in minutes. They cover hardware overviews, I/O, routing channels, mix minus, bussing and monitoring – everything you need to get up and running. These short step-by-step training videos highlight the main features and help you set up these features on your audio console successfully.

IP Training

Our certified series of comprehensive IP training sessions will help you master or refresh your IP knowledge and covers everything a broadcast facility needs to know about IP, how it works and the effect it is having on our industry.

Dolby Atmos® Training

Dolby and Calrec make immersive mixing easy with their free certified training. With more live broadcasts taking advantage of immersive technology, Dolby and Calrec show how Calrec Brio's mix of features help keep your audience in the centre of your world.

IP Primer

The IP Primer builds up your knowledge of IP and will enable you to create reliable IP networks to meet the needs of your desired workflow without defining or compromising operations. This guide details the underlying technologies that are required to implement IP in its simplest and most complex forms.

IP Resilience Whitepaper

The paper looks at how to build resilient and robust IP network infrastructures and why Calrec is doubling down to provide fully hardware redundant IP solutions. It is beneficial to networking, technology and architect teams who require a thorough understanding of the operation and performance of Calrec's hardware redundancy model.

To sign up for training or download our primers and whitepapers please visit:

calrec.com/calrec-sound-institute

Complete Calrec Sound Institute's FREE certified training in three easy steps!

- Watch each video
- Answer a set of questions after watching each video
- Download and share your certificate



Hydra2 consoles

	Apollo	Artemis Shine	Artemis Ray	Artemis Beam	Artemis Light	Summa		Brio36	Brio12
DSP Paths	*1292*	*904*	*680*	*564*	*384*	*248*	*300*	*156*	*124***
Input Channels	*1020*	*680*	*456*	*340*	*240*	*128*	*180*	*96*	*64***
Max Physical Faders	*320*	*72*	*72*	*64*	*56*	*44*		*36*	*12*
Max Main Output Buses	*16 from a pool of 128*				*16 from a pool of 72*	*4*		*4 from a pool of 36*	
Max Group Buses	*48 from a pool of 128*				*48 from a pool of 72*	*8*		*8 from a pool of 36*	
Aux Output Buses	*48*	*32*			*24*	*16 mono or stereo*		*24*	
Track/IFB Output Buses	*96*	*64*			*48*	*32*		*N/A*	
Track/IFB Sends per Path	*4*					*1*		*N/A*	
Mix-Minus Outputs and Direct Outputs	*512*				*256*	*188*		*64*	*48*
Insert Send and Returns	*256*				*128*	*252*		*132*	*100*
EQ	*6 band EQ on every processing path*							*4 band EQ on every processing path plus 2 filters*	
Dynamics	*2 x compressor/limiters and 1 x expander/gate per path*							*2 x compressor/limiters and 1 x expander/gate/ducker per path**	
Input Delay	*256 of up to 2.73s*							*64 of up to 5.4s*	*48 of up to 5.4s*
Path Delay	*1020 of up to 2.73s*	*680 of up to 2.73s*	*456 of up to 2.73s*	*340 of up to 2.73s*	*240 of up to 2.73s*	*180 of up to 2.73s*		*64 of up to 5.4s*	*48 of up to 5.4s*
Output Delay	*256 of up to 2.73s*			*128 of up to 2.73s*				*64 of up to 5.4s*	*48 of up to 5.4s*

Maximum sizes quoted

** No compressor/limiter 2 on auxes, no expander/gate/ducker on main 2*

*** Max available with DSP upgrade to 64 channels. Standard Brio12 has 48 input channels and 108 DSP paths*

Apollo+ and Artemis+ consoles with ImPulse

	Apollo+ and Artemis+ consoles with ImPulse				
DSP Paths	*1458*	*1056*	*800*	*672*	*528*
Input Channels*	*1122*	*768*	*512*	*384*	*256*
Max Physical Faders	*320 (Apollo+) / 72 (Artemis+)*				
Max Main Output Buses*	*16 from a pool of 192*				*16 from a pool of 96*
Max Group Buses*	*48 from a pool of 192*				*48 from a pool of 96*
Aux Output Buses	*48*	*32*			
Track/IFB Output Buses	*96*	*64*			*48*
Track/IFB Sends per Path	*4*				
Mix-Minus Outputs and Direct Outputs	*512*				*256*
Insert Send and Returns	*256*				*128*
EQ	*6 band parametric EQ/filters on every channel, track, aux, group and main*				
Dynamics	*2 x compressors/limiters + 1 x expander/gate/ducker + 2 x full bands of sidechain EQ per channel, track, aux, group and main***				
Input Delay	*256 of up to 2.73s*		*128 of up to 2.73s*		
Path Delay	*Up to 2.73s per path*				
Output Delay	*256 of up to 2.73s*		*128 of up to 2.73s*		

Maximum sizes quoted

** Each of which can be any combination of mono, stereo, 5.1, 5.1.2, 5.1.4, 7.1, 7.1.2 or 7.1.4 wide*

*** No ducker on main*

Argo Q and Argo S consoles with ImPulse, ImPulse1 and ImPulseV

	ImPulse								ImPulse1				ImPulseV
DSP Paths	*2384*	*2128*	*1872*	*1458*	*1056*	*800*	*672*	*432*	*672*	*432*	*356*	*304*	*256*
Input Channels*	*2048*	*1792*	*1536*	*1122*	*768*	*512*	*384*	*256*	*384*	*256*	*180*	*128*	*128*
Max Physical Faders	*240*												
Max Main Output Buses*	*16 from a pool of 192*							*16 from a pool of 96*	*16 from a pool of 192*	*16 from a pool of 96*			*8*
Max Group Buses*	*48 from a pool of 192*							*48 from a pool of 96*	*48 from a pool of 192*	*48 from a pool of 96*			*32*
Aux Output Buses	*48*				*32*								
Track/IFB Output Buses	*96*				*64*			*48*	*64*	*48*			*32*
Track/IFB Sends per Path	*4*												
Mix-Minus Outputs and Direct Outputs	*1024*		*768*		*512*			*256*	*512*	*256*	*180*	*128*	*64*
Insert Send and Returns	*1024*		*384*		*256*			*128*	*256*	*128*			
EQ	*6 band parametric on every channel, group, main, aux and track* *6 & 12dB per octave slope options on any band operating with shelf response* *12, 18d & 24B/octave slope options on bands 1 & 2 when set to HF/LF filter response*												
Dynamics	*2 x compressor/limiter + 1 x expander/gate/ducker on every input channel, group & main*** *2 x compressor/limiter on every aux and track* *Adjustable knee control on compressor thresholds*												
Input Delay	*256 of up to 5.4s*								*128 of up to 5.4s*				
Path Delay	*Up to 5.4s per path (In addition to the input & output delay pools above, each and every input channel & bus has its own dedicated path delay available, switchable pre EQ/pre fader/post fader.)*												
Output Delay	*256 of up to 5.4s*								*128 of up to 5.4s*				

Maximum sizes quoted

** Each of which can be any combination of mono, stereo, 5.1, 5.1.2, 5.1.4, 7.1, 7.1.2 or 7.1.4 wide*

*** No ducker on main*

Argo M console with ImPulse, ImPulse1 and ImPulseV

	ImPulse and ImPulse1	ImPulse1		ImPulseV	Argo M Internal DSP	
DSP Paths	*432*	*356*	*304*	*256*	*356*	*304*
Input Channels*	*256*	*180*	*128*	*128*	*180*	*128*
Max Physical Faders	*36*					
Max Main Output Buses*	*16 from a pool of 96*			*8 from a pool of 32*	*16 from a pool of 96*	
Max Group Buses*	*48 from a pool of 96*			*16 from a pool of 32*	*48 from a pool of 96*	
Aux Output Buses	*32*					
Track/IFB Output Buses	*48*			*32*	*48*	
Track/IFB Sends per Path	*4*					
Mix-Minus Outputs and Direct Outputs	*256*	*180*	*128*	*64*	*180*	*128*
Insert Send and Returns	*128*					
EQ	*6 band parametric on every channel, group, main, aux and track 6 & 12dB per octave slope options on any band operating with shelf response 12, 18d & 24B/octave slope options on bands 1 & 2 when set to HF/LF filter response*					
Dynamics	*2 x compressor/limiter + 1 x expander/gate/ducker on every input channel, group & main** 2 x compressor/limiter on every aux and track Adjustable knee control on compressor thresholds*					
Input Delay	*128 of up to 5.4s*					
Path Delay	*Up to 5.4s per path (In addition to the input & output delay pools above, each and every input channel & bus has its own dedicated path delay available, switchable pre EQ/pre fader/post fader.)*					
Output Delay	*128 of up to 5.4s*					

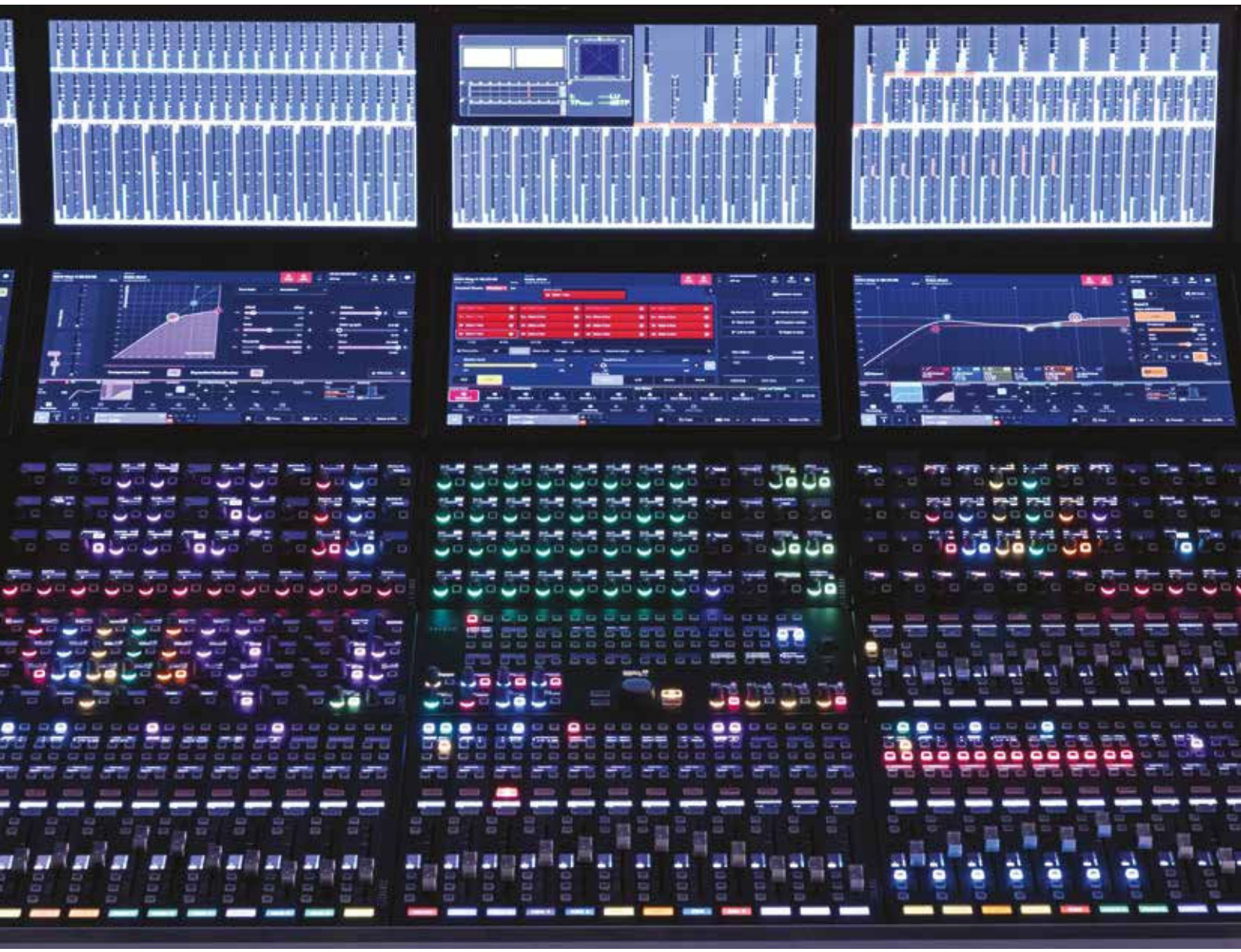
Maximum sizes quoted

* *Each of which can be any combination of mono, stereo, 5.1, 5.1.2, 5.1.4, 7.1, 7.1.2 or 7.1.4 wide*

** *No ducker on main*



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