VIGILANT

T-Gen2 Building Occupation Warning System

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 has been designed to comply 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 18U (see later for a full list of available items and accessories):

FP1136 **8U 60W BOWS:** 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 up to two 17Ahr batteries, 3 x 100V Switching or 100V Splitter modules is available. Note the 5A PSU may limit the expansion T-Gen 2 load capacity.

FP1137 **18U 120W BOWS:** A complete BOWS including a T-Gen 120, 10A PSU, 3U 19" rack mounting door with Grade 3 User Interface and microphone, mounted in a cream coloured 18U x 310 deep rack cabinet. Space for up to 75Ahr batteries (but not including 65Ahr batteries), additional T-Gen 120, and up to 8 x 100V Switching or 100V Splitter modules is available. Note the 10A 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 FP1136 BOWS to expand the power output.

FP1116 **T-Gen 120:** A second 120W T-Gen2 can be fitted to the FP1137 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.

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 (LT0676) 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

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

FP1136, 8U 60W BOWS
>1 x T-Gen 60W Board
>1 x 5A PSU
>1 x T-Gen2 Installation Instructions (LT0667).
>1 x Grade 3 User Interface Operating Instructions (LT0673)
>1 x BOWS Installation Instructions (LT0676 – this document).
>1 x LM0359, battery lead
>6 x HW0302, clip-in cable tie mount
>1 x LT0675, factory completed BOWS checklist
>1 x LT0435, cabinet wall mounting template
>1 x KT0575 kit of parts, including:
>>1 x 3k3, 6 x 10k, 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 x 12 screws, nuts, washers

FP1137, 18U 120W BOWS
- 1 x T-Gen 120W Board
- 1 x 10A PSU
- 1 x T-Gen2 Installation Instructions (LT0667).
- 1 x Grade 3 User Interface Operating Instructions (LT0673)
- 1 x BOWS Installation Instructions (LT0676 – this document).
- 1 x LM0359, battery lead
- 12 x HW0302, clip-in cable tie mount
- 1 x LT0675, factory completed BOWS checklist
- 1 x LT0435, cabinet wall mounting template
- 1 x KT0575 kit of parts, including:
    - 1 x 3k3, 6 x 10k, 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 x 12 screws, nuts, washers

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 configuration.

This sets up the T-Gen2 with the Grade 3 User Interface, the ALARM input to trigger AS 4428.16 evacuate tones and message, the AIE input as an EXT PSU Fault (wired from the PSU), 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.

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 T-Gen2 when used in the BOWS units.

2. PSU Dipswitches

   The dipswitches in the PSU in the BOWS should be configured as follows:

1	2	3	4	5	6	7	8
OFF 5A	OFF	ON	OFF	ON	OFF	ON	OFF
ON 10A							

INSTALLATION AND WIRING

Cabinet Mounting

The 8U and 18U BOWS cabinets are typically fixed to a wall with four 8mm (8U cabinet) or 6mm (18U cabinet) 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**.
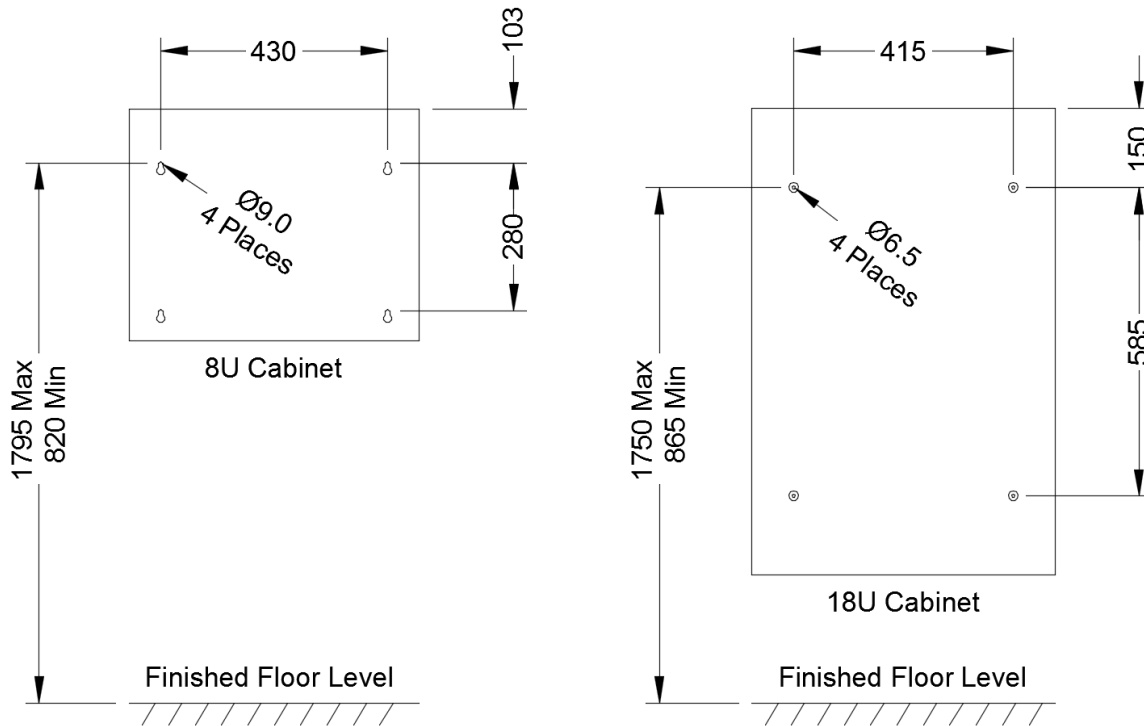
Figure 1 - BOWS Cabinet Mounting Details

CAUTION 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

8U Cabinet Cable Entry

There are four Ø20mm and two Ø50mm and knockouts provided in the top and bottom of the cabinet, as well as a Ø20mm knockout provided in the top for mains wiring entry. Other entry holes can be drilled as required.
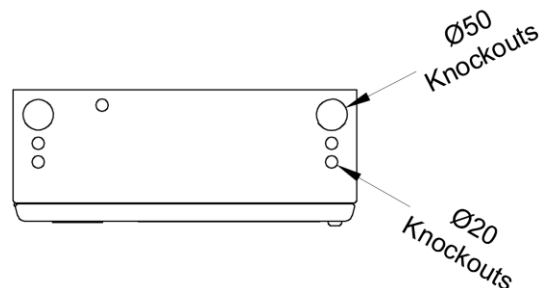

Figure 2 – 8U Cabinet Cable Knockouts

18U Cabinet Cable Entry

There are eight Ø20mm knockouts and a gland plate provided in the top and bottom of the cabinet. Other entry holes can be drilled as required.
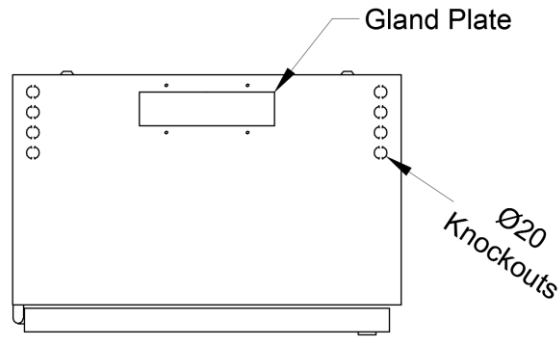
Figure 3 – 18U Cabinet Cable Knockouts

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 BOWS needs to be supplied with a current-limited mains feed (e.g., via a circuit breaker) direct from a main switchboard (refer AS 3000).

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 18U cabinet has space for a pair of 12V 75Ah batteries.

The BOWS panels are supplied with a red battery lead for joining the neg(-) terminal on the 1st battery to the pos(+) on the 2nd battery, and the screws, washers and nuts required for attaching the leads to the batteries.
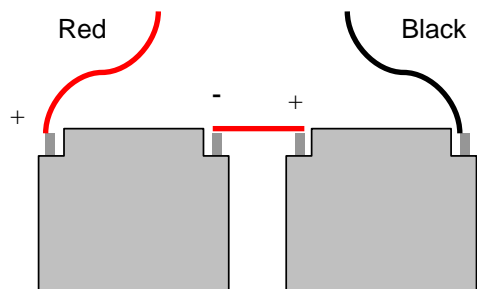

Figure 4 - Battery Wiring

Factory Wiring

The PSU 24V output is wired to the T-Gen2 +24V terminals and the PSU Charger Flt- signal is wired to the A/I/E- input. The default BOWS configuration for T-Gen2 sets the A/I/E- input as External PSU Fault, allowing a PSU fault to signal via the T-Gen2.

The User Interface and microphone are connected to the T-Gen2 QBus connector J32 and PA MIC Connector J9 respectively.

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.

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.

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.

PSU Rating

The BOWS is supplied with a 5A (FP1136) or 10A (FP1137) maximum current PSU. This limits the load that can be connected to the T-Gen2 units, as AS 1670.1:2015 requires the PSU to be able to supply the full alarm load without any batteries connected.

Figure 5 shows the 100V load that can be connected to the FP1136 BOWS with 1 and 2 T-Gen 60 units and varying strobe currents.

Basically the FP1136 PSU can support:
- 1 x T-Gen 60 @ 60W load with up to 2A strobe load.
- 2 x T-Gen 60 @ 50W load each with no strobe load, decreasing to a combined 20W load with a total of 4A strobe load.
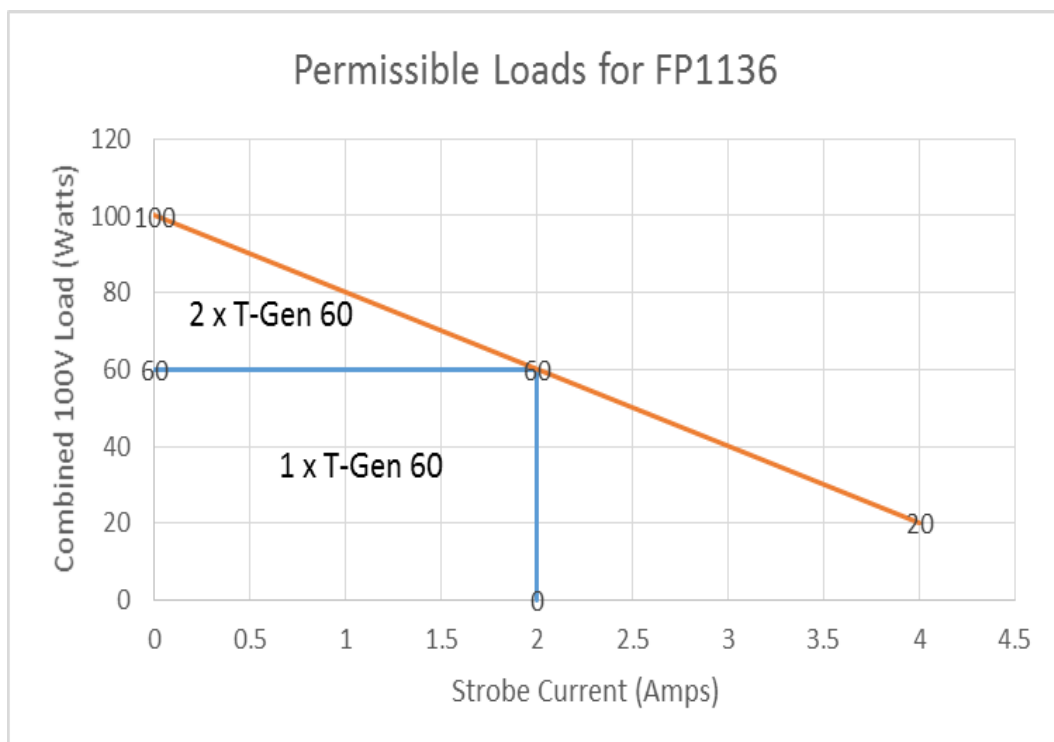

Figure 5 – FP1136 T-Gen2 100V Load vs Strobe Current

Figure 6 shows the 100V load that can be connected to the FP1137 BOWS with 1 and 2 T-Gen 120 units and varying strobe currents.

Basically the FP1137 10A PSU will support:
- 1 x T-Gen 120 @ 120W load with up to 2A strobe current
- 2 x T-Gen 120 @ 100W load each with no strobe current, decreasing to a combined 120W load with a total strobe current of 4A.
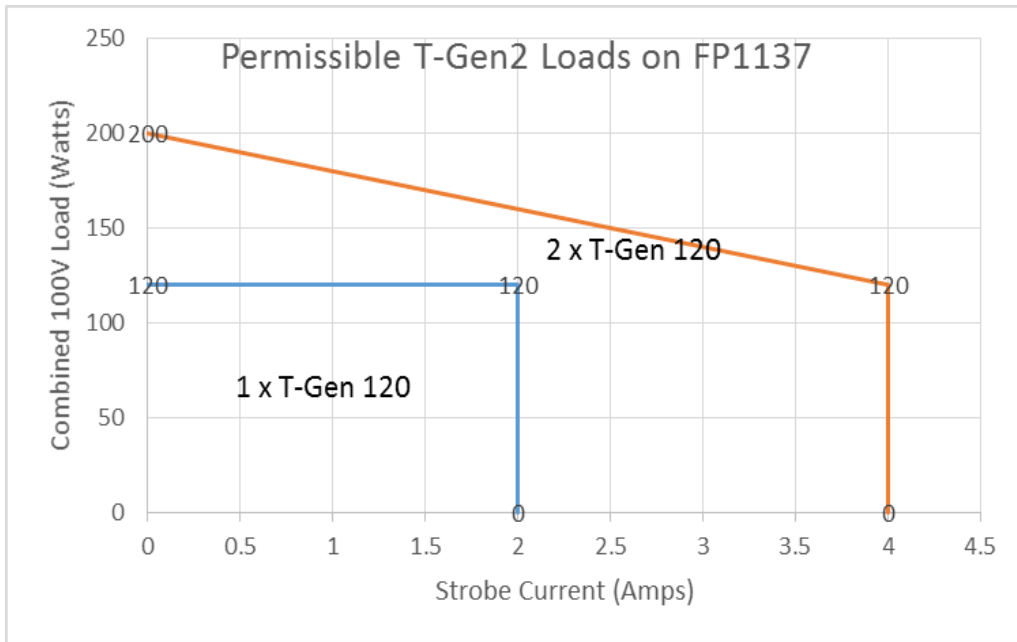

Figure 6 – FP1137 T-Gen2 100V Load vs Strobe Current

Battery Capacity

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

# T-Gen2 Units	FP1136	FP1137
1	12 AHr	17 AHr
2	17 AHr	24 AHr

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. There is reserve capacity to power one 100V Switching or 100V Splitter Module as well.

SPECIFICATIONS

	FP1136	FP1137
Weight	**17kg**	42kg
Size	550 x 440 x 210mm	575 x 885 x 388mm
PSU Output Current (Peak)	5A	10A
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		
Power Save Mode (Audio turned off)	65mA	65mA
Audio enabled but idle (no audio)	190mA	190mA
Active Current - 27Vdc (plus Strobe)	3.0A @ 60W	6.0A @ 120W
Avg Alarm Current (plus Strobe)		
AS4428.16 Evacuate Tone	1A @ 60W	2A @ 120W
AS2220.1 Evacuate Tone	2.4A @ 60W	4.8A @ 120W
100V Output		
Line Voltage - AC (Tones)	100V rms	100V 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
100V Speaker Line Supervision		
ELD - 1 Branch	56k 0.4W	56k 0.4W
- 2 Branches	100k 0.4W	100k 0.4W
Strobe Output		
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	10k EOL, <3.5V Active	10k 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 and 100V Switching Module	Master / Slave operation, User Interface and 100V Switching Module
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 (internal) - Load impedance	8Ω min 6mW	8Ω min 6mW

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 on the BOWS cabinet. Can be used as a spare part or expansion module for FP1137.

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. Can be used as a spare part of expansion module for FP1137.

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.

ME0343S, MECH ASSY,1966-85,PSU2412F 24V 10A 2U RACK,BENTEL
18U BOWS replacement PSU – keep loom in BOWS that plugs into J7 of PSU.

ME0476S, MECH ASSY,1901-294,MX4428 24V 5A PSU,BENTEL
8U BOWS replacement PSU – keep loom in BOWS that plugs into J7 of PSU.

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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