

# RUGGED HD VIDEO, ETHERNET AND SERIAL DATA MULTIPLEXER

Model 924-HDE



Moog Focal is the leading manufacturer of reliable, high-performance, and high-quality multiplexers and media converters since 1983, specializing in standard and custom products for harsh environment applications. Our experience positions us perfectly to help you choose the best solution for your application.

The 924-HDE is a high speed fiber-optic multiplexer supporting multiple uncompressed HD video channels, multiple serial data channels, and a single Gigabit Ethernet port. Using Focal's expertise in Time Division Multiplexing (TDM), a high speed optical transceiver and a high speed Field Programmable Gate Array (FPGA) has allowed the 924-HDE to be compact, rugged and low power. In comparison to a multiple media converter solution the 924-HDE is smaller, lighter, lower power, and lower cost. The 924-HDE compares even more favorably when a single fiber solution is needed (i.e. fiber optic rotary joint). A single 924-HDE can replace as many as three HD Video converters, four serial data converters and one Gigabit Ethernet converter.

By using high speed optics and a high speed FPGA the 924-HDE does not use video compression. The latency of the video is less than 20 micro-seconds, comparable to media converters. Jitter, another key parameter of video transmission, is also extremely low.

The 924-HDE is the first product in the 924 series. Modifications, such as form factor, connector type and placement are possible for specific applications.

## Features:

- Three 3G/HD/SD-SDI video channels, auto detect video mode
- Four RS-422 serial data channels
- One Gigabit Ethernet port
- Rugged design for harsh environments
- On-board diagnostics
- Optional Built-in Self-Test (BIST)
- Field updateable firmware

## ADVANTAGES

- Low latency, < 100  $\mu$ s
- Reduces size, weight, power consumption and cost (SWaP-C)
- Replaces eight media converters
- Simplifies troubleshooting with advanced diagnostics
- Supports a wide range of optics, including CWDM wavelengths
- Uncompressed, real time video

## APPLICATIONS

- Camera pedestals
- Electro-optic pods
- Remote weapon stations
- Vehicle turrets
- ROV

# SPECIFICATIONS

## TECHNICAL DATA

924-HDE Specifications					
Version		LS	MS	HS	
HD Video	No. Channels	2	3	3	
	Format	HD/SD-SDI (SMPTE-292M/259M-C)	HD/SD-SDI (SMPTE-292M/259M-C)	3G/HD/SD-SDI (SMPTE-424M/292M/259M-C)	
	Data Rate	1485, 270 Mbps	1485, 270 Mbps	2970, 1485, 270 Mbps	
Ethernet	No. Channels	0	1	1	
	Format	N/A	10/100/1000 BASE-T(X)	10/100/1000 BASE-T(X)	
	Data Rate	N/A	1000 Mbps	1000 Mbps, min. 600 Mbps with 3 x 3G-SDI	
Serial Data	No. Channels	4	4	4	
	Format	RS-422 (RS-485 factory option)	RS-422 (RS-485 factory option)	RS-422 (RS-485 factory option)	
	Data Rate	2.5 Mbaud max.	2.5 Mbaud max.	2.5 Mbaud max.	

Video latency less than 20  $\mu$ s, not including fiber (5  $\mu$ s/km).

Ethernet supports jumbo frames.

Serial port 4 can be configured for diagnostics.

Optical	
Optical Fiber	1 or 2 singlemode (9/125 $\mu$ m) or multimode (50/125 $\mu$ m)
Baud Rate	10.3125 Gbaud
Wavelength	1270/1330 nm Bidi standard CWDM 1471-1611 nm, optional
Optical Budget	6 dB, up to 24 dB optional
Electrical	
Power Voltage	+12.0 VDC +/- 10%, regulated
Power Current	0.71 A typical (0.85 A max.)
Protection	Over voltage/under voltage, reverse polarity, 3 A time-delay fuse
Mechanical	
Dimensions	90 x 96 mm [3.55 x 3.78 inches]
Weight	< 100 g (0.26 lb) including SFP
Options	Custom enclosures

Diagnostics	
LEDs	Power good, power fault, optical link, optical fault, video status
Serial to PC	Diagnostics through serial port 4
Connectors	
Optical	1 or 2 LC (SFP)
HD video	2 or 3 x MCX
Ethernet	1 x 8-pin Harwin Datamate
Serial	4 x 6-pin Harwin Datamate
Power	4-pin Harwin Datamate
Environmental	
Temperature	40°C to +71°C with airflow or other cooling (+85°C max. card temperature) -40°C to + 85°C (storage)
Humidity	85% RH, non-condensing
Vibration	MIL-STD-810G: Method 514.6, Procedure I, Category 20-b
Shock	MIL-STD-810G: Method 516.6, Procedure I, 30 g, 11 ms, half sine
Options	Other qualification tests

For product information, visit [www.moog.com](http://www.moog.com)

For more information or the office nearest you, contact us online, [focal@moog.com](mailto:focal@moog.com)

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Moog Focal 924-HDE Technical Data Sheet  
MCM/Rev. -, March 2025, Id. CDL68759-en