Alarm Display System for Public Emergency Telephone System (PETS)

- **Clear unambiguous message display**
- **Duplicated communications path**
- **Flexible communications network architecture**
- **Interfaces alarms and controls from Associated equipment**

In applications where safety is a predominant issue D&IT have a secure solution to display critical alarms.

System Overview

The Alarm Display System comprises of four elements and is outlined schematically in Figure 1. This shows how the Alarm Display System is used in conjunction with the Public Emergency Telephone System (PETS).

Remote Terminal Units (RTUs) interface to the PETS equipment for each level crossing, and are powered from the standard 48V DC telecommunications supply.

The SP-15 with Polling option organises the communications to and from the loop of RTUs and interfaces to the Text Alarm Display Unit (TADU), which is located in the Signaller's Control Console, and provides a textual display of the alarms that the PETS generate, together with a series of status indicators (figure 1).

Text Alarm Display Unit (TADU)

The TADU occupies a panel area 100 mm high by 250 mm wide and has various mounting options and comprises:

- A four line x 40 character, back-lit text display,, with buttons for display text 'Scroll Up' and 'Scroll Down'
- Audible alarm indication
- Alarm 'Acknowledge' button
- A tri-colour LED for each remote site
- A tri-colour 'System' LED
- Lamp 'Test/Reset' button
- 48 Volt DC Operation

On each line twenty characters are allocated to a site name, with the second twenty being allocated to a text description of the alarm conditions, eg 'UNIT NOT DETECTED' Up to four alarm conditions can be seen at any one time. By using the 'Scroll Up' and 'Scroll Down' buttons, the Signaller can read the additional alarm conditions.

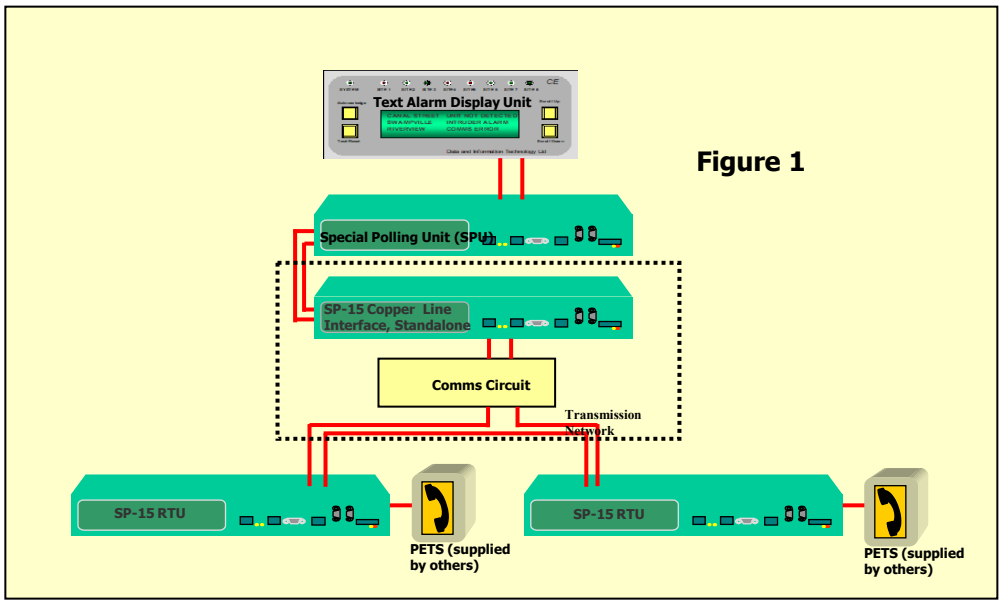

Figure 1

A tri-colour LED, one for each remote PETS site, indicates green for no alarms; amber for non-urgent alarms and red for urgent alarms.

A new alarm will cause the site LED to flash (pulse) and the acknowledge button must be pressed when it will then change to a solid (steady) illumination.

A 'System' LED will normally illuminate green to indicate that all is well and will illuminate red and flash in the event of a communications problem to the DIT equipment at the PETS sites. As with the other LEDs this flashing continues until acknowledged.

Special Polling Unit (SPU)

This SPU is a derivative of the SP-15 and comprises an I/O expander and PETS Polling firmware configured to provide enhanced facilities.

For reliability, a duplicated communications route structure is required, resulting in a network with a ring/loop configuration. This unit sequentially polls, in alternate directions around the loop, all of the remote PETS sites by addressing each RTU.

The alarm conditions received from each site are processed and used to generate two data formats for subsequent display by the TADU. The first drives the text display and the second the tri-colour LEDs.

SP-15 Copper Line Interface, Standalone

The Copper Line Interface provides a communications mechanism between the sites on the system. It can drive 4 km of copper cable, alternatively the signals can be transported with standard transmission equipment.

SP-15 RTU at PETS Site

This is a special application of the SP-15 RTU with Copper Line Interface. It has PETS firmware which interprets the alarm conditions indicated by the PETS equipment itself. The PETS indication is a seven segment LED and some nineteen different alarm conditions can be indicated. These are interpreted by the PETS firmware and mapped on to the DIT alarm mapping scheme. Two independent polling ports allow the unit to be configured in a loop for polling purposes. This ensures no loss of information should any single communications failure occur. The unit periodically interrogates the PETS equipment for its full alarm status, by which means it establishes alarm clearance conditions. There is a maximum of nine RTUs per system.