

**PA0646
QE90 Audio Line Isolator Module ALIM9706**

Installation and Operating Instructions

Description

The Vigilant® Audio Line Isolator Module ALIM9706 is an audio isolation and balancing/matching device with variable or fixed gain. It was designed for use with QE90 and Microvac systems, and also for general audio isolation purposes.

The ALIM9706 provides independent isolation of two audio signals (channels), with the gain separately selectable for each channel.

The ALIM9706 can be used for various purposes, including:

- As an isolation and/or line balancing transformer (with optional volume control) for background music inputs connecting to the Local Inputs of QE90 Amplifiers, music input of T-GEN 50, etc. Refer Fig.1 below.
- To allow spurs on the WIP speech and PA speech busses in a networked QE90 system. Refer Fig. 4 and 5 below.
- To provide the isolation and voltage reduction required when connecting the amplifier primary or 100V line output of a QE90, T-GEN 50 or similar system into the low level input of another amplifier (or vice versa). Refer Figure 3 below.

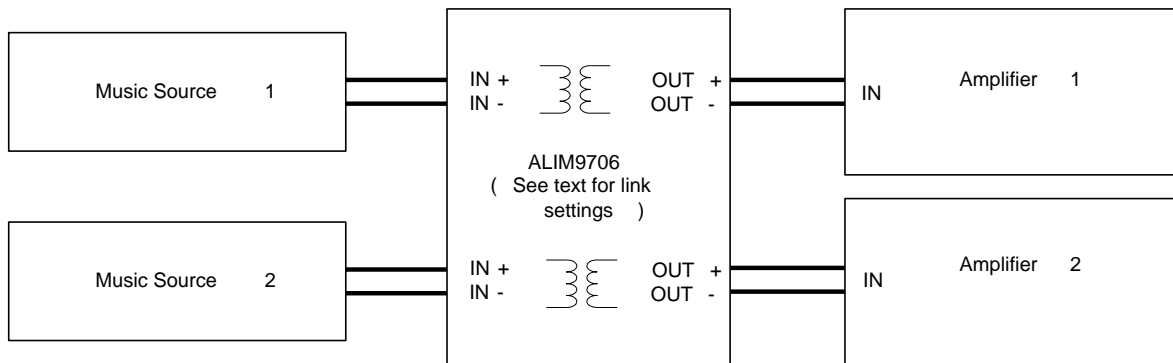


Figure 1 – Typical Use of ALIM for Background Music Isolation

Gain Settings

Each audio channel of the ALIM9706 can be set for one of four different gains (refer to Table 1 below):

- If no volume control is required, links LK1 and LK2 on the ALIM9706 should be installed, and LK3 not installed. In this mode the ALIM9706 has unity gain.
- When volume control is required, links LK1 and LK2 should be removed, and link LK3 installed in the 2-3 position. In this mode the ALIM9706 has a maximum gain of about 0.3, but it can be adjusted down to zero.
- If one of links LK1 or LK2 is fitted and LK3 is installed in the 1-2 position, then a fixed gain of 0.04 is selected.
- If neither links LK1 nor LK2 are fitted and LK3 is installed in the 1-2 position, then a fixed gain of 0.02 is selected. This is suitable for fixed attenuation for 100W Microvac systems from amplifier primary outputs to feed into another amplifier.

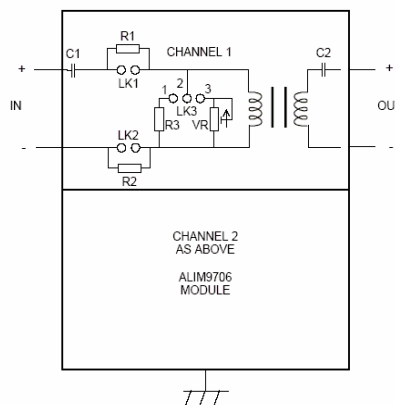


Figure 2 – ALIM 9706 Schematic

Link Settings Summary

Table 1 – Gain Settings

LK1	LK2	LK3 – 1-2	LK3 – 2-3	Gain	Max Input Voltage
fitted	fitted	not fitted	not fitted	1	3 Vrms
not fitted	not fitted	not fitted	fitted	Variable 0-0.3	10 Vrms
not fitted	not fitted	fitted	not fitted	0.02	15 Vrms
fitted	not fitted	fitted	not fitted	0.04	10 Vrms
not fitted	fitted	fitted	not fitted	0.04	10 Vrms

NOTE

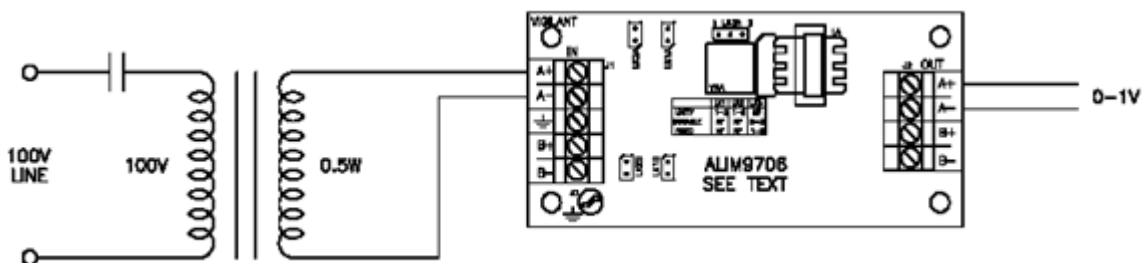
On circuit board encoding;

- Links LK1A, LK2A, LK3A apply to Channel A.
- Links LK1B, LK2B, LK3B apply to Channel B.

Other link settings should generally not be used.

100V Line Coupling/Attenuation

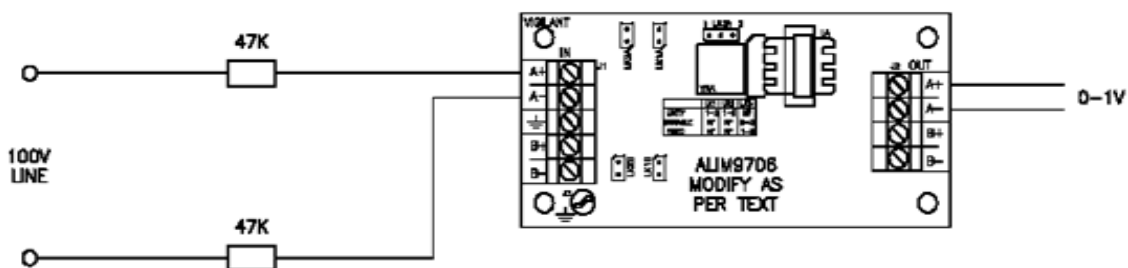
The ALIM9706 can be used to couple an existing 100V speaker line into the low-level input of another amplifier. The best method of achieving this is to use a capacitively-coupled 100V: 0.5 – 2.0W 8 ohms line-matching transformer (e.g. off a 100V line loud speaker) to reduce the voltage first, and feed this into the ALIM9706 to provide volume control, as shown in Figure 3A.



The links on the ALIM9706 should be: LK1 and LK2 not fitted, LK3 in position 2-3 to provide volume control.

Figure 3A - 100V Line Coupling Using Transformer

However, by modifying the ALIM9706 and using external resistors a similar effect can be obtained, as shown in Figure 3B below:



Modify the ALIM as follows:

(ALIM Revision 1 only). Remove D1A and D2A for Channel A, and/or remove D1B and D2B for channel B. Not required on ALIMs Revision 2 or later.

Set the links as follows:

Remove LK1 and LK2

Insert LK3 in position 2-3. This link must be installed even if you don't need the volume control.

Figure 3B - 100V Line Coupling Using Resistors

QE90 Network Spurs

Both the input and the output of each ALIM 9706 audio channel are capacitively coupled, allowing the use of a DC supervision signal to detect the presence of an EOL resistor. The capacitors prevent the ALIM9706's transformer from shorting out the DC supervision signal.

With this feature the ALIM can be used to provide spurs for PA Speech and WIP Speech in a networked QE90 system, as shown in the following diagrams.

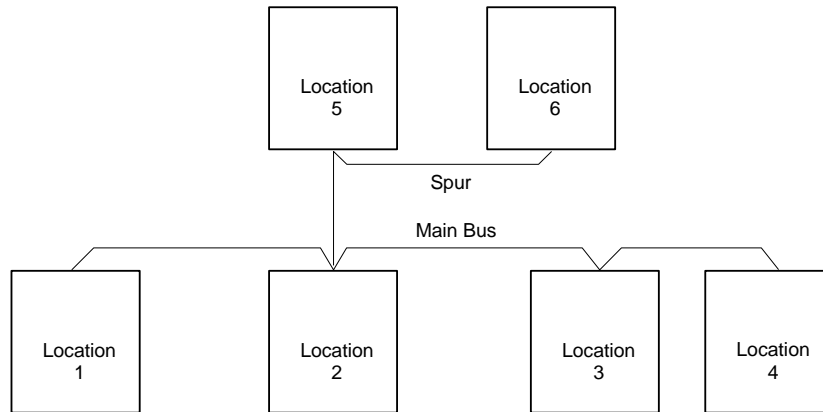


Figure 4 – Typical QE90 Network System (with spur)

Figure 5 shows in more detail the wiring of the ALIM9706 at the location where the spur joins the main bus (Location 2 in Figure 4). Other locations will not have a spur and so will not require the ALIM9706.

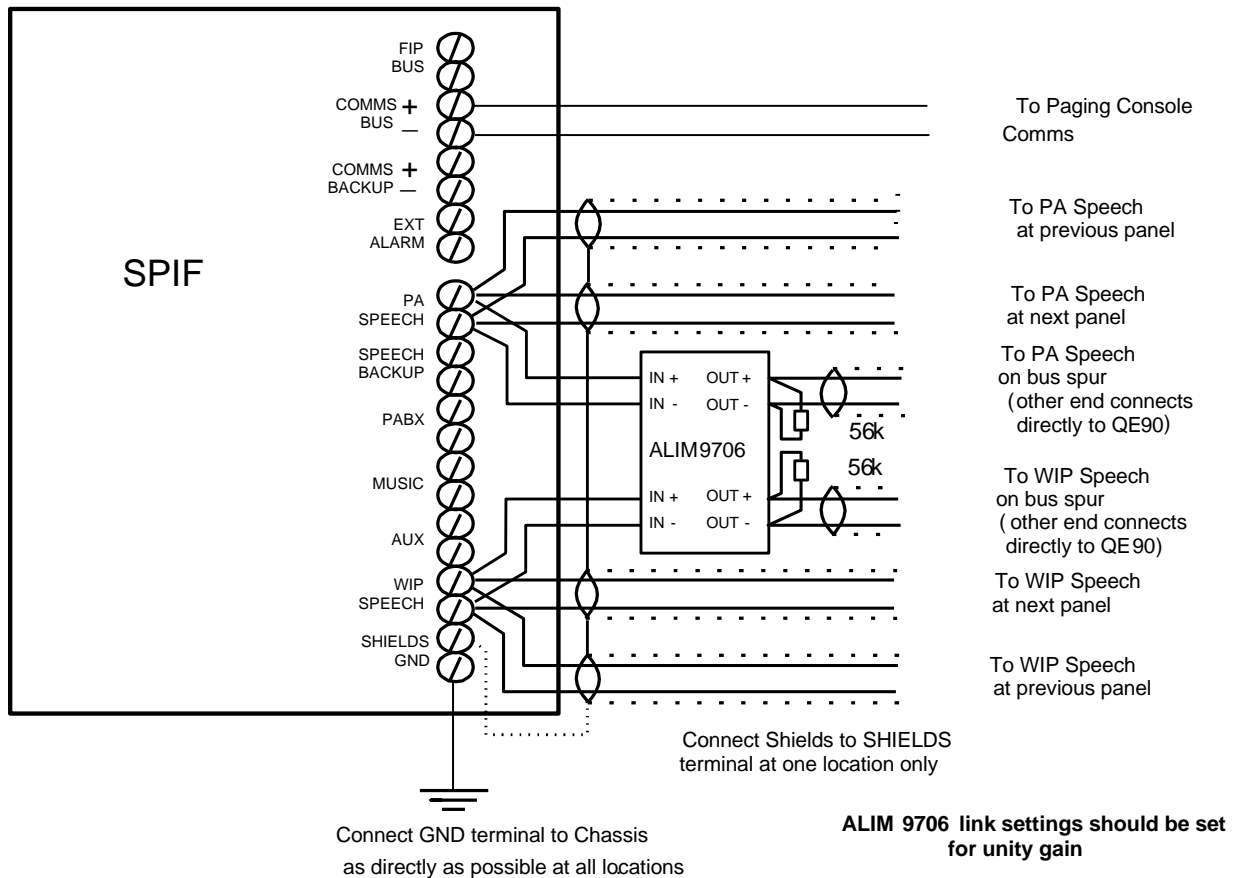


Figure 5 – Use of ALIM9706 at QE90 Network Spur

Mounting and Earthing

The ALIM9706 may be mounted:

- on a DIN rail (see Fig 6)
- on a gearplate or chassis using PCB standoffs. Suitable standoffs are listed under “Ordering” at the end of this document.

The ALIM9706 should be connected to a suitable earth stud. An earth connection is provided for this purpose and is located at the centre of the five-way input connector on the ALIM9706. Refer to Figure 3A/3B and to the circuit board encoding.

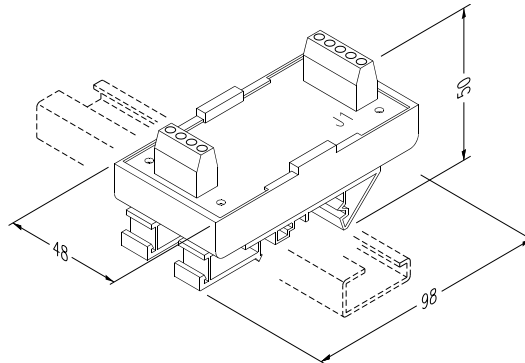


Figure 6 – Layout and dimensions with plastic DIN rail mounts (supplied)

Ordering

The ALIM9706 is available as:

PA0646 PCB ASSY, QE90, ALIM9706, AUDIO LINE ISOLATOR (WEB)

It is supplied with plastic PCB holders and clips suitable for mounting directly onto DIN Rails. Multiple ALIM9706s can be used to provide a number of audio inputs in a larger module. Alternatively the plastic PCB holders can be removed and the module mounted on metal or plastic standoffs (not supplied).

Ordering codes for suitable standoffs are as follows:

HW0130	HARDWARE, PCB STANDOFF, PBR10 (10mm)
HW0131	HARDWARE, PCB STANDOFF, PBR13 (13mm)
HW0209	HARDWARE, PCB STANDOFF, PBR06 (6mm)

ALIM9706 Specifications

Physical Size (l x h x d)	(PCB only) 94mm x 45mm x 25mm + PCB standoffs (in plastic holder) 98mm x 48mm x 50mm
Mounting type	PCB standoffs or DIN rail adaptor
Mounting hole pattern	83mm x 34mm rectangular footprint
Operating temperature	-5° C to +45° C
Max input voltage	See Table 1
Max current	Nil
No. of channels	2
Voltage isolation	Limited by maximum common mode voltage to earth (275V protection MOVs).
Gain	Up to unity gain. Set by links LK1, LK2, LK3 & VR (See Table 1)

Accessories included with ALIM9706

DIN rail mounts (see “Mounting and Earthing”, above).

Manufactured by:	Tyco Fire Protection Products 17 Mary Muller Drive, Christchurch 8022 PO Box 19-545, Christchurch 8241 New Zealand Tel +64-3-389 5096 Fax +64-3-389-5938	Distributed By:
------------------	---	-----------------