WARRANTY

All fiber optic transmission systems, products and accessories manufactured by Liteway, Inc. and it's 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 (516) 931-2800 and the item returned to Liteway, Inc. 166 Haverford Road, NY 11801, USA, 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 ! The laser diodes used in all -7 and -9 Fiber Optic Transmission systems manufactured by Liteway, Inc. utilize solid-state laser diodes located in the optical ports of these units. These laser diodes produce invisible radiation, which may be harmful to human eyes. As a result one should never look directly into the optical port of any fiber optic unit designed to operate with single-mode optical fiber.

Liteway, Inc. does not authorize or warrant any of its products or accessories for use in critical life support systems or applications of any kind.

 123240 Rev F

OPERATING INSTRUCTIONS

Fiber Optic Universal Intercom Transceiver

Model ACX-1001

The ACX-1001 system consists of a fiber optic transmitter and receiver in a single housing and will transmit high quality two-way balanced or unbalanced line level
audio signals as well as two-way contact closures for remote control purposes from one point to another.

Technical Specifications

Signal Bandwidth	30 Hz to 50 KHz (+0, -3dB)
In/Out Impedance	600 ohms
In/Out Signal Level	3 volt pp (1 Vrms)
Input	Balanced or Unbalanced, 2 or 4 wire
Linearity and THD	3% or better
Signal/Noise Ratio	60 dB minimum
Optical Loss Budget	0 – 12 dB (multimode or single-mode)
Optical Output	-15dBm typ
Operating Wavelength	850 (-1), 1300 (-3,-7), 1550 (-9) nm
Fibers Accommodated	Multimode; -1, -3, Single-mode; -7, -9
Number/Type of Fibers	2,Multimode or 2 Single-mode
Temperature Range	-35º to +75ºC
Operating Power Requirements	11-24 VAC/DC @150 mA
Physical Size (mm)	5.0"(127)L x 1.0" (25.4)W x 3.0"(7)D
Output Contact Rating	0.5A/125 VAC, 1A 24 VDC

All specifications measured with 1Km of 62.5u multimode fiber and are subject to change without prior notice.

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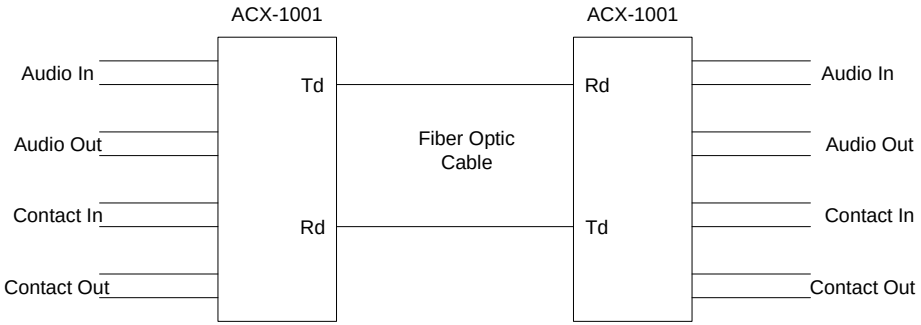
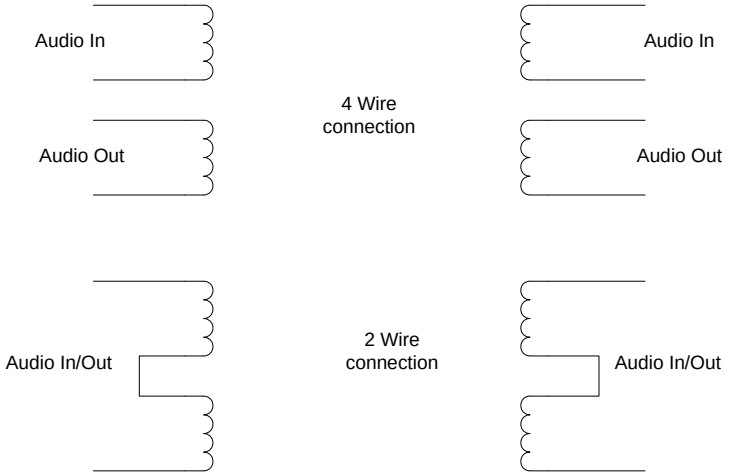
Installation Instructions

Typical Installation

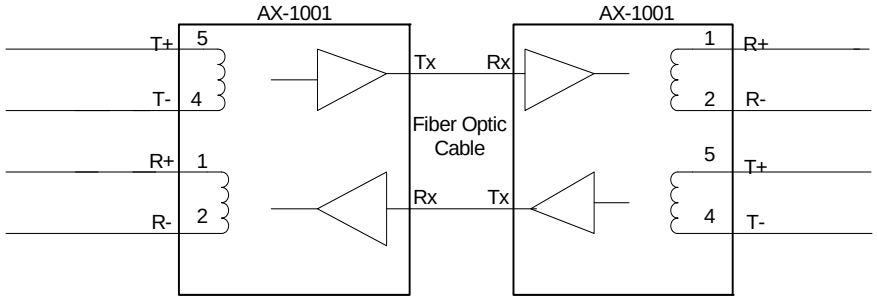
The diagram below shows the typical (functional) installation of the ACX-1001 fiber optic audio/contact transmission units. A 3 volt peak-to-peak audio signal is applied to the transmitter. The transmitter then sends the audio signal over the fiber optic cable to the receiver at the second location. The receiver then reproduces the 3 volt peak-to-peak audio output signal across a 600 ohm load. In addition a closed contact input at one ACX-1001 results in a closed contact output from the other ACX-1001. The same is true for the reverse direction.



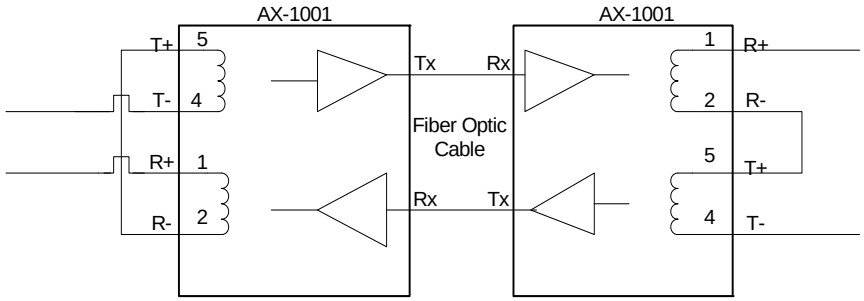
The diagram below shows how the input and output audio lines can be connected in a 4-wire or as a 2-wire configuration as required. Pin 3 is for ground in 4-wire or shields or both.



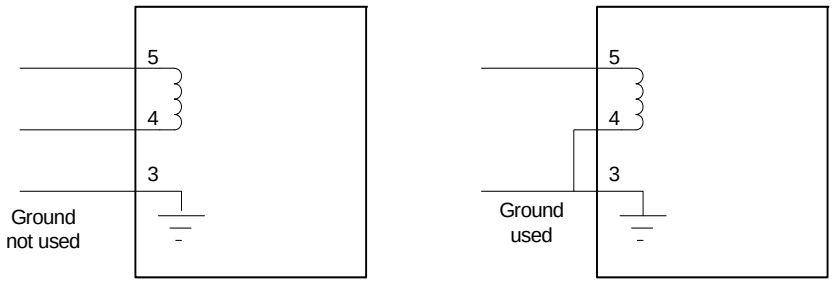
If oscillation occurs in the 2 wire configuration reverse the leads to the terminals of one of the audio output channels at one location only.



Four Wire Input Configuration



Two Wire Input Configuration



Balanced Input **Unbalanced Input**

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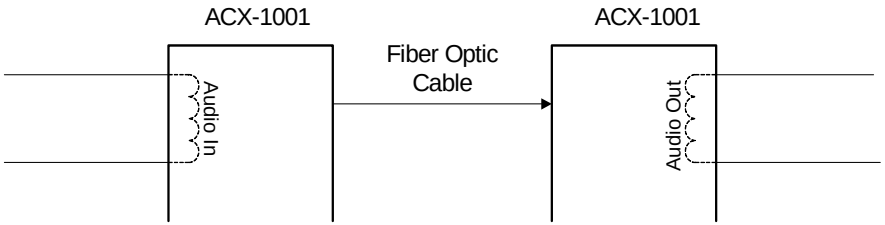
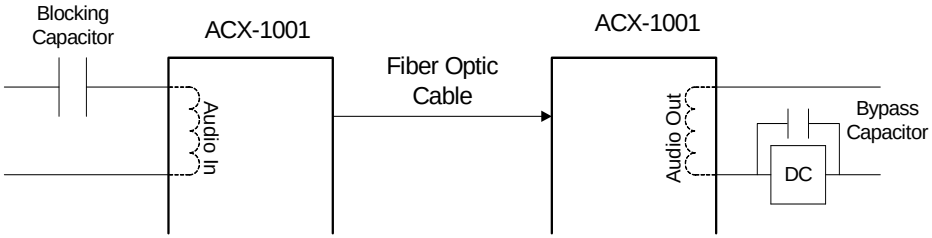
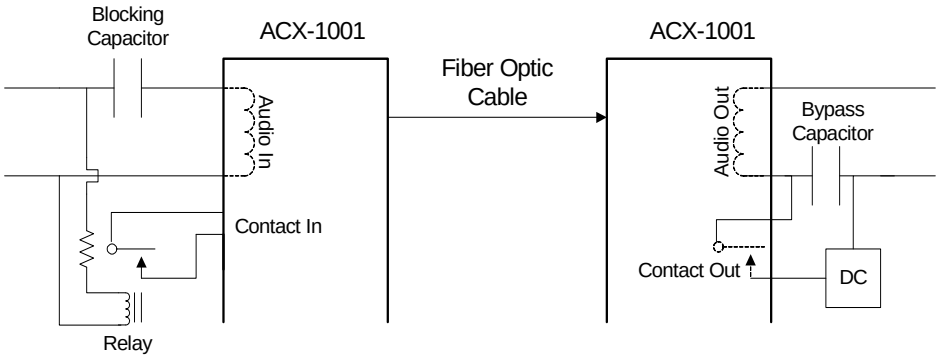


AC Coupled Audio with no DC Level



AC Coupled Audio with DC Level



AC Coupled Audio with Switched DC Level

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Audio Signal Connector Connections

Pin	Function
1	(+) Audio Output
2	(-) Audio Output
3	Common (ground) (also connected to housing)
4	(+) Audio Input
5	(-) Audio Input

If oscillation occurs in the 2 wire configuration reverse the leads to the terminals of one of the audio output channels at one location only.

Contact Closure Connector Connections

Pin	Function
1	Contact Input
2	Contact Input
3	Common (ground) (also connected to housing)
4	Contact Output
5	Contact Output

Power Terminal Block 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 24 V AC or DC
3	AC or DC return (Common to Housing)

Indicator Lights

LED	Function
Pwr	Correct operating power is present
Link	A valid fiber optic link has been established
ATx	Audio is being transmitted
ARx	Audio is being received
CTx	A closed contact input is present
CRx	A closed contact output is present
Alm	A valid fiber optic link has not been established

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Supplementary Information

Fiber Optic Universal Intercom Transceiver

Model ACX-1001

The diagrams on this document show three common ways to interface the ACX-1001 as well as some additional information regarding the inputs. Note that one direction is shown in most cases for clarity. However, the same scheme can certainly be provided on both sides if necessary. Operation of each interface is as follows:

AC Coupled Audio with no DC level
This method transmits line level audio that is essentially AC coupled (symmetrical around 0 volts) with no significant DC level. Since the input and output are transformer windings they may be connected for either balanced or unbalanced operation. As the inputs and outputs are low resistance discrete transformer windings no significant DC level is permitted. The only precaution in this case is to assure that the audio levels do not exceed 1 volt rms (3 volts pp). Note that the contact closures are not used in the configuration and may be employed for other purposes.

AC Coupled Audio with a Discrete DC level
This method transmits line level audio that is riding on a discrete DC level which must be maintained from one side of the link to the other. Since the input and output are transformer windings they may be connected for balanced or unbalanced operation but have to be blocked from DC. At the transmit side a DC blocking capacitor is needed as shown. The value of this capacitor should be at least 10uF for a low frequency 3dB point of about 20Hz (600 ohms). In addition the voltage rating of the capacitor should be at least 2 to 3 times greater than the residual DC level. At the receive side output a DC power supply of the desired discrete level must be provided and connected in series with the audio as shown. A bypass capacitor across the power supply may also be added as shown if required. The precautions in this case are to assure that no more than 10mA of DC current is allowed to flow through the output winding and that the audio levels do not exceed 1 volt rms (3 volts pp). Note that the contacts are not used in the configuration and may be employed for other purposes.

AC Coupled Audio with a Switched DC level
This method transmits line level audio that is riding on a discrete DC level which must can be switched on and off from one side of the link to the other for signaling purposes. Since the input and output are transformer windings they may be connected for balanced or unbalanced operation but have to be blocked from DC. At the transmit side a DC blocking capacitor is needed as shown. The value of this capacitor should be at least 10uF for a low frequency 3dB point of about 20Hz (600 ohms). In addition the voltage rating of the capacitor should be at least 2 to 3 times greater than the residual DC level. To sense the input DC level a small relay and resistor (or similar means) is used to trigger the contact input of the unit.

At the receive side output a DC power supply of the desired discrete level must be provided and connected in series with the output contact closure and the audio as shown. When the contact at this end is closed the audio rides on the DC level. When the contact is open the audio is bypassed by the capacitor and the DC level is 0. The precautions in this case are to assure that no more than 10mA of DC current is allowed to flow through the output winding when the contact is closed and that the audio levels do not exceed 1 volt rms (3 volts pp).

Four wire Input Configuration
In this case the inputs and the outputs are used separately. What ever is applied to the transmit pair at one end of the link is reproduced at the receive pair at the other end of the link. The only precaution in this case is to assure that the audio levels do not exceed 1 volt rms (3 volts pp).

Two wire Input Configuration
In this case the inputs and the outputs are connected together. What ever is applied to the transmit/receive pair at one end of the link is reproduced at the transmit/receive pair at the other end of the link. The only precaution in this case is to assure that the audio levels do not exceed 1 volt rms (3 volts pp). In some cases it may be necessary to reverse the connections to one pair of windings, (transmit or receive - not both) at one side of the link to prevent oscillation.

Balanced/Unbalanced Configuration
Balanced or unbalanced connections can be used at the input and/or output as required by the specific application.

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