



# 242D

## Product Specification

### Description: Video + Return Data

#### Features

- ✓ Two-Way Transmission, One or Two Fibers
- ✓ Video One-Way with Return Data
- ✓ AGC Circuitry
- ✓ Supports RS232, RS422, TTL, Manchester, Biphase
- ✓ Operates Distances Up to 8.9 mi (14 km)
- ✓ Diagnostic Indicators: Status, Level/Loss™
- ✓ Standalone Modules or Rack Units
- ✓ Forever Warranty™

#### Description

The Fiber Options' Series 242D Video and Data Transmission System supports high-quality simultaneous transmission of video and control data, over one or two optical fibers. The system accepts RS232, RS422, Manchester (or biphase), or TTL data. The system incorporates video presence, data presence, and Level/Loss™ status indicators to monitor signal quality. Incorporating AGC circuitry, the system requires no field adjustment either at installation or periodically thereafter. The Series 242D may be ordered either in standalone or rack versions. Rack cards can be easily mounted in the Fiber Options' Series 515R Card Cage System or Series 517R Racking system, each unit occupying one rack slot.

#### Basic Model Descriptions

- 242D1** Multimode fiber link uses two different wavelengths (850 and 1300 nm) for transmission in two directions over one fiber.
- 242D2** Two-fiber link transmits using the same wavelength (850 nm) over separate fibers for two-way communication.
- 242D2L** Two-fiber link for long-haul transmission using 1300 nm wavelength over separate fibers for two-way communication.

For a complete list of available models, please refer to Table 1.

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## SERIES 242D

### TECHNICAL INFORMATION

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#### ELECTRICAL

Input Voltage:		Power Consumption @14 V:	3 W
Standalone Modules	12 - 16 VAC	Heat Equivalent**:	0.2 Btu/min
	12 - 16 VDC		0.05 cal/min
Rack Units	13.5 - 16 VDC		
Current Requirement:	200 mA		
Rack Module Power Factor:	2*		

\*For an explanation of the Power Factor, please see the product specification for the 515R or 517R racks or the Fiber Finder™.

\*\*This represents the conversion of all input power to heat. The actual heat generated will be less.

#### VIDEO SIGNAL

Number of Video Channels:	1	Signal-to-Noise Ratio:	> 50 dB @ maximum optical attenuation
Standards Supported:	EIA, CCIR, NTSC, PAL	Video Bandwidth:	8 MHz ± 1 dB
Video Input Signal:	1.0 V p-p composite	Video Resolution:	> 640 TV lines
Input/Output Impedance:	75 Ω	Differential Phase:	< 3°
Video Output Signal:	1.0 V p-p composite	Differential Gain:	< 3°
Output Gain:	Unity		

#### VIDEO INTERCONNECTION

Recommended Maximum Distances		Recommended Cable Type:	RG59/U coaxial cable (Belden No. 9259 or equivalent)
Video Equip to Tx:	≤100 ft (30 m)		
Rx to Video Equip:	≤100 ft (30 m)		

#### DATA SIGNAL

Number of Data Channels:	1	Impedance:	Per data format
Data Format:	RS232, RS422, TTL Manchester (biphase)	Operating Mode:	Asynchronous
Baud Rate:	56 kbps	Bit Error Rate:	<10 <sup>-9</sup>
Input/Output Logic levels:	Vary with data format		

#### DATA INTERCONNECTION

Recommended Maximum Distances		Recommended Cable Type:	Shielded Twisted Pair
Data Equip to Tx:	≤ 50 ft (15 m)	Gauge:	20-22 AWG
Rx to Data Equip:	≤ 50 ft (15 m)	Conductors:	Depends on data requirements

## SERIES 242D

### TECHNICAL INFORMATION

#### OPTICAL

<p>Wavelength:</p> <p>242D1: 850 and 1300 nm</p> <p>242D2: 850 and 1300 nm</p> <p>242D2L: 1300 nm</p> <p>Optical Mode: Multimode</p> <p>Signal Direction: Tx → Rx</p> <p>Optical Budget: 10 dB</p> <p>Operating Distance*:</p> <p>242D1: 2.5 mi (4.0 km)</p> <p>242D2: 2.5 mi (4.0 km)</p> <p>242D2L: 8.9 mi (14 km)</p>	<p>Emitter Type: LED</p> <p>Fiber Type: 62.5 μm</p> <p>Gain Control: Optical automatic (OAGC)</p> <p>Transmitter Launch Power: -17 dBm</p> <p>Receiver Sensitivity: -27dBm</p>
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\*Operating distance is approximate and assumes best fiber. It will be affected by the type and number of splices in the fiber.

#### AGENCY COMPLIANCE AND MTBF

<p>Emissions: FCC Part 15, ICES-003, AS/NZS 3548, EN55022</p> <p>Immunity: ENVS0204 EN61000-4-2, 3, 4, 5, 6, 11</p>	<p>Safety: UL1950, CAN/CSA 22.2, NO.950-95</p> <p>MTBF: &gt;100,000 hours</p>
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#### CONNECTORS

<p>Optical: ST type</p> <p>Video: BNC</p> <p>Data, Standalone: 6-pin screw terminal</p> <p>Data, Rack: 3-pin screw terminal</p>	
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#### OPTIONS

<p>Power Supply:</p>	<p>Model 611P (AC)</p> <p>Model 612P (DC)</p>
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#### ENVIRONMENTAL

<p>Temperature Range in Operation: -40° to +167° F (-40° to +75° C)</p> <p>Temperature Range in Storage: -40° to +185° F (-40° to +85° C)</p>	<p>Humidity Range in Operation: 0 - 95% relative, noncondensing</p> <p>Humidity Range in Storage: 0 - 95% relative, noncondensing</p>
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**SERIES 242D**  
**TECHNICAL INFORMATION**

**MECHANICAL**

**Standalone Modules**

Dimensions: Length: 4.0 in (102 mm)  
Width: 4.55 in (116 mm)  
Height: 1.22 in (31 mm)

Weight: 0.54 lb (0.25 kg)

Shipping Dimensions: Length: 5.1 in (130 mm)  
Width: 4.2 in (107 mm)  
Height: 1.40 in (35 mm)

Shipping Volume: 0.010 cu ft (0.0003 cu m)

Shipping Weight: 0.54 lb (0.25 kg)

Construction: Aluminum

Finish: Black semigloss paint

Mounting Method: 4 - No. 6 (3 mm) screws

**Rack Modules**

Module Width: 1 slot, 1.0 in (25.4 mm)

Weight: 0.67 lb (0.3 kg)

Shipping Dimensions: Length: 9.9 in (252 mm)  
Width: 5.4 in (137 mm)  
Height: 1.1 in (28 mm)

Shipping Volume: 0.034 cu ft (0.001 cu m)

Shipping Weight: 0.83 lb (0.4 kg)

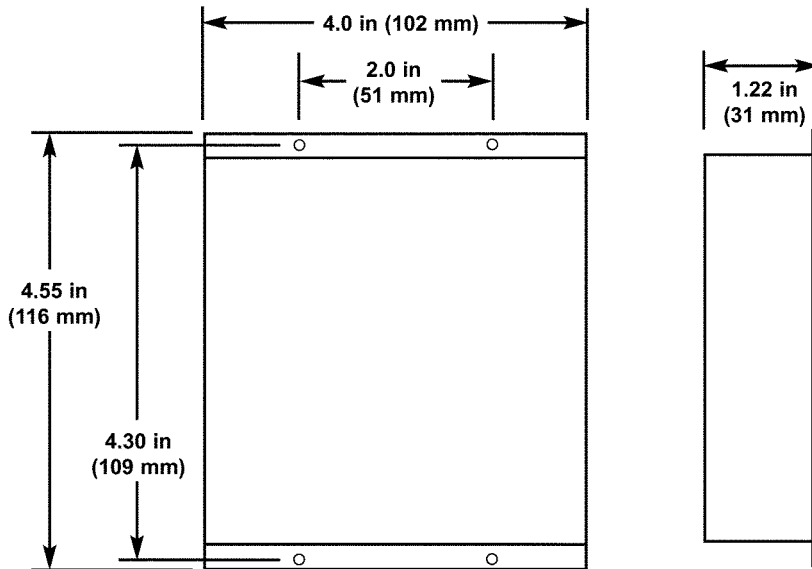
Construction: Aluminum

Finish: Black semigloss paint

**INDICATORS**

Receiver:		Transmitter	
Standalone	Level/Loss™	Standalone	Video Status
Rack	Level/Loss™	Rack	Video Status
	Video Status		

**FIGURE 1: OUTLINE DRAWING**



**SERIES 242D**  
**TECHNICAL INFORMATION**

**TABLE 1: MODEL DESCRIPTIONS**

Model Number	Function	Enclosure Type*	Fiber Size	No. of Fibers	Max. Atten.	Wave-length	Power Supply Model
<b>Standalone Modules</b>							
<b>TTL Data Format</b>							
242D1-T/1BX1	Transmitter	4 X 4 X 1	62.5	1	10	850/1300	612P
242D1-R/1B1X	Receiver	4 X 4 X 1	62.5	1	10	850/1300	612P
242D2-T/1BX1	Transmitter	4 X 4 X 1	62.5	2	10	850	612P
242D2-R/1B1X	Receiver	4 X 4 X 1	62.5	2	10	850	612P
<b>RS232 Data Format</b>							
242D1-T/1BX2	Transmitter	4 X 4 X 1	62.5	1	10	850/1300	612P
242D1-R/1B2X	Receiver	4 X 4 X 1	62.5	1	10	850/1300	612P
242D2-T/1BX2	Transmitter	4 X 4 X 1	62.5	2	10	850	612P
242D2-R/1B2X	Receiver	4 X 4 X 1	62.5	2	10	850	612P
<b>RS422 Data Format</b>							
242D1-T/1BX4	Transmitter	4 X 4 X 1	62.5	1	10	850/1300	612P
242D1-R/1B4X	Receiver	4 X 4 X 1	62.5	1	10	850/1300	612P
242D2-T/1BX4	Transmitter	4 X 4 X 1	62.5	2	10	850	612P
242D2-R/1B4X	Receiver	4 X 4 X 1	62.5	2	10	850	612P
<b>Manchester (Biphase) Data Format</b>							
242D1-T/1BX5	Transmitter	4 X 4 X 1	62.5	1	10	850/1300	612P
242D1-R/1B5X	Receiver	4 X 4 X 1	62.5	1	10	850/1300	612P
242D2-T/1BX5	Transmitter	4 X 4 X 1	62.5	2	10	850	612P
242D2-R/1B5X	Receiver	4 X 4 X 1	62.5	2	10	850	612P
<b>Rack Mounted Modules</b>							
<b>TTL Data Format</b>							
242D1-T-R/1BX1	Transmitter	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D1-R-R/1B1X	Receiver	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D2-T-R/1BX1	Transmitter	515R, 517R	62.5	2	10	850	Powered by rack
242D2-R-R/1B1X	Receiver	515R, 517R	62.5	2	10	850	Powered by rack

*Table Continued on Next Page*

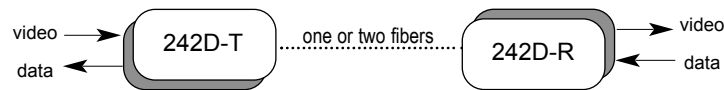
# SERIES 242D

## TECHNICAL INFORMATION

**TABLE 1: MODEL DESCRIPTIONS (continued)**

Rack Mounted Modules (continued)							
Model Number	Function	Enclosure Type*	Fiber Size	No. of Fibers	Max. Atten.	Wave-length	Power Supply Model
<b>RS232 Data Format</b>							
242D1-T-R/1BX2	Transmitter	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D1-R-R/1B2X	Receiver	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D2-T-R/1BX2	Transmitter	515R, 517R	62.5	2	10	850	Powered by rack
242D2-R-R/1B2X	Receiver	515R, 517R	62.5	2	10	850	Powered by rack
<b>RS422 Data Format</b>							
242D1-T-R/1BX4	Transmitter	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D1-R-R/1B4X	Receiver	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D2-T-R/1BX4	Transmitter	515R, 517R	62.5	2	10	850	Powered by rack
242D2-R-R/1B4X	Receiver	515R, 517R	62.5	2	10	850	Powered by rack
<b>Manchester (Biphase) Data Format</b>							
242D1-T-R/1BX5	Transmitter	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D1-R-R/1B5X	Receiver	515R, 517R	62.5	1	10	850/1300	Powered by rack
242D2-T-R/1BX5	Transmitter	515R, 517R	62.5	2	10	850	Powered by rack
242D2-R-R/1B5X	Receiver	515R, 517R	62.5	2	10	850	Powered by rack

**FIGURE 2: SYSTEM DIAGRAM**



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