Ref: PBK0029A

31 October 2018

USING T-GEN2 IN *MX1*

This bulletin describes using the T-Gen2 Grade 3 & 2 Emergency Warning System in MX1 panels. Using T-Gen2 Grade 2 in combination with MX1 is covered in PBG0214.

The T-Gen2 product range is described in Product Bulletin PBG0203A and the 100V Splitter Board in PBG0205. A complete single zone Grade 3 Building Occupant Warning System (BOWS) is described in PBG0215. A complete 4 zone Grade 2 Emergency Warning System (EWS) is described in PBG0214.

The various *MX1* panels – 8U, 15U and larger, support various arrangements of the T-Gen2 products in a Grade 3 (single zone) format. For an AS4428.16 compliant Grade 2 EWS (Multi-zone) system, the MX1 PSU cannot be used to power the T-Gen2 equipment, so a separate EWS must be used. This will usually be a separate EWS cabinet or arranged as a combo panel with separate equipment.

8U *MX1*

The 8U *MX1* supports a single T-Gen 60 or T-Gen 120 module on the gearplate – but nothing else. There is no room for 100V Splitter or 100V Switching Modules – so the T-Gen2 output is limited to a single floor or area <2000m^2 (AS 1670.1:2015). An empty 8U cabinet with an *MX1* gearplate could be used to house some 100V Splitter/Switching Modules, allowing additional 100V outputs.

The 8U cabinet does not support a 3U User Interface, nor the FP1121 T-Gen 60 mounted on the User Interface – as parts of the *MX1* outer door obscure LEDs and buttons on the User Interface – making them unviewable when the door is closed.

15U *MX1*

The 15U *MX1* supports:

- A T-Gen 60 or T-Gen 120 on the gearplate LHS.
- A T-Gen 60 on the gearplate RHS return fold.
- An FP1121 3U User Interface complete with a T-Gen 60 on the 19” rack.
- An FP1122 3U User Interface with no T-Gen2 on the 19” rack, connected to a T-Gen2 mounted on the gearplate.
- Up to 3 100V Switching or Splitter Modules on the gearplate upper LHS with a T-Gen2 mounted below them.
- Up to 6 100V Switching or Splitter Modules on the gearplate LHS if no T-Gen2 is fitted on the gearplate.

Note: the positions for the 100V Switching/Splitter Modules on the gearplate are the same as for MX Loop Cards and similar mounting brackets.

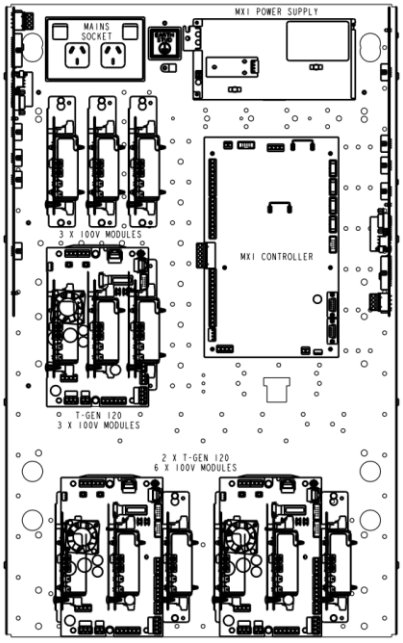
For larger systems the T-Gen2 expansion cabinet (FP1130) could be used to house additional T-Gen2 equipment

MX1 15U with FP1121/FP1122

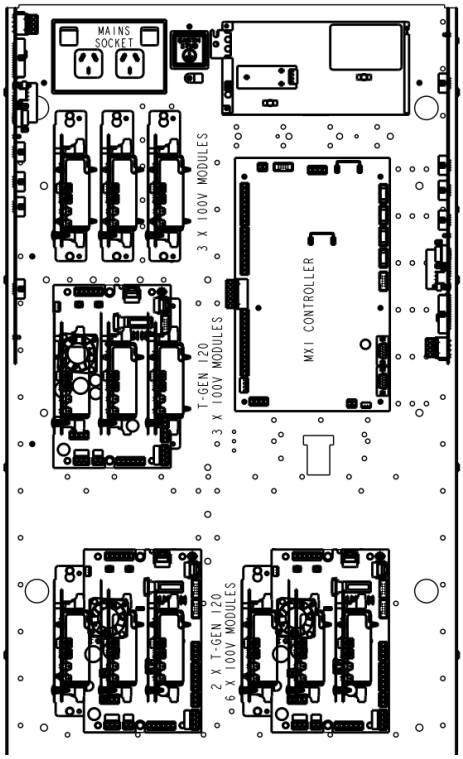
15U Gearplate with T-Gen2 & Splitter/Switching Modules

Larger *MX1* Cabinets

The BTO *MX1* cabinets (28U/40U) can fit up to 3 x T-Gen 60 or T-Gen 120 units on the gearplate and a number of 100V Switching or Splitter Modules – depending on what else is fitted. Note that the T-Gen2 positions and 100V Switching /Splitter Module positions overlap, and the T-Gen2 units should not be mounted on the sides of the gearplate.



18U Gearplate T-Gen2 & Splitter Positions



Large Gearplate T-Gen2 & Splitter Positions

The 19” rack can house the FP1121 3U Door complete with a T-Gen 60, or the FP1122 3U User Interface connected to a T-Gen2 mounted inside the cabinet.

FP1121/FP1122 Grade 2 User Interface

Combo Panels

MX1 and T-Gen2 “Combo” panels can be designed and ordered as build-to-order (BTO) systems using MX1Cost (V2.13 onwards).

Two base MX1 panels are available to add T-Gen2 gearplates and equipment to:

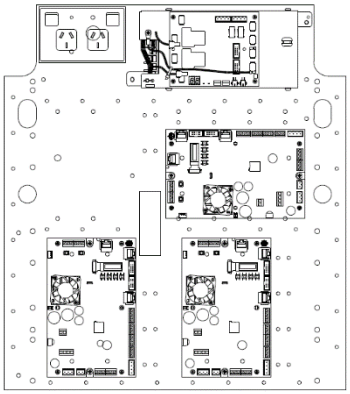
FZ9041 A 28U x 310 deep cabinet with a 15U MX1 gearplate fitted inside and the 4U LCD/keyboard mounted on the 19” frame. The MX1 Controller and 5A PSU are fitted, with MX1 Loop Cards, etc., able to be added to the MX1 gearplate.
The cabinet can accommodate one T-Gen2 15U gearplate, leaving space for up to 4 x 40Ahr batteries at the bottom – note one battery is mounted in front of the T-Gen2 gearplate.

FZ9047 A 40U x 310 deep cabinet with an 18U MX1 gearplate mounted at the top, along with the 4U LCD/keyboard on the 19” frame.
The MX1 Controller and 5A PSU are fitted, with extra MX1 equipment able to be included (see earlier drawing).
One T-Gen2 15U gearplate can be included in the cabinet, leaving room for up to 4 x 75Ahr, or 6 x 40Ahr batteries at the bottom.

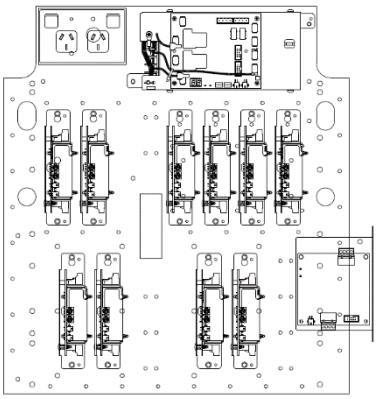
Each 15U T-Gen2 gearplate can accommodate up to:

- 3 x T-Gen 60/120 modules.
- 2 x 14A PSU and 1 GPO.
- 10 x 100V Switching/Splitter Modules.

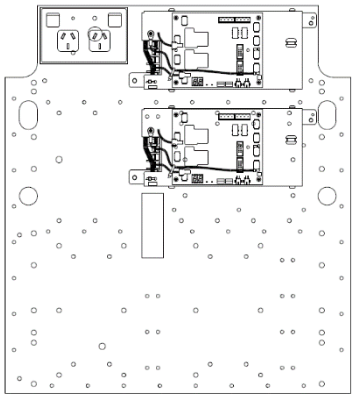
Note a number of positions overlap – so not all can be mounted at the same time.



T-Gen2 Modules



100V Switch/Splitter/HLI Modules



2nd 14A PSE

15U Gearplate Module Mounting Positions

MX1 – T-Gen2 Interconnection

For a Grade 3 T-Gen2, usually the Alarm Devices relay and function of the MX1 will be used to control the T-Gen2 and annunciate faults.

The T-Gen2 includes a cable suitable for connecting to the Anc1 output connector on the MX1 Controller. However, this could be wired to Anc2 or 3 if required.

High Level Link (HLI)

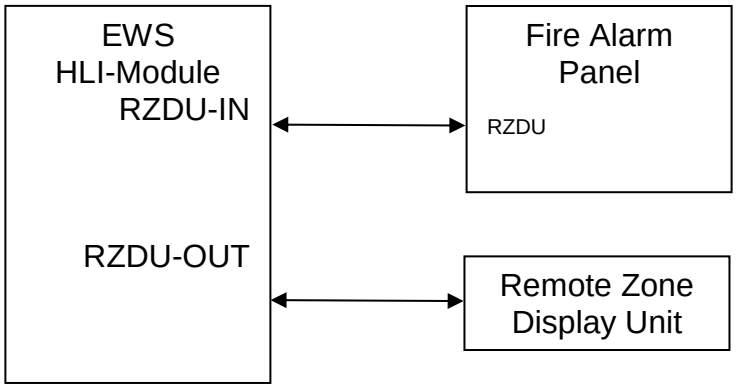
The T-Gen2 has the capability to communicate directly with the MX1 to exchange status and information using the RZDU protocol. Up to 32 Zones Alarm states and other triggers can be sent to the T-Gen2 to trigger alarms and play of messages, while the T-Gen2 can return the fault state.

Two wiring options are available:

1) Direct connection MX1 to T-Gen2 using a 10-way ribbon cable:
This option can be used only when the T-Gen2 and MX1 are mounted in the same or adjacent cabinets. Connecting external RZDU devices is not possible and Port 0 on the MX1 must not be used for any other function.

2) HLI Board Interface between T-Gen2 and RZDU port:
This method allows one or more external / remote RZDU units to be used.
The T-Gen2 HLI board (module) includes a separate short-circuit isolated RZDU connection for wiring to remote RZDU devices – so that a short circuit in the field wiring does not affect the T-Gen2's communication with the MX1.

The HLI board can be mounted on the side of the EWS cabinet or on the gearplate if space has not been used for any other expansion modules (e.g., Switching or Splitter module).



MX1 Power Supplies

The standard *MX1* PSU is 5A. Under AS 1670.1:2015 the PSU must be able to supply the full alarm load of the panel and any connected EWS without any batteries.

Under AS4428.16 the fire panel PSU may power a Grade 3 EWS directly. However for a Grade 2 separate outputs must be provided from the PSU to the fire panel and the EWS. The MX1 PSU does not provide these.

Therefore it is necessary to do a design check to make sure the *MX1* PSU is able to power the *MX1* in alarm, plus what the T-Gen2 requires in alarm, without exceeding the 5A rating.

As the T-Gen2 can draw 3A @ 60W load, 6A at 120W load, plus any connected strobe load up to 2A, the total load on the T-Gen2 may need to be less than the maximum.

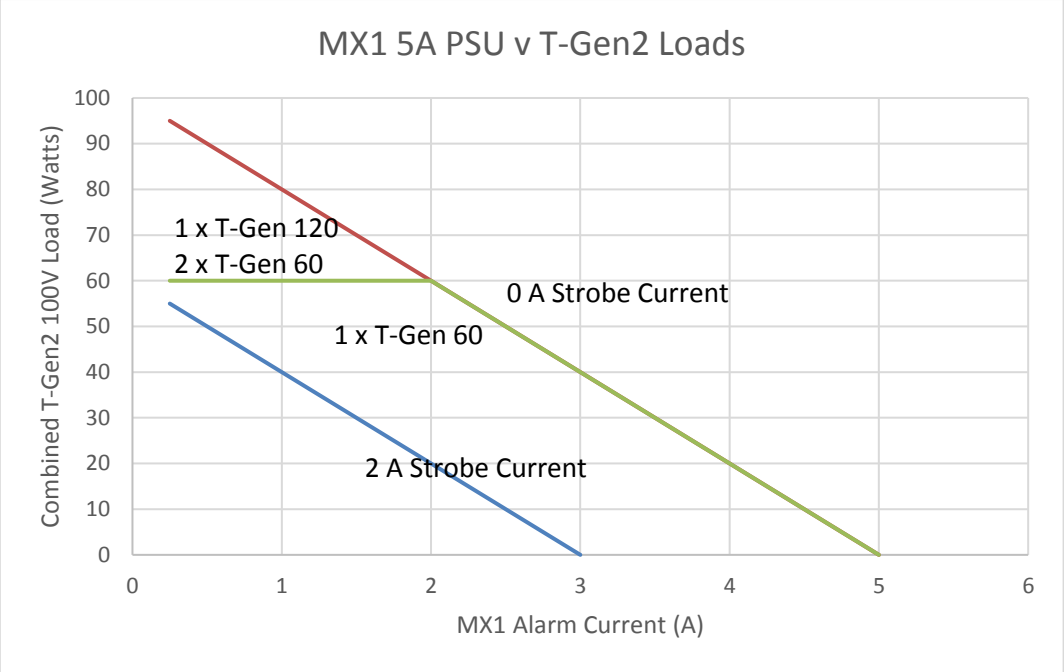
Figure 1 shows the connectable 100V load on a T-Gen 60 or T-Gen 120 for various alarm currents on the *MX1*, taking into account the T-Gen2 strobe current from 0 to 2A.

Basically the MX1 can support:

- One T-Gen 60 with no strobe current fully loaded (60W) on the 100V output, if the MX1 alarm current is less than 2A; decreasing to 0W on the 100V output as the MX1 alarm current increases to 5A.
- One T-Gen 60 with 2A of Strobe current and 55W of 100V load, if the MX1 has no extra alarm load; decreasing to 0W on the 100V output as the MX1 alarm current increases to 3A.
- Two T-Gen 60 units with a combined 100V load of 95W and no strobe load if the MX1 has no extra alarm load, decreasing to 0W as the MX1 alarm current increase to 5A.
- One T-Gen 120 with no strobe current loaded to 95W on the 100V output, decreasing to 0W as the MX1 alarm current increases to 5A.

To determine the supportable load, calculate the *MX1* panel alarm current (excluding the T-Gen2 requirements). Use the graph to determine the T-Gen2 100V load that is

supported for that *MX1* alarm current. Extrapolate between the 0A strobe current and 2A strobe current lines to determine the actual 100V load that can be supported based on the strobe current that must also be supplied.



Permissible T-Gen2 100V Load v *MX1* Alarm Current and Strobe Current

If the required load cannot be supported by the *MX1* PSU, options are:

- Use a separate PSU (and battery) to power the T-Gen2. The FP1139 (14A) PSE is required. FP1130 15U expansion cabinets with a blank door could house the PSU, battery and T-Gen2 units, or provide power back to the T-Gen2 mounted in the *MX1*.
- Use an external BOWS (FP1144 or FP1134) for Grade 3, or an external EWS (FP1129) for Grade 2 as these contain their own PSU, T-Gen2 unit(s) and battery space.
- Use a BTO panel with separate PSUs for the MX1 and T-Gen2 equipment.

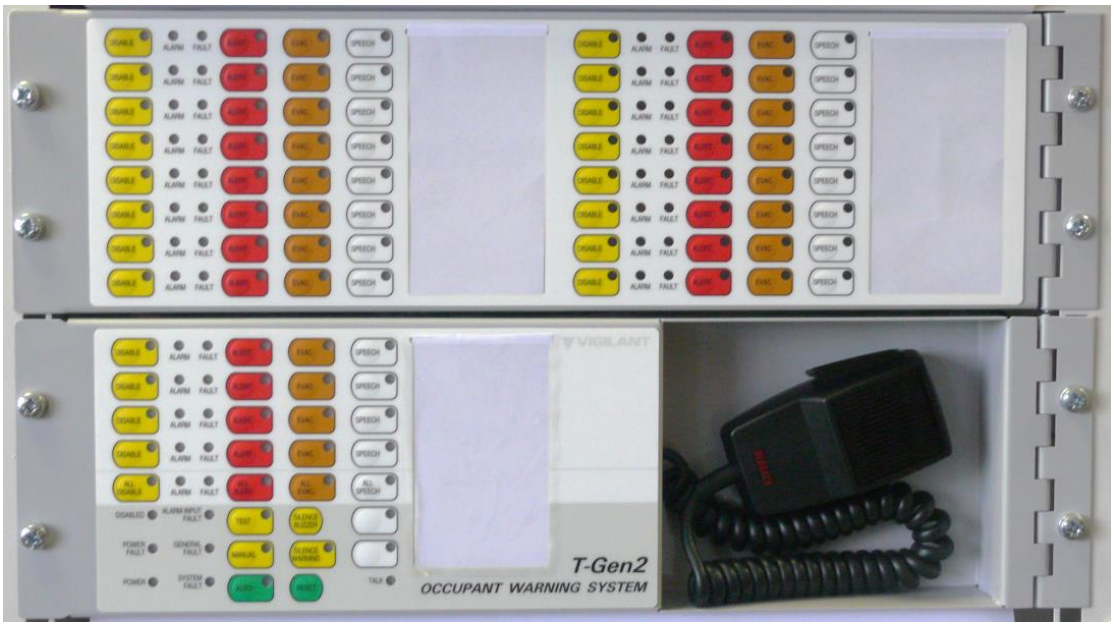
CONFIGURATION

The T-Gen 60 and T-Gen 120 units (FP1115 and FP1116) are supplied with a default configuration of AS4428. This is suitable for the master T-Gen2 in the MX1 using the ALARM input for triggering the T-Gen2. If Slave T-Gen2 units, paging, user interface, HLI, etc, are needed then a specific configuration will need to be prepared and downloaded using the SmartConfig Windows program.

GRADE 2 SYSTEM

If a multi-zone Grade 2 EWS is required and the User Interface must be mounted in the 15U MX1 panel, then the FP1124 3U Door (first 4 zones), FP1126 (3U 16 Zone Expansion door) and FP1128 (8 zone Extender modules) can be mounted in the MX1 cabinet and cabled to the T-Gen2 unit fitted into an FP1130 15U blank door cabinet next to the MX1.

This cabinet can house the 14A PSE, the T-Gen2 and other equipment for the EWS. The MX1 cannot be used to power a Grade 2 EWS.



FP1124 Grade 2 User Interface with FP1126 16 Zone Expansion

Otherwise a combo BTO system can be designed and ordered. See Combo Panel section earlier.