

Isolation Amplifier

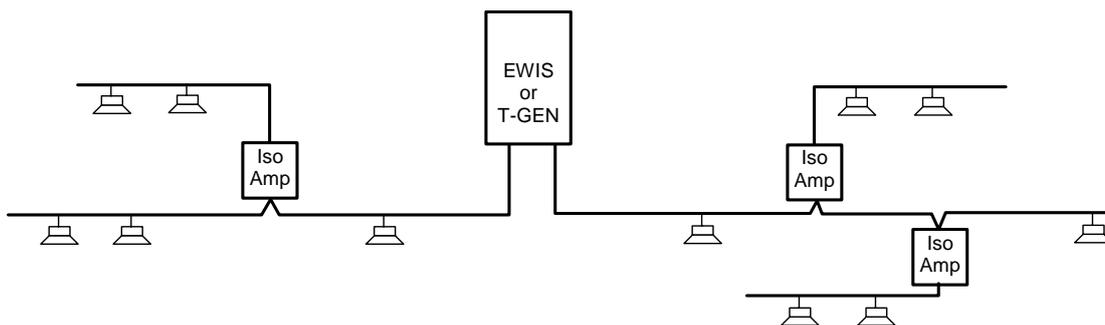
Installation & Operating Instructions

FP0875 FP, ISOLATION AMPLIFIER, 100V 50W

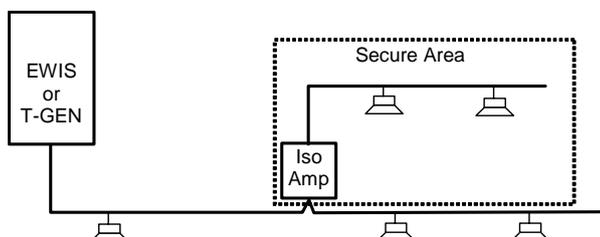
The FP0875 Isolation Amplifier connects to an existing 100V speaker line and reproduces this signal at up to 50W load on a separate 100V line. It is suitable for use with speech and music as well as with warning tones. The 100V output line from the amplifier is electrically isolated from the input 100V line, so noise or other signals on the output line are kept separate and do not affect the input line. The Isolation Amplifier requires a nominal supply of 27VDC.

Typical Applications

- System expansion – the Isolation Amplifier presents a 1W load on the input 100V line and produces 50W output, effectively increasing the overall system capacity by 50W. This also avoids the need to cable from an expansion area all the way back to the main amplifier or tone generator, if the Isolation Amplifier is locally powered.



- Additional branching – an existing system can be expanded or divided with one or two additional supervised branches of 100V wiring without affecting the existing supervision arrangements.
- Security isolation – the Isolation Amplifier can be used to drive speakers in a secure military or commercial area so that eavesdropping from outside via the speaker line is much more difficult. The Isolating Amplifier should be installed inside the secure case.



The Isolation Amplifier supervises its output 100V line for faults. It signals a fault to the main amplifier or tone generator by switching a 10kΩ resistance across the input 100V line to produce a “soft” supervision fault which does not degrade the operation of this line, but does add 1W of extra load.

Power Supply

Each Isolation Amplifier requires a supply of 27Vdc at 2.2A for full 50W power output.

Existing Supply

If there is a nearby FIP or EWIS with sufficient spare power supply capacity, this can be used to power the Isolation Amplifier. The power cabling must be sufficiently heavy to avoid excessive voltage drop under load.

Cable cross-section area	1mm ²	2.5mm ²	4mm ²
Maximum recommended cable length	30m	75m	120m

Dedicated Supply

If there is no existing supply, a dedicated mains-powered supply unit must be used. This power supply must include sufficient backup battery capacity to comply with the requirements of the Australian or New Zealand standards for fire alarm and evacuation systems. The power supply must also perform battery voltage monitoring and regular battery tests, and generate an output signal if any fault is detected.

A compatible power supply is the FP0766 1948 Series PSU 24V 2A, which can also house a 7Ah 24V battery in a cabinet matching the Isolation Amplifier's cabinet.

Installation

The Isolation Amplifier cabinet is suitable for surface mounting in any orientation, but for convenience of servicing and testing, a vertical position is recommended. The internal electronics will become hot during operation, so the cabinet should not be installed in an excessively hot location.

The protection rating of the cabinet is IP40, so it is not suitable for mounting in an outdoor or damp location.

Wiring

Refer to the diagram on the next page

Input Wiring

All input wiring is terminated to the 6 way terminal block in the lower part of the Isolation Amplifier cabinet.

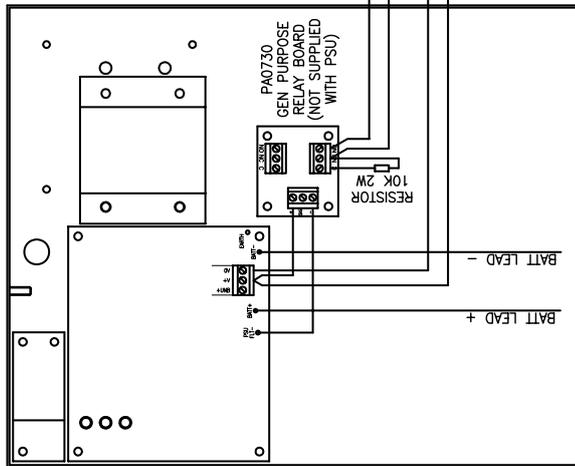
Terminal	Connected to
+24V, 0V	24V power supply to Isolation Amplifier
100V IN +/-	Main 100V line, loop in
100V OUT +/-	Main 100V line, loop out

Output Wiring

The output 100V line is connected to the Line+/Line- terminals on the amplifier board inside the Isolation Amplifier cabinet. The output line must be supervised or normalised with an end-of-line device as follows:

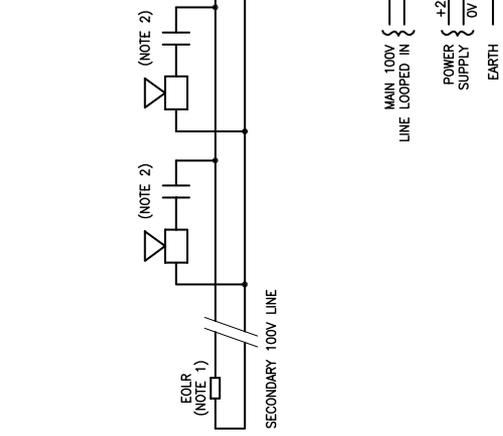
Number of Wiring Branches	End-of-line Resistor – each branch
1 branch	56k Ω
2 branches	100k Ω

FP0766/FP0768 1948 SERIES PSU 24V 2A

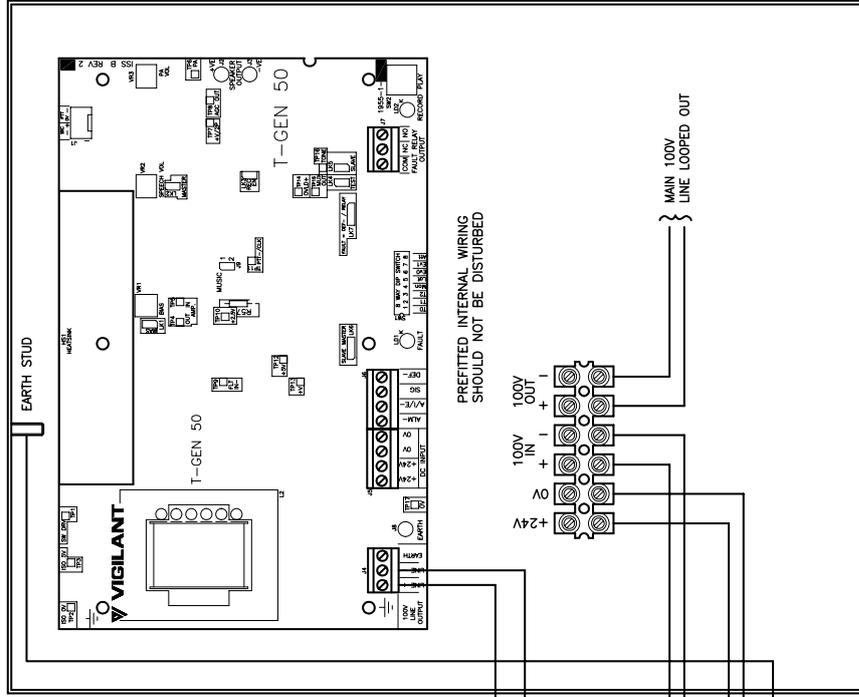


OPTIONAL LOCAL POWER SUPPLY - DETAILS SHOWN TO GENERATE AND SIGNAL PSU FAULT ON MAIN OR SECONDARY 100V LINE VIA PA0730 GP RELAY BOARD.

- NOTES:
1. EOLR IS 56K FOR A SINGLE WIRING BRANCH OR 100K AT EACH END OF TWO WIRING BRANCHES.
 2. DECOUPLING CAPACITORS ARE REQUIRED AT EACH SPEAKER TRANSFORMER.



FP0875 ISOLATION AMPLIFIER



PREFITTED INTERNAL WIRING SHOULD NOT BE DISTURBED

Wiring Detail to produce a compatible fault signal from a 1948 Series PSU. Note that this method adds 1W load to the 100V line during a fault condition.

Field Wiring Connections to Isolation Amplifier

A bipolar decoupling capacitor with a rating of at least 10V is required at each speaker transformer. The capacitor value should be 1 - 5 μ F per watt of speaker load.

Speaker Load	0.33W - 0.5W	1W - 5W	10W - 20W	40W
Capacitor	1 μ F	10 μ F	47 μ F	100 μ F

The factory-fitted internal wiring should not require modification for normal installations.

Earthing

For electrical safety, and to allow internal protection devices to work correctly, the Isolation Amplifier cabinet should be connected to a local earth, e.g., in a nearby switchboard, or associated power supply. The earth wire should be at least 0.75mm².

Configuration & Operation

Link Settings - the Isolation Amplifier contains a standard T-GEN 50 board, set up to operate as a Slave amplifier. The factory setting for this board is:

1. DIP switches all set to OFF
2. Not Fitted: Lk1 BIAS, Lk2 MASTER, Lk3 REC EN, Lk4 TEST.
3. Fitted: Lk5 SLAVE, Lk6 SLAVE/MASTER in SLAVE, Lk7 FAULT=DEF-/RELAY in RELAY

If replacing this board, the links on the new board must be changed to these settings.

Indicators – the single yellow LED on the amplifier board shows the presence of a supervision fault in the output 100V line or an internal electrical fault in the amplifier unit. The Isolation Amplifier will also generate a fault on the main 100V line if its power fails, but the LED will not light.

Level Adjustment – input sensitivity is controlled by trimpots VRB (coarse) and VRA (fine) on the ALIM9706 isolation board. These are factory-set, and should not normally require adjustment. However, if adjustment is necessary, here is the procedure:

1. Tone only system – set the EWIS to produce Evacuation tone. With an AC voltmeter, measure the voltage on the input 100V line. Adjust the trimpots until the same or nearly the same voltage is measured on the output 100V line.
2. Tone and Speech system – set the EWIS to produce Evacuation tone and message. During the speech message, adjust the trimpots until the speech starts to sound excessively distorted, and then decrease the sensitivity slightly so that the distortion is removed.

Maintenance and Testing - The Isolation Amplifier does not require routine maintenance or adjustment. It does not require any special action during routine system testing. Batteries in any associated power supply will require testing (should be noted in main panel to alert technicians to the presence of a remote PSU).

Specifications

Supply Voltage	19.6V - 28.8V; reduced performance below 27V
Supply Currents	57mA (no speech or background music) standby, 2.2A for 50W output at 27VDC when active
Input	100V rms at 1W max
Output	100V rms, 50W rms (tones), 25W (speech/music)
Fault Signalling	10k Ω load placed across input 100V line
Cabinet Size	240W x 295H x 80D mm

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