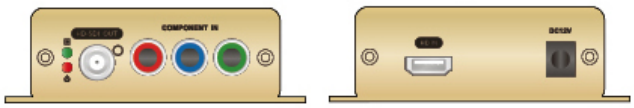
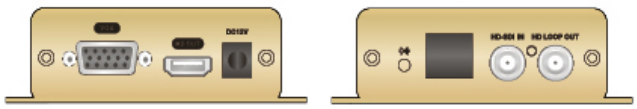
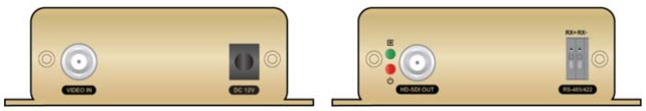
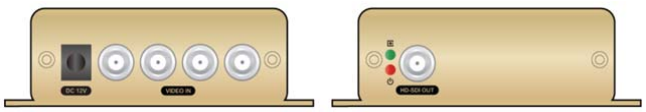
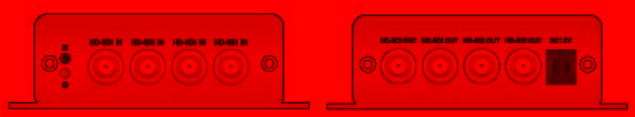
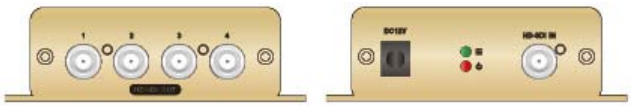
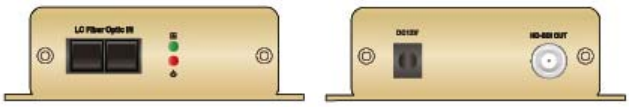
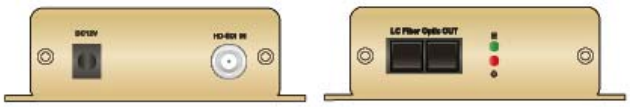
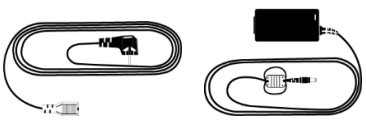
HD-SDI Video Signal Accessories

User`s Manual

The List of Configuration

HSC 1100 **(HDMI to HD-SDI Converter)**	
HSC 1200 **(HD-SDI to HDMI Converter)**	
HSC 2110 **(1 to 1 Analog to HD-SDI Converter)**	
HSC 2410 **(4 to1 Analog to HD-SDI Converter)**	
HSR 1110 **(1 In / 1 Out Repeater)**	
HSR 1440 **(4 In / 4 Out Repeater)**	
HQS 1004 **(1 In 4 Out Distributor)**	
HFO 1100 **(FO to HD-SDI Converter)**	
HFO 1200 **(HD-SDI to FO Converter)**	
Power Adapter and Cable	

14. HD-SDI Video Signal Accessories

14.1 HSC1100

14.1.1 Introduction

- HSC 1100 is HD signal converter which converts video signal between HDMI and HD-SDI. It converts the high resolution of HDMI sources to SMPTE 292M, standard HD-SDI signal.

14.1.2 Features

- Convert HDMI to HD-SDI
- Convert HDMI and component input to HD-SDI SMPTE 292M
- Full HDMI Support Including Embedded Audio
- Equalized HDMI Input Supports Long HDMI Cables Up to 30m, 24 gauge
- HDMI v1.3 Standard
- HD-SDI SMPTE 292M Support(1080p, 1080i or 720p)
- Low Power Consumption: Free Voltage 12VDC, 1A
- Compact Size & Light Weight

14.1.3 Technical Specification

Model	HSC 1100
Input	HDMI
	Component Input
Input Formats	1080p 24/25/30
	1080i 50/60
	720p 50/60
Output	HD-SDI SMPTE 292M
Output Formats	1080p 24/25/30
	1080i 50/60
	720p 50/60
Power Consumption	Free Voltage 12VDC, 1A
Dimension	83.75mm x 31.75mm x 87.07mm / 3.35inch x 1.27 x 3.48 inch
HDMI Connector	HDMI Female
HD-SDI Connector	BNC Female

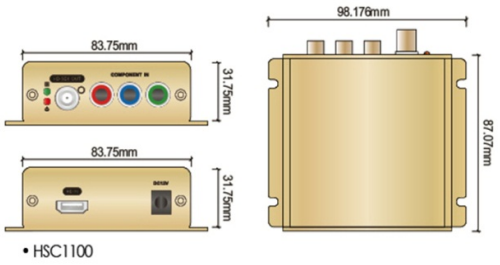
14.1.4 Unpacking

- This equipment is an electronic appliance, so it should be handled with special care.

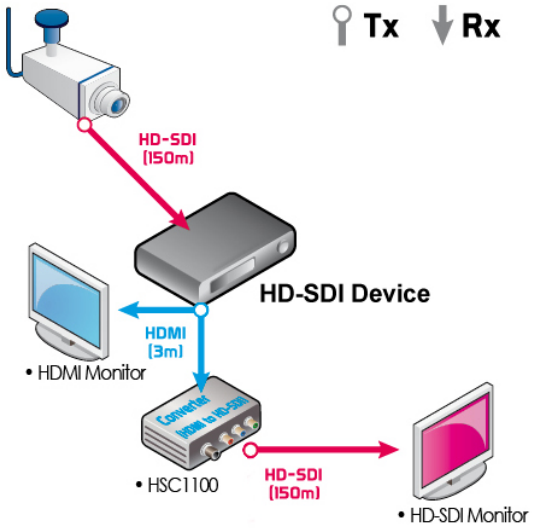
14.1.5 Service

- If there is any problem in the product, please refer to the supplier or the distributor with qualified service personnel.

14.1.6 System Dimension Diagram



14.1.7 System Connection Diagram



14.1.7.1 HDMI In/Out and HD-SDI In/Out Connections

- Connect a **'HDMI OUT'** from the device to '**HDMI IN**' of HSC 1100 using by HDMI cable.
- Connect a **'HD-SDI OUT'** from HSC 1100 to **'HD-SDI IN'** of HD-SDI device using by 75 ohm coaxial cable.

14.1.7.2 Video Component Input

- If users wish to link video component input (e.g. Divx, etc), assure that video component input and **"COMPONENT IN"** connections are connected properly with same colors.

14.1.7.3 Power Supply Connections

- Plug the power supply adapter **(DC 12V, 3.33A)** which is included in this product to '**DC12V**' connector and plug another side to power source and Input voltage is a free volt **(100 VAC ~ 240 VAC).**

14.1.8 Cable

- 75 ohm coaxial cable
- HDMI cable
- Component cable

NOTE
The cables above are not included in the package.

14.1.9 Display

14.1.9.1 LEDs

KEYS	Operating mode
Power LED (Red)	• Light off: Converter off • Light on: Converter on
Connection LED (Green)	• Light off: Not connected • Light on: Connected

14.2 HSC1200

14.2.1 Introduction

• HSC 1200 is HD signal converter which converts video signal between HD-SDI and HDMI. It converts the HD-SDI video to HDMI signal.

14.2.2 Features

• Convert HD-SDI to HDMI
• Equalized HDMI input supports long HDMI cables up to 30m, 24 gauge
• HDMI v1.3 standard
• HD-SDI SMPTE 292M support(1080p, 1080i or 720p)
• Free voltage 12VDC, 1A
• Compact Size & Light weight

14.2.3 Technical Specification

Model	HSC 1200
Input	HD-SDI SMPTE 292M
Input Formats	1080p 24/25/30
	1080i 50/60
	720p 50/60
Output	HDMI
	HD-SDI Loop Output
Output Formats	1024 x 768
	720p 60
	1080p 30/60
Power Consumption	Free Voltage 12VDC, 1A
Dimension	83.75mm x 31.75mm x 87.07mm / 3.35inch x 1.27 x 3.48 inch
HDMI Connector	HDMI Female
HD-SDI Connector	BNC Female

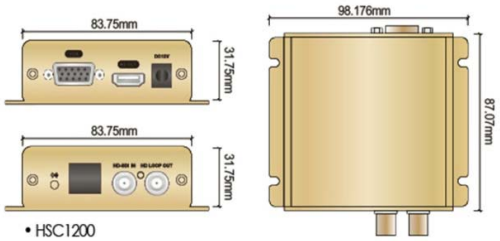
14.2.4 Unpacking

• This equipment is an electronic appliance, so it should be handled with special care.

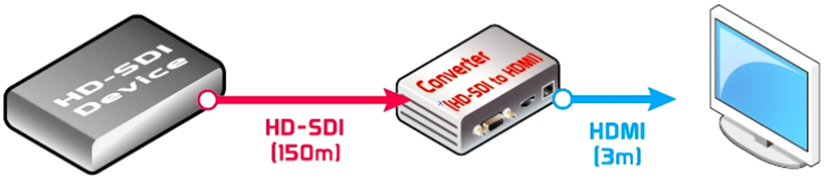
14.2.5 Service

• If there is any problem in the product, please refer servicing to a supplier or a distributor with qualified service personnel.

14.2.6 System Dimension Diagram



14.2.7 Connector Wiring



14.2.7.1 HD-SDI In/Out and HDMI In/Out Connections

• Connect a **'HD-SDI OUT'** of HD-SDI device to **'HD-SDI IN'** of HSC 1200 using by 75ohm coaxial cable
• Connect a **'HDMI OUT'** of HSC 1200 to **'HDMI IN'** of device with HDMI output using by HDMI cable'

14.2.7.2 Video Component Input

• If users wish to link video component input (e.g. Divx, etc), assure that video component input and **"COMPONENT IN"** connections are connected properly with same colors.

14.2.7.3 Power Supply Connections

• Plug the power supply adapter **(DC 12V, 3.33A)** which is included in this product to 'DC12V' connector and plug another side to power source and Input voltage is a free volt **(100 VAC ~ 240 VAC).**

14.2.8 Cable

• 75 ohm coaxial cable
• HDMI cable
• VGA cable

NOTE
The cables above are not included in the package.

14.2.9 Operation Key and Screen Display Information

First Digit No.	Output resolution
1	OUT_1024x768
2	OUT_1280x720p_60Hz
3	OUT_1920x1080_30Hz
4	OUT_1920x1080_60Hz, (default)
5	OUT_1920x1080_60Hz_RB

NOTE

Operation button: When operation button is pressed, output resolution is changed. Please note that the number shown in the operation button is the time that users need to press the button.

Second Digit No.	Input resolution
-	No input detected
1	IN_1280x720p (max. 60 frames)
2	IN_1920x1080i(50 or 60 field)
3	IN_1920x1080p(30 frame only, doesn't support 60 frame)

NOTE

Input resolution depends on the input signal

NOTE

Please note that this device has the same function as HD-SDI repeater that extends the signal transmission distance up to 150m.

14.3 HSC2110

14.3.1 Introduction

- HSC 2110 is video signal converter between SD to SDI. It is 1 In / 1 Out SD to SDI signal converter which will convert one analog signal to one HD-SDI signal.

14.3.2 Features

- Convert 1CH SD to 1CH HD-SDI
- NTSC/PAL Input Signal Auto Detection
- Output Signal Format 1080p 30
- Vertical Frequency Auto-Track
- PTZ control with Pelco C supporting PTZ camera
- Free Voltage 12VDC, 1A
- Compact Size & Light Weight

14.3.3 Technical Specification

Model	HSC 2110
Input Signal	Analog Input 75Ω, 1Vp-p/BNC-F, 1CH
	NTSC or PAL (Auto Detection)
Output Signal	HD-SDI SMPTE 292M
Output Format	1080p 30
Input Return Loss (BNC)	>-15dB, 270 Mb
Output Return Loss (BNC)	>-15dB, 1.5 Gb
Input Impedance (BNC)	75 Ohms +/- 1%
Output Impedance (BNC)	75 Ohms +/- 1%
Power Consumption	Free Voltage 12VDC, 1A
Dimension	83.5mm x 31.5mm x 86.9mm
HD-SDI Connector	BNC Female

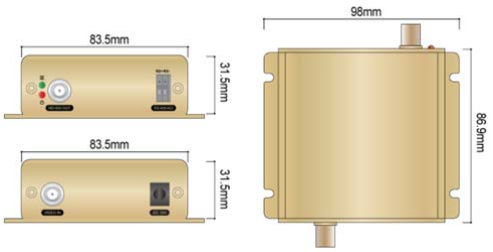
14.3.4 Unpacking

- This equipment is an electronic appliance, so it should be handled with special care.

14.3.5 Service

- If there is any problem in the product, please refer servicing to a supplier or a distributor with qualified service personnel.

14.3.6 System Dimension Diagram



14.3.7 Connector Wiring

14.3.7.1 1 In / 1 Out Analog to HD-SDI Connection

- Connect a 'VIDEO OUT' of analog device to 'VIDEO IN' of HSC 2110 using 75ohm coaxial cable.
- Connect a 'HD-SDI OUT' of HSC 2110 to 'HD-SDI IN' of the HD-SDI DVR using 75ohm coaxial cable.

14.3.7.2 RS-485 Connection

- Connect 'Rx +/-' of the HD-SDI DVR or Keyboard Controller to 'Tx +/-' of HSC 2110.
- Connect 'VIDEO IN' of HSC 2110 to 'VIDEO OUT' of analog PTZ camera with Pelco C protocol using 75ohm coaxial cable.

NOTE
This function is ONLY supported with PTZ camera with Pelco C protocol.

NOTE
Please refer to Product Manual 4.4.2 Camera / PTZ for more information.

NOTE
Only support Camera ID 1 in Camera / PTZ Menu.

14.3.7.3 Power Supply Connection

- Plug the power supply adapter (DC 12V, 3.33A) which is included in this product to 'DC12V' connector and plug another side to power source and Input voltage is a free volt (100 VAC ~ 240 VAC).

14.3.8 PTZ Control

- User can control PTZ camera by connecting

14.3.9 Cable

- 75 ohm coaxial cable
- RS-485 connection cable.

NOTE
The cable above is not included in the package.

14.3.10 Display

14.3.10.1 LEDs

KEYS	Operating mode
Power LED (Red)	• Light off: Converter off • Light on: Converter on
Connection LED (Green)	• Light off: Not connected • Light on: Connected

14.4 HSC2410

14.4.1 Introduction

- HSC 2410 is video signal converter between SD to SDI. It is 4 In / 1 Out SD to SDI signal converter which will convert four analog signal to one HD-SDI signal.

14.4.2 Features

- Convert 1CH SD to 1CH HD-SDI
- NTSC/PAL Input Signal Auto Detection
- Output Signal Format 1080p 30
- Vertical Frequency Auto-Track
- Free Voltage 12VDC, 1A
- Compact Size & Light Weight

14.4.3 Technical Specification

Model	HSC 2410
Input Signal	Analog Input 75Ω, 1Vp-p/BNC-F, 4CH
	NTSC or PAL (Auto Detection)
Output Signal	HD-SDI SMPTE 292M
Output Format	1080p 30
Input Return Loss (BNC)	>-15dB, 270 Mb
Output Return Loss (BNC)	>-15dB, 1.5 Gb
Input Impedance (BNC)	75 Ohms +/- 1%
Output Impedance (BNC)	75 Ohms +/- 1%
Power Consumption	Free Voltage 12VDC, 1A
Dimension	103mm x 31.5mm x 88.09mm
HD-SDI Connector	BNC Female

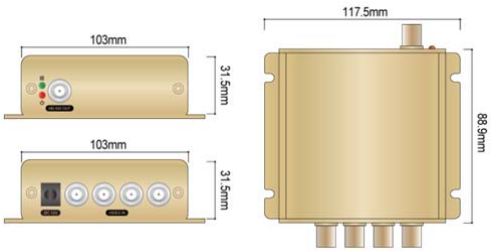
14.4.4 Unpacking

- This equipment is an electronic appliance, so it should be handled with special care.

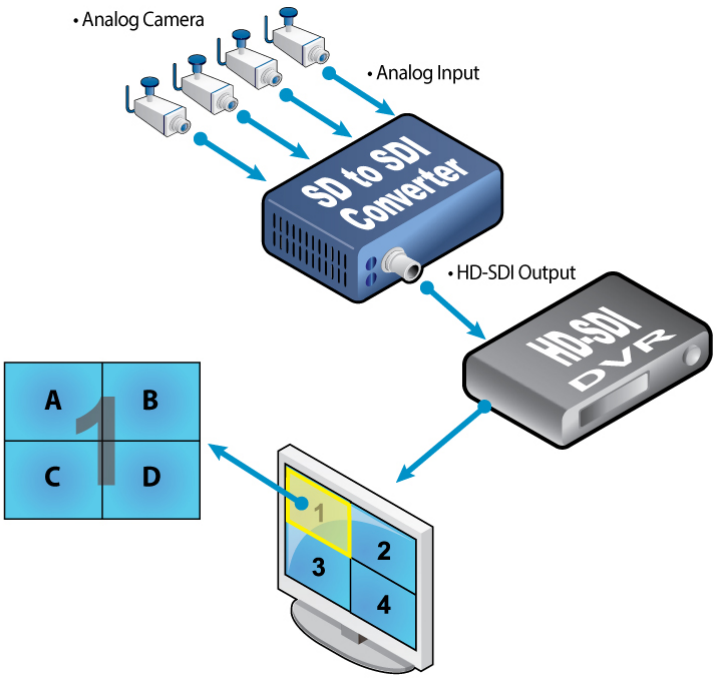
14.4.5 Service

- If there is any problem in the product, please refer servicing to a supplier or a distributor with qualified service personnel.

14.4.6 System Dimension Diagram



14.4.7 Connector Wiring



14.4.7.1 4 In / 1 Out Analog to HD-SDI Connection

- Connect **4 'VIDEO OUT'** of Analog device to each of **4 'VIDEO IN'** of HSC 2410 using 75ohm coaxial cables.
- Connect a **'HD-SDI OUT'** of HSC 2410 to **'HD-SDI IN'** of the HD-SDI DVR using 75ohm coaxial cable.

14.4.7.2 Power Supply Connection

- Plug the power supply adapter (DC 12V, 3.33A) which is included in this product to 'DC12V' connector and plug another side to power source and Input voltage is a free volt (100 VAC ~ 240 VAC).

14.4.8 Cable

- 75 ohm coaxial cable

> **NOTE**
> The cable above is not included in the package.

14.4.9 Display

14.4.9.1 LEDs

KEYS	Operating mode
Power LED (Red)	• Light off: Converter off • Light on: Converter on
Connection LED (Green)	• Light off: Not connected • Light on: Connected

14.5 HSR1110

14.5.1 Introduction

- HSR 1110 is HD SDI repeater to extend the signal transmission distance between HD-SDI devices. The transmission distance is easily extended up to 150m and if it requires to extend longer than 150m, it needs to connect another repeater to extend the signal transmission and it will be extended up to another 150m.

14.5.2 Features

- 1 in / 1 Out HD-SDI Repeater
- HD-SDI SMPTE 292M support(1080p, 1080i,or 720p)
- 150m Extension of transmission distance
- Vertical Frequency Auto-Track(60,60/1.001)
- Low Power Consumption: Free voltage 12VDC, 1A
- Compact Size & Light weight
- Input / Output return loss : >-15dB at 1.5GBPS
- Input / Output Impedance: 75Ohms+/-1%

14.5.3 Technical Specification

Model	HSR1110
Input / Output Signal	10bit HD Serial Digital Signal, SMPTE 292M, 1/4ch
Video Format	1080p 24/25/30
	1080i 50/60
	720p 24/25/30/50/60
Input Return Loss(BNC)	>-15 dB 270Mb-3Gb
Output Return Loss(BNC)	>-15 dB 270Mb-3Gb
Input Impedance(BNC)	75 Ohms+/-1%
Output Impedance(BNC)	75 Ohms+/-1%
Power Consumption	Free Voltage 12VDC, 1A
Dimension(WxHxD)	83.75mm x 31.75mm x 87.07mm / 3.35inch x 1.27 inch x 3.48 inch
HD-SDI Connector	BNC Female

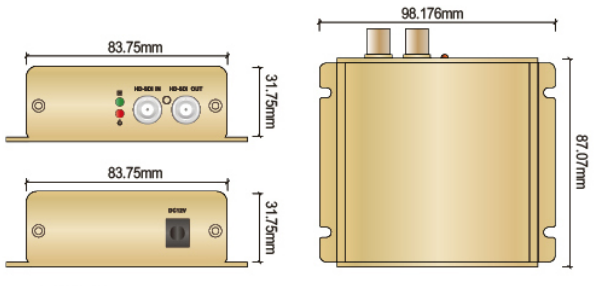
14.5.4 Unpacking

- This equipment is an electronic appliance, so it should be handled with special care.

14.5.5 Service

- If there is any problem in the product, please refer servicing to a supplier or a distributor with qualified service personnel.

14.5.6 System Dimension Diagram



• HSR1110

14.5.7 Connector Wiring

• 1 In / 1 Out HD-SDI Repeater (HSR1110)

14.5.7.1 1 In/ 1 out HD-SDI Connections

- Connect a HD-SDI device (e.g. Camera) to '**HD-SDI IN**' of HD-SDI repeater.
- Connect the HD-SDI device (e.g. DVR) to '**HD-SDI OUT'** of HD-SDI repeater.

14.5.7.2 Power Supply Connections

- Plug the power supply adapter **(DC 12V, 3.33A)** which is included in this product to '**DC12V**' connector and plug another side to power source and Input voltage is a free volt **(100 VAC ~ 240 VAC).**

14.5.8 Cable

- 75 ohm coaxial cable

> **NOTE**
> The cable above is not included in the package.

14.5.9 Display

14.5.9.1 LEDs

KEYS	Operating mode
Power LED (Red)	• Light off: Repeater off • Light on: Repeater on
Connection LED (Green)	• Light off: Not connected • Light on: Connected

14.6 HSR1440

14.6.1 Introduction

- HSR 1440 is HD-SDI repeater to extend the signal transmission distance between HD-SDI devices. The transmission distance is easily extended up to 150m and if it requires to extend longer than 150m, it needs to connect another repeater to extend the signal transmission and it will be extended up to another 150m.

14.6.2 Features

- 4 In / 4 Out HD-SDI Repeater
- HD-SDI SMPTE 292M Support(1080p,1080i or 720p)
- Vertical Frequency Auto-Track(60,60/1.001)
- Low power Consumption: Free voltage 12VDC, 1A
- Compact Size & Light weight
- Input / Output return loss : >-15dB at 1.5GBPS
- Input / Output Impedance: 75Ohms+/-1%

14.6.3 Technical Specification

Model	HSR1440
Input / Output Signal	10bit HD Serial Digital Signal, SMPTE 292M, 1/4ch
Video Format	1080p 24/25/30
	1080i 50/60
	720p 24/25/30/50/60
Input Return Loss(BNC)	>-15 dB 270Mb-3Gb
Output Return Loss(BNC)	>-15 dB 270Mb-3Gb
Input Impedance(BNC)	75 Ohms+/-1%
Output Impedance(BNC)	75 Ohms+/-1%
Power Consumption	Free Voltage 12VDC, 1A
Dimension(WxHxD)	83.75mm x 31.75mm x 87.07mm / 3.35inch x 1.27 inch x 3.48 inch
HD-SDI Connector	BNC Female

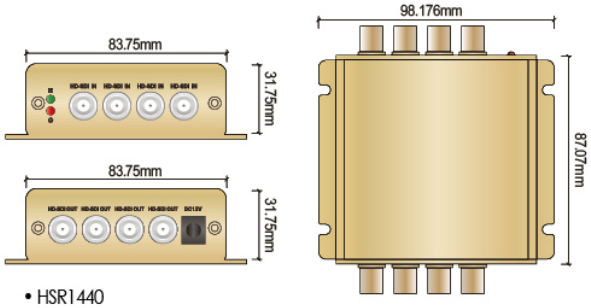
14.6.4 Unpacking

- This equipment is an electronic appliance, so it should be handled with special care.

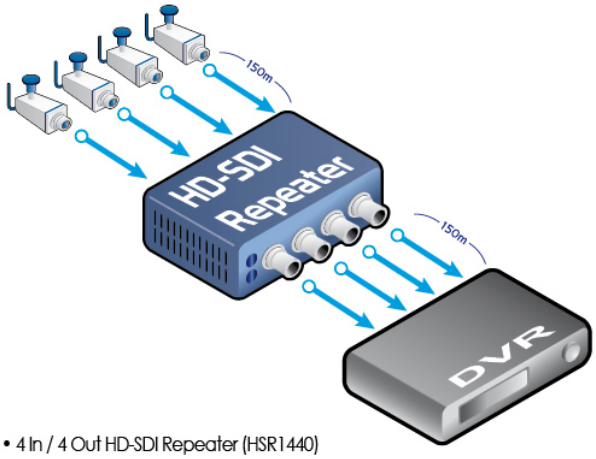
14.6.5 Service

- If there is any problem in the product, please refer servicing to a supplier or a distributor with qualified service personnel.

14.6.6 System Dimension Diagram



14.6.7 Connector Wiring



• 4 In / 4 Out HD-SDI Repeater (HSR1440)

14.6.7.1 4 In/ 4 out HD-SDI Connections

- Connect a 4 HD-SDI device (e.g. Camera) to each of 4 '**HD-SDI IN**' of HD-SDI repeater.
- Connect the 4 HD-SDI devices (e.g. DVR) to each of 4 '**HD-SDI OUT'** of HD-SDI repeater.

14.6.7.2 Power Supply Connections

- Plug the power supply adapter **(DC 12V, 3.33A)** which is included in this product to '**DC12V**' connector and plug another side to power source and Input voltage is a free volt **(100 VAC ~ 240 VAC).**

14.6.8 Cable

- 75 ohm coaxial cable

> **NOTE**
> The cable above is not included in the package.

14.6.9 Display

14.6.9.1 LEDs

KEYS	Operating mode
Power LED (Red)	• Light off: Repeater off • Light on: Repeater on
Connection LED (Green)	• Light off: Not connected • Light on: Connected

14.7 HQS1004

14.7.1 Introduction

• This device is HD-SDI Video distribution amplifier which has 4 separately buffered HD-SDI outputs. This model is specially designed for 75 ohm HD Digital video distribution.

14.7.2 Features

• Compact HD-SDI Video Distribution Amplifier
• 1 HD-SDI Video Input(SMPTE 292M)
• 4 Separately Buffered HD-SDI Outputs(SMPTE 292M)
• Auto Equalization
• Auto Re-clock/ Bypass Any Rate from 10KBPS through 2.97GBPS
• Low Power Consumption: Free Voltage 12VDC, 1A
• Compact Size & Light Weight
• Input / Output Return Loss : >-15 dB

14.7.3 Technical Specification

Model	HQS 1004
Format	1080p, 1080i or 720p Manual Selection
Video Inputs	1 HD-SDI Input(SMPTE 292M)
Input Format	1080p 24/25/30
	1080i 50/60
	720p 24/25/30/50/60
Video Output	4 HD-SDI output (SMPTE 292M)
Output Format	1080p 24/25/30
	1080i 50/60
	720p 24/25/30/50/60
Input / Output Return Loss(BNC)	>-15dB, 270Mb-3Gb
Input / Output Impedance	75Ohms+/-1%
Power Consumption	Free Voltage 12VDC, 1A
Dimension(WxHxD)	83.75mm x 31.75mm x 87.07mm / 3.35kinch x 1.27inch

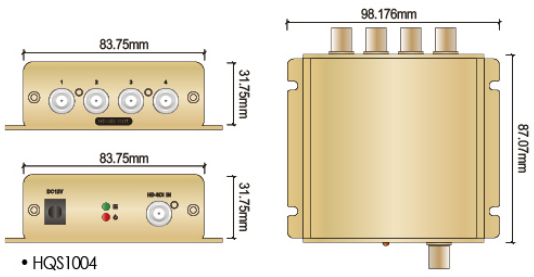
14.7.4 Unpacking

• This equipment is an electronic appliance, so it should be handled with special care.

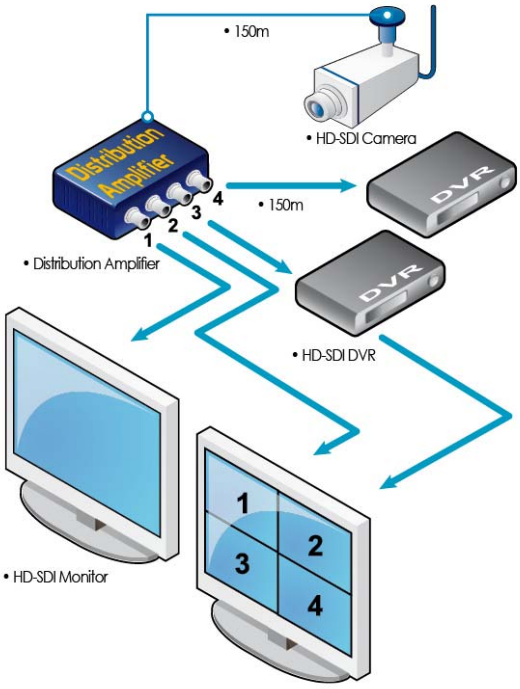
14.7.5 Service

• If there is any problem in the product, please refer to the supplier or the distributor with qualified service personnel.

14.7.6 System Dimension Diagram



14.7.7 Connector Wiring



14.7.7.1 Distribution-In/Out Connections

- Connect a **'HD-SDI OUT'** of HD-SDI device (e.g. Camera) to **'HD-SDI IN'** of HQS 1004 using by 75 ohm coaxial cable
- Connect 4 **'HD-SDI OUT'** of HQS 1004 to each **'HD-SDI IN'** of HD-SDI devices (e.g. DVR).

14.7.7.2 Power Supply Connections

- Plug the power supply adapter **(DC 12V, 3.33A)** which is included in this product to '**DC12V**' connector and plug another side to power source and Input voltage is a free volt **(100 VAC ~ 240 VAC).**

14.7.8 Cable

- 75 ohm coaxial cable

> **NOTE**
> The cable above is not included in the package.

14.7.9 Display

14.7.9.1 LEDs

KEYS	Operating mode
Power LED (Red)	• Light off: Repeater off • Light on: Repeater on
Connection LED (Green)	• Light off: Not connected • Light on: Connected

> **NOTE**
> Please note that this device has the same function as HD-SDI repeater that extends the signal transmission distance up to 150m.

14.8 HFO1100 & HFO1200

14.8.1 Introduction

- HFO 1100 Series are HD-SDI/Fiber optic converters which enable the transmission of HD-SDI signal up to 30km. These converters meet SMPTE 292M specification and are suitable for both indoor and outdoor use. HFO1200 receives the HD-SDI signal and send the signal out through fiber optic cable. HFO 1100 receives the signal from fiber optic cable and send it out through HD-SDI coaxial cable.

14.8.2 Features

- Transmission of HD-SDI over Single Mode Optical Fiber
- Auto-detection of Video Format
- HD-SDI Connector (SMPTE292M)
- LC Fiber Optic Connector
- Low Power Consumption: Free Voltage 12VDC, 1A
- Input / Output Return Loss : > -15dB at 1.5GBPS
- Input / Output Impedance : 75 Ohms +/- 1%
- All inputs, either SDI or Fiber, are equalized and re-clocked

14.8.3 Technical Specification

Model	HFO1100	HFO1200
Format	3 Gb, 1.5Gb, 270Mb Auto Detect	
Video Inputs	1 LC Fiber Optic Connector 1	HD-SDI Input(SMPTE 292M)
Input Format	1080p 24/25/30	
	1080i 50/60	
	720p 24/25/30/50/60	
Video Outputs	1HD-SDI Output(SMPTE 292M)	1 LC Fiber Optic Connector
Output Format	1080p 24/25/30	
	1080i 50/60	
	720p 24/25/30/50/60	
Cable Equalization (BNC Inputs, 1694 Coax)	270mb, 460m	
	1.5Gb, 230m	
	3Gb, 150m	
Input Return Loss(BNC)	>-15dB, 270Mb-3Gb	
Output Return Loss(BNC)	>-15dB,270Mb-3Gb	
Input Impedance	75Ohms+/-1%	
Output Impedance(BNC)	75Ohms+/-1%	
Optical Outputs	Wavelength:13 10nm	
	Output Power:-2dBm Typical	
Power Consumption	Free Voltage 12VDC, 1A	
Dimension	83.75mm x 31.75mm x 87.07mm / 3.35kinch x 1.27inch	

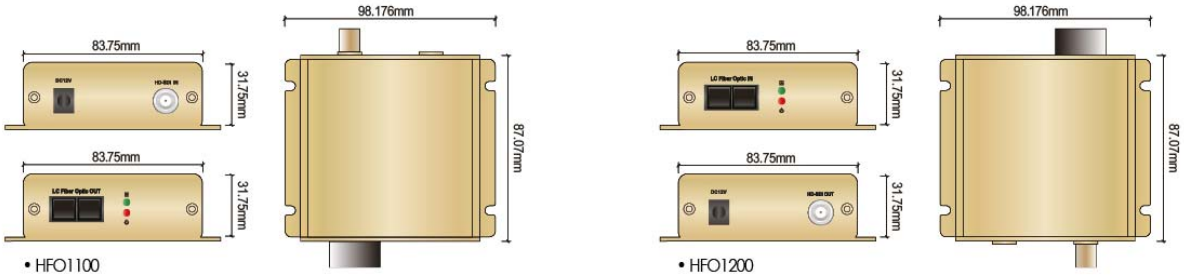
14.8.4 Unpacking

- This equipment is an electronic appliance, so it should be handled with special care.

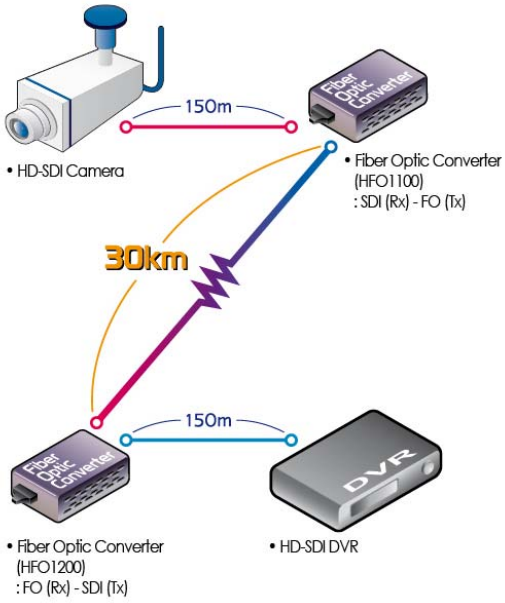
14.8.5 Service

- If there is any problem in the product, please refer to the supplier or the distributor with qualified service personnel.

14.8.6 System Dimension Diagram



14.8.7 Connector Wiring



14.8.7.1 HD-SDI in Connections

- Connect HD-SDI Camera to **'HD-SDI IN'** of HFO1200 using 75 ohm coaxial cable

14.8.7.2 Fiber Optic Out Connections

- Connect the "LC Fiber Optic out" of HFO1200 which can be connected to opposite site of Fiber optic converter (HFO 1100) by using the fiber optic cable.

14.8.7.3 Fiber Optic in Connections

- Connect the fiber optic cable which is coming from the opposite site of HFO1200 to "LC Fiber Optic In" of HFO 1100.

14.8.7.4 HD-SDI out connections

- Connect the **'HD-SDI OUT'** of HFO 1200 to **'HD-SDI IN'** of HD-SDI device by using 75ohm coaxial cable.

14.8.7.5 Power Supply Connections

- Plug the power supply adapter **(DC 12V, 3.33A)** which is included in this product to '**DC12V**' connector and plug another side to power source and Input voltage is a free volt **(100 VAC ~ 240 VAC).**

14.8.8 Cable

- 75 ohm coaxial cable is needed
- Fiber Optic Cable

NOTE
The cables above are not included in the package.

14.8.9 Display

14.8.9.1 LEDs

KEYS	Operating mode
Power LED (Red) 	• Light off: Converter off • Light on: Converter on
Connection LED (Green) 	• Light off: Not connected • Light on: Connected