

WARRANTY & LIABILITY

All fiber optic transmission systems, products and accessories manufactured by Liteway, Inc. and its subsidiaries are fully tested prior to shipment and are warranted against defective materials and workmanship for a period of Five full years from the date of the original shipment. Should a problem occur, a Return Material Authorization Number (RMA) must be obtained from Liteway Inc. at www.liteway.com and the item returned to a USA Liteway, Inc. Location prepaid. Liteway Inc. will then, at its option repair or replace the defective item.

Liteway, Inc. maximum liability under this warranty is limited to the cost of the defective item only. No contingent liabilities of any kind are either assumed or implied.

Any items returned to Liteway, Inc. that have been misused, abused, damaged, modified, connected or adjusted in any way contrary to the instructions furnished by Liteway, Inc. or repaired by unauthorized personnel will not be covered by this warranty. Any non-warranty repairs required will be quoted at the current rate for such services.



Important Notices



CAUTION ! AVOID DIRECT EXPOSURE TO BEAM.

All -5, -7, -8, and -9 Models use laser diodes. These solid-state laser diodes are located in the optical ports of these units. Laser diodes produce invisible radiation that may be harmful to human eyes. Never look directly into the optical port of any fiber optic unit designed to operate with single-mode optical fiber.

NOT FOR LIFE SUPPORT SYSTEMS

Liteway, Inc. does not authorize or warrant any of its standard products or accessories for use in critical life support systems or applications of any kind. Please contact us for this critical specialty equipment.

OPERATING INSTRUCTIONS

10 MHz High Precision Fiber Optic Sine Wave Transmission System

INST-4101

INSR-4101



The INST-4101 and INSR-4101 is a high precision analog fiber optic transmission system used to transmit highly precise low noise 10 MHz sine waves for a multitude of timing applications.

Technical Specifications

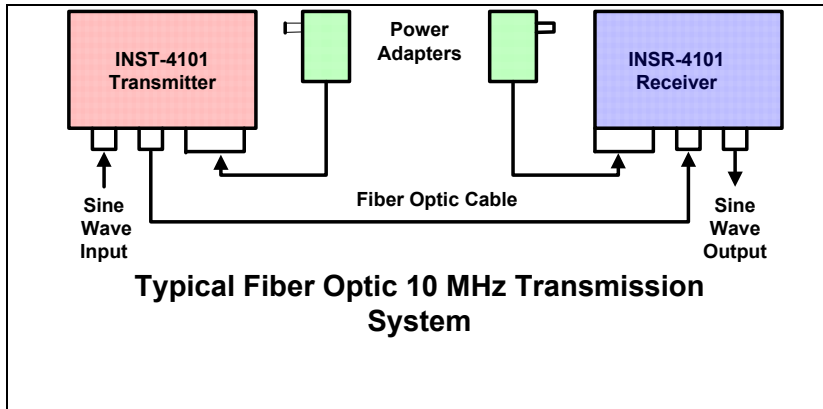
System Bandwidth	10 MHz \pm 1%
Input/Output Impedance	50 ohms
Input Signal Level	0.5 to 1.5 volts pp
Output Signal Level	1.0 volt pp, Adjustable
Harmonic Levels*	-60 dBc typically
Output Channel Isolation	>100 dB
Input/Output VSWR	Less than 20 dB
Phase Noise	>140 dBc/Hz
Signal Connectors	BNC
MTBF (MIL-HDBK-217)	>100,000 Hours
Temperature Range	-35° to +75°C
Power Requirements	11-18 VAC/DC @350 mA
Physical Size (mm)	5.0"(127)Lx7.0"(178)Dx1.0"(25.4)W

** The INST-4101 and INSR-4101 will only degrade the harmonic levels of an input signal by less than 5dB. For example, an input signal with a third harmonic level of -65dBc will result in an output signal with a third harmonic level of less than -60dBc.*

All specifications are subject to change without prior notice.

Installation Instructions

The diagram below shows the typical installation of the INST-4101 and INSR-4101 as used for 10 MHz precision sine-wave transmission.



Input Considerations

The input to the INST-4101 is a matched 50 Ohm impedance. Any 10 MHz sine wave signal from 0.5 to 1.5 volts pp may be connected as required. It is important that the sine wave be basically symmetrical around zero (AC coupled). For best results the input and output source, load and coax cables should all be matched to 50 ohms.

Output Considerations

The output of the INSR-4101 is designed to drive a 50 Ohm load impedance. An external level control is provided on the unit to adjust the output level to 1 volt pp at the output for input levels from 0.5 volts pp to 1.5 volts p-p. This allows compensation for voltage drops due to long coax cables, to boost the signal when long coax output lines are employed or to adjust for optical fiber attenuation. Once adjusted, this control will normally not require any further adjustment.

Harmonic and Noise Considerations

The signal path through both the INST-4101 and INSR-4101 contain 10 MHz low pass filters and linear low noise circuitry which attenuate harmonics through the system to a high degree. As a result, the

harmonic degradation of the unit itself is typically only 5 dB. This means, for example, that for an input signal with a second and third harmonic level of -65 dBc, the output signal will only have a second and third harmonic level of -60 dBc. Signals with a poor initial second and third harmonic content will be improved due to the action of this filter.

Note that although poor signals will be improved, they may not necessarily be improved fully to the system specifications.

The components used in the INST-4101 and INSR-4101 units all also contribute minimal phase noise to a signal passing through the unit at a level of approximately -140 dBc/Hz. As a result, any additional phase noise of the input signal will be passed to the output.

Residual noise will be a function of the type and length of fiber optic cable employed

Removable Terminal Block Power Connections

Pin	Function
1	Alarm output for use with optional Alarm Sensing Unit ALM-1000. No other connections should be made to this terminal
2	+11 to 18 DC or AC Volts input
3	AC or DC return (Common to Housing)

Be certain to check all connections, settings and voltages before applying power.

Indicator Lights

Indicator	Lights when
Pwr	Proper power is present.
Alm	There is no 10 MHz signal present to transmit, the level of the input signal is less than 0.5V pp or the output signal is less than 0.7 volts pp.
Sig (Tx)	A valid 10 MHz sine-wave signal between 0.5 volts pp and 1.5 volts pp is present.
Sig (Rx)	A valid 10 MHz 1 volt pp signal is present