

INSTALLATION INSTRUCTIONS

The VIGILANT T-Gen2 is a self-contained Grade 3 Emergency Warning System (EWS) with 100V speaker line supervision and digitised speech messages. It is compliant with AS 4428.16.

It is available as a self-contained Building Occupant Warning System (BOWS) complete with PSU, User Interface and microphone in two cabinet sizes, 8U and 15U (see later for a full list of available items and accessories):

FP1144 8U 60W BOWS: A complete Building Occupant Warning System (BOWS) including a T-Gen 60, 14A 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 up to two 17Ahr batteries, 3 x 100V Switching or 100V Splitter modules is available.

FP1134 15U 120W BOWS: A complete BOWS including a T-Gen 120, 14A PSU, 3U 19" rack mounting door with Grade 3 User Interface and microphone, mounted in a titania coloured 15U x 200 deep rack cabinet. Space for up to 40Ahr batteries, additional T-Gen 120, or up to 8 x 100V Switching or 100V Splitter modules is available. Note the 14A PSU may limit the expansion T-Gen 120 load capacity.

Optional modules that can be fitted into the T-Gen2 BOWS include:

FP1115 T-Gen 60: A second 60W T-Gen2 can be fitted to the FP1144 BOWS to expand the power output.

FP1116 T-Gen 120: A second 120W T-Gen2 can be fitted to the FP1134 BOWS to expand the power output.

FP1117 100V Switching Module: This splits the T-Gen2's 100V output into 4 short-circuit isolated outputs that can also be used to direct paging announcements to specific areas.

FP1118 100V Splitter Module: This splits the T-Gen2's 100V output into 4 short-circuit isolated outputs. No control of the outputs is possible.

FP1143 HLI Module: This module allows a high level link to be made between a Vigilant MX1, MX4428 or F3200 or Simplex 4100ESi fire panel and the BOWS to transfer alarm and fault information.

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 from remote locations. Up to two paging consoles can be connected to the SU0361 Audio Switch.

SU0361 A 4489 Audio Switcher: Used with the A 4428 4 zone paging console to provide relay outputs. Able to be mounted inside the BOWS cabinet.

These instructions (LT0693) cover the installation and configuration of the BOWS. For installation and operation of the included and optional modules refer to the following documents:

LT0667 LIT,T-GEN2 60/120 INSTALLATION & OPERATION MANUAL
LT0668 LIT,T-GEN 100V SWITCHING MODULE INSTALL INSTRUCTIONS
LT0671 LIT,T-GEN 100V SPLITTER MODULE INSTALL INSTRUCTIONS
LT0672 LIT,GRADE 3 USER INTERFACE INSTALLATION GUIDE
LT0673 LIT,GRADE 3 USER INTERFACE OPERATING INSTRUCTIONS
LT0685 LIT,PSE 14A,GEAR PLATE MTD,INSTALLATION GUIDE
LT0691 LIT,T-GEN2 HLI BOARD INSTALLATION INSTRUCTIONS

CHECKING THE BOWS

Before commencing installation, please ensure that the following items are present and undamaged:

FP1144, 8U 60W BOWS

- 1 x T-Gen 60W Board
- 1 x 14A PSU
- 1 x T-Gen2 Installation Instructions (LT0667).
- 1 x Grade 3 User Interface Operating Instructions (LT0673)
- 1 x BOWS Installation Instructions (LT0693 – this document).
- 1 x LM0571, Battery joining lead, c/w 20A blade fuse
- 6 x HW0302, clip-in cable tie mount
- 1 x LT0692, factory completed BOWS checklist
- 1 x LT0435, cabinet wall mounting template
- 1 x KT0575 kit of parts, including:
 - 1 x 3k3, 6 x 2k7, 1 x 15k, 3 x 27k, 1 x 56k, 2 x 100k, 1 x LB0648 Warning Label, 220mm length of 3mm heat shrink, 4 x M4 x 10 screws
- 1 x KT0576 kit of parts, including 4 x M5/M6 screws, nuts, washers

FP1134, 15U 120W BOWS

- 1 x T-Gen 120W Board
- 1 x 14A PSU
- 1 x T-Gen2 Installation Instructions (LT0667).
- 1 x Grade 3 User Interface Operating Instructions (LT0673)
- 1 x BOWS Installation Instructions (LT0693 – this document).
- 1 x LM0571, Battery joining lead, c/w 20A blade fuse
- 12 x HW0302, clip-in cable tie mount
- 1 x LT0692, factory completed BOWS checklist
- 1 x LT0435, cabinet wall mounting template
- 1 x KT0575 kit of parts, including:
 - 1 x 3k3, 6 x 2k7, 1 x 15k, 3 x 27k, 1 x 56k, 2 x 100k, 1 x LB0648 Warning Label, 220mm length of 3mm heat shrink, 4 x M4 x 10 screws
- 1 x KT0576 kit of parts, including 4 x M5/M6 screws, nuts, washers

SYMBOLS USED ON PRODUCT LABELS

The following symbol used on product labels have these meanings:



WARNING: Electrical hazard contained inside. Extra care required if opening.

OPERATION

Operational of BOWS is controlled by the programmable configuration held within the T-Gen2. On leaving the factory the T-Gen2 is programmed with the BOWS_AS4428 configuration.

This sets up the T-Gen2 with the Grade 3 User Interface, one 14A PSE, the ALARM input to trigger AS 4428.16 evacuate tones and message, AUDIO IN 1 as always enabled background music, and GP1 as an input to activate AUDIO IN 2 on demand (e.g., to enable an external all-area paging microphone).

SmartConfig will be required to program a specific configuration if, for example, 100V Switching Modules are added, extra input functionality is wanted, area paging is required, or a Slave T-Gen2 is added.

Further details for configuring/wiring the T-Gen2 are contained in LT0667, and in the SmartConfig on-line help file for preparing a custom configuration for the T-Gen2. SmartConfig Lite (SF0323) and its User Manual (LT0345) can be downloaded from the Fireplace: <http://vigilant-fire.com.au>.

CONFIGURATION

1. T-Gen2 Configuration. Refer to the T-Gen2 Manual LT0667 for details. The Earth Mon Enable link Lk1 needs to be fitted to the (master) T-Gen2 when used in the BOWS units, and removed from slave T-Gen2. Lk2 and Lk3 are not fitted.
2. User Interface set to Address 01. Links Lk1 and Lk2 are not fitted.
3. PSE Address set to 01. Link Lk1 is not fitted.

CABINET INSTALLATION

Cabinet Mounting

The 8U and 15U BOWS cabinets are typically fixed to a wall with four 8mm screws or bolts (not included). The drilling details are shown in Figure 1 or the LT0435 cabinet drilling template can be used.

The following conditions are required:

1. Dry Area, moderate ambient temperature, 45°C maximum.
2. Not exposed to direct sunlight.
3. Not subject to outdoor conditions without suitable protection.
4. The User Interface display should be at an average eye level and must not be higher than 1850mm or lower than 750mm above floor level.
5. Clear access and viewing for operators.
6. At least 1 metre free space should be provided in front of the panel for installation and maintenance.
7. Must not be installed in hazardous areas as defined in AS3000.
8. If recessed into a wall allow room for the door to open at least 145deg.

It should not be necessary to drill within the cabinet, but if drilling or filing is required, remove the circuit boards first.

Clean out all swarf before refitting the boards.

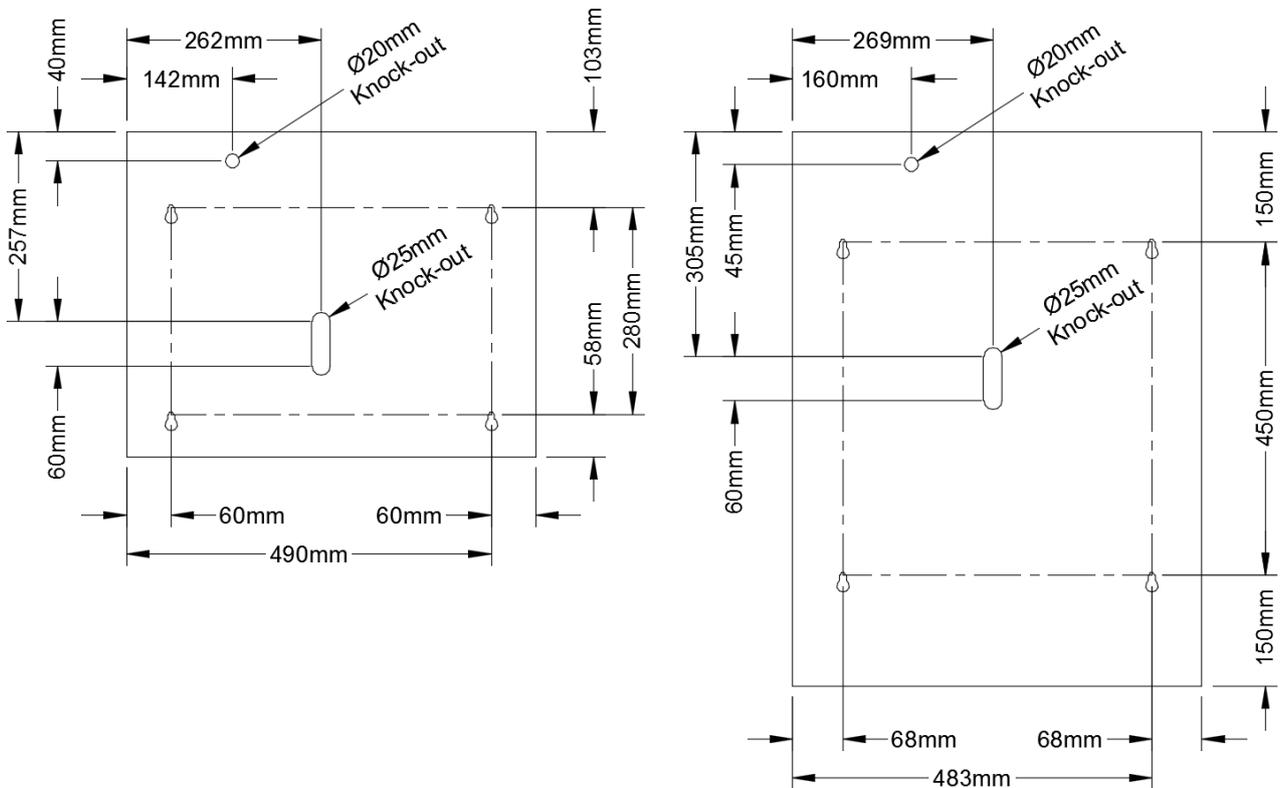


Figure 1 – 8U/15U Cabinet Mounting Details



This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

EXTERNAL WIRING

Cabinet Cable Entry

There are four Ø20mm and two Ø50mm and knockouts provided in the top and bottom of the cabinets, as well as a Ø20mm knockout provided in the top for mains wiring entry. The 15U BOWS also has a Ø20mm and a Ø60mm knockout in the cabinet rear wall and gearplate for cable entry. Other entry holes can be drilled as required.

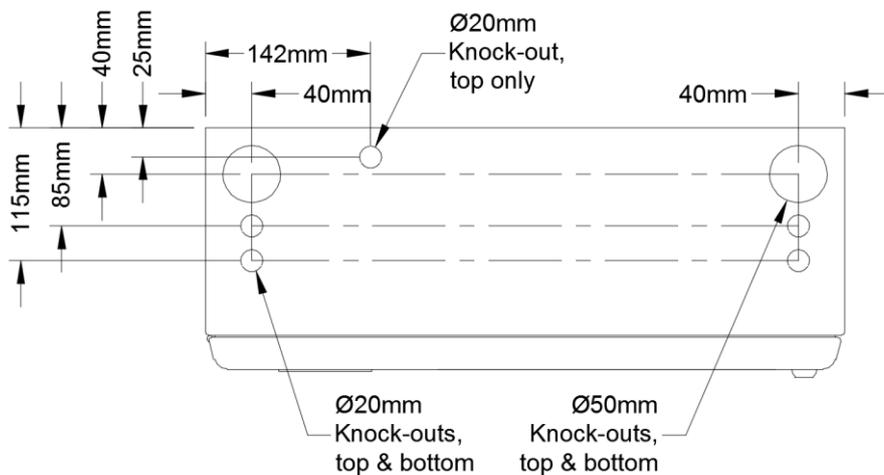


Figure 2 – 8U /15U Cabinet Cable Knockouts

To prevent water entering the cabinets, seal unused knockouts and any top cable entries. Where possible, use bottom cable entry with cables going down 100 mm below the cabinet before rising.

Mains Wiring

The EWS shall be supplied with a dedicated mains feed direct from a main switchboard (refer AS/NZS 3000).
A 10A circuit breaker is required for a system with up to three 14A PSE units.
A 16A circuit breaker is required for a system with four or five 14A PSE units.
A circuit breaker of more than 16A rating should not be used.

The General Purpose Outlet (GPO) must be wired by a suitably qualified electrician.

IMPORTANT: The factory-fitted earth loom under the GPO mounting block must be wired to the earth terminal of the GPO in order to correctly earth the BOWS cabinet.

Battery Wiring

The 8U cabinet has space for a pair of 12V 17Ah batteries, the 15U cabinet has space for a pair of 12V 40Ah batteries.

The BOWS panels are supplied with a red battery joining lead LM0571 for joining the neg(-) terminal on the 1st battery to the pos(+) on the 2nd battery, and the M5/M6 screws, washers and nuts required for attaching the leads to the 17Ah to 40Ah batteries. The lead includes a 20A blade fuse.

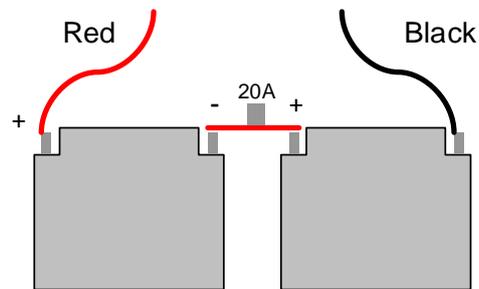


Figure 3 - Battery Wiring

Factory Wiring

The T-Gen2 QBus Connector J32 is wired to the PSE QBus In Connector J20, and the PSE QBus Out Connector J21 is wired to the QBus In Connector J6 on the User Interface.

The User Interface microphone is connected to the T-Gen2 PA MIC Connector J9.

T-Gen2 Field Wiring

Refer to the T-Gen2 Installation and Operating Instructions (LT0667) included with the BOWS for details on connecting field wiring to the T-Gen2 and how to use the OLED display on the T-Gen2.

100V Switching Module Field Wiring

Refer to the 100V Switching Module Installation Instructions (LT0668) for details on fitting and wiring this optional module.

100V Splitter Module Field Wiring

Refer to the 100V Splitter Module Installation Instructions (LT0671) for details on fitting and wiring this optional module.

HLI Wiring

Refer to the T-Gen2 HLI Installation Instructions (LT0691) for details and wiring this optional module.

Expansion T-Gen2

Fit the expansion T-Gen2 as per the instructions in LT0667. Connect 24V from the master T-Gen2 to the expansion T-Gen2 module, using red/black power wires.

Using the supplied RJ45 cable, connect the master T-Gen2 QBus OUT connector (J28) to the expansion T-Gen2 QBus IN connector (J27).

Configure the expansion T-Gen2 with the Slave configuration and address 1 (refer to LT0667 for instructions). Re-configure the master T-Gen2 to include a Slave T-Gen at address 1 using SmartConfig.

Additional 14A PSE Wiring

The details for fitting and wiring additional 14A PSE (FP1139) are contained in LT0685. Multiple PSE can share the same battery set (each PSE can be configured to enable its battery charger if needed) – inter-connect the Battery Test-terminals between these PSE to synchronise the battery testing. Each PSE needs to be assigned a different QBus slave address and configured in the master T-Gen2 configuration using SmartConfig.

Paging

The BOWS can be configured for area paging using FP1117 100V Switching Modules and the Paging buttons on the User Interface, or an external paging console. Refer to the T-Gen2 Installation & Wiring Instructions LT0667 for details.

EXPANDING THE BOWS

The T-Gen2 BOWS can be expanded up to a total of:

- 10 x T-Gen2 (master and 9 slaves)
- 9 x 14A PSE
- 10 x 100V Switching Modules
- Multiple 100V Splitter Modules per T-Gen2 100V output

The gearplate in the 8U BOWS supports a number of additional modules as shown in Figure 4 (note some positions overlap).

- One T-Gen 60 or T-Gen 120
- 3 x 100V Switching/Splitter Modules
- One HLI Interface Module instead of a 100V Switching/Splitter Module
- A Barix Extreamer or Annunicom Module.

If a T-Gen 120 is fitted, then there is no room for the batteries and another cabinet will be needed for these.

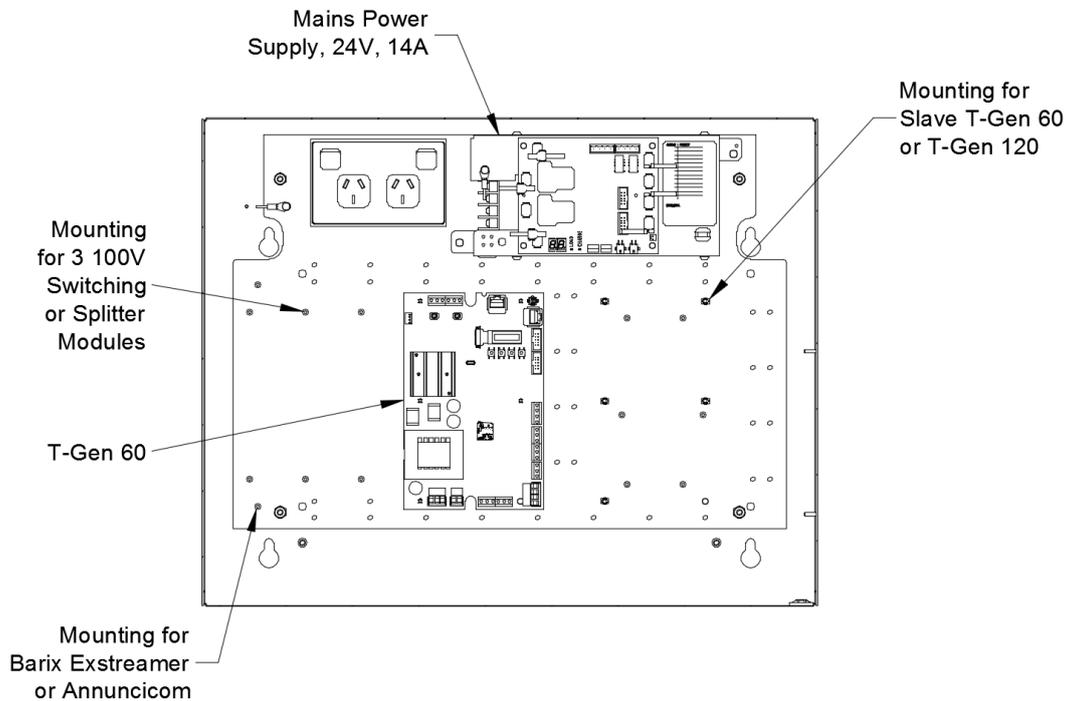


Figure 4 – 8U Gearplate Module Mounting Positions

The gearplate of the 15U BOWS supports a number of combinations of additional T-Gen2 parts, including:

- Up to 3 x T-Gen 60 or T-Gen 120 units
- Up to 2 x 14A power supplies
- Up to 10 x 100V Switching/Splitter Modules
- One HLI module (this can alternatively be mounted on the cabinet RHS wall).

Figure 5 shows the positioning of these modules on the gearplate (note many positions overlap).

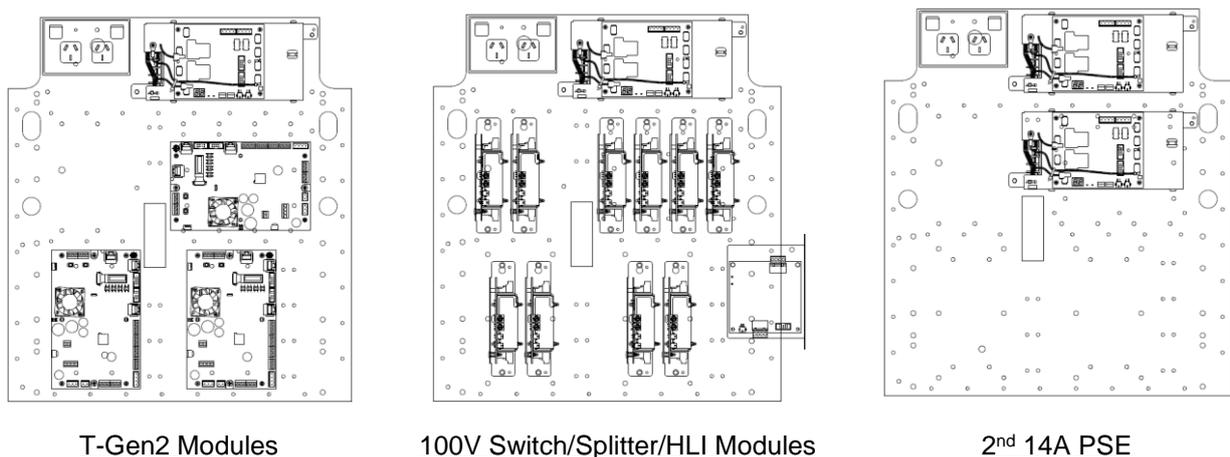


Figure 5 –15U Gearplate Module Mounting Positions

Additional 15U blank door cabinets, complete with the same 15U BOWS gearplate, mains GPO and 14A PSE fitted are available as FP1130. These can be mounted adjacent to the BOWS cabinet to house additional T-Gen2 equipment. The 15U gearplate has the same capacity as shown above for the 15U BOWS (FP1134).

The maximum capacity for a 15U cabinet from a heat dissipation perspective is one 14A PSE and 2 x fully loaded T-Gen 120 units.

PSU Rating

The BOWS are supplied with a 14A peak current PSU. This limits the total load that can be connected to the T-Gen2 units, as AS 4428.16 requires the PSU to be able to supply the full alarm load without any batteries connected.

Figure 6 shows the 100V load that can be connected to the FP1144 BOWS with 1 and 2 T-Gen 60 units and varying strobe currents.

Basically the FP1144 PSU can support:

- 1 x T-Gen 60 @ 60W load with up to 2A strobe load.
- 2 x T-Gen 60 @ 60W load each with 4A strobe load.

However, as the battery capacity of the cabinet is limited to 17Ahr, a practical limit for this cabinet, including these batteries is:

- 2 x T-Gen 60 @ 60W each with a total of 1.5A strobe load.

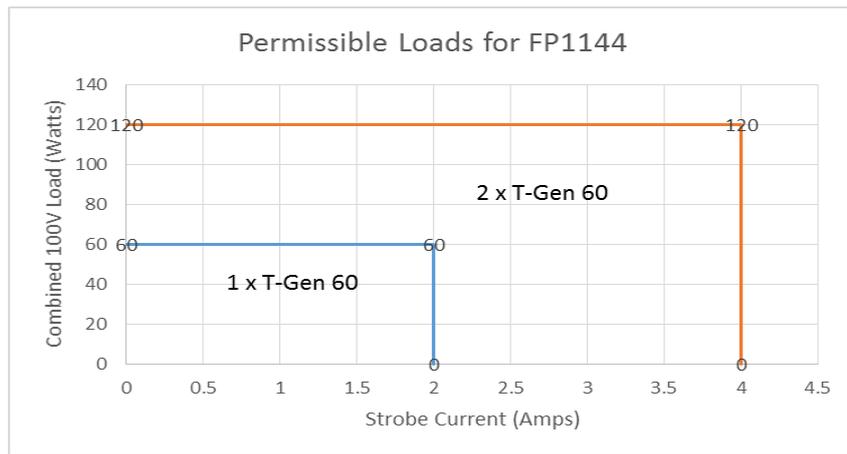


Figure 6 – FP1144 T-Gen2 100V Load vs Strobe Current

Figure 7 shows the 100V load that can be connected to the FP1134 BOWS with 1 and 2 T-Gen 120 units and varying strobe currents.

Basically the FP1134 14A PSU can support:

- 1 x T-Gen 120 @ 120W load with up to 2A strobe current
- 2 x T-Gen 120 @ 120W load each with no strobe current, decreasing to a combined 160W load with a total strobe current of 4A.

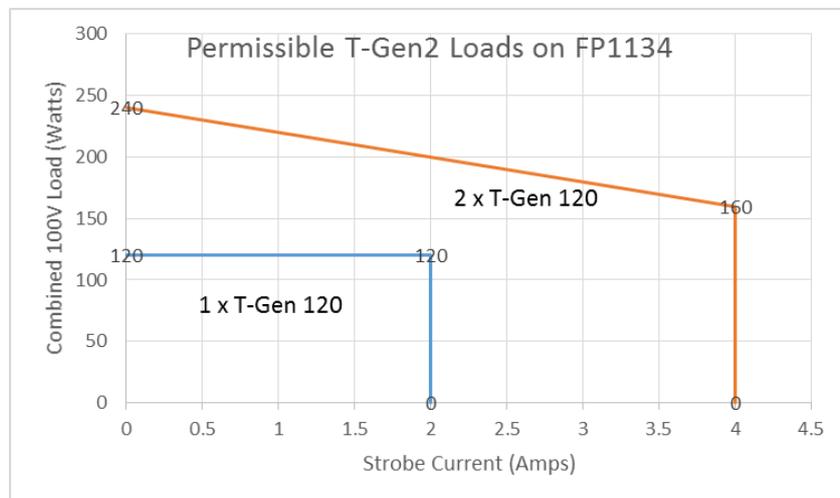


Figure 7 – FP1134 T-Gen2 100V Load vs Strobe Current

This performance assumes the T-Gen 50 **100V OUT V decreases with Supply V** setting in SmartConfig is ticked. If not, the T-Gen2 current consumption is higher at low voltages, so the load will need to be decreased.

Battery Capacity

For simplicity the required battery capacity has been calculated as follows.

# T-Gen2 Units	FP1144		FP1134	
	AS4428	AS2220	AS4428	AS2220
1	12Ahr	17Ahr	12Ahr	17Ahr
2	24Ahr*	33Ahr*	24Ahr	33Ahr

* These batteries will not fit in the cabinet and a separate battery box will be required.

This provides 24 hour standby operation with the T-Gen2 in the audio-enabled state, plus 30 minutes in alarm at the full load supported by that BOWS unit with the specified warning signal. There is reserve capacity to power one 100V Switching or 100V Splitter Module as well.

POWER ON & TESTING

The mains power to the system can be switched off by using the switch on the General Purpose Outlet inside the cabinet. To completely isolate the mains supply from the system, remove the PSE mains plug(s) from the mains outlet.

The battery power to the system can be isolated by removing the fuse in the lead connecting the two batteries.

For the first tests apply only mains power to check the operation of the EWS without a battery. Once this is confirmed a battery can be connected.

- Power on and wait for the T-Gen2 to start up (<10s).
- Check the POWER and AUTO LEDs on the T-Gen2 User Interface turn on and that no faults are generated. If faults are generated refer to the T-Gen2 Instructions (LT0667) to use the OLED display to determine the faults that are present.
- After 30 seconds a battery not connected (nb) fault code will be shown on the PSE and the Power Fault LED on the User Interface will turn on.
- Connect the batteries and check the fault is cleared after 30 seconds.

COMMISSIONING & FAULT FINDING

Refer to the T-Gen2 Commissioning section in LT0667 for general instructions.

If faults are generated then refer to the T-Gen2 OLED display for information and to the specific module manuals for an explanation.

SPECIFICATIONS

	FP1144	FP1134
Weight	17.5kg	26kg
Size (W x H x D)	550 x 440 x 210mm	550 x 750 x 210mm
PSU Output Current (Peak)	14A	14A
DC Supply Voltage	19.2Vmin - 28.8Vmax	19.2Vmin - 28.8Vmax
Operating Temperature Range	-5C to +45C	-5C to +45C
Relative Humidity	0 to 95% non-condensing	0 to 95% non-condensing
Storage Temperature Range	-20C to +70C	-20C to +70C
Quiescent Current		
Audio enabled but idle (no audio)	290mA	290mA
Active Current - 27Vdc (plus Strobe)	3.1A @ 60W	6.1A @ 120W
Avg Alarm Current (plus Strobe)		
AS 4428.16 Evacuate Tone	1A @ 60W	2A @ 120W
AS 2220.1 Evacuate Tone	2.4A @ 60W	4.8A @ 120W
100V Output (per T-Gen2)		
Line Voltage - AC (Tones)	290V rms	290V rms
- DC (Supervision)	2.5V (56k ELD 5.0V (O/C))	2.5V (56k ELD 5.0V (O/C))
Line Power - Tones	60W rms	120W rms
- Audio	60W rms	120W rms
Maximum line capacitance	200nF	200nF
Audio Frequency Range		
+/- 1dB	260Hz – 3800Hz	260Hz – 3800Hz
+/- 3dB	215Hz – 8400Hz	215Hz – 8400Hz
Audio Performance		
SNR	≥75dB (A)	≥75dB (A)
THD	≤0.25%	≤0.25%
100V Speaker Line Supervision		
ELD - 1 Branch	56k 0.4W	56k 0.4W
- 2 Branches	100k 0.4W	100k 0.4W
Strobe Output (per T-Gen2)		
ELD - 1 to 3 branches	1x10k - 3 x 27k 0.4W	1x10k - 3 x 27k 0.4W
Current rating	Max 2.0A	Max 2.0A
Audio Inputs		
Audio 1 & Audio 2	230mVrms (min) into 5kΩ isolated for full power	230mVrms (min) into 5kΩ isolated for full power
Microphone - Input Level	3mVrms-100mVrms, PTT driven, supervised	3mVrms-100mVrms, PTT driven, supervised
Digital Inputs		
Alarm, AIE, GP1-4	2k7 EOL, <3.5V Active	2k7 EOL, <3.5V Active

Open Collector O/Ps		
OC1 & OC2	<1V @ 100mA, 30Vdc Optionally Load Supervised (fault <12V)	<1V @ 100mA, 30Vdc Optionally Load Supervised (fault <12V)
OC3 & OC4	<1V @ 100mA, 30Vdc	<1V @ 100mA, 30Vdc
Interfaces		
OLED, 4 button menu structured		
QBus compliant	Master / Slave operation, User Interface, 100V Switching Module, PSE	Master / Slave operation, User Interface, 100V Switching Module, PSE
Slave T-Gen2	RJ45 cable within cabinet	RJ45 cable within cabinet
On-board Storage	4MB (configuration and audio files)	4MB (configuration and audio files)
Micro-SD Card	32GB FAT32 support	32GB FAT32 support
Headphone Output		
Load Impedance	8Ω min 6mW	8Ω min 6mW
Audio Level	1.3Vrms	1.3Vrms

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 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) 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. Mounts in the BOWS cabinet.

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

Provides 4 supervised, short-circuit isolated 100V outputs (each rated at 100W) 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.

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-Gen60 or T-Gen120 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. Can be used as a spare part for the User Interface in FP1134/44.

FP1130, FP,T-GEN 2 EXP CAB,C/W 14A PSU,15U,BLANK DR

15U titania-coloured cabinet with a blank outer door and a 15U BOWS gearplate mounted inside with a mains GPO and 14A PSE fitted. Suitable for add-on T-Gen2, 100V Switching Modules, 100V Splitter Modules and up to 40Ahr batteries.

FP1139, FP, PSE GEARPLATE MTG, 24V, 14A, SPARE

Replacement 14A PSE for the PSU in the BOWS. This can also be used as an expansion PSU for larger systems.

FP1143, FP,T-GEN2 HLI BOARD

High Level Link Interface module allows an adjacent Vigilant MX1, MX4428 or F3200 Fire Panel using RZDU or Simplex 4100ESi Fire Panel using internal 4100Comms to be connected to the BOWS to transmit alarm information (up to 32 fire zones to trigger BOWS) and monitor the BOWS fault status.

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). Includes a 1m extension lead. Suitable as a spare part for the microphone in the BOWS.

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 from remote locations. Up to two paging consoles can be connected to the SU0361 Audio Switch.

SU0361 A 4489 Audio Switcher: Used with the A 4428 4 zone paging console to provide relay outputs. Able to be mounted inside the BOWS cabinet.

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