

# Prodigy Alarm Annunciator Supervisory System

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## Prodigy

# Alarm Annunciator Supervisory System

Prodigy installation at Jersey Airport, Channel Islands

Jersey Airport is the gateway to the Channel Islands handling well over a million passengers a year from the UK and Europe. The smooth and safe running of the airport relies on the operation and maintenance of several hundred systems for air traffic control, passenger information, meteorological, air conditioning, intruder detection etc. This responsibility lies with the Jersey States Department of Electronics (DOE) which monitors all airport systems 24 hours a day.

It is a requirement that all airport systems interface to a central alarm reporting point, where an audible and visible alarm can be generated and accepted and where alarms can be recorded, time stamped and remedial actions noted. A traditional alarm panel and paper logbook provided this facility however after twenty years of use the panel had become very fragile, incapable of expansion and a modern replacement was needed. The DOE required that any new system should provide the following benefits;

- Improved reliability
- Easier re-configuration of alarm channels
- Automatic event recording and reporting
- Capacity to expand to meet future requirements
- Provision for remote monitoring via PC network
- Ability to subdivide global alarms to give a more detailed alarm capability

These benefits were delivered within a tight technical specification and budget by a system using Prodigy industrial automation software.

The old panel was replaced with a 19" rack mount touch screen LCD display, connected to an industrially rugged PC running Prodigy software. The PC runs Microsoft Windows 2000 operating system with twin caddied hard disk drives and RAID Level One disk mirroring to simplify system recovery in the event of hard disk failure. The system is designed for continuous operation 24 hours a day, 365 days a year without system administration. Disk space management and file archiving are automatic and a system watchdog monitors for any PC hardware or software failure.



The touch screen display provides a user interface designed to resemble the existing panel. For text input there is a keyboard and mouse as well as a virtual on-screen keyboard. The main user display has a grid of 64 buttons, one for each alarm channel with the alarm state indicated by the button colour.

When an alarm occurs its associated button flashes and changes colour and a local alarm sounder is activated. The alarm can be accepted by pressing its alarm button or via an alarm banner, which is present at the top of all displays at all times. The alarm banner displays the alarm time and description and can be toggled to display a full-page chronological alarm list from which the user can accept unacknowledged alarms in any order.

If multiple alarms are triggered at the same time a major fault button on the main display can be used to accept all active alarms. If an alarm is not accepted within a pre-set time then an intercom system is automatically activated to raise the attention of other engineers in the department. A system option also allows for engineers to receive and accept alarms via SMS text messaging to mobile phones.

Free form text comments indicating the reason for the alarm can be entered either when an alarm occurs or at a later time. Any comment entered is recorded into the alarm/event history log. The system automatically records alarm information including alarm occurrence, alarm acknowledgement, alarm reversion, alarm comment, date, time and operator ID to an Access™ compatible database. Tabular alarm reports covering any period can be filtered, previewed and printed on demand.

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For alarms that have been accepted but are still active an alarm nag facility can re-trigger the alarm to remind the user that the condition is still present. Alarm set-up facilities allow the alarm nag to be enabled, disabled or nag time period altered. Alarm legends and descriptions can be modified and alarms marked in or out of commission with any channels set out of use ignoring alarm conditions.

An information button on the main display provides help options for all alarms. Information such as text documents, standard operating procedures, schematic diagrams, pictures etc. can be stored on the system for easy retrieval.

A major benefit that the new system provides is remote viewing of the main alarm panel from any PC on the network. When the airport is not in use manning levels may be reduced and with this facility any engineer can supervise the alarm panel from a remote PC if the main Watch engineer is called away. However, for safe operation access to the main panel facilities are restricted including, alarm acceptance or system re-configuration. Connection to the PC network also allows secure backup of alarm data, report printing, remote access to alarm data files.

A further benefit of the new PC based system over standard annunciator panels is the provision of remote data capture. This enables the alarm system to provide significantly more information, the possibility of alarm prediction and virtually unlimited expansion capability. Due to the limited number of signals the old panel could handle it was necessary to group alarms from subsystems. This often demanded an engineer to investigate the severity of an alarm when it occurred. It also meant that alarm reports were less specific and useful as possible. In order to provide a more detailed breakdown of alarms the new system is capable of interfacing to standard industrial PLC's or dedicated data capture equipment allowing both digital and analogue data capture. Analogue signal values can be used to indicate alarm severity, for condition monitoring and even alarm prediction through trend analysis.

The system provides 64 direct alarm input channels expandable to 128 and 8 control output channels expandable to 64. A combination of PC plug in cards and remote data acquisition modules is used to provide the interface to the alarm signals. This combination means that there is no practical limit to the size of application that can be handled. All digital inputs are opto-isolated for increased signal integrity. Each alarm channel also has fuse and surge suppression protection to prevent excess voltage from lightning strikes affecting signals from remote areas of the airport.

Although supplied as a pre configured turnkey system, Prodigy's ease of configuration makes it straightforward for DOE personnel to make changes to user access, displays and the signal database. Being able to make changes as and when required means the DOE are not reliant upon the system suppliers for any changes, saving both time and money. To provide a rapid response to support calls the system is equipped with telephone modem and remote PC monitoring software. This is specially configured for security and is an invaluable feature given the time taken to get to site from the mainland.



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