

Mini-Gen

Multi Tone Generator

INSTALLATION AND OPERATING INSTRUCTIONS

PA0894 Mini-Gen – 12V

Mini-Gen is a self-contained tone generator that produces a 100Vrms "Line" output for powering suitable 100V line loud speakers. It has been designed to connect directly to Tyco fire alarm panels, but may be connected to other suitable panels. It utilizes the fire alarm panel's output supervision (e.g. Bells) to supervise the wiring (from the panel to the unit and from the unit to the speakers) for open and short circuit faults.

Mini-Gen is available in 2 versions: PA0894 for 12V Operation; PA0895 for 24V Operation (refer to LT0258 for instructions).

Product release:

- October 2000 SF0240 V1.00 software: produces only the AS2220 Evacuate tone and ignores the selection links.
- March 2001 SF0240 V2.00 software: added AS2220 Alert tone, 1 and 3 min Alert/Evacuation auto changeover and Vigilant RH3.
- June 2004 SF0311 V3.00 software: added ISO8201 Evac tone. Only links Y and Z have been modified (used to be spare AS2220 Evac).

Upgrades			
SF0311	Software for ISO8201 Tone	1	Replace SF0240 in U1

Operation

Mini-Gen has no control input. It illuminates its green "ON" LED and generates the selected tone whenever power is applied to the DC IN terminals. With power reversed it draws no current. Tone selection (for V2.00 and higher software) is by fitting 2 mini-jumpers V-Z & A-B, allowing up to 10 tones. The tone selection links may be changed while Mini-Gen is running and the new selection will take effect at the end of the tone cycle in progress. If the 100V line is over-loaded (e.g. short circuit), Mini-Gen will stop generating the tone and illuminate the yellow LED until the overload is removed.

Connection and Fault Monitoring

The simplest method of connection is 2-wires in, 2-wires out. This is ideal for unsupervised alarm system outputs, and those supervised by polarity reversal (ALPHA, SIGMA 5, FP1600, OMEGA 64, Bell Monitor Board). For these the 2-W mini-jumper must be fitted. Refer to Fig 1.

Removing the 2-W mini-jumper allows use of the dedicated Supervision terminal on Mini-Gen for a 4-wire in, 2-wires out supervised connection to a panel with clean relay contacts and a separate supervision input (as with most Vigilant Australian panels). Refer to Fig 2. The fire alarm panel supervises the 100V speaker line while the output is not active.

Capacitively coupled 100V line speakers must be used, and the appropriate end-of-line resistor (EOLR) must be installed at the end of the speaker run and sometimes at the input to Mini-Gen itself. The speaker circuit end-of-line resistor must be capable of handling 100Vrms. For values below the 27k commonly used in NZ this will need to be a higher power device.

The capacitors must be bipolar, rated at 10V minimum, and their value should be 1 - 5uF per Watt of their speaker's load (see below), though may be higher (but this will increase the Fault delay after turnoff).

Speaker Load	0.33W - 0.5W	1W - 5W	10W - 20W
Recommended Capacitor	1uF	10uF	33uF

Bipolar capacitors available from Tyco Safety Products are: CA0624 10uF, 63V; CA0623 33uF, 25V.

Due to the charge time of the blocking capacitor at each speaker, a supervision defect/fault condition may occur on some panels each time Mini-Gen is de-activated (e.g. after a test). This will clear and can be reset after a few seconds. A label to this effect is included to stick in the panel as a reminder.

For a New Zealand fire panel with Bells supervision of up to three branches, the following combinations are possible. Fit the 2-W Supervision link on the Mini-Gen. Where an EOLR is fitted to the Mini-Gen it is fitted to the DC Looping terminals of the last unit (i.e. furthest from panel). Refer to Fig 1.

Number of Mini-Gens	EOLR on DC Terminals	Number Spkr Line Branches per unit	EOLR on Each Branch
1	2 x 27k in parallel	1	27k
1	27k	2	27k
1	-	3	27k
2	27k	1	27k
2	-	1 & 2 (3 total)	27k
3	-	1	27k

For added Branches, use multiple Bell Monitor Boards to split the panel evacuation output in the usual way, but check total loading of relays and fuses.

100V Speaker Line Wiring

100V wiring is not SELV and so must be segregated as per the appropriate wiring regulations. Note also the line capacitance limits - Mini-Gen is not designed for driving very long lines. Full 20W output loading is only permitted on lines less than 500m of total cable length (TPS). Shorter distances will apply to highly capacitive cable (e.g. MIMS) - consult the cable manufacturer's specifications.

Mini-Gen Specifications (PA0894)

Board Dimensions: 93mm x 67mm. Height 36mm from bottom of pcb.
 Mounting Pattern: Ø4.0 x 4, 83mm x 57mm, 4 standoffs supplied for Ø6.0 in 0.8-1.6mm sheet metal. Height 9.5mm.
 Shipping Weight: 0.25kg.
 Temperature: Operating 0°C – 45°C Storage 0°C – 70°C.
 Humidity: 0% to 95% RH (non-condensing).
 Operating Voltage: 9 – 14.5Vdc.
 Operating Current: 2.0A @ 13Vdc with 20W load (PA0894).
 Non-operating Current: Nil.
 Power Output: 20Wrms @ 100V line at 13Vdc, 50nF line capacitance (500m maximum of TPS).
 15Wrms @ 100V line at 13Vdc, 100nF line capacitance (1km maximum of TPS).
 Power reduces with reduction of input voltage.
 Overload: Automatic shutdown at 180% nominal overload.
 Indicators: On (Green), Overload (Yellow).
 Controls: Select 2-wire or 4-wire input supervision (link 2-W).
 Tone Selection: Mini-jumper Links (10 combinations of 2 links).

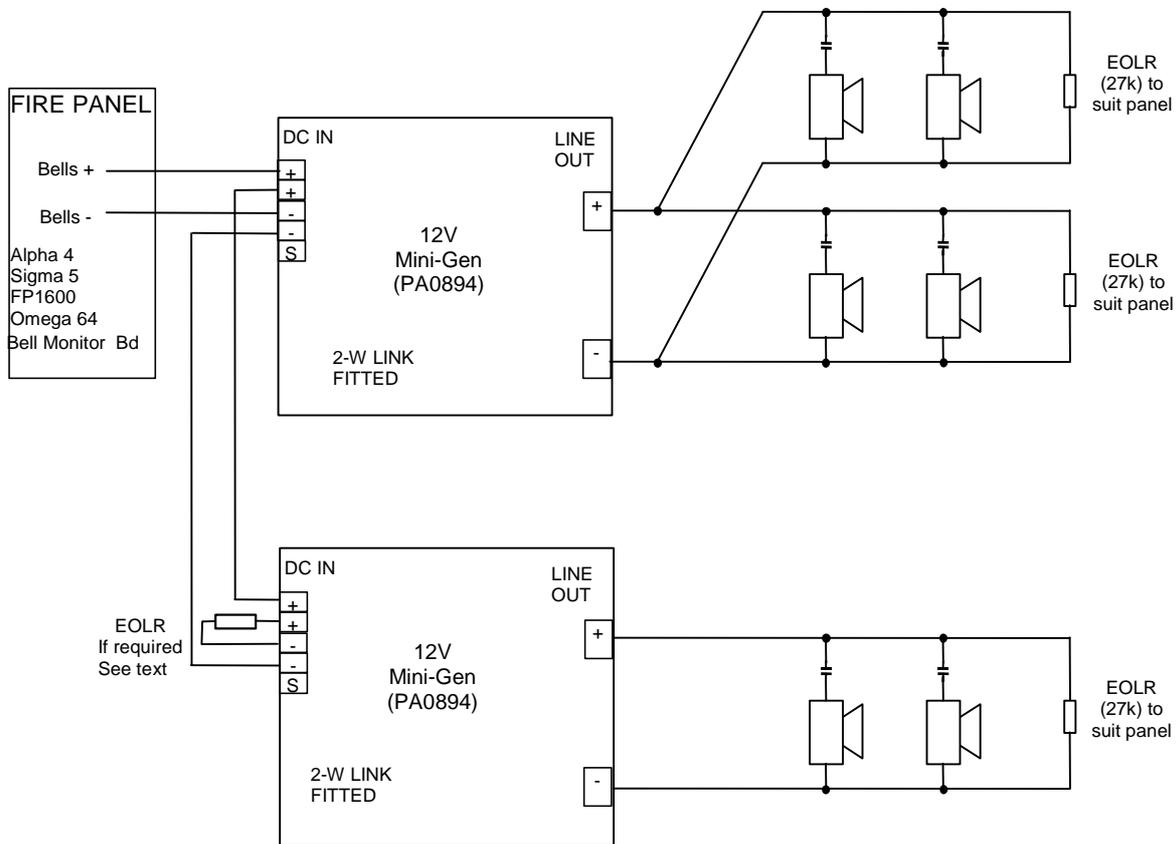


Fig 1
Example of Multiple Branches on Fire Panel with Bell 3 Branch Supervision

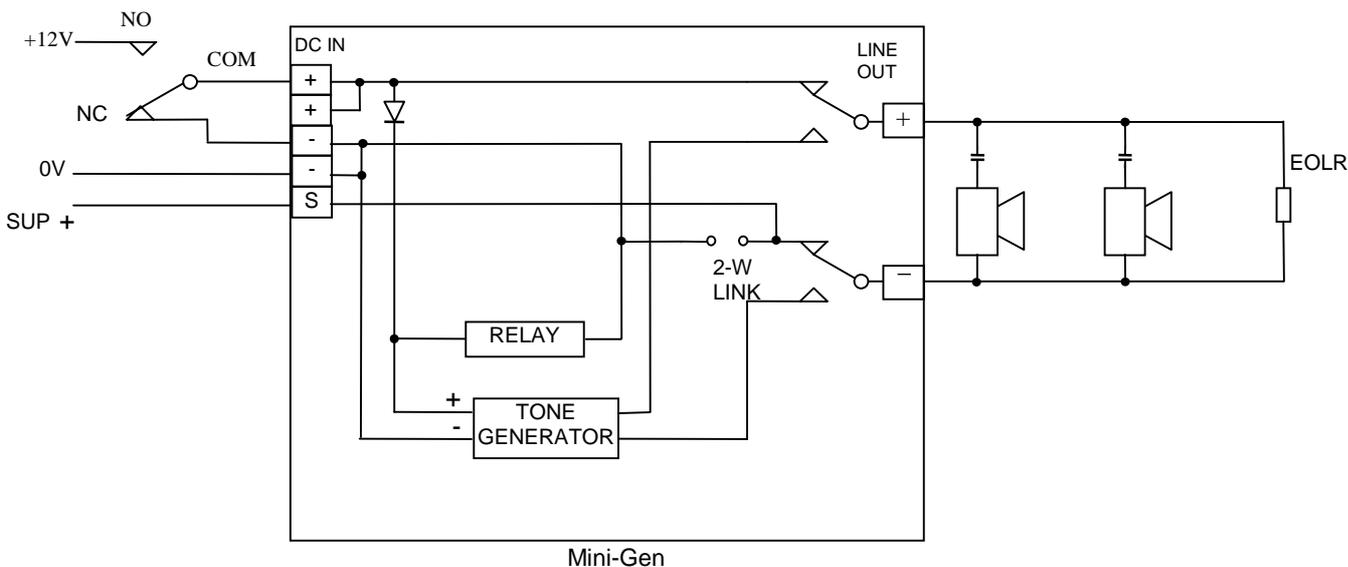


Fig 2
Mini-Gen Connection With Separate Supervision (single pole / 4 wire)

Tone Selection

Links	V	W	X	Y	Z
A	AS2220 Evac	RH3	1 min Alert then Evac (AS2220)	ISO8201 Evac	1 min Alert then Evac (ISO)
B	AS2220 Alert	AS2220 (Evac)	3 min Alert then Evac (AS2220)	AS2220 Alert	3 min Alert then Evac (ISO)

Position one mini-jumper on V to Z, the other on A or B, as appropriate. For selection V, a separate relay contact connected across the B position (2 pins of link A/B) could be used to switch between Alert and Evac. Open = Evac, closed = Alert. Use a 3 way 0.1" plug-on connector (e.g. CN0451 for 0.2sqmm stranded wire) to connect to Link A/B. **Warning.** Links are unprotected inputs. Use only a local relay, and use anti-static procedures.

WARNINGS

Some components on Mini-Gen will get hot when it has been running for a time into a heavy load, especially if a long line is used. This applies mainly to the transformer, which should therefore not be touched.

The loading must not exceed the fuse rating and the relay rating of the Fire Panel.

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