

## T-GEN2 60/120W EMERGENCY WARNING SYSTEM

*This bulletin announces the T-Gen2 range of Emergency Warning System (EWS) products that are designed to comply with AS 4428.16.*

T-Gen2 is a self-contained Emergency Warning System (EWS) with a wide range of functions and optional modules to enable small to large-sized single zone evacuation systems to be created.

At the heart of the system is the T-Gen2 tone generator and amplifier which can produce 100Vrms tones and speech from live audio inputs or pre-recorded digital storage.

The T-Gen2 is available in two models with different power ratings/physical formats:

- T-Gen 60: A 125 (w) x 195 (h) x 55mm (d) PCB that mounts on the “Responder” footprint or where an existing T-Gen 50 can be mounted (excluding F3200 card frame), and can drive 60W of speaker load.
- T-Gen 120: A 125 (w) x 195 (h) x 110mm (d) module that generally mounts where MX Loop Cards can mount on various gear plates, in Simplex 4100 PDI bays, and can drive 120W of speaker load.



Fig 1  
T-Gen2 60W Model

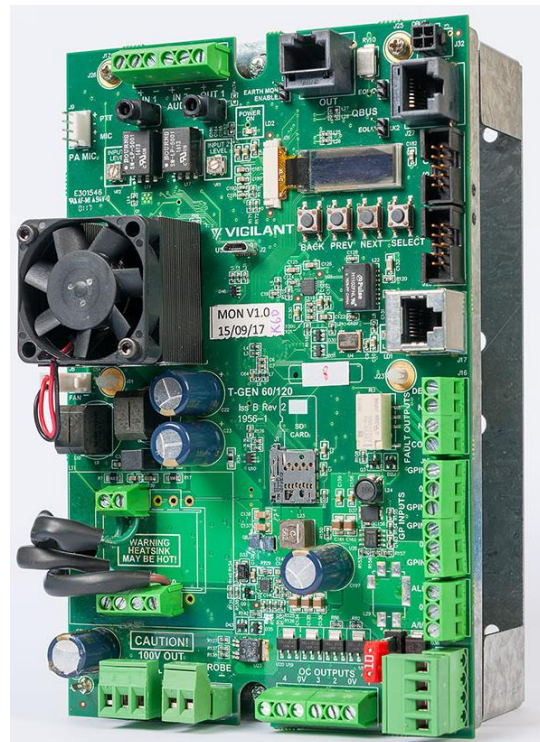


Fig 2  
T-Gen2 120W Model

Both versions have the same feature list, with the exception of the size, mounting arrangement, maximum speaker load and the presence of a cooling fan on the 120W version. Table 1 shows the feature list for both models.

## **Features**

Table 1 – T-Gen 60/120W Feature List

	FP1115 60W	FP1116 120W
100V RMS Output Power	60W	120W
Single PCB 125 (w) x 195 (h) x 55mm (d)	✓	
Single PCB on bracket 125 (w) x 195 (h) x110mm (d)		✓
Designed to comply with AS 4428.16	✓	✓
24Vdc (19.2 – 28.8V) operation	✓	✓
Mounts on Responder/T-Gen 50 footprint	✓	
Mounts on 3 x MX Loop Card bracket footprint		✓
Mounts in 4100ESi Compact panel	✓	
Mounts in 4100ESi PDI bays (depending on cabinet depth)	✓	✓
Easy connection to MX1 and 4100ESi	✓	✓
Supervised Alarm Input (programmable)	✓	✓
A/I/E Input (optional - programmable)	✓	✓
4 x Supervised Digital Inputs (programmable)	✓	✓
All Digital Audio processing, Class D Amplifier	✓	✓
AS 4428.16 Alert & Evacuate Tones	✓	✓
AS 2220.1 Alert & Evacuate Tones	✓	✓
Pre-recorded Alert and Evacuate messages	✓	✓
ISO8201 keyword messages	✓	✓
Alarm Input Non-Latching/Latching	✓	✓
Programmable Alert to Evacuate delay	✓	✓
School Bell Tone	✓	✓
Supervised Microphone Connection	✓	✓
2 x Audio Inputs 150mVrms (min) for BGM, Paging – electrically isolated	✓	✓
1 x Audio Output (headphones/Ext. Amp)	✓	✓
Link-selectable Earth Fault monitoring	✓	✓
Normally energised Fault Relay	✓	✓
Open Collector Def- Fault Output	✓	✓
On-board OLED character display for faults and functions	✓	✓
100V Speaker output O/C, S/C Supervision (2 branches)	✓	✓
2Amp Strobe Output, Single Polarity, Supervised (3 branches)	✓	✓
Strobe Output Supports Synchronised Strobes	✓	✓
Amplifier monitoring, quiescent and overload	✓	✓
Automatic Speaker Overload Protection (reduces voltage)	✓	✓
Digital storage of messages (up to 2 minutes)	✓	✓
Optional Micro-SD card for non-emergency messages	✓	✓
On-site recording of messages	✓	✓
Play messages from digital input closure	✓	✓
Listen and Play messages from OLED	✓	✓
1KHz sinewave Test Tone, adjustable level	✓	✓
Optional chimes on paging and microphone	✓	✓

Programmable sequencing of messages for Signals	✓	✓
Programmable volume for each message and input	✓	✓
Programmable priority between inputs and message playing	✓	✓
Power Save Mode on Mains Fail – disables background audio	✓	✓
Five Band graphic equaliser	✓	✓
Supports up to 9 Slave T-Gen2s for higher power outputs	✓	✓
Configurable as Slave T-Gen2	✓	✓
Cooling fan monitored for failure	N/A	✓
Supports up to 4 paging areas with 100V Switching Modules	✓	✓
Optional 100V Switching / Splitter Modules provide 4 x short circuit isolated 100V outputs	✓	✓
Supports optional Grade 3 User Interface & Microphone	✓	✓
AS 4428.16 – Test, Disable, Silence Warning functions	✓	✓

## **Operation**

For a standard grade 3 EWS installation the T-Gen2 and optional microphone are typically installed in, powered and controlled by a fire panel. They are readily mounted in the Vigilant *MX1* and Simplex 4100ESi panels.

Usually the Alarm Devices output of the fire panel is wired to the Alarm Input on the T-Gen2, so that the fire panel Alarm Devices function turns the T-Gen2 Evacuation system on and off directly (the T-Gen2's Alarm input is set for non-latching operation).

For non-alarm operation the T-Gen2 supports two electrically isolated low-level audio inputs that can be used for background music, remote paging (to up to 4 different areas), audio announcements, etc. The inputs can be programmed to be “always on” or activated by certain digital inputs on the T-Gen2 being active.

When combined with a 4 zone paging console (SU0360 and SU0361) and optional 100V Switching Modules (FP1117) the T-Gen2 can be configured to make voice paging announcements to different areas of the building.

Each output of a 100V Switching Module can be assigned to one, all or none of the paging areas, so that different paging combinations can be configured. For example, some outputs could get all announcements, some area specific, and some don't receive any paging announcements.

An optional User Interface can be added to the T-Gen2 to provide expanded manual controls and zoned paging functions, by using the paging buttons and microphone that are built into the User Interface.

The T-Gen2 Digital Inputs can be programmed to make recorded message announcements to the T-Gen2's speaker output. These could be used for special announcements like school class change, area lock-down, test commencement/completion, etc. Two spare buttons on the User Interface are also configurable to play recorded messages – these could be one-time announcements, or play continuously until the button is pressed again to turn off.

An on-board OLED display and 4 pushbuttons provide a means of controlling the T-Gen2 and viewing its status. The current input conditions, and fault status, firmware and configuration versions can be recalled; and each of the tone signals can be listened to, played out the 100V line, or re-recorded if the configuration permits. A test tone with adjustable volume is also available for conducting speaker checks at a low level, or sound level checks at full volume.

For higher power outputs, or separate speaker feeds, multiple T-Gen2 units can be joined together in a master-slave arrangement. One unit is the master and it provides the control and audio signals for the slave units. Additional T-Gen2 units are configured for Slave operation and their unique address (1-9) via the on-board OLED and pushbuttons. They are then connected together and to the master T-Gen2 using RJ45 cables provided.

### **Configuring T-Gen2**

The T-Gen2 is supplied ex-factory with a default configuration suitable for use in most fire panels. A number of other configurations are also present, one of which can be selected using the OLED and pushbuttons. These allow the T-Gen2 to be used with the older AS 2220.1 tones, and as spare parts for particular configurations. Otherwise the SmartConfig PC program is used to program a specific configuration and download this to the T-Gen2 using a USB cable.

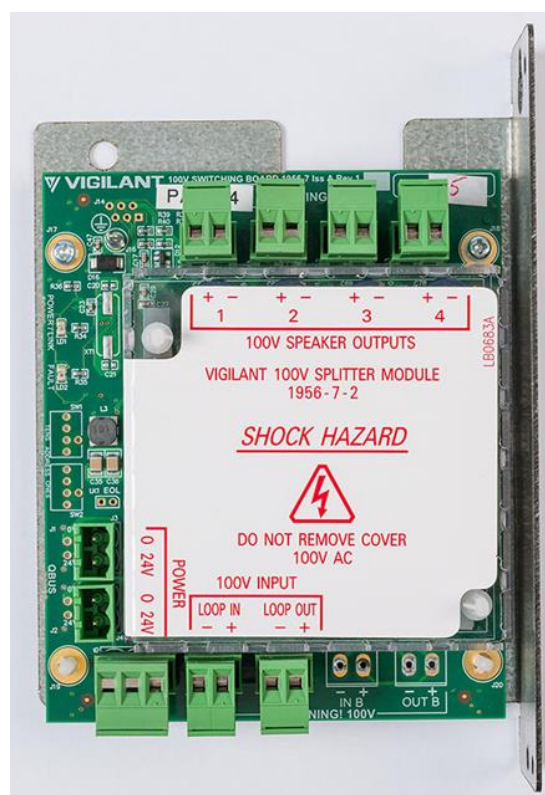
## Optional Modules

### **100V Splitter Module (FP1118)**

The 100V Splitter Module takes the T-Gen2's 100V output and splits it into 4 x 100V outputs, each with its own open/short circuit fault supervision and isolation relay for disconnection on short circuit. This provides 4 outputs with short-circuited fault tolerance between them, and by daisy-chaining multiple modules together additional outputs can be provided.

The 100V Splitter Module is readily mounted in most fire panels and BOWS cabinets along with the T-Gen2.

Further details on the 100V Splitter Module are contained in Product Bulletin PBG0205.



100V Splitter Module

### 100V Switching Module (FP1117)

The 100V Switching Module provides similar functionality as the 100V Splitter Module, with the additional feature that the four outputs can be controlled by the T-Gen2. This allows each output to be connected and disconnected from the T-Gen2's 100V feed, allowing functions like area selective paging to be done. A separate paging console/microphone, or the T-Gen2 User Interface, can be used to choose to which areas paging announcements need to be made, and then the T-Gen2 controls the 100V Switching Modules to direct the paging announcements to the required areas (100V outputs).



100V Switching Module

Multiple Switching Modules can be daisy-chained together to provide additional outputs – with each output assignable to one, all or none of the paging areas.

The 100V Switching Module is readily mounted in the most fire panels or BOWS cabinet along with the T-Gen2.



## T-Gen2 Grade 3 User Interface

An optional Grade 3 User Interface is available for T-Gen2 as a 3U 19 inch rack mounting module containing a microphone.



3U Door

This provides:

- Alert, Evacuate, Speech and Disable controls and indications for a single evacuation zone.
- 4 Area paging buttons
- Auto/Manual controls
- 2 programmable buttons for playing messages
- Test Mode to observe operation with no sounds/strobes activated
- Alarm simulation in Test Mode
- Silence Warning – one button press to silence operation
- Silence buzzer control
- LED test
- Fault indicators
- Microphone for Emergency Speech or Area Paging functions
- Talk indicator for showing when microphone is active

As a number of the buttons require specific functions to be available in the building emergency management plan (e.g., Zone Disable, Alert Signal, Silence Warning, Reset) these buttons are usually disabled, but can be enabled for sites that require them.

The User Interface is available in 3 versions:

- FP1121 is the 3U door User Interface, grey in colour (suits *MX1*) with a T-Gen 60 module mounted on the rear.
- FP1122 is the 3U door User Interface, grey in colour (suits *MX1*) with no T-Gen 60 on the rear – but with cables to connect to the T-Gen 60 or T-Gen 120 mounted inside the fire panel.
- FP1123 is the 3U door User Interface, black in colour (suits Simplex 4100ESi) with no T-Gen 60 on it. It includes cables to connect to the T-Gen 60 or T-Gen 120 mounted in the 4100ESi.

## **BOWS**

The T-Gen2 is also available as two complete Building Occupant Warning System (BOWS) units – assembled into a cabinet with a PSU, User Interface and space for additional modules.

An 8U cabinet with one T-Gen 60 and a 5A PSU is available as FP1136.

An 18U cabinet with one T-Gen 120 and a 10A PSU is available as FP1137.

Further details are contained in PBG0206.

## **Use in Fire Panels**

Details for using T-Gen2 in Vigilant *MX1* fire panels are contained in PBK0029.

Details for using T-Gen2 in Simplex 4100ESi panels are contained in PBS0071.

Details for using T-Gen2 in Vigilant MX4428 panels are contained in PBF0285.

Details for using T-Gen2 in F3200 are contained in PBG0207.



**Specifications****T-Gen2 (FP1115/1116)**

<b>Weight</b>	0.65kg / 1.5kg
<b>Size</b>	125x195x55mm / 125x195x110mm
<b>Supply Voltage</b>	19.2Vmin - 28.8Vmax
<b>Operating Temperature Range</b>	-5C to +45C
<b>Relative Humidity</b>	0 to 95% non-condensing
<b>Storage Temperature Range</b>	-20C to +70C
<b>Quiescent Current</b>	
Power Save Mode (Audio turned off)	45mA
Audio enabled but idle (no signal)	170mA
<b>Active Current - 27Vdc</b>	3.0A @ 60W / 6.0A @ 120W
Line Voltage - AC (Tones)	100V rms
Line Power - Tones	60W rms / 120W rms
- Audio	60W rms / 120W rms
Maximum line capacitance	200nF
<b>Audio Frequency range</b>	
+/- 1dB	260Hz – 3800Hz
+/- 3dB	215Hz – 8400Hz
<b>100V Speaker Line Supervision</b>	
ELD - 1 Branch	56k 0.4W
- 2 Branches	100k 0.4W
<b>Strobe Output</b>	
ELD - 1 to 3 branches	1x10k - 3 x 27k 0.4W
Current rating	Max 2.0A
<b>Audio Inputs</b>	
Audio 1 & Audio 2	230mVrms (min) into 5kΩ non-isolated for full power
Microphone - Input Level	3mV rms - 100mV rms, PTT driven, supervised
<b>Interfaces</b>	
OLED, 4 button menu structured	
QBus Slave communications	Master / Slave T-Gens, User Interface and 100V Switching Module
On-board Storage	4MB (configuration and audio files)
Micro-SD Card	32GB FAT32 support
<b>Headphone Output</b> (internal) - Load impedance	8Ω min 6mW

**T-Gen2 100V Splitter Module (FP1118)**

Operating Voltage	19.2V to 28.8Vdc
Quiescent Current	15mA @ 24V
Fault State Current	40mA @ 24V
100V EOL Resistor	56k Ohm (1 branch) 100k Ohm (2 branches)
100V Load/Output	100W
100V Load (all 4 outputs)	120W
Fault Contact Rating	2A @ 24Vdc
Fault on 100Vin	25k Ohm
Ambient Temperature	-5°C to +24°C
Relative Humidity	10% to 95% (non cond.)
<i>Indoor Applications Only</i>	
Dimensions (HWD)	142 x 104 x 40mm
Wire Size (maximum)	2.5sq mm

**T-Gen2 100V Switching Module (FP1117)**

Operating Voltage	19.2V to 28.8Vdc
Quiescent Current	10mA @ 24V
Fault State Current	43mA @ 24V
100V EOL Resistor	56k Ohm (1 branch) 100k Ohm (2 branches)
100V Load/Output	100W
100V Load (all 4 outputs)	120W
Ambient Temperature	-5°C to +45°C
Relative Humidity	10% to 95% (non cond.)
<i>Indoor Applications Only</i>	
Dimensions (HWD)	142 x 104 x 40mm
Wire Size (maximum)	2.5sq mm

**Part Numbers****FP1115, FP,T-Gen 60,24V,C/W INSTALL LIT & MTG**

T-Gen 60 model of T-Gen2 able to drive a speaker load up to 60W. Supports two non-emergency audio inputs (BGM, paging), a microphone audio input (Speech or Paging), 6 supervised inputs (Alarm, Fault, Paging), 4 open-collector outputs, normally-energised Fault relay, supervised single polarity 2A strobe output, and 100V speaker output.

**FP1116, FP,T-Gen 120,24V,C/W INSTALL LIT & MTG**

T-Gen 120 model of T-Gen2 able to drive a speaker load up to 120W.

**FP1117 FP,100V SWITCHING MODULE,C/W LIT,LOOMS & MTG BRK**

Provides 4 supervised, short-circuit isolated 100V outputs (each rated at 100W max, 120W combined) from the T-Gen2's 100V output, along with control of each output by the T-Gen2 to provide area paging. A QBus slave module. Supplied on *MX1*-style mounting bracket with cables and EOLs.

**FP1118 FP,100V SPLITTER MODULE,C/W LIT,LOOMS & MTG BRKT**

Provides 4 supervised, short-circuit isolated 100V outputs (each rated at 100W max, 120W combined) from the T-Gen2's 100V output. No control of the outputs is available. Signals fault to the T-Gen2 by superimposing a fault on the T-Gen2's 100V input. Standalone operation (not a QBus slave). Supplied on *MX1*-style mounting bracket with cables and EOLs. Refer to PBG0205 for details.

**FP1121, FP,GRADE 3 EWS UI 3U DOOR,C/W T-Gen 60 & MIC,GREY**

A grey 3U 19" rack mounting door complete with a T-Gen 60 mounted on the back of it. A microphone and front panel User Interface are supplied fitted to provide a complete functional unit. A 1.5m loom for connection to an *MX1* Controller for power, control and monitoring is factory fitted. Wiring to the 100V speaker and Strobe line is required to make it operational.

**FP1122 FP,GRADE 3 EWS UI 3U DOOR,C/W LOOM & MIC,GREY**

A grey 3U 19" rack mounting door complete with a Grade 3 user interface and PA microphone ready for connection to a T-Gen 60 or T-Gen 120 mounted inside the cabinet. A 1.5m power loom and microphone extension loom are included, long enough to connect to the T-Gen2 mounted on the gear plate in a 40U deep cabinet, for example. Suitable for mounting in an *MX1* fire alarm panel.

**FP1123 FP,GRADE 3 EWS UI 3U DOOR,C/W LOOM & MIC,BLACK**

A black 3U 19" rack mounting door complete with a Grade 3 user interface and PA microphone ready for connection to a T-Gen 60 or T-Gen 120 mounted inside the cabinet. A 1.5m power loom and microphone extension loom are included, long enough to connect to the T-Gen2 mounted on the gear plate in a 40U deep cabinet, for example. Suitable for mounting in a Simplex 4100ESi fire alarm panel.

**FP1136 FP, 60W T-GEN2 BUILDING OWS, 8U TITANIA CAB**

A complete Building Occupant Warning System (BOWS) including a T-Gen 60, 5A PSU, 3U 19" rack mounting door with Grade 3 User Interface and microphone mounted in a titania-coloured 8U cabinet. Space for an additional T-Gen 60 and batteries, 3 x 100V Switching or 100V Splitter modules is available. Refer to PBG0206 for details.

**FP1137 FP, 120W T-GEN2 BUILDING OWS, 18U CAB**

A complete BOWS including a T-Gen 120, 10A PSU, 3U 19" rack mounting door with Grade 3 User Interface and microphone, all mounted in an 18U x 310 deep rack cabinet. Space for batteries, additional T-Gen 120, and up to 8 x 100V Switching or 100V Splitter modules is available. Refer to PBG0206 for details.

**ME0290 Mech Assy, 1955-3, T-Gen/MVAC Dynamic Microphone****ME0490 Mech Assy, 1955-44, T-GEN50, Dynamic Microphone**

A noise-cancelling dynamic microphone suitable for plugging onto the T-Gen2 to provide emergency PA or for field recording of the digitised speech message(s). ME0290 has a 1m coiled cord. ME0490 has a 1m extension to this coiled cord, suitable for internal routing in the cabinet, if required.

**ME0292 Mech Assy, 1955-25, T-Gen Empty Box, Keyed 003**

A 240W x 295H x 85D, cream wrinkle coloured, locked, metal box suitable for mounting the T-Gen2 (not included) inside.

**SU0360 A 4488 4 Zone Paging Console**

A 4 zone paging console with microphone and chime option that can be used with the SU0361 A 4489 Audio Switcher to achieve 4 area paging with T-Gen2.

**SU0361 A 4489 Audio Switcher**

Used with the A 4428 4 zone paging console to provide relay outputs.