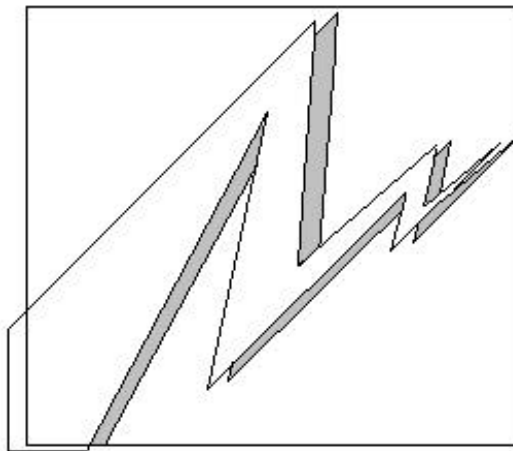# P2282
ALARM PANEL

USER MANUAL

FOR OPERATING SYSTEM 21908-01

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1   Introduction

P2282 INTRODUCTION

The P2282 Alarm Panel is designed to monitor up to 8 local inputs and up to 160 networked inputs. Both audible and visual indication of any alarm condition is provided. Networked input information is obtained from other panels connected to the network.

Each local or networked input can be programmed to have a unique message assigned to it which will be displayed when the input is in the alarm condition. In addition to the message, one of two LED's can be selected to provide a steady or flashing status. If the non-alarm condition is satisfied on all inputs used, a common "system normal" message is displayed along with the green LED. If more than one alarm condition exists simultaneously, the appropriate messages are displayed in sequence, however the highest priority LED (Red) will always be displayed should one of the messages require it. This warns the operator that an emergency message is contained in the rotating sequence even if the current message being displayed is of a low priority. The numer of messages in alarm is also displayed on the single digit 7 seg. Display. If there are more than 9 alarm messages the 7 seg. Display will flash 9.

The audible alarm is sounded with each new alarm condition detected. It can be muted using the mute switch, however it will sound again after a predefined time should the alarm condition still exist.

Local input connections and network connection to the P2282 is made via plug in terminal blocks and 8 way plug/socket respectively. The terminal blocks and 8 way sockets are mounted on a separate dedicated PCB that can be suitably mounted at the installation wiring stage. This allows the main electronics to be kept safely out of harms way until final commissioning of the system, at which point, the main electronics is plugged into the connector PCB via a ribbon cable and a network link cable.

If networking is not required, it can be disabled by removing a plug in link on the connector PCB, the unit then functions as a "local" 8 input stand alone alarm panel.

All P2282 programming is done via a 4 pin RS232 plug and socket that couples it to a computer. This feature permits full custom set up of Messages, LED's, Input Type, Audio Repeat Period etc.

2   Unit Description

FRONT PANEL - Main Electronics

The main electronics PCB is mounted to a metal backing plate.
The front panel presents the operator with the following items.
A 20 digit 5x7 dot matrix vacuum fluorescent display.
Three LED's, 1 x Red, 1 x Amber, 1 x Green.
Three switches, Test, Mute & Audio Level Check.
A single digit 7 segment led display.

1) <u>20 Digit Display</u> - used to convey all messages to the operator.

2) <u>3 LED's</u> - There are 3 LED's, Red, Amber & Green associated with input alarm conditions. These LED's provide an operator with a quick visual status of the panel. If the green LED is on, all is considered normal, this LED is associated with the "System Normal" message only & does not flash. The Red and Amber LED's are associated with alarm messages, providing a simple method of prioritorising an alarm as a warning (amber) or emergency (red), both Red and Amber LED's can be on solid or flashed when illuminated, this depends on what was selected when the panel was being programmed.
Messages providing information on the panel itself will use the amber warning led, these messages include input S/C or O/C problems, network problems etc.

3) <u>Switches</u> - There are three switches, Test , Mute & Display audio level.

Mute is used to silence the audible alarm once an operator has been made aware of the alarm condition. The mute button is also used to put the panel into "off" mode. (see operation section)

Test switch initiates a test cycle that sounds the audible alarm, cycles each LED on & off, then cycles through all the messages programmed, both local and networked, with their associated LED's, the test routine is then terminated. The test cycle can be terminated at any time by operating the Test switch a second time. The test program is automatically terminated if an alarm condition is detected while in test mode.

Display audio level sounds the audio and uses the display as a bar graph to display the level setting. The level display will auto cancel after 3 sec, or it can be manually cancelled be operating the display audio level button a second time.

4   <u>7 Segment Display</u> – The seven segment display shows the number of inputs in alarm so that the operator will know how many messages are being displayed. If there are more than 9 inputs in alarm the display will show 9 and flash.

RS232 SERIAL PORT SOCKET

The RS232 connection is made via a 4 way socket on the right side of the unit, (see fig 5 below). When connected to a computer running "APM" software supplied by Associated Controls, the operator can configure the P2282 as required.

NETWORK SOCKET

The network connection is made via either one of two 8 way sockets on the connector PCB, (see Fig 5 below). Two sockets are provided, should a "daisy chain" wiring configuration be required. The third socket is the link back to the main electronics PCB. The system wiring can be of any configuration as shown if Fig 1 to 4 below, however there are limits on the cable length. The maximum total wire length in the installation is 450 metres and the maximum distance between any node to any node, or a termination is 250 metres.
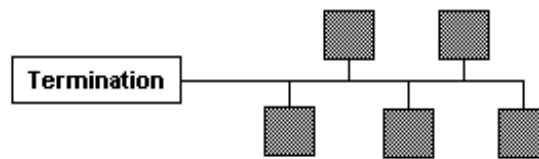
The cable length figures above apply to a category 5 utp solid twisted pair cable. Only 2 of the 8 ways of the network socket are used at this stage, (see specifications for pinouts) 8 way is provided for future expansion.
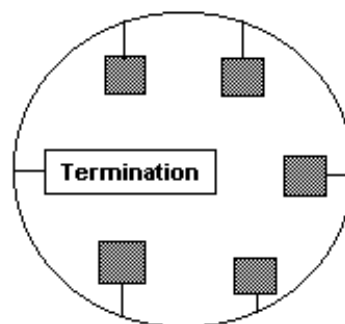
Figure 1 Loop Topology
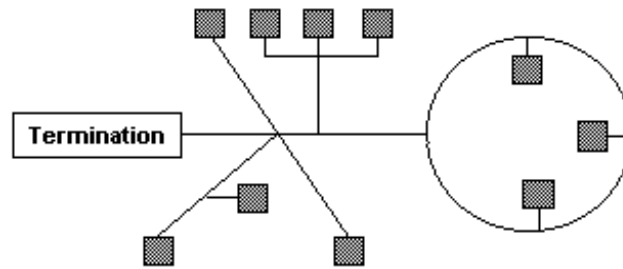
Figure 2 Mixed Topology

Figure 3 Single Terminated Bus Topology
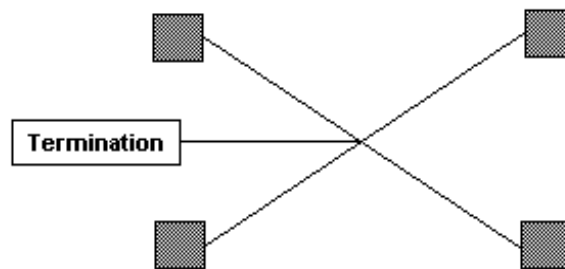
Figure 4 Star Topology

NETWORK TERMINATION LINKS

While the network system used by the P2282 is of a "Free Topology" nature, it still requires one termination on the network. It is not critical where the termination should be, so long as it is there. Each panel has the ability to provide the termination, only one on the network is required. The termination selection link is on the connector PCB, it is labelled "J1" "TERMINATION". To provide termination the link should be installed, leave it out if termination is not required.

NETWORK SELECT/DESELECT LINK

A network select link is provided on the left hand side of the main board labelled as "CON2" "NETWORK SEL". If this link is left out the

P2282 functions as a "stand alone" 8 local input alarm panel. All network functions are ignored, therefore no network error messages will be displayed.
If this link is installed, the P2282 functions as a fully networked panel and expects to communicate with other panels as set up at installation. If communication is lost with these panels, error messages will be displayed to that effect.

ALARM STATUS RELAY

There is an alarm status relay provided, this relay is wired as a fail safe device, being normally energised in the non alarm state & de-energised in the alarm state, thus providing an alarm signal should supply to the panel fail, or in the event of an alarm during normal operation. Connection to the relay contacts is via a terminal block on the "Connector PCB".

CONNECTOR PCB

All connections to the P2282 are made via the separate terminal block PCB. There is a 12 way T/B with 8 inputs & 4 commons, a 6 way block providing connection of supply and a clean set of changeover contacts from the alarm status relay, plus, a second 6 way block for network connection as an alternative to the 8 way sockets.

INPUTS

The 8 inputs can be configured to accept a switch input directly or to monitor the input line for alarm, non-alarm, open circuit or short circuit conditions. All 8 inputs must be configured as switched or monitored, they can't be mixed. Each input has an internal 1K pullup resistor to supply current from an internally regulated 7.5V supply, to the external switch or line monitoring circuit.

In switched mode an input voltage less than 3.6V is considered to be in the non-alarm condition. Above 3.6V is considered as an alarm condition.

Monitored inputs rely on a balanced string of resistor values to operate correctly. This resistive string is distributed between the monitor PCB mounted in the pressure switch housing and the alarm panel input itself. Each input provided a current sourcing resistor to drive the monitor PCB. The monitor PCB in the switch housing can only drive one input, if connection is made to multiple inputs the line monitoring system balance will be upset and it will not work.

In monitored mode an input voltage below 1.65V is a short circuit, between 1.65V - 3.68V is the non-alarm condition, between 3.68V - 5.8V is the alarm condition, above 5.8V is an open circuit. The following summary shows the relationship between the input voltage

and the corresponding analogue value expressed in both decimal and hexadecimal. The alarm and non-alarm figures shown, show a monitored line with zero resistance (470R & 1470R) and one with a total of 150 ohms (620R & 1620R).

SUMMARY
MONITORED MODE

```
x.....................  x.............. x.......... x....... x....... x....... x....... x.....................  x
|       S/C       |      NON-ALARM      |    ALARM     |         O/C          |
0                56       |       |       123  |    |       194              244
0                $38      |       |       $7B  |    |       $C2              $F4
0V               1.65V    |       |       3.68V|    |       5.8V             7.5V
                          |       |            |    |
MON.  BRD  READINGS       |       |            |    |
                          81      97          150
                          $51     $61         $96
                          2.4V    2.9V        4.46V
                          470R    620R        1470R
                                                 |
                                               156
                                               $9C
                                               4.64V
                                               1620R
```

SWITCHED MODE

```
x.....................................………. x.................................................  x
|               NON-ALARM               |               ALARM                |
0                                        122                                  244
0                                        $7A                                  $F4
0V                                       3.6V                                 7.5V
```
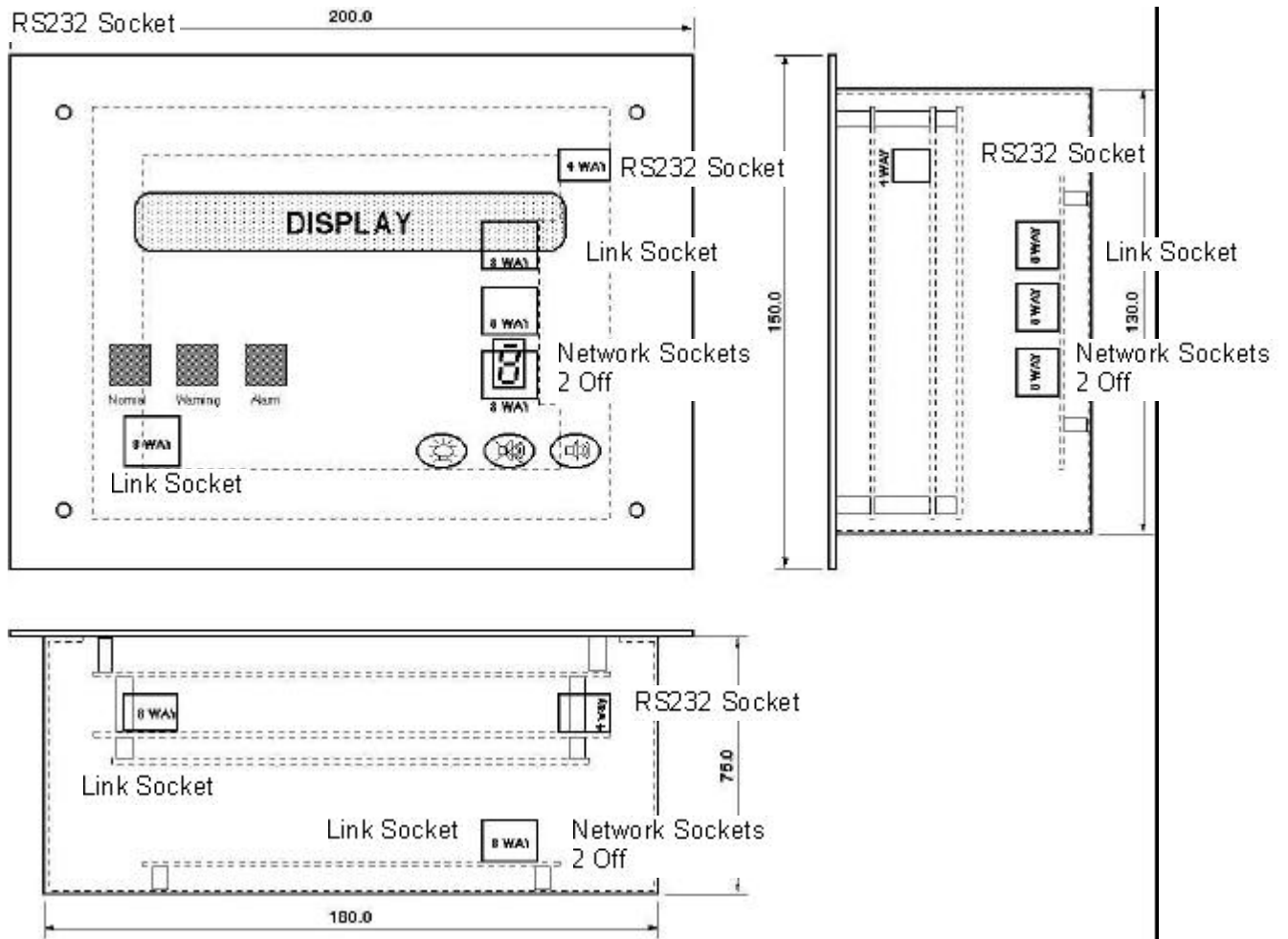
SOCKET POSITION DETAIL

Figure 5

3   Unit Operation

USE OF UNIT

From the user point of view there is very little to know. An understanding of the messages and the priority rating of the LED's is essential, This is a "local", or "site" issue and can't be explained here. Otherwise, there are only three pushbuttons that can be operated on the front panel, "Test", "Mute" & "Display Audio Level".

Mute   The Mute pushbutton is used to silence the audible alarm once an alarm has been raised. If the alarm condition is forgotten, and left unattended, the audible alarm will sound again after a predefined period as a reminder, again it can be silenced with the Mute button. This cycle will continue until the alarm condition is removed. The predefined period is selected and set at installation.

Test   The Test button initiates a test cycle that sounds the audible alarm, cycles each LED on & off, then cycles through all the resident messages programmed, both local and networked, with their associated LED's, the test routine is then terminated. The test cycle can be terminated at any time by operating the test button a second time. The test program is automatically terminated if an alarm condition is detected while in test mode.

Display Audio Level The display audio level button allows the operator to view and hear the current audio level that is programmed. Operation of this button will sound the audio and convert the display to a horizontal bar graph that displays the set level. The audio level can be set at 1 of 8 levels when the unit is programmed at installation. For each unit of level the display will show a "O", therefore level 1 will show 1 "O", level 2 will show 2 "O", and so on up to 8 "O" for level 8. This display mode will self cancel after 3 sec, or can be manually cancelled by operation of the "display " button a second time.

UNIT SET UP - Installer Accessible Only

With the exception of those hardware features already described, the P2282 is configured at installation using "APM" (Alarm Panel Management) software supplied by Associated Controls. The "APM" software is run on a suitable computer connected to the P2282 panel via the RS232 socket.
The "APM" software has its own User Manual giving detailed instruction on its use. A summary only of the features will be given here.

The "APM" software has two sections.

1)   File Generation Mode

File generation is the first step in setting up a P2282 panel. It contains all the messages. both local and networked, with associated LED information. It also contains a unique panel ID number, identification message, audio level, audio repeat time & local input mode (switched or monitored) The computer need not be connected to the P2282 at this stage.
This file can be downloaded to a P2282 panel using the second section "monitor mode". No further panel setup is required if the file information is correct.

2)   Monitor Mode

The Monitor Mode is used to communicate with the P2282, the computer must be connected to the P2282 panel when using this section.
When the communications cable is connected to the P2282 panel the message " SETUP MODE" will be displayed when the panel is ready to proceed.
The functions provided in monitor mode are as follows:-

Download
        Used to send a file generated under "File Generation" to the P2282 panel.

Upload
        Used to receive a file from a P2282 panel. This is useful if a panel setup has been modified and a file record is required, it can be uploaded from the panel, therefore, it is not necessary to generate a new file under "File Generator"

Display Setup
        Will display the current panel setup information
        Unit ID
        Unit Message ID
        Number Of Local Messages Programmed.
        Number Of Remote Messages Programmed
        Current Audio Level
        Current Audio Repeat time
        Current Input Mode

Display Messages
>Will display all the programmed messages, both local and networked.

Display inputs
>Will display in real time the current analogue value present at each of the 8 inputs. This command is a very useful tool during system commissioning. Input values are in hexadecimal.

eg.

```
NO. 01 02 03 04 05 06 07 08
I/P 55 56 56 DE 56 C4 55 56
```

Audio Level
>This function allows direct adjustment of the alarm audio level.

Audio Repeat Time
>This function allows direct adjustment of the alarm audio repeat timer.

Input Mode
>Used to directly select the local input operating mode ie. switched or monitored.

ERROR MESSAGES

The P2282 has numerous error messages that will be displayed. These messages are divided into two categories, those that will be displayed during normal operation and those that will be displayed during set up. What they are and their meaning is given below.

Normal Operation Error Messages
Displayed on the P2282 Display.

S/C I/P = (I/P No)

When the inputs are configured as monitored inputs, this message will be displayed if a short circuit is detected on an input.

O/C I/P = (I/P No)

When the inputs are configured as monitored inputs, this message will be displayed if an open circuit is detected on an input.

NO MESS FOR I/P = (I/P No)

This message will be displayed in either switched or monitored modes if the signal level on an input is such that it indicates an input device is connected and no associated message is programmed.

EEPROM FAIL, SERVICE

This message can be displayed at any time. It will occur if an unsuccessful attempt in made to write to the EEPROM. It if a serious problem and the P2282 should be returned for service.

NO I/P'S PROGRAMMED

If the P2282 is turned on with no inputs programmed this message will appear.

NETWORK COMMS FAIL

If total network failure is experienced this message will appear.

COMM FAIL, UNIT (panel ID number)

If network communication with a specific panel is experienced this message will appear followed by the lost panel ID number.

Set Up Mode Error Messages
Displayed on the P2282 Display.

CHKSUM MISMATCH
          or
BYTE CNT MISMATCH
          or
FILE TRANS NOT ACK

These messages will appear on the P2282 display if an error is encountered during the uploading or downloading of message files.

4   Specifications

SPECIFICATIONS

Power Consumption
<u>Operating Voltage</u> - 12 Volts AC +/- 10%

<u>Current Consumption</u> - 0.6 Amps

<u>Power Consumption</u> - 7 Watts

Environmental Conditions
<u>Operating Temperature Range</u> - 0 - 45 Deg C

<u>Operating Humidity Range</u> - 95% R.H. non-condensing

Inputs
All input devices should be of a passive nature. No externally generated voltages should be applied.

Maximum current supplied by an input circuit is = 7.5 ma.

Maximum loop resistance of input cable = 150 ohms

Relay Output
Alarm status relay contact rating = 1A @ 30V DC

Serial Output Format

1200 Baud, 8 Bit, 1 Stop, No Parity

Network Information

<u>Cable Type</u> - Category 5 utp solid

<u>Cable Length</u>
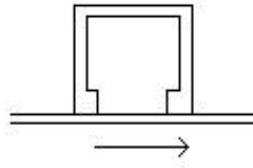Maximum total length in system   = 450 metres
Maximum length any node to any node or termination = 250 metres

<u>Network Frequency</u> - 78 kbps

<u>Maximum No. Of Nodes</u> - 30

Socket Connections

Pin numbering runs left to right
Figure 6

Figure 6 numbering applies to both 4 way RS232 socket and 8 way Network sockets

RS232 4 Way

Pin No.	Function
1	Common (Ground)
2	N/C
3	TXD (Data Out)
4	RXD (Data In)

Network 8 Way

Pin No.	Function
1	N/C
2	N/C
3	N/C
4	N/C
5	N/C
6	N/C
7	Network
8	Network