MX1-Au ADDRESSABLE FIRE ALARM SYSTEM

This updated bulletin announces a range of standard MX1 panels with 2 x MX loops, and brigade kit, T-Gen2 and AS 1668 options. The FV421i is also supported.

The VIGILANT MX1-Au supports the latest 850 Series "Generation 6" MX addressable detectors and also provides AS1668 control facilities.

The VIGILANT *MX1* analogue addressable fire alarm system incorporates many innovative features, supports up to 2000 multi-point devices on up to 8 *MX* addressable loops, and networking of up to 250 panels.

ActivFire listed to the latest ISO-based AS 7240.2-2004 standard (afp-2320), the *MX1* includes an integrated Fire Brigade Panel to AS 4428.3:2010. Its support for *MX TECHNOLOGY*, fuzzy-logic detection algorithms and powerful control functions make it suitable for a wide range of fire detection applications, including those in hazardous areas.

**VIGILANT *MX1*-Au (FP0927) in 15U cabinet format and Titania Colour
(Shown with Centaur II ASE fitted, optional extra)**

The *MX1* ActivFire listing includes the optional Alarm Acknowledgement Facility (AAF) complying with AS 7240.2 Annex ZB, Alarm Investigation Facility (AIF) complying with the functional requirements of AS 4428.10, and AS1668 Fire Fan Controls complying with the functional requirements of AS 4428.7.

The *MX1* supports the comprehensive range of *MX VIRTUAL* multi-sensor detectors, with the ability to process smoke, Carbon Monoxide (CO) and temperature readings from the multiple sensors individually, and in combination, to achieve optimum detection and nuisance alarm rejection for each location.

Panel-Link networking allows the *MX1* to be interconnected with other *MX1* panels, QE90 EWIS, XLG-C/S Graphics, MX4428, F3200 and selected VIGILANT Panel-Link network devices: Nurse Station Annunciator (NSA), Panel-Link Modbus Bridge (PMB), and NDU Network Display Unit. Network media options include I-HUB networking (copper and/or fibre optic) and IP networking using the PIB with MOXA switches (Ethernet, fibre optic) and, optionally, Ethernet Extenders (over twisted pair).

Common network applications (e.g. master/sub or peer panels) have pre-configured "profiles" which automatically set the information-sharing between panels – alarm annunciation, fault indication, status recall and remote control of zones and points. Control strategies can be linked between panels using network logic variables. Each *MX1* can selectively log and print events from other panels on the network.

For details on networking *MX1* with MX4428, F3200 and other AS4428.1 products refer to PBK0030.

The *MX1* is stocked in standard configurations in both 15U and 8U cabinets. Custom build-to-order configurations are also available in 8U, 15U, 28U and 40U 19" rack cabinets.

The VIGILANT *MX1* is ideal for virtually every analogue addressable panel application.

VIGILANT *MX1*-Au in 8U cabinet format (FP1040)

MX1 FEATURES AND BENEFITS

- One built-in *MX* analogue addressable loop, expandable to 8 loops through the addition of *MX* Loop Cards.
- Each *MX* addressable loop supports up to 250 addressable devices, minimising wiring and installation costs.

- The 1A addressable loop power feed capacity allows extensive use of sounder bases and other loop-powered devices.
- Networkable using IP fibre/copper network and I-HUB ring, up to 250 panels.
- Integrated Fire Brigade Panel (AS 4428.3:2010) for ease of fire-fighter operation.
- Optional Remote Fire Brigade Panel (Remote FBP) – allows a second, or remote, brigade attendance point.
- Field-proven fire detection algorithms provide sensitive analogue addressable detection with optimised nuisance alarm rejection.
- Heat detectors are programmable as rate-of-rise or fixed temperature, normal or high temperature, reducing spare parts requirements.
- In-built short circuit isolator at each 850 Series detector in 4B-C base, QIO850, QMO850, QRM850 and DDM800 module.
- The analogue addressable VESDA LaserCOMPACT VLC-800MX provides high sensitivity smoke detection for critical applications.
- The VIO800 addressable interface kit for VESDA LaserPLUS and LaserSCANNER integrates the *MX1* with VESDA systems.
- A wide range of addressable input/output modules and short circuit isolators provides extensive detection and control flexibility.
- 3-port Short Circuit Isolator facilitates compliant spur wiring and fire-rated spurs.
- Loop-powered sounder bases and flashing LED beacons for alternative occupant warning.
- A comprehensive range of intrinsically safe detectors and modules covers most hazardous area fire detection applications.
- Flame detector models include plug-in single spectrum and triple spectrum, intrinsically safe, and flameproof options for a wide range of applications.
- Networking provides interface to Remote Displays, XLG-C/S Colour Graphics, Modbus, QE90 EWIS.
- Simple interface to T-Gen2, T-GEN 50, or Mini-Gen tone/speech generator saves installation time.
- Optional 3U 12-way AS 1668 air-handling control modules to AS4428.7:1999 available – up to 126 controls, including across-network operation. For fire fans or for other switch/indicator functions.
- Flow switch monitoring and remote testing, including across-network operation.
- Comprehensive test facilities, including automatic self-tests - simplifies maintenance and reduces system down time.
- Optional LED zone indicators for up to 32 zones: red Alarm and yellow Fault/Disable LEDs for each zone. Expandable to 192 zone LEDs with additional 4U modules.
- Zone indicators may be individually programmed for total flexibility of display.
- Alarm Investigation Facility (AIF) to AS 4428.10 built in: reduces brigade calls.
- Alarm Acknowledgement Facility (AAF) to AS 7240.2 Annex ZB built in: easily configured and operated – uses sounder base and Alarm Acknowledge Module (AAM2).
- Alarm Delay Facility (ADF) to AS 1670.1:2015.
- Sub-points indicate status of individual elements of multi-sensor detectors. In residential applications smoke detection may provide local alarm only, with heat calling the brigade.
- Up to 9 separate user passwords with 3 access levels for improved security against unauthorised operation or changes to configuration.
- Temporary Access Password facility for recovery from lost passwords.
- Default and customised configuration templates provide convenient starting point for new site-specific configurations.
- Network modules automatically self-configure for routine applications.
- Dual databases; this reduces down-time during reprogramming and increases reliability.
- "Profiles", which provide named collections of settings to simplify programming of zones, device operation, logic functions and networking.
- Powerful Boolean logic functions and timers for output control.
- SmartConfig - easy-to-use Windows-based database configuration and download tool

- Non-volatile internal history of up to 900 events – vital for "after the event" diagnostics.
- Optional earth fault supervision.
- Optional printer event logging.
- High-capacity 5A power supply accommodates occupant warning and ancillary functions without additional power supplies.
- Dual switched mains outlets – one for PSU, one spare.
- 2-wire connection to Centaur ASE, no separate EOL unit required.
- 16 clean contact inputs and 16 open collector outputs for in-cabinet I/O.
- RZDU port interfaces up to 8 remote displays and HLI to QE90, BMS, IO-NET, T-Gen2, etc.
- Tandem Mode available via network or local port for cost-effective remote fault diagnostics and control.
- Controller and Loop Card firmware in flash memory – field upgrades without chip-swap.
- Built-in short circuit isolators for each loop feed – no isolators required at the start and each of each loop.
- Front panel loop search function – displays devices present on each side of loop if broken, even without a configuration having been programmed.
- Front panel device re-addressing functions:
  - One device at a time or multiple devices.
  - Allows new replacement devices to be installed and re-addressed automatically – no service tool required.
- "Learn" function allows *MX* devices discovered on loops to be populated into SmartConfig database – significantly reduces amount of programming.
- Demountable loop connectors, on board Tx/Rx LED indicators and Auxiliary loop connector aid field diagnostics and servicing.

COMPATIBLE *MX* DEVICES

Detectors:	850PH, 850P, 850H, 850PC, 814PH, 814P, 814H, 814CH, 814I, VLC800MX, 801F, S271f+, FV411f, FV412f, FV413f
Modules:	MIM800, MIM801, CIM800, RIM800, DIM800, DDM800, SNM800, MIO800, SAM800, SAB801, LPS800, QIO800, QMO800, QRM800, SIO800, VIO800.
Call point:	CP820, CP830, MCP820, MCP830
Bases:	4B, 4B-C, 4B-I, 5B, 5BI, 814RB, 802SB, 901SB, and 5BEx (for I.S. detectors)
Intrinsically: Safe (IS)	801PHEx, 801CHEx, 801HEx, IF800Ex, 801FEx, S271i+, CP840Ex, FV421i Require IS interface module (EXI800) and galvanic barrier
S/C Isolators:	LIM800 (3-port module), 4B-I base, 5BI base

ORDERING CODES

New Installations – Standard Parts

FP0927   FP MX1 AUST 15U PANEL 3U CENTAUR ASE BRACKET

FP0928   FP MX1 AUST 15U PANEL 3U CUBE/WA ASE BRACKET

FP0948   FP MX1 AUST 15U PANEL 3U BLANK
These are supplied complete with: Operator's Manual (LT0439), Wiring Manual (LT0442), Mounting Template (LT0435), blank zone labels (LB0600), set of battery leads, end-of-line devices for inputs and ancillary output supervision, pre-made loom for connection to T-Gen2 or T-GEN 50 (LM0319), and specified 3U Brigade Interface bracket or blank plate.

FP1150   FP MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CENTAUR ASE

FP1151   FP MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CUBE/WA ASE

**FP1152   FP MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CENTAUR ASE
              2 X 1668 FAN CONTROLS**

**FP1153   MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CUBE/WA ASE
              2 X 1668 FAN CONTROLS**

**FP1154   MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CENTAUR ASE
              1 X FP1115 T-GEN 60**

**FP1155   MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CUBE/WA ASE
              1 X FP1115 T-GEN 60**

**FP1156   MX1 AUST 15U PANEL C/W 2 MX LOOPS 3U CENTAUR ASE
              1 X FP1116 T-GEN 120**

**FP1157   MX1 AUST 15U PANEL C/W 2 MX LOOPS, 3U CUBE/WA ASE,
              1 X FP1116 T-GEN 120**

These standard panels are based on either FP0927 (Centaur ASE bracket) or FP0928 (Cube/WA bracket) and include an additional MX Loop (1 x FP0950) and a T-Gen 60, a T-Gen 120 or 2 AS 1668 Controls (FP1056) fitted and wired.

Part Number	# MX Loops	ASE Kit	# AS1668 Controls	# T-Gen60	# T-Gen120
FP1150	2	Centaur	-	-	-
FP1151	2	Cube/WA	-	-	-
FP1152	2	Centaur	2	-	-
FP1153	2	Cube/WA	2	-	-
FP1154	2	Centaur	-	1	-
FP1155	2	Cube/WA	-	1	-
FP1156	2	Centaur	-	-	1
FP1157	2	Cube/WA	-	-	1

FP1040   FP MX1 AUST 8U PANEL 3U BLANK
This is supplied complete with most accessories as detailed for the 15U panels above. Where required, a brigade kit must be purchased separately, and may need to be mounted externally.

FP0950   FP MX1 LOOP CARD KIT
Additional *MX* loop card, mounting bracket and hardware, plus cables to connect to *MX1* controller.

FP1002   FP MX1 16 ZONE DISPLAY EXTENDER
Includes 16-zone LED display board, looms, and mounting hardware.

FP1029   FP MX1 8U EMPTY CAB, BLANK DOOR, TITANIA
An empty 8U cabinet with a blank door that can be used as an expansion (no displays) or battery box for an *MX1* panel.

FP1030   FP MX1 15U EMPTY CAB C/W WINDOW TITANIA
Empty 15U cabinet with left-hand hinged windowed door the same as 15U *MX1* panel with the MCP blanked off. Has 13U of externally-visible rack space.

FP1031   FP MX1 15U EMPTY CAB BLANK DOOR TITANIA
Empty 15U cabinet with left-hand hinged blank (non-windowed) door.

FP1084   FP MX1 EMPTY CABINET, FULL WINDOW TITANIA
Empty 15U cabinet with a left-hand hinged, full height, windowed door. This provides 15U of visible rack space for additional equipment.

FP1056   MX1 AS1668 FAN CONTROL 3U 12-WAY DOOR + 2 CONTROLS
Includes door, 2-control circuit board, labels, looms and mounting hardware.

FP1057   MX1 AS1668 FAN CONTROL EXPANSION KIT (2 CONTROLS)
Includes circuit board (additional 2 controls), looms and mounting hardware.

FP1092   6U NTFAST BRIGADE I/F DOOR
A 6U door onto which the Miri Telemetry Unit and NTFAST Switch Board can be mounted.

FP0991   FP MX1 REMOTE FIRE BRIGADE PANEL SLIMLINE
Remote FBP in slimline cabinet. See PBK0006A for details.

FP0771   I-HUB UPGRADE KIT C/W MTG PLATE
Includes the I-HUB, mounting plate & hardware, User Manual (LT0229), programming loom (LM0065), and loom to connect to *MX1* (LM0152).

FP0986   FP PIB PANEL-LINK IP BRIDGE
Includes the PIB, User Manual (LT0519), loom to connect to *MX1* (LM0576), and Ethernet cable. For other IP networking equipment (MOXA fibre switches, Westermo Ethernet Extender) refer to PBG0177A.

FP1012   FP MX1 DIN MODULE MTG BRACKET C/W MTG SCREWS
Includes a bracket that mounts in an *MX* Loop card gear plate position suitable for mounting MOXA fibre switches, Westermo Ethernet Extenders and other compatible DIN rail mounting equipment.

FP1013   IP NETWORK MOUNTING BRACKET C/W MTG HARDWARE
Includes a bracket that mounts into the side of an 8U rack cabinet suitable for mounting a PIB plus a MOXA fibre switch or a Westermo Ethernet Extender or other compatible DIN rail mounting equipment.

Build-To-Order Panels

For build-to-order 15U, 28U or 40U panels use MX1Cost (V2.13 onwards) to design and quote the system and then place a special panel order. Note, BTO lead times will apply.

Spare Parts

FP0913	*MX1* Replacement LCD Module Kit
LM0076	Loom 1922-25 ECM Programming DB9 (Fem)-DB9 (Fem) Null Modem
LM0291	FRC Loom 26-way STYLE B 230mm (between zone displays)
LM0319	Loom *MX1* Controller to T-Gen2, T-Gen 50 (one supplied with panel)
LM0323	FRC Loom 16-way Style D 125mm Twisted MX1 LCD
LM0324	FRC Loom 10-way Style B 900mm (LCD/Keyboard to Controller)
LM0339	Loom MX1 LCD/Keyboard to 1ST Zone Display 1982-28
LB0600	Label *MX1* Blank Zone Label Grey (sheet of 5 supplied with panel)
ME0448	*MX1* PSU Assembly1982-26
ME0464	*MX1* 4U Door + Keypad Only (no circuit boards)

ME0465   *MX1* 4U Complete LCD Door Tested
PA1081   *MX1* Controller Board 1982-2
PA1057   *MX1* LCD/Keyboard Circuit Board AS 4428.3 1982-64

Literature Items (available electronically)

LT0439   *MX1* Au Operator's Manual A5 (supplied with panel)
LT0442   *MX1* Au Field Wiring Instructions (supplied with panel)
LT0441   *MX1* Au System Design Manual
LT0440   *MX1* Au Service Manual
LT0369   *MX1* Zone Display Label Template (MS Word document)
LT0443   *MX1* Loop Card Installation Guide
LTxxxx   SmartConfig User Manual (includes programming instructions)
LT0532   *MX1*-Au Remote FBP Install Instructions
LT0564   *MX1* Network Design Manual
LT0587   *MX1* Fan Control Installation Instructions.

Software Items (available electronically)

SFxxxx   SmartConfig Panel Configuration Tool (V2.6.0.0 or later required)
SF0281   PanelX Remote Operation Tool (V3.0 or later)
SF0xxx   MX1Cost Design/Estimating Tool (various versions)
SF0332   Software MX1CAL Design Tool (use MX1Cost except for Ex loops)
SFxxxx   *MX1* Controller Firmware (included in SmartConfig)
SF0392   *MX* Loop Card Firmware

NOTE: SmartConfig requires a licence code, which can be obtained from Johnson Controls.
Sales Presentations and other Drawings (available electronically)

1982-42   *MX1* 15U Presentation Drawing
1982-66   *MX1* 15U Example Layouts Presentation
1982-99   *MX1* Remote FBP Presentation Drawing
1982-143   *MX1* 8U Presentation Drawing
1982-220   *MX1* 15U 2 x *MX* Loop Panels Presentation Drawings

Copies of software, literature items and presentation drawings, and updates to these, are available from Johnson Controls.

15U 19" RACK CABINET (FP0927/928/948/FP1150-1157) OPTIONS

The *MX1* cabinet has 15U of 19" rack space. The 4U LCD/keyboard door is fitted at the top, and usually the next 3U allocated to the brigade interface. Blank doors are fitted to the remaining space. However a range of 19" rack mounting units can be field-fitted including:

- ME0457   4U 80 Zone LED Display Door (mounts up to 5 x FP1002)
- FP1056   3U 12-Way AS1668 Fan Control Door (up to 12 controls – 2 included)
- FP0698   3U T-GEN 50 Module with microphone
- FP1121   3U T-Gen2 User Interface c/w T-Gen 60
- FP1122   3U T-Gen2 User Interface (no T-Gen2)
- ME0258   1U document tray
- KT0199   3U single Centaur ASE mounting bracket
- KT0212   3U dual ASE/V-Modem door for Centaur ASEs
- FZ9028   3U Cube ASE mounting bracket
- FP1092   6U NTFAST Brigade I/F door

Mounted in the rear of the cabinet is a gear plate, factory-fitted with the *MX1* Controller and 5A power supply module. Undoing four nuts releases the gear plate for easy removal. The gear plate has pre-punched mounting footprints for (not all will fit simultaneously):

- One T-Gen2 (T-Gen 60 or T-Gen 120), or T-GEN 50 tone/speech generator or two Mini-Gen tone/speech generators. A T-Gen 60 can be mounted on the right hand fold of the gearplate.
- Six positions for MX Loop Card (FP0950) or 2 x *MX* modules on FP1027 bracket (see PBK0014), or 4 x Standard sized *MX* modules on FP1062 bracket (see PBK0019) or T-Gen2 100V Switching Modules (FP1117) or T-Gen2 100V Splitter Modules (FP1118).
- Two *MX1* DIN module mounting brackets (each holds a MOXA fibre switch and/or Ethernet Extender for IP networking)
- One *MX* Loop Card (FP0950) removed from its bracket
- One 16-way relay board, or a 16-way input board and a 16-way output board, or an ECM (I-HUB, TPI, etc.), or a PIB, or an RS485 card for the Remote FBP
- Two ISO 8201 Strobe Driver Modules (PA1043) or two Mini-Gen tone generators
- Up to four standard sized *MX* addressable modules, including LIM800 loop isolators
- One 4-way Fuse board (002-109K)
- A range of cable tie and trunking options.

The 2 x *MX* Loop Standard Panels (FP1150-1157) are supplied with an additional MX Loop (1 x FP0950). A T-Gen 60 or T-Gen 120 is also fitted to FP1154 - FP1157 and 2 x AS 1668 Controls (1 x FP1056) are fitted and wired to FP1152 and FP1153.

Networking equipment (I-HUB, PIB) is fitted to the right hand side flange of the gear plate. If required a MOXA fibre switch and/or Westermo Ethernet Extender are mounted on an FP1012 bracket, which mounts on the gear plate, occupying three *MX* Loop Card positions.

Battery space within the cabinet is 175H x 480W x 175D (mm), which will accommodate two 12V batteries of up to 40Ah capacity. This is sufficient for most brigade-connected and many non-brigade-connected installations (unless an NTFAST Brigade door is fitted low).

Additional 8U battery boxes are also available:
  FP1029   FP 8U BATTERY BOX BLANK DOOR (new Titania colour)
  FP0576   FP 8U BATTERY BOX BLANK DOOR (original Cream Wrinkle colour)
  FP0584   FP 8U BATTERY BOX FULL WINDOW DOOR (original Cream Wrinkle)

Expansion 15U cabinets can be achieved using the following parts.

  FP1030   FP MX1 15U EMPTY CAB, C/W WINDOW, TITANIA
  FP1031   FP MX1 15U EMPTY CAB, BLANK DOOR, TITANIA
  FP1084   FP MX1 15U EMPTY CAB, FULL WINDOW, TITANIA

8U 19" RACK CABINET (FP1040) OPTIONS

The *MX1* 8U cabinet has 8U of 19" rack space. The 4U LCD/keyboard door is fitted at the top and a 3U blank panel underneath (the bottom 1U is empty). The 3U blank can be replaced with:

- KT0199   3U single Centaur ASE mounting bracket
- FZ9028   3U Cube ASE mounting bracket

The 4U 80 Zone LED Display (ME0457), 3U T-GEN 50 door (FP0698), T-Gen2 User Interface (FP1121, FP1122), FP1056 12-Way AS1668 control door, and document shelf should not be fitted as they either encroach into battery space, or are not fully visible through the front door.

Mounted in the rear of the cabinet is a gear plate, factory fitted with the *MX1* Controller and 5A power supply module. Undoing four nuts releases the gear plate for easy removal. The gear plate has pre-punched mounting footprints for (not all will fit simultaneously):

- One T-Gen2 (T-Gen 60 or T-Gen 120), or T-GEN 50 tone/speech generator or two Mini-Gen tone/speech generators or two PA1043 ISO 8201 Strobe Drivers (or 1 each of Mini-Gen and Strobe Driver), and
- Two standard-sized *MX* modules (CIM, DIM, DDM, LIM, LPS, RIM, SIO, SNM) or
- One *MX* Loop Card (FP0950) removed from its bracket.

OR

- Three positions for *MX* Loop Cards (FP0950) or *MX* Modules on FP1027 brackets (see PBK0014), or 4 x Standard sized *MX* modules on FP1062 bracket (see PBK0019) or an HLI board (FP1143); and
- One Mini-Gen or Strobe Driver.

Networking equipment is usually mounted on the right hand inside wall of the cabinet – using the 4 x M3 studs provided.

An FP0771 I-HUB is mounted on its mounting plate. IP networking parts are fitted to an FP1013 Mounting Bracket which can accommodate the PIB and one MOXA fibre switch (but no Ethernet Extenders in an 8U *MX1*).

It is possible to fit a MOXA fibre switch and/or Ethernet Extender to an FP1012 bracket mounted on the gear plate, however this consumes all 3 x *MX* Loop Card positions.

Battery space within the 8U cabinet is 175H x 480W x 175D (mm), which will accommodate two 12V batteries of up to 17Ah capacity. This is sufficient for a 1 loop panel with 250 x 814PH detectors, a T-Gen 50 and an ASE. If networking or additional loops are included then a separate battery box will be needed:

FP1029   FP 8U BATTERY BOX BLANK DOOR (new Titania colour)

Build to order 28U and 40U 19" RACK CABINET OPTIONS

Larger *MX1* panels can be factory built, but limitations in gear plate fitting and module space apply. Please consult Johnson Controls technical services before quoting.

UPGRADING EXISTING SYSTEMS

Earlier versions of *MX1* firmware may be upgraded to the latest firmware. Some existing *MX1* systems with a PA1011 Controller board may need to be upgraded to a PA1081 Controller, due to the increased memory requirements of the newer firmware. Refer to PBK0022 for details.

Some existing *MX1* gear plates may not have mounting patterns for all the networking components, so some drilling may be necessary.

Also it may be possible to replace some F4000 or MX4428 panels with an *MX1* and retain the existing detection devices. Please consult Johnson Controls technical services when pricing this type of upgrade.

MX1-Au System – Key Specifications

Cabinet	Dimensions	8U: 440 x 550 x 210 mm (H x W x D). 15U: 750 x 550 x 210 mm (H x W x D).
	Construction	1.2mm mild steel, zinc coated, colour Dulux Titania. Baked epoxy powder coat finish. 003 key. Outer door with Perspex window.
	Shipping weight	8U/15U: 17kg/24 kg approx., excluding batteries.
Environmental	Temp/Humidity	-5°C to +45°C operating, up to 95% RH (non-condensing)
	Cabinet Protection	IP30, as required by AS 7240.2 (for indoor use only).

Power Supply	Mains Input	Single phase 192-253VAC, 50-60Hz, 1.2A rms
	Power Supply	27.3V, 5.0A dc continuous, 5.5A current limit nominal.
	Batteries	2 x 12V sealed lead-acid batteries up to 40Ah capacity.
	Fused supplies	Three VBF and one VRZDU terminals (battery-backed) and one VNBF (non battery-backed) terminal, wire capacity 2.5mm^2. Each output is fused at 3A (20 x 5 slow-blow cartridge type).
	Operating Range	19.2V – 28.8V dc
	LV Cutout	15V – 19.2V dc
	Current	Base Panel consumption: 150Ma
Addressable Device Loops	Devices	Supports up to 250 *MX* devices.
	Loop feed current	Up to 1A continuous. Over-current cut out at 1.1A (nominal).
	Terminals	AL+, AL-, AR+, AR-. Wire capacity 4.0 mm^2.
Inputs	GP IN1 GP IN 2	Two protected supervised general purpose inputs suitable for connection to clean contact or open collector outputs. EOLR value is 1.5kΩ - 3.3kΩ.
Ancillary Relay Outputs	ANC1 and ANC2	Each relay provides a set of voltage-free changeover contacts, rated at 1A inductive or 2A resistive at 30VDC. Configurable contact, load, door-holder or custom mode supervision. ANC1 has a demountable screw terminal header compatible with pre-made loom LM0319 to connect to a T-Gen2 or T-GEN 50 tone generator. ANC2 has 2.5mm^2 capacity screw terminals.
	ANC3	A single set of voltage-free changeover contacts, 5A resistive at 30V. Negative bias supervision of up to three branches of wiring is possible from this relay. EOLR values are 9.1kΩ for a single branch, 2 x 18kΩ for a double branch and 3 x 27kΩ for a triple branch.
Other Outputs	GP OUT 1 GP OUT 2	Two protected general purpose open collector 2.5mm^2 outputs which can be used to drive loads of up to 500mA. Load mode supervision is optional on these outputs.
	Other I/O	16 clean contact inputs, 16 open collector outputs From LCD/keyboard – require (protected) termination or relay boards
Serial Ports	Diag/Prog	Male DB9 connector configured as DTE. For connection to PC for diagnostics, programming, or firmware update. Requires null-modem cable, e.g., LM0076. Can connect to a modem via a straight serial cable for dial-in remote access.
	Serial Port 1	Male DB9 connector configured as DTE. Suitable for connection to a logging printer. Requires null-modem cable for printer connection, e.g., LM0076.
	Serial Ports 2-4	10-Way FRC unprotected CMOS levels, suitable for: *MX* Loop Card, Remote FBP via RS485 Card, Network Interface (I-HUB, PIB), AS1668 Master Control.
	RZDU Port	Four 2.5mm^2 capacity screw terminals, for connection to up to 8 remote display devices using VIGILANT RZDU protocol.
Brigade Interfaces	Centaur ASE Interface	Isolated and protected screw terminal, 4mm^2 capacity, for 2 wire connection to a Centaur ASE FAS input. Transmits Alarm, Fault and Disable (Isolate). Operates in parallel with the Brigade Relays
	SGD Interface	10-way FRC header (not currently used in Australia).
	Brigade Relays	Three sets of voltage-free changeover contacts, rated at 1A inductive at 30V, with 2.5mm^2 capacity terminals, for Alarm, Fault (normally energised), and Disable (Isolate).