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CQS 1441
yelloGUI compatible

Bidirectional 2SI Quad Link to Single Link Converter

- Support for Quad 2SI to 12G SDI or 12G SDI to Quad 2SI conversions
- 4K UHD 12G SDI Fiber and BNC Input (Fiber SFP optional)
- 4K UHD 12G SDI Fiber and BNC Output (Fiber SFP optional)
- 4K UHD 12G SDI BNC Loop Output
- 4x 3G SDI BNC Input
- 4x 3G SDI BNC Output
- Control / configure via LYNX Technik yelloGUI
- Fully compatible with Rack frame LYNX Technik R FR 1000-1

The CQS 1441 is a compact solution to bridge between 4K UHD quad link 2SI devices and single link 12G SDI devices. The module can be configured to convert to or from Quad link 2SI. Note. This module does not support SQD (Square Division)

CQS 1441 can also be used for distributing 3G/HD signal on Input 1 (BNC/SFP) to four 3G/HD signals (BNC) as well as on the Loop out. Video format 720p is not supported in Auto distribution mode.

The module is suitable for all SMPTE standard signals from 1.5Gbit/s to 12Gbit/s (SMPTE 292M, 424M, 2081 and 2082)

Conversion modes:
- 12G SDI single link to 4 x 3G Quad link (2SI)
- 4 x 3G Quad link (2SI) to 12G SDI single link
- 6G SDI single link to 4 x 1.5G SDI
- 4 x 1.5G SDI to 6G SDI single link

With the distance limitations of 12G SDI electrical connections, the CQS 1441 is equipped with an integrated SFP fiber port which can accept a number of 12G fiber options depending on the specific application.

Fiber I/O Options:
There are 12G SDI fiber Transmitters, Receivers, Transceivers and also a selection of CWDM Transmitters available depending on the application.

Shown with optional 12G SDI fiber SFP Installed

Standard Fiber Options

Option #	Description
OH-TX-12G-LC	12G SDI Fiber Transmitter (1310nm)
OH-RX-12G-LC	12G SDI Fiber Receiver (1260-1620nm)
OH-TR-12G-LC	12G SDI Fiber Transceiver (1310nm)

CWDM Fiber Options

Option #	Description
OH-TX-12G-XXXX-LC	12Gbit SDI Optical Transmitter - CWDM (XXXX=Wavelength 1270nm to 1610nm)

Technical Specifications

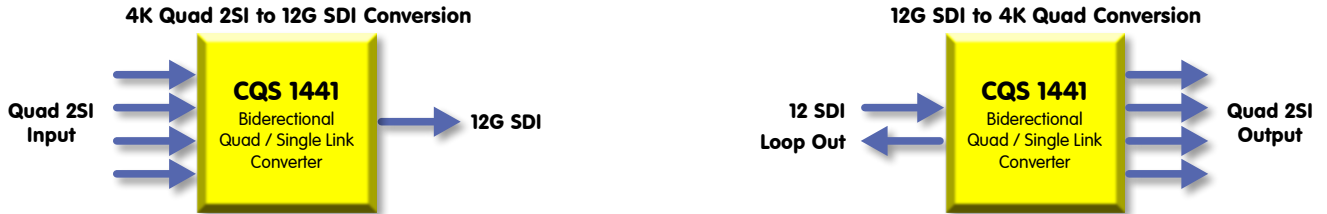|	
Electrical Inputs	4x multi-rate SDI inputs. 75 Ohm BNC connector (2SI only no support for SQD or "Square Division")
	SMPTE 292M, SMPTE 424M, SMPTE 2081, SMPTE 2082
	Multi standard operation from 1.5Gbit/s to 12Gbit/s; reclocking
	Electrical Return Loss: >10dB from 1.5GHz to 3GHz, >7dB from 3GHz to 6GHz, >4dB from 6GHz to 12GHz
	Automatic cable EQ 140m @ 3Gbit/s (Belden 1694A), 80m @ 6Gbit/s, 80m @ 12Gbit/s (Belden 4794R cable)
Electrical Outputs	5x multi-rate SDI outputs; 75 Ohm BNC connectors 1x 12Gbit/s SDI output; 75 Ohm BNC connector 1x 12Gbit/s SDI loop output; 75 Ohm BNC connector (2SI only no support for SQD or "Square Division")
	SMPTE 292M, SMPTE 424M, SMPTE 2081, SMPTE 2082
	Electrical Return Loss: >10dB from 1.5GHz to 3GHz, >7dB from 3GHz to 6GHz, >4dB from 6GHz to 12GHz
	Alignment Jitter: < 0.2 UI @ 1.5Gbit/s, < 0.3 UI @3Gbit/s, 6Gbit/s, 12Gbit/s Timing Jitter: < 1.0 UI @ 1.5Gbit/s, < 2.0 UI @ 3Gbit/s, 6Gbit/s, 12Gbit/s
Fiber Input	1 x fiber optic output option for 12G SDI input (see option table) Simplex (singlemode) using LC Connection
	SMPTE 297M - 2006
	Input range (wavelength) 1260nm to 1620nm
Fiber Output	1 x fiber optic output option for 12G SDI (see option table). Simplex (single-mode) using LC Connection
	Non CWDM (1310nm) and CWDM options available (see options table)
Power	+12VDC @ 6.79W nominal - (supports 7 - 24VDC input range)
Physical	Size: 138mm x 90mm x 44mm (5.43" x 3.54" x 1.72") including connectors
Weight	250g (8.9 Oz)
Ambient Temp	5 - 40°C (41 - 104°F) 90% Humidity (non condensing)
Model#	CQS 1441 - (EAN# 4250479325678)
Includes	Module,and AC to 12V DC power supply

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CQS 1441 Applications

There are multiple applications for the CQS 1441, aside from the basic conversions to and from Quad link to Single link, the optional fiber port opens up a host of additional possibilities.

Basic Applications

You may have a 4K camera (or another source device) which has a quad 2SI 4K UHD output which you would like to convert to a standard single link 12G SDI signal. Likewise, you may have a disk recorder or other device which requires a quad 2SI input, and you only have a 12G source. These basic "bridge" modes are the most simple and most common applications of the module.
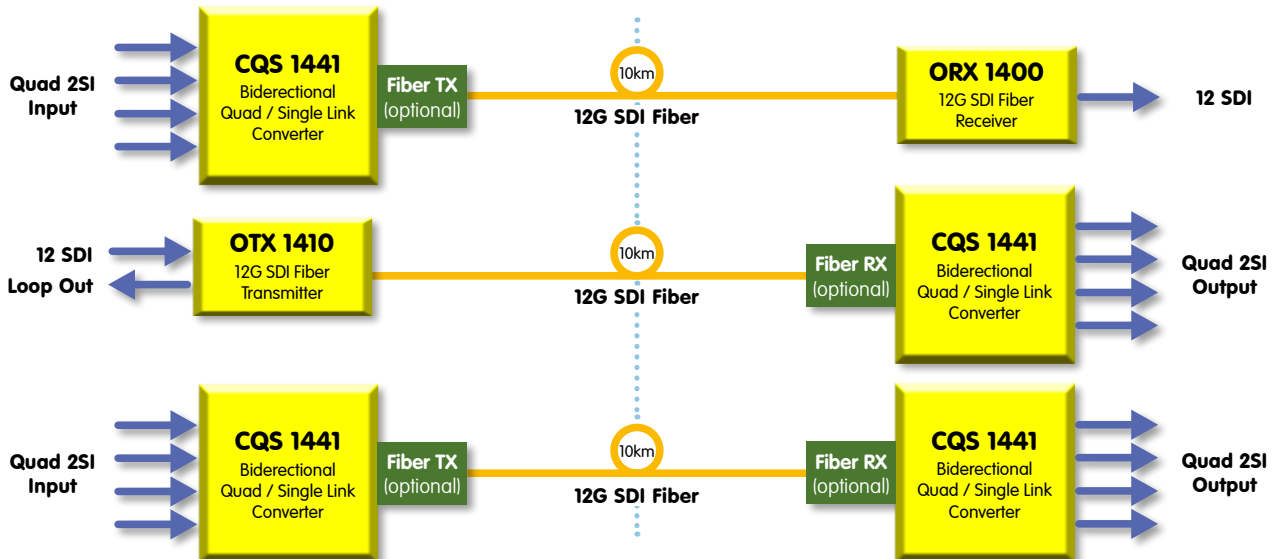
4K Quad 2SI to 12G SDI Conversion

Quad 2SI Input → **CQS 1441** Biderectional Quad / Single Link Converter → 12G SDI

12G SDI to 4K Quad Conversion

12 SDI → / Loop Out ← **CQS 1441** Biderectional Quad / Single Link Converter → Quad 2SI Output

You can also use CQS 1441 for distributing one 3G/HD signal from Input 1 [BNC/SFP] and distribute it to output 1-4 as well as loop out.

Input on BNC

3G SDI Input [BNC] → / 3G SDI Output [BNC] ← / 3G SDI Output [SFP] ← **CQS 1441** Biderectional Quad / Single Link Converter → 3G/HD SDI / 3G/HD SDI / 3G/HD SDI / 3G/HD SDI

Input on SFP

3G SDI Output [BNC] ← / 3G SDI Output [BNC] ← / 3G SDI Input [SFP] → **CQS 1441** Biderectional Quad / Single Link Converter → 3G/HD SDI / 3G/HD SDI / 3G/HD SDI / 3G/HD SDI

Note: 720p video format not supported

Basic Fiber Applications

Because of the distance limitations using coaxial cable for 12G SDI, using fiber makes a lot of sense. The CQS 1441 is quipped with an integrated SFP port which can accept several fiber options which expands the distance of the 12G SDI signal. Likewise, you can also extend the distance of a native Quad 2SI signal using fiber if needed. (Note: additional LYNX Technik Fiber conversion modules are shown in some applications)

Quad 2SI Input → **CQS 1441** Biderectional Quad / Single Link Converter → **Fiber TX (optional)** —10km— 12G SDI Fiber → **ORX 1400** 12G SDI Fiber Receiver → 12 SDI

12 SDI → / Loop Out ← **OTX 1410** 12G SDI Fiber Transmitter —10km— 12G SDI Fiber → **Fiber RX (optional)** **CQS 1441** Biderectional Quad / Single Link Converter → Quad 2SI Output

Quad 2SI Input → **CQS 1441** Biderectional Quad / Single Link Converter → **Fiber TX (optional)** —10km— 12G SDI Fiber → **Fiber RX (optional)** **CQS 1441** Biderectional Quad / Single Link Converter → Quad 2SI Output
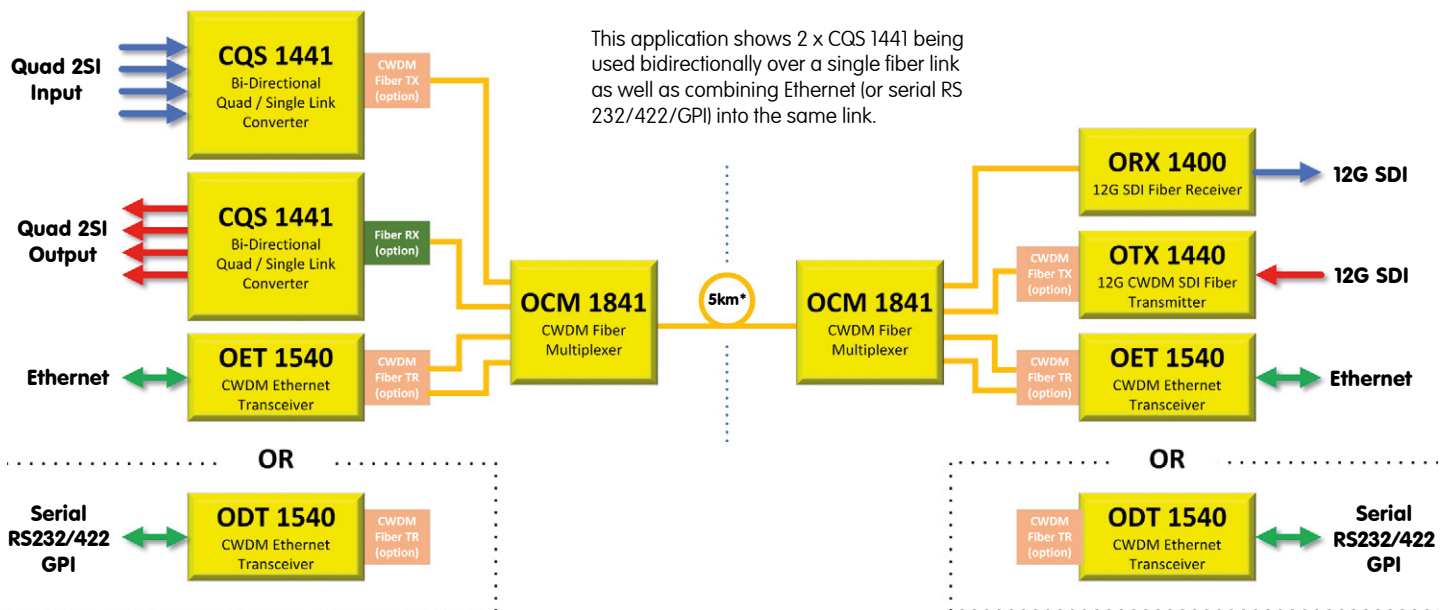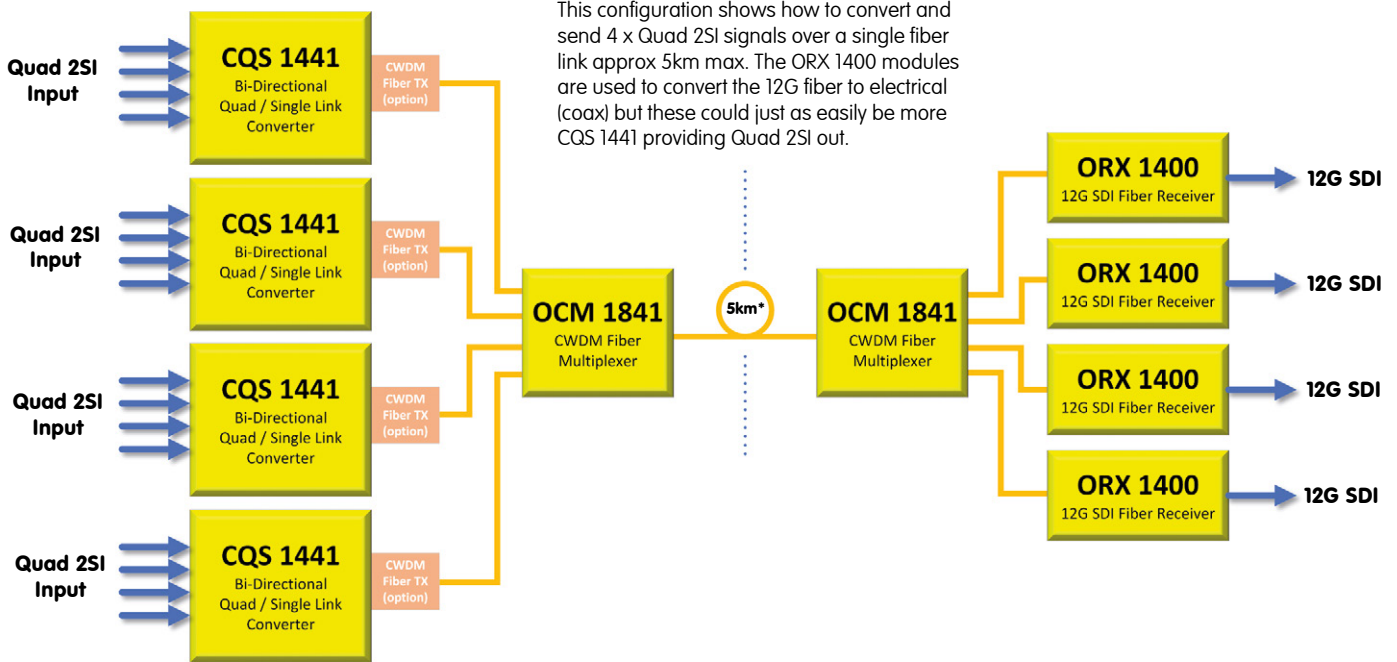
A fiber Transceiver option is also available. This includes both a Transmitter and Receiver in a single SFP package. The receive and transmit functions cannot be used simultaneously, but this option is useful if the CQS 1441 configuration is frequently changed where fiber transmission is sometimes needed and on other occasions fiber reception.

* Note: Max distances quoted are only approximations based on nominal fiber links. Actual distances achieved can be shorter or longer than that stated. Many things can impact distance such as splices, connections, patches, splitters and the quality of the fiber. For longer distances you should always calculate the total fiber losses in the fiber link and ensure adequate optical budget.

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CWDM Fiber Applications

Using the available 12G SDI CWDM fiber transmitter options with the CQS 1441 opens up a whole host of additional possibilities for more complex system designs combining multiple signals into a single fiber link, unidirectional and even bi-directional over a single link. Quad link 2SI and 12G can be combined with ethernet, serial data and even additional SDI signals if needed There are too many possibilities to show them all, but below are a few which show the versatility of CWDM fiber when used with the CQS 1441.

This configuration shows how to convert and send 4 x Quad 2SI signals over a single fiber link approx 5km max. The ORX 1400 modules are used to convert the 12G fiber to electrical (coax) but these could just as easily be more CQS 1441 providing Quad 2SI out.

This application shows 2 x CQS 1441 being used bidirectionally over a single fiber link as well as combining Ethernet (or serial RS 232/422/GPI) into the same link.

CQS1441-rev10 Specifications subject to change

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