

Data Sheet

N50 12G-SDI Bi-Directional Converter

N50-2.40



Product Description

The Kiloview N50 is a next-generation, professional-grade bi-directional converter (I/O) powered by world-leading FPGA technology and advanced AVC/HEVC/NDI algorithms. It is designed to provide broadcast-quality, ultra-low latency IP video conversion for high-end broadcasting and medical imaging.

The N50 supports high-performance conversion between 12G-SDI and NDI at resolutions up to 4K UHD (4096x2160@60Hz). Users can flexibly switch between Encoding Mode (12G-SDI to NDI) and Decoding Mode (NDI to 12G-SDI) based on their specific workflow requirements.

To meet the rigorous demands of professional broadcasting and medical imaging, the N50 supports YCbCr 4:2:2 color space and up to 10-bit color depth in both AVC (H.264) and HEVC (H.265) formats. It remains fully backward compatible with standard 8-bit YCbCr 4:2:0 formats, ensuring high-fidelity color reproduction and image integrity across all applications.

The device features dual Gigabit Ethernet ports, with one port supporting PoE (IEEE 802.3at) for simplified cabling. It is equipped with dedicated 12G-SDI input and output interfaces.

In Encoding Mode: The 12G-SDI output serves as a loop-through for the input signal.

In Decoding Mode: The decoded NDI video is output through the 12G-SDI port.

The integrated USB port supports USB audio expansion (e.g. USB headsets). This enables point-to-point voice communication between Kiloview devices or integration with the Kiloview Intercom System (KIS) for multi-party group talkback.

With the USB expansion port, users can record encoded NDI video directly to USB storage (U-disk). Additionally, the N50 supports NAS (Network Attached Storage) recording, providing a flexible, reliable, and convenient solution for high-capacity storage and multi-device file sharing.

The N50 introduces a built-in color LCD screen and a control scroll wheel on the front panel. Users can easily monitor device status, access configuration parameters, and perform quick actions such as starting/stopping recordings or configuring IP addresses. The LCD also functions as a large, high-visibility Tally display.

The N50 features a refined, compact aesthetic with an excellent thermal design. Its carefully engineered structure ensures reliability and ease of use across various professional environments.

By combining the advantages of NDI IP interconnectivity with a robust product ecosystem, the Kiloview N50 12G-SDI to NDI Converter provides a high-quality, future-proof solution for ultra-high-definition video workflows in broadcasting, medical imaging, and beyond.

Product Features

1. Decoding & Encoding Performance

- Supports 12G-SDI to NDI and vice versa, with resolutions up to 4K UHD

(4096x2160@60Hz).

- Compatible with NDI HB, NDI HX2, NDI HX3, SRT, RTSP, RTMP, HLS, UDP, and RTP.
- Supports SpeedHQ, AVC (H.264), and HEVC (H.265).
- Supports YCbCr 4:2:2 color space and 10-bit color depth for broadcast-quality

imagery.

2. Interfaces & Expansion

- Supports loop-out monitoring during encoding or direct SDI output during decoding.-

USB

- Dual Gigabit Ethernet: Features 2×RJ45 ports; includes PoE (IEEE 802.3at) support.
- Supports 12V-18V DC input or PoE power.
- USB port supports PTZ camera control via Visca, Visca over IP, and Pelco protocols

(custom PTZ cables available).

- USB audio expansion supports group talkback via the Kiloview Intercom System (KIS).

3. Recording Capabilities

- Dual-Storage Recording: Supports direct NDI video recording to USB storage or NAS

(Network Attached Storage).

4. Synchronization & Latency

- Achieves frame-level and audio-video synchronization through precision clocking and intelligent algorithms.
- ultra-low 80ms end-to-end latency.

5. User Interface & Industrial Design

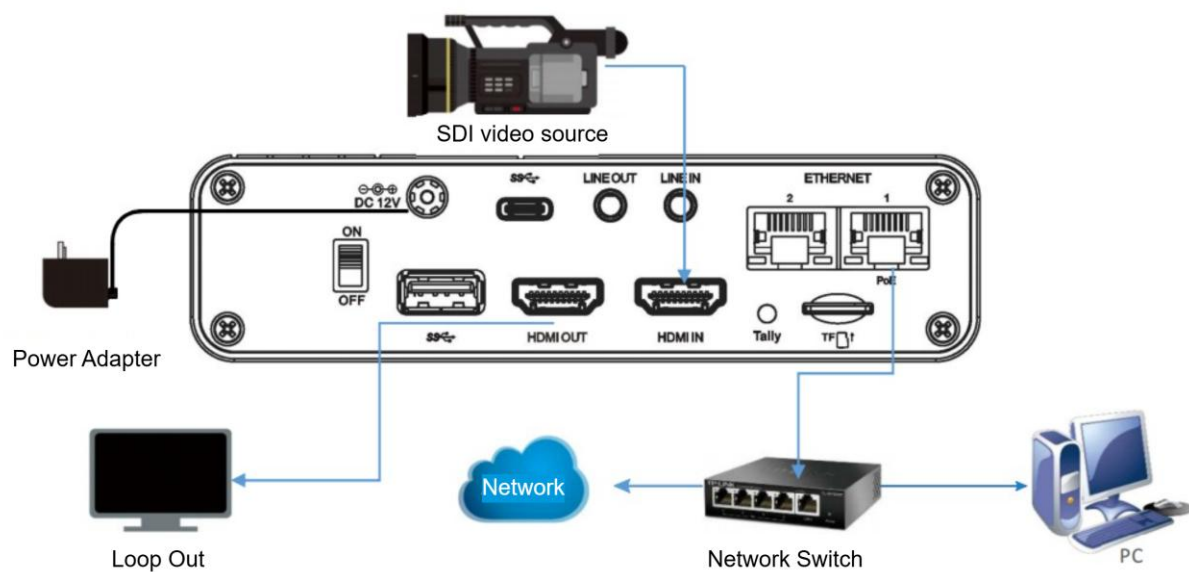
- Equipped with a color LCD screen and scroll wheel for real-time status monitoring and quick configuration.

- Features a large, high-visibility built-in Tally display.
- Compact design with superior thermal management.
- Includes a standard cold-shoe mount for camera installation.

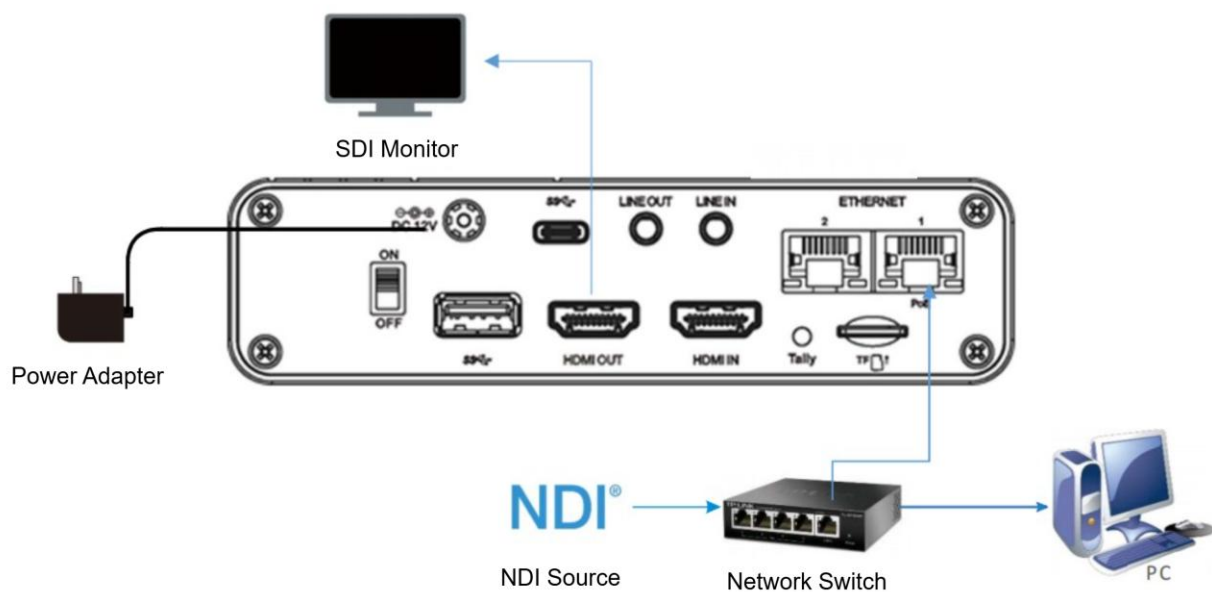
6. Power & Ecosystem Integration

- Fully compatible with Kiloview Multiview Server, Recorder System, KiloLink Server, and NDI CORE.

Product Application



Application for Encoding Mode



Application for Decoding Mode

Product Specifications

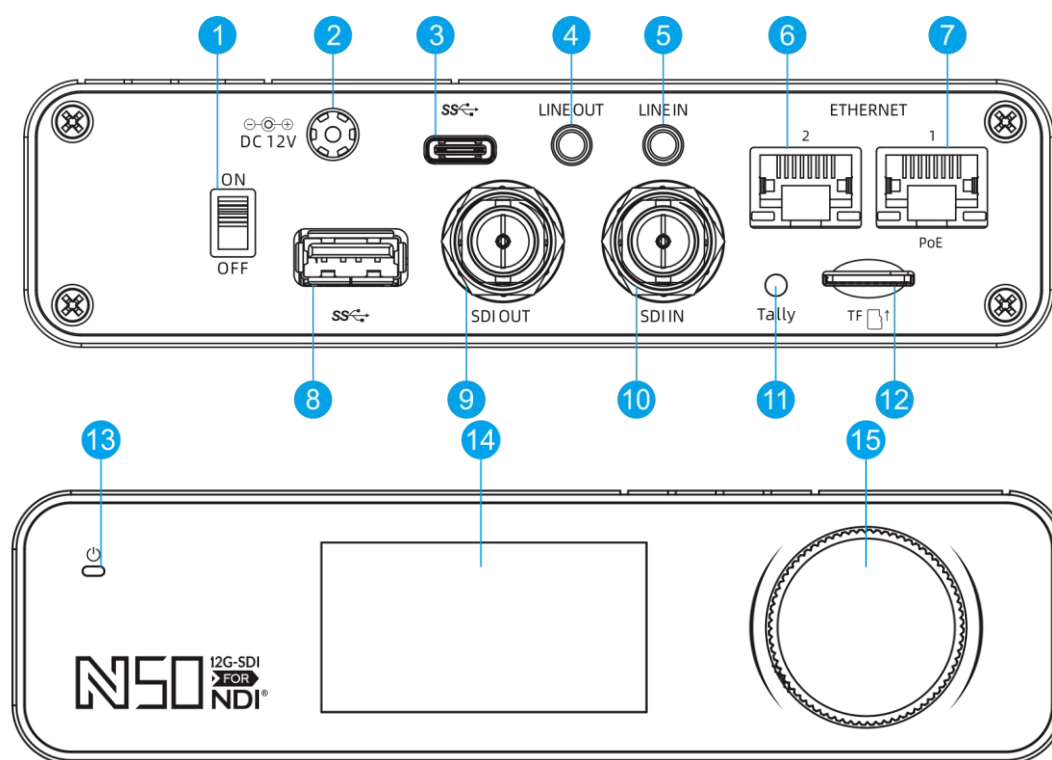
Model	N50
Functions and Performance	
Input and Output Capabilities	- Maximum supported input and output up to 4096x2160 at 60fps Supported formats include: 4096x2160p 50/30/29.97/25/24/23.98fps 3840x2160p 60/59.94/50/30/29.97/25/24/23.98fps 1920x1080p 60/59.94/50/30/29.97/25/24/23.98fps 1920x1080i 60/59.94/50fps 1280x720p 60/59.94/50/30/29.97/25fps - Supports BT.601 BT.709 BT.2020 color spaces
Encoding Capabilities	- Supports streaming protocols including NDI High Bandwidth/NDI HX2/NDI HX3/SRT/RTMP/RTSP/HLS/UDP/RTP - Maximum encoding up to 4K60 4:2:2 10-bit - Output resolution follows input signal. Typical outputs include: 4096x2160p 50/30/29.97/25/24/23.98fps 3840x2160p 60/59.94/50/30/29.97/25/24/23.98fps 1920x1080p 60/59.94/50/30/29.97/25/24/23.98fps 1920x1080i 60/59.94/50fps 1280x720p 60/59.94/50/30/29.97/25fps - Interlaced input with interlaced encoding supported for: - NDI High Bandwidth - HEVC(NDI HX2/NDI HX3/SRT/RTSP/HLS/UDP/RTP) - Selectable color depth: 8-bit/10-bit - Selectable color formats: YCbCr 4:2:2/YCbCr 4:2:0 - Supports up to 6-channel audio encoding
Decoding Capabilities	- Supports streaming protocols including NDI High Bandwidth NDI HX2 NDI HX3/SRT/RTMP - Maximum decoding up to 4K60 4:2:2 10-bit - Output resolution follows input signal. Typical outputs include: 4096x2160p 3840x2160p 1920x1080p 1280x720p - Output frame rate follows input signal - Supports up to 8-channel audio decoding
Video Codec	SpeedHQ (NDI CODEC): SHQ0, SHQ2 ISO MPEG-4 Part 10: Advanced Video Coding (AVC)/ITU H.264

	■ AVC (H.264): Baseline, Main, High, High10, High 4:2:2 up to 5.2 level 3. ISO MPEG-H Part 2: High Efficiency Video Coding (HEVC)/ITU H.265 ■ HEVC (H.265): Main, Main Intra, Main10, Main10 Intra, Main 4:2:2 10, Main 4:2:2 10 Intra up to 5.1 High Tier
Audio Codec	NDI Audio(PCM); AAC-LC; Other codecs supported via software extension
Typical Encoding Bitrate	1. SpeedHQ (NDI CODEC): (1) 2160p60: 250Mbps (2) 1080p60: 132Mbps (3) 1080p30/1080i60: 112Mbps (4) 720p60: 105Mbps (5) 480i60: 62.5Mbps 2. NDI HX3(H.264): (1) 2160p60:110Mbps (2) 1080p60:62Mbps 3. NDI HX3(HEVC): (1) 2160p60:84Mbps (2) 1080p60:50Mbps 4. AVC(H.264): (1) Adjustable from 1Mbps to 200Mbps (2) Recommended 24Mbps or higher for 4K60 and 10Mbps or higher for 1080p60. 5. HEVC(H.265): (1) Adjustable from 1Mbps to 200Mbps (2) Recommended 15Mbps or higher for 4K60 and 6Mbps or higher for 1080p60
HDR	Recommended 15Mbps or higher for 4K60 and 6Mbps or higher for 1080p60
NDI Features	1. Based on NDI 6.2 SDK (V2.40 and above) with continuous updates 2. Supports NDI Bridge (version 2.03 and above)
Recording Features	1. Supports local recording and NAS recording 2. Recording formats MP4 and MOV 3. Supported USB storage formats FAT32 NTFS exFAT 4. Supported network storage formats NFS CIFS 5. Recording file segmentation modes: (1) Unlimited size

	(2) Split by duration (3) Split by file size 6. Supports custom recording file size
语音通话	Group intercom supported with Kiloview Intercom System KIS Requires external USB headset
PTZ 控制	1. PTZ control via USB serial extension RS232 RS485 2. IP-based PTZ control supported including Sony VISCA Pelco-D Pelco-P
管理方式	1. WebUI configuration interface 2. Centralized remote management via Kiloview KiloLink Server Pro 3. Front panel display shows real-time device and codec status 4. Supports HTTP APIs
General Specifications	
Video Input	1x 12G-SDI (SMPTE ST 2082), compatible with 3G-SDI(SMPTE 424M)/HD-SDI(SMPTE 292M) ● SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 424M, SMPTE 425M ● SMPTE 2081-1, SMPTE 2081-10, SMPTE 2082-1 and SMPTE 2082-10
Video Output	1x 12G-SDI (SMPTE ST 2082), compatible with 3G-SDI(SMPTE 424M)/HD-SDI(SMPTE 292M) ● SMPTE 292M, SMPTE 296M, SMPTE 372M, SMPTE 424M, SMPTE 425M ● SMPTE 2081-1, SMPTE 2081-10, SMPTE 2082-1 and SMPTE 2082-10
Audio Input	● 12G-SDI: 6-ch ● 3.5mm Audio: 2-ch
Audio Output	● 12G-SDI: 8-ch ● 3.5mm Audio: 2-ch
Network	2x 1000Mbps Ethernet ports (100M/1000M auto negotiation) Ethernet 1 supports PoE IEEE 802.3AT up to 24W
USB	1x USB 3.0 Type-A 1x USB 3.0 Type-C
TF Card Slot	1x TF MicroSD slot compliant with SDXC SD 3.0 Maximum speed 104MB per second Maximum capacity 2TB
Tally	1. Front panel LCD Tally indication 2. Rear panel Tally LED indicator 3. Supports external Tally light

Front Panel Display & Control	1.91 inch LCD screen with rotor
Power	12V to 18V DC input or PoE power supply
Consumption	<= 16W
Working Temperature	-20°C ~ 45°C / -4°F ~ 113°F
Storage Temperature	-20°C ~ 70°C / -4°F ~ 158°F
Accessories	1. Power adapter 2. Cold shoe
Dimensions	135mm*105.5mm*35mm
Weight	520g

Product Overview



1	Power Switch	2	Power Interface (DC Input)
3	Type-C Expansion Port	4	Line Out (Audio Output)
5	Line In (Audio Input)	6	1000M Ethernet Port
7	1000M Ethernet Port - PoE	8	USB Expansion Port
9	SDI OUT	10	SDI IN

11	Tally Status Light	12	Micro SD/TF Card Slot
13	Power Indicator	14	LCD Display
15	Scroll Wheel		