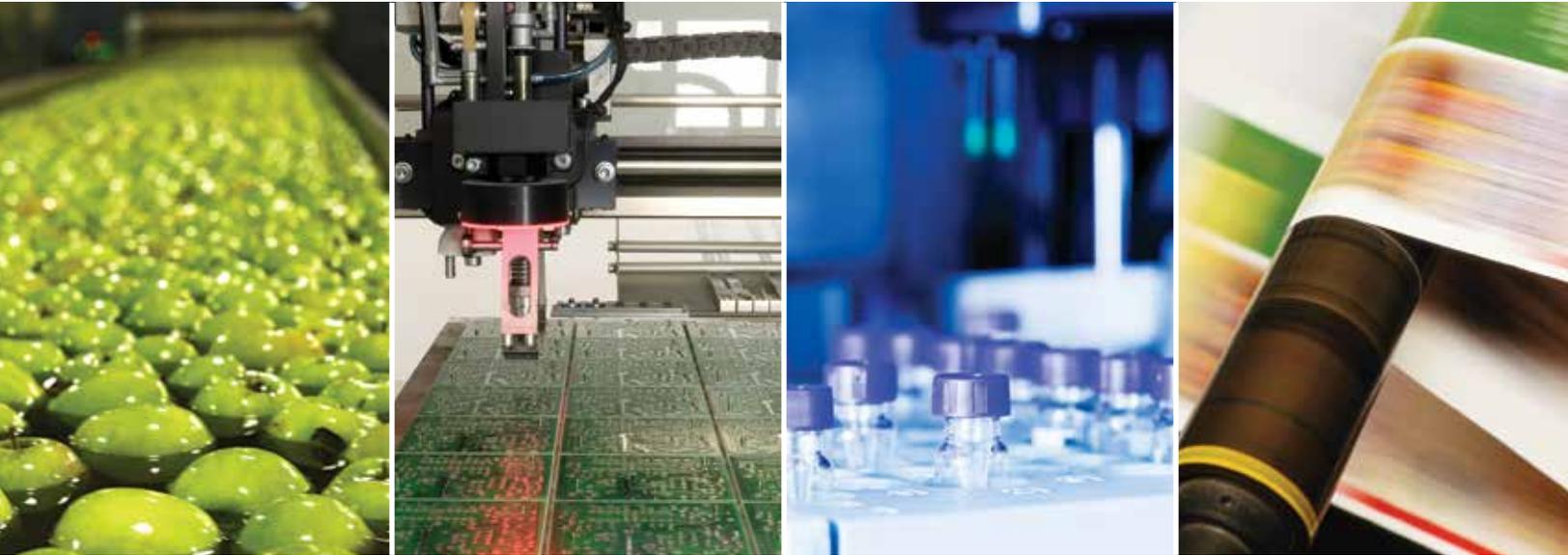


# Camera Link or CLHS: Which one is right for your application?



## The Goal: Fast and Reliable Long Distance Data Transfer

As you might expect in any next generation standard, Camera Link HS® (CLHS) has features and capabilities beyond those found in Camera Link®. A main driver for system designers is system cost, and CLHS reduces system costs over Camera Link and CoaXpress®. The main reason for cost reduction is the ability to connect the FPGA directly to the cable without external devices and the improved bit rate of each differential pair in the cable. Increased distance is achieved via DC balancing the signal on the differential pair, sending the signal with higher voltage swing and the ability of the receiver to provide auto equalization to compensate for cable losses.

CLHS M protocol uses copper cable that is similar to Camera Link cable. This CLHS cable features thumbscrew, 15 meter distance in copper@ 2.1 Gbyte/sec transfer (3 times CL deca configuration). Low-cost plug-in Active Optical cables are available from multiple suppliers and can achieve distances beyond 30 meters. The same cable is used with a bandwidth of 3.3 Gbyte/sec in the [Piranha™ XL Color model camera](#) so most products can be supported with a single cable.



Teledyne DALSA's [Linea™ 16k line scan camera](#) is available in both CL and CLHS interfaces. Which one is right for you?

**The following table indicates which interface to choose for various criteria.**

DECISION CRITERIA	CHOOSE	COMMENT
Cable Distance > 15 m	CLHS	Plug on Active Optical Cables available from Alysium and Hewtech in standard and flex life rated versions.
Cable Distance < 15 m	CLHS	Single copper cable to 15 meter is lower cost than 2 CL copper cables.
Smaller Cabling Solution	CLHS	Single copper cable of similar size to CL or AOC cable with 3 mm diameter is available.
Throughput > 850 MB/s	CLHS	Camera Link is limited to 850 MB/s, which equates to a 16k camera at 48 kHz (8-bit). CLHS supports up to 3.4 Gbyte/s on a single cable; this allows a CLHS camera such as the Linea 16k to output the full speed of its sensor at 71 kHz.
Flex Life Rated Cabling	CLHS	Available in copper and AOC.
System Error Rate Qualification	CLHS	Bit Errors are measured and can be queried in CLHS. CL has no easy method to measure error rate in place.
EMI/ground loop Induced Error risk	CLHS	Active Optical cables are ground loop and radiated emission immune
Backward Compatible	CL	

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