- **Digital Stage box**
- **Redundant Rugged switches**
- **Multi-networks optical backbone**

Link was the first to introduce printed circuit board based modular snake and stageboxes over two decades ago in Rome.

Link is proud to present the first and unique multi-protocol enabled modular digital snake system.

The DGlink™ digital audio distribution system leverages a long lineage of analog/digital cables, connectors, and circuitry (all manufactured by Link) to produce a truly modular touring grade digital distribution system.

DGlink™ is a digital snake designed for live events leveraging the architecture of traditional Stage Boxes.

The primary objective is to offer a solution that will replace, or integrate with, traditional audio distribution systems (analog and digital) during live applications, utilizing one, or multiple, digital standards over CAT 5 or 6 cables.

**MDP SYSTEM
(Multi digital Protocol)**

The Digital Protocol Modules support simultaneous use of two different digital audio standards in a single system. The same cards are used in the FOH unit, in the stage unit, and other auxiliary output modules (REC). During start-up, the microprocessor automatically initializes the ADC8 and DAC8 cards installed in the system.

MADI

DGlink

Ether
ES
Sound

⚆Dante™

- Provide a flexible control scheme that supports multiple industry standard digital transport protocols.
- Work closely with consoles, amplifiers, monitoring, and speaker manufacturers to provide the most robust and flexible multi-signal connectivity solutions for the live entertainment and broadcast industry.
- Leverage Link's extensive experience with PCB-based robust bussing systems.
- Maintain a modular system that supports multiple configurations of inputs/outputs and digital/analog 19" panels.
- Provide components that may be mounted in custom stage boxes and installation panels.
- Support up to 64 mic/line level inputs and up to 64 line level outputs (foldback and drive sends).
- Offer remote control of all stage box functions including control of phantom power, PAD,
- and gain settings.
- Initially support 48 kHz/24-bit audio (scalable to 96kHz).
- Provide an auxiliary data channel in certain configurations (LAN standard).
- Support optional analog/digital hybrid configurations using Link's 12 or 24 pair AES/EBU + 2 Cat 6 cable.
- Leverage Link's LK line of multi-pin connectors to provide for multiple signal type connections.

EtherSound™ enhances existing network technology providing high sound quality and easy to implement. The patented EtherSound™ protocol allows the transmission of synchronized audio channels on standard Ethernet, with a completely deterministic and low latency (1.4µs to 125µs with each additional node on the network).

EtherSound™ offers a cost-effective, fully digital, with an almost infinite number of audio equipment in the network, with up to 128 channels (64 and 64 In Out) 24-bit to 48 KHz.

You can get an extension of the number of audio equipment and the distance between them in the network, through the use of components such as Ethernet switches, 100Base-TX in common use.

Dante™ developed by Audinate Pty provides a digital audio network self-configuring "plug-and-play" that uses standard IP protocols, and compatible with common switcher already on the market. Dante™ is a scalable solution that works both to 100Mbits that 1Gigabit Ethernet and in combination with the unique possibility of hybrid configurations Analog - Digital, Link offers at the end user a distribution system that improves the audio quality and simplify the setup.

Dante™ provides a cost-effective fully digital with an almost infinite number of networked audio devices with capacities up to 512 bidirectional channels (256 and 256 In-Out) at 48 kHz 24-bit network to 1 Gbps (48 channels, bidirectional drawn up to 100 Mbps).

DGlink

- Plug-and-play technology – automatic discovery and simple signal routing
- Reduced Cost & Complexity- No special skills required to set up audio networking
- Sample accurate playback synchronization
- Lowest latency available from any networking technology
- Add/remove/rearrange components at will
- Deterministic latency throughout the network
- Support mixed bit depths and mixed sample rates over one network
- Scalable, flexible network topology supporting a large number of senders and receivers
- Supports mix of 100 Mbps, 1Gbps, through 10Gbps networks
- Supports a single integrated network for audio, video, control, monitoring
- Uses inexpensive, off-the-shelf computer networking equipment
- Direct connection to PCs for multi-channel recording, processing and playback using a Dante Virtual Soundcard for both PCs and Macs
- AVB Ready

Dante™

The *picoDM6™* MADI card is an OEM module (44.1-96 kHz SR) that can run 64 In / 64 Out at 48 kHz and through the DGlink adapter perfectly fits onto the DGlink system. It is also compatible with 56 In / 56 out MADI standard. The DGL MA (DGlink MADI adapter) has a MADI optical I/O integrated which can work as an internal splitter. It is possible to use BNC and SC outputs simultaneously heading the same audio channels to two different users.
As previously explained, DGlink can run up two different digital audio protocols at the same time.

That allows to manage MADI and Dante (or EtherSound) simultaneously driving two mixers with different audio protocols, for example. It is also possible to manage many devices (mixers, amplifiers, DAWs…) on a network (e.g.: Dante) maintaining one or two MADI outputs for a broadcast production or other needs.

MADI
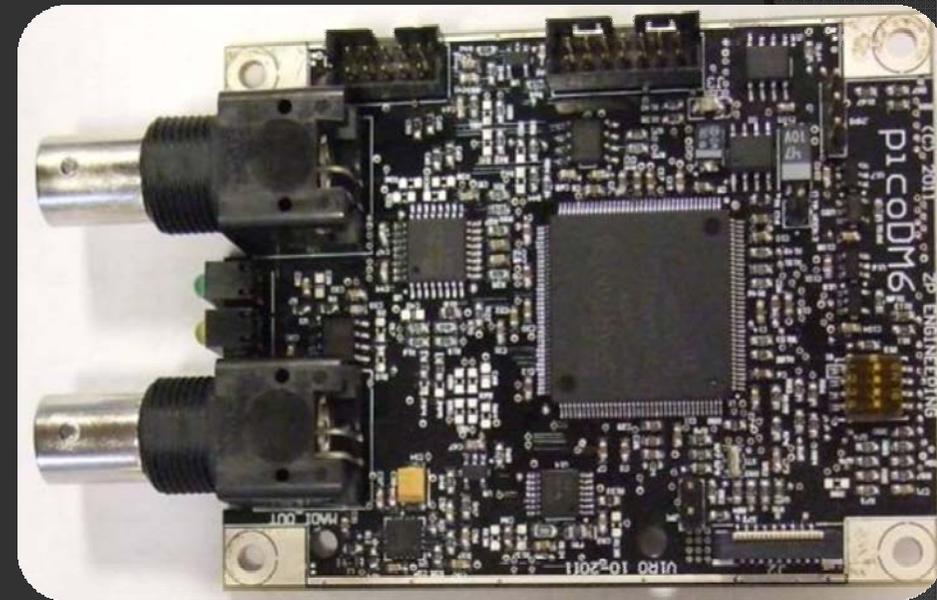
MADI

Dante™

DGlink is also available as "format" converter between two of the three available standards: DANTE, MADI and EtherSound.
A smart solution could be creating a DANTE network routing both MADI and DANTE channels as shown in example 5 & 6. Vice versa, the same thing can be obtained with an EtherSound ring network.

Why DGlink

The Digital Challenges in Today's Touring Environment

Connectivity for a professional touring audio system has become more complex than ever. Most production companies have a significant investment in their existing analog equipment and are receiving requests to provide the newer digital technologies as part of the complete tour package. In the new world of digital, there are many different audio system transport, control, and monitoring protocols that must be understood. Today's manufacturers of professional touring equipment have leveraged a multitude of protocols that in most cases, do not integrate directly with each other.

Multiple Signals

Although transporting audio via a digital protocol is one component to be addressed, there are many other signals that must be distributed in a typical touring rig. Below is a list of a few examples:

Channel Inputs to one or multiple analog/digital mixing/recording consoles or house monitoring systems.

- *Digital/Analog mixing console outputs that drive one or multiple speaker or recording systems.*

- *Signals for headset communication systems.*

- *Remote control and monitoring of one or multiple mixing consoles and outboard processors.*

- *Remote control and monitoring of multiple DSP's, amplifiers and/or powered speakers.*

- *Remote control and monitoring of wireless systems.*

- *Multi signal audio transport for in ear monitoring systems.*

- *Remote control and monitoring or inclinometers and load points.*

Set-Up

Reducing the time for set-up and act changeover is more time critical than ever. Even though the complexity level for connecting a system has increased substantially, a production company is more reliant than ever on local crews to unload, install, and pack their equipment.

Moreove, DGlink range offers several solution for ruggerized and redundant connections

Flexibility

DGlink

The first multiprotocol stagebox and digital networking framework for managing multiple digital mixers, audio, video, and control streams on a single redundant backbone. Perfect for festivals and live events where a robust flexible solution is critical.

Ex. 2

Recording

Splitter Madi

Monitor Console

FOH Console

DGlink 48/16

Coax Madi

Optic Madi

Gain Control

Control Panel

Ex. 3
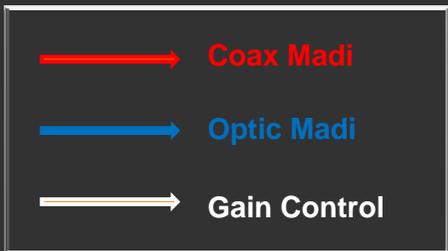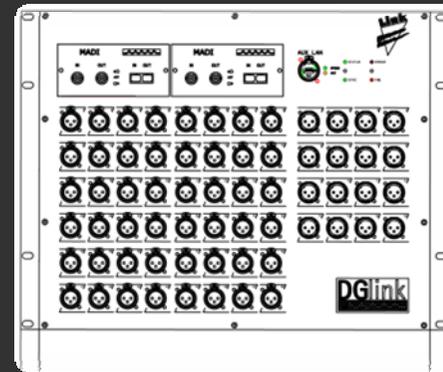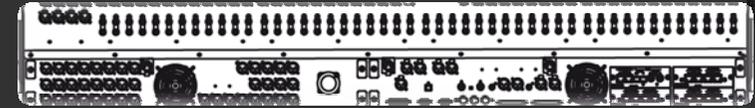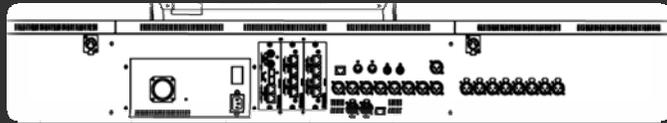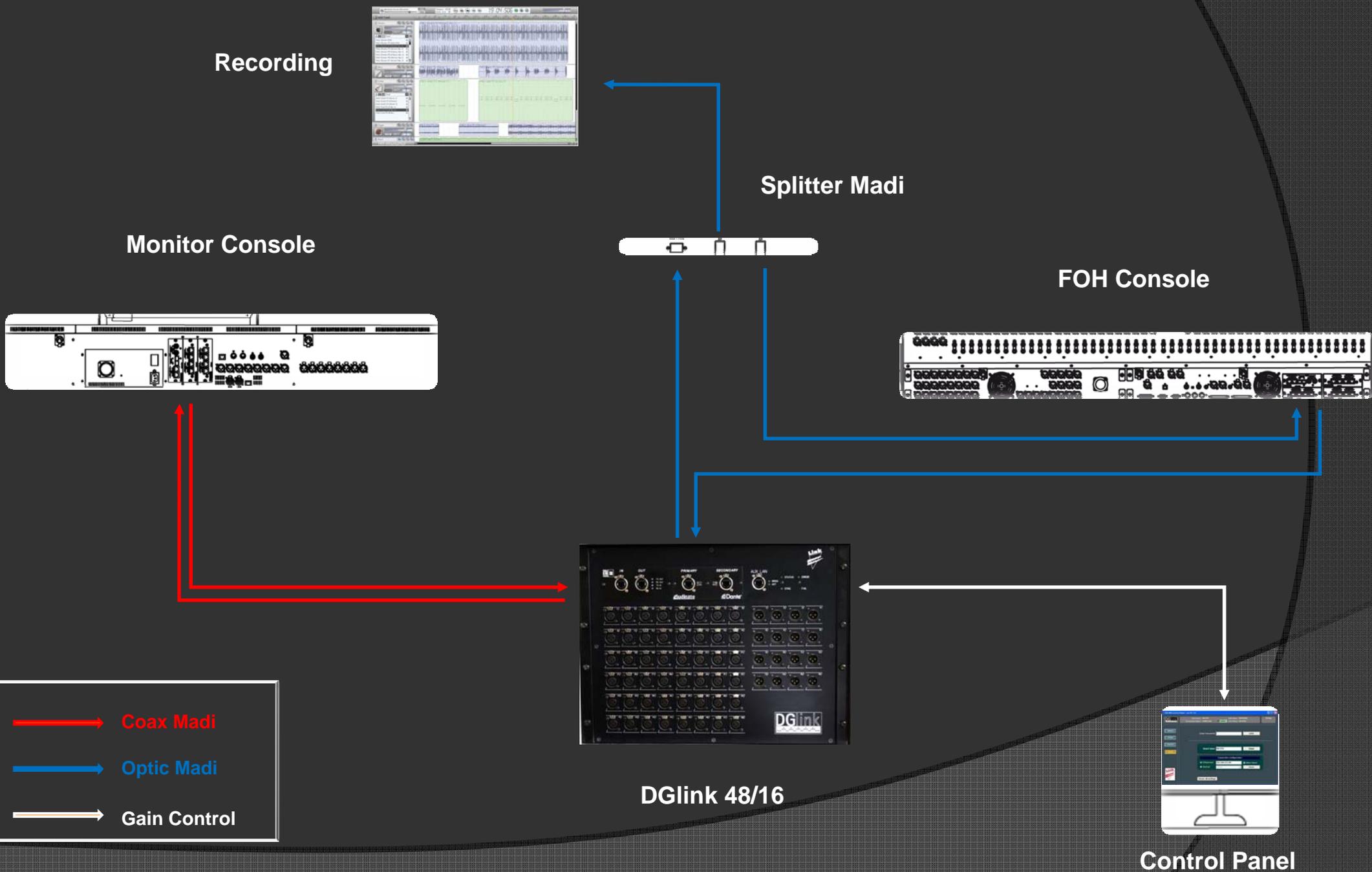
Recording

Amp Rack

DGlink switch

Midi I/O

DGlink switch

FOH Console

Monitor Console

Control Panel

DGlink 48/16

Lan

Coax Madi

Network Dante

Gain Control

Ex. 4
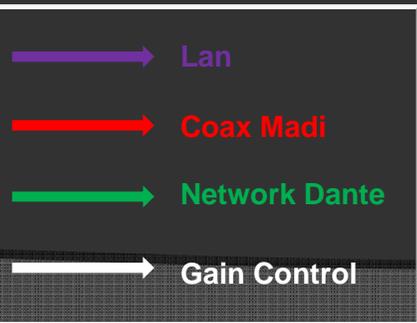
DGlink

HW C220 switch

Amp Rack

Recording

Broadcast Mobile

Midi I/O

DG-MIDI

DGlink HW C220 Gb switch

FOH Console

Monitor Console

Control Panel

|	
→	Lan
→	Optical Madi
→	Coax Madi
→	Network Dante
→	Gain Control
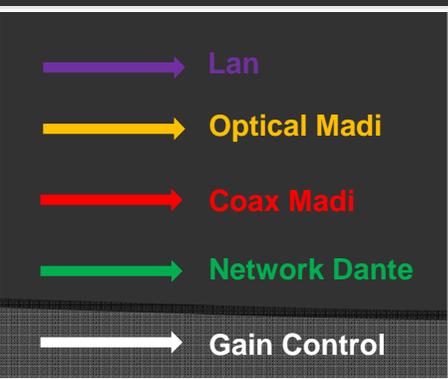
DANTE network with MADI or EtherSound audio format conversion

Redundant "star" topology connection.
In case of "Primary" circuit fault , the "Secondary" will maintain active the network without signal interruption.
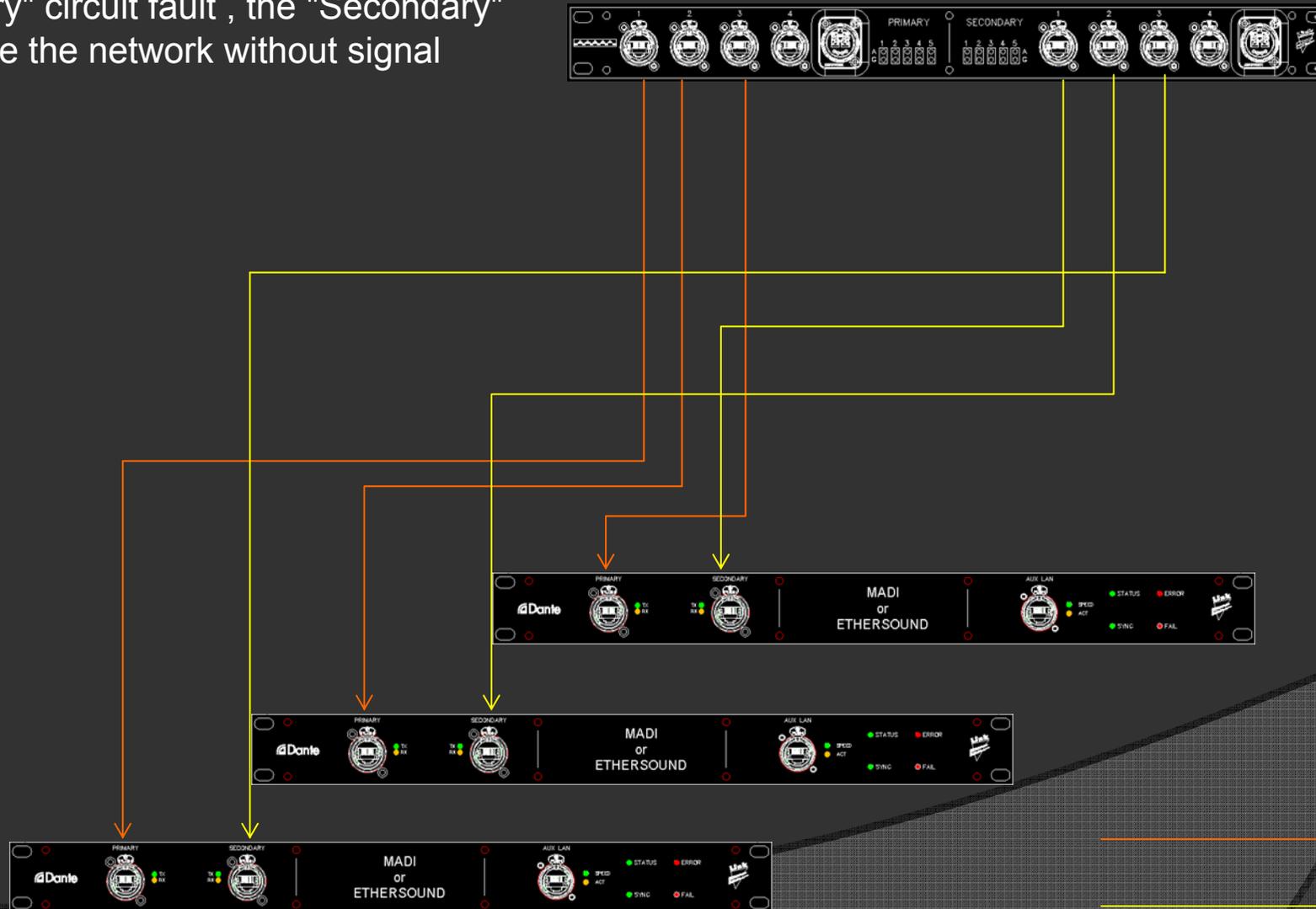
Primary

Secondary

Ex. 6

EtherSound network with MADI or DANTE audio format conversion

Redundant "Ring" topology connection.
In case of a connection fault between two devices, the signal will run on the opposite direction without interruption.

In/Out (single cable)
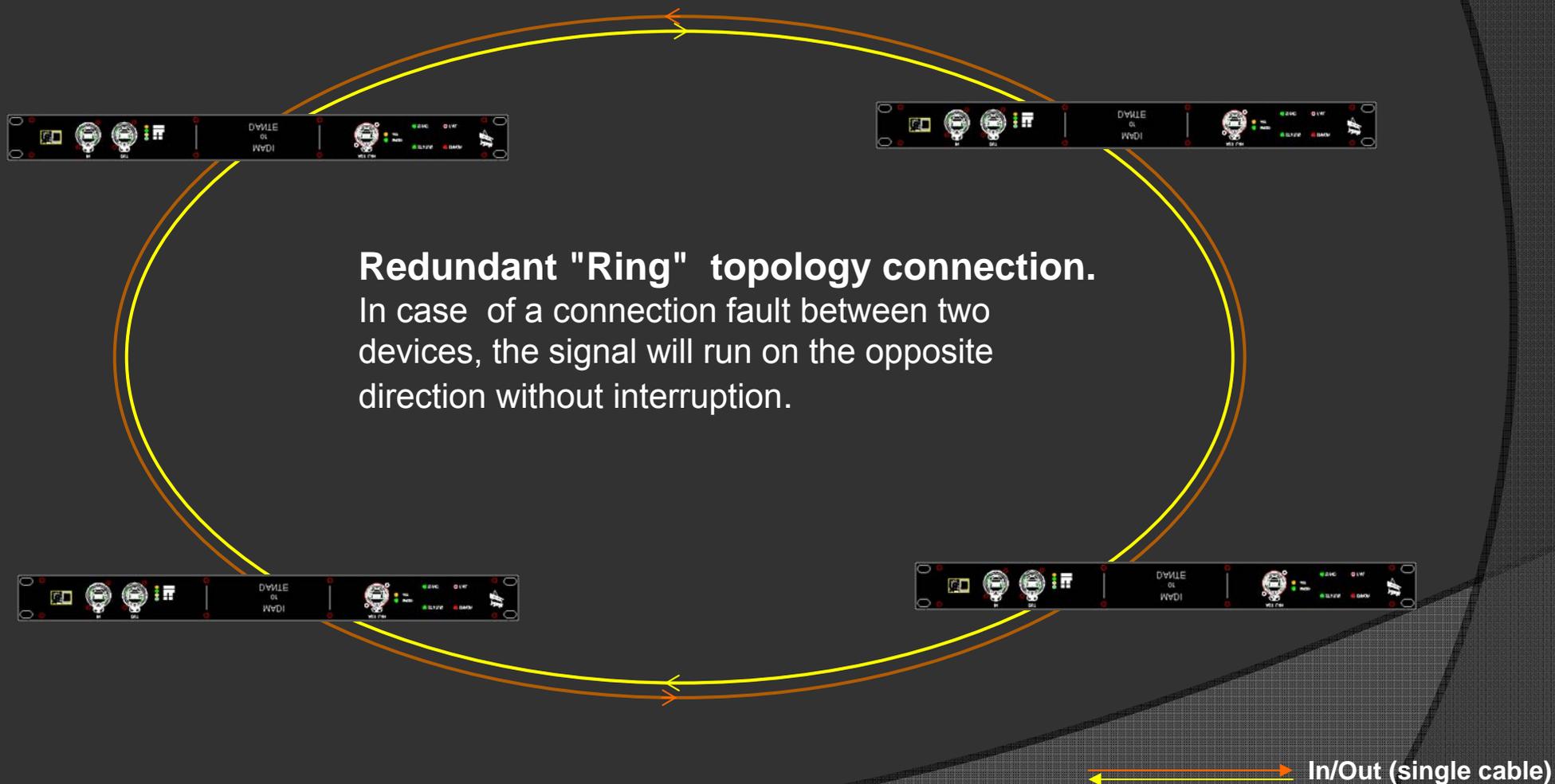
Redundant Rugged Switches

OVERVIEW

Rugged Switch with following features:

- Managed switch with 8 ports 10/100/1000 + 2 Combo mini-GBIC slots

- Based on Cisco 300 Series

- Box 1U rugged standard rack

- Ethercon connectors for copper port

- OpticalCon, SC or LC connectors for optical ports

- Optional redundant supply

SWITCH FEATURES

Cisco 300 Series Switches offer a variety of features providing convenience, improved performance, and advanced capabilities. These include:

◉ Strong security features include access control lists (ACLs), guest virtual LANs (VLANs), and other advanced security features to tightly control networks

◉ Intelligence and advanced traffic management to simplify the addition of voice, wireless, and security services. These advanced managed switching features give you a variety of capabilities for controlling traffic over your network

◉ IPv6 support allows you to move up to the next generation of networking applications and operating systems without an extensive equipment upgrade

SWITCH FEATURES

- Quality of service (QoS) on all models prioritizes network traffic to keep critical network applications running at top performance

- Static routing/Layer 3 IP routing between VLANs allows for communicating across VLANs without degrading application performance

- Intuitive browser-based tools provide for easy setup and management

- Switches offer compatibility with network devices from other vendors

- Meet tomorrow's networking needs as well as today's with advanced features like static routing and IPv6 support, which let you enable the latest generation of networking applications and operating systems without an extensive equipment upgrade.

DGlink 48/16 with 8/4 analog sub-snakes

DGlink 48/16 with 8/4 analog sub-snakes

DGlink HW C220 Gb switches

Monitor console

Primary

Secondarry

Recording

FOH console

DGlink 48/16 with 8/4 analog sub-snakes

DGlink

HW C220 switch

DGlink 48/16 with 8/4 analog sub-snakes

DGlink 48/16 with 8/4 analog sub-snakes

Primary

Secondarry

HW C220 switch

DAW Recording

DGlink 48/16 with 8/4 analog sub-snakes

FOH

DGlink 48/16 with 8/4 analog sub-snakes

Monitor

DGlink 48/16 with 8/4 analog sub-snakes

DGlink 48/16

DGlink HW C220 Gb switches

Primary

Secondarry
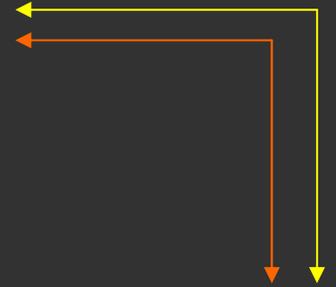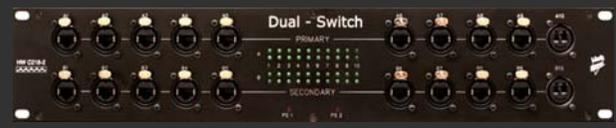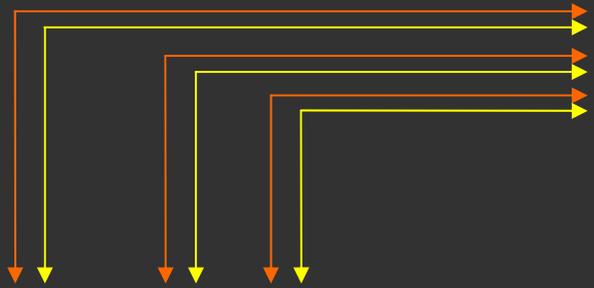
CTRL Room

FOH

DGlink 48/16 with 8/4 analog sub-snakes

WFX 2012
(Atlanta – USA)

Yamaha LS-9

DGlink 48/16

Primary

Secondarry

Dual - Switch

DGlink HW C220 Gb switches

Dual - Switch

DGlink 48/16 with 8/4 analog sub-snakes
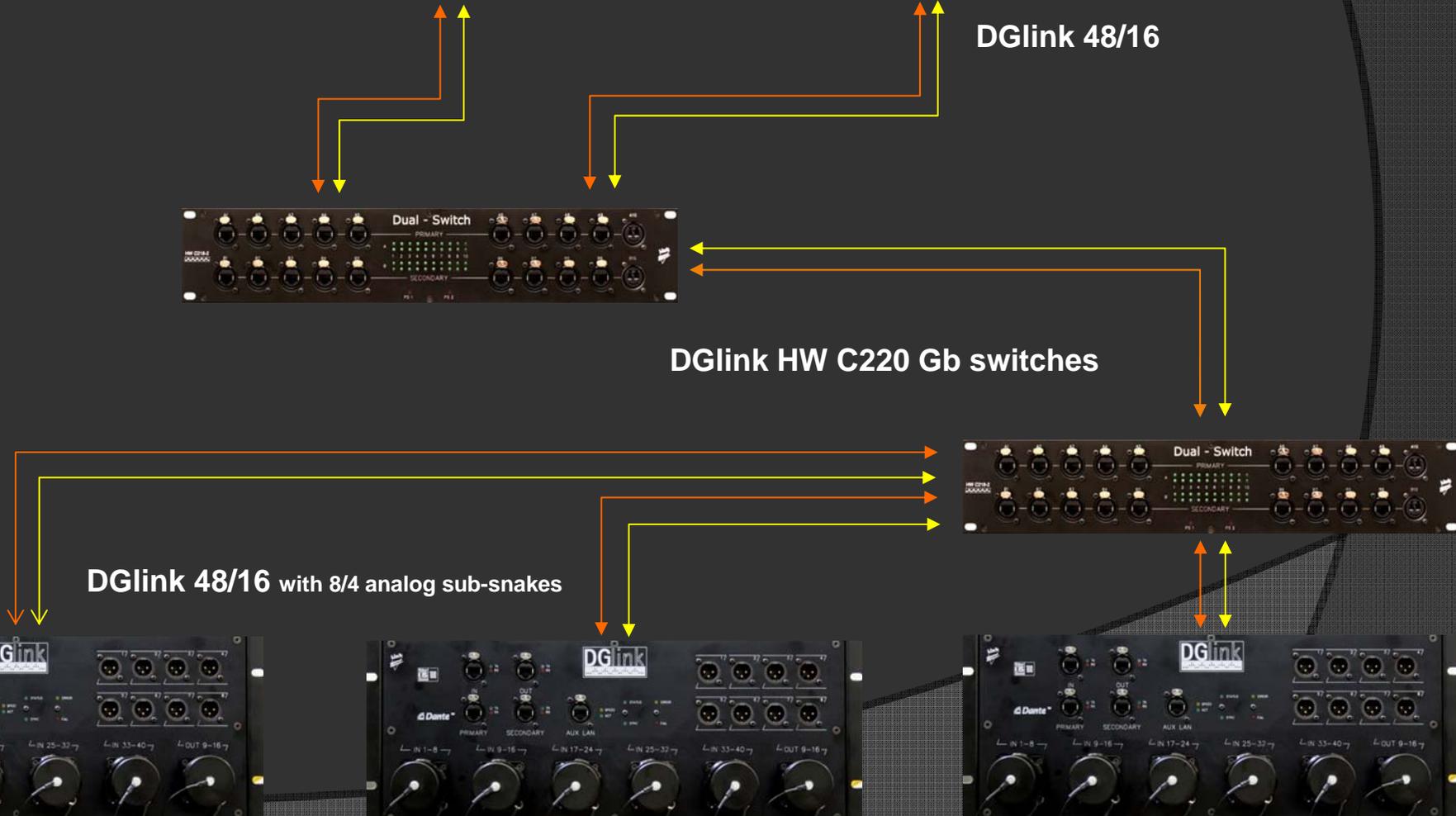
HW C10

- Based on Switch Gigabit Cisco SG300-10
- 10 ports Gigabit with Neutrik EtherCon
- 2 VLAN: Primary and Secondary
- Quality of service (QoS) prioritizes network traffic to keep critical network applications running at top performance
- Strong security features include access control lists (ACLs), guest virtual LANs (VLANs), and other advanced security features to tightly control networks
- Box 1U rugged standard rack

HW C10

- Standards Compliance:
  - IEEE 802.3u 100BASE-TX Fast Ethernet
  - IEEE 802.3ab 1000BASE-T Gigabit Ethernet
  - IEEE802.3x full-duplex flow control
  - Honors IEEE 802.1p priority tags
  - Honors IEEE 802.1Q VLAN tags
- Redundant Power Supply:
  - PS1: 220V AC, PowerCon
  - PS2: 12V DC, External Power Supply
- Status LEDs:
  - Power (PS1 and PS2)
  - Activity and Speed indicators
- Compatible with all major network software

DGlink

HW C08-2

- Based on Switch Gigabit Cisco SG300-10
- 10 ports Gigabit:
  - 8 Neutrik EtherCon
  - 2 Neutrik OpticalCon
- 2 VLAN: Primary and Secondary
- Quality of service (QoS) prioritizes network traffic to keep critical network applications running at top performance
- Strong security features include access control lists (ACLs), guest virtual LANs (VLANs), and other advanced security features to tightly control networks
- Box 1U rugged standard rack

CISCO

- Managed switch with 8 ports 10/100/1000 + 2 Combo mini-GBIC slots
- Quality of service (QoS) prioritizes network traffic to keep critical network applications running at top performance
- Strong security features include access control lists (ACLs), guest virtual LANs (VLANs), and other advanced security features to tightly control networks
- Intelligence and advanced traffic management to simplify the addition of voice, wireless, and security services.
- Standards Compliance:
  - IEEE 802.3u 100BASE-TX Fast Ethernet
  - IEEE 802.3ab 1000BASE-T Gigabit Ethernet
  - IEEE802.3x full-duplex flow control
  - IEEE 802.1X port security
  - IEEE 802.1d STP Spanning Tree support
  - IEEE 802.1w RSTP Rapid Spanning Tree support
  - IEEE 802.1d MSTP Multiple Spanning Tree support
  - Honors IEEE 802.1p priority tags
  - Honors IEEE 802.1Q VLAN tags
  - IGMP limits bandwidth-intensive multicast traffic to only the requesters; supports 1K multicast groups
- Redundant Power Supply:
  - PS1: 220V AC, PowerCon
  - PS2: 12V DC, External Power Supply
- Status LEDs:
  - Power (PS1 and PS2)
  - Activity and Speed indicators
- Compatible with all major network software
- **Advanced network management capabilities**
  - *Static routing/Layer 3 switching between VLANs:* This capability allows you to segment your network into separate workgroups and communicate across VLANs without degrading application performance.

DGlink Gigabit Switches

HW C10
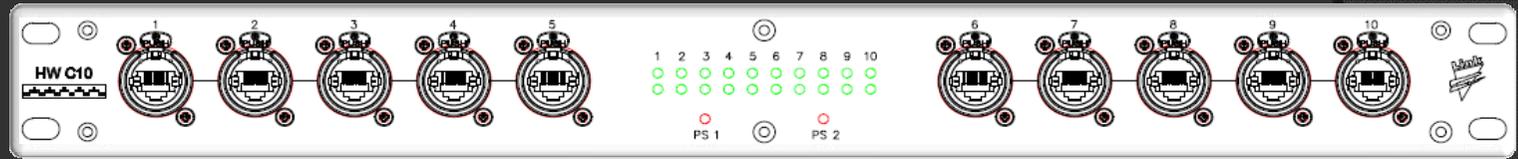
HW C10V2
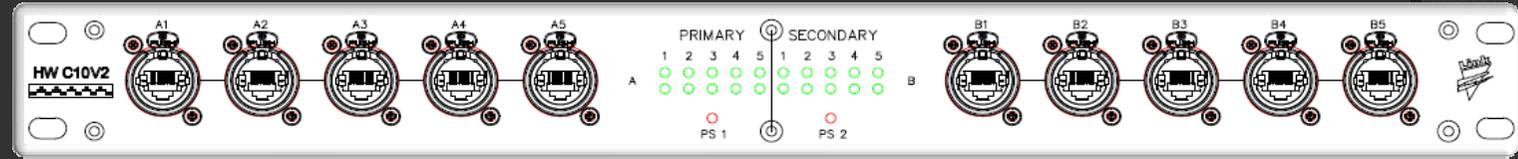
HW C220

HW C218-2

HW BP12A2

BATTERY PACK

NEW !
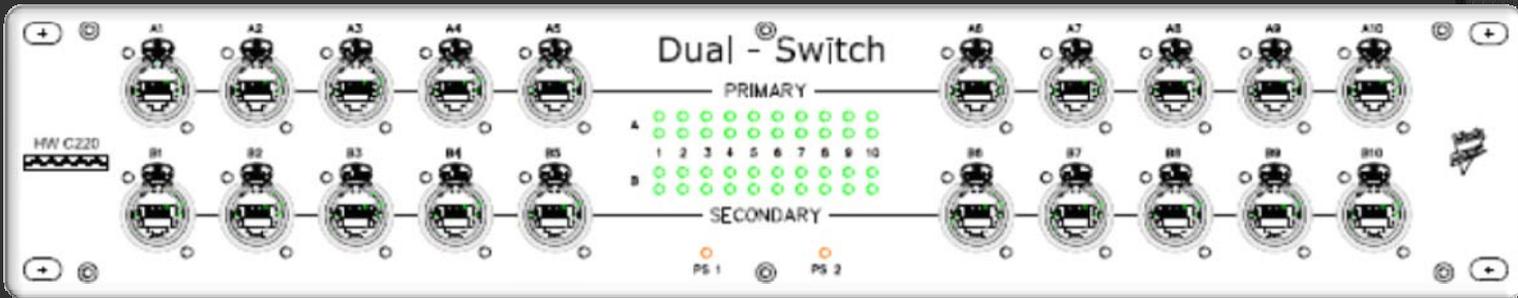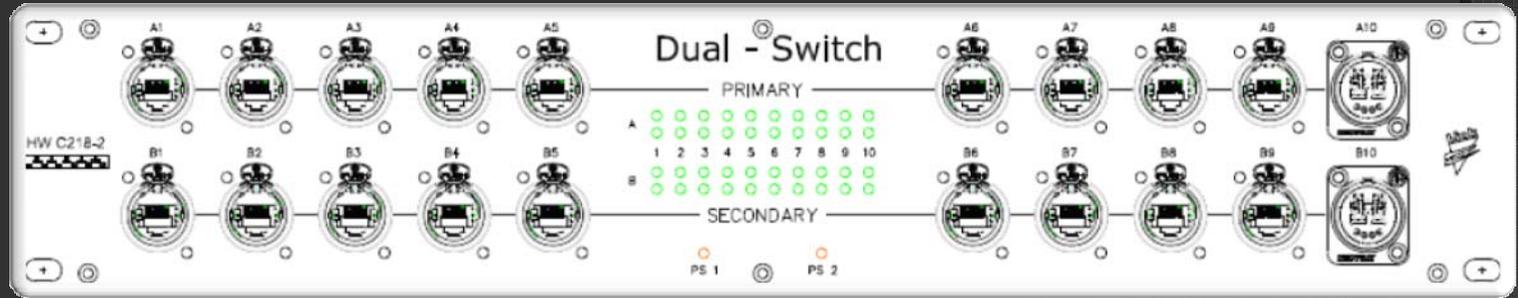
Features & perfomances

Features	HW C08-2 HW C08-2V2	HW C10 HW C10V2	HW C218-2 Prim/Sec	HW C220 Prim/Sec
RJ45 ports (10/100/1000 Mbps)	8	10	9+9	10+10
SFP ports	2		1+1	
Connectors	EtherCon, OpticalCon	EtherCon	EtherCon, OpticalCon	EtherCon
Power supply	Dual 110 -240 Vdc	Dual 110 -240 Vdc	Dual 110 -240 Vdc	Dual 110 -240 Vdc
Switch redundancy	Virtual	Virtual	Full	Full
Spanning Tree	Yes	Yes	Yes	Yes
IGMP	1, 2, and 3 snooping	1, 2, and 3 snooping	1, 2, and 3 snooping	1, 2, and 3 snooping
QoS	4 Hardware queues	4 Hardware queues	4 Hardware queues	4 Hardware queues
Vlan	Yes	Yes	Yes	Yes
Layer 3	Yes	Yes	Yes	Yes
ACL Filter	Yes	Yes	Yes	Yes
Ipv6	Yes	Yes	Yes	Yes
Port mirroring	Yes	Yes	Yes	Yes
Bandwidth management	Yes	Yes	Yes	Yes
Storm control	Yes	Yes	Yes	Yes
SNMP	Yes	Yes	Yes	Yes
Jumbo frames	10 KB	10 KB	10 KB	10 KB
MAC table	up to 8000	up to 8000	up to 8000	up to 8000
Bonjour protocol	Yes	Yes	Yes	Yes
LEDs	Activity / Speed (1Gpbs)	Activity / Speed (1Gpbs)	Activity / Speed (1Gpbs)	Activity / Speed (1Gpbs)
Flash memory	16MB	16MB	2x 16MB	2x 16MB
CPU memory	128MB	128MB	2x 128MB	2x 128MB

CWDM Optical mux-demux

The modules are based on passive CWDM technology, standardized on the ITU G.695 and G.696 and provide up to 18 wavelength channels that can be used for a point-to-point connection of different signals such as 3G HD-SDI, MADI, AES, Dante, Ethernet or storage data *(8G/4G/2GI* 1GFibre Channel), without complex protocol conversion technologies.

The 4, 8, 16 or 18 channel modules, combine and split light signals coming from and heading to CWDM transceivers.

MADI, Dante Ethersound

RS232/422

SWITCH

YR. APP.
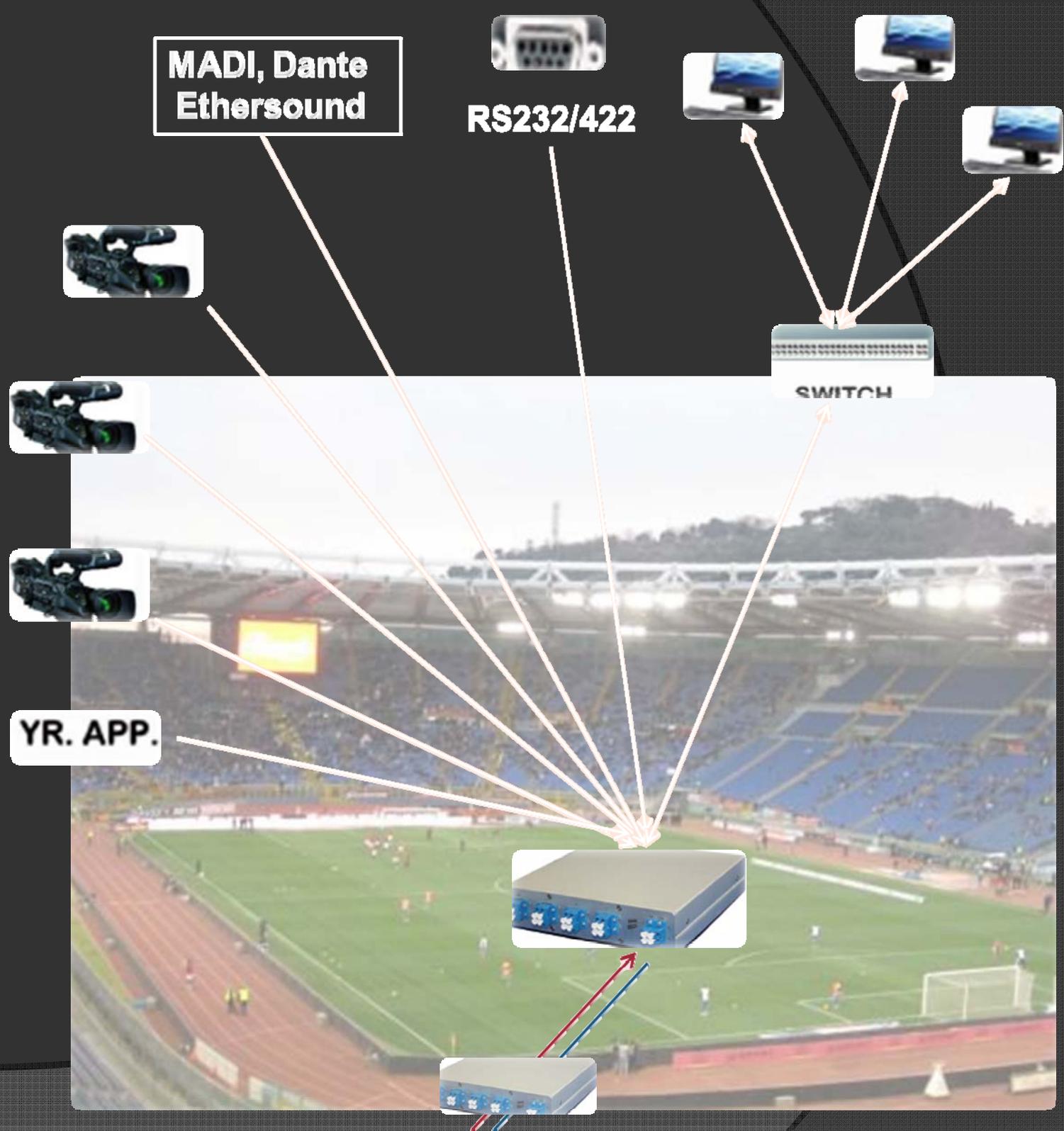
The modules perfectly combine with all major broadcast products working on CWDM wavelengths, are available in many different enclosures and with different *F/O* connectors: LC or SC for wavelength channels and Lemo, OpticalConn or Extended Beam connectors for long distance mobile connections.

YR. APP.

RS232/422

SWITCH

FlexiNn

SERIE A TIM

AUDIO SOURCE
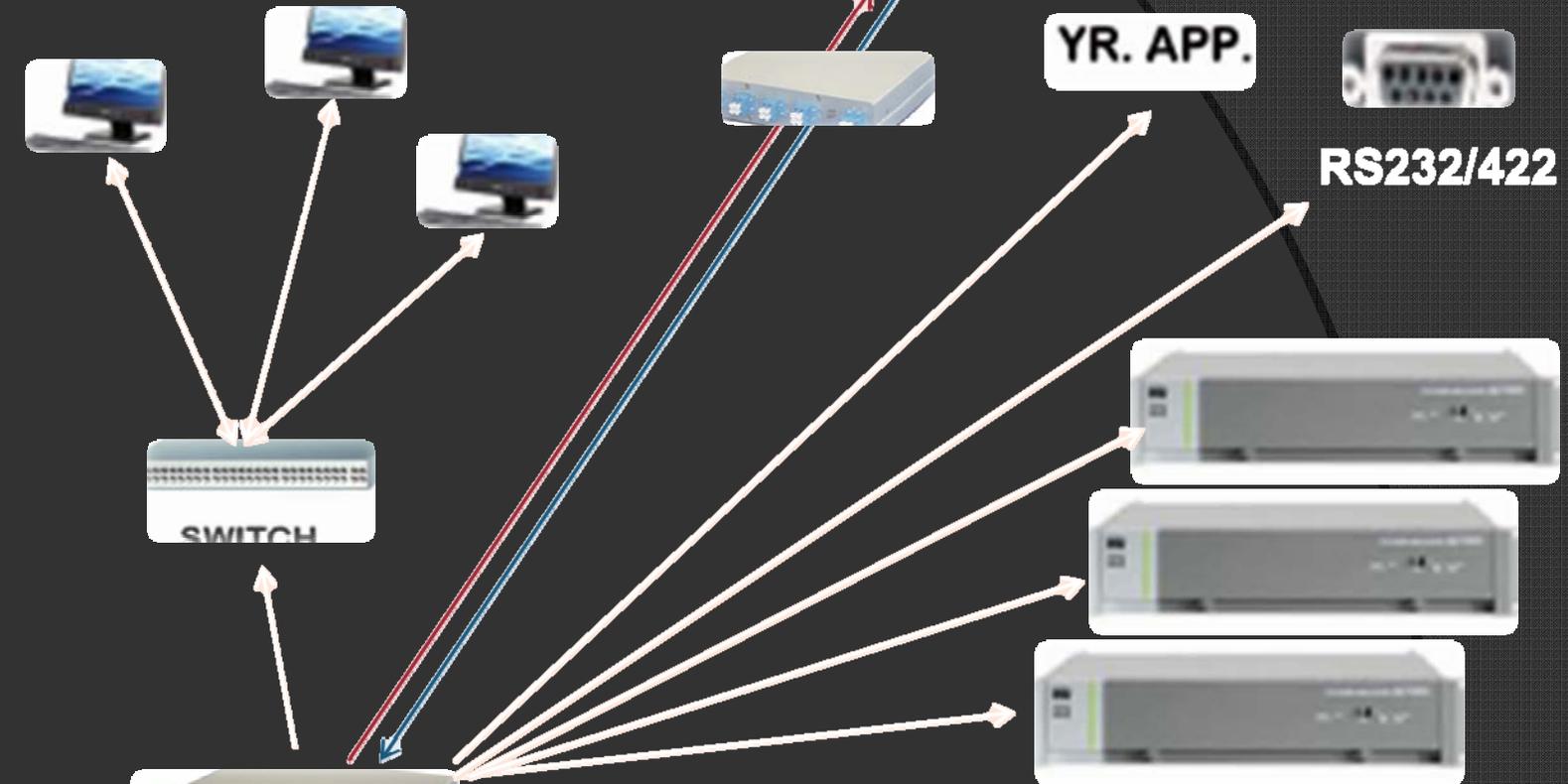
Link srl
Via Pieve Torina, 48
 00156 Roma   -   Italy
Phone +39 06 227251
Fax +39 06 22725225
www.linkitaly.com   info@linkitaly.com

LINK USA, Inc.
2413 Parmenter Street - Suite #140 - Middleton, WI 53562
Phone: +1 608-826-4680 - Fax: +1 608-826-4689
info@linkusa-inc.com   www.linkusa-inc.com