NOTIFIER AFL-T Audio Fiber Link Transmitter Module Instruction Manual

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Contents

Audio Fiber Link

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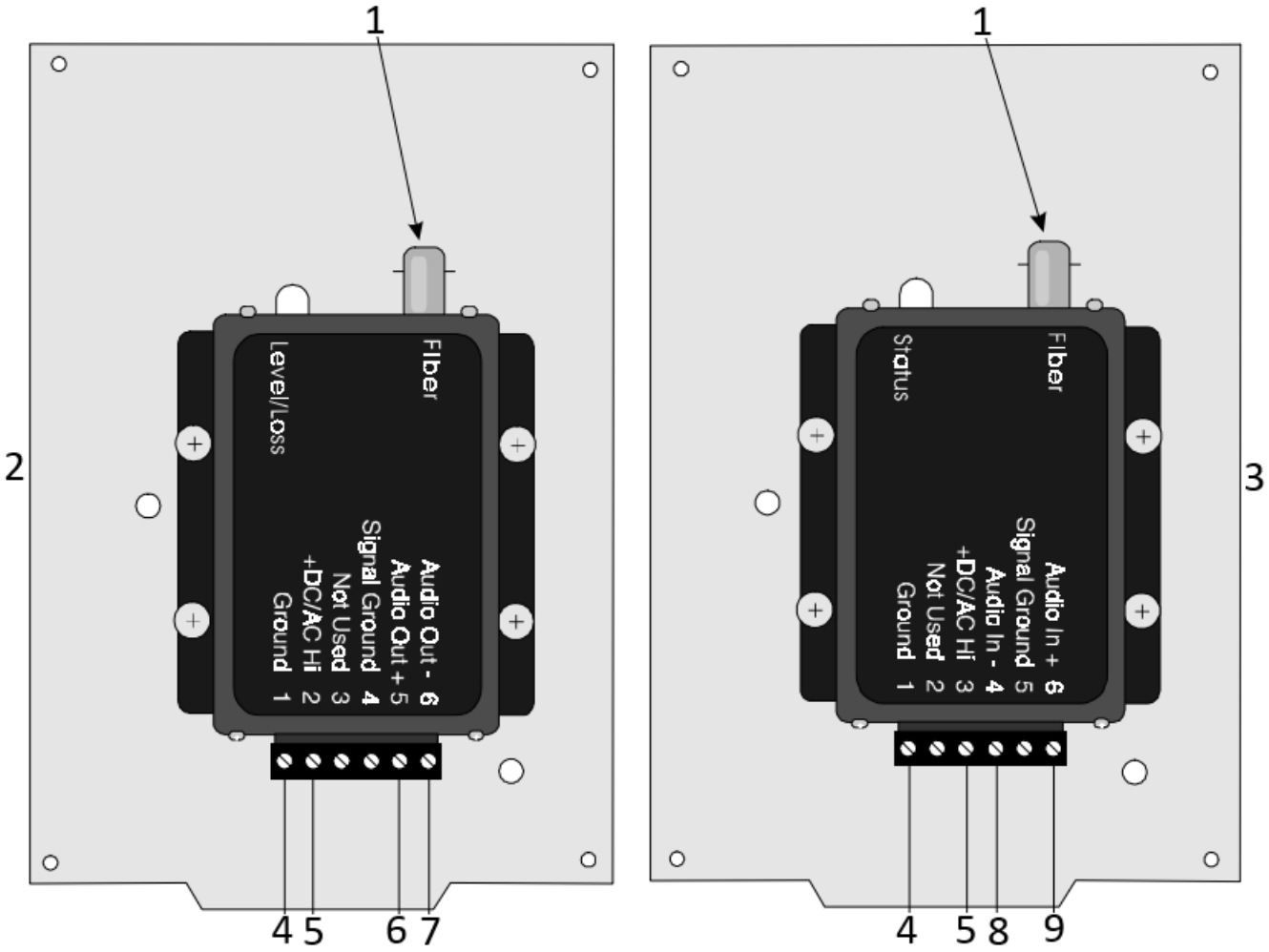
General Description

The Audio Fiber Link (consisting of an AFL-T, AFL-R, and fiber optic cable) distributes low level audio signals via fiber optic media.

The AFL-T accepts low level audio signals from the AMG-1, AMG-E, or the ATG-2. The AFL-T then converts the low level audio signal to modulated light which is transmitted through multimode fiber optic cable. The AFL-R accepts that modulated light on the other end of the fiber optic cable. The AFL-R then converts the modulated light to low level audio which in turn, feeds AA-30, AA-100, or AA-120 amplifiers and (if required) the next daisy-chained AFL-T.

Both AFL-T and AFL-R are powered from nonresettable 24 VDC output of power supplies such as the MPS-24A/AE, MPS-24B/BE, MPS-400, or FCPS-24 which are listed for fire protective signaling service.



AFLPANEL.

FIGURE 1 – AFL-R AND AFL-T ASSEMBLIES

1. ST Male Connector
2. AFL-R (Receiver)
3. AFL-T (Transmitter)
4. Common
5. +24 VDC
6. Low Level Audio Output +
7. Low Level Audio Output –
8. Low Level Audio Input –

9. Low Level Audio Input +

Installation

The AFL-T or AFL-R may be mounted in a listed CHS-4, CHS-4L, or an ABS-8R. When mounting on a CHS-4L, use the inner position. When the AFL-T or AFL-R is mounted on the CHS-4 and CHS-4L, adequate clearance above the board is required. Outer position mounting on the CHS-4 is possible only if the board is mounted with components facing inward.

CAB-3 Mounting

CHS-4

- **Inner Position**
  Screw two 6-32 standoffs onto PEM studs in chassis. Screw two 4-40 screws into top holes of board and attach two 4-40 standoffs. Place tab on bottom of board into slot. Screw boards into 6-32 standoffs with two 6-32 screws (refer to **Figure 2**). The top standoffs should rest on the back of the chassis.

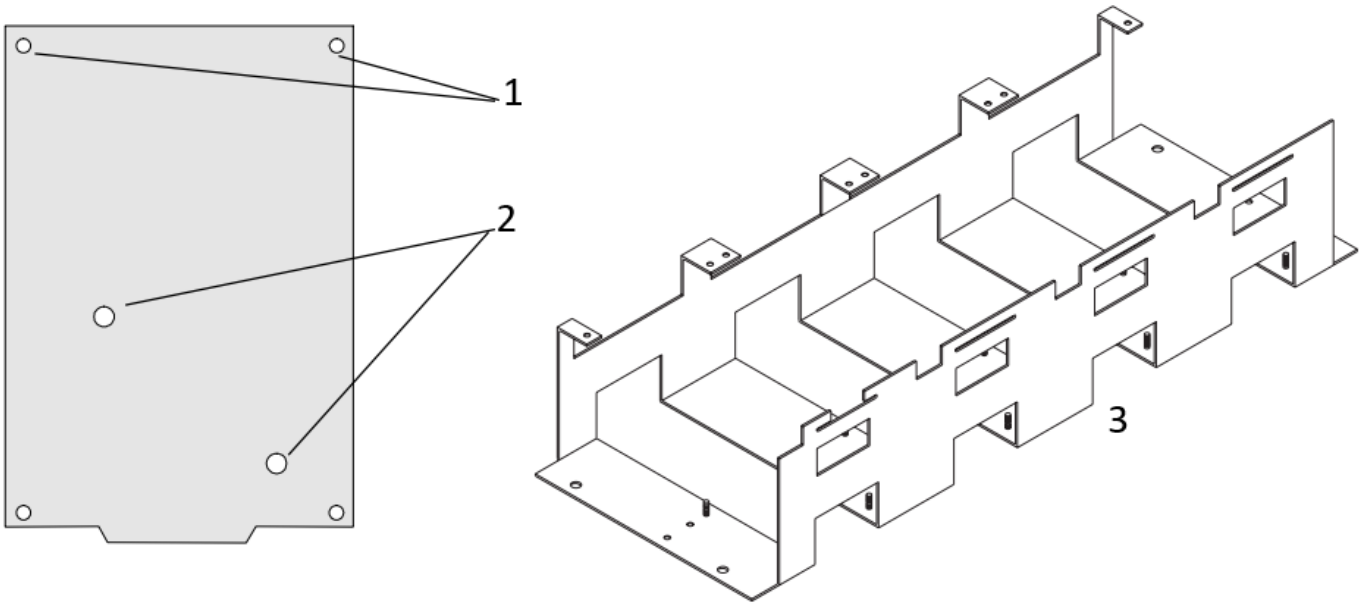


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FIGURE 2 – MOUNTING THE AFL-T OR AFL-R TO THE CHS-4

1. 4-40 Screws
2. 6-32 Standoffs
3. CHS-4

- **Outer Position**
  The board components must face inward! Slip the board tab in the top slot of the CHS-4 with the components facing the back of the chassis. Rest the top of the board on the mounting tabs at the top of the CHS-4 and attach using two 4-40 screws.

CHS-4L

Screw the two 4-40 standoffs on the top row of PEM studs on the CHS-4L. Slide the board tab in the inner slot of the CHS-4L and rest on the standoffs. Use the two 4-40 screws to attach the board to the chassis (refer to **Figure 3**).

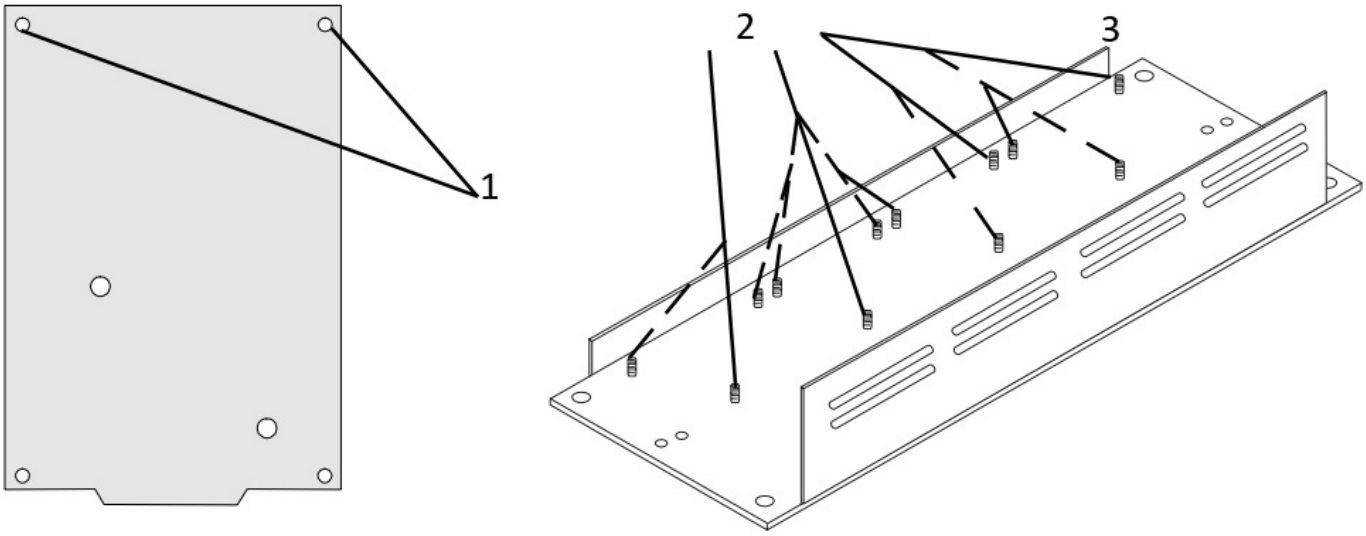

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FIGURE 3 – MOUNTING THE AFL-T OR AFL-R TO THE CHS-4L

1. 4-40 Screws
2. PEM Studs
3. CHS-4L

ABS-8R Mounting

Before mounting the ABS-8R, determine which knockouts are required to wire the AFL-T or AFL-R and remove the designated knockouts. Mount the ABS-8R. Place the AFL-T or AFL-R on the PEM standoffs in the ABS-8R using four 4-40 screws (refer to **Figure 4**). Draw appropriate wiring in through knockouts.

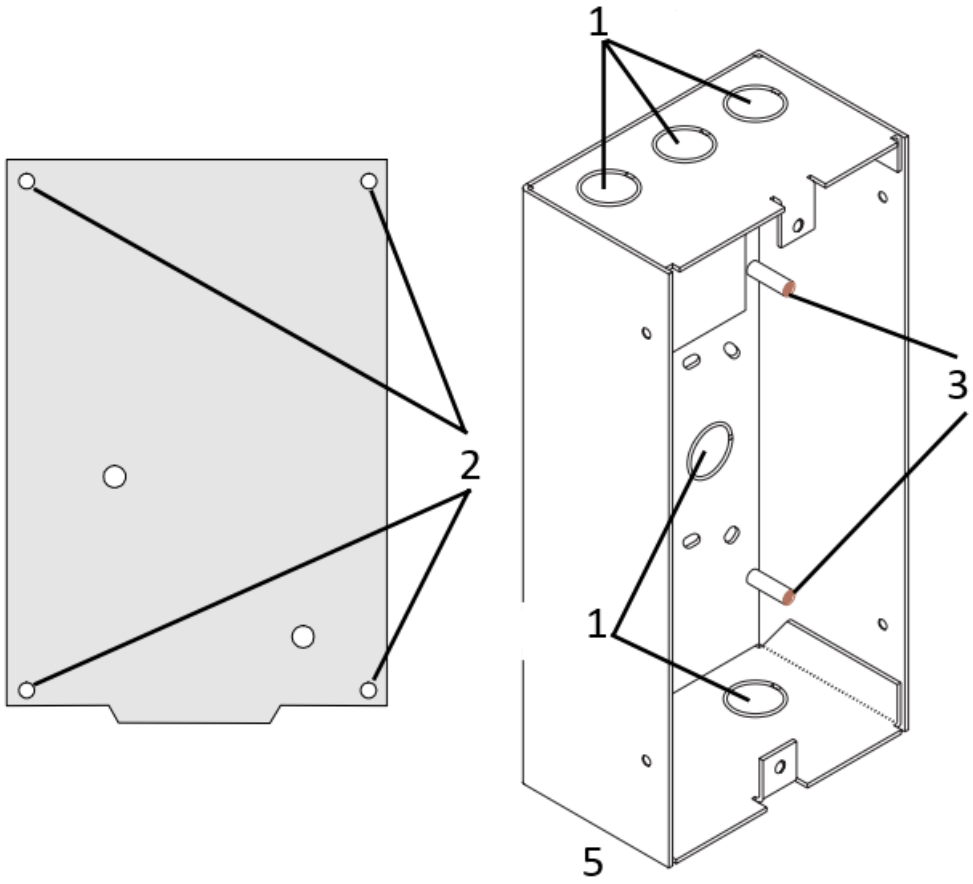

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FIGURE 4- MOUNTING THE AFL-T OR AFL-R TO THE ABS-8R

1. Knockouts
2. 4-40 Screws
3. PEM Standoffs
4. ABS-8R

Fiber Optic Link (Refer to Figure 5)

The attenuation of fiber optic cabling between the AFL-T or AFL-R must not exceed a 10 dB limit. At the system design stage apply the following steps to establish the limit:

1. Find the maximum dB loss per foot within the cable manufacturers specifications. Determine the total attenuation between the two nodes/repeaters due to the cable. Loss = (loss/feet) x (length in feet)
2. Establish the dB loss for each connector and splice. Sum all the losses.
3. Add the attenuation factors obtained in steps 1. and 2. for a total. This will provide an approximate attenuation total.

The actual attenuation can be measured end-to-end with standard fiber optic test equipment using a signal wavelength of 850 nanometers.

The following are supported by Audio Fiber Link:

- Connectors: ST® Style (ST is a registered trademark of AT&T).

- Fiber Type Multimode
  Core Size: 62.5/125 micrometers.
- Wavelength: 850 nanometers.
- Maximum Attenuation of Fiber Optic Link Between AFL-T and AFL-R Cannot Exceed 10 dB.

Applications

Audio Fiber Link may be used in systems where:

- the use of wire media is not possible due to security requirements.
- fiber optic cable is already installed and available for low level audio distribution.
- significant distances between AMG-1 and remote amplifier cabinets dictate the use of fiber.
- high intensity electromagnetic fields of audible frequencies could be coupled to wire type low level audio loop.
- both distance and physical location of remote cabinets require the use of star topology.

Up to 50 AFL-T transmitters may be connected to the output of an AMG-1, AMG-E or ATG-2 low level audio source.

A maximum of ten amplifiers may be fed from the AFL-R output and a maximum of ten AFL-Ts may be fed by a single AFL-R. The maximum series connection of audio fiber links is two AFL-T/R pairs deep.

Once the audio system installation is complete, the audio gain level must be adjusted as follows:

1. Start with the AFL-T connected directly to the low level audio source (AMG-1, ATG-2). Observe the AFL-T Level LED. If the Level LED is red or flashes red continuously while in alarm, it is indicating too high a signal level. Connect one or more 470 ohm resistors in parallel across the input. (One 470 ohm resistor is normally installed on the low level audio circuit). The AFL-T Level LED should indicate green at all times except during signal switching, when it may momentarily flash red.
2. Adjust the gain on all amplifiers that are connected in parallel with the first AFL-T.
3. Proceed to the AFL-R terminating the first stage fiber optic link. If the AFL-R feeds a second stage AFL-T, observe the Level LED. Add one or two 470 ohm resistors in parallel with the AFL-R output if necessary to lower the signal level.
4. Adjust the gain on all amplifiers that are fed from the first stage AFL-R.
5. Repeat step four for the amplifiers fed from the second stage AFL-R. Add parallel resistors if necessary.
6. Test the entire system in systems normal and alarm, checking each signal that will be used, to verify that the above requirements are satisfied and that there is no significant audible distortion.

NOTES

- A system requiring many fiber links may also require larger batteries and external chargers. The AFL-T and the AFL-R have operating currents of 104 mA and 51 mA (respectively) and operate from 20.4 to 26.4 VDC. Refer to fire panel instructions for battery calculations.
- AFL-T should be powered by the 24 VDC U.L. listed power supply connected to the same reference (battery negative) as the audio signal source (AMG, ATG, AFL-R).
- Class A low level audio riser cannot be implemented when using audio fiber link.

- Any combination of up to 50 AFL-T transmitters and AA-30, AA-100, and AA-120 series amplifiers may be connected to the output of any one AMG or ATG. All of the AFL-T transmitters must remain in the same cabinet as the AMG or ATG.

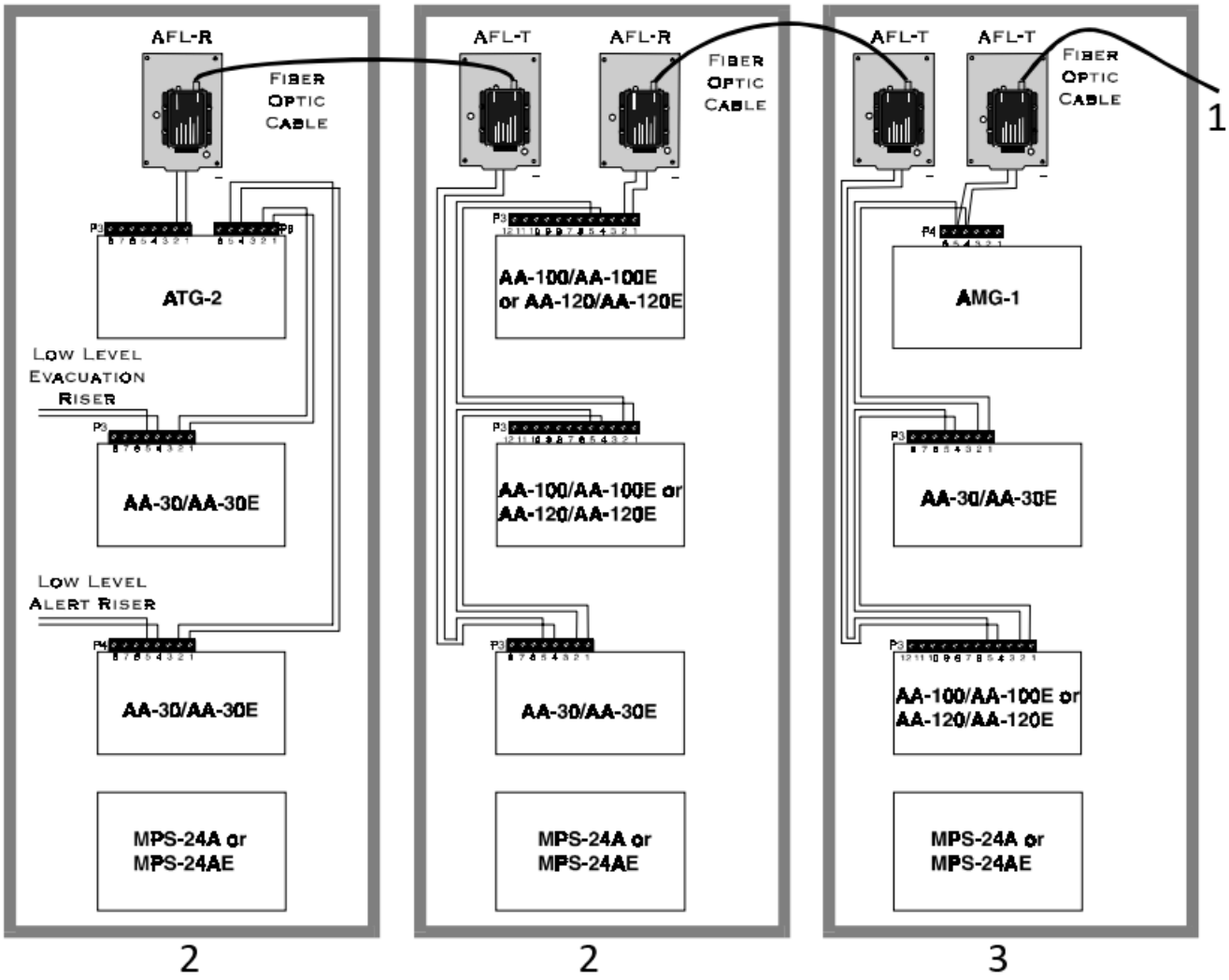

FIGURE 5 – AUDIO FIBER OPTIC LINK

1. To AFL-R in a remote amplifier cabinet
2. Remote Amplifier Cabinet
3. Main Control Panel Cabinet

Origin of Main Audio Riser

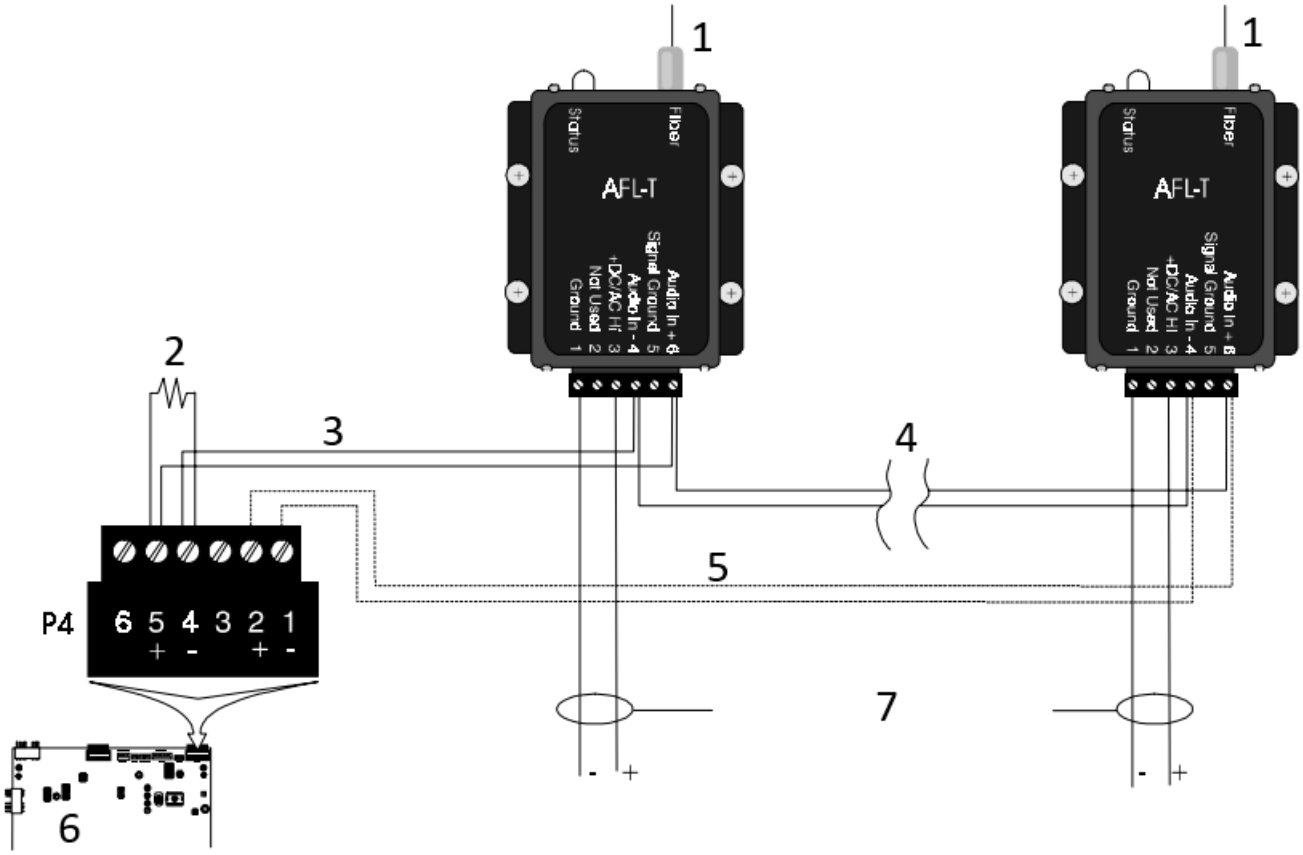

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FIGURE 6 – CONNECTING THE AFL-T TO THE AMG-1/AMG-E

1. Fiber to AFL-R
2. R-470 470Ω (ohms) resistor
3. Low Level Audio
4. Up to a total of 50 AFL-Ts or amplifiers
5. Optional Return
6. AMG-1
   AMG-E
7. To 24V non-resettable U.L. listed power supply output connected to the same reference (battery negative) as the audio source (AMG-1, AMG-E).

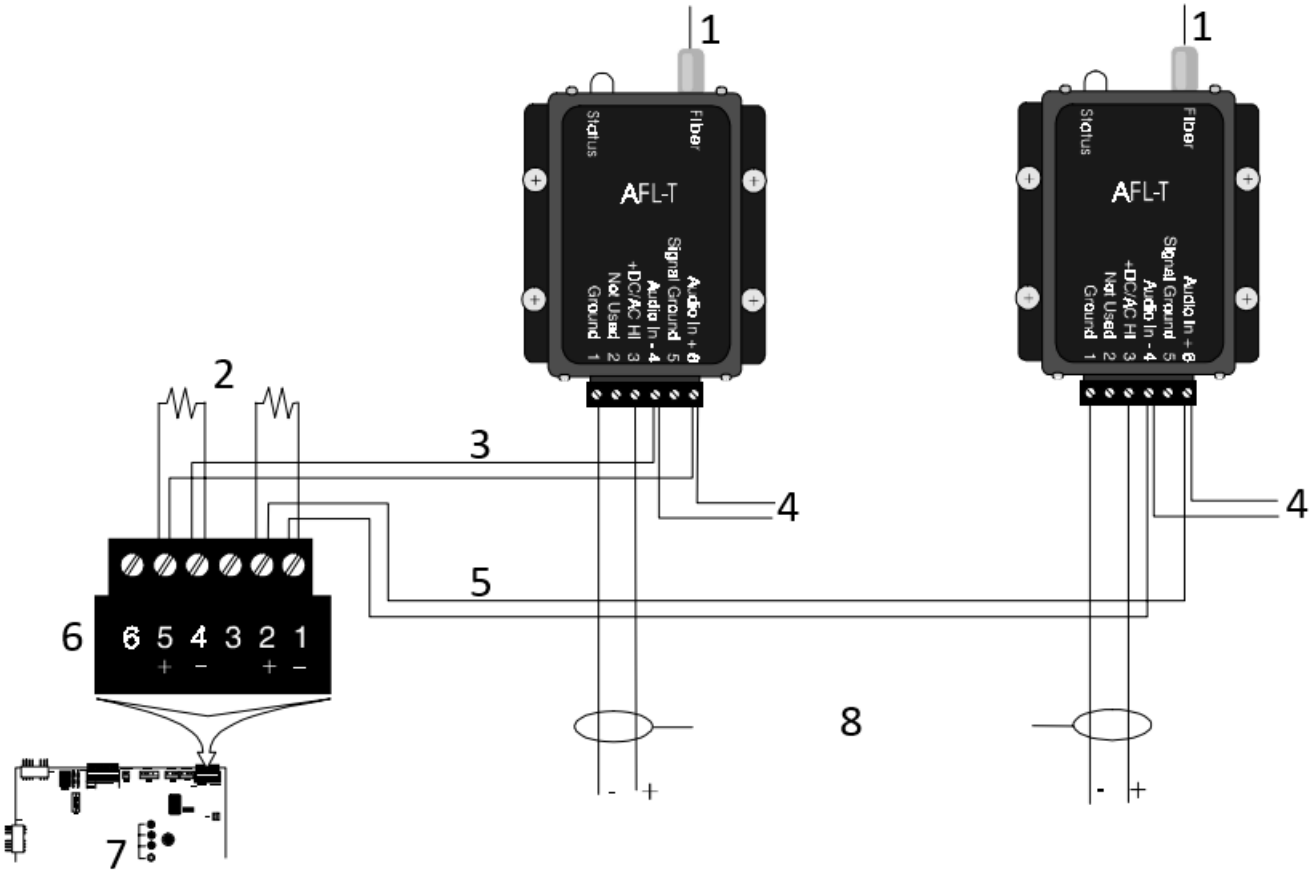

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FIGURE 7- CONNECTING AFL-TS TO THE ATG-2 (TWO-CHANNEL APPLICATION SHOWN)

1. Fiber to AFL-R
2. R-470 470Ω (ohms) resistor
3. Low Level Audio EVAC
4. Up to a total of 50 AFL-Ts or amplifiers
5. Low Level Audio Alert
6. P8
7. ATG-2
8. To 24V non-resettable U.L. listed power supply output connected to the same reference (battery negative) as the audio source (ATG-2).

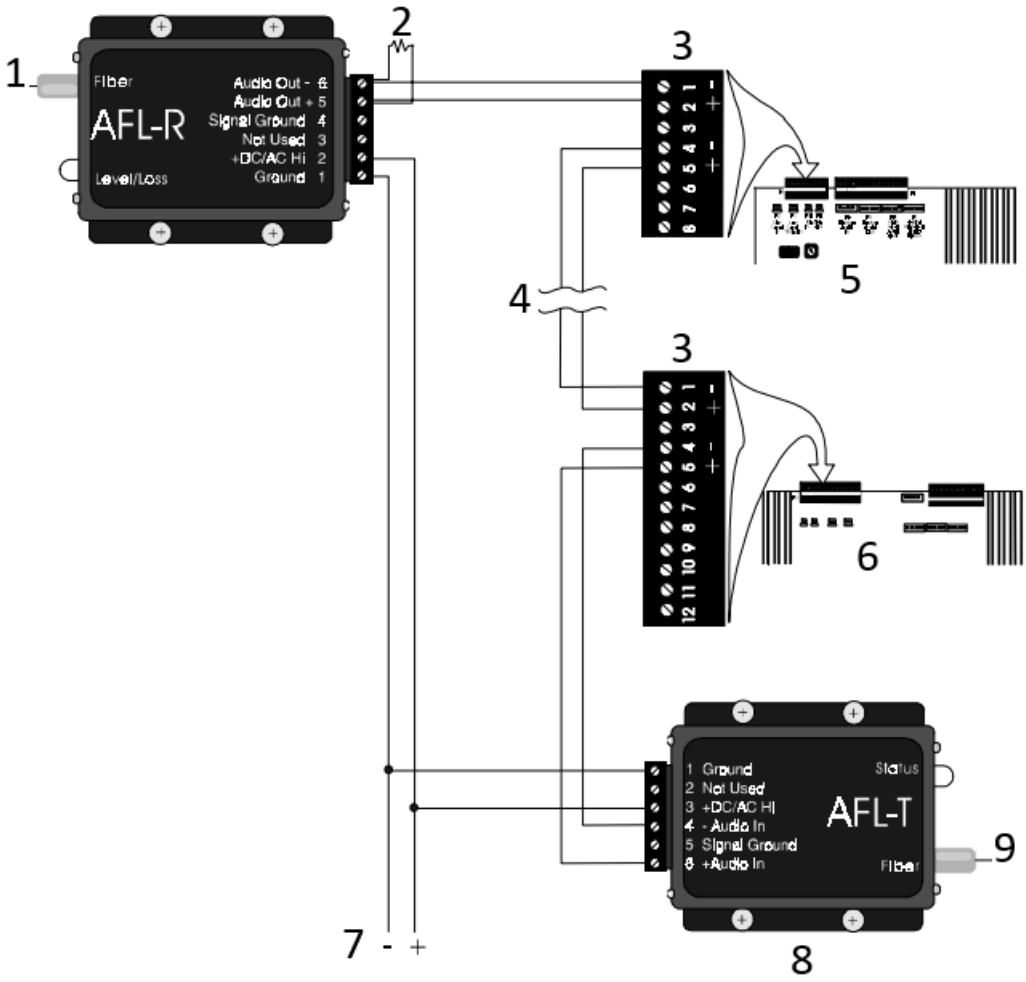

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FIGURE 8- CONNECTING THE AFL-R TO AMPLIFIERS AND SECOND STAGE AFL-TS

1. Fiber from the first stage AFL-T
2. R-470 470Ω (ohms) resistor
3. P3
4. Up to a total of 10 amplifiers/ AFL-Ts
5. AA3D
6. AA-100/AA-120
7. To 24V non-resettable U.L. Listed power supply output connected to the same reference as the audio source. (In this figure, AFL-R is the audio source.)
8. The second stage AFL-T
9. Second stage fiber optic link

Troubleshooting

The AFL-T light emitting diode (LED) displays various intensities of green depending on the signal level. Abnormally high levels of audio signal will cause the LED to glow steady red, indicating distortion.

The AFL-R LED displays various intensities of green depending on the level of optical power delivered (the lower the optical signal level, the dimmer the intensity of the LED). The AFL-R LED will glow steady red if the link is not receiving enough light or if the fiber is disconnected.

It is normal for bi-color LEDs on both units to momentarily change from green to red during paging/ message operation.

Notes

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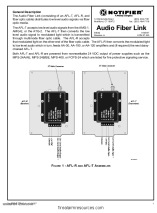
Documents / Resources

	NOTIFIER AFL-T Audio Fiber Link Transmitter Module [pdf] Instruction Manual AFL-T, AFL-T Audio Fiber Link Transmitter Module, Audio Fiber Link Transmitter Module, Fiber Link Transmitter Module, Link Transmitter Module, Transmitter Module, Module

References

- Fire Alarm Resources | Download fire alarm documents