Motion Compensated Converter
MCC-4K-A

InSync technology

FOR.A ®

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The MCC-4K-A is a universal standards converter providing exceptional quality frame rate and format conversion for UHD/3G/HD signals. MCC-4K-A offers support for Quad Link 3G-SDI of two-Sample Interleaved (2SI) or Square Division (SQD) format as well as Single Link 12G/6G-SDI and SFP connectivity.

UHD conversions

Motion compensated conversion from any UHD frame rate to any other UHD frame rate (4K ↔ 4K), with 4 UHD Single Link 12G/6G outputs or a UHD Quad Link 3G-SDI output, plus automatic detection of SMPTE ST425-5 (sample interleave input) and ITU-R BT.2020 colorimetry.

HD conversions

Motion compensated conversion from any 3G/HD-SDI frame rate to any other 3G/HD-SDI frame rate, as well as up-conversion from 3G/HD to UHD and down-conversion UHD to 3G/HD.

Applications

Live UHD frame rate conversion

MCC-4K-A is ideal for live frame rate conversion applications, where UHD content sourced at a chosen production frame rate needs to be converted to other frame rates for international contribution and distribution. International sports, concerts, breaking news and current affairs can all be simply and impeccably converted to the desired output format and frame rate.

Source 4K UHD 50p   Output 4K UHD 59.94p

HD/3G to UHD up-conversion

MCC-4K-A is perfect for integrating HD and 3G content into UHD programming. Benefiting from proprietary aperture control for up-conversion with enhancement features, MCC-4K-A transforms 3G/HD content into superb UHD output, offering 4 UHD Single Link 12G/6G outputs or a UHD Quad Link 3G-SDI output.

Source HD 50i

Output UHD 59.94p

UHD to HD/3G down-conversion

Simultaneous transmissions in UHD and HD are easy with MCC-4K-A. Simply configure UHD as input and choose the required HD standard output. ITU-R BT.2020 to ITU-R BT.709 conversion is available if required, as well as process amplifier and RGB color corrector.

Source UHD 59.94p

Output HD 50i

HD to HD frame rate conversion

MCC-4K-A also operates as an 3G/HD motion compensated standards converter, allowing its rapid redeployment for all conversion applications. Availability of loop-through reference input with genlock phase control, and timecode conversions make the MCC-4K-A ideal for demanding live production environments.

Source HD 50i

Output HD 59.94i

Workflow support

With both 12G/6G-SDI and SFP connectivity, as well as Quad Link 3G-SDI, MCC-4K-A can be used in a wide range of production and transmission environments, integrating simply into your workflow.
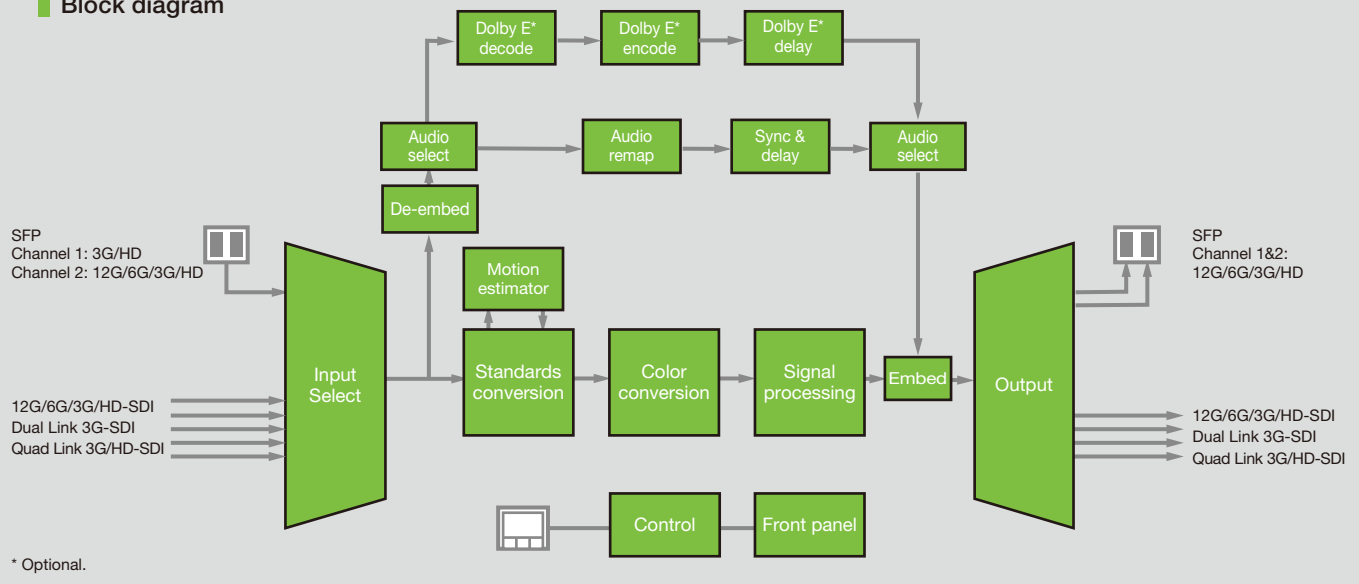
MCC-4K-A supports 16 channels of embedded PCM audio with a delay matched to the video delay, and straightforward tools enable audio channel remapping, synchronization and delay.

Control is available via an intuitive front panel, with video screen for confidence monitoring, with individual quadrants for square division output. Remote control is also offered via a clearly laid-out browser interface.

Key features

- Superb quality motion compensated format and frame rate conversion for all HD, 3G and UHD signals.

- Suitable for any sport events.

- All frame rates from 23.98 to 60p supported, including interlaced and PsF formats.

- Automatic input detection of SMPTE ST425-5 (sample interleave input) and ITU-R BT.2020 colorimetry.

- Selectable 2SI or SQD output.

- 16 channels of embedded PCM audio with a delay matched to the video delay.

- Confidence display on front panel (individual quadrants for square division output).

- Closed caption and Timecode passing.

- Dolby E decode/transcode option.

Block diagram

* Optional.

Specifications

Video format	12G: 2160/60p, 2160/59.94p, 2160/50p 6G: 2160/30p, 2160/29.97p, 2160/25p, 2160/24p, 2160/23.98p 3G: 1080/60p, 1080/59.94p, 1080/50p (Level-A/B, 2SI/SQD) HD: 1080/60i, 1080/59.94i, 1080/50i, 720/60p, 720/59.94p, 720/50p, 1080/30p, 1080/29.97p, 1080/25p, 1080/24p, 1080/23.98p, 720/30p, 720/29.97p, 720/25p, 720/24p, 720/23.98p, 1080/30PsF, 1080/29.97PsF, 1080/25PsF, 1080/24PsF, 1080/23.98PsF
Video input	
SDI	12G/6G/3G/HD: BNC x 5 Dual Link 3G 2SI: BNCs 1-2 Quad Link 3G*/HD: BNCs 1-4
SFP	Channel 1: 3G/HD, channel 2: 12G/6G/3G/HD
Video output	
SDI	12G/6G/3G/HD/Quad Link 3G*/HD: BNC x 4 Dual Link 3G 2SI: BNCs 1-2
SFP	Channel 1 & 2: 12G/6G/3G/HD
Audio	Passes 16 channels of PCM embedded audio. (Link 1) - Audio channel remapping - Audio delay tracks video delay
Genlock input	BB: Bi-level or Tri-level sync: 0.3 Vp-p, 75Ω, BNC x 2, loop-through (to be terminated with 75Ω terminator, if unused) - Lock to external reference with adjustable H/V offset
Colorimetry output	BT.2020 / BT.709 conversion - BT.2087 process with selectable gamma (2.0/2.4) Color legalization

Conversion modes	- Up/down/cross-conversion and synchronization
	- Any valid input to any supported 12G/6G/3G/HD output format
	- Motion compensated conversion
	  · Linear frame rate conversions for the following input/output frame rates: 59i/p / 60i/p , 29p / 30p and 23 PsF/p / 24 PsF/p
	  · Motion compensated frame rate conversion in all other modes
	- HDR conversions: PQ, HLG, S-Log3
	- HDR / SDR conversion

Processing features	Video level control (Y gain, Black level, Chroma gain) RGB color corrector (RGB Gain and Lift) Aperture control and enhancement features
Control	Front panel with short-cut keys Video confidence monitor Built-in Web control
Interface	Ethernet: 10/1000 BASE-TX, RJ-45 x 1
Temperature / humidity	0°C to 40°C / 30% to 90% (no condensation)
Power / consumption	100 V AC to 240 V AC / 70 W
Dimensions / weight	431 (W) x 88 (H) x 370 (D) mm / Approx. 6 kg

* Level-A/B 2SI/SQD support

FOR-A COMPANY LIMITED   www.for-a.com

Head Office:
3-8-1 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
Tel: +81 (0)3-3446-3936

FOR-A Corporation of America
Corporate Office/Service Center:
11155 Knott Ave., Suite G, H & I, Cypress, CA 90630, U.S.A.
Tel: +1 714-894-3311

FOR-A Corporation of America Northeast Office:
Tel: +1 973-220-8471

FOR-A Corporation of America Southeast Office:
Tel: +1 305-773-7608

FOR-A Corporation of America Support Center:
2400 N.E. Waldo Road, Gainesville, FL 32609, U.S.A.
Tel: +1 352-262-5779

FOR-A Latin America and the Caribbean Miami Office:
Tel: +1 657-600-5759

FOR-A Latin America and the Caribbean Sao Paulo Office:
Tel: +55 11-99913-3751

FOR-A Latin America and the Caribbean Mexico City Office:
Tel: +52-55-5072-4969

FOR-A Europe S.r.l.:
Via Volturno, 37, 20861 Brugherio MB, Italy
Tel: +39 (0)39-916-4811

FOR-A UK Limited:
Trident Court, 1 Oakcroft Road, Chessington, KT9 1BD, UK
Tel: +44 (0)20-3044-2935

FOR-A Italia S.r.l.:
Via Volturno, 37, 20861, Brugherio MB, Italy
Tel: +39 (0)39-881-086

FOR-A Corporation of Korea:
1007, 57-5, Yangsan-ro, Yeongdeungpo-gu, Seoul 07271, Korea
Tel: +82 (0)2-2637-0761

FOR-A China Limited:
1618A Huateng Building, No. 302, 3 District, Jinsong, Chaoyang, Beijing 100021, China
Tel: +86 (0)10-8721-6023

FOR-A Middle East-Africa Office:
DSC Tower, Office 207, Dubai Studio City,
P.O. Box 502688, Dubai, UAE
Tel: +971 (0)4-551-5830

FOR-A India Private Limited Corporate Office:
Unit No: 800, World Trade Tower, Sector-16, Noida-201301, Uttar Pradesh, India
Tel: +91-120-4238674 / +91-120-4252330

FOR-A India Private Limited Mumbai Office:
202-203, Wellington Business Park No-01, Marol, Off, Andheri Kurla Road, Andheri East, Mumbai-400059, Maharashtra, India
Tel: +91 22-49795570

FOR-A South East Asia Hong Kong Office:
Studio 09, Rm. A1, 3/F., Phase 1, Hang Fung Ind. Bldg., 2G Hok Yuen St., Hung Hom, Hong Kong
Tel: +852-2110-9227

FOR-A South East Asia Singapore Office:
Tel: +65-8686-8086