

## User Manual

# SD/HD/3G-SDI Video + Power + Data RS-485 Transmission over Coax Kit

## HD-SDE-VDK

Tx – Camera Side



HD-SDE-VDT  
SD-6b

Rx – DVR Side



HD-SDE-VDR  
SD-6a

★ The power are only for the devices, not for camera.

## Repeater

for SD/HD/3G-SDI Video + Power + Data RS-485 Transmission over Coax Kit

## HD-SDE-VDP



SD-7

*NOTE: The casing design is subject to change without notice.*

The SD/HD/3G-SDI Video + Power + Data RS-485 Transmission over Coax products are HD-SDI repeater for transmission distance extension. With supporting 14 types of SMPTE-compliance HD formats (1.485Gb/s, 1.485/1.001Gbps), these devices equalizes and re-clocks the input video signal and distributes it to 2 identical channels. The transmission distance is easily extended with 200m / 600ft per device unit for HD-SDI video signal.



Please read the Manual before attempting to use this product.

Specifications and appearance are subject to change without notice.



## CAUTION

RISK OF ELECTRIC SHOCK  
DO NOT OPEN!



TO REDUCE THE RISK OF ELECTRICAL SHOCK,  
DO NOT OPEN COVERS (OR BACK).  
NO USER SERVICEABLE PARTS INSIDE.  
REFER SERVICING TO QUALIFIED  
SERVICE PERSONNEL.



### Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems).

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



### Caution

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#### 1. Handle this product with care

Avoid any shock or bumping of the product. Improper handling could damage the product. Do not handle the unit with wet hands. Provide proper ventilation and air circulation and do not use near water.

#### 2. Requires a proper operating environment

This product is not waterproof and is designed for indoor use. The allowable temperature range for operation of this product is between -0°C~50°C / 32°F~122°F.

#### 3. Check the power source voltage

The power source voltage should be within the specified range. (Product must meet the specifications).

#### 4. Objects and liquid entry

Never push objects of any kind into this product as this may touch dangerous voltage points of short out parts that could result in a fire or electric shock. Never spill any kind of liquid on the product.

#### 5. Cleaning

Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

## 6. Servicing

Do not attempt to service this product by yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all service to qualified servicing personnel.

## Package Contents

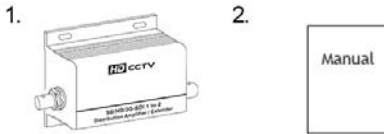
### PTZ Camera SDI Video + Power + Data RS-485 Transmission over Coax Kit:

1. One (1) Transmitter Unit – **HD-SDE-VDT**
2. One (1) Receiver Unit – **HD-SDE-VDR**
3. One (1) 12V DC 1Amp Power Adapter w/ Locking Power Connector for **HD-SDE-VDR**
4. One (1) User Manual



### Repeater:

1. One (1) Repeater Unit – **HD-SDE-VDP**
2. One (1) User Manual



For any returns, please include all components listed above with original packaging in **Resalable Condition**. **Absolutely No Returns** will be accepted if any component is missing/damaged.

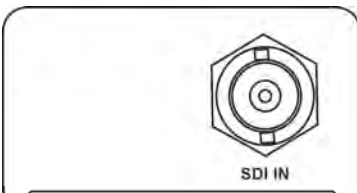
## Features

- Adaptive Equalizer returns the signal to its original amplitude and modulation.
- Re-clocking function resynchronizes the signal
- Cable Driver retransmits the signal with its original characteristics
- Data and power can be transmitted from the recorder side to the camera over the coax cable.
- Up to 7 repeaters may be powered from the coax cable – Requires 24V DC to power 2+ repeaters & Tx
- Max. cable length (Belden 1694A): SD-SDI 400m/1300ft, HD-SDI 200m/600ft, 3G-SDI 140m/450ft
- 5V~24 DC

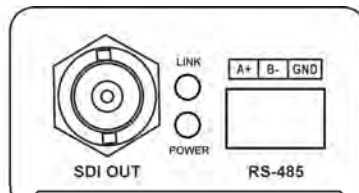
## Parts & Functions

### Tx – Camera Side, HD-SDE-VDT

Left Side View:

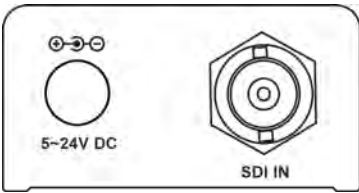


Right Side View:

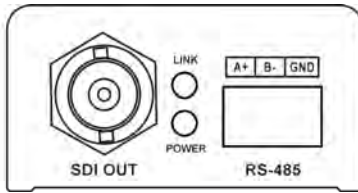


## Rx – DVR Side, HD-SDE-VDR

Left Side View:



Right Side View:

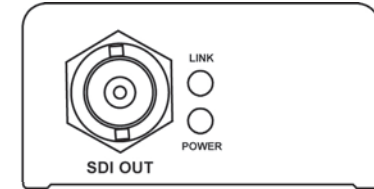


## Repeater, HD-SDE-VDP

Left Side View:



Right Side View:

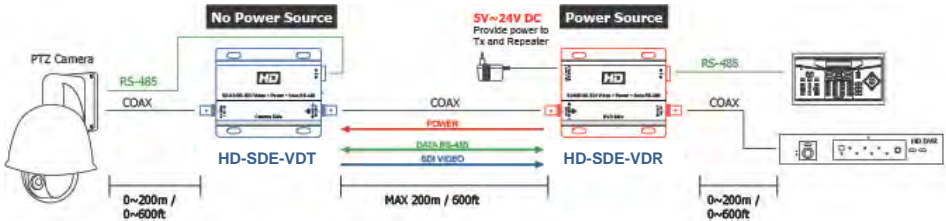


## Application Diagram

\* The distance depends on the quality of the SDI signal from the HD camera source and also the Coax Cable & Connector

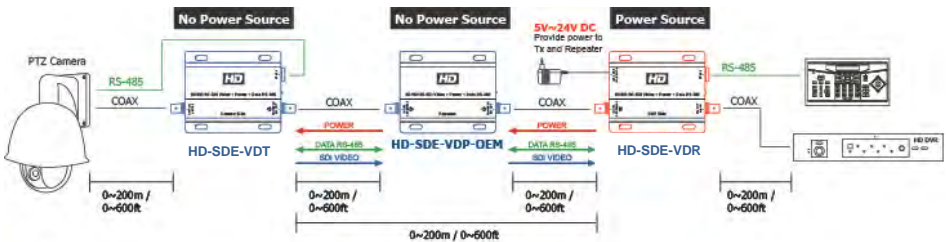


**Pay careful attention to POWER IN/SDI OUT and POWER OUT/SDI IN when connecting the devices. Wrongful connection will burn the devices.**



\* The distance depends on the quality of the SDI signal from the HD camera source and also the Coax Cable & Connector

## Tx and Rx used with HD-SDE-VDP Repeater:



\* The distance depends on the quality of the SDI signal from the HD camera source and also the Coax Cable & Connector

Note: Can connect up to 7 repeaters. If using only 1 repeater, use 12V DC power supply for Rx at DVR side. If using 2+ repeaters, use 24V DC power supply. For each repeater used decreases 10% distance.

**See page 8 for Important Notes about Cable and Connector for SDI HD Camera**

Name	Color	Status	Description
ACTIVE	Green	ON	SDI signal is active
		OFF	SDI signal is inactive
POWER	Green	ON	Power on
		OFF	Power off

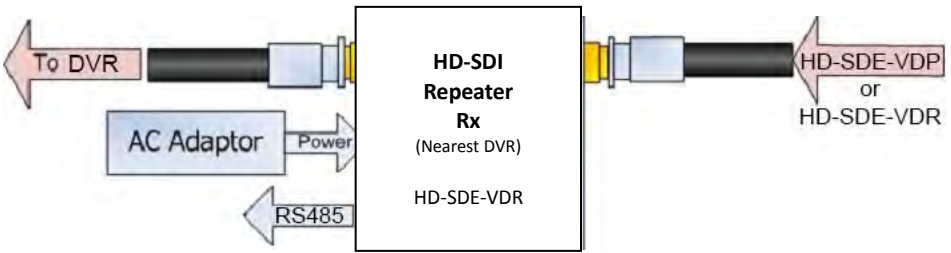
## Hardware Installation

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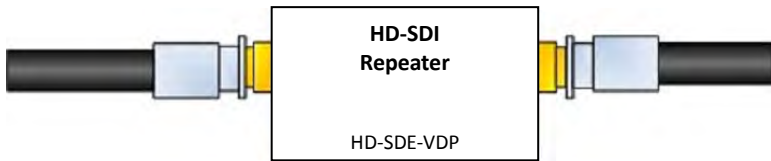
1. Check the power supply configuration and connect the correct voltage according to the power supply input requirements.
2. Use the standard HDMI cable and connect the HDMI source to HDMI input port.
3. Use SDI coaxial cable and connect the SDI output port with the display equipment.
4. Turn on the power switch.

### Notes:

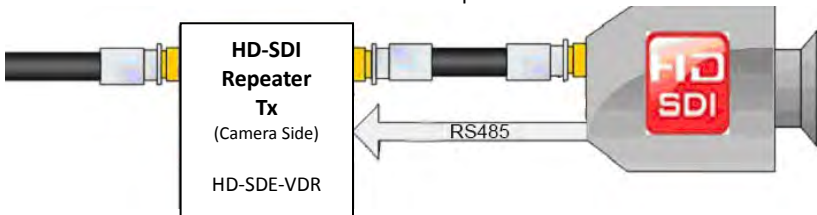
- Each repeater supports transmission distance up to 200m / 600ft with a data rate of 1.5Gbit/s (depending on cable quality).
- Up to 7 repeater units can be connected together; all powered over the coaxial cable by power injected to the first repeater.
- Longer lengths can be supported with lower speed cameras: for example, 720m / 1200ft for SDI cameras.



DVR/NVR side Repeater including Link Power and Control Channel



In-line HD-SDI Repeater



Camera side HD-SDI Repeater with Control

Camera control signals RS485 and the system power can be injected at the first repeater (nearest the recorder). Control signals RS485 and camera power (if appropriate) can similarly be taken from the repeater nearest to the camera and feed into the camera itself.

The camera control is via RS-485 and a control signal bandwidth of up to 115KHz is supported.

## Technical Specifications

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Model	HD-SDE-VDK		HD-SDE-VDP
	HD-SDE-VDT	HD-SDE-VDR	
Type	Transmitter	Receiver	Repeater
Connectors	1x BNC SDI		
Input / Output Signal Type	SD-SDI (270Mbps) HD-SDI (1.485Gbps) 3G-SDI (2.97Gbps)		
SDI Impedance	75 ohms		
Max. Input Coax Length	Belden 1694A SD-SDI 400m / 1300ft ; HD-SDI 200m / 600ft ; 3G-SDI 140m / 450ft		
RS-485 Connector	Plug-in Terminal Block		
RS-485 Pitch / Poles	3.81mm/3P		
Power Supply	Not Included	5V~24V DC w/ Locking Power Connector (plus any cascaded repeaters)	Not Included
DC Feed via Coax	Min. 8V DC		
Operating Temperature	0°C ~ 50°C / 32°F ~ 122°F		
Storage Temperature	-20°C ~ 70°C / -4°F ~ 158°F		
Relative Humidity	Up to 85% RH (Non-condensation)		
Dimension	84 x 48 x 25 mm / 3.31 x 1.89 x 0.98 inches		

\*Specifications are subject to change without notice

## Performance Specifications

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Performance by Coax	Max. Coax Length for Error-Free Operation @ 1.5Gbps	Cable / Power Budget	
		Max. # of Repeaters	DC Power After 2 Repeaters
RG6 Sample 1 (16dB/100m) (Belden 1694A)	200 m / 650 ft	5 (1km)	6W
RG6 Sample 2 (16dB/100m) (Carol Brand)	200 m / 650 ft	3 (1km)	1.8W
5C-HFBS Sample (16dB/100m) (Amphenol)	200 m / 650 ft	5 (1km)	6W
RG59 Sample (23dB/100m)	140m / 450ft	5 (700m)	6.5W
3C-2V Sample 1 (41dB/100m)	78m / 325ft	5 (390m)	6.5W
RG11 Sample (10dB/100m) (CommCope F1160BVV)	330m / 1050ft	4 (1.3km)	4W

## Key Components

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### Components Made in USA for this product:

Name of Component	Manufacturer
Multi-Rate SDI Adaptive Cable Equalizer	Mindspeed & Gennum
Multi-Rate SDI Automatic Reclocker	Mindspeed & Gennum
Multi-Rate Dual Slew-Rate Cable Driver	Mindspeed & Gennum & National Semiconductor
Data Communication IC	MAXIM

### Components Made in Taiwan for this product:

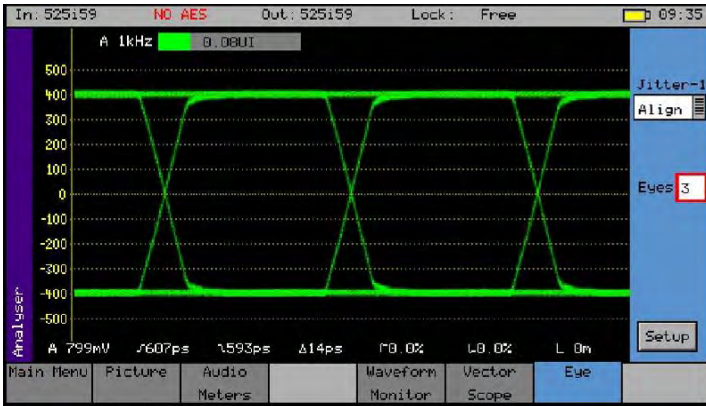
Name of Component	Manufacturer
DC/DC Converter	Richtek

\*Key components are listed by the manufacturer and are subject to change without notice

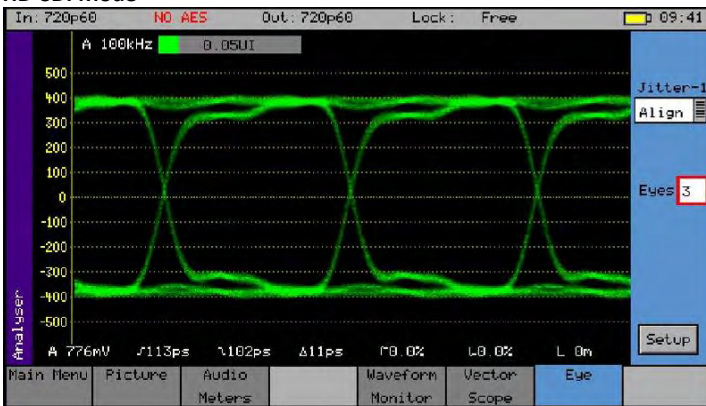
## Eye Diagram

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### SD-SDI Mode



### HD-SDI Mode

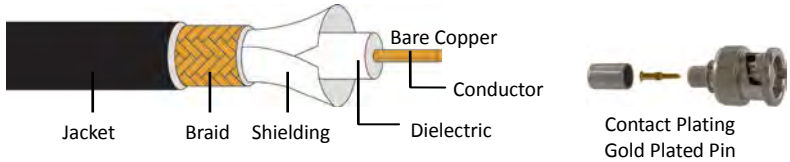




## IMPORTANT NOTE: Cable & Connector for SDI HD Camera

In order to achieve the Best Quality and Long Range coax cable run of up to 200m / 600ft, you will need:

1. **Good Quality Cable:** We suggest using RG6 Belden 1694A Low Loss Serial Digital coax cable because RG6 cables have better grounding than RG59 cables. RG6 is for Digital Signal and RG59 is for Analog Signal.
2. **Good Quality BNC Connectors:** Contact Plating Gold plated pins provide exceptional conductivity.
3. **Good Quality Installation:** Do not over cut the braid because it will affect the grounding. The image will have lines and noise.



## Limited Warranty

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### LIMITED ONE (1) YEAR WARRANTY AND EXCLUSIONS

Manufacturer warrants to the original consumer purchaser and not for the benefit of anyone else that this product at the time of its sale by Manufacturer is free of defects in materials and workmanship under normal and proper use for one (1) year from the purchase date. Manufacturer's only obligation is to correct such defects by repair or replacement, at its option, if within such one (1) year period the product is returned prepaid, with proof of purchase date, and a description of the problem. This warrant excludes and there is disclaimed liability for labor for removal of this product or reinstallation.

**This warranty is voided if this product is installed improperly or in an improper environment, overloaded, misused, opened, abused, or altered in any manner, or is not used under normal operating conditions or not in accordance with any labels or instructions. There are no other implied warranties of any kind, including merchantability and fitness or a particular purpose, but if any implied warranty is required by the applicable jurisdiction, the duration of any such implied warrant, including merchantability and fitness of or a particular purpose, is limited to one (1) year.**

**Manufacturer is not liable for incidental, indirect, special, or consequential damages, including without limitation, damage to, or loss of use of, any equipment, loss sales or profits or delay or failure to perform this warranty obligation.** The remedies, provided therein are the exclusive remedies under this warranty, whether based on contract, tort or otherwise.

[www.AAS.com.tw](http://www.AAS.com.tw)



HD-SDE-VDK  
HD-SDE-VDP

MADE IN CHINA  
MADE IN CHINA