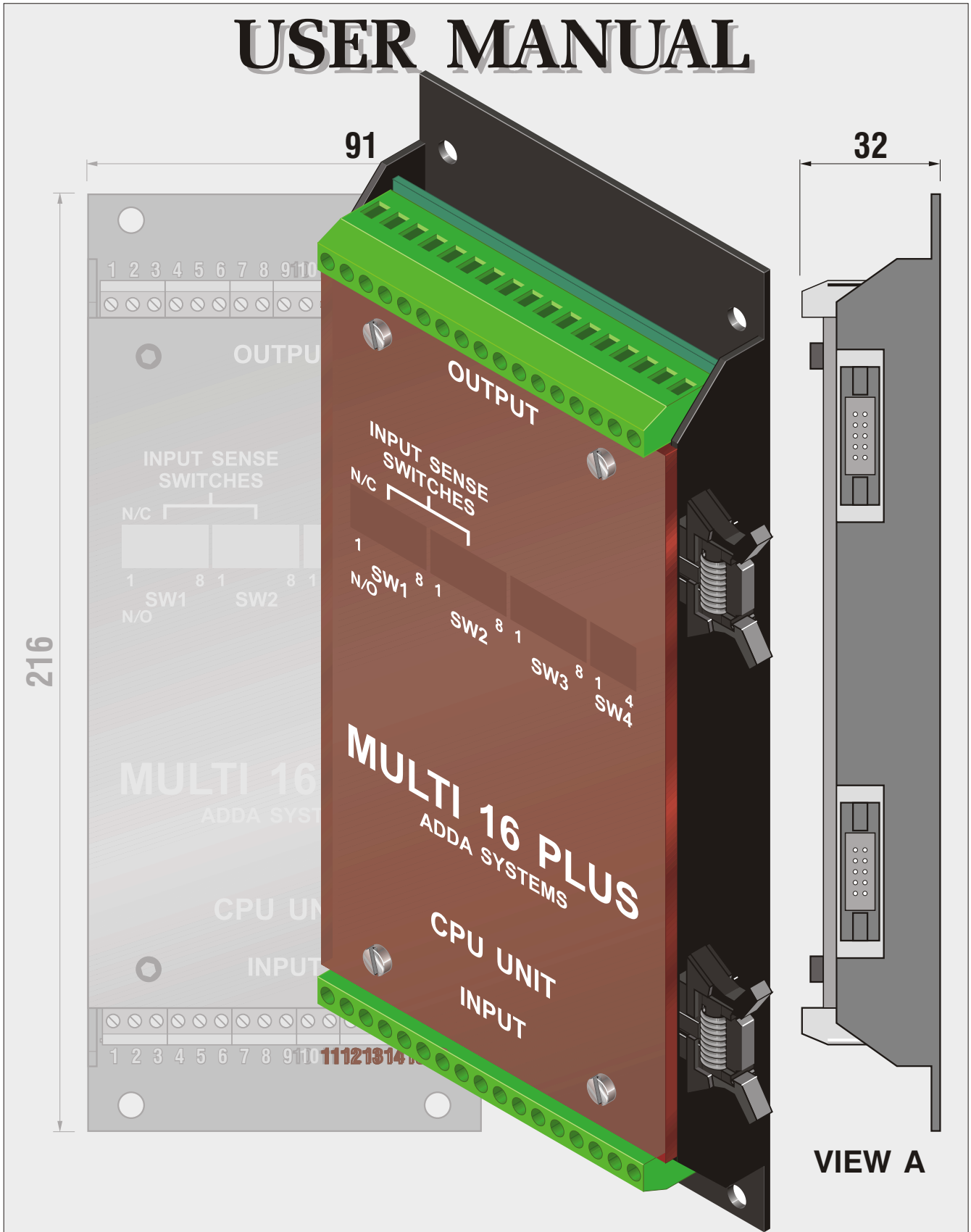


MULTI 16 PLUS

BY ADDA SYSTEMS

USER MANUAL



The ADDA range of compact annunciators incorporate the latest microprocessor technology to provide a versatile and flexible alarm system suitable for a wide range of applications.

The basic system consists of a Power Supply and one 16 way CPU alarm unit. This may be extended in modules of 16 ways up to a maximum group of 1024 ways, to form a very large synchronised alarm annunciator. Each 16 way CPU unit can be extended to 32 ways with a low cost Extension unit.

Design Features

- ! Field selectable N/O - N/C input sense.
- ! Choice of 4 alarm sequences via dipswitch.
- ! Choice of 4 input delay options via dipswitch.
- ! Ringback option (indicates return to normal position)
- ! First on Fast Flash option (indicates first up alarm in a group of 32).
- ! Horn relay output for remote audible device.
- ! General alarm relay output for inhibit or control purposes.
- ! Acknowledge pushbutton input (doubles as Lamp Test).
- ! Reset pushbutton input.
- ! Flash synchronizing of adjacent units.
- ! Watchdog timer to monitor microprocessor.
- ! Microprocessor is galvanically isolated from inputs.
- ! Optional printer controller provides time stamped event records.
- ! Opto-coupled inputs for full isolation of field wiring.

MULTI 16 PLUS - Installation

Standard 16 Channel Unit

The basic system consists of one 16 input/16 output chassis and power supply.

Power Supply

The power supply unit consists of 3 separate supplies:

- A.** 8V DC for driving CPU units.
- B.** 24V DC for driving the outputs.
- C.** 24V DC (ISOLATED) for driving the inputs.

Supplies **A** and **B** share a common negative supply rail connected at the common earth point (CEP). Supply **C** is completely isolated.

Connect the 14 way ribbon cable between J1 on the CPU unit and the power supply (See page 3), J2 is for expansion modules. (See "Extension Units" below)

Output Wiring

The outputs are standard darlington open collector drivers (ULN2003). LEDs may be driven directly from the unit, an internal resistor provides the necessary current limiting for standard LEDs supplied from a 12~24V power supply. These internal resistors may be shorted out by melting a blob of solder across the shorting pads provided on top of the printed circuit board(see diagram on page 2), should any other type of output device such as relays or incandescent lamps be required.

Input Wiring

The inputs may be wired from the isolated 24V supply available on the standard power supply unit or from any external isolated power supply if required. The input will be "ON" when between 12 and 24V is applied to the opto-coupler. The return line is common to all modules. A minimum input debounce delay of 4mS is standard, longer delay options are set via the dipswitches.

The acknowledge and reset inputs are opto-coupled and are also driven by this power supply. Only one common set of buttons is required for a complete group.

Extension Units

An additional 16 input/16 output expansion module may be added to the CPU unit to provide a 32 channel alarm system. All 32 channels will follow the same program options selected on the DIP switches, including call back and first out functions. The input/output wiring and input sense selection is similar to the CPU unit. Use the 10 way ribbon cable supplied to connect the two units.

Setting the Dip-Switches

Each time a dip-switch setting is altered, it is necessary to switch the power supply to the CPU unit **OFF**, and then **ON** again to initialize the changes.

Step 1. Set SW1 and SW2 (SW5/6 on the expansion unit) according to the input sense of the alarm input. For a normally open alarm contact which closes under alarm conditions, set the dip-switch on the corresponding channel OFF.

For a normally closed alarm contact which opens under alarm conditions, set the dip-switch on the corresponding channel ON.

Step 2. Choose the desired alarm sequence option description described in pages 4~5 and set SW3. 1-3 accordingly.

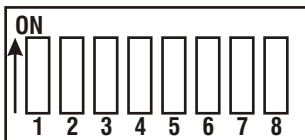
Step 3. Choose the delay option description in page 4 and set SW3.4-5 accordingly. (See "Follower Option")

Step 4. The ringback and first-on-fast flash options are enabled with SW3.6-8. These should be disabled (switch in the ON position) if not required.

Step 5. If more than one CPU unit is installed in a grouped system, then one and only one of the units must be set up as the master. This is necessary to insure the flash synchronization of the of the slave units. Set SW4 all off for one of the CPU units (master) and any address between 1 and 8 for the other slave units. Up to 32 CPU units may be linked in this way. The RS485 I/O terminals on each power supply must be connected in parallel. i.e. Join terminals 13 & 14 on each P.S.U.

Step 6. This steps only required if the alarm printer is installed. Each CPU unit must be given a unique address in order for the intelligent alarm printer to identify the input and log the event. The units are numbered 1 to 8 via SW4. The printer will perform the master function of the group. A maximum group of 8 slaves with printer server as master may be implemented. Refer to the printer manual for further information.

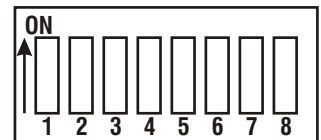
DIP-SWITCH 1



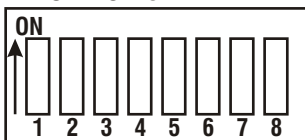
DIP-SWITCH 1 AND 2 FOR INPUT POLARITY

OFF CLOSING CONTACT = TRUE ALARM
ON OPENING CONTACT = TRUE ALARM

DIP-SWITCH 2



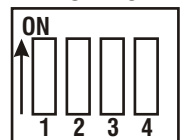
DIP-SWITCH 3



LEGEND

- Don't Care
- Switch On
- Switch Off

DIP-SWITCH 4



ALARM SEQUENCE

- 1 AUTO RESET
- 2 KEY RESET
- 3 MOTOR STATUS
- 4 GREEN OK
- 5 (FUTURE)
- 6 (FUTURE)
- 7 (FUTURE)
- 8 (FUTURE)

INPUT DELAY

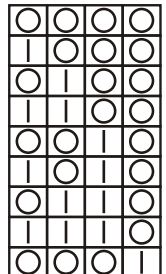
- 1 NO DELAY (40mS)
- 2 ONE SECOND
- 3 FIVE SECONDS
- 4 TEN SECONDS

ALARM OPTION

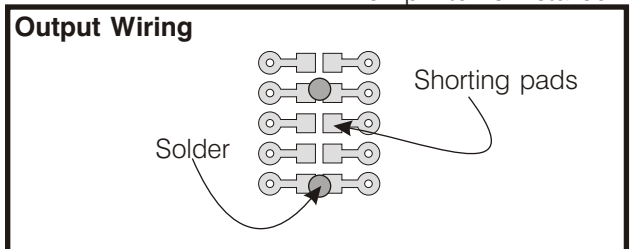
- 1 RINGBACK
- 2 FIRST-ON-FAST FLASH
- 3 (FUTURE)

CPU ADDRESS

- MASTER
- SLAVE1
- SLAVE2
- SLAVE3
- SLAVE4
- SLAVE5
- SLAVE6
- SLAVE7
- SLAVE8



Slave address is only significant when printer is installed

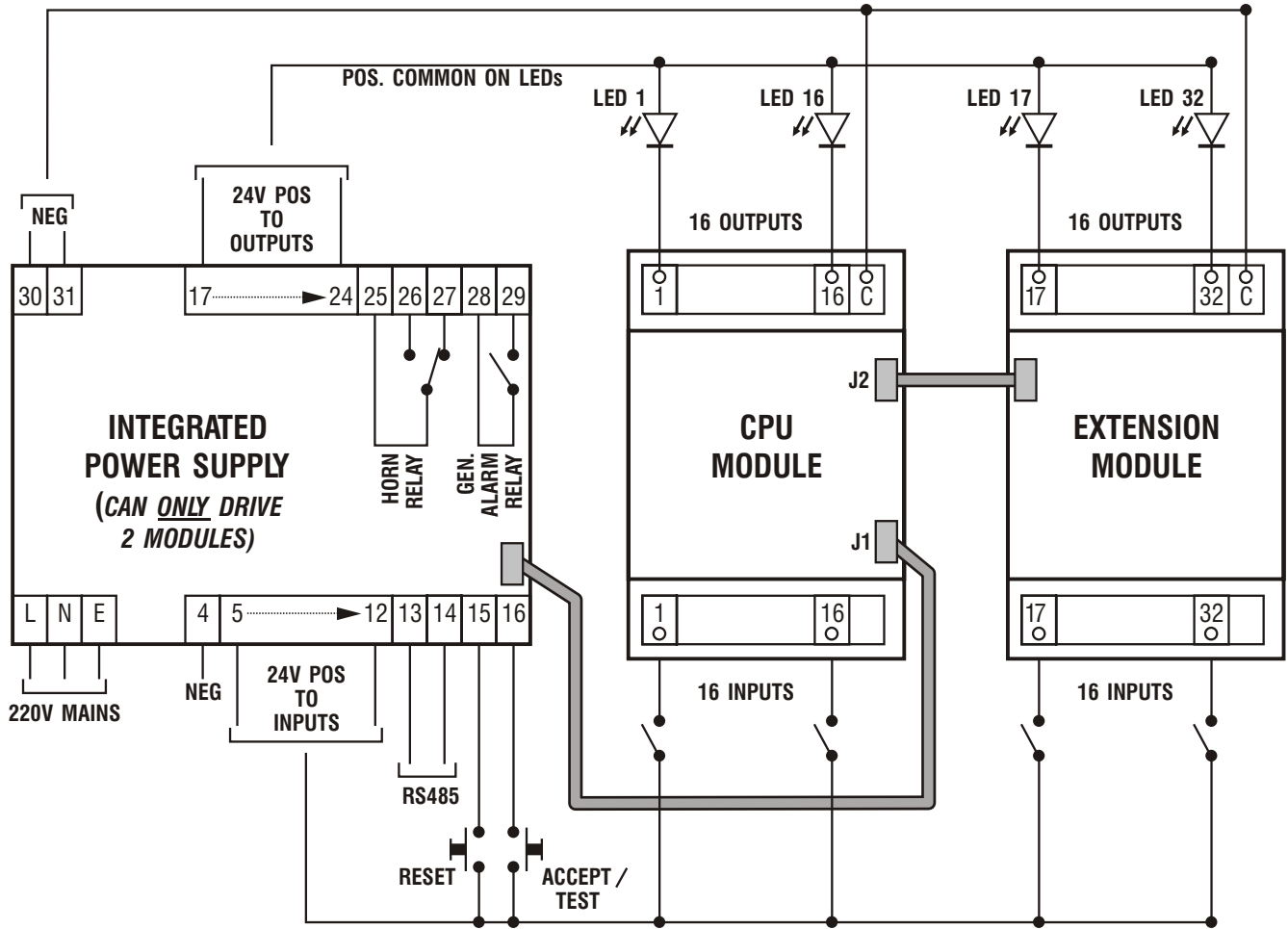


MULTI 16 PLUS - Integrated Power Supply

(Maximum 2 modules)

multi 16 plus.4

BLOCK DIAGRAM



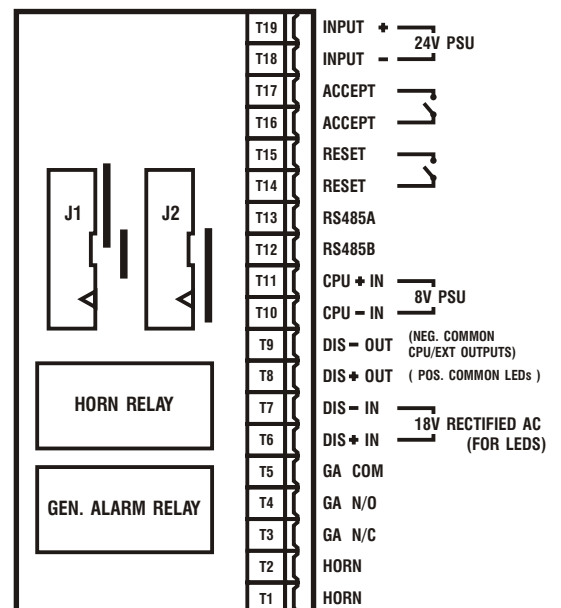
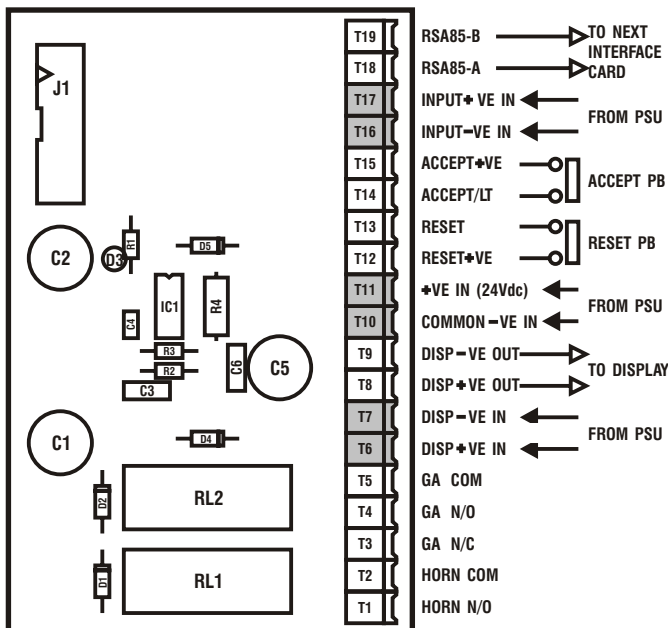
MLT 16-PSU 98-1

MULTILARM INTERFACE CARD

External Power supply interface card

- Capable of driving 2x Multi 16 + 2 extension modules
- Single power supply or multi isolated power supply usage

For large systems use this "multilarm interface card"



Shaded terminals must be connected to supply

SEQUENCE 1 - Auto Reset

Momentary (fleeting) alarm, lamp slow flash. Horn is silenced with the Accept pushbutton. Lamp to steady. Auto reset when input returns to normal.

SEQUENCE 2 - Key Reset

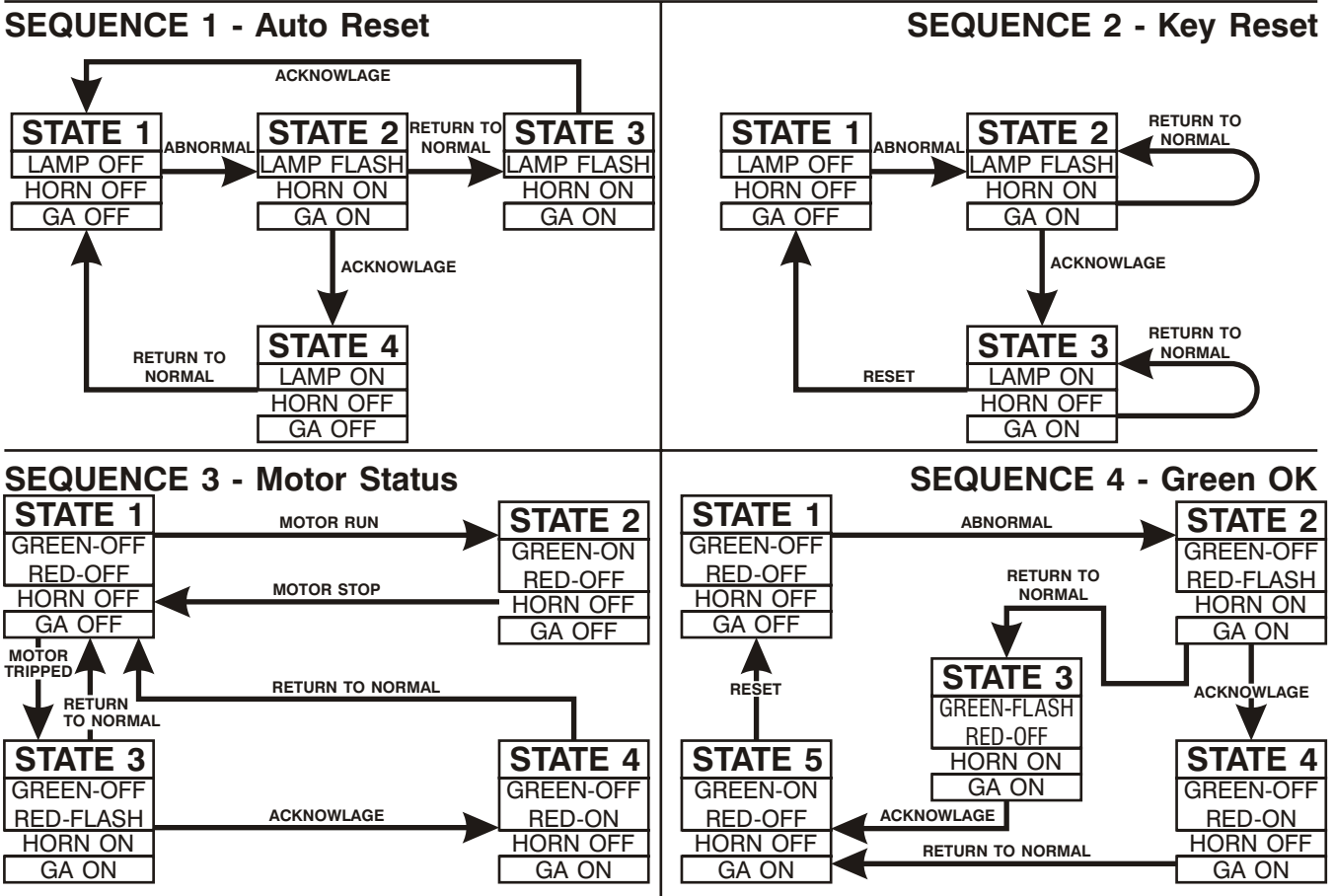
Momentary (fleeting) alarm, lamp slow flash. Horn is silenced with the Accept pushbutton. Reset (key-switch) is only possible when input returns to normal after acceptance.

SEQUENCE 3 - Motor Status

Inputs from field 'motor run' and 'motor tripped' contacts requires two inputs and two outputs per channel. Motor run lamp (green) follows first input. Motor tripped lamp (red) flashes with second input, horn may be silenced with the Accept pushbutton. Eight motors may be monitored per alarm module.

SEQUENCE 4 - Green OK

Eight inputs drive 16 lamps, a red and green lamp per input channel. The remaining 8 inputs are not used.
 ABNORMAL STATE Red flashing.
 Red steady (acknowledged).
 RETURN TO NORMAL Green flashing.
 Green steady (acknowledged).
 Reset pushbutton only when input is normal.



Ringback Option

Provides an indication when any alarm returns to the normal state. The horn relay will energise for approx. 1 second whenever an input reverts to the normal state. This option has no effect if the Motor Status sequence is selected.

Delayed Input Option

Four time delay values may be selected from the option dip-switch. The input will not be recognized as abnormal until the expiry of this delay.

- DELAY 1 No delay (4mS)
- DELAY 2 1 Second
- DELAY 3 5 Seconds
- DELAY 4 10 Seconds

First On Fast Flash Option

This option provides an indication of the **first** of a group of alarms to go abnormal according to the logic below. A group is defined as one CPU unit and optionally one extension unit. This option has no effect on the Motor Status, sequence

- A. An all clear condition is assumed at the start (no lights on).
- B. The first alarm to go abnormal will follow the standard sequence described in alarm sequences. (See page 4)
- C. The second and subsequent alarms will also follow the standard sequence but will cause the first alarm to fast flash. The first alarm will continue to flash fast until all alarms have been cleared & reset.
- D. The sequence is "rearmed" for the next off when all alarms have been cleared & reset.

MULTI 16 PLUS Specifications

Power Supply

INPUT	220V AC
OUTPUT A For Indicators	24V DC 1.5A
OUTPUT B For CPU	8V DC 300mA
OUTPUT C For Inputs	24V DC 750mA

Alarm Inputs

Optocoupled as above.	
Galvanic Isolation	1500V
INPUT Voltage	12~24V DC TYP 12V DC
INPUT Current	ON 7~14mA OFF <1mA
INPUT Debounce Delay	40mS (Opening & Closing)

Pushbutton Inputs

Acknowledge and Reset,
(Acknowledge doubles as Lamp Test)
Optocoupled as above,
suitable for normally open contacts only.

Lamp Drivers

Open collector (ULN2003)
Max. Output Current: ...
15mA per channel using internal resistors
50mA per channel with resistors shorted.

Relay Outputs

Horn Relay	SPST
General Alarm Relay	SPDT
Max. Current	2A 250V AC

Dimensions

90mm Wide x 220mm High