✔️VIGILANT

MX Loop Card Expansion Kit (FP0950)

Installation Instructions

Contents of this Kit (FP0950)

| Item	Qty	Description
PA1052/ FA2542	1	*MX* LOOP CARD 1982-57, on VERTICAL MOUNTING BRACKET
HW0052	4	PCB STANDOFF DBLE BARB, 7,7MM HI-Q PBA06L
FA2016	2	HEX BARREL NUT M3 X 10MM 4.76 A/F
WA0005	2	WASHER FLAT M3 ZP 7MM OD 0.6MM THICK
SC0176	2	SCREW PHIL M4 X 10 SPRING & FLAT WASHER
LM0081	1	LOOM G/Y 200MM M4 LUG:2.3QC
LM0172	1	LOOM FRC 10-WAY STYLE A 250MM
LM0441	1	LOOM FRC 10-WAY STYLE A 750MM
LT0443	1	*MX* LOOP CARD INSTALLATION GUIDE (these instructions)
LM0459	1	LOOM 1982-105 *MX1* DC LOOM FUSED
FU0042	1	FUSE ATQ BLADE TYPE 10A RED BODY
SU0020	2	CABLE TIE 3.62IN

Before installing the *MX* Loop Card, check that all items in the kit are present and undamaged.

General Description

The FP0950 *MX* Loop Card kit (Figure 1) is used to provide an additional addressable loop interface for up to 250 *MX* devices in an *MX1* fire alarm panel, or to replace a faulty *MX* Loop Card already fitted.

The Loop Card kit is designed for use with VIGILANT *MX1* fire alarm panels in both 19" rack cabinets and New Zealand Slimline cabinets.

These instructions cover the fitting and connection of the *MX* Loop Card in an *MX1*. The details of any necessary changes to the system configuration or other hardware are not covered here. *MX1* firmware V1.60 and V1.61 must not be used with *MX* Loop Cards. Refer to **System Firmware Compatibility and Configuration** on Page 6 for compatible versions of *MX1* firmware.
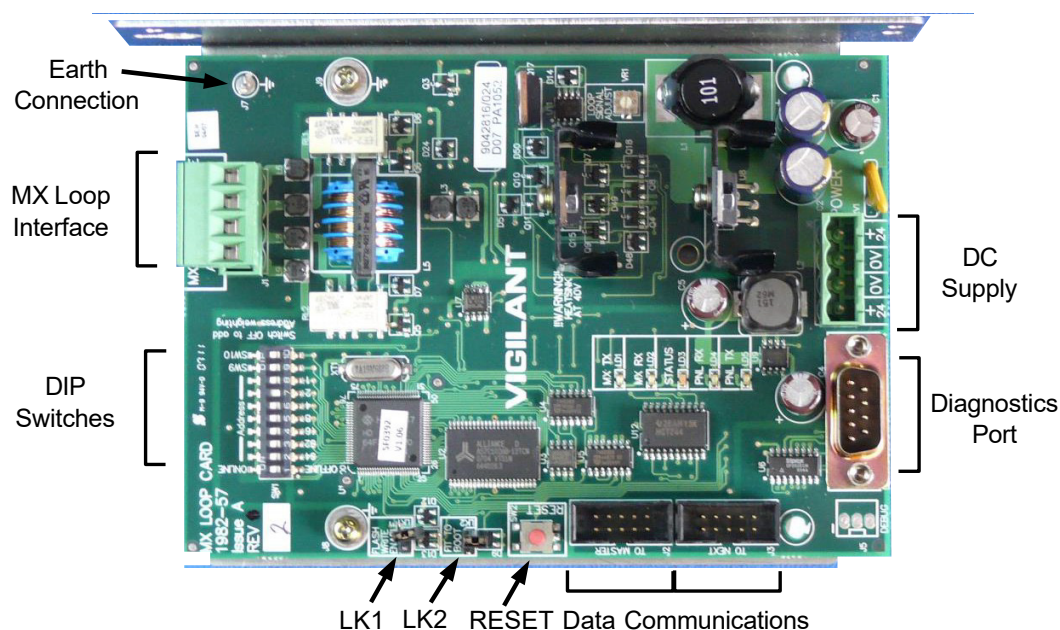
Figure 1 – *MX* Loop Card on Mounting Bracket

Mounting a New *MX* Loop Card

Preparation

- Advise the building owner or representative, monitoring service, and fire brigade, as appropriate, that the fire system is being taken out of service. Isolate the panel from the monitoring system.

- Power down the fire panel by disconnecting the batteries and turning off the mains supply. Protect the battery leads so they do not short together or to any metallic objects.

- Use appropriate anti-static precautions, e.g., wrist strap connected to the case earth.

Mounting in a Slimline Cabinet

On bracket

This is the recommended method for the Slimline cabinet. The Loop Card and bracket assembly is directly mounted on the side wall, as shown in Figure 2. This position will not interfere with the zone LED display cards for a rear service system.

Remove the Loop Card and bracket assembly from its ESD protection and fasten it on the front pair of studs using the two M3 barrel nuts and washers from this kit.

WARNING: do not over-tighten the barrel nuts, otherwise the studs may snap.

On gear plate

Use this method if the side position is unavailable for some reason.

WARNING: This position will probably interfere with the SGD or T-GEN mounting.

Fit the four plastic standoffs from the kit to the holes for the chosen position. Remove the Loop Card and bracket assembly from its ESD protection. Undo the two screws and release the two plastic clips holding the Loop Card to the bracket.

Place the Loop Card carefully on the four standoffs on the gear plate and press it home.

Earth the Loop Card to the gear plate with the loom from the kit, as shown in Figure 5.
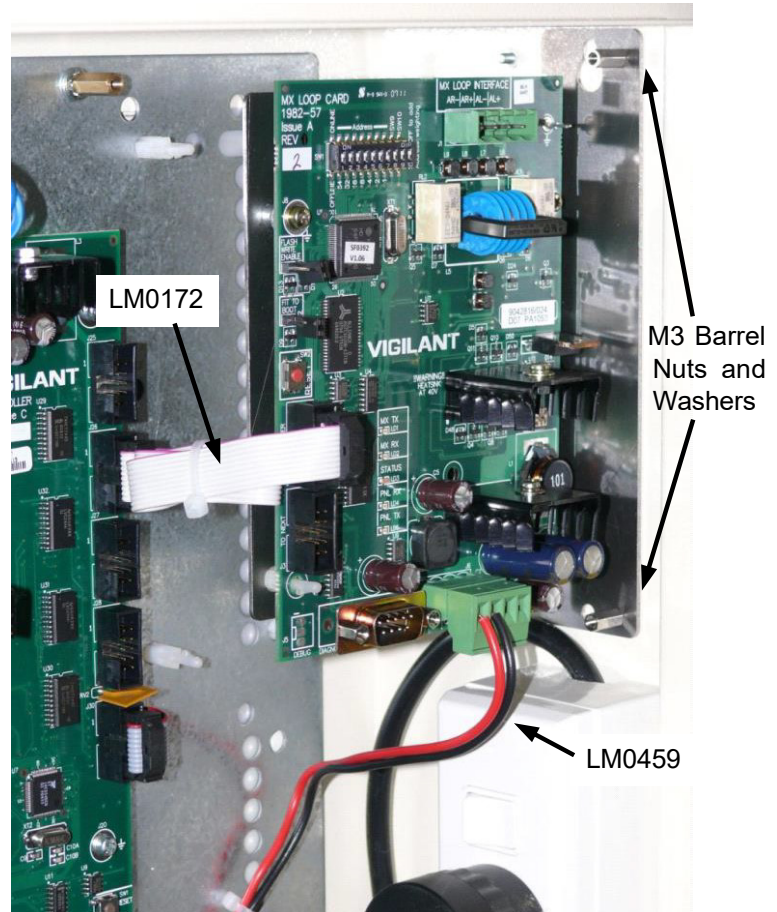
Figure 2 – Loop Card and Bracket in Slimline Cabinet

Mounting in a 15U Cabinet

The Loop Card can be mounted in three ways:

- On the bracket on the gear plate – see Figure 3a. This is the recommended method if the gear plate is suitable.

- On the side fold of the gear plate – see Figure 3b. Use this position if the back part of the gear plate does not have mounting points, or it is already filled with other items.
  NOTE: the side fold is the preferred position for the network interface. If the *MX1* will be networked (in future), it may be worth rearranging the other items on the back part of the gear plate to allow the bracket mounting method, if at all possible.

- Flat on the gear plate – see Figure 3c. Use this position if the other choices are not available.

The numbers in Figure 3 refer to the recommended order of preference for each position – "1" is the first choice.
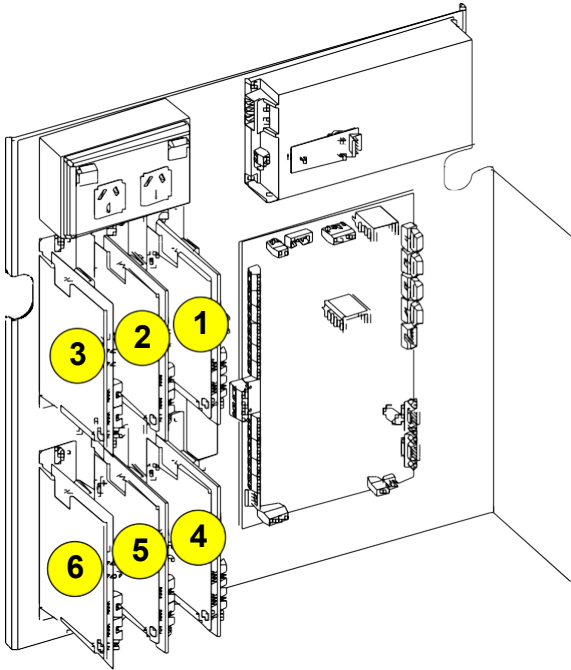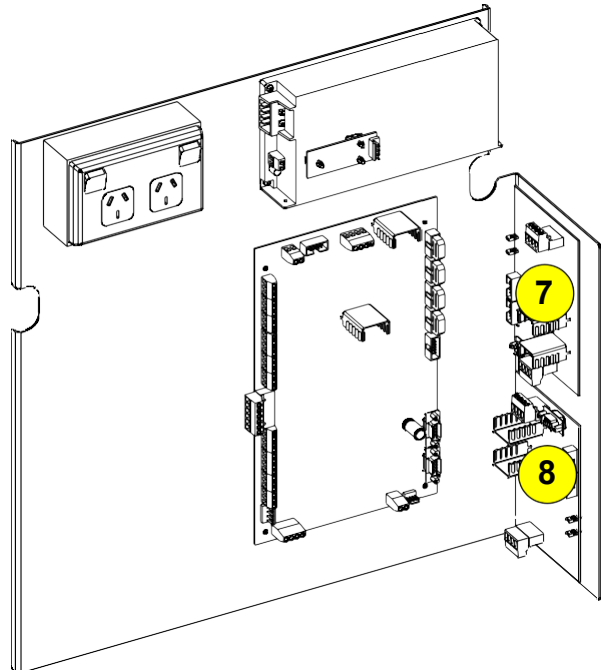
Figure 3a – Bracket Locations

Figure 3b – Side Fold Locations

Mounting the bracket on the gear plate (1-6)

Choose the next bracket position using Figure 3a as a guide. Fit one of the M4 screws from the kit in the top fastening point but do not tighten it. Remove the Loop Card and bracket assembly from its ESD protection and hang it on this screw using the "keyhole" mounting hole in the rear of bracket. Fit the other M4 screw in the bottom fastening point and tighten both screws.

Mounting the Loop Card on the gear plate side fold (7-8) or flat on the gear plate (9)

Fit the four plastic standoffs from the kit to the holes for the chosen position. Remove the Loop Card and bracket assembly from its ESD protection. Undo the two screws and release the two plastic clips holding the Loop Card to the bracket.

Place the Loop Card carefully on the four standoffs on the gear plate and press it home.

Earth the Loop Card to the gear plate with the loom from the kit, as shown in Figure 5.
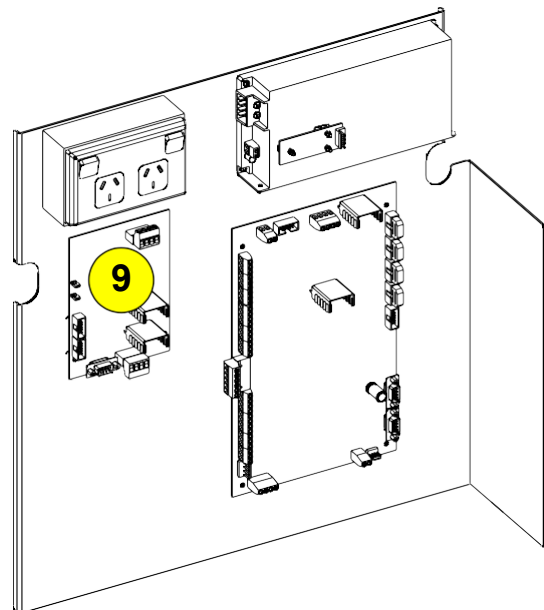

Figure 3c – 15U Gear Plate Locations

Mounting in an 8U Cabinet

The Loop Card can be mounted in two ways:

- On the bracket on the gear plate – see Figure 4a. This is the recommended method if the gear plate is suitable.

- Flat on the gear plate – see Figure 4b. Use this position if the other choices are not available.

The numbers in Figure 4 refer to the recommended order of preference for each position – "1" is the first choice

Mounting the bracket on the gear plate (1-3)

Choose the next bracket position using Figure 4a as a guide. Fit one of the M4 screws from the kit in the top fastening point but do not tighten it. Remove the Loop Card and bracket assembly from its ESD protection and hang it on this screw using the "keyhole" mounting hole in the rear of the bracket. Fit the other M4 screw in the bottom fastening point and tighten both screws.

Mounting the Loop Card flat on the gear plate (4)

Fit the four plastic standoffs from the kit to the holes for the chosen position. Remove the Loop Card and bracket assembly from its ESD protection. Undo the two screws and release the two plastic clips holding the Loop Card to the bracket.

Place the Loop Card carefully on the four standoffs on the gear plate and press it home.

Earth the Loop Card to the gear plate with the loom from the kit, as shown in Figure 5.
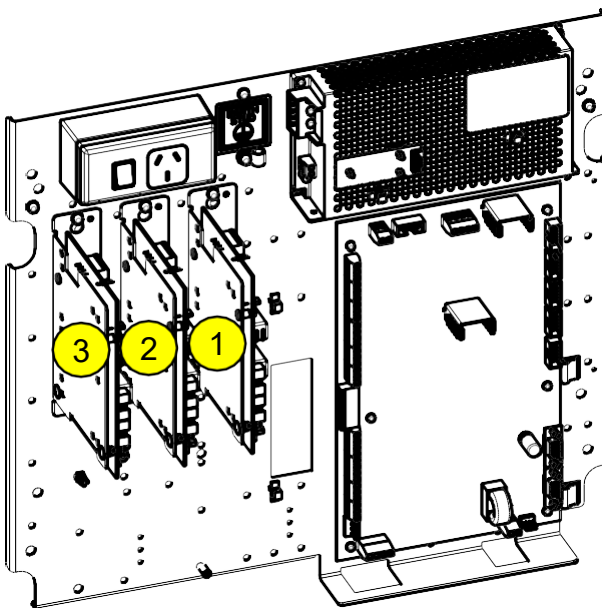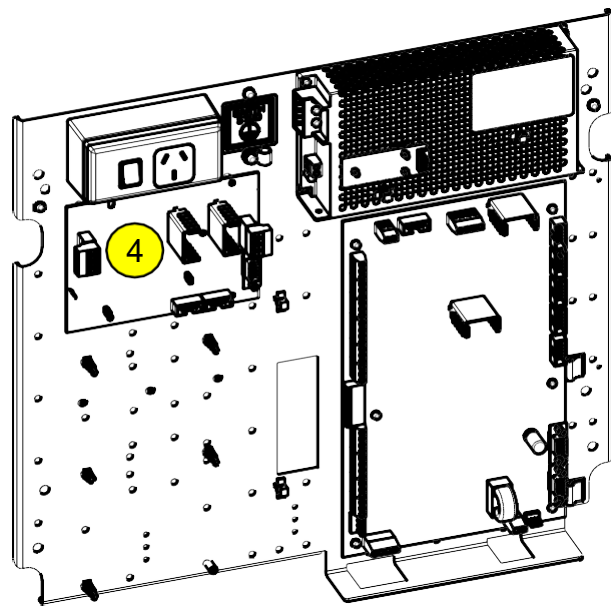

Figure 4a – Bracket Locations

Figure 4b – Gear Plate Locations

Wiring a New *MX* Loop Card

DC Supply

For the first Loop Card in a system

Connect the fused loom (LM0459) supplied with the kit to terminals **J33 LOOP INTERFACE SUPPLY**, in the lower right corner of the *MX1* controller board. The 4-way connector fitted to the other end of the loom is plugged into the header **J6 POWER** of the Loop Card. Refer to Figure 5. Secure the loom to existing or new restraints as required.

If necessary fit a 10A blade fuse (red body) to the fuse holder in the loom. A spare 10A fuse is supplied with the kit, and should be left in the *MX1* cabinet.

If you use a ME0570 14 A PSU assembly and a power distribution board (PDB) in a MX1 cabinet instead of a 5 A PSU, turn on the loop card from the PDB. For the connection details, refer to Figure 5.

In this setup, connect the LM0459 Fused Loom to any one of the PDB output terminals F1, F2, F3, or F4 as shown in the *MX1 Wiring Diagrams (LT0442, Sheet 128)*.

For additional Loop Cards

DC power for additional Loop Cards is daisy-chained from the Loop Card(s) already fitted. Trim the LM0459 DC loom supplied in the kit to a suitable length, and connect it to the 4-way DC connector of a previous Loop Card, as shown in Figure 5. Up to four Loop Cards can be daisy-chained in this manner without overloading a 10A fuse.

NOTE: The DC wiring method shown in Figure 5 is convenient, but has a disadvantage that removing the DC connector to any loop card removes power to all the following loop cards. If this is a problem in any installation, it can be overcome by wiring both red leads and both black leads into the same terminals on the Loop Card DC connector or to any one of the PDB output terminals F1, F2, F3, or F4.
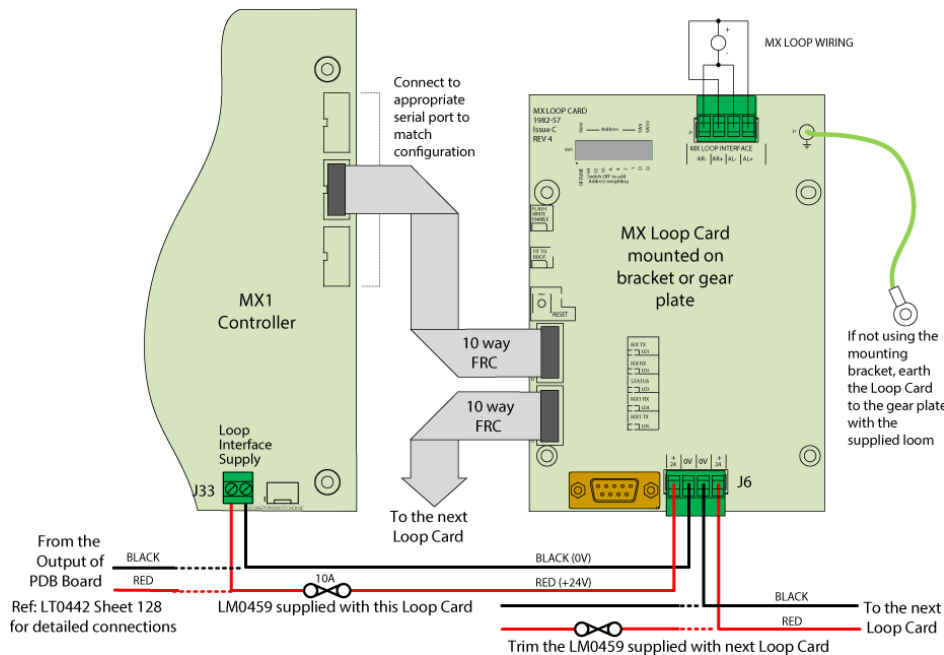
Figure 5 – DC and Communications Wiring to the Loop Card

If more than four loop cards are required, power the extra ones from a new fused connection to the **J33 LOOP INTERFACE SUPPLY** on the *MX1* controller or to any one of the PDB output terminals F1, F2, F3, or F4. These terminals can accommodate up to 4 sq.mm of wiring.

If the new loop card is located away from any existing ones, it may be easier to connect the unmodified LM0459 loom directly to **J33** or to any one of the PDB output terminals F1, F2, F3, or F4. This is an acceptable alternative.

NOTE: If you use a ME0570 14 A PSU assembly and a PDB in a MX1 cabinet, connect the DC wiring to one of the PDB outputs.

> ⚠️ **If replacing a faulty *MX* Loop Card be careful NOT to accidentally swap the connections to J6 and J1 – they use the same style of 4-way demountable connectors.**

Data Communications Wiring

Loop Cards are controlled via a 10-way Flat Ribbon Cable (FRC) connecting them to a specific serial port on the right hand edge of the *MX1* controller board.

For *MX1* systems with v1.3x firmware and a single Loop Card, this must be connected to **SERIAL PORT 3**.

For *MX1* systems with v1.4 or later firmware with multiple Loop Cards, each one may be connected to its own

dedicated serial port, or up to three Loop Cards may be daisy-chained from each serial port, or some combination of these. Note that the serial ports used for each Loop Card must match the SmartConfig configuration. Figure 4 shows the connection of the FRC to the *MX1* Controller and the Loop Card.

The order of connection of Loop Cards to any serial port is not important.

System Firmware Compatibility and Configuration

MX1 system firmware versions earlier than V1.30 must be upgraded to support Loop Card(s).

- *MX1* firmware version V1.3x supports a single Loop Card on SERIAL PORT 3. Any version of Loop Card firmware will suit this.

- *MX1* firmware versions V1.4 and later support up to 7 Loop Cards on serial ports 2, 3, 4, and 0 (up to three *MX* Loop Cards per serial port). The Loop Card firmware must be V2.0 or later for this arrangement.

- *MX1* firmware versions V1.60 and V1.61 must not be used with *MX* Loop Cards. Upgrade the *MX1* firmware to the latest version if installing an *MX* Loop Card on a panel with these versions of firmware.

- *MX1* firmware version V1.90 and later supports the features outlined in the latest revisions of the AS7240 standard, parts 2 and 4, and the AS1670 standard. The features from the previous versions are also retained.

The *MX1* system firmware or Loop Card firmware in existing systems can be upgraded if necessary – refer to *MX1* Service Manuals LT0440 (Australia) and LT0366 (NZ) for details of how to do this.

The system configuration must be updated with the SmartConfig tool to include the new Loop Card(s), their serial ports, and the new *MX* devices connected to them.

Set the address switches on the Loop Card(s) to match the address in the configuration.

- For the first Loop Card, the address will be 2.

- For additional Loop Cards, addresses will be 3, 4, etc.

Refer to Table 1 for details of setting the switches.

Note: if the Loop Card is powered up when the DIP switches are changed, the RESET button must be pressed to activate the change, or the card powered down and back up again.

Table 1 – *MX* Loop Card DIP Switch Settings

SW	Function		Loop Card address:						
			2	3	4	5	6	7	8
1	Off Line/On Line		On for Normal Operation						
2		64	on	on	on	on	on	on	on
3	Loop Card address	32	on	on	on	on	on	on	on
4		16	on	on	on	on	on	on	on
5	Switch off to add weighting.	8	on	on	on	on	on	on	OFF
6		4	on	on	OFF	OFF	OFF	OFF	on
7		2	OFF	OFF	on	on	OFF	OFF	on
8		1	on	OFF	on	OFF	on	OFF	on
9	Unused		On						
10	Unused		On						

Power Supply and Battery

The extra load from adding a Loop Card and *MX* devices may require a larger system battery or power supply to meet standards compliance requirements. Refer to the *MX1* System Design Manuals LT0441 (Australia) or LT0361 (NZ) for more details about designing the system to meet these requirements. A software tool (MX1Cost) is also available to assist with these calculations.

Power On and Testing

Make any necessary firmware upgrades to the system, as mentioned in the previous section. Ensure that LK1 and LK2 on the Loop Card(s) are fitted on one pin only.

Leave the battery disconnected and power the *MX1* up on mains only.

The *MX1* controller should start as normal, with the B and C indicators on the controller board flashing and the LCD showing the system status.

The new Loop Card(s) should show all indicators on briefly, changing to just the red indicator LD3 STATUS flashing a status indication as in Table 2.

Table 2 – *MX* Loop Card STATUS LED (LD3) Indications

Status LED (LD3) Indication	Condition
2 quick flashes every 2 seconds.	The *MX* Loop Card is being polled by the *MX1* panel, the *MX* loop is intact, and all programmed *MX* devices are responding.
1 quick flash every 2 seconds.	The *MX* Loop Card is NOT being polled by the *MX1* panel.
5 flashes then a pause, repeating. Each of the 5 flashes indicates that a particular fault is present when the flash is **long**, or is not present if the flash is **short**.	1st flash: The *MX* Loop Card is not being polled by the *MX1* panel. 2nd flash: The *MX* loop is overloaded (excess current being drawn). 3rd flash: The *MX* loop is open circuit. 4th flash: The *MX* loop is shorted on the "left" (AL+, AL-) terminals. 5th flash: The *MX* loop is shorted on the "right" (AR+, AR-) terminals.
Continuous very rapid flashes.	The *MX* Loop Card has just powered up. This should last only a few seconds.
LED Off	No power, or board faulty, or both Lk1 and Lk2 are fitted.

If the system configuration has been updated to include the new card, the lower yellow indicators PNL RX and PNL TX should start flashing as messages pass back and forth to the *MX1* controller. The upper two yellow indicators MX TX and MX RX should show data being sent to the *MX* loop and data being returned, if *MX* devices are connected.

MX Loop Card Specifications

Power requirements	24V 2A (max) supplied from the *MX1* Controller board
Dimensions (HWD)	142 x 104 x 40mm
Format	Circuit board assembly pre-assembled on metal bracket
Operating Temperature Range	-5°C to +45°C
Humidity Range	10% to 93% RH non-condensing
Mounting Pattern	PCB: $\varnothing$4mm holes at 90mm x 90mm (half responder footprint) Bracket: M4 holes at 150mm centres or M3 holes at 147mm centres.