

XP95 SWITCH MONITOR PLUS

FUNCTION

The XP95 Switch Monitor Plus is designed to monitor the state of one or more single pole, volt-free contacts connected on a single pair of cables and to report the status to Apollo compatible analogue control equipment. It has an output for resetting a remote detector and a selectable alarm delay, making it suitable for monitoring flow switches.

FEATURES

The Switch Monitor Plus provides four input states to the control equipment: 'Normal', 'Fault', 'Pre-alarm' and 'Alarm'. The Switch Monitor Plus has a red LED to indicate an alarm and a yellow LED to indicate a fault condition. The 30 second delay is selected by setting the eighth bit of the DIL switch to '0'.

ELECTRICAL CONSIDERATIONS

The XP95 Switch Monitor Plus is loop powered and operates at 17–28V DC. The Switch Monitor Plus is designed to accept a maximum line resistance of 50Ω. The end-of-line resistor required is 20kΩ. The opto-coupled reset takes the form of a current limited transistor output.

PROTOCOL COMPATIBILITY

The Switch Monitor Plus operates only with control equipment using the Apollo Series 90, XP95 or Discovery digital protocol.

PROTOCOL BIT USAGE

The control equipment transmits a 10-bit message to the Switch Monitor Plus:

The output (or forward command) bits from the control panel have the following function:



Part no 55000-809

When **output bit 2** is set to logic 1 on two or more consecutive cycles, the red LED is illuminated.

When **output bit 1** is set to logic 1 on two or more consecutive cycles, a self test is activated, resulting in an analogue value of 64 being transmitted to the control panel.

When **output bit 0** is set to logic 1 on two or more consecutive cycles, the opto output is switched on.

The **seven bits** which are then transmitted by the control equipment correspond to the **address (as set on the DIL switch)** of the device to be polled.

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A response message is then sent by the Switch Monitor Plus to the control equipment:

The **interrupt bit** is always set to logic 0.

The **analogue value bits** are set to return a pre-set analogue value of 4 for open and short circuit faults, 16 during normal operation, 45-51 to indicate a pre-alarm and 64 to signal an alarm.

The **input bits** are used to confirm the operation of the corresponding output bits.

The Switch Monitor Plus sends **seven bits** of data to confirm its **address** and then **one bit** to indicate that the device can use the XP95 protocol (**XP95 flag**).

The **alarm flag** is set if another device is in alarm and is not being integrated. The Switch Monitor places an alarm flag every 32 polling cycles if its analogue value is 64.

The next **five bits** are the second block of analogue value data bits and are not used by the Switch Monitor Plus.

The **parity bit** is set to '1' or '0' such that the device will always respond with an even number of data bits.

The final **seven bits** are used to transmit the **interrupt address or alarm address**.

MECHANICAL CONSTRUCTION

The Switch Monitor Plus is normally supplied with a back box for surface mounting. It is also available without the back box for flush mounting. Both versions are designed for indoor use only.

Two LEDs, one red and one yellow, are visible through the front cover of the enclosure.

The red LED can be illuminated under CIE control in the event of an alarm being detected.

The yellow LED is illuminated in the event of a fault condition being detected in the monitoring circuit and cannot be controlled by the CIE.

Dimensions and weight of Switch Monitor Plus (surface mount):

150 x 90 x 48mm

240g

TECHNICAL DATA

| | |
|------------------------------------|---------------------|
| Series 90/XP95 loop voltage | 17-28V DC |
| Maximum current consumption at 24V | |
| switch-on surge, max 150ms | 2.5mA |
| quiescent, 20kΩ EOL fitted | max 1.2mA |
| LED off, switch input closed | max 1.5mA |
| LED on, switch input closed | 3.5mA |
| LED on, switch input s/c | max 6.0mA |
| Opto voltage range | 5-30V DC |
| Guaranteed opto current | 1mA |
| Switch input monitoring voltage | 9-11V DC |
| Cable resistance, max | 50Ω |
| Operating temperature | -20°C to +70°C |
| Humidity (no condensation) | 0-95%RH |
| Shock | } to EFGS/F/95/007 |
| Vibration | |
| Impact | |
| IP rating | 54 |
| Radiated emissions | to BS EN50081-1 & 2 |
| Radiated immunity | to BS EN50082-1 |



| Resistance across input | Status | Analogue value |
|-------------------------|---------------------|----------------|
| <100Ω | Short-circuit fault | 4 |
| 100–200Ω | Indeterminate | 4 or 64 |
| 200–2kΩ <i>1kΩ*</i> | Alarm | 64 |
| 2–3kΩ | Indeterminate | 64 or 45–51 |
| 3–11kΩ <i>10kΩ*</i> | Pre-alarm | 45–51 |
| 11–15kΩ | Indeterminate | 45–51 or 16 |
| 15–25kΩ <i>20kΩ*</i> | Normal | 16 |
| 25–30kΩ | Indeterminate | 16 or 4 |
| >30kΩ | Open-circuit fault | 4 |

*The values shown in *italics* are recommended values

Table 1 Input resistances

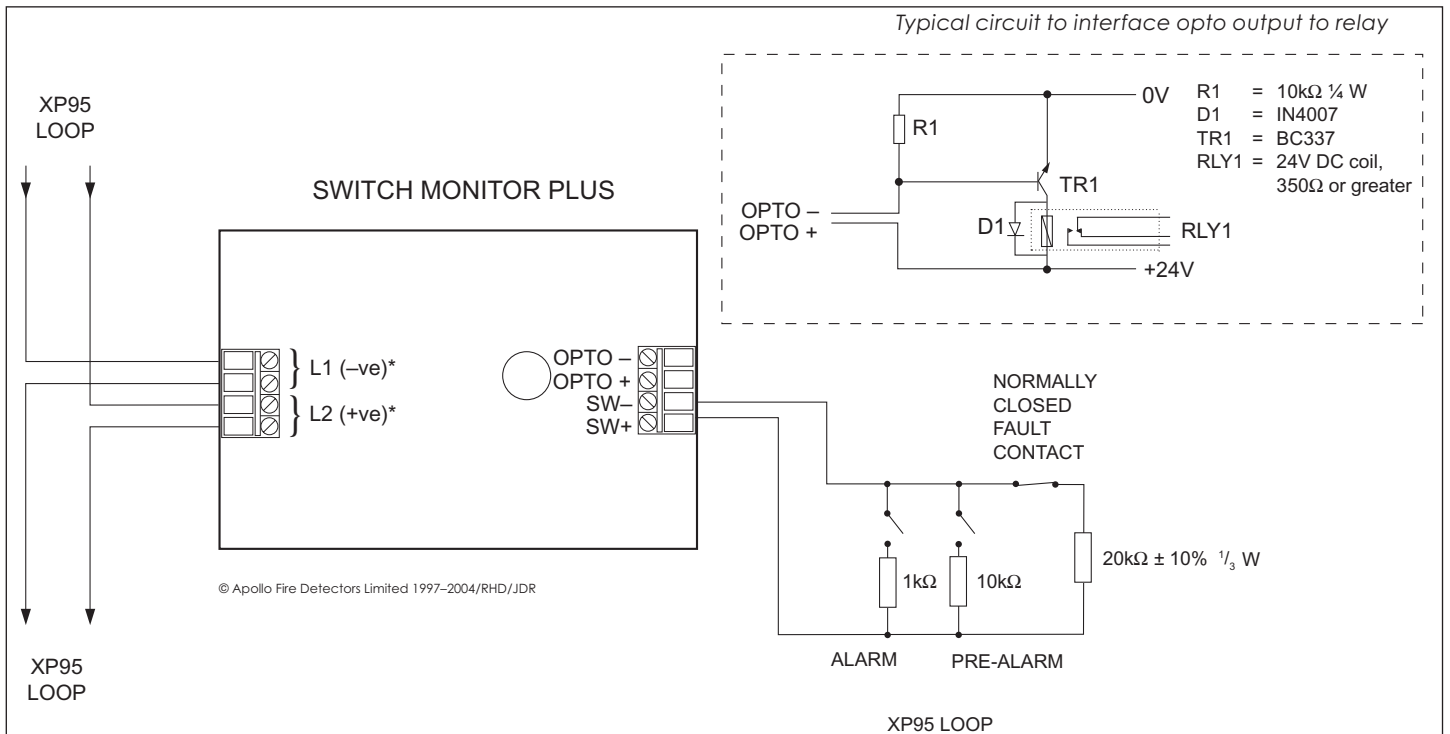
EMC DIRECTIVE 89/336/EEC

The XP95 Switch Monitor Plus complies with the essential requirements of the EMC directive 89/336/EEC, provided that it is used as described in this PIN sheet.

A copy of the Declaration of Conformity is available from Apollo on request.

Conformity of the XP95 Switch Monitor Plus with the EMC directive does not confer compliance with the directive on any apparatus or systems connected to it.

Schematic Diagram & Wiring Connections



* L1 and L2 are polarity insensitive, but, for the sake of consistency, it is recommended that L1 be kept negative