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Open your Eyes™

EqcoLogic HD-SDI Repeaters for long-haul digital HD-CCTV

Extend HD-CCTV links up to 1.0km with power over cable and camera control link over single coax cable

EqcoLogic's EQCO-SDI15-7501 is an extender solution for HD-SDI links, operating with 75Ω coax cable.

Each unit receives a HD-CCTV signal that may be attenuated by up to 200m of coax cable.

The repeater contains three critical components to correct and then retransmit the signal:

- Adaptive Equalizer to return the signal to its original amplitude and modulation
- Reclocker to resynchronize the signal—bringing it back to its original condition
- Cable Driver to retransmit the signal with its original characteristics restored

Furthermore, the repeater design allows for two unique benefits:

- Power can be transmitted from the recorder side to the camera over the coax cable.
- Up to 6 repeaters may be powered from the coax cable; if one or two repeaters are used, the power may also be adequate to power the camera.
- A control signal (RS485) can be transmitted from the recorder side to the camera over the coax cable

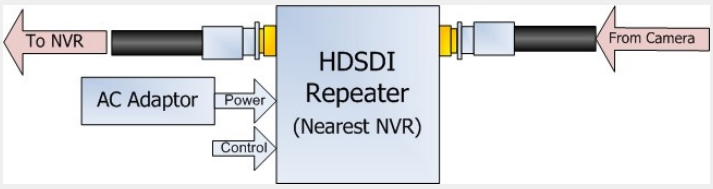
Simultaneous signal transmission, camera control and power over a single cable, allowing full re-use of coax infrastructure.

Implementation

Each repeater supports a link of up to 200m with a data-rate of 1.5Gbit/s (depending on cable quality*).

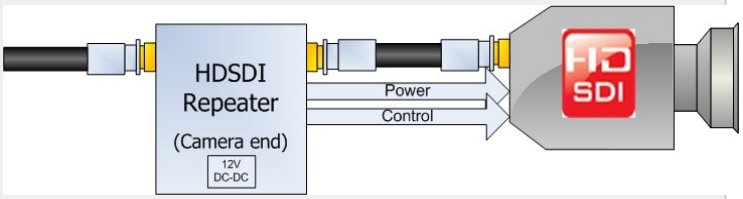
Longer lengths can be supported with lower speed cameras: for example, 720m for SDI cameras.

Up to 5 repeater units can be daisy-chained together, all powered over the coax cable by power injected to the first repeater.



NVR side Repeater including Link Power and Control Channel

In-line HDSDI Repeater



Camera side HDSDI Repeater with Power and Control

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

The camera control is via RS485, the most commonly used protocol and a control signal bandwidth of up to 40KHz is supported.

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*Subject to maximum cable attenuation, see over for details

Technical Specifications

HD-SDI Interface	
Connectors	BNC True 75Ω
Cable Impedance	75Ω ± 3Ω
Connector/coax Return Loss	Return Loss > 20dB @ 1MHz – 750MHz
Data Throughput	270Mbps – 1.5Gbps (SMPTE 292M)
Aux Interface	
Connector (Head End)	RJ45 (Cat 3)
Cable Type	Category 3 or above
Signalling	RS485 in (Pair 1) RS485 out (Pair 2), Gnd (Pair 3), +24V (Pair 4)
Power Supply Input (Head End input)	
Aux Power in via RJ45	24V @ 1.3Watts, plus any concatenated repeaters
DC Feed via Coax	Min 8V DC
Power Supply Output (Camera Side output)	
Aux Power out via RJ45	V_{IN} @ Head End -1V -Coax DC drop (varies with cable type/length)
DC Feed via Coax	V_{IN} @ Head End – (1V + Coax DC drop) per hop (varies with cable type/length)
Environmental	
Operating Temperature	0°C to 50°C
Relative humidity	Up to 85% non-condensing
Storage Temperature	-20°C to 70°C

Performance Specifications

Performance by coax type	Max coax length for error free operation @1.5Gbps	Cable/Power Budget	
		Max # Repeaters (total length)	DC power after 2 repeaters
RG6 Sample 1 (16dB/100m) (Belden 1694A)	200 meters / 640 feet	5 (1km)	6W
RG6 Sample 2 (16dB/100m) (Carol Brand)	200 meters / 640 feet	3 (1km)	1.8W
5C-HFBT Sample (16dB/100m) (Amphenol)	200 meters / 640 feet	5 (1km	6W
RG59 Sample (23dB/100m)	140 meters / 450 feet	5 (700m)	6.5W
3C-2V Sample 1 (41dB/100m) (Hangzhou Linan Tongda Cable Co.,Ltd)	78 meters / 325 feet	5 (390m)	6.5W
RG11 Sample (10dB/100m) (CommCcope F1160BVV)	330 meters / 1050 feet	4 (1.3km)	4W

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