

XP95 MINI SWITCH MONITOR

FUNCTION

The XP95 Mini Switch Monitor 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.

FEATURES

The Mini Switch Monitor has been specially designed to fit into equipment with limited space. The unit provides four input states to the control equipment: "Normal", "Fault", "Pre-alarm" and "Alarm". These are derived from the switched resistive values shown in the table overleaf.

The Mini Switch Monitor has an integral red LED and provision for the connection of a remote LED, which is switched automatically with the integral LED.

ELECTRICAL CONSIDERATIONS

The device is loop powered and operates at 17–28V DC. The Mini Switch Monitor is designed to accept a maximum line resistance of 50Ω. The end-of-line resistor required is 20kΩ.

PROTOCOL COMPATIBILITY

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

PROTOCOL BIT USAGE

The control equipment transmits a 10-bit message to the Mini Switch Monitor.



Part no: 55000-833

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

When **output bit 2** is set to logic 1 on two or more consecutive cycles, the integral LED (and any remote LED fitted) 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, a fault condition is

simulated, resulting in an analogue value of 4 being transmitted to the control panel.

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.

A response message is then sent by the Mini Switch Monitor 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 or 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 Mini Switch Monitor sends **seven bits** of data to confirm its **address** before placing **one bit** of data to indicate that the device is using the XP95 protocol (**XP95 flag**).

The **alarm flag** is set by the Mini Switch Monitor if the monitor is at analogue value 64 and the device has not been polled for 1 second.

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

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 **alarm address** if the alarm flag has been set.

MECHANICAL CONSTRUCTION

The Mini Switch Monitor is supplied as a PCB in a two-part polycarbonate moulding with connections being made by six 150mm flying leads. The address switch is accessible through an aperture in the moulding.

When the address has been set the aperture must be sealed with the label provided, showing the setting of the address switch.

The Mini Switch Monitor is fitted with an LED which illuminates red in alarm. A remote LED connection is also provided. This is switched simultaneously with the integral LED.

Dimensions and weight of Mini Switch Monitor:

76 x 47 x 14mm 46g

Technical Data


Series 90/XP95 line voltage	17-28V DC	
Maximum current consumption at 24V		
switch-on surge, max 60 ms	3mA	
quiescent, 20kΩ EOL fitted	1mA	
alarm LED off	1.45mA	
alarm LED on	3.5mA	
switch input short circuit	2mA	
Switch input monitoring voltage	9-11V DC	
Maximum cable resistance	50Ω	
Operating temperature	-20°C to +70°C	
Humidity (no condensation)	0-95%	
Shock	}	to EFSG/F/95/007
Vibration		
Impact		
IP rating	54	
Radiated emissions	to BS EN50081-1 & 2	
Radiated immunity	to BS EN50082-1	
		

Table of input resistances

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 in *italics* are recommended values

Diagram to show pre-alarm, alarm and fault contacts

