RUNNING ACE OVER FIBRE OPTIC

ACE stands for 'Audio & Control over Ethernet' and is a point to point link, created and developed by Allen & Heath.
Please see our 'Understanding ACE' document for further information.

Fixed format iLive systems are shipped with a built in ACE single connection which allows the mixing surfaces to be linked to an iDR MixRack using standard Cat5e twisted pair cable. This link provides both network connection and bidirectional audio. Modular iLive systems can employ the M-ACE module for the Surface to MixRack link. This can also provide redundant connection.

Connections of up to 120m (400ft) are possible, depending on cable type. Please see our recommended & tested cables as published on our website.

Since ACE is Ethernet IEEE 802.3 Layer 2 compliant, standard Cat5 to Fibre Optic media converters can be used. These must support Fast Ethernet (100base TX) connections. Many media converters only support Gigabit Ethernet (1000baseT), which will not work, as the ACE port must link at 100baseTX.

In theory, any Layer 2 network switch or managed switch could also be used as a media converter, provided it has optical ports. In order for this to work, you must be able to turn off 'broadcast storm protection' and 'spanning tree protocol' in the switch.

Fibre Optic transmission relies on thin, flexible, transparent fibre that acts as a waveguide, or 'light pipe', to transmit light between the two ends of the fibre. Widely used in communications, this technology permits transmission over longer distances and at higher bandwidths than metal wires. Signals travel along them with less loss and are also immune to electromagnetic interference, potential difference and grounding issues.

Cost-effective, Multi-mode Fibre Optic can be used for cable length up to 2km, depending on equipment and cable quality. Neutrik OpticalCON DUO cable is typically sold with 150m drums, but couplers are available to join two cables together.

Please visit the Neutrik website for more information:
http://www.neutrik.com/uk/en/audio/204_2128866957/opticalCON_DUO,_two_channel,_hybrid_group.aspx

TESTED EQUIPMENT

2x TP-Link MC-100CM Fast Ethernet Media Converter (Multi-mode), SC optical connectors

2x Videk 3182-1 adapter cable (SC to LC optical connectors, duplex, multimode)

2x Neutrik NO2-4FDW (OpticalCON DUO chassis connector with LC-duplex socket on the rear)

2x Neutrik NE8FDP (EtherCON chassis connector with RJ45 feedthrough)

1x Neutrik OpticalCON DUO field cable

The above is an example system. We recommend customers source and try similar technology with their iLive system and test for functionality and reliability before putting into service.

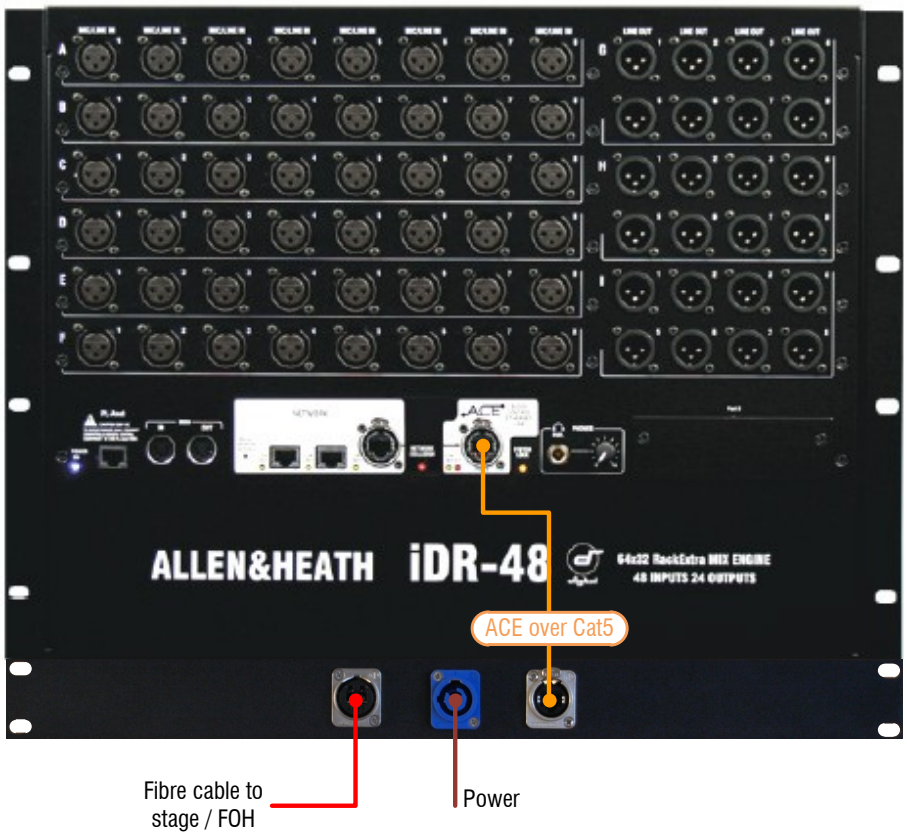
Allen & Heath can't provide technical support for issues related to third party equipment.

CONNECT A FIXED FORMAT SURFACE TO A FIXED FORMAT MIXRACK USING FIBRE OPTIC

1. Plug a Cat5 cable between the Surface ACE port and the first Media Converter.
2. Plug a Cat5 cable between the MixRack ACE port and the second Media Converter.
3. Plug a Fibre Optic duplex cable from each Media Converter to the rear of a Neutrik OpticalCON chassis connector; these come with LC duplex sockets. Because most of-the-shelf, cost-effective converters use SC connectors instead, you will probably need an adapter cable from SC to LC.
4. Choose your length of Neutrik OpticalCON DUO field cable to join the two chassis connectors.

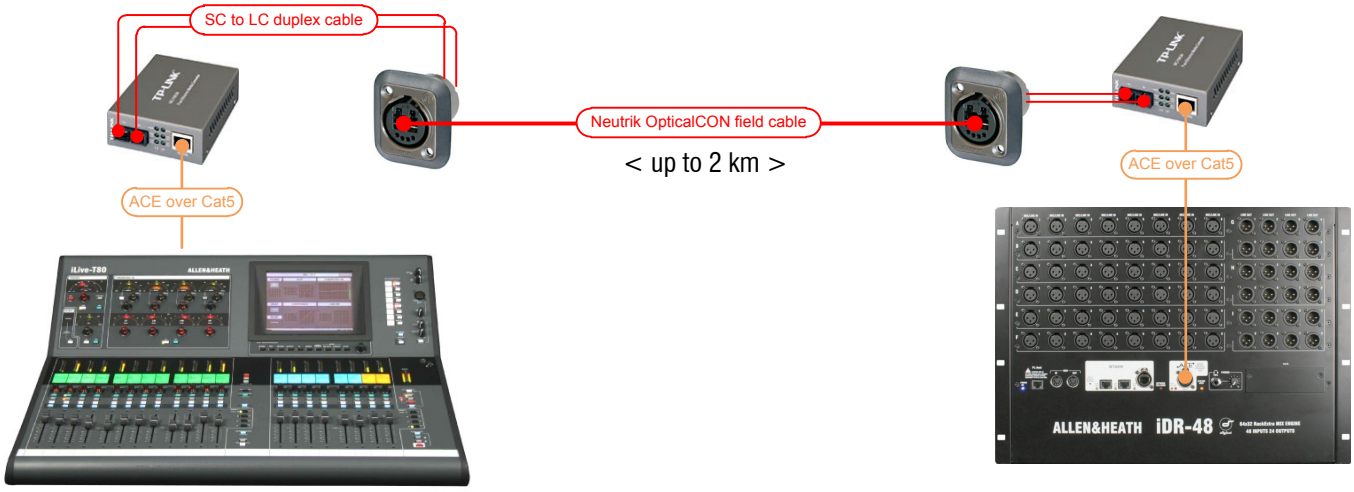
MAKE IT RUGGEDIZED!

Mount the chassis connectors on rack panels together with a pair of EtherCON and PowerCON connectors to build your all-in-a-box fibre optic solution.

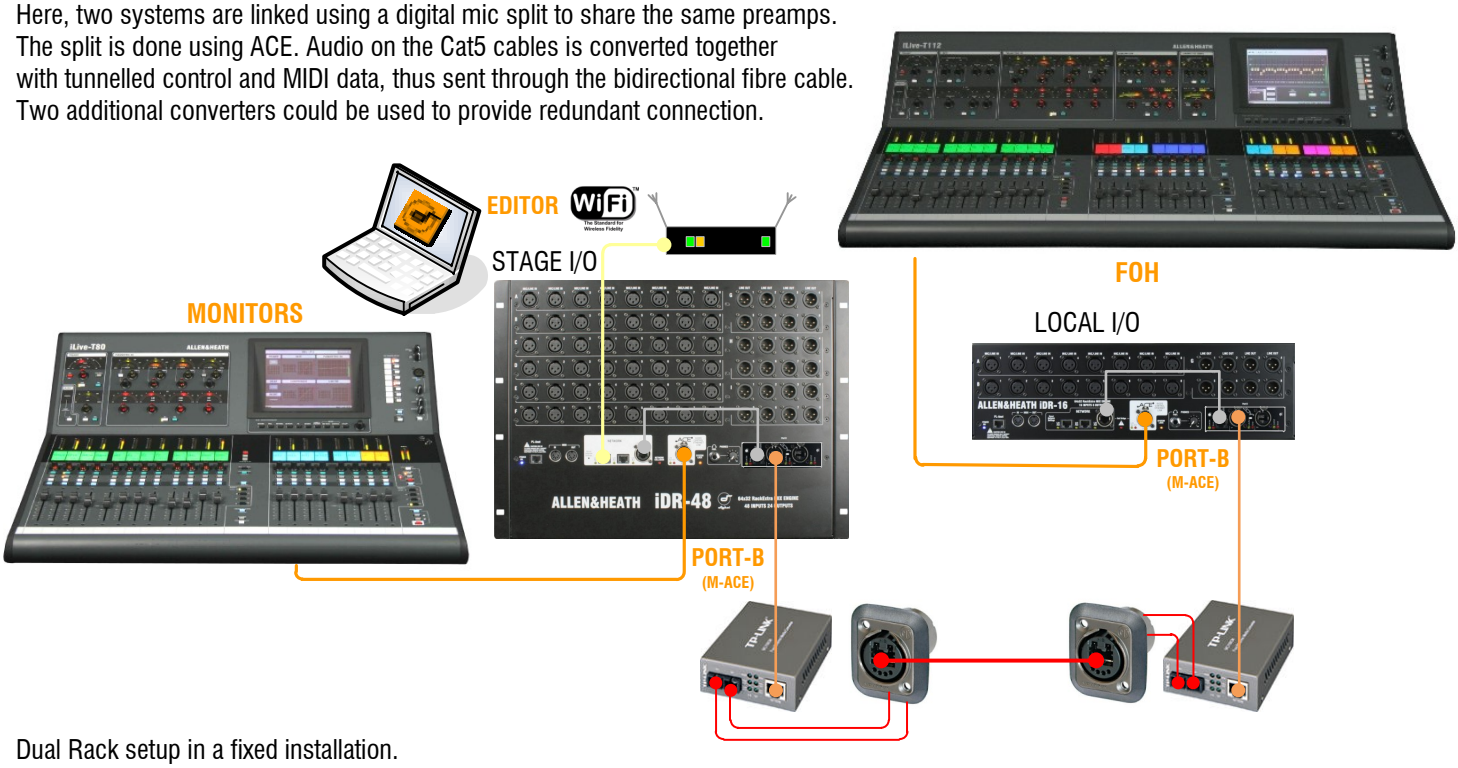


APPLICATION EXAMPLES

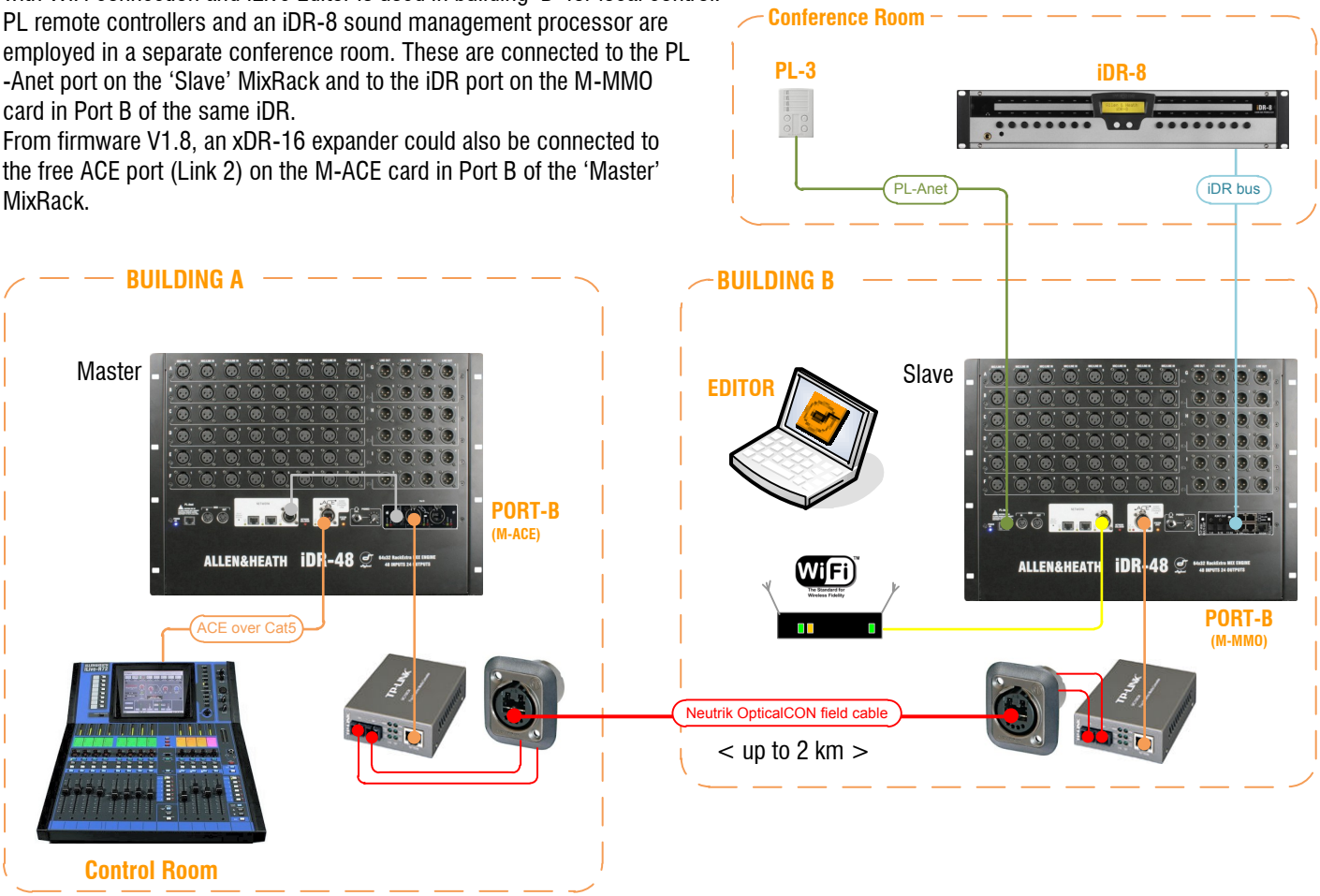
Surface to MixRack link.



Digital FOH / Monitor split with iLive control from a laptop.
Here, two systems are linked using a digital mic split to share the same preamps.
The split is done using ACE. Audio on the Cat5 cables is converted together with tunnelled control and MIDI data, thus sent through the bidirectional fibre cable.
Two additional converters could be used to provide redundant connection.



Dual Rack setup in a fixed installation.

Here, two MixRacks are connected together to expand the number of input channels of an iLive system. Thanks to the fibre connection, the 'Slave' MixRack can be placed in a separate building up to 2km in distance, providing remote inputs and outputs.

The iLive-R72 surface in the Control Room of building 'A' controls the whole system and has access to up to 128 input channels. A laptop with WiFi connection and iLive Editor is used in building 'B' for local control.
PL remote controllers and an iDR-8 sound management processor are employed in a separate conference room. These are connected to the PL -Anet port on the 'Slave' MixRack and to the iDR port on the M-MMO card in Port B of the same iDR.
From firmware V1.8, an xDR-16 expander could also be connected to the free ACE port (Link 2) on the M-ACE card in Port B of the 'Master' MixRack.