

INSTALLATION & OPERATING INSTRUCTIONS PA1043 ISO 8201 Strobe Driver

General Description

The ISO 8201 Strobe Driver is a module that can be connected to a switched 24Vdc output to convert this into an ISO 8201 compliant (“T3”) pattern for driving compatible strobes. It is designed to connect directly to Tyco/Vigilant fire alarm panels, but may also be connected to other suitable panels. The fire alarm panel's output supervision (e.g. Bells and end-of-line resistors) is used to supervise the wiring for open and short circuit faults, both from the panel to the unit and from the unit to the strobes.

Operation

The Strobe Driver module generates its T3 output pattern whenever 24Vdc power is applied to its DC IN terminals. It draws no current with the voltage reversed, enabling the use of reverse polarity line supervision. A strobe load of up to 2A can be connected to the output terminals. All connected strobes will flash with a synchronised pattern. The Strobe Driver will automatically shut down to protect itself from damage when excessive current is drawn.

The T3 pattern repeats every 4 seconds and consists of 3 flashes 1 second apart (i.e. every fourth flash is absent). Two T3 pattern options are currently implemented, one to drive Simplex Multi-Candela strobes (parts 4906-9103 and 4906-9104) and the other to directly drive LEDs or LED Beacons with a 500ms ON pulse. These are shown diagrammatically in Fig 1 below. Generic self-flashing xenon strobes **must not** be connected to the Strobe Driver. Pattern selection is made using the on-board DIP-switch. The switch selection may be changed while the Strobe Driver is running and the new selection will take effect immediately.

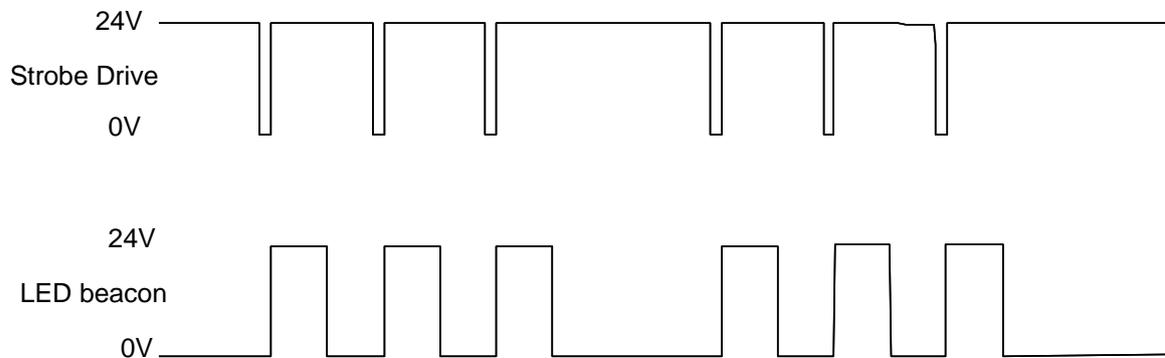


Fig 1
T3 Pattern Options

Synchronised Operation

Up to 5 Strobe Drivers in the same cabinet may be synchronised, provided that the Strobe Drivers and their controlling fire panel share a common DC IN -ve connection. Wire the SYNCH– terminals of all Strobe Drivers together as shown in Fig 2.

The Strobe Driver may also be synchronised with Mini-Gen Mk2 modules operating in tone-only mode. Note that if speech is enabled, the Mini-Gen Mk2 speech messages will not be played correctly, as the Strobe Driver modules operating on a shorter cycle will re-synchronise before the Mini-Gen cycle is complete.

Connection and Fault Monitoring

The simplest method of connection to the panel is 2-wires in, 2-wires out. This is ideal for unsupervised alarm system outputs, e.g. retrofits, and those supervised by polarity reversal (F3200 Bells, Bell Monitor Board, MX1 ANC3, SNM800). For these the 2-WIRE switch must be ON. Refer to Fig 2.

Setting the 2-WIRE switch OFF allows use of the dedicated Supervision terminal on the Strobe Driver for a 4-wires in, 2-wires out supervised connection to a panel that has clean relay contacts and a separate supervision input (as with F08 Ancillary, F3200 ANC 1 & 2, 8RM, MX4428 Ancil, IOR, MX1 ANC 1 & 2). Refer to Fig 3.

The F4000/MX4428 ADR with RRM can also be used control a Strobe Driver. For this, two relay outputs on the same RRM will be required, and generally, a separate 24V feed will also be needed as the RRM will not be able to provide sufficient current to the strobes. Refer to Fig 4.

The fire alarm panel supervises the strobe line while the output is not active. The appropriate end-of-line resistor (EOLR) must be installed at the end of the strobe run and sometimes at the spare DC IN terminals of the Strobe Driver itself (for multi-branch circuits to make up the total end-of-line resistance required). The Multi-Candela strobes contain internal polarity diodes, and so will not interfere with supervision. Any load without an internal diode must be connected with a diode in series.

For the devices that provide three-branch supervision (Bell Monitor Board, MX1 ANC3 and F3200 Bells), the following combinations are possible. Turn the 2-WIRE Supervision switch ON. Where an EOLR is fitted to the Strobe Driver, it is fitted to the DC Looping terminals of the last module (i.e. furthest from panel). Refer to Fig 2 and Table 1. For F3200 Bells the EOLR is 10k. For MX1 ANC3 and Bell Monitor Board the EOLR is 27k. For more than three branches, multiple Bell Monitor Boards can be used, but check total loading of relays and fuses.

Table 1 – Multi-branch supervision

Number of Strobe Drivers	Number Strobe Line Branches per Unit	EOLR on DC Terminals		EOLR on each Branch	
		F3200	Bell Monitor/MX1	F3200	Bell Monitor/MX1
1	1	2 x 10k	2 x 27k	10k	27k
1	2	10k	27k	10k	27k
1	3	-	-	10k	27k
2	1	10k	27k	10k	27k
2	1 & 2 (3 total)	-	-	10k	27k
3	1	-	-	10k	27k

Cable Calculations

For reference, Table 2 shows the load current for each Multi-Candela strobe at different intensity settings. Figures are given for an input voltage of 18V to allow for voltage drop in the cables; current consumption will be higher at lower input voltages. The current consumption of all strobes connected to the same circuit should be totalled up for use in selecting the correct cable size.

Table 2 - Multi-Candela strobe current consumption

Strobe	15 cd	30 cd	75 cd	110 cd
4906-9103	55 mA	85 mA	169 mA	226 mA
4906-9104	64 mA	102 mA	199 mA	266 mA

The following table shows the cable sizes required for different combinations of cable length and total strobe load. A minimum voltage of 20V from the fire panel terminals has been assumed; thicker cables will be required if the source terminal voltage needs to be lower than this.

Table 3 - Recommended cable sizes

Cable length	100mA load	250mA load	500mA load	1A load	2A load
100m	0.75 mm ²	0.75 mm ²	0.75 mm ²	1.0 mm ²	2.5 mm ²
200m	0.75 mm ²	0.75 mm ²	1.0 mm ²	2.5 mm ²	
300m	0.75 mm ²	0.75 mm ²	1.5 mm ²	3.0 mm ²	
500m	0.75 mm ²	1.5 mm ²	2.5 mm ²		
700m	0.75 mm ²	2.5 mm ²	3.0 mm ²		
1000m	1.0 mm ²	2.5 mm ²			

Note that the total strobe load must not exceed 2A. The maximum numbers of Multi-Candela strobes that can be connected at different intensity settings without exceeding this 2A limit are shown in Table 4. Figures are

given for an input voltage of 18V to allow for voltage drop in the cables; the total number will be lower at lower input voltages. If the fuse rating or the relay rating of the fire panel is less than 2A, fewer strobes can be connected.

Table 4 - Maximum number of Multi-Candela strobes

Strobe	15 cd	30 cd	75 cd	110 cd
4906-9103	36	23	11	8
4906-9104	31	19	10	7

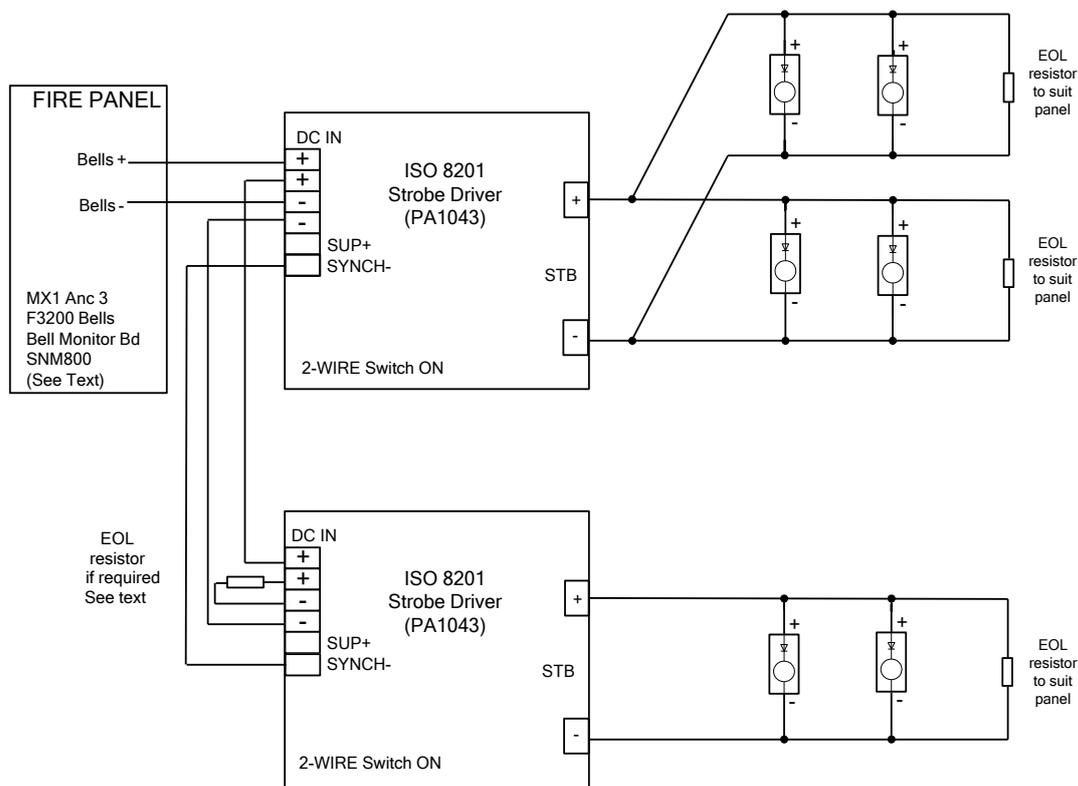


Fig 2

Example of Multiple Branches on Fire Panel with “Bell” 3 Branch Supervision

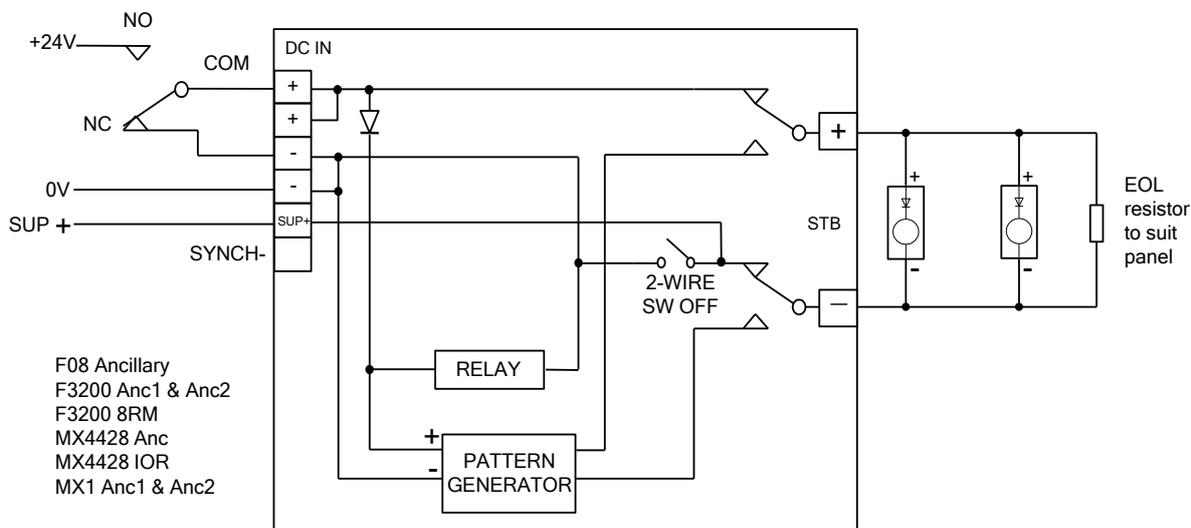


Fig 3

ISO 8201 Strobe Driver Connection With Separate Supervision (single pole / 4 wire)

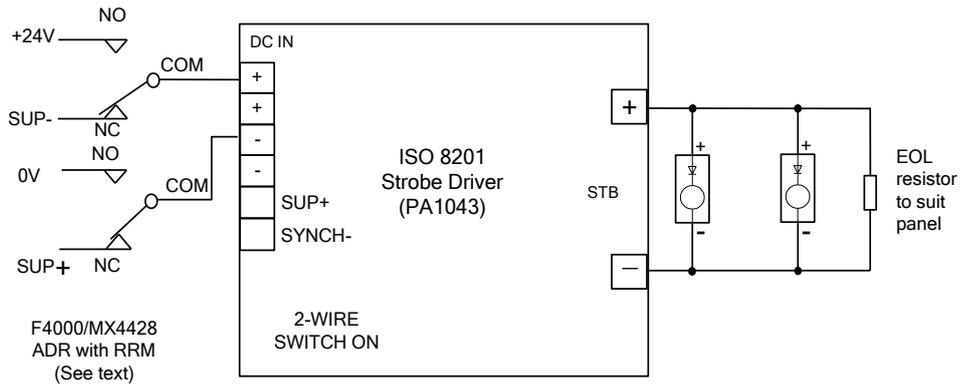


Fig 4
ISO 8201 Strobe Driver Connection for Two Pole Relay With Integral Supervision (2 Pole/2 Wire)

Fire Panel Connections
(Refer to Figures 2, 3 and 4)

MX1

Ancillary 3 Relay has integral supervision that supports 3 branches with 27k EOLRs. See **Fig 2** and Table 1 noting that the 27k value applies. On *MX1*, Bells- is 0V, Bells+ is the COM terminal of ANC3, ANC3 NC is connected to SUP and NO is connected to +VBF.

The EOLR across the DC IN terminals is in parallel with those across the output circuits. If only one Strobe Driver is being used, fit 2 x 27k resistors in parallel across the spare (out-going) DC IN terminals.

Ancillary Relay 1 or 2 can drive a single Strobe Driver, with the Supervision connected as per **Fig 3**.

- Connect the relay NO to +24V supply, NC to Strobe Driver DC IN -ve, COM to Strobe Driver DC IN +ve, and 0V supply to the second DC IN -ve.
 - Connect ANC SUP to SUP+ on the Strobe Driver.
 - Turn the 2-WIRE Supervision switch OFF on the Strobe Driver.
 - Use a 15k EOLR at the end of the output line.
- Only 1 Strobe Driver with one strobe line is allowed per relay.

SNM800 MX Addressable Module

An SNM800 can be used to drive a single Strobe Driver (follow **Fig 2** substituting SNM800 terminals S+ for Bells+ and S- for Bells-).

A single strobe branch is allowed using a 27k EOLR. Supervision of the strobe line is performed by the SNM800. An external 24V supply is required to power the Strobe Driver (via the SNM800). The SNM800 supervises this for low voltage.

MX4428/F4000

Main Board

A single Strobe Driver can be driven by the single pole Ancil Relay. Connect the relay and Ancil supervision as per **Fig 3**.

- Cut the link on the MX4428/F4000 Main Board that connects Ancil Supervision to Ancil COM (i.e., disconnect).
 - Turn the 2-WIRE Supervision switch OFF on the Strobe Driver.
 - Use a 15k EOLR on the end of the strobe line.
- Only 1 strobe module with one strobe line is allowed.

Alternatively, a 24V Bell Monitor Bd (PA0494) can be used to connect up to 3 branches of strobe lines as per **Fig 2** and Table 1. Refer to LT0070 MX4428 Installation Manual, Section 2.6.1.1, for instructions on wiring the Bell Monitor Bd to the panel.

RRM

Use two relays of an RRM with both programmed to operate together. (Similar to **Fig 4**, but with the RRM having link selectable integral positive voltage supervision to the COM of each relay.) The amount of power drawn from the RRM +24V terminals is limited to 100mA max and by the loop restrictions. Where more power is needed an external 24V PSU is required (with a back-up battery and supervision depending on the application). If using the Fire Panel +24V, run both +ve and -ve and do not short out part of the responder loop.

- Connect the NO of one relay to 0V supply (PSU -ve), COM to Strobe Driver DC IN -ve, and program this relay for supervision but do **not** fit the link. Use the 3 way housing and crimp terminal supplied to connect the 'S' end pin of the 3 way header on the RRM to the SUP+ input terminal on the Strobe Driver.
- Connect the NO of the other relay to +24V supply, NC to RRM 0V, COM to Strobe Driver DC IN +ve, and select this relay as un-supervised.
- Switch the 2-WIRE Supervision switch OFF on the Strobe Driver. Use a 15k EOLR at the end of the strobe line.

Only one Strobe Driver with one strobe line is allowed.

IOR

Use one relay of a Relay Board and configure the corresponding IOR input for supervision. (Wiring is similar to **Fig 3**).

The amount of power drawn from the IOR +24V terminals is limited to typically 650mA and by the loop restrictions.

Where more power is needed an external 24V PSU is required (with a back-up battery and supervision for many applications). The PSU -ve must be connected to the IOR 0V for supervision to work.

- Connect the relay NO to +24V supply (PSU +ve), NC to Strobe Driver DC IN -ve, COM to Strobe Driver DC IN +ve, and 0V supply (PSU -ve) to the second DC IN -ve and IOR 0V. The corresponding IOR input terminal for supervision is connected to SUP+ on the Strobe Driver.
- Switch the 2-WIRE Supervision switch OFF on the Strobe Driver.
- Use a 3k3 EOLR at the end of the strobe line.

Only 1 Strobe Driver with one strobe line is allowed.

MXP

An SNM800 can be used to control the Strobe Driver. Refer *MX1/SNM800* above for details.

F3200

MAF/PSU Relays

The **Bells** relay has integral supervision that supports 3 branches with 10k EOLRs.

See **Fig 2** and Table 1, noting that the 10k value applies, and that the EOLR across the DC IN terminals is in parallel with those across the strobe circuits. If only one Strobe Driver is being used, fit 2 x 10k resistors in parallel across the spare (out-going) DC IN terminals.

Ancillary 1 or **2** relays can also be used, with the Supervision connected as per **Fig 3**.

- Connect the relay NO to +24V supply, NC to Strobe Driver DC IN -ve, COM to Strobe Driver DC IN +ve, and 0V supply to the second DC IN -ve.
- Connect ANC SUP to SUP+ on the Strobe Driver.
- Switch the 2-WIRE Supervision switch OFF on the Strobe Driver.
- Use a 15k EOLR at the end of the strobe line.

Only 1 Strobe Driver with one strobe line is allowed.

8 Relay Module (8RM)

Use two relays of an 8RM programmed to operate together. (Similar to **Fig 4**, but with the module having integral positive voltage supervision to the COM of each relay, link selectable). Alternatively, you could fit a 3-way 5mm (or 0.2") pitch connector to the second pole of one relay. Parts CN0260 & CN0488 form a suitable demountable pair. (Each relay has 2 poles, but only 1 set of connectors is fitted as standard). One Strobe Driver with one or two branches of strobe wiring is permitted, or two Strobe Drivers with one branch each.

- Connect the NO of one relay to 0V supply, COM to Strobe Driver DC IN -ve.
- Connect the NO of the other relay to +24V supply, NC to 0V, COM to Strobe Driver +ve.
- Select supervision on the relay connected to Strobe Driver DC IN -ve only (i.e., fit link in S position). The panel should be configured to supervise this relay only while it is inactive.
- Turn the 2-WIRE Supervision switch ON on the Strobe Driver.
- Use a 27k EOLR at the end of each strobe line, and one across the spare DC IN +ve and -ve terminals if there is only one Strobe Driver and one branch.

Alternatively, the single pole of one relay can be used and connection made directly to the supervision input on the 3 way Supervised / Un-supervised (S/U) link. Refer to **Fig 3**. Remove the supervision jumper altogether, plug a single connector onto the pin furthest from the screw terminals and wire this to the SUP+ terminal of the Strobe Driver. Do not bridge the two 'S' pins on the 3-way link. (A suitable 3-way housing is supplied with two crimp terminals, but requires an appropriate crimp tool and 0.1 - 0.35mm² wire. Fit the spare terminal to the other end to help hold it on). Turn the 2-WIRE Supervision switch OFF on the Strobe Driver. Use 2 x 27k EOLs – one at the end of the Strobe wiring and the other across the STB + and - terminals.

F08

Ancillary Relay

A single Strobe Driver can be driven by the single pole Ancil Relay. Connect the relay and Ancil supervision as per **Fig 3**.

- Turn the 2-WIRE Supervision switch OFF on the Strobe Driver.
 - Use a 15k EOLR at the end of the strobe line.
- Only 1 Strobe Driver with one strobe line is allowed.

A **24V Bell Monitor Bd** (PA0494) driven from the Bells relay can be used to connect up to 3 branches of strobe line as per **Fig 2** and Table 1. Refer to LT0082, F08 Programming and Installation Manual Section 2.8.2, for instructions on wiring the Bell Monitor Bd to the panel.

BELL MONITOR BOARD

A 24V Bell Monitor Bd (PA0494) can be used to connect up to 3 branches of strobe line as per **Fig 2** and Table 1. It is suitable for use with panels with a DEF- (Defect/Fault) input. (Refer to LT0190 Bell Monitor Data Sheet for details.)

Identification Drawing

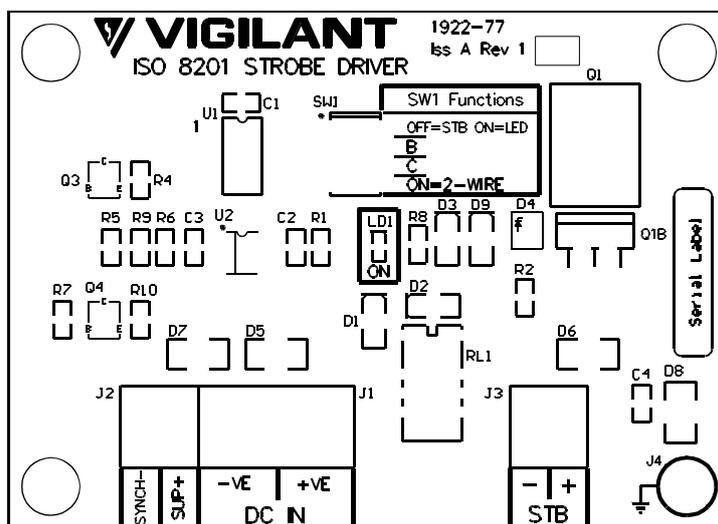


Fig 5
ISO 8201 Strobe Driver

Pattern Selection Switches

If switch 1 is turned OFF, the Strobe Driver is configured to drive Simplex Multi-Candela strobes, part numbers 4906-9103 and 4906-9104, with an ISO 8201 compliant T3 pattern. Do not use any other types of strobe on the strobe line, as they will not flash correctly.

If switch 1 is turned ON, the Strobe Driver is configured to drive LEDs or LED Beacons with a 500ms ON pulse in an ISO 8201 compliant T3 pattern.

The functions of switches 2 and 3 are currently undefined and reserved. These switches should be kept in the OFF position to ensure compatibility with any future software upgrades.

WARNINGS

Generic self-flashing xenon strobes must not be connected to the Strobe Driver, they will not function correctly.

Some components on the ISO 8201 Strobe Driver will get hot when it has been running for a time into a heavy load, especially if a long line is used. This applies mainly to transistor Q1, which should therefore not be touched.

The total strobe current loading must not exceed the fuse rating and the relay rating of the fire panel.

ISO 8201 Strobe Driver Specifications (PA1043)

Board Dimensions:	93mm x 67mm. Height 20mm from bottom of PCB.
Mounting Pattern:	Ø4.0 x 4, 83mm x 57mm, 4 x HW0130 standoffs supplied for rear mounting in Ø6.0 holes in 0.8-1.6mm sheet metal. 4 x HW0052 standoffs for front mounting in Ø4.8 holes.
Shipping Weight:	0.1kg.
Temperature:	Operating 0°C – 45°C. Storage 0°C – 70°C.
Humidity:	0% to 95% RH (non-condensing).
Operating Voltage:	17-30Vdc.
Operating Current:	25mA.
Non-operating Current:	Nil.
Output Strobe Current:	2A maximum.
Indicators:	On (Red). This LED will flicker in time with the output cadence.
DIP-switches:	1 pattern selection switch (2 switches are unused). 1 switch to select 2-wire or 4-wire input supervision.
Inputs:	SYNCH- Synchronises output signals between up to 5 Strobe Drivers.

Accessories included with PA1043

PART NO	DESCRIPTION	QTY	WHERE USED
CN0313	0.1" Connector Housing, 3 Way	1	F3200 8RM Supervision, or MX4428 RRM
CN0249	Crimp Terminal for above	2	F3200 8RM Supervision, or MX4428 RRM
HW0130	PBR10 PCB Standoff	4	For mounting the Strobe Driver
HW0052	PCB Standoff	4	For mounting the Strobe Driver in MX1 15U gearplates

Manufactured for: Tyco Safety Products
17 Mary Muller Drive
PO Box 19-545
Christchurch, New Zealand
Tel +64-3-389 5096
Fax +64-3-389-5938

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