

ALARM MESSAGE DISPLAY & ALARM INDICATOR INSTALLATION AND OPERATING MANUAL

Alarm Message Display and Alarm Indicator ASL, Pharmagraph Division



AN1440 Message Display



AN1220 Alarm Indicator

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DOCUMENT REVISION HISTORY

Date	Revision	Updated by	Detail
16 Apr 2009	1.0	K.J.McWilliam	Initial release for Rev C/D copper
09 Sep 2010	1.1	J. Wallingford	Document title changes
11 Nov 2013	1.2	K.J.McWilliam	Switches changed to provide host RS485 bus bias instead of termination
09 Sep 2014	1.3	K.J.McWilliam	Address changed
11 Sep 2017	1.4	K.J.McWilliam	Added Diagnosis section
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FIRMWARE REVISION HISTORY

Date	Revision	Updated by	Detail
08 Apr 2009	CA	K.J.McWilliam	Initial release for Rev C/D copper
24 Jan 2011	CB	K.J.McWilliam	RS485 bus now powers up with TX OFF.
02 Nov 2011	CC	K.J.McWilliam	Fixed failure to drive amber lamps
19 Nov 2015	CD	K.J.McWilliam	Added diagnostic 'hold mute for version nos.'
11 Sep 2017	CE	K.J.McWilliam	Accommodated overlay Rev C with 3 buttons

1 INTRODUCTION

This document constitutes the Installation and Operating Manual for the multi-drop Alarm Message Display and Alarm Indicator series based on the 27051501 revision C/D PCB.

The AN1440 alarm message display is used to alert staff within a clean room that critical parameters are out of limits. The stainless steel plate and wipe clean surface allow installation in high classification areas, offering information right where it is needed. A bright red lamp indicates the presence of one or more parameters that are out of compliance within the local area. The AN1440 features an alphanumeric display that clearly shows the out of compliance parameters with their description and real-time value. A sounder announces the arrival of a new alarm condition, and continues to sound until silenced by pressing the 'mute' button. This means that operators are made aware of potential problems at the earliest opportunity and can take appropriate action without leaving the clean room. The AN1220 omits the alphanumeric display and is therefore physically smaller but otherwise retains the same functionality.

The devices support dual-redundancy by offering an auxiliary communications port that can be connected to a second 'hot-standby' PC. In the event that the main PC fails, the Alarm Message Display or Alarm Indicator will continue to operate via the second PC.

2 SPECIFICATIONS

AN1440:

- Four lines of 40 characters show local parameters currently in alarm.
- High intensity Red and Green lamps show 'out of limits' or 'in limits' conditions locally.
- Built-in sounder announces appearance of new alarm conditions.
- Local mute button silences the sounder without leaving the room.
- Housed in a 316 stainless steel enclosure.
- Face plate dimensions: W285mm x H200mm x D3mm.
- Back box dimensions: W250mm x H160mm x D45mm.
- Power supply: 18VDC to 36VDC, 6W (extra when driving external outputs).
- Interfaces: RS485 2-wire multi-drop supporting up to 32 displays/indicators.
- Directly drives external beacon/sounder stack, up to 500mA per output, 2A total.

AN1220:

- High intensity Red and Green lamps show 'out of limits' or 'in limits' conditions locally.
- Built-in sounder announces appearance of new alarm conditions.
- Local mute button silences the sounder without leaving the room.
- Housed in a 316 stainless steel enclosure.
- Face plate dimensions: W145mm x H85mm x D3mm.
- Typical Back box dimensions: W135mm x H73mm (aperture required) x D40mm deep.
- Power supply: 18VDC to 36VDC, 2W (extra when driving external outputs).
- Interfaces: RS485 2-wire multi-drop supporting up to 32 displays/indicators.
- Directly drives external beacon/sounder stack, up to 500mA per output, 2A total.

3 MOUNTING DETAILS

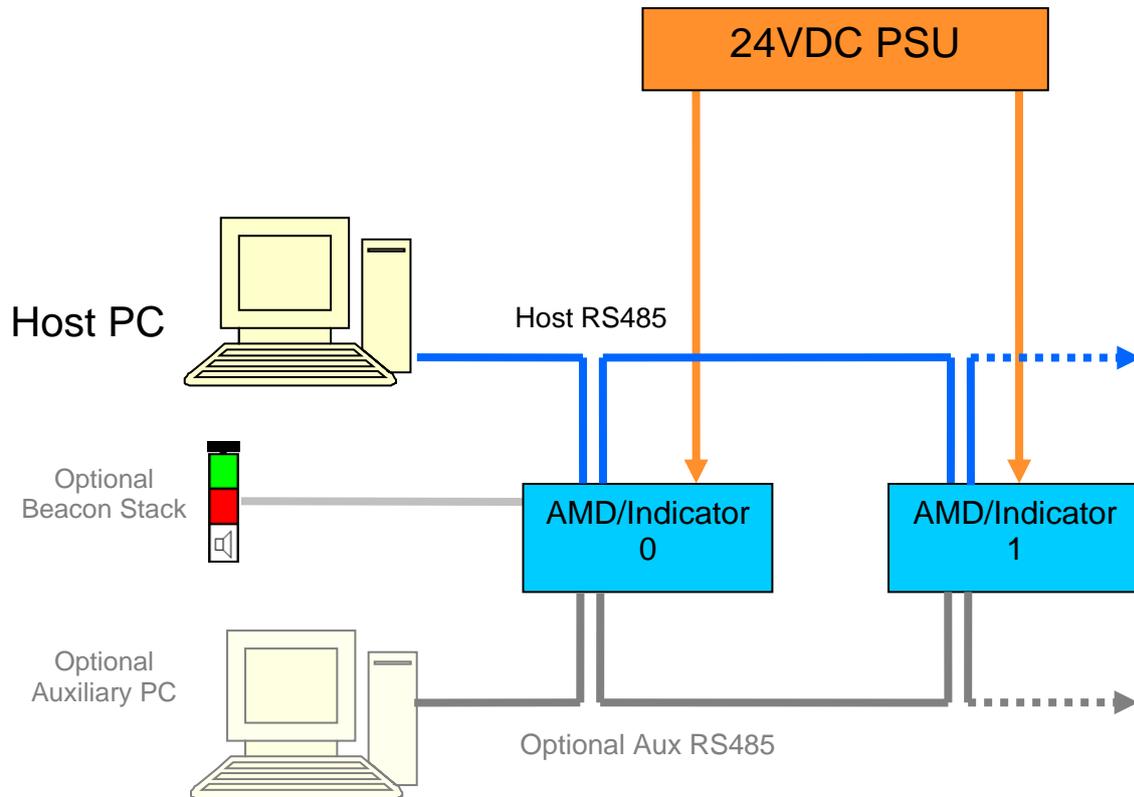
The AN1440 is designed to be glued or screwed in place within the clean room to minimise surface crevices. Approximately 16mm of flange is formed between the outer dimensions of the face plate and the outer dimension of the back box to facilitate this mounting.

The required aperture in the wall to accommodate the back box is 163mm high by 253mm wide by 48mm deep.

The AN1220 is designed to be screwed to a plastic back box that requires an aperture of 135mm by 73mm by 40mm deep.

4 OVERVIEW OF THE ALARM MESSAGE DISPLAY/ALARM INDICATOR

The general arrangement is shown below:



Each AMD/Alarm Indicator is designed to be fitted within the clean room and needs to be supplied with 24VDC power and RS485 communications.

4.1 24Vdc Power Supply

A suitable 24Vdc power supply should be provided to each AMD/Alarm Indicator. The controller PCB uses an on-board integrated switching regulator to generate the +6V supply rail necessary to power the display backlight (AN1440 only) and a linear regulator to generate the 5V logic supply for the board from the 6V rail.

4.2 Host Communications Interface

The host RS485 bus from the PC should be looped into and out of each AMD/Alarm Indicator in turn, until the last AMD/Alarm Indicator is reached. The final AMD/Alarm Indicator in the chain is a convenient place to enable the RS485 bus bias by switching S5/5 and S5/6 to 'ON' on the controller 27051 PCB.

Note that only one device on the entire RS485 bus should have bus bias switched on.

The controller PCB uses JP6 (RS485 in) and JP7 (RS485 out) as the RS485 interface to the host PC.

The host RS485 port has two diagnostic LEDs to assist in on-site fault finding. The red LED (D9) pulses for 10ms for each *received* character and the green LED (D10) pulses for each *transmitted* character.

4.3 Auxiliary Communications Interface

When used in a dual-redundant system the auxiliary RS485 bus from the hot-standby PC should be looped into and out of each AMD/Alarm Indicator in turn, until the last AMD/Alarm Indicator is reached. The auxiliary bus has no on-board means to enable bus bias and should be provided externally if found necessary.

The controller PCB uses JP15 (for both RS485 in and out) as the connection to the hot-standby PC.

4.4 Setting the Message Display Device Address

Two binary-coded-decimal address switches (SW2 and SW1) on the 27051 controller PCB are used to define the host RS485 address, and must be set in the range 00 to 31 to correspond with each device address set up in the Alarm Message Display driver software.

4.5 Selecting Optional Modes

Various operating modes may be selected using SW5 positions 1 and 4 (annotated as M3 thru M0). M2 and M3 are associated with the sounder behaviour, while M1 and M0 are associated with the red lamp behaviour.

M0	Action
0	On-board red lamp flash rate 4Hz (125ms on, 125ms off)
1	On-board red lamp flash rate 1Hz (500ms on, 500ms off)

M1	Action
0	External red lamp constant (no flashing)
1	External red lamp flashes at 4Hz or 1Hz determined by M1 switch

M2	M3	Action
0	0	Constant sounder
1	0	Pulsed sounder @ 4Hz
0	1	Pulsed sounder @ 1Hz
1	1	Sounder disabled

The two remaining positions (SW5/5 and SW5/6) allow host RS485 bus bias to be switched on and should be used on only a single device on the host bus.

SW5/5	Host pd	ON for only one device on bus	Host RS485 bus biased
SW5/6	Host pu	ON for only one device on bus	Host RS485 bus biased

5 CONNECTING THE ALARM MESSAGE DISPLAY/ALARM INDICATOR

5.1 DC Power In

Connect the 24V DC supply to JP3.

27051 JP3 Pin No.	Signal Description
1 (nearest to JP3 annotation)	+24V
2 (nearest to edge of board)	0V

5.2 DC Power Out

If “daisy chaining” the 24Vdc power, then JP4 may be used to supply 24Vdc to the next AMD/Alarm Indicator.

27051 JP4 Pin No.	Signal Description
1 (nearest to JP4 annotation)	+24V
2	0V

5.3 Host RS485 In

Connect the RS485 bus from the host (or previous AMD/Alarm Indicator) to Controller PCB JP6 via the 3 pin header plug.

27051 JP6 Pin No.	Signal Description
1 (nearest to JP6 annotation)	A
2 (middle)	B
3	Screen

5.4 Host RS485 Out

Connect the RS485 bus to the next AMD/Alarm Indicator to Controller PCB JP7 via the 3 pin header plug.

27051 JP7 Pin No.	Signal Description
1 (nearest to JP7 annotation)	A
2 (middle)	B
3	Screen

5.5 Auxiliary RS485

If using an auxiliary RS485 bus from a second host to implement dual redundancy, then this should be connected to Controller PCB JP15 via the 3 pin header plug. Note that daisy chaining (RS485 in and RS485 out) must be implemented using two wires to each pin of this single connector.

27051 JP15 Pin No.	Signal Description
1 (nearest to corner of board)	A
2 (middle)	B
3	Screen

5.6 Mute Button Input

JP14 provides the connection to the mute button. The input is internally pulled up to +5V and is designed to be used with a momentary action button and is normally connected to the local membrane switch.

27051 JP14 Pin No.	Signal Description (older overlays)	Signal Description (Rev C overlay)
1	0V	0V
2	Mute button	<reserved>
3	<reserved>	Mute button
4	<reserved>	<reserved>

5.7 External Beacon/Sounder Drive

JP8 provides the connection to an external 24V beacon/sounder stack.

27051 JP8 Pin No.	Signal Description
1	0V
2	Green lamp drive
3	Red lamp drive
4	Sounder drive
5	Amber lamp drive

Each output supplies switched 24Vdc via a P-Channel FET and can directly drive industry standard beacon/sounder stacks that are configured with common ground connections (common cathode in the case of LEDs).

NOTE: if driving relays, it is recommended that non-pulsed sounder and non-flashing lamp behaviour is selected using SW5 (see section 4.5). This will avoid premature wear of the relays.

6 DIAGNOSTICS

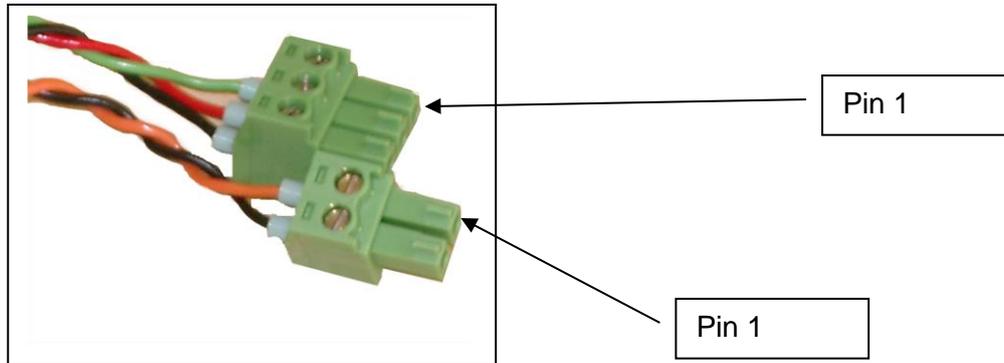
During on-site commissioning or after the alarm indicator is installed in the field, the mute button can be used to determine certain information.

If the mute button is held continuously for five seconds, the sounder will sound and the LEDs will flash the firmware version: red for the major version and green for the minor version e.g. three red followed by five green flashes means firmware 3.5 also known as 'CE'.

7 ORIENTATION OF HEADER CONNECTORS

To improve ease of installation, two part headers are used for connections to the AMD PCB.

It is vital that the correct orientation of the two part connectors is observed. Pin 1 of the header on the PCB is always at the *left* when looking into the header with the PCB viewed from the edge. Failure to observe the correct orientation may result in damage to the system.



Orientation of pin 1 on two-part headers

8 HEADER CONNECTORS DIAGRAM

