

USFR08



# UHD 4K MODULAR SYSTEM

'Experience the New Vision'



# UHD 4K 12G/3G/HD-SDI Modular

K2E Modular system provide UHD 4K system by using current SD/HD SDI facility with single cable and without any complex conversion.

K2E Modular system use 12G-SDI single link based on SMPTE 2082-10. It compensates difficulties of using 4K facility with 3Gx4(quad/2SI) complex hardware installation, the problem of latency, large scale of investment cost, and difficulty of live broadcasting to provide 4K system without difficulties.

K2E Modular System provide multiple and efficient cards. Cards are designed with best technology with variety functions that cannot be compared with other solution.

It is designed with convenience by changing back panel it can be modified as customers needs.

It demonstrates real worth in OB VAN, Studio and Live broadcasting.

It can be installed in variety of places and environment as needs of customer's.

## USFR08 / USFR18



Multi Frame 08



Multi Frame 18



USFR18		USFR08	
<b>Maximum slots</b>	18 Slots	<b>Maximum slots</b>	8 Slots
<b>Reference</b>	2ch & Loop 2ch SMPTE274M, SMPTE296M ITU624-4/SMPTE318	<b>Reference</b>	2ch & Loop 2ch SMPTE274M, SMPTE296M ITU624-4/SMPTE318
<b>Ethernet Control</b>	10/100 base-T SNMP Control	<b>Ethernet Control</b>	10/100 base-T SNMP Control
<b>Dimension</b>	170(H) x 440(W) x 495(D)mm	<b>Dimension</b>	85(H) x 440(W) x 495(D)mm
<b>Power</b>	250 Watts	<b>Power</b>	200 Watts

### Feature & Function

● USFR Series are Multi-Module Frame. The card is designed to hold and control up to 8 or 18 modules. Module items are total 8types as follows

Smart Module (UV-8)

Distribution Amplifier (KUDR08)

Optical Fiber Bi-directional (KUOF20)

Gear-Box Multiplex & De-Multiplex (KUGM404)

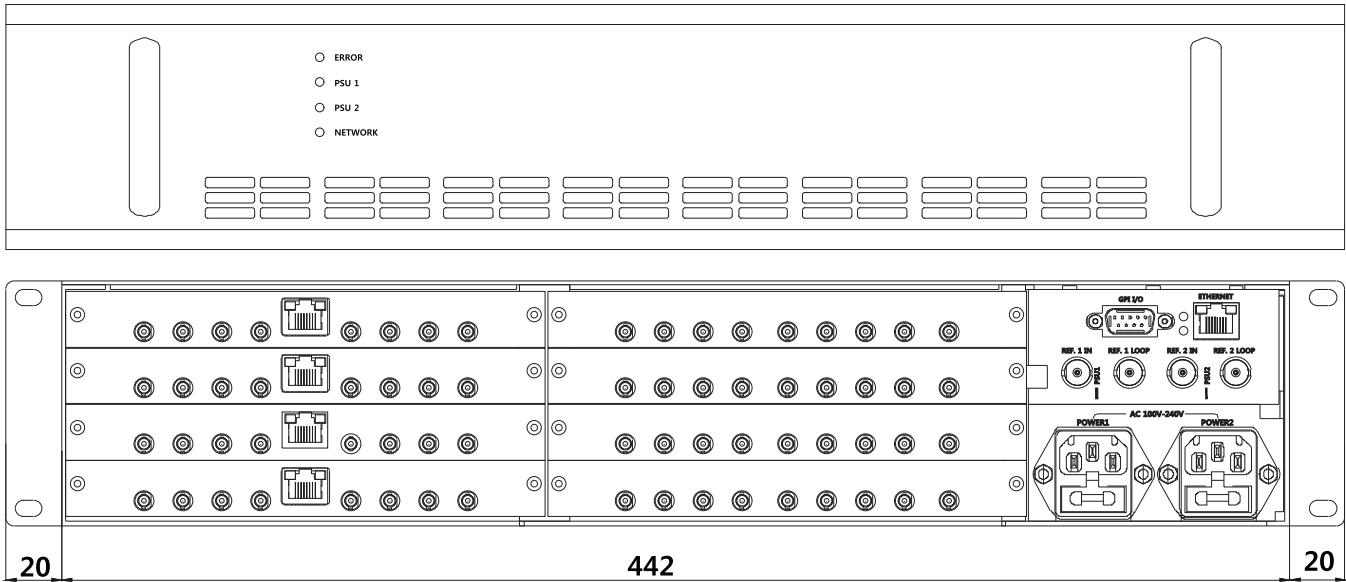
Format Conversion Up & Down (KUDU10)

Audio Embed & De-Embed (KUED10)

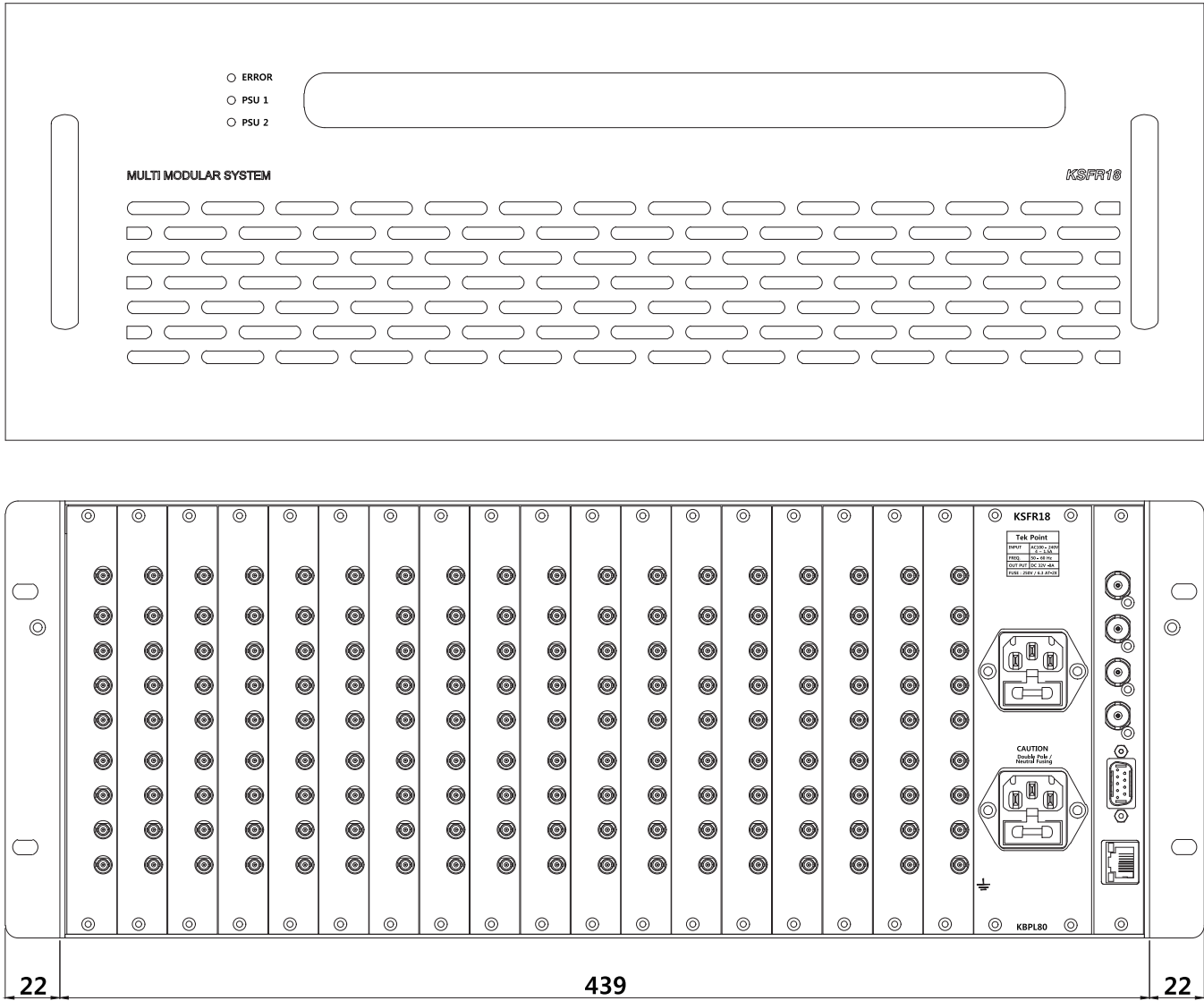
UHD Auto Change-over (KUACO20)

UHD Logo & Keyer (KULK20)

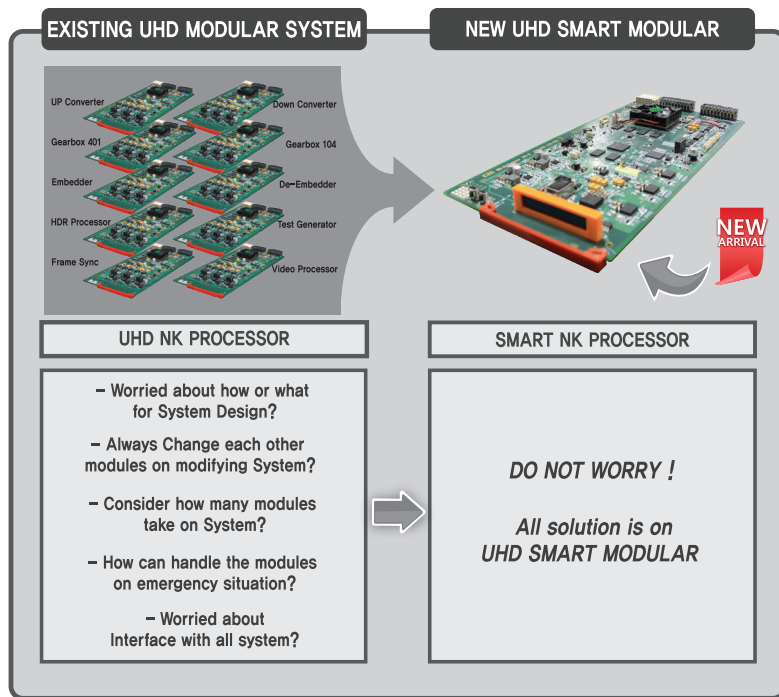
USFR08



USFR18

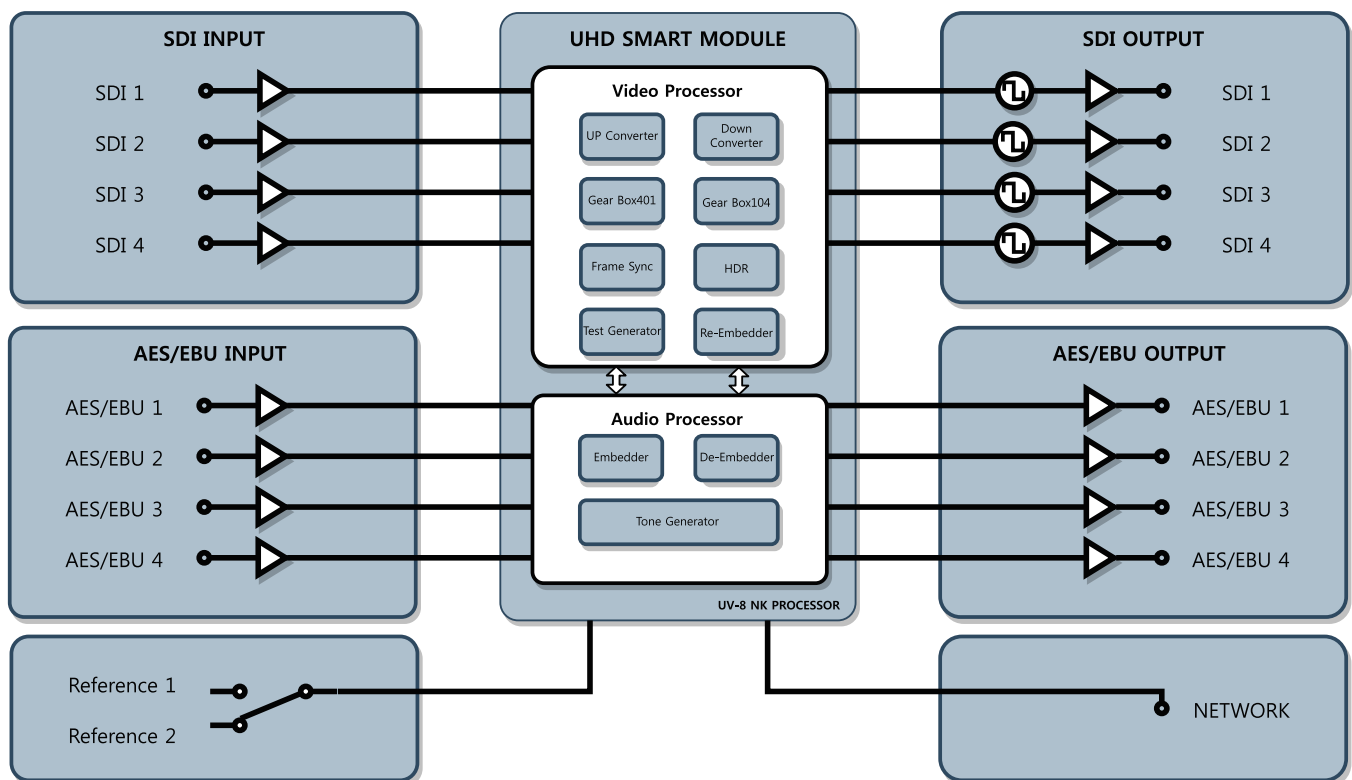


## UV-8 SMART MODULE



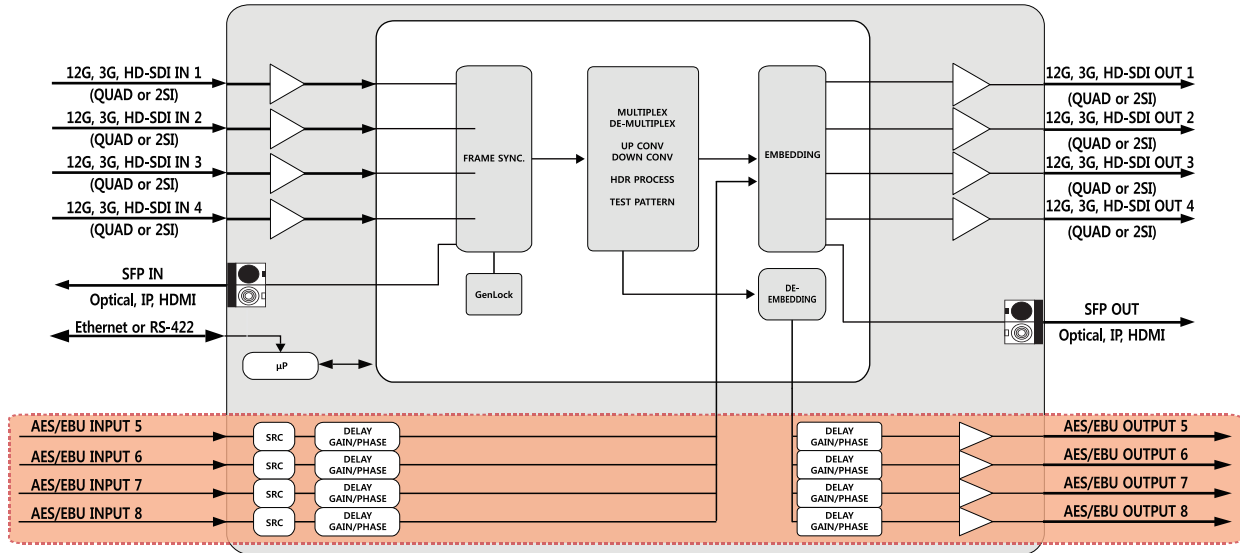
- UV8 is all in one product that makes various functions into one module. It is designed to handle complicated system construction such as module quantity by type, function of main and spare module, and action in case of emergency during operation of system.
- Display functions and make changes and modifications convenient. UV8 Smart NK Processor includes Video Processor & Audio Processor

## Signal Flow Diagram

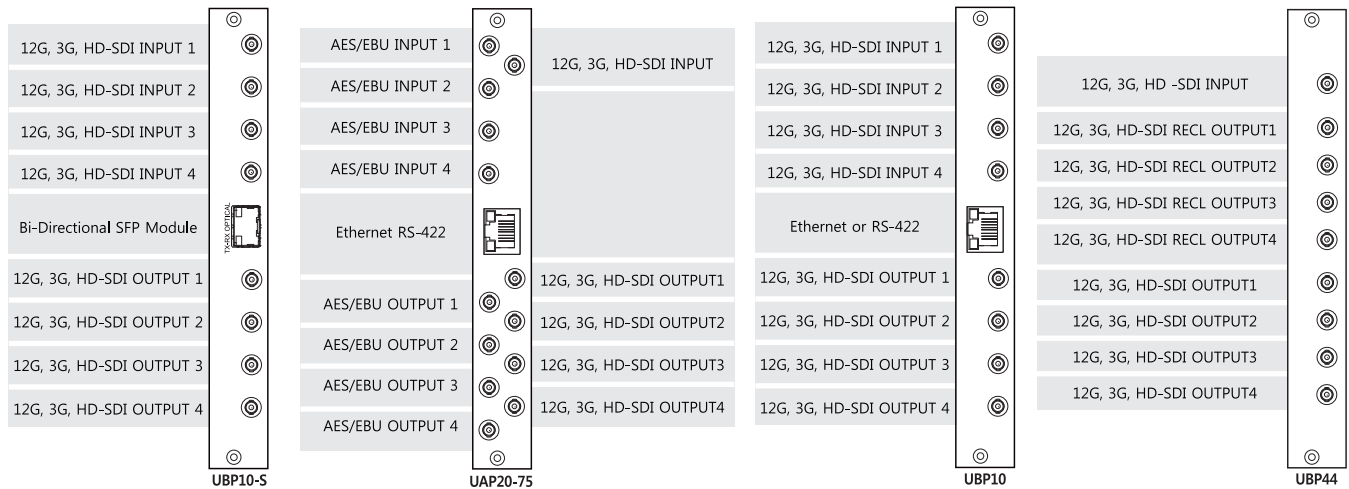


- 12G-SDI Smart NK Processor Signal Flow Diagram represent which processor is activated now.
- Video Processor includes Up Converter, Down Converter, Gear Box 401, Gear Box 104, Frame Sync, HDR, Test Generator and Re-Embedder.
- Audio Processor includes Embedder, De-Embedder and Tone Generator.

# UV-8 SMART MODULE

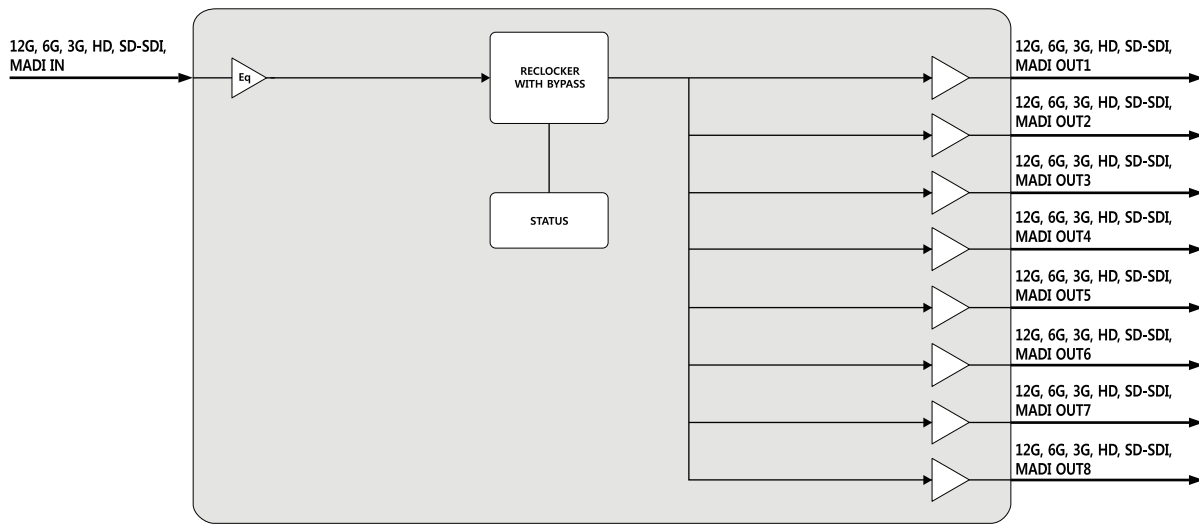


## Back Panel



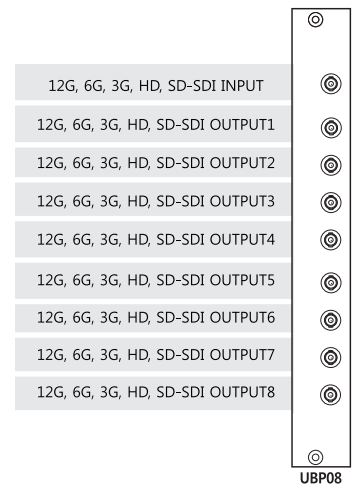
SPECIFICATION			
<b>Input</b>	12G/3G/HD-SDI, SFP, AES/EBU	<b>AES/EBU</b>	75Ohm 4ch
<b>Output</b>			
<b>Wideband Jitter</b>	< 0.3UI	<b>Signal Level</b>	800mV nominal
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	<b>Standard</b>	SMPTE 259M, SMPTE 344M, SMPTE 292M, SMPTE 372M, SMPTE 424M, SMPTE ST-2082
<b>Wavelength (E/O)</b>	Tx-1270nm, Rx-1330nm	<b>Wavelength (O/E)</b>	Tx-1330nm, Rx-1270nm
<b>Data Communication</b>	Ethernet or RS-422	<b>Data Format</b>	9600 ~ 15200 baud rate
<b>Ethernet</b>	10/100 base-T	<b>Connector</b>	RJ-45, HD-BNC, LS, LC
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Weight</b>	250g
<b>Power</b>	+24V to +30V	<b>Consumption</b>	12 Watts

# KUDR08 Distribution Amplifier with Re-Clockd Output



## Feature & Function

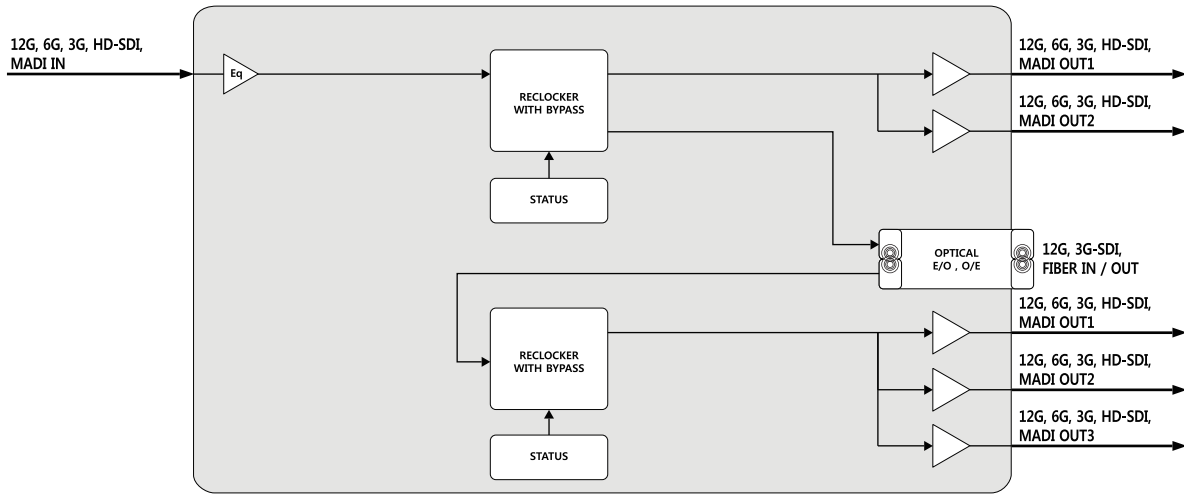
- Compatible with:
  - 270 Mb/s
  - 1.485 Gb/s
  - 2.970 Gb/s
  - 5.94 Gb/s
  - 11.88 Gb/s
- Two Sample Interleave(2SI) for 12G-SDI
- Bypass function of the reclocker for non-standard frequencies



SPECIFICATION			
Input	12G/3G/HD-SDI INPUT 1CH	Output	12G/3G/HD-SDI OUTPUT 8CH
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	<b>Standard</b>	SMPTE 259M, SMPTE 344M, SMPTE 292M, SMPTE 372M, SMPTE 424M, SMPTE ST-2081, SMPTE ST-2082
<b>Signal Level</b>	800mV nominal		
<b>Ethernet</b>	10/100 base-T	<b>Connector</b>	HD-BNC
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Weight</b>	250g
<b>Power</b>	+24V to +30V	<b>Consumption</b>	4 Watts

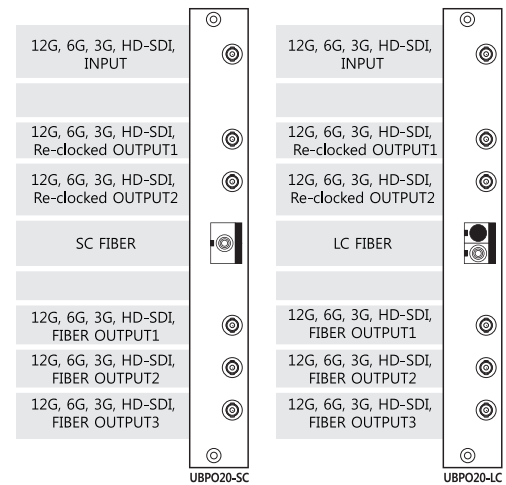


# KUOF20 12G/6G/3GHD-SDI Optical Fiber Bi-Directional (E/O and O/E)



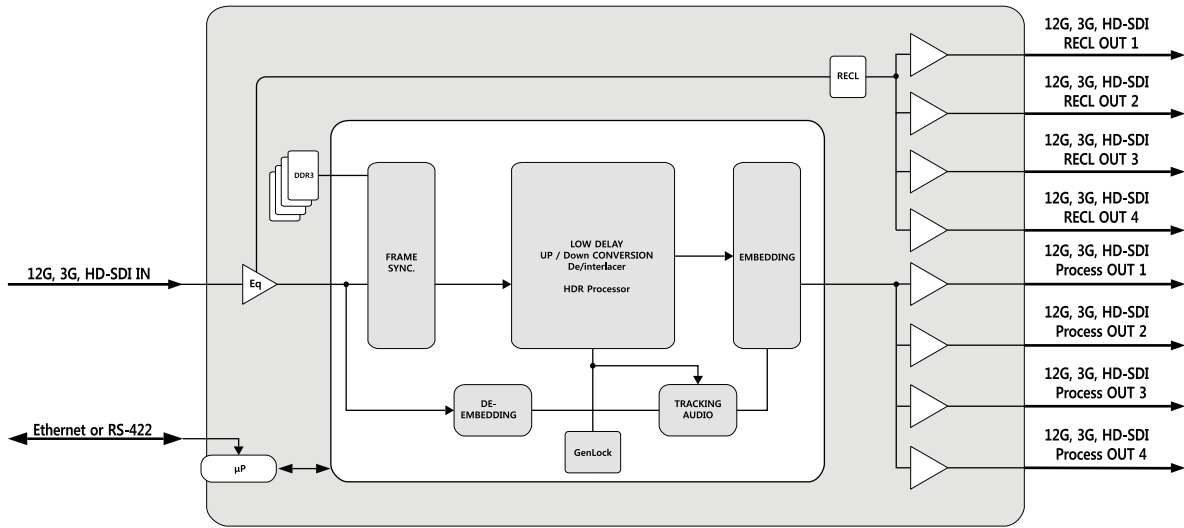
## Feature & Function

- Optical Multirate, Bi-directional transceiver for 12G-SDI application(LC or SC)
- Compatible with:
  - 270 Mb/s
  - 1.485 Gb/s
  - 2.970 Gb/s
  - 5.94 Gb/s
  - 11.88 Gb/s
- Two Sample interleave(2SI) for 12G-SDI
- 1 Fiber input, Output (hot swap SFP modules) LC connector with UPC polish
- Bypass function of the reclocker for non-standard frequencies
- Support DVB-ASI, 310M, MADI



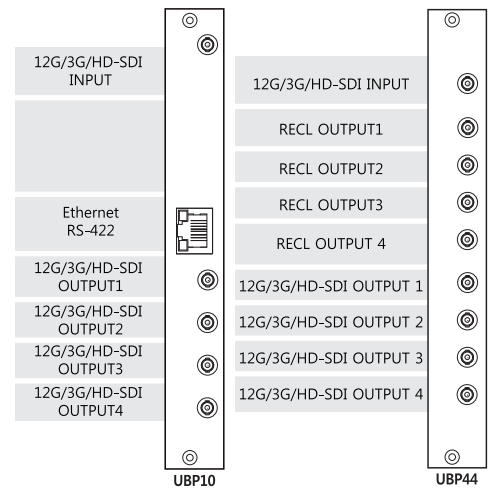
SPECIFICATION			
<b>Input</b>	1CH SDI, 1CH FIBER	<b>Signal Level</b>	800mV nominal
<b>Reclock Output</b>	2CH Re-clocked OUTPUT	<b>Fiber Output</b>	3ch Re-cocked out
<b>Optical In/Out</b>	E/O, O/E	<b>Connector</b>	HD-BNC
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	<b>Standard</b>	SMPTE 259M, SMPTE 344M, SMPTE 292M, SMPTE 372M, SMPTE 424M, SMPTE ST-2081, SMPTE ST-2082
<b>Wavelength (E/O)</b>	Tx-1270nm, Rx-1330nm	<b>Wavelength (O/E)</b>	Tx-1330nm, Rx-1270nm
<b>Ethernet</b>	10/100 base-T	<b>Connector</b>	HD-BNC, LC, SC
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Weight</b>	250g
<b>Power</b>	+24V to +30V	<b>Consumption</b>	4 Watts

# KUDU10 12G/3G/HD-SDI Up & Down Converter



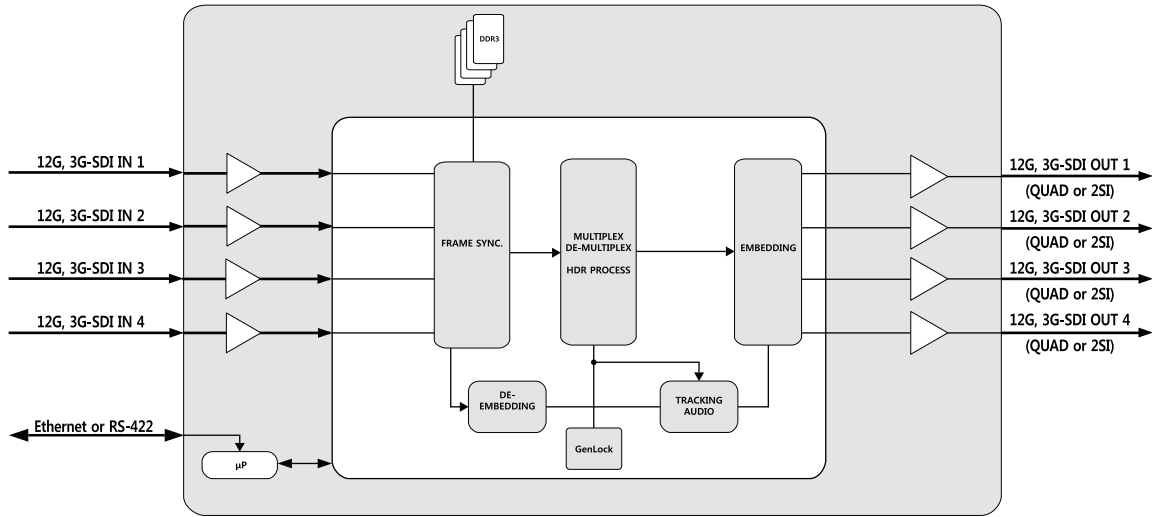
## Feature & Function

- Two Sample Interleave(2SI), Quad Split for 12G-SDI
- Down convert input ,1080i, 1080p, 2160p (50/59.94)
- Up convert input with 720p ,1080i, 1080p (50/59.94)
- 4 Reclock output, one for each quadrant
- Low delay (2line@2160p)
- Full control, status monitoring through the front panel of the frame and the Ethernet port (ACP)



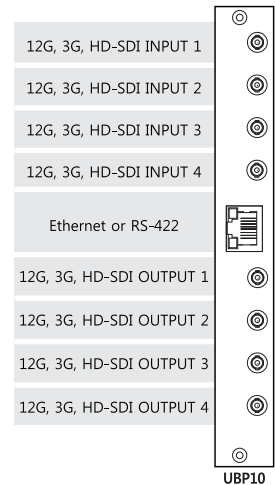
SPECIFICATION			
<b>Input</b>	12G/3G/HD-SDI INPUT 1CH	<b>Re-clocked Output</b>	4CH
<b>Output</b>	12G/3G/HD-SDI OUTPUT 4CH	<b>Signal Level</b>	800mV nominal
<b>Wideband Jitter</b>	< 0.3UI	<b>Standard</b>	SMPTE 259M, SMPTE 344M, SMPTE 292M, SMPTE 372M, SMPTE 424M, SMPTE ST-2082
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	<b>Data Format</b>	9600 ~ 15200 baud rate
<b>Data Communication</b>	Ethernet or RS-422	<b>Connector</b>	RJ-45
<b>Ethernet</b>	10/100 base-T	<b>Weight</b>	250g
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Consumption</b>	12 Watts
<b>Power</b>	+24V to +30V		

# KUGM404 12G-SDI Gear Box Multiplex & De-Multiplex



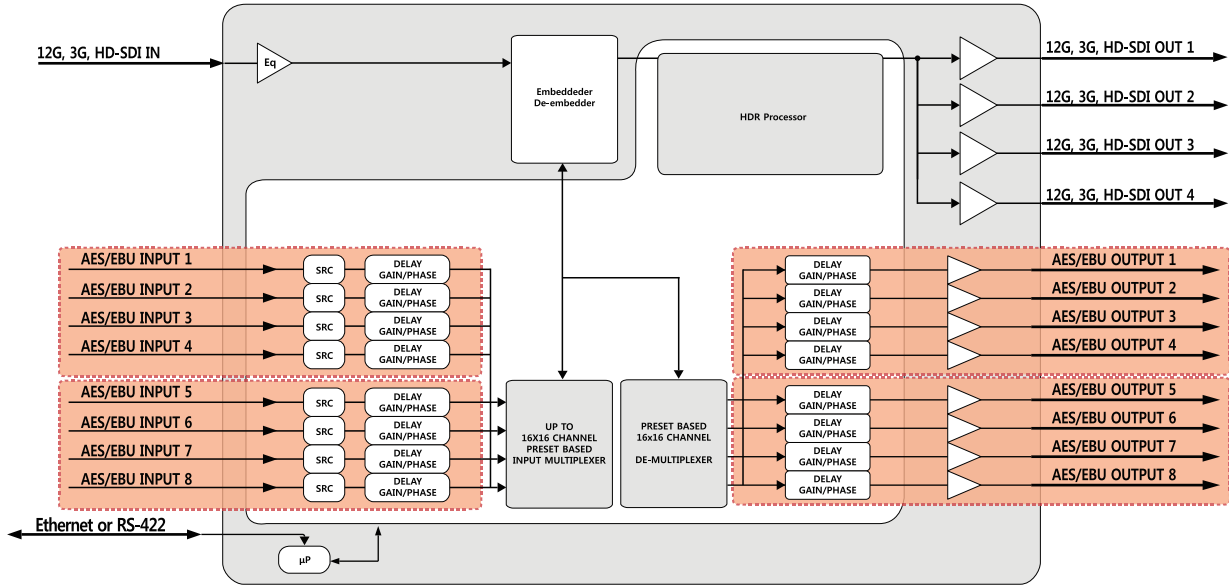
## Feature & Function

- 3G-SDI(Quad Link) input
- Compatible with 1080p59.94 or 1080p50 input
- 4x3G-SDI(Quad Split) to 12G-SDI
- 4x3G-SDI(2SI) to 12G-SDI
- 12G-SDI(Single Link) input
- Compatible with 2160p59.94 or 2160p50 input
- 12G-SDI to 4x3G-SDI(Quad Split)
- 12G-SDI to 4x3G-SDI(2SI)
- Low delay (2line@2160p)
- Full control, status monitoring through the front panel of the frame and the Ethernet port (ACP)



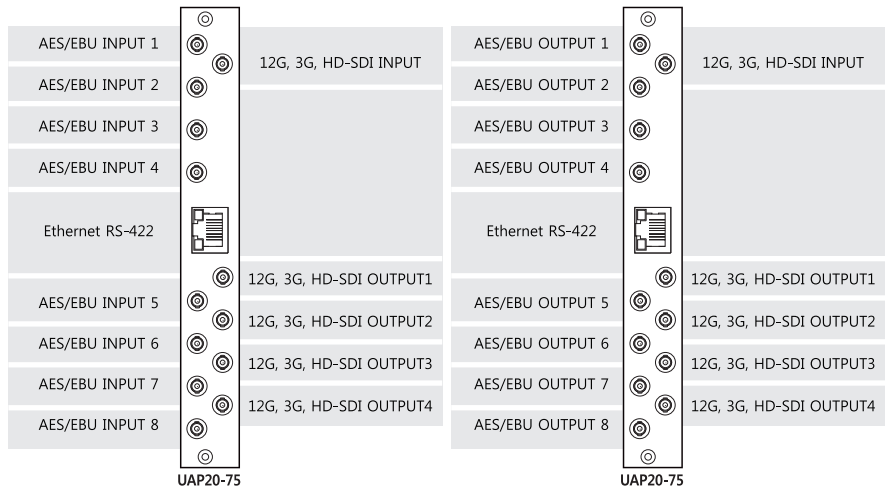
SPECIFICATION			
Input	12G/3G/HD-SDI INPUT 1CH	Output	12G/3G/HD-SDI OUTPUT 4CH
Wideband Jitter	< 0.3UI	Signal Level	800mV nominal
Equalization	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	Standard	SMPTE 259M, SMPTE 344M, SMPTE 292M, SMPTE 372M, SMPTE 424M, SMPTE ST-2082
Data Communication	Ethernet or RS-422	Data Format	9600 ~ 15200 baud rate
Ethernet	10/100 base-T	Connector	RJ-45
Dimension	20(H) x 137(W) x 296(D)mm	Weight	250g
Power	+24V to +30V	Consumption	12 Watts

# KUED10 12G/3G/HD-SDI & AES/EBU Embed & De-Embedder



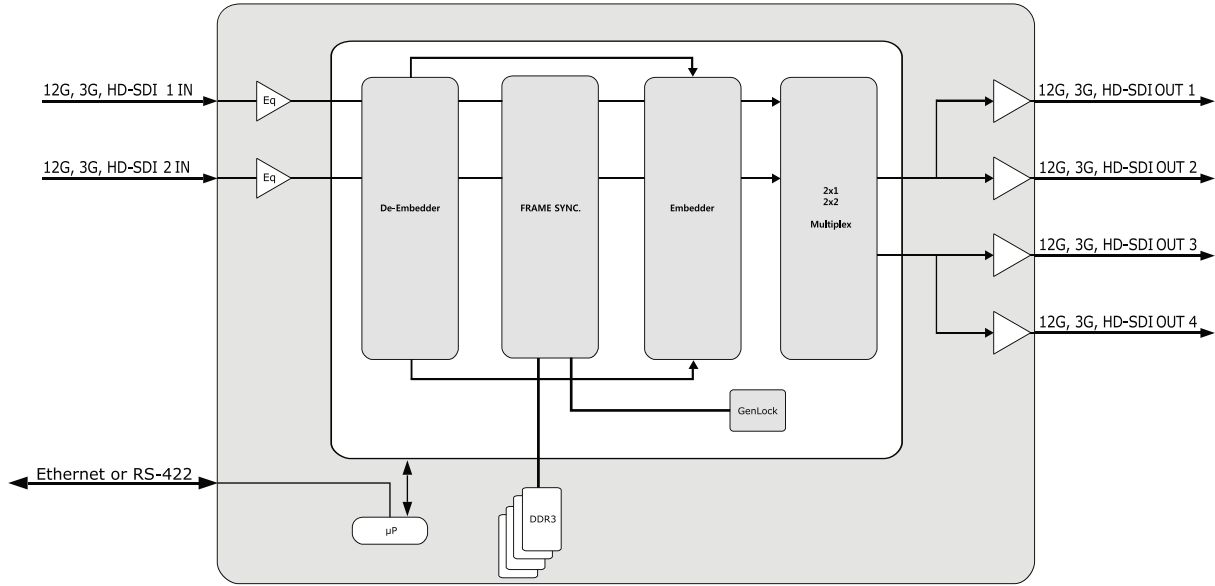
## Feature & Function

- Up to 8 AES/EBU input with sample rate converter \*(available with 75 Ohm input)
- 12G-SDI + embedded audio output
- Audio level and phase control
- Audio offset delay up to 2600ms
- Peak detection 0 dBFS
- Silence detection with threshold (-100 to -20dBFS) and time control (1 to 255 sec)
- Lock to SDI input
- Full control, status monitoring through the front panel of the frame and the Ethernet port (ACP)



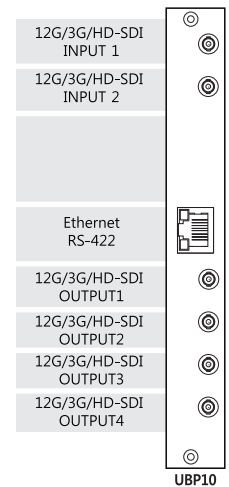
SPECIFICATION			
<b>Input</b>	12G/3G/HD-SDI INPUT 1CH	<b>Output</b>	12G/3G/HD-SDI OUTPUT 4CH
<b>AES/EBU In or Out</b>	8CH (75Ω)	<b>Connector</b>	HD-BNC
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	<b>Standard</b>	SMPTE 259M, SMPTE 344M, SMPTE 292M, SMPTE 372M, SMPTE 424M, SMPTE ST-2082
<b>Data Communication</b>	Ethernet or RS-422	<b>Data Format</b>	9600 ~ 15200 baud rate
<b>Ethernet</b>	10/100 base-T	<b>Connector</b>	RJ-45
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Weight</b>	250g
<b>Power</b>	+24V to +30V	<b>Consumption</b>	12 Watts

# KUACO-20 4K UHD Auto Change Over



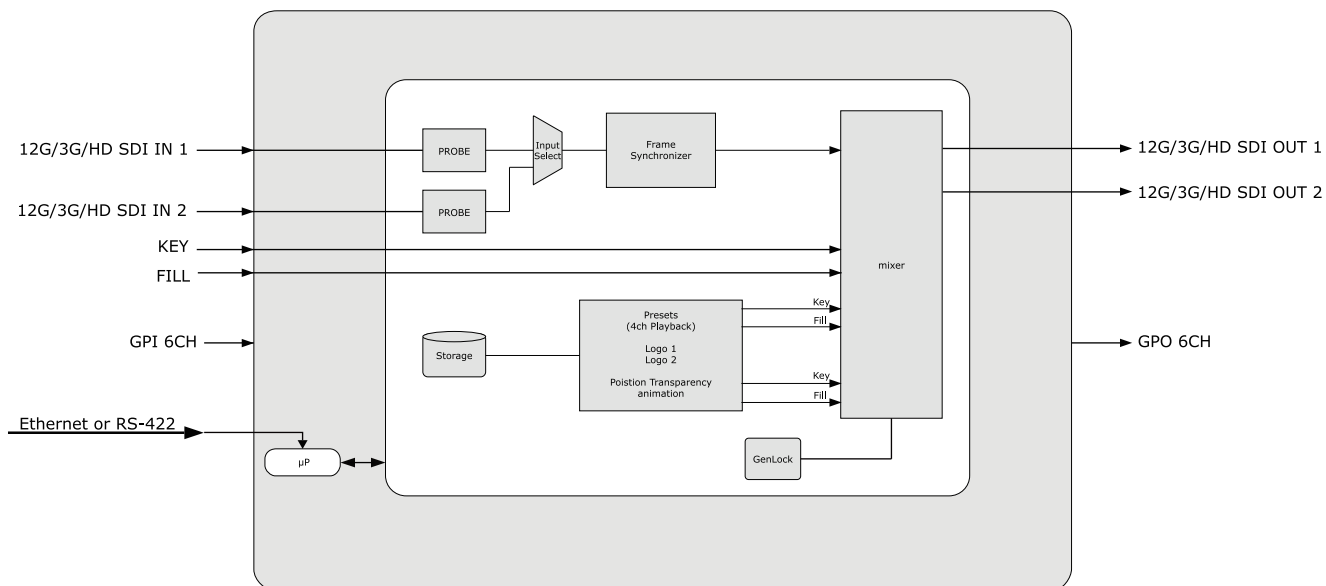
## Feature & Function

- 12G-SDI 2 Inputs
- SDI Carrier detect
- Black detection
- Freeze detection
- CRC detection
- ANC detection
- Silence detection
- Support 2x2, 2x1 Function Selecting
- Audio channel detection



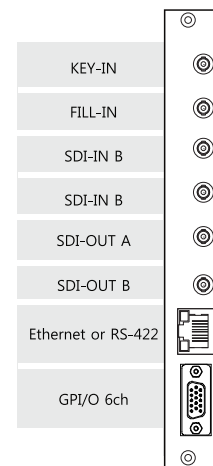
SPECIFICATION			
<b>Input</b>	12G/3G/HD-SDI INPUT 2CH	<b>Signal Level</b>	800mV nominal
<b>Output</b>	12G/3G/HD-SDI OUTPUT 2X2		
<b>Wideband Jitter</b>	< 0.3UI	<b>Standard</b>	12G, 3G, HD-SDI / ST-2082-10, SMPTE242M, SMPTE425M(Level-A, Level-B)
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)		
<b>Data Communication</b>	Ethernet or RS-422	<b>Data Format</b>	9600 ~ 15200 baud rate
<b>Ethernet</b>	10/100 base-T	<b>Connector</b>	RJ-45
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Weight</b>	250g
<b>Power</b>	+24V to +30V	<b>Consumption</b>	12 Watts

# KULK-20 12G, 3G, HD-SDI LOGO & KEYER Inserter



## Feature & Function

- Two individual logo inserter
- Supported logo file formats : PNG
- Supported animation control file : PNG
- Logo presets A and B : 16 presets
- Maximum 1000~1500 frames of animation support
- Reducing frame when using 12G-SDI Logo animation function
- Support PC Logo Manger ( Monitoring status of Modular )
- Dual mode DSK & Logo
- Single mode DSK & Logo
- Logo and keyer single or dual selectable
- External GPI/O 6ch



SPECIFICATION			
<b>INPUT</b>	12G/3G/HD-SDI INPUT 2CH	<b>DSK</b>	KEY 1CH / FILL 1CH
<b>OUTPUT</b>	12G/3G/HD-SDI OUTPUT 4CH	<b>GPI/O</b>	6CH
<b>Wideband Jitter</b>	< 0.3UI	<b>Signal Level</b>	800mV nominal
<b>Equalization</b>	85m at 11.88Gb/s, 200m at 2.97Gb/s, 250m at 1.485Gb/s (Typical maximum equalized length of 5C cable)	<b>Standard</b>	12G, 3G, HD-SDI / ST-2082-10, SMPTE242M, SMPTE425M(Level-A, Level-B)
<b>Data Communication</b>	Ethernet or RS-422	<b>Data Format</b>	9600 ~ 15200 baud rate
<b>Ethernet</b>	10/100 base-T	<b>Connector</b>	RJ-45
<b>Dimension</b>	20(H) x 137(W) x 296(D)mm	<b>Weight</b>	250g
<b>Power</b>	+24V to +30V	<b>Consumption</b>	12 Watts

**Memo**



**K2E** Professional  
Broadcasting Product

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