ACT-1 Audio Coupling Transformer
Product Installation Document

PN 52527:B 12/23/2010 10-613

1 UL 864 Compliance

1.1 Products Subject to AHJ Approval

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 9th Edition. Operation of this product with products not tested for UL 864 9th Edition has not been evaluated. Such operation requires the approval of the local Authority Having Jurisdiction (AHJ).

Products mentioned in this manual that have not received UL 864 9th Edition certification:

- AMG-1Audio Message Generator
- AA-30

2 ACT-1 Audio Coupling Transformer

2.1 Overview

The ACT-1 Audio Coupling Transformer couples low-level audio to audio amplifiers or other audio inputs, such as AMG-1. The unit can be used to couple a low-level audio signal to up to eight devices. Multiple ACT-1s are required for amplifiers on multiple channels. It provides electrical isolation for equipment powered by separate power supplies with ground fault detection enabled. In addition, the ACT-1 provides common mode noise rejection (CMNR), greatly reducing crosstalk from SLCs.

2.2 Applications

You can install the transformer in any application that uses AA-series audio amplifiers, subject to the following restrictions:

- The amplifiers must mount remotely from the source of low-level audio devices, such as an AMG-1 or RM-1.
- The power supplies in the main control panel cabinet and the remote cabinets do not share the same common.
- Ground fault is enabled on each power supply.

In larger systems, capacitance becomes a critical factor in creating sporadic and difficult-to-find ground faults along a single common connection. In these systems—as in systems that expand—use an ACT-1 if possible.

2.3 Isolating Power Supplies

Isolated power supplies, each with respective ground fault detection circuits enabled, are often used to aid the quick location of ground faults in large systems. This task is more difficult if the entire system (main and all remote devices) share the same common and the power supply in the main control panel cabinet provides ground fault detection.

For example, take a system consisting of a remote annunciator powered from a local supply within the same cabinet—but connected through an EIA-485 circuit—to the main control panel (Figure 1). A common connection occurs (although a poor one) along the EIA-485 interface. Therefore, the power supplies in this system are not adequately isolated and problems will occur (such as intermittent reports of a ground fault when each power supply's ground fault detection signal interacts with the signal from the other power supply). In this case, the earth fault detection of the remote power supply must be disabled and a good common connection must be made between the two systems. An ACT-1 is not required for amplifiers mounted in this remote cabinet but installation of an ACT-1 can reduce CMN from the SLC. Figure 1 shows a block diagram of a remote annunciator powered from a local power supply.

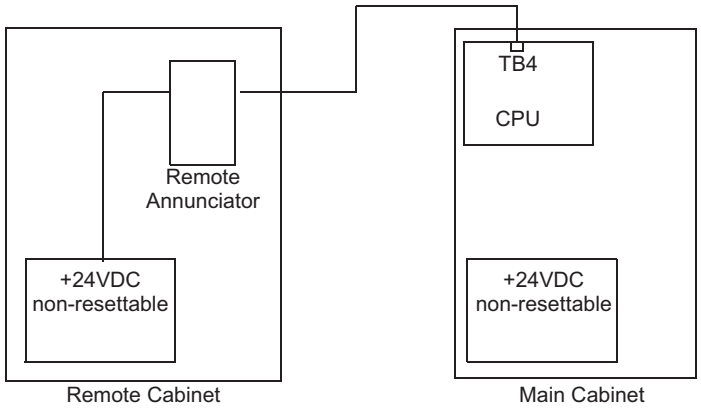


Figure 1 Remote Annunciator Powered from a Local Power Supply

2.4 Installation

2.4.1 Connect ACT-1 to Amplifier

To connect an ACT-1 to an AA-series amplifier, follow these steps and refer to Figure 2, "ACT-1 Connections".

1. Connect the ACT-1 to the first amplifier in the chain by inserting P1 pins of the ACT-1 into terminal block P3 of the amplifier as shown below. Tighten screws securely.
2. Using the supplied cable, connect the ground terminal (TB1-7 EARTH) on each ACT-1 to P8 on the AA-100/AA-120 or to a screw on the upper left corner of the AA-30.
3. Connect the low-level AUDIO IN circuit to the terminal block TB1 on the ACT-1.

NOTE: For highest sound quality, observe polarity of audio signal when connecting speakers.

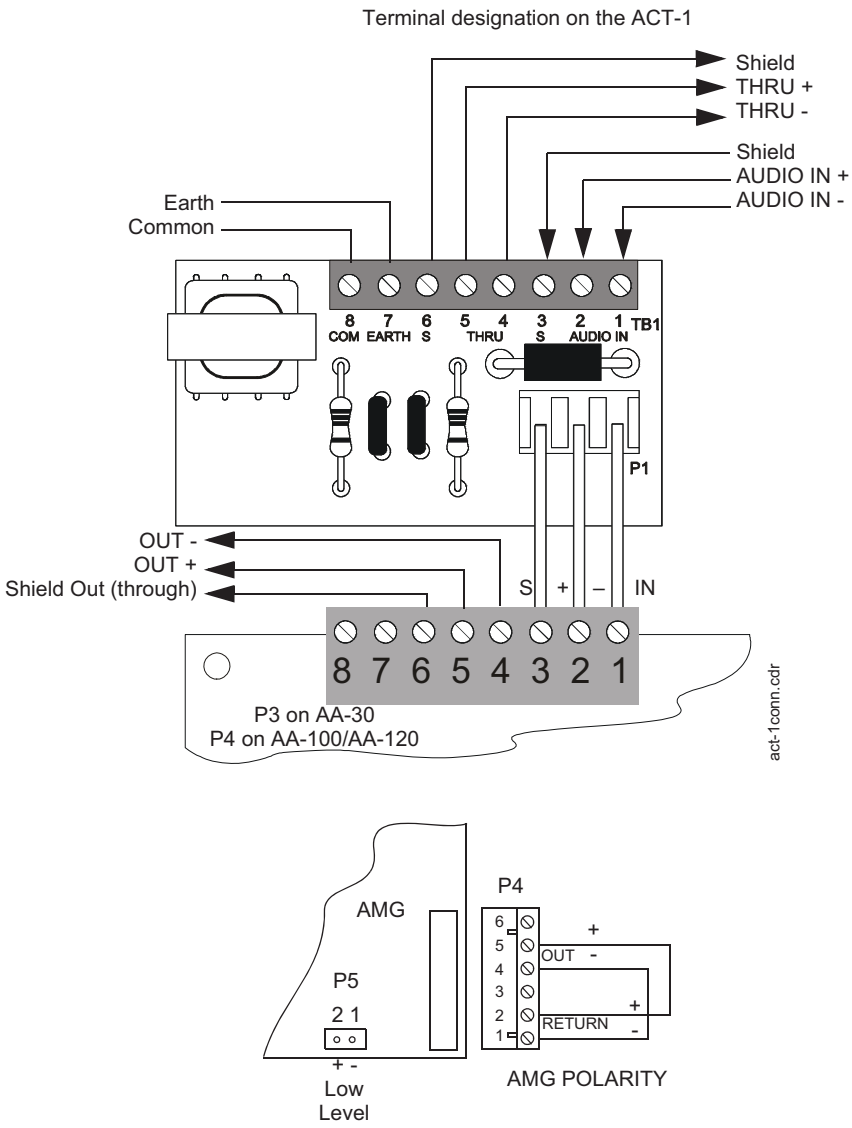


Figure 2 ACT-1 Connections

2.4.2 Wiring Amplifiers

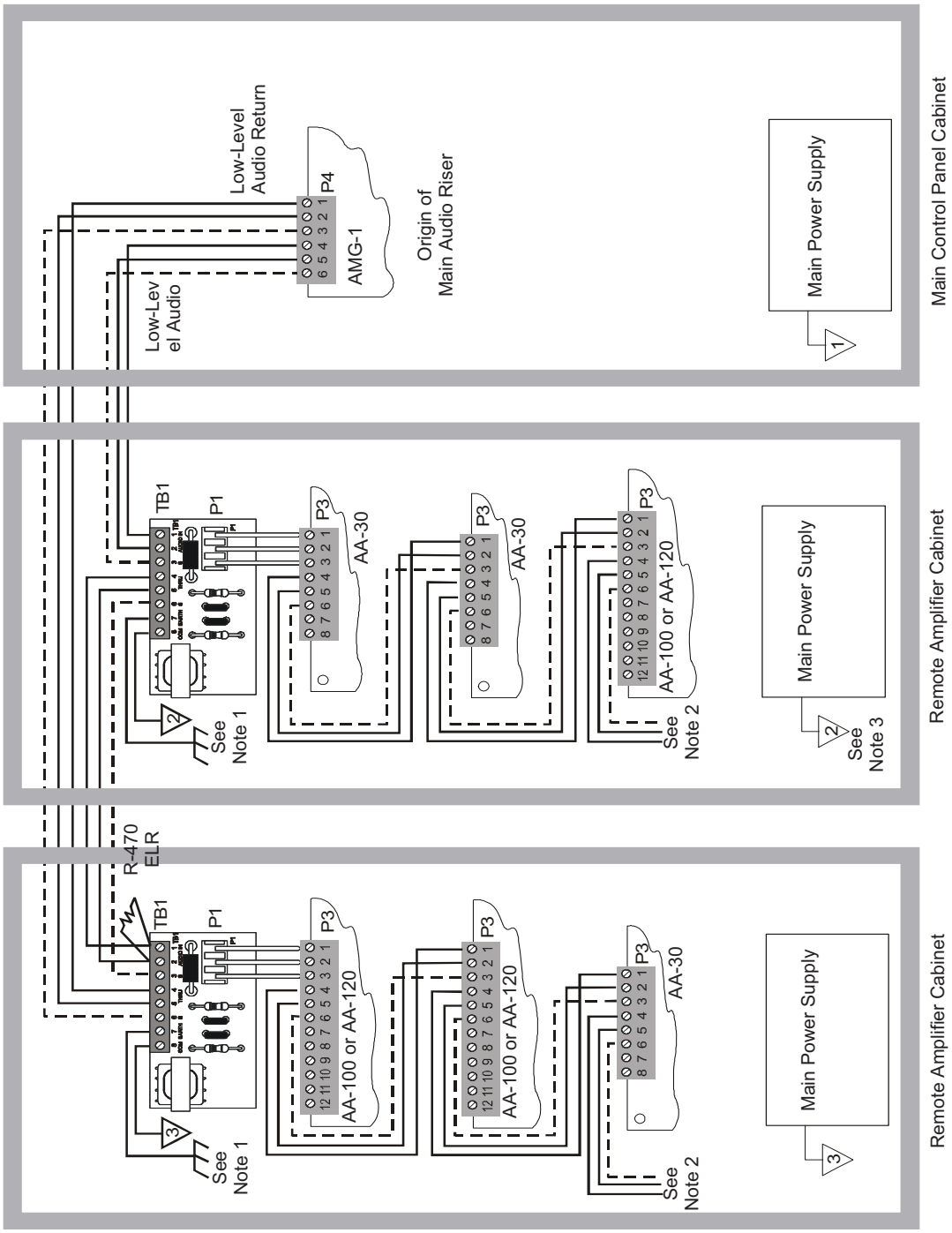


Figure 3 ACT-1 Wiring Diagram

NOTE:

1. The COM terminal is intended for optional shielding of the secondary side of the ACT-1 (low-level audio from the ACT-1 through each amplifier). To use shield, connect to the common of the local power supply—but do not connect this shield to the shield from the primary side of the ACT-1.
2. Daisy-chain the secondary side of the ACT-1 (low-level audio) up to a maximum of eight amplifiers.
3. This symbol denotes a local common, in this case for supply number 2.