F-18-07-01

INTEROPTICS
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Fiber Optic Data Link Series 100

OPTO/LINK

DATA SHEET NO. IO 008-1085

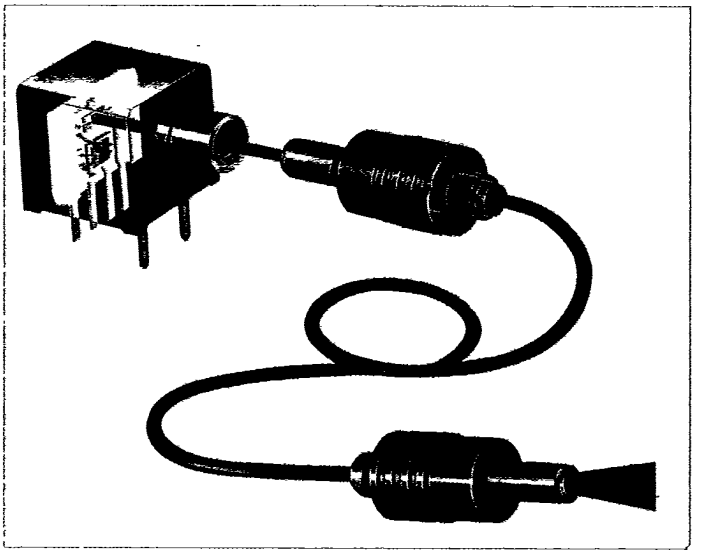
DESCRIPTION

The OPTO/LINK 100 Series is a complete digital data link incorporating the LED with the transmitter IC in a single transmit module and the photo diode with the receiver IC in a single receive module in order to facilitate usage in virtually any type of TTL circuit.

This design makes the optical portion completely transparent to the user as the input and output signals are TTL levels and no special coding is required. The Automatic Threshold Control (ATC) circuit assures constant pulse width regardless of optical power fluctuations.

Installing the connector is easily and quickly accomplished with a crimping tool without the need for epoxying or extensive polishing. Custom cable lengths are also available.

These off-the-shelf components are ideal for short distance data transmission applications where problems could arise from EMI/RFI, crosstalk, ground loops or in areas governed by FCC regulations regarding EMC.



FEATURES

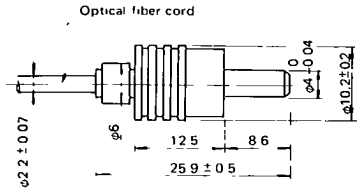
- Simplex operating mode
- DC to 3 Mb/s (NRZ)
- TTL/STTL/LSTTL compatible
- 970 micron plastic core fiber
- Transmission up to 50 meters
- PC board mountable
- Easily installable "snap-in" connector
- EMI/RFI immunity
- Inexpensive

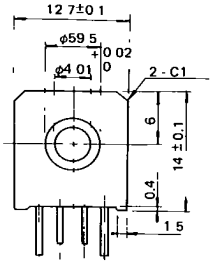
APPLICATIONS

- Computer
- Industrial
- Medical
- Automotive
- Automation
- Control systems
- POS systems
- Secure data transmission
- High RFI noise areas
- EMC (FCC requirements)

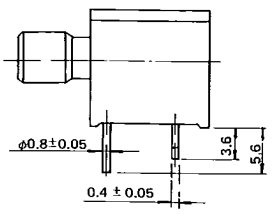
MECHANICAL CHARACTERISTICS

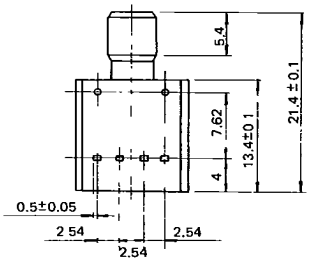
Connector



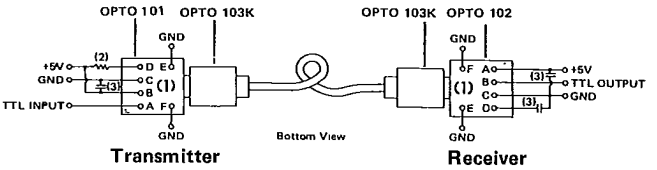


Transmitter or Receiver Module





CIRCUIT LAYOUT BETWEEN OPTO-101 AND OPTO-102



Note (1) Pin Marking

OPTO-101		OPTO-102	
A	— TTL input	A	— Vcc, 5 volt
B	— Vcc, 5 volt	B	— TTL output
C, E, F	— GND	C, E, F	— GND
D	— Note (2)	D	— Note (3)

Note (2)
500 Ω resistor <10 meters
150 Ω resistor >10 meters
(1/8 watt or larger)

Note (3)
Capacitor 0.1 μf, 25 watts

Dimensions are in millimeters

SPECIFICATIONS

Maximum Ratings

Part Number	Item	Symbol	Min.	Max.	Unit
100 Series	Operating temperature	T_{opr}	0	70	°C
OPTO101 Transmitter	Power supply voltage	V_{cc}	−0.5	7	V
	Input voltage	V_{IH}	−0.5	5.5	V
OPTO102 Receiver	Power supply voltage	V_{cc}	−0.5	7	V
	Low level output current	I_{OL}	—	20	mA
	High level output current	I_{OH}	—	−1	mA

ORDERING INFORMATION

Description	Part No.
Transmitter	OPTO101
Receiver	OPTO102
Connector	OPTO103K
Cable (1 meter)*	OPTO104M
Assembly Kit	OPTO105

*Consult factory for other cable lengths.

ELECTRICAL AND OPTICAL CHARACTERISTICS

(T_{opr} = 25° C, V_{cc} = 5 ± 0.25 V, λp = 660 nm)

Part Number	Item	Symbol	Min.	Standard	Max.	Unit	Condition
OPTO101 Transmitter	Coupled power to fiber	Pf	−15	−13	−10	dBm	External resistor 150 Ω using OPTO103K w/1 meter of cable
	Wavelength of peak radiant intensity	λp	—	660	—	nm	
	Current consumption	I_{cc}	—	45	65	mA	
	High level input voltage	V_{IH}	2.0	—	—	V	(2)
	Low level input voltage	V_{IL}	—	—	0.8	V	(2)
	High level input current	I_{IH}	—	—	40	μA	V_{cc}=5.25V, V_{IH}=2.4V
	Low level input current	I_{IL}	—	—	−1.6	mA	V_{cc}=5.25V, V_{IL}=0.4V
OPTO102 Receiver	Maximum receivable power	P_{MAX}	−15	−13	—	dBm	BER= 10^{-9} (1)
	Minimum receivable power	P_{MIN}	—	−30	−28	dBm	BER= 10^{-9} (1)
	Current consumption	I_{cc}	—	18	30	mA	
	High level output voltage	V_{OH}	4.6	—	—	V	V_{cc}=4.75V, I_{OH}=60μA (4) −50μA (5) (3)
	Low level output voltage	V_{OL}	—	—	0.4	V	V_{cc}=4.75V, I_{OL}=1.2 mA (3) (4)

CABLE CHARACTERISTICS

Part No.	Item	Symbol	Min.	Standard	Max.	Unit	Condition
OPTO104M	Numerical aperture	N.A.	—	0.5	—		
	Refractive index profile	Step index, plastic core/clad. Core diameter = .97 mm, clad diameter = 1.0 mm					
	Transmission loss		—	0.4	—	dB/m	Measured with 10 m optical fiber length
	Bandwidth		—	60	—	MHz	Optical fiber length 50 m
	Propagation delay time	t_p	—	5	7	ns/m	

(1) Rated by peak value.
(2) LED is on when input is at low level, it is off when at high level.
(3) Low level output when optical flux is received, high level output when optical flux is not received.
(4) When three LS-TTL gates are connected.
(5) When one S-TTL gate is connected.

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INTEROPTICS reserves the right to change these specifications as required to permit improvements in the design of its products

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