Ampac

Fire detection and evacuation solutions that save lives.

SmartTerminal

INTERNATIONAL COMPLIANCE

EN54: PT2 & 4

FireFinder

Installation Commissioning & Operation

MAN1537-6

Table of Contents Page No.

1 Introduction 3

1.1 Operation 3

1.2 Access levels 3

2 Specifications 4

2.1 Overview 4

3 Operational & Key Features 5

4 Mechanical 5

4.1 Mounting the Enclosure 5

4.1.1 Enclosure Details 5

4.1.2 Fixing the Chassis to the Wall 6

4.1.3 Board Removal / Replacement 6

4.1.4 Removing the Knockouts 6

5 Installation & Cabling 8

5.1 SmartTerminal Termination Board Interconnection 9

5.2 FACP Communications Extender Board Interconnection 9

5.3 Setting the Address 10

5.4 Setting the *SmartTerminal* in ConfigManager 10

5.4.1 Setting the *SmartTerminal* Reporting Parameters 10

6 SmartTerminal Controls and Indicators 13

6.1 LCD Screen Format 17

7 Trouble Shooting Chart 19

1 Introduction

SmartTerminal connects to the ***FireFinder***™ Fire Alarm Control Panel (FACP) via the RS485 multidrop communication port. Generally it is designed to be used anywhere where the status of the FACP is required to be monitored by local personnel and limited control is required.

- Front panel controls that allow the resetting of alarms and activation/silencing of alarm devices. Enabling operational access to the controls is via a key-switch;
- Reports events from devices that are accessible to the host FACP. For example if the host FACP is configured with global access then the connected ***SmartTerminal*** reports events from all devices. If the host FACP is configured as local then the connected ***SmartTerminal*** reports events from devices that are directly connected to the host FACP.

1.1 Operation

The operation of ***SmartTerminal*** can be considered to be in one of three states, these are;

1. Power up - when the SmartTerminal is initialising
2. Normal - when the SmartTerminal address has been set and is communicating with the FACP, reporting normal / abnormal conditions and controlling the FACP via the front panel controls
3. Fault where the SmartTerminal is in fault and/or is unable to communicate with the FACP.

Power Up

The LCD displays a message telling the operator ***SmartTerminal*** is being powered up and that the hardware is being initialised. Once the hardware has been successfully initialised set the address and ***SmartTerminal*** should automatically transition to the normal state. Should a failure occur on power up press the “RESET” button located on the LCD PCB (see *Figure 5*) and check the address is correct.

Normal

The Normal state is entered from the “Power-up” or a return from the “Fault” state and is displayed on the LCD if the ***SmartTerminal*** is communicating with the FACP and operating correctly. In this state the front panel Power indicator is illuminated.

Fault

SmartTerminal enters the Fault state upon;

- A hardware failure
- LCD module failure or
- A loss of communications with the FACP (indicated by the “DIAGNOSTIC” LED – not flashing and the “no communications“ message being displayed)

In a Fault condition the front panel NORMAL indicator is extinguished and the details of the fault are displayed on the LCD. The FACP will also indicate a fault in a similar manner.

1.2 Access levels

There are two levels of access.

Access level 1 only the Acknowledge, previous and next front panel controls are operative. All other controls operate in access level two.

Access level 2 is entered when the key-switch is in the ENABLED position.

Figure 1 Keyswitch in the Disabled / Enabled Positions

2 Specifications

MECHANICAL	
Dimensions ABS Cabinet: (mm)	195mm (H) x 345mm (W) x 50mm (D)
ENVIROMENTAL	
Temperature: Humidity:	-5ºC to + 55ºC 25% to 75%
INPUT POWER	
Operating Voltage (nominal): Operating Voltage (minimum): Quiescent Current @ 26.5VDC: Maximum Current: Cabling Requirements: Optional 27VDC Power Supply: Batteries:	27VDC 18VDC 12.4mA (back light, off buzzer off") 43.8mA (back light on, buzzer on) 2 core 1.5 to 2.5mm² 1.8A plus 400mA Battery Charging 12Ahr
27VDC OUTPUTS	
Auxiliary 27VDC Distribution Protection: Cabling Requirements:	24VDC 500mA Monitored 2 core 1.5 to 2.5mm²
COMMUNICATIONS	
Internal to FACP: External to FACP: Cabling Requirements: Fault monitoring: Maximum Number of SmartTerminal's per FACP: Maximum Distance (from FACP):	RS485 RS485 Twisted pair plus power O/C, S/C 30 1.2Kms.
LCD	4 line X 40 character - backlit

2.1 Overview

SmartTerminal essentially consists of three PCBs;

1. BRD82CEB2 – FACP – Communications Extender Board. The Communications Extender Board is mounted inside the FACP and provides the protected RS485 communications and 27VDC to the ***SmartTerminal*** Termination Board/s and LCD/s.
2. ***SmartTerminal*** Termination Board. A Termination Board is mounted in each SmartTerminal to protect and interface the RS485 communications and 27VDC supply to the LCD Board
3. BRD82ICC2 – Control, LCD Communications and LCD Driver Board

☞ **Note:** A maximum of 30 ***SmartTerminal's*** may be connected to the communications bus over a distance of approximately 1.2Kms

3 Operational & Key Features

SmartTerminal has been designed for use with the ***FireFinder***™ series of FACP's.

- 4 line by 40 character LCD with backlight and navigation keys ▲ ▼ keys allow the SmartTerminal to be used for FACP operation and interrogation. Note the backlight is only energised when alarms are present, a key has been pressed or controls enable key switch is enabled
- Buzzer and system Reset.
- System expansion capabilities / options:
- A wide range of secure user functions. This includes the ability to disable / re-enable a large number of system functions.
- Flush or surface mountable enclosure.
- Controls have tactile and audible feedback of operation.
- All terminals cater for 2.5mm cables.

4 Mechanical

SmartTerminal is supplied in an ABS cabinet and consists of;

The Main Card, with all controls and indicators mounted directly onto it

- 1 X Termination Board
- 2 X ABS door keys
- 2 X Barrel Enable / Disable keys
- 2 X Jumper links

☞ **Note:** A Communications Extender Board will be required if the Comms Bus in the FACP is fully utilised and / or if one is not fitted.

The front door of the ABS version is locked by way of two clips on the right hand side of the cabinet. A special locating key which has two raised pins that are inserted into the side of the cabinet unlocks the door.

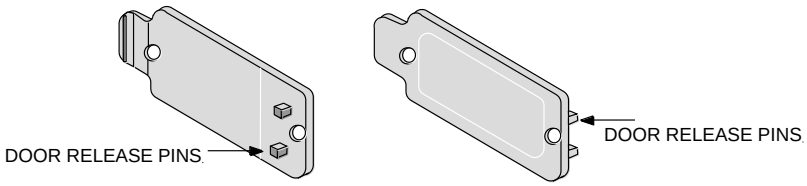


Figure 2: ABS Door Key

4.1 Mounting the Enclosure

The panel MUST be mounted in an area that is NOT subject to conditions likely to affect its performance, e.g. damp, salt-air, water ingress, extremes of temperature, abuse etc. is at an easily accessible height and such that the indicators are at eye level.

Typical locations for the panel are the first and most obvious point of contact for emergency services or a security office that is likely to be permanently staffed.

4.1.1 Enclosure Details

The LCDA can be surface or semi-flush mounted, is supplied with a detachable front door, mountable back box and a minimum of two separate PCBs.

4.1.2 Fixing the Chassis to the Wall

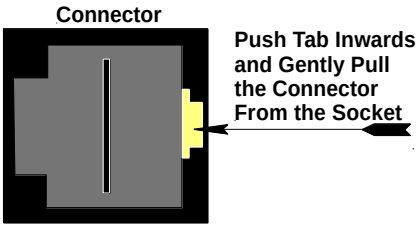
Taking into account the weight of the panel securely mount it by using the three keyhole mounting holes in the backpan, two in the top and one in the bottom. Use suitably sized screws and plugs for the type of mounting surface.

Caution: Any dust or swarf created during the fixing process must be kept out of the cabinet and great care should be taken not to damage any wiring or components.

4.1.3 Board Removal / Replacement

If a PCB has to be removed the following precautions should be observed;

- Removing the door will provide better access to the boards and will ensure the hinges are not accidentally stressed.
- Personal anti- static procedures must be followed.
- When disconnecting the RJ45 style connecting cable from the PCB, make sure that the cable remains connected to at least one board to prevent it being misplaced.



☞ **Note:** Care should be taken when detaching this connector as it is necessary to depress the small locking tab to unlock the connector from its base. To reconnect the cable the connector must first be correctly aligned then pushed into the socket so it locks into position.

- Carefully remove the retaining screws at each corner of the board taking care not to damage any of the components.
- Place each board into anti- static storage once removed.

4.1.4 Removing the Knockouts

The knock-outs should be removed with a sharp tap in the rim of the knock-out using a flat broad-bladed screwdriver. *Note: Use of excessive force could damage the enclosure around the knock-out.*

Note: Any unused knock-outs must be securely blanked off.

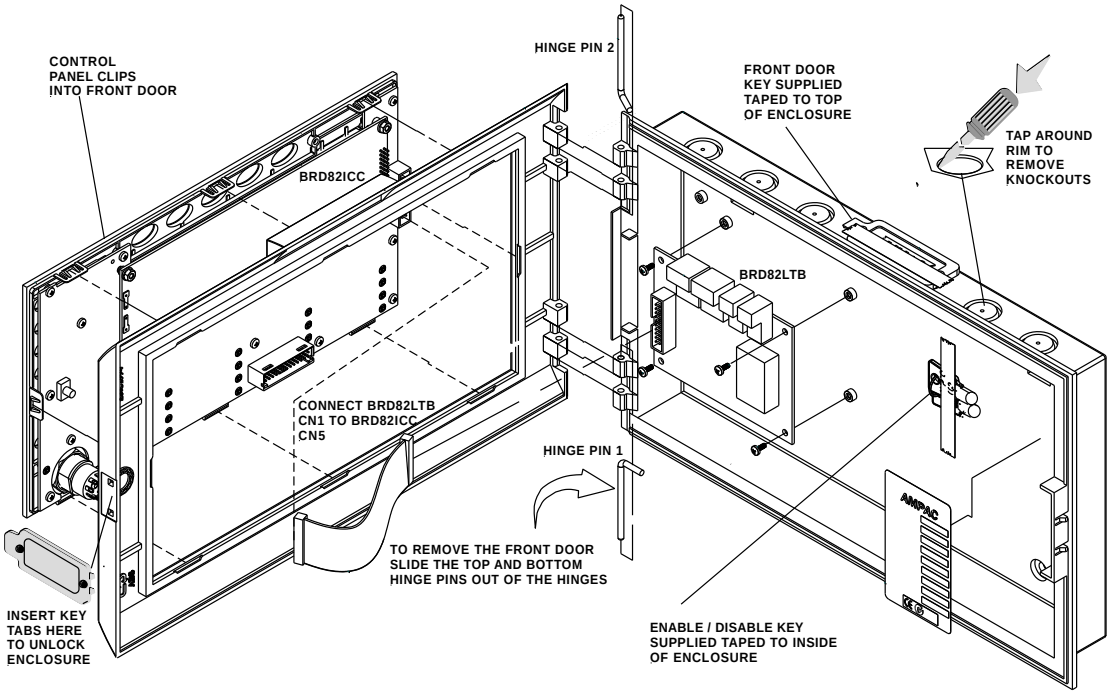


Figure 3: Exploded View

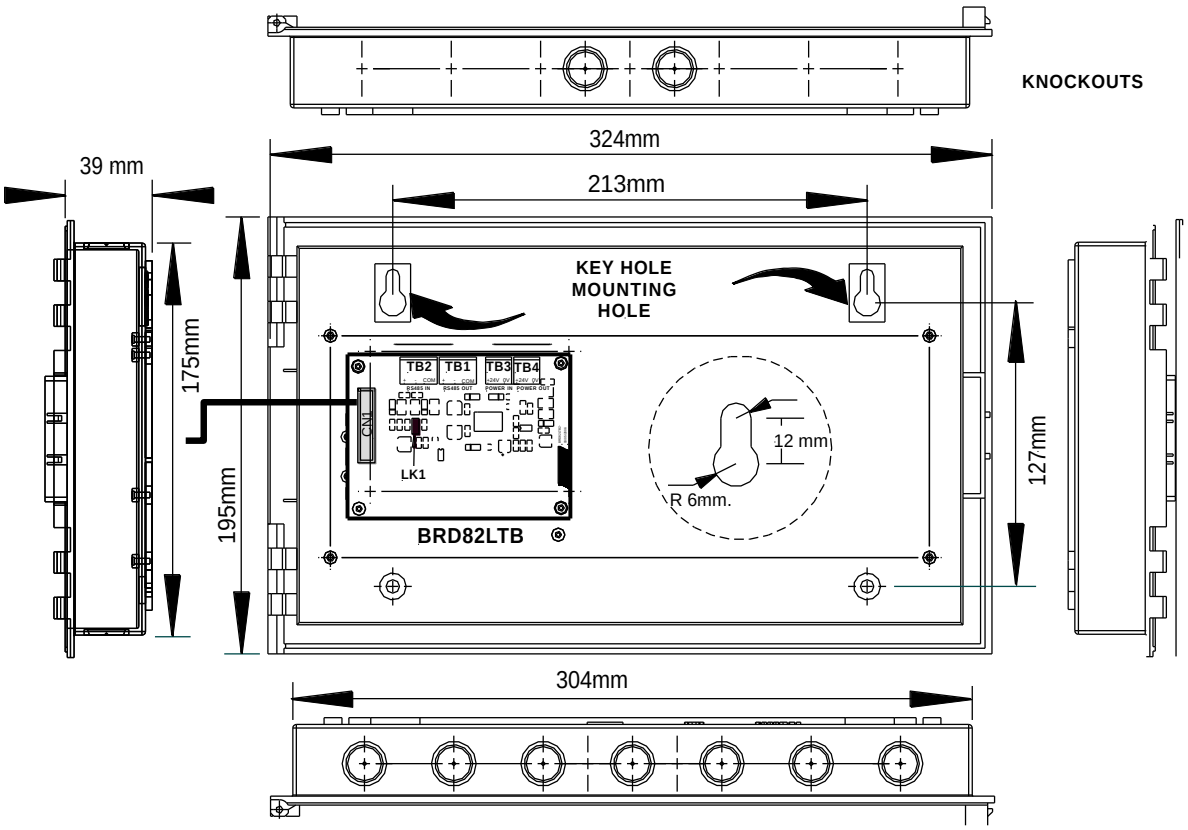


Figure 4: Typical Layout (Externally Powered) and Location of Keyholes

5 Installation & Cabling

The Communications Extender Board (Item Number 159-0129) should be mounted into the FACP and cabled as shown below.

It should be noted the Communications Extender Board and its supporting plate is mounted in a piggy back fashion onto one of the loop / zone boards.

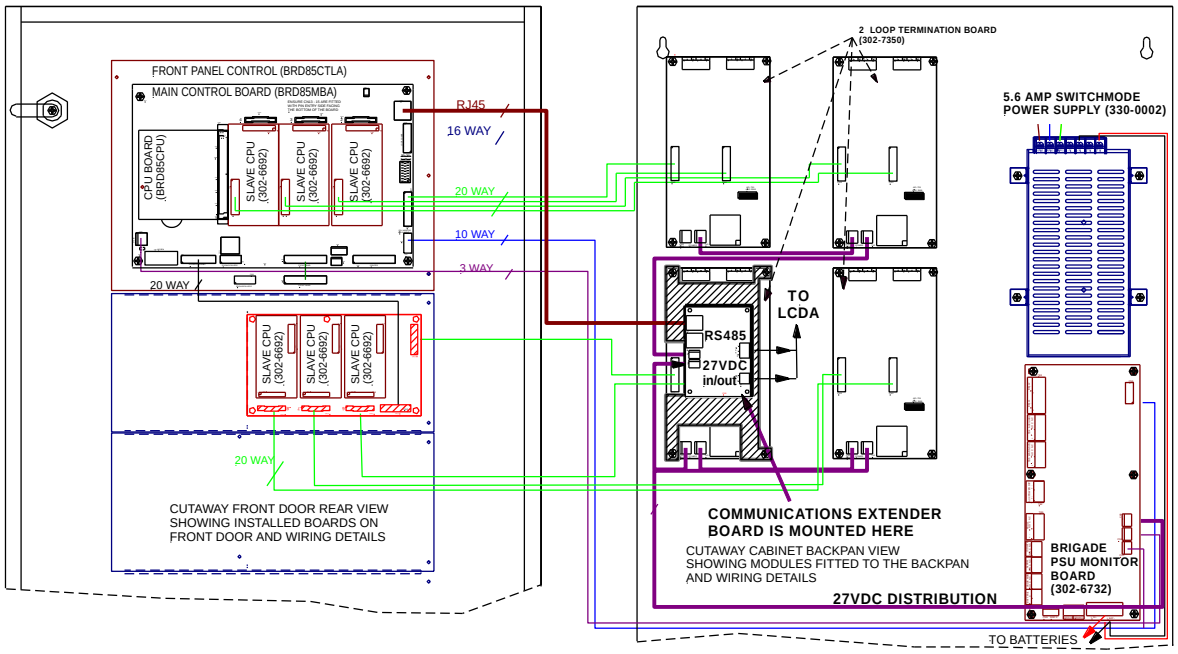


Figure 5: FACP Internal Layout

The ***SmartTerminal*** is then connected to the FACP as shown below.

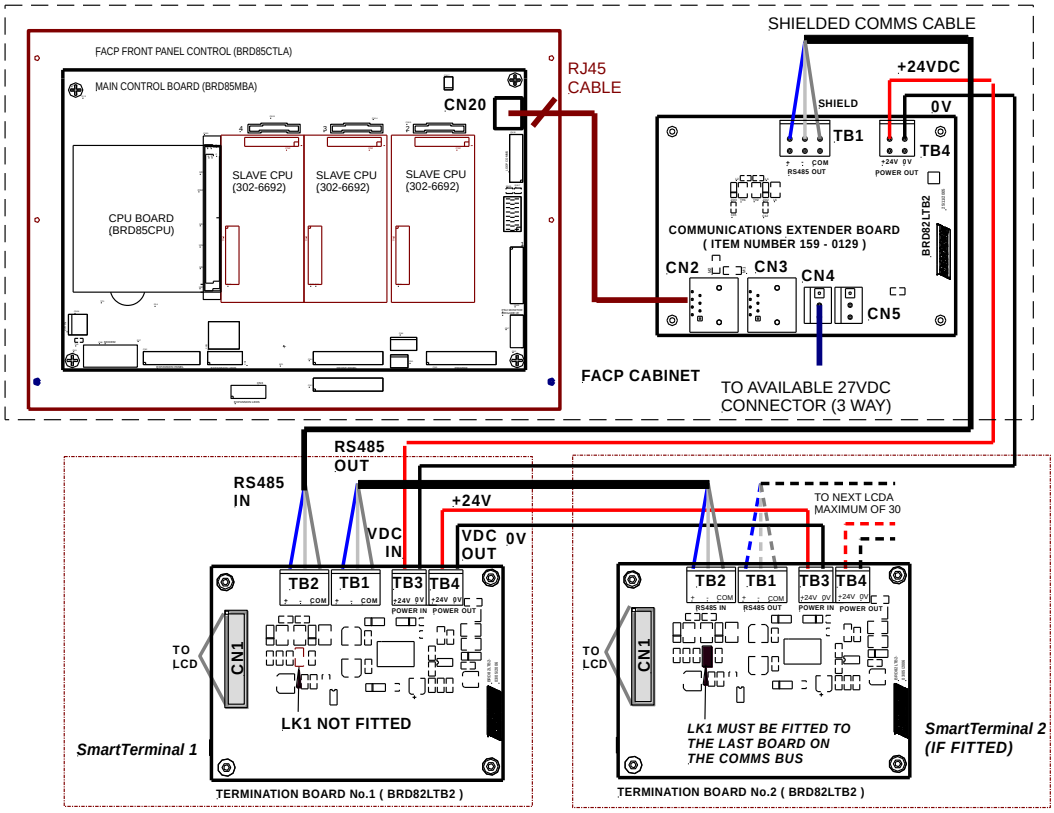


*Figure 6: Connecting the **SmartTerminal** to the FACP*

5.1 SmartTerminal Termination Board Interconnection

Connector CN1 Pin Number	Purpose
1,2	0V
3, 4	+24VDC
5, 6	0V
7	TP6
8	RESET
9	TP7
10	TP8
11	TP9
12	TP10
13	RTX+
14	RTX-
15, 16	+3V3
17, 18	+5VDC
19, 20	0V

Terminal Block TB1 (RS485 OUT) TB2 (RS485 IN)	Purpose
1 (Pin Number)	RS485 +ve
2	RS485 -ve
3	SCREEN

Terminal Block TB4 (27VDC OUT) TB3 (27VDC IN)	Purpose
1 (Pin Number)	0V
2	+24VDC

5.2 FACP Communications Extender Board Interconnection

Terminal Block TB1 (RS 485 OUT) Number	Purpose
1	RS485 +ve
2	RS485 -ve
3	SCREEN

Connector CN2 (IN) & CN3 (OUT)	Purpose
1 (Pin Number)	TP18
2	0V
4	RTX+

Note: CN1,CN2,CN3 and CN4 are not used and are not mounted on the PCB

5	RTX-
7	0V
8	TP18

Terminal Block TB4 (27VDC OUT) Number	Purpose
1	0V
2	+24VDC

Connector CN4 (IN) & CN5 (OUT)	Purpose
1, 3 (Pin Number)	0V
2	+24VDC

5.3 Setting the Address

Open the front door; locate the “CONFIG” button situated on the left hand side of the PCB and press for 3 seconds. The buzzer and “Config” LED will double beep and flash respectively to indicate that the Configuration mode has been entered. The LCD will now display the Configuration screen. This screen consists of the code version number, current address and four adjustment markers. These markers A-, A+, C-, and C+ are used to indicate the keys that adjust the address and LCD contrast.

Use the “PREVIOUS (A-) and NEXT” (A+) keys to select the desired address. The default value for this address is 255 which is not a valid ***SmartTerminal*** address. The user must then select an address value from 1 to 30, i.e. the same address as that set in the FACP. The keys corresponding to C- (ACK) and C+ (RESET) are used in a similar manner to decrease and increase the LCD contrast level. There is audible feedback for all key presses.

Once the address has been set press the “CONFIG” button again for 3 seconds and the screen will return to its default and the “DIANOSTIC” LED will return to a slow flash. This slow flash indicates ***SmartTerminal*** and the FACP are communicating normally i.e. the LED flashes if communications data is being received from the FACP.

☞ **Note:** If the address is not set within the time out period of approximately 75 seconds ***SmartTerminal*** will return to its normal state.

5.4 Setting the *SmartTerminal* in ConfigManager

Right click on the Controller icon and select “Edit Module Types” to bring up the following screen/s.

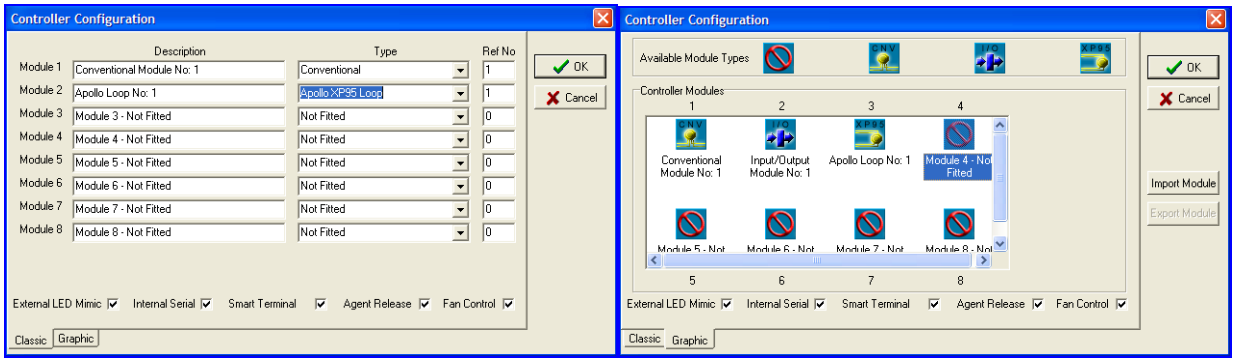


Figure 7 The Controller Edit / Add Module Types Screens

Click within the check box to “tick” the Smart Terminal check box and click OK. Double click on the Controller to open the Panel screen and the ***SmartTerminal*** tab should now be visible along with the other installed functions.

5.4.1 Setting the *SmartTerminal* Reporting Parameters

To set the ***SmartTerminal*** parameters click on the ***SmartTerminal*** tab and the following screen will be displayed. Under the assigned ***SmartTerminal*** Card designator, 1 to 30, click in the Active box to change the “N” (NO not fitted) to “Y” (YES fitted) and then enter or type in a “Description”. The description should be a name given to the ***SmartTerminal*** (LCDA) or its physical location. Double click in each of the “Report” boxes to display and set the, “Y” (Yes reports the parameter) and “N”

(No does not report the parameter) “Alarms, Faults, Disables” parameters that ***SmartTerminal*** will display on each ***SmartTerminal*** at each location.

☞ **Note:** A maximum of 30 ***SmartTerminal's*** can be used in the configuration of the FACP.

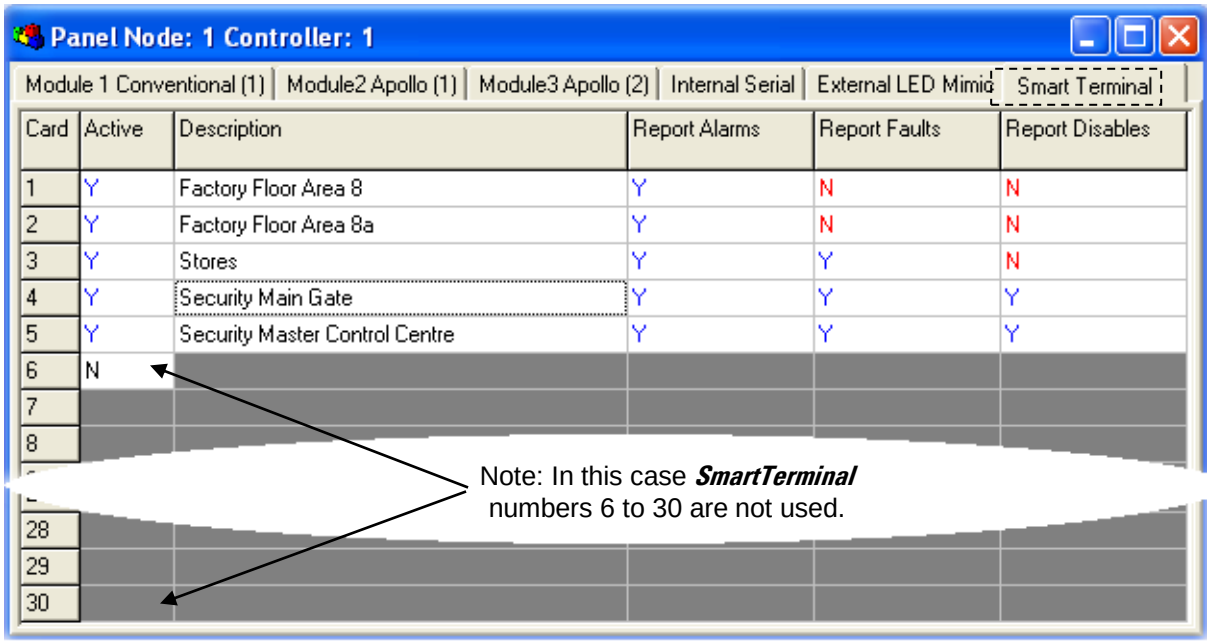


*Figure 8 Example of **SmartTerminal** Configuration Settings Screen*

In the above example **Card 1 & 2;**

- Are active
- Are situated in the factory floor area 8
- Will display all Alarms
- Will not display any Faults, and
- Will not display any Disables

Card 3

- Is active
- Is situated in the stores area
- Will display all Alarms
- Will display any Faults, and
- Will not display any Disables

Card 4 & 5

Are active

- Are situated in the security areas
- Will display all Alarms
- Will display any Faults, and
- Will display any Disables

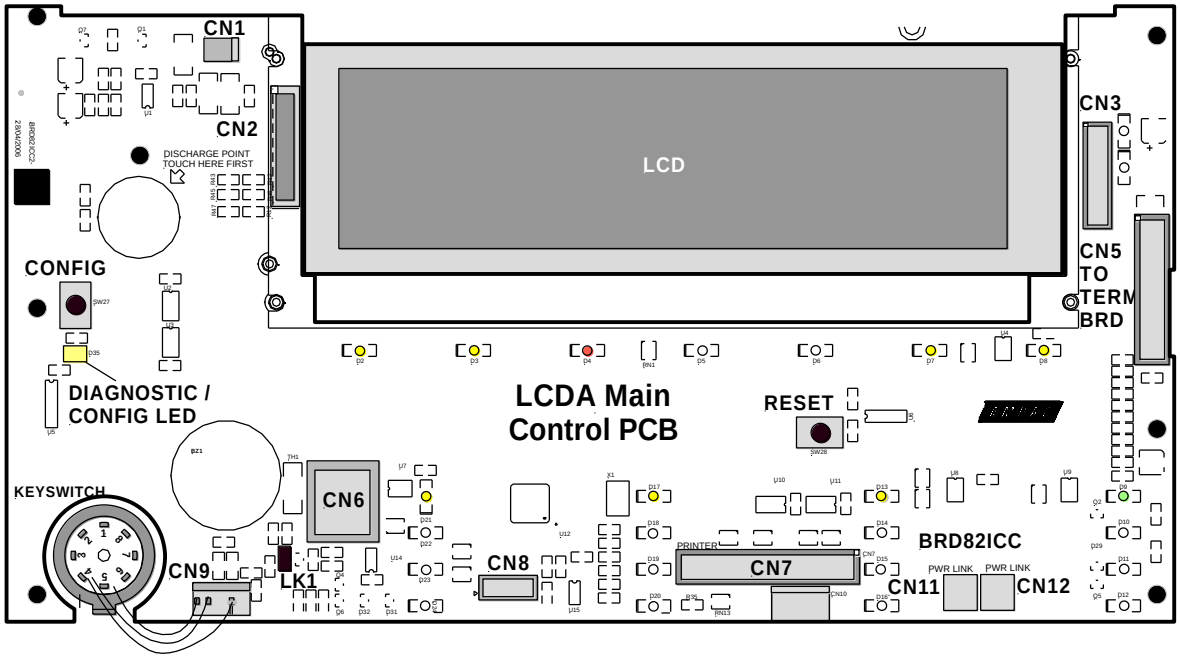


Figure 9 LCD Printed Circuit Board Layout

6 SmartTerminal Controls and Indicators

All controls, except for the Enable / Disable keyswitch, are of a momentary push button style.

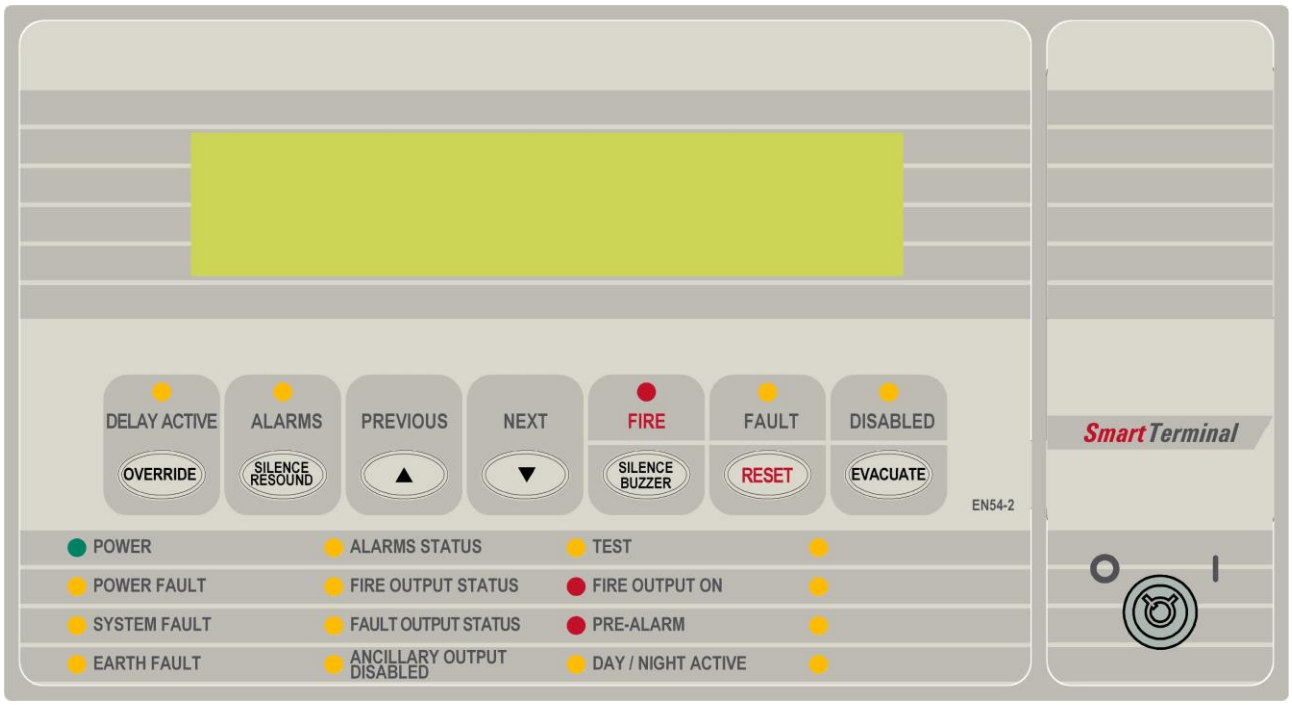


Figure 10 ***SmartTerminal*** *Front Panel Layout*

(Yellow) The LED is illuminated when a device has been activated and the device is configured to have a delay before operating the brigade output and alarm devices.

The LED is turned off when the delay expires and the brigade output and alarm devices are activated or the delay is overridden by the use of the delay override.

Override When zones and/or detectors are configured with delays, at the FACP then the operation of alarm devices (sounders and strobes) or the activation of the brigade alarm output can be delayed from when the zone/detector goes into alarm.

The delay can be overridden by pressing the OVERRIDE key. This will cause the alarm devices and brigade output to be activated immediately

Active at access level 1 and 2.

(Yellow) The LED is illuminated when the sounders have been silenced in response to a FIRE condition, indicating the resound function is active.

Silence / Resound Press to silence the alarm devices (associated LED illuminated).

Press again to re-enable the alarm devices (associated LED extinguished).

Active at access level 2 only.

Primary Function

Press to display the previously displayed LCD screen

Secondary Function

Set ***SmartTerminal*** address – A – (minus) decrement number

Active at access level 1 and 2

Primary Function

Press to display the next displayed LCD entry

Secondary Function

Set ***SmartTerminal*** address – A + (plus) increment number

Active at access level 1 and 2

(Red) The LED is illuminated when one or more devices are reporting a FIRE condition and are not disabled.

Silence Buzzer

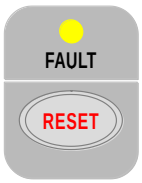
Silences the panel buzzer. Buzzer is activated under the following conditions:

- Alarm condition
- Devices – missing, out of calibration, wrong type, reporting an internal error
- Loops – short circuit or open circuit
- Monitored inputs and outputs on loop devices are in fault
- Sounders – missing, wrong type or reporting an internal error
- Modules within the panel – missing, wrong type or hardware error
- Main and secondary power supply fault

In Configuration mode this key decreases the LCD contrast.

Push button – held down for 3 seconds commences a lamp test. Lamp test is to test all indicators, segments on the LCD and the buzzer.

Active at access level 1 and 2.



LED is illuminated when there are one or more faults on the system. Faults can be;

- Devices – missing, out of calibration, wrong type, reporting an internal error
- Loops – short circuit or open circuit
- Monitored inputs and/or outputs on loop devices in fault
- Monitored inputs and/or outputs within the FACP in fault
- Modules within the panel – missing, wrong type or hardware error
- Modules or stations external to the panel – missing, wrong type or hardware error (***SmartTerminal***)
- Main and secondary supplies

Reset

Returns the FACP to its default power up state. This means all detectors in alarm are reset to normal and all indicators and outputs are updated accordingly.

In Configuration mode this key increases the LCD contrast.

Active at access level 2 only.

(Yellow) The LED is illuminated when one or more zone detectors, loop devices or panel outputs are disabled.

Evacuate

Turns on all alarm devices (visual and aural) outputs and activates the Fire indicator. The SILENCE / RESOUND or RESET control shall turn off all alarm devices (visual and aural).

Active at access level 2 only

Key Switch Controls enable key switch. The ***SmartTerminal*** by default is in access level 1, and when the control enable key switch is in the ENABLED position, the ***SmartTerminal*** is in access level 2. Access level 2 is used to restrict access to certain controls.

(Green) Illuminated to show the presence of power. Flashes when mains have failed.

(Yellow) Illuminated when there is a fault with the power supply. Fault can be no mains, high charger voltage, low battery voltage or missing/damaged battery.

(Yellow) Illuminated when the FACP is unable to provide mandatory functions. LED is latched, until cleared by reset.

(Yellow) Illuminated when there is an earth fault detected on the panel.

(Yellow) Illuminated steady if any of the alarm devices (sounders and/or strobes) have been disabled and flashes if any of the alarm devices (sounders and/or strobes) are in fault. Disable has priority over fault.

(Yellow) Illuminated steady if the fire output has been disabled and flashes if the fire output is in fault (open or short circuit condition). Disable has priority over fault.

(Yellow) Illuminated steady if the fault output has been disabled and flashes if the fault output is in fault (open or short circuit condition). Disable has priority over fault.

(Yellow) Illuminated when the ancillary output has been disabled.

(Yellow) Illuminated when the FACP is in the test mode. Possible tests are alarm, fault, walk, lamp and loop.

(Red) Illuminated when the FIRE output is active as a result of a fire condition.

(Red) Illuminated when one or more devices are in the pre-alarm condition and not disabled.

(Yellow) Illuminated when day / night facility has been enabled on the FACP.

(Yellow) Programmable 1 to 4 – *For future use.*

6.1 LCD Screen Format

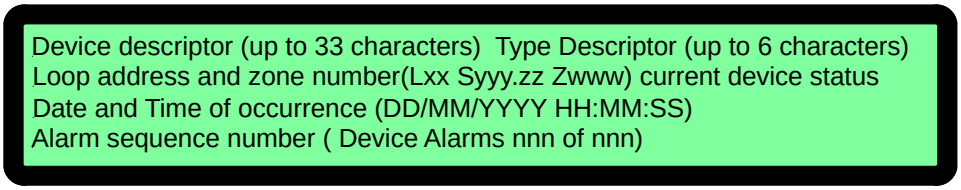
There are 3 events that can be reported and displayed by ***SmartTerminal***. The types of event are;

- Fire
- Faults and
- Disables.

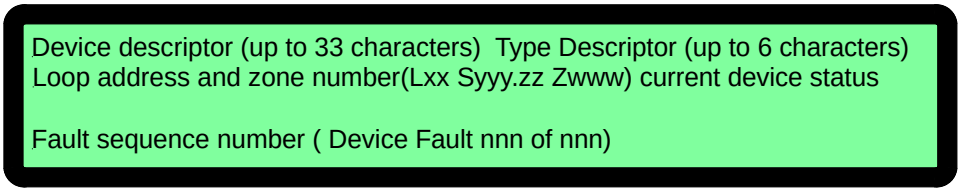
The types of events are only associated with sensors and detectors hence faults associated with modules, loops O/C – S/C, power supplies and so forth are not reported on the LCD.

The ***SmartTerminal*** has front panel LED's for each type of event. When ***SmartTerminal*** is configured not to report a type of event and that event type is present (and the corresponding front panel LED is illuminated on the ***SmartTerminal***), then a standard information screen is displayed on the LCD stating the system is not normal and the operator should see the FACP.

Alarm: If configured the screen format for reporting loop / sensor / zone fire condition is:



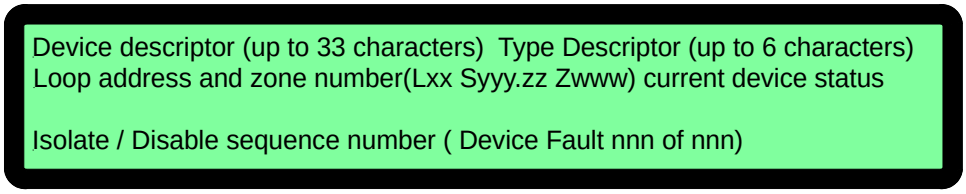
Fault: If configured the screen format for reporting loop / sensor / zone fault condition is:



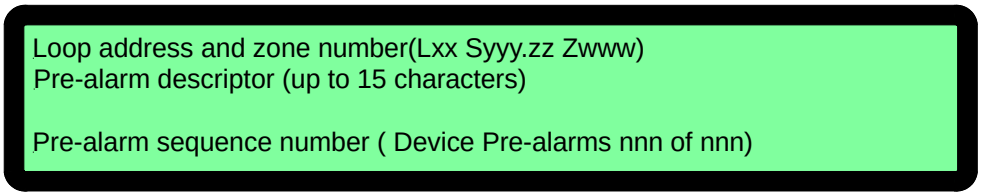
Note: The fault types only relate to devices.

In the event of a loss of communications, for a period of greater than 15 seconds the ***SmartTerminal*** will default to the No Communications screen. The format for this screen is:

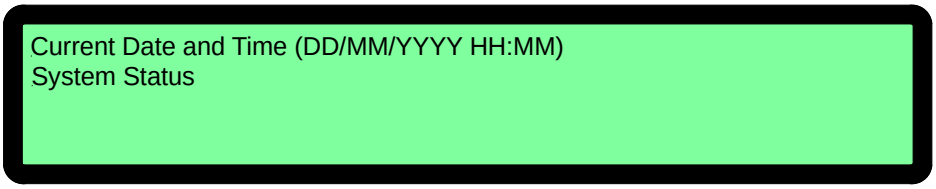
Device Isolate / Disables: If configured the screen format for reporting loop / sensor / zone disable condition is:



Pre-alarm: If configured the screen format for reporting loop / sensor / zone Pre-alarm condition is:



Normal / Default: The format for reporting that everything is normal is:



The screen is only displayed when there are no alarms, fault or disables on the panel.

The default screen is only displayed when there are no device alarms, device faults or device disables present on the system. The highest priority current system status will be displayed and can be one of the following listed in order of highest to lowest priority:

“SYSTEM ALARM”

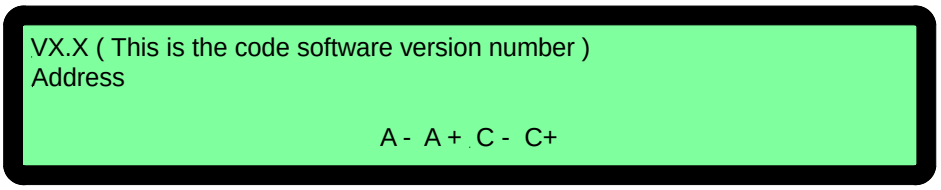
“SYSTEM PRE-ALARM”

“SYSTEM FAULT”

“SYSTEM ISOLATE”

“SYSTEM NORMAL”

Config: The Config screen displays the following



A - A +: adjusts the address 1 to 30, 30 being the maximum number of ***SmartTerminal’s*** that can be connected to the FACP, (default is 255 which is not a valid address).

The function keys perform the following;

A – Press “Previous” A+ press “Next”

C - C+: decreases [-] and increases [+] the LCD contrast level.

The function keys perform the following;

C – Press “Silence Buzzer” C+ press “Reset”

7 Trouble Shooting Chart

Problem	Solution
Normal Supply LED not illuminated	Check supply voltage it should be set to 27.2VDC. Nominal fault voltages are - Low = (<18VDC) High = (> 28VDC)
FACP Earth Fault LED illuminated	Check all input and output cabling and wiring assemblies for short to ground
FACP System Fault LED illuminated	Ensure correct panel configuration Check all connections for loose wiring
FACP Warning System Fault LED illuminated	Check correct E.O.L is fitted Check wiring is connected correctly
RS485 Communication Bus not working	Refer FACP LCD. This may identify where there is a break in the communication line Check the ***SmartTerminal*** Diagnostic Config LED is flashing. If not the FACP is not communicating with the SmartTerminal. Check the RS485 cabling. If flashing check the ***SmartTerminal's*** address.

www.ampac.net

AUSTRALIA **AMPAC PTY LTD** 7 Ledgar Road Balcatta 6021 Western Australia Tel: 61 8 9201 6100 Fax: 61 8 9201 6101 Email: info@ampac.net	EUROPE **AMPAC EUROPE LTD.** Unit 18, West Moor Park, Networkcentre, Doncaster England DN3 3GW Tel: +44 (0) 1302 833 522 Fax: +44 (0) 1302 835 021 Email: info.eu@ampac.net	NEW ZEALAND **AMPAC PACIFIC LTD.** Unit 4, 101 Diana Drive Glenfield, Auckland New Zealand Tel: 64 9 443 8072 Fax: 64 9 443 8073 Email: info.nz@ampac.net

(HEAD OFFICE)

Assessed to ISO9001
LPCB ref. no 952
(AMPAC Europe)

UNCONTROLLED DOCUMENT

NOTE: Due to AMPAC's commitment to continuous improvement specifications may change without notice.