Microchip’s EQCO30R5.D and EQCO30T5.2 chipset enables HD/3G-SDI links operating over a standard 75Ω coaxial cable for sending high-quality uncompressed video and control signals. Each unit receives an attenuated HD-CCTV signal and extends it up to 220 meters over the coaxial cable. An HD-SDI repeater, which also utilizes the EQCO30R5.D and EQCO30T5.2 devices, can be used to extend the distance even further.

About the Demonstration
The demonstration showcases the following:
- HDCCTV camera which includes Microchip’s EQCO30T5.2 cable driver chip
- HD/3G-SDI repeater which uses Microchip’s EQCO30R5.D and EQCO30T5.2 chipset and a reclocker chip
- HDSDI monitor which uses a third-party HDSDI equalizer

This demonstration highlights that up to 3G-SDI speeds can be sent over a standard 75Ω coaxial cable while simultaneously sending power over coax and camera control over a single cable. A Microchip HD/3G-SDI repeater is added to the demonstration to show that Microchip’s solution is compatible with devices (a monitor or DVR) from other vendors. Power and camera control is added to the repeater nearest the monitor. Camera control and power are combined by the repeater and sent over the coax to the next inline repeater. The last repeater sends power and camera control to the camera. The camera simultaneously sends the video signal back to the monitor over the same coax cable.

This demonstration can utilize up to five HD/3G-SDI repeaters to achieve up to 1 km in distance without having to add additional power or camera control. Each chip and the HD/3G-SDI repeater supports a data rate of 2.97 Gbps (3G-SDI). A link of up to 220m can be achieved with a data rate of 1.485 Gbps, depending on cable quality, and can be extended up to 1 km. For longer cable lengths, lower-speed cameras are supported. For example, 720 meters can be supported with standard-definition SDI cameras.

Camera control is accomplished via RS485, the most commonly used communications protocol, which supports a control signal bandwidth of up to 38.4 kbps.

Applications
- Video security and surveillance
- Crowd monitoring
- Traffic monitoring
- License plate tracking
- Elevator and building monitoring
- Bank and casino security

Features
EQCO30T5.2 HD/3G-SDI Cable Driver
- Supports up to 140m of cable at 2.97 Gbps using high-quality coax
- Supports up to 200m of cable at 1.485 Gbps using high-quality coax
- Supports up to 450m of cable at 270 Mbps using high-quality coax
- Compatible with all SMPTE3G SDI data rates:
  - SMPTE259M SDI, 143 to 360 Mbps
  - SMPTE344M, 540 Mbps
  - SMPTE292M HD-SDI, 1.485 Gbps
  - SMPTE372M Dual-Link HD-SDI, 2.97 Gbps
  - SMPTE424M Dual-Speed 3G-SDI, 2.97 Gbps
- Single 3.3V supply
- Low power consumption (220 mW, 3.3V supply; 80 mW, 1.2V supply)
- More robust due to transmit amplitude independent operation
- 16-pin, 0.65 mm pin pitch, 4 mm QFN package
- −40°C to +85°C industrial temperature range
- RoHS compliant
EQCO30R5.D – HD/3G-SDI Equalizer

- Compatible with all SMPTE3G SDI data rates:
  - SMPTE259M SDI, 143 to 360 Mbps
  - SMPTE344M, 540 Mbps
  - SMPTE292M HD-SDI, 1.485 Gbps
  - SMPTE372M Dual-Link HD-SDI, 2.97 Gbps
  - SMPTE424M Dual-Speed 3G-SDI, 2.97 Gbps
- Loss of signal detect at input, optional 3 dB input trace/receive equalization
- Pin compatible with some Semtech and Texas Instruments parts
- Single 3.3V supply
- Low power consumption (150 mW, 3.3V supply)
- Output driver enable
- LF-uplink receiver included, receives 5 Mbps in full-duplex communication for cable lengths up to 450m
- Up to 900 mA can be received for powering camera devices
- Selectable slew rate for SD and HD/3G
- 16-pin, 0.65 mm pin pitch, 4 mm QFN package
- −40°C to +85°C industrial temperature range
- RoHS compliant

EQCO-SDI-30-7502 – HD/3G-SDI Repeater

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 (EQCO30R5.D)
- Reclocker to resynchronize the signal, bringing it back to its original condition
- Cable driver to retransmit the signal with its original characteristics restored (EQCO30T5.2)

The repeater design offers these unique benefits:

- Power can be transmitted from the recorder (DVR) side to the camera over the coax cable
- Up to five repeaters may be powered from the first repeater at the DVR side over the cable; if only one or two repeaters are used, the remaining power may also be adequate to power the SDI camera at the remote end
- A control signal (RS485) can be transmitted from the recorder (DVR) side to the camera over the coax cable
- The repeater enables simultaneous signal transmission camera control and power over a single cable

Typical Use Diagram

Featured Products

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<td>HD/3G-SDI repeater</td>
<td>SDI signaling based on SMPTE protocol standard</td>
<td>270 Mbps, 1.485 Gbps, 2.97 Gbps</td>
<td>38.4 kbps</td>
<td>Up to 1 km if 5 repeaters used</td>
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