Manual

Advanced
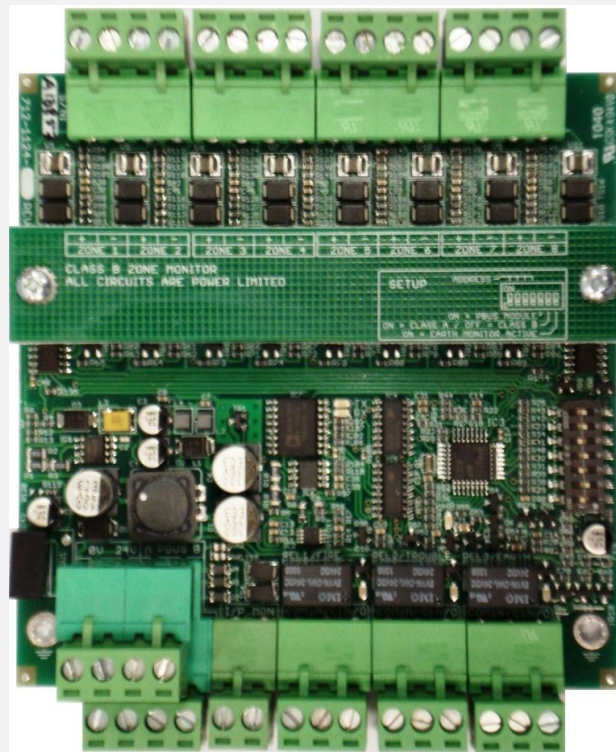
Peripheral Zone Card

- Compatible with Standard or Diode Bases
- Up to 32* devices per circuit (*device range dependant)
- Individually Configured Zone circuits
    - ○ "Short = Alarm" Option
    - ○ "Intrinsic Safety" Option
    - ○ "Non-latching" Option (from 50-06 onwards)
    - ○ "Alarm Verification" Option (from 50-07b onwards)
- Current Limited Zone circuits (48mA under Short Circuit)
- Voltage Regulated Zone Circuits
- S.M.A.R.T. Power Management

The operation and functions described in this manual are available from Software Version Mx5000-050-04 onwards.

Specifications:

Models, Sales Order Parts:

Mxp-536 Peripheral Zone Card

Applications / Limitations:

Cards must be mounted locally to their power supply
Earth Monitoring circuit must be disabled if operating on the same ground plane as the Fire Panel
Volt free (PSU Monitor / Reset Input)

Compatibility:

Mx-5000 Range of Fire Panels
Exp-006 Active End of Line Module
Requires PC Config Tool Version 6.13 Onwards for access to all the configuration options.
Requires Panel Version 50-06 Onwards for access to the following functionality

- Class A zones
- Non-Latching zone configuration

Requires Panel Version 50-07b, And Card Firmware Version 1.05, Onwards for access to the following functionality

- Alarm Verification

Requires Panel Version 50-08 Onwards for access to the following functionality

- Configurable EOL

Item	Specification Details
Applicable Standards	EN54-13, EN54-18
Operating Temperature	-5°C to 40°C
Relative Humidity	95% Non Condensing (maximum)
PCB	32mm H x 105mm W x 126mm L 150 grams (assembled with top plate)
D.C. Supply	24V (17V to 28V) DC
Min Quiescent Current	100mA (Vs = 24V, 8 Zones = Min Load, EOL = 6K8)
Max Quiescent Current	120mA (Vs = 24V, 8 Zones = Max Load, EOL = 6K8, Relays Off)
Max Current (O/Ps On)	135mA (Vs = 24V, 8 Zones = Max Load, EOL = 6K8, 3 Relays On)
Max Alarm Current	300mA (Vs = 20V, 8 Zones = Max Alarm Load, 3 Relays On)
Zone Circuits Available	8 Radial (Class B) / 4 Loop (Class A), Conventional
Zone Current (Iz) Limit	48mA, Under Short Circuit
Zone Voltage (Vz)	24V ± 5%
Max Line Resistance	32R
Radial Zone EOL	Configurable (6K8, 4K7 or 3K9), Advanced Exp-006 AEOL Module
PSU Monitor Input	Volt Free
PSU Monitor EOL	10K
PBUS EOL	150R
Relay Outputs	SELV, Change Over

As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice

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1   Introduction

The Mxp-536 Peripheral Zone Card, on-board I/O module, is an internal peripheral for use with the Mx-5000 range of fire alarm control panels

Each card provides monitoring of up to 8 Radial, or 4 Loop, conventional zone circuits.

Cards are protocol Independent.

Up to 16 cards may be connected to a panel, allowing for an extra 128 conventional zone circuits, and 48 Relay Outputs.

Easily configured with the PC Configuration Tool

Can be set to Stand Alone mode and operate independently from the Fire Panel; using the 3 on-board relays to report Fire, Fault & Earth Fault conditions.

2   General Installation & Operation

2.1   Module Overview

The Mxp-536 Peripheral Zone card offers 8 individually configurable conventional zone circuits, and 3 configurable relay outputs; as well as including an Earth Monitor circuit in the event that the card is mounted remotely to its parent Fire Panel.

With up to 16 cards supported, this allows up to 128 conventional zone circuits and an extra 48 SELV relay outputs to be operated from a single Fire Panel.

Each Mxp-536 unit can be configured to operate in either radial (class B) or ring (class A) mode.

In radial (class B) mode:
- Up to 8 Conventional zones are supported per card
- The EOL can be configured to use a 6K8, 4K7 or 3K9 EOL (single setting for all zones).
- Zones work with standard or Schottky diode bases †.
- Complies with applicable standard EN54-13 †.
- Can be configured for operation with Intrinsically Safe zones ††

In ring (class A) mode:
- Up to 4 Conventional zones are supported per card
- Maximises coverage protection (in the event of zone faults).
- Complies with applicable standard EN54-13.

See **Wiring Configuration** for further details.

Cards are generally intended to work with an Mx5000 fire panel which is commonly referred to as working in "Peripheral Bus" mode; but can also be configured to operate in a "Stand Alone" mode were connection to a 3rd party panel is required. See **Operating Modes** for further details.

In Peripheral Bus mode, zone behaviour and relay settings are individually configured using the PC Configuration tool.

See **Card Configuration Setup** for further details.

A dedicated PSU Monitor input is provided to report PSU faults back to the parent fire Panel when operating in PBUS mode. In Stand Alone mode this input is used to reset the card in order to clear latched alarm conditions.

The Mxp-536 Peripheral Zone card makes use of **S**oftware **M**onitoring **A**nd **R**eal **T**ime Power Management techniques in order to minimise power requirements under fault conditions (such as short circuits across multiple zones), or when driving into Zone Circuits under Alarm conditions. The result is lower power requirements, and increased battery life.

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†   Requires an "Exp-006 Active End of Line Module", sold separately.
†† Requires an apropriate barrier module. EN54-13 compliance is not supported on I.S zones

2.2   Basic Configuration

Each card connected to the 485 Communication Line must have its own address. This address should be set so that it matches the corresponding card within the Advanced PC Config Tool design.

Configuration Defaults:

- **Earth Monitor Disabled**: This is the required condition if the card is expected to share a ground plane with the parent fire Panel, or any other card which also provides earth monitoring capabilities. For example, if multiple Zone cards are located in a remote enclosure, that requires earth monitoring; only 1 of the cards should be set to monitoring mode. Slide switch to the ON position to enable the earth monitor circuit.

- **Radial (Class B) operation**. Slide switch to the ON position to put card into Loop (Class A) mode.

- **Stand Alone Mode**. Slide PBUS switch to the ON position to enable Peripheral Bus Mode.

In Peripheral Bus mode the card address is set using the Address switches (as depicted above).

In Stand Alone mode the address switches are used to configure the EOL setting:

Bit 0	Bit 1	EOL Setting
Off	Off	Default EOL (6K8)
On	Off	4K7
Off	On	3K9
On	On	Not Used (defaults to 6K8)

Note: Bits 2 and 3 current have no function when operating in stand alone mode.

2.3   Operating Modes

The Mxp-536 has 2 operation modes:

- **Stand Alone Mode** (DIP Switch Default)**:**

    o   The card is connected to a 3rd party Fire Panel via volt-free relay connections

    o   The card uses following default processing rules:

      ▪   In Class B:

Zone ID	Latching	Alarm Verification	Short is Fire	I.S Mode
1	●	●	●	
2	●	●	●	
3	●		●	
4	●		●	
5			●	
6			●	
7	●	●	●	●
8	●		●	●

      ▪   In Class A:

Zone ID	Latching	Alarm Verification	Short is Fire	I.S Mode
1	●	●	●	
2	●		●	
3	●		●	
4			●	

● Feature supported on this zone

    o   Unused zone circuits should have EOLs fitted (or loop wiring if running in class A) in order to avoid incorrectly reporting faults.

    o   The 3 on-board relays are used to interface to the outside world and inform external monitoring equipment of Fire (relay 1), Fault (fail safe operation) (relay 2), and Earth (relay 3) Fault conditions.

⚠	The signalling relays are global to all zones, so while a Fire or Fault can be reported it cannot be tied-in to any one particular zone circuit on the card. Therefore in stand alone mode only one zone circuit should be used for detection purposes, or conversely all zone circuits on the card should be operating in the same physical detection zone.

- **Peripheral Bus Mode:**

    o   The card requires an Mx5000 Fire Panel in order to operate. In this mode the card provides maximum flexibility, with the ability to configure each zone independently via the Advanced Configuration tool.

    o   No need to fit EOLs (or loop wiring if running in Class A) on unused zones; unused zones are disabled by the Fire Panel to reduce current drain.

    o   Configurable Relay outputs (via Advanced Configuration tool)
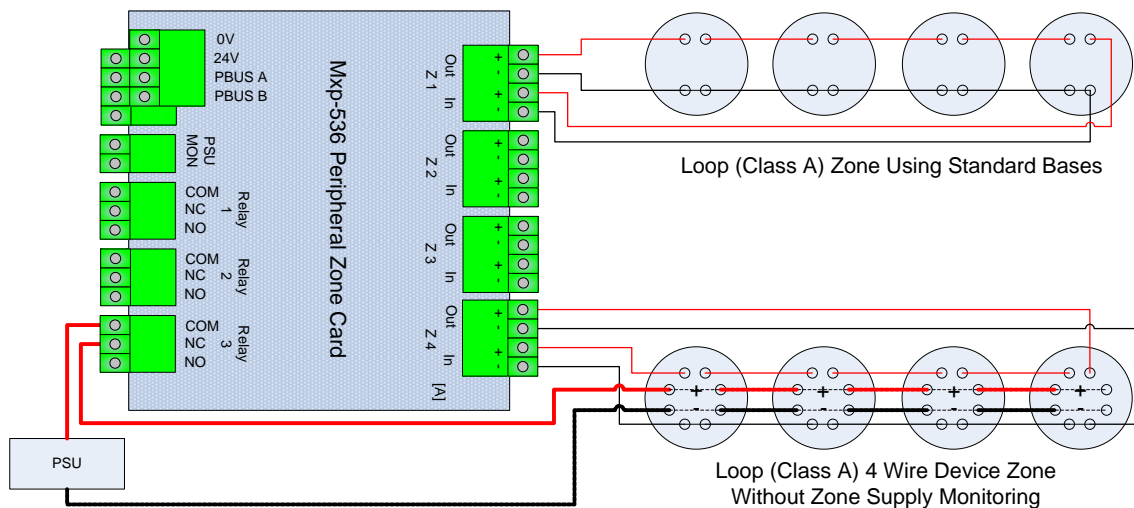
2.3.1   PSU Monitor

The behaviour of the PSU Monitor input changes depending on the run mode of the card.
- In Stand Alone mode the input is used to issue the reset command to the card
- In Peripheral Bus mode the input acts as a PSU monitor.

Line State	Reset Input Interpretation	PSU Monitor State
EOL Present	Normal Operation	PSU Monitor Ok
EOL Missing	Normal Operation	PSU Monitor Fault
Short	Reset (enforced on release)	PSU Monitor Fault

2.4   Wiring Configuration

2.4.1   Loop (Class A) Zone Wiring

Loop (Class A) Zone Using Standard Bases

Loop (Class A) 4 Wire Device Zone
Without Zone Supply Monitoring

2.4.2   Radial (Class B) Zone Wiring

Radial (Class B) Zone Using Standard Bases

Radial (Class B) Zone Using Diode Bases

Radial (Class B) 4 Wire Device Zone
Without Zone Supply Monitoring
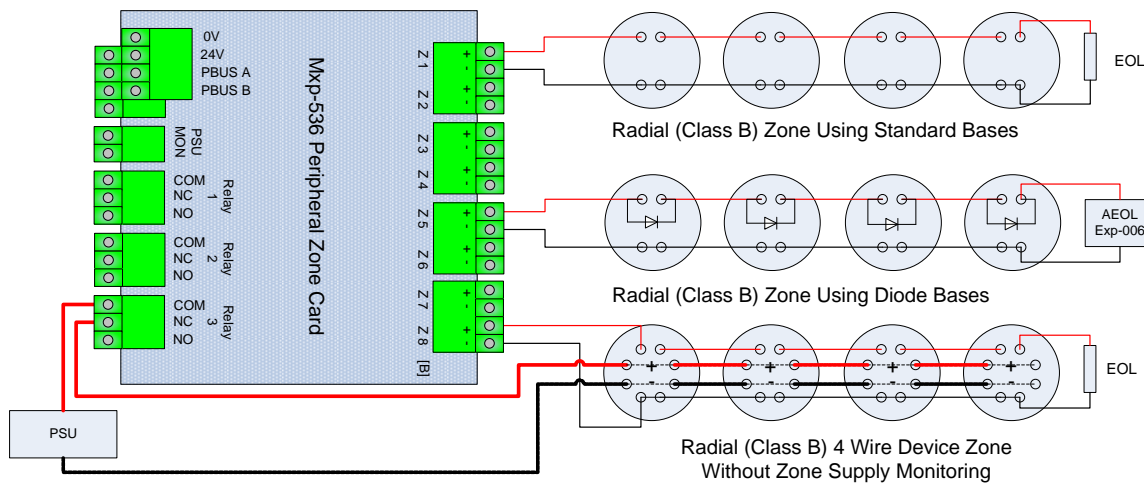
Notes:
- For compliance with EN54-13 an AEOL (Exp-006) must be used with radial zones, regardless of the type of base in use. Please note that not all detection devices are compatible with the AEOL (Exp-006) module (please refer to
- If an AEOL (Exp-006) is in use the EOL configuration must be set to 6K8.
- Up to three 4-wire zones can be supported using the on-board relays (in PBUS mode)
- If operating in Stand Alone Mode the on-board relays become purpose specific and therefore cannot be used in 4-Wire device configurations.

2.4.3   485 Comms Wiring
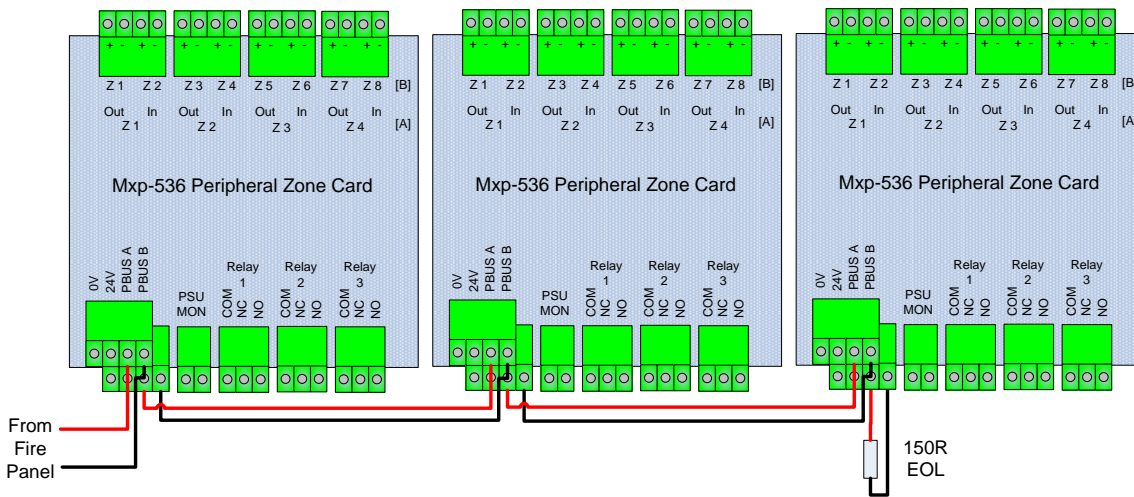
2.4.4   Supply Wiring

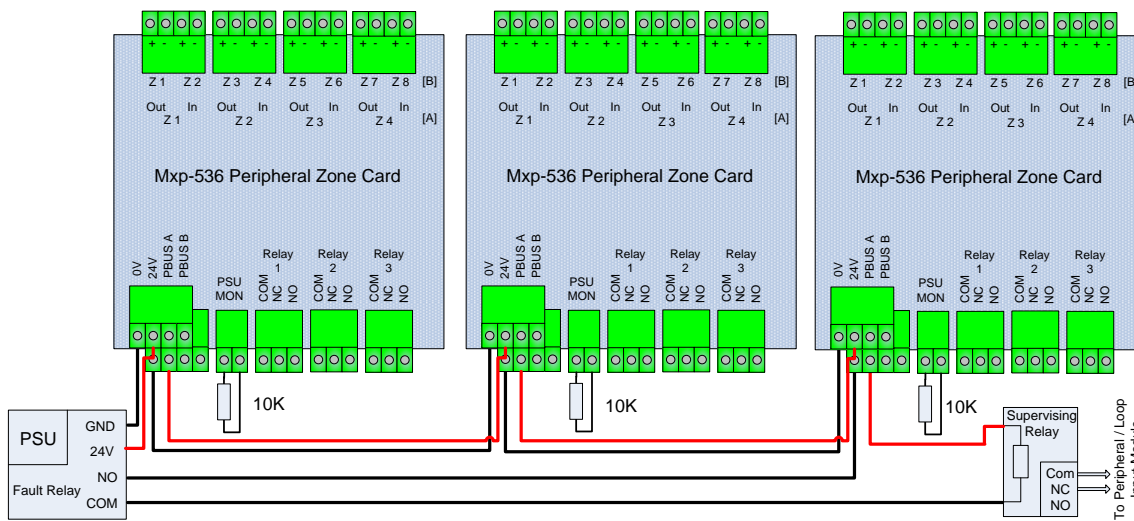Supply wiring with local PSU monitoring.
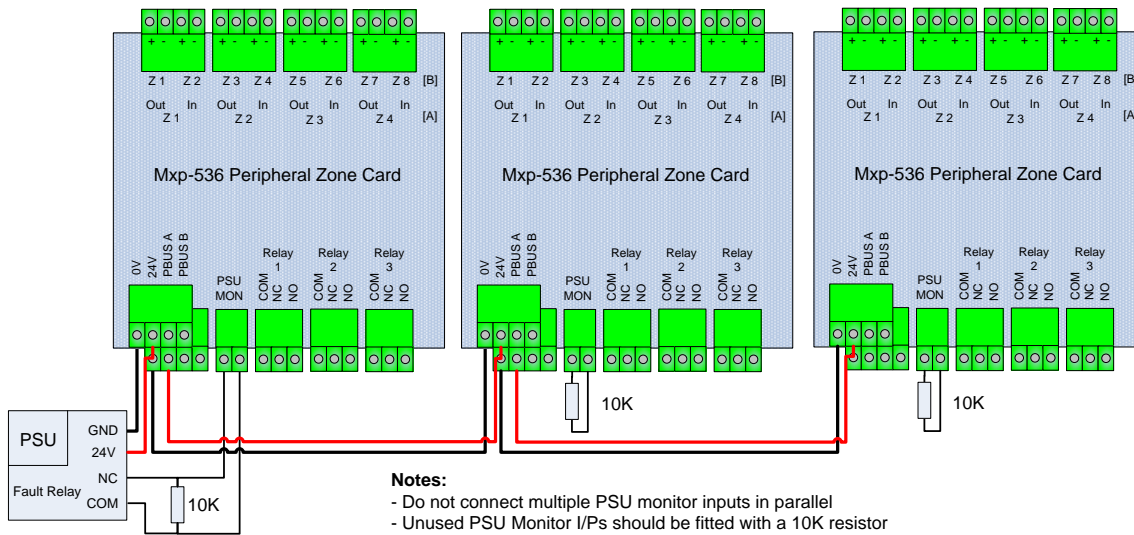
Notes:
- Do not connect multiple PSU monitor inputs in parallel
- Unused PSU Monitor I/Ps should be fitted with a 10K resistor

Supply wiring with Remote PSU monitoring.

2.5 Detector Compatibility

Table Legend:
Normal Devices using standard bases wired in a Loop (no EOL required) or…
       Devices using standard bases with an EOL Resistance
SD   Devices using Shottkey diode bases and an Advanced Active EOL module.
       Value represents the maximum number of devices (+1) that can be lost before zone evaluation is compromised.
IS   Devices used in a Radial Intrinsic Safety Zone using a 300R Zener Barrier module, and   an EOL resistance; only applicable to I.S. capable devices.

Note(s):
Tables assume that all devices in a zone are of the same family and type. If mixed families and/or types are used the maximum device quiescent load should be kept to less than 2mA.

An Exp-006 (Active EOL module) is required for '*Partial Open circuit*' detection (EN54-13) on Radial (Class B) zones.

2.5.1 Radial (Class B)

Hochiki		Maximum Devices			Exp-006 Compatible
Device	Type	Normal	SD	IS	
SRA-ET	Beam	7	7	0	Yes
SPB-ET	Beam	11	11	0	Yes
SPC-ET	Beam	10	10	0	Yes
SLR-E3	Optical	32	21	0	Yes
DCD-AE3	Heat (RofR/ 60deg)	32	21	0	Yes
DCD-CE3	Heat (RofR/ 90deg)	32	21	0	Yes
HF-24	UV flame	13	13	0	Yes
DFG-60E	Heat (waterproof)	32	21	0	Yes
DFJ-AE3	Heat (60 deg)	32	21	0	Yes
DFJ-CE3	Heat (90 deg)	32	21	0	Yes
DCD-1E-IS	RoR Heat	32	21	32	Yes
SLR-E-IS	Photo	32	21	32	Yes

Apollo		Maximum Devices			Exp-006 Compatible
Device	Type	Normal	SD	IS	
Orbis - full range	All	27	23	0	Yes
Orbis Optical I.S.	Photo	31	23	29	Yes
Orbis Multi I.S.	Photo(with heat)	31	23	29	Yes
Orbis Heat I.S.	Heat	32	23	31	Yes
Series65 55000-315/316/317	Optical	32	24	0	Yes
Series65 55000-122/127/132/137	Heat (Standard)	32	24	0	Yes
Series65 55000-120/121/125/126	Heat (LED flash)	32	24	0	Yes
Series65 55000-130/131/135/136	Heat (LED flash)	32	24	0	Yes
Series65 55000-215-to-220	Ion	32	24	0	Yes

Nittan		Maximum Devices			Exp-006 Compatible
Device	Type	Normal	SD	IS	
Sensortec (330R base)	All (except UV)	32	15	0	Yes
Sensortec (0R base)	All (except UV)	32	17	0	Yes
Sensortec NFD-68P (330R base)	UV flame	22	15	0	Yes
Sensortec NFD-68P (0R base)	UV flame	22	22	0	Yes
Evolution EVC-P	Photo	32	13	0	Yes
Evolution EVC-H-A2/ EVC-H-C	Heat	32	13	0	Yes

Argus Aurora		Maximum Devices			Exp-006 Compatible
Device	Type	Normal	SD	IS	
S100 (0R / 330R bases)	Photo	30	0	0	No
S200 (0R / 330R bases)	Photo/Heat	31	0	0	No
S300 (0R / 330R bases)	High temp heat	32	0	0	No
S400 (0R / 330R bases)	Heat	32	0	0	No
20-S1000-ADV (0R / 330R bases)	Photo	30	0	0	No
20-S2000-ADV (0R / 330R bases)	Photo/Heat	31	0	0	No
20-S3500-ADV (0R / 330R bases)	Heat/High Temp	32	0	0	No

System Sensor		Maximum Devices			Exp-006 Compatible
Device	Type	Normal	SD	IS	
ECO1002 (standard base - no resistor)	Photo/ Heat	32	0	0	No
ECO1003 (standard base - no resistor)	Photo	32	0	0	No
ECO1004T	Heat	32	0	0	No
ECO1005 (standard base - no resistor)	Heat (RofR)	32	0	0	No
2351TEM (standard base - no resistor)	Photo/ Heat	32	0	0	No
2351E (standard base - no resistor)	Photo	32	0	0	No
5351TE (standard base - no resistor)	Heat (58deg)	32	0	0	No
4351E (standard base - no resistor)	Heat (78deg)	32	0	0	No
5351E (standard base - no resistor)	Heat (RofR)	32	0	0	No

2.5.2 Ring (Class A)

Nittan			Maximum Devices
Device		Type	
Sensortec	(0R base - no resistor)	All (except UV)	32
Sensortec NFD-68P	(0R base - no resistor)	UV flame	32

| Argus Aurora			Maximum Devices
Device		Type	
S100	(0R base - no resistor)	Photo	32
S200	(0R base - no resistor)	Photo/Heat	32
S300	(0R base - no resistor)	High temp heat	32
S400	(0R base - no resistor)	Heat	32
20-S1000-ADV	(0R base - no resistor)	Photo	32
20-S2000-ADV	(0R base - no resistor)	Photo/Heat	32
20-S3500-ADV	(0R base - no resistor)	Heat/High Temp	32

System Sensor			Maximum Devices
Device		Type	
ECO1002	(standard base - no resistor)	Photo/ Heat	32
ECO1003	(standard base - no resistor)	Photo	32
ECO1004T		Heat	32
ECO1005	(standard base - no resistor)	Heat (RofR)	32
2351TEM	(standard base - no resistor)	Photo/ Heat	32
2351E	(standard base - no resistor)	Photo	32
5351TE	(standard base - no resistor)	Heat (58deg)	32
4351E	(standard base - no resistor)	Heat (78deg)	32
5351E	(standard base - no resistor)	Heat (RofR)	32

3 Card Configuration Setup

3.1 Adding a Card to the Design

Expand the Panel (in the "Site List") and select the "Peripheral Bus" node; this will bring up a list of available cards that can be connected to the peripheral bus in the "Device Selector".
Unlike most peripheral devices the PC1124 is represented twice in the "Device Selector"…
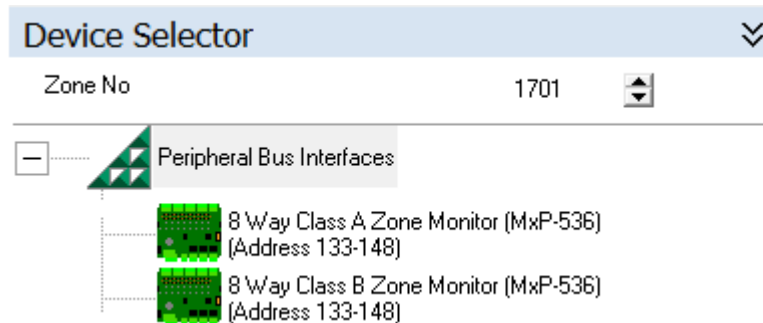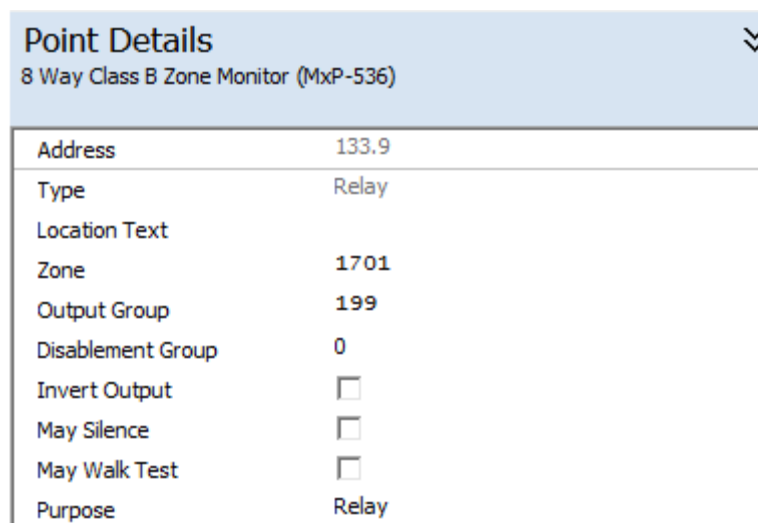

Select the desired operation mode (Class A / B) and add it to the design.

> ⚠️ The device should be added to the same address as the one set on the card.
>
> The selected operation mode should match the mode set on the card; failure to do so will result in a type change error being reported against that card, after upload.

3.2 Output Configuration

Output configuration is performed along the same line as any other output device/point.

> ⚠️ If the card is operating in "stand-alone" mode (but still present in the design, and connected to the peripheral bus) these output settings will have no effect on the relay behaviour.

3.3 Input Configuration

Point Details
8 Way Class B Zone Monitor (MxP-536)

Address	133.1
Type	Zone Monitor
Location Text	
Zone	200
Input Action	Fire
Short Circuit Qualifies Action	☐
Intrinsically Safe Zone	☐
Zone End of Line	6K8
Incidence	Single
Investigation	☑
Confirmation Filter	Not Required
Fire Category	-
Input Latched	☑
Disablement Group	0
SSM/Time Clock No	# Unused
⊟Sensitivity Adjust Mode	
Delay (s)	0

Point Details
8 Way Class B Zone Monitor (MxP-536)

Address	133.2
Type	Zone Monitor
Location Text	
Zone	200
Input Action	Control Signal
Short Circuit Qualifies Action	☐
Intrinsically Safe Zone	☐
Zone End of Line	6K8
Incidence	Single
Investigation	☑
Input Latched	☐
Disablement Group	0
SSM/Time Clock No	# Unused
⊟Sensitivity Adjust Mode	
Delay (s)	0

Point Options for Fire Action   **Point Options for Non-Fire Actions**

Input configuration is performed along the same line as configuring any loop device.

Setting the "Input Action" to "No Action" has the following impact:

- Input is disabled at the hardware end (overall power consumption is reduced)
- End of Line resistors are not required for unused inputs.

Each Zone circuit can be individually configured to treat short circuits as activating/qualifying conditions; this is done via the "Short Circuit Qualifies Action" checkbox.

Each Zone circuit can be individually configured to operate in Intrinsically Safe mode; which is intended for use only with an appropriate I.S Barrier and I.S. Devices.

Each zone can be configured for Alarm Verification by setting the "Comfirmation Filter" option. To get this option the "Confirmation Filter" must first be enabled under "Panel Details→General Options"

Each Zone can be configure for Latching or non latching operation. Non Latching zones will reassert an active condition 10 seconds after activation. The default sequence is as follows:

Activation →10s Reassert Delay → 2s Reset → 5s Zone Evaluation Inhibit → Full Monitoring

The Zone EOL selection is an option common to all the zones in a card, setting a zone to 6K8 will change the setting on all other zones for that card.

4   General Notes

The DC power to the Mxp-536 card must always be local to the card.

This equipment is constructed with static sensitive components. Observe anti-static precautions at all times when handling printed circuit boards. Wear an anti-static earth strap connected to panel enclosure earth point.

The unit must be grounded; this is normally achieved via the screw terminals used to secure the card to the enclosure. Should this not be the case, a dedicated ground must be provided.

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USER NOTES