Mixer Accessories

DN9650

AES50 Network Bridge Format Converter with up to 64 Bidirectional Channels and Asynchronous Sample Rate Conversion



- Network bridge format converter for AES50 networks with up to 64 bidirectional channels
- Compatible with KLARK TEKNIK KT-AES50, KT-DANTE64, KT-MADI and KT-USB network modules
- Asynchronous sample rate conversion on every channel with bypass facility
- Bidirectional output audio clock inhibit feature for redundant network systems
- 24 bit audio operation with 96 kHz and 48 kHz sample rates
- Video synchronisation in standard and high definition formats
- Internal "AES Grade 1" temperature-compensated word clock (1 ppm)
- Internal web server allows browser-based configuration via Ethernet control port
- Status indicator LEDs and LCD display on front panel
- Features Neutrik etherCON* network ports
- Rugged 1U rackmount chassis for durability in portable applications
- Auto-ranging universal switch-mode power supply
- 3-Year Warranty Program*
- Designed and engineered in England



DN9650 provides a multichannel interface between AES50 networks and third party digital audio networks and point-to-point interfaces. The AES50 and third party interfaces operate in separate clock domains and are connected by a bidirectional asynchronous sample rate converter (ASRC). This unique KLARK TEKNIK technology allows the interfacing of up to 64 bidirectional channels between the two independently clocked domains, which can also operate at different sample rates. Currently supporting AES50, Dante, MADI and USB 2.0 via the KLARK TEKNIK KT-AES50, KT-DANTE64, KT-MADI and KT-USB network modules, DN9650 is future-proofed in the evolving world of digital audio networking technology by being able to support new and emerging protocols via its industry-standard expansion slot, which is compatible with the Cirrus CM-1* format.

The DN9650 allows MIDAS PRO Series digital consoles and MIDAS digital I/O hardware and other 96 kHz-enabled AES50 devices to interface to multichannel AES50, Dante, MADI and USB 2.0 connections, simply and reliably.

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Digital Audio Networking

SuperMAC (AES50-Compliant) digital audio networking technology from KLARKTEKNIK simultaneously provides high channel counts, ultra low and deterministic latencies, sample-synchronous and phase-aligned networked clock distribution, error detection and correction, network redundancy, and ease of deployment and use – to meet the demanding requirements of live concert touring.

DN9650 is compatible with all MIDAS digital consoles, audio system engines, digital I/O units, as well as with any other AES50-equipped devices.

Asynchronous Sample Rate Converter

The multichannel bidirectional Asynchronous Sample Rate Converter (ASRC) allows the AES50 and third party domains to function independently, however in instances where the two networks need to be synchronised, the ASRC features a bypass facility so that the third party network domain can be directly clocked from the AES50 domain.

Additionally, when the two domains are operating independently, a clock failure or loss of synchronisation in one domain will not necessarily affect the operation of the other. Very often in dual-redundant systems it is desirable to propagate a clock failure in one domain across to the other, so that the failure can be recognised and switchover to the redundant network can be initiated. DN9650 features a user-configurable bidirectional output clock inhibit feature that will stop the output clock if the incoming clock synchronisation fails.



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Flexible Synchronisation

DN9650 supports 24 bit audio operation at 48 kHz and 96 kHz independently in both the AES50 domain and the third party network domain. If the on-board oscillator (AES50 internal clock) is selected, then all three AES50 ports can either be set to globally operate at either 48 kHz or 96 kHz. If AES50 external clock is selected as the clock source, then each AES50 port can be set to provide 24 bidirectional channels at either 48 kHz or 96 kHz sample rate on an individual basis. This flexibility allows interfacing between 48 kHz and 96 kHz AES50 networks when the KT-AES50 module is fitted to the DN9650.

Word clock input and output connections plus a black burst horizontal video sync input are provided on BNC connectors, with the latter supporting PAL, SECAM and NTSC formats in standard definition and high definition 720P, 1080P and 1080i formats. The word clock output can be derived from the AES50 clock domain, the third party network clock domain or the word clock input.

DN9650 features a precision "AES Grade 1" reference temperature-compensated clock oscillator with 1 part-per-million (ppm) stability which is used as the AES50 internal clock source. This highly accurate clock source can be used as the reference clock for digital audio systems, providing a very defined sound image free of jitter and other digital clocking error artefacts.

The AES50 domain can be synchronised to the incoming AES50 external clock signal, the AES50 internal clock, the word clock input or the video black burst video sync input.

The third party network domain can be synchronised to the external network clock (with or without word clock synchronisation), the network module onboard clock, the word clock input or the black burst video sync input, as well as optionally slaving to the AES50 clock domain if the ASRC is bypassed.

Internal Web Server

DN9650 features an on-board web server that allows platform-independent configuration using a web browser application. The need for separate control applications and support for multiple operating system versions is eliminated with this approach, which allows simple user selection of network module and DN9650 settings, including AES50 and third party network domain sample rates, clock synchronisation for both domains and the ASRC bypass and bidirectional output clock inhibit functions.



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Front Panel Indication

DN9650 features status LED indicators for AES50 and network synchronisation, Ethernet control port activity and the ASRC bypass and bidirectional output clock inhibit functions on the front panel for 'at a glance' status display, even at wide distances and viewing angles. An alphanumeric LCD display allows individual units to be labelled, essential in large network systems where multiple DN9650 units are in use.

Built for the Road

Featuring a rugged steel 1U rackmount enclosure, the DN9650 is designed for the rigours of live concert touring. Premium Neutrik etherCON* and BNC connectors are used to ensure reliable network and clock connections, night after night.





Auto-ranging universal switch-mode power supply

DN9650 features a universal power supply, which is auto-voltage sensing for use on a worldwide basis.

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You Are Covered

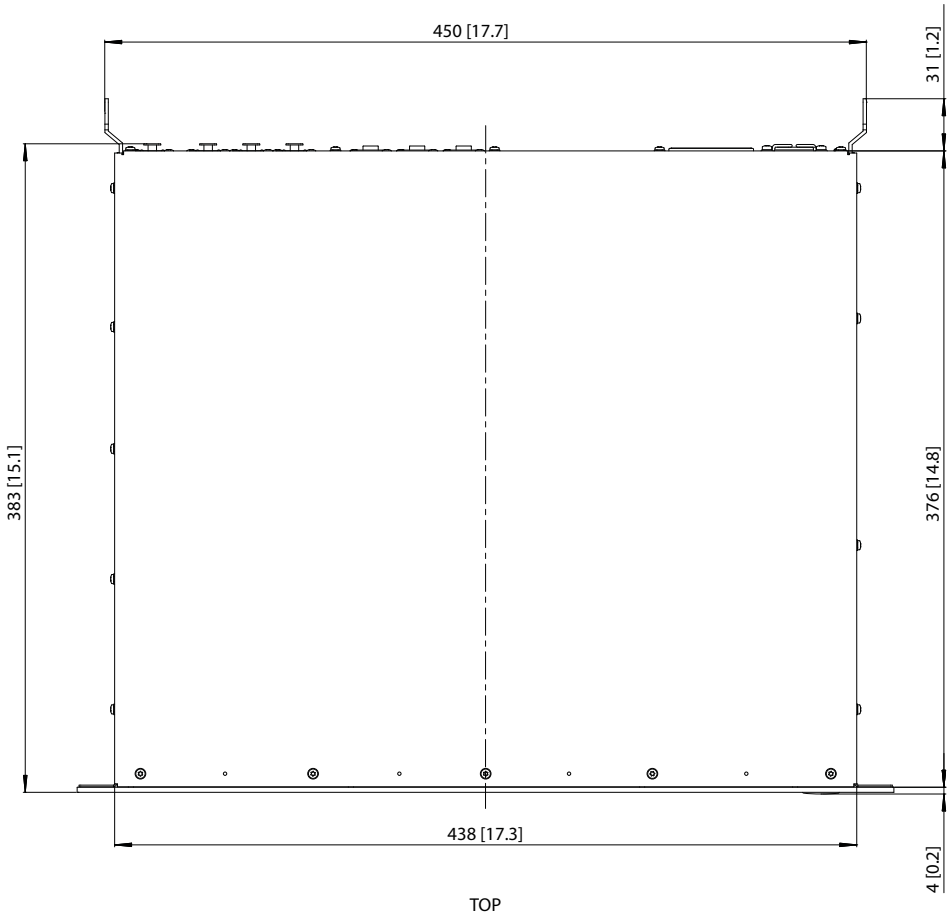
We always strive to provide the best possible Customer Experience. Our products are made in our own MUSIC Group factory using state-of-the-art automation, enhanced production workflows and quality assurance labs with the most sophisticated test equipment available in the world. As a result, we have one of the lowest product failure rates in the industry, and we confidently back it up with a generous 3-Year Warranty program.

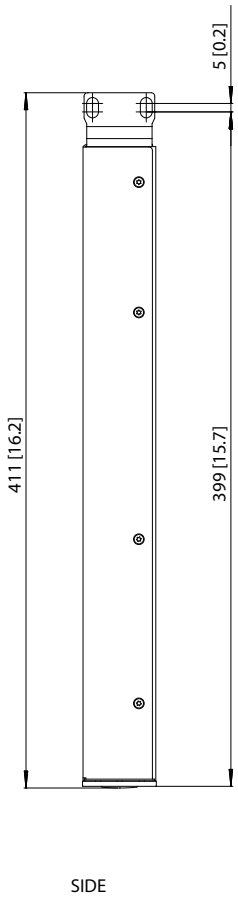


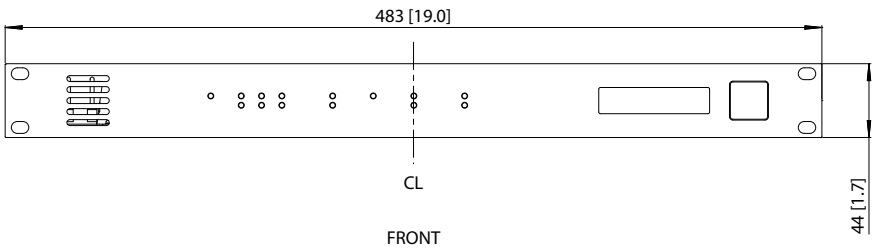
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Dimensions







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Technical Specifications

AES50

Ports	**3**
Type	Neutrik etherCON with LED status indication
Sample rate	48 kHz, 96 kHz

Ethernet Control

Port	**1**
Type	Neutrik etherCON with LED status indication

External Synchronisation

Word clock input	**1**
Type	Neutrik BNC with 75 ohm termination
Sample rate	48 kHz, 96 kHz
Word clock output	**1**
Type	Neutrik BNC (no termination)
Sample rate	48 kHz, 96 kHz
Video black burst input	**1**
Type	Neutrik BNC with 75 ohm termination
Formats	Standard definition: PAL, SECAM, NTSC. High definition: 720P, 1080P, 1080i

Network Module Expansion

Slot	**1**
Type	Cirrus CM-1 format compatible

Asynchronous Sample Rate Converter

Channels	64 bidirectional
Bypass	Sync network domain to AES50 domain (user-selectable)
Output clock inhibit	Bidirectional stop output clock if input clock fails (user-selectable)

Onboard Clock

Type	Temperature-controlled crystal oscillator (TCXO) with 1 part-per-million (1 ppm) stability

AES50 Domain Clock Source

Options	AES50 external clock Onboard oscillator (AES50 internal clock) Word clock input Video black burst input

Network Domain Clock Source

Options	External network clock External network clock with word clock in synchronisation Onboard oscillator (AES50 internal clock) Network module onboard clock AES50 clock source Word clock input Video black burst input

Word Clock Output Source

Options	AES50 clock domain Network clock domain Word clock input

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Other Terminations

Power	3-pin IEC

Power Requirements

Voltage	100 to 240 VAC, 50 to 60 Hz
Consumption	<50W

Dimensions

Width	**483 mm (19.0")**
Depth	**411 mm (16.2")**
Height	**44 mm (1.7")**

Weight

Net	5.1 kg (11.2 lbs)

Options

KLARK TEKNIK KT-AES50	AES50 Network Module with up to 48 Bidirectional Channels
KLARK TEKNIK KT-DANTE64	Audinate Dante Network Module with up to 64 Bidirectional Channels
KLARK TEKNIK KT-MADI	MADI Network Module with up to 64 Bidirectional Channels
KLARK TEKNIK KT-USB	USB 2.0 Network Module with up to 48 Bidirectional Channels

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Architecture & Engineering Specifications

The network bridge shall provide bidirectional asynchronous sample rate conversion of up to 64 simultaneous channels of 24 bit resolution digital audio, between a 3 port digital audio network interface and a third party network module interface. The 3 port digital audio network interface shall use a 100 Megabit Ethernet frame-based digital audio network compliant with the Audio Engineering Society AES50-2011 standard.

The network bridge shall have provision for an expansion slot conforming to the electrical and mechanical specifications of the Cirrus CM-1 format to provide the third party network module interface.

The network bridge shall have one Ethernet control port for the purposes of remote configuration from a computer web browser interface and updating the internal software.

The network bridge shall have two clock domains (AES50 and Network), separated by an asynchronous sample rate converter which shall permit independent operation of the two clock domains whilst providing a birectional 64 channel interface between them. The asynchronous sample rate converter shall have a bypass option with the facility to lock the network clock domain to the AES50 clock domain.

The AES50 clock domain shall support selection of clock source from either internal (on-board clock oscillator) or external (incoming clock via AES50 ports) synchronisation, word clock input, or video black burst input which shall support incoming video synchronisation signals in PAL/SECAM/NTSC formats in standard definition (SD) and 720P, 1080P and 1080i high definition (HD) formats.

The AES50 clock domain shall support operation at either 96 kHz or 48 kHz sample rates, either on a global basis if the clock reference is sourced from the on-board oscillator, or on an individual port basis if the clock reference is sourced via the AES50 digital audio network.

The network clock domain shall support clock synchronisation to incoming clock via third party network module, word clock input or video black burst Input which shall support incoming video synchronisation signals in PAL/SECAM/NTSC formats in standard definition (SD) and 720P, 1080P and 1080i high definition (HD) formats, as well as optionally slaving to the AES50 clock domain if the asynchronous sample rate converter is bypassed. The network clock domain shall support operation at either 96 kHz or 48 kHz sample rates.

The word clock output shall be capable of being derived from the AES50 clock domain, the network clock domain or the word clock input.

The network bridge shall have a precision clock reference provided by a temperature-controlled crystal oscillator (TCXO) with 1 part-per-million (1 ppm) stability.

The network bridge shall have user-selectable functions for both the AES50 and network clock domains to stop an output clock if the corresponding input clock fails, to propagate network failures across the asynchronous sample rate converter for the purposes of automatic or manual redundancy switchover.

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The network bridge shall be housed in a standard 1U 19" rackmount chassis, and shall be 483 mm wide x 411 mm deep x 44 mm high (19.0" x 16.2" x 1.7"), with nominal weight 5.1 kg (11.2 lbs). The network bridge shall be installed in a rack frame or road case capable of safely supporting its weight. Input, output, and power connections shall be made at the rear panel of the network bridge. Installers shall allow adequate space at the rear for connection and disconnection of input, output, and power connections. The power requirements shall be 100 to 240 VAC, 50 to 60 Hz.

The network bridge shall be the KLARK TEKNIK DN9650 and no other alternative shall be acceptable.x 1.7"), with nominal weight 5.1 kg (11.2 lbs). The network bridge shall be installed in a rack frame or road case capable of safely supporting its weight. Input, output, and power connections shall be made at the rear panel of the network bridge. Installers shall allow adequate space at the rear for connection and disconnection of input, output, and power connections. The power requirements shall be 100 to 240 VAC, 50 to 60 Hz.

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