Tyco XL Graphics Client/ Server

Colour Graphics Alarm Display System

Engineer's Specification

A Client/Server based colour graphics system supporting fire alarm and evacuation system monitoring.

1 Colour Graphic Life Safety Fire Command Centre

1.1 System Capacity and Capabilities- Computer Colour Graphics Display

1.1.1 General Requirements

The Fire Detection/Evacuation system shall include the supply, installation and commissioning into service of an automatic computer-based colour graphic fire alarm/evacuation display system including all computer hardware, software, wiring and connections to the fire indicator panel(s)/evacuation panel(s). The system and components shall be supplied by one manufacturer of established reputation and experience who shall have produced similar equipment and be able to refer to similar installations providing satisfactory service.

1.1.2 System Description

The colour graphics display system shall consist of a personal computer running Microsoft Windows 7 Professional operating system, complete with keyboard, hard disk drive, printer, colour display and fire indicator panel interface, in accordance with the drawings.   The colour graphics display system shall be capable of connecting to and displaying information from both the fire alarm and/or evacuation system network on the one colour graphics display system. The colour graphics system shall be capable of being expanded up to the maximum capacity of the site fire alarm and/or evacuation system(s) or across multiple sites via a number of possible mediums including TCP/IP.

Operating parameters for the system shall be field programmable via the system keyboard and/or the mouse supplied with the system. Access to the programming function shall be via a password. The software operation shall be graphics based with common functions driven by "point and click" action using a mouse (or touchscreen)*, and capable of being operated by a person with little previous experience with computer systems.

1.1.3 Installation

A 240 Vac 50 Hz 10 Amp supply shall be made available by others at the location of the graphic system(s). Wiring shall be carried out in accordance with AS 3000, TS 009 or AS 1670.1 as applicable. Connections to graphics system components shall be via flexible cable with plugs compatible with the equipment. All plugs shall have protective shrouds and be secured against accidental removal. Equipment shall be installed in a dry, dust free, environment and protected against mechanical damage.

1.1.4 The colour graphics system shall be built upon client/server communications architecture capable of connecting multiple remote clients for multi-point network annunciation and control via standard TCP/IP connections.

1.1.5 On detection of a non-normal condition the following shall occur:
- Display on the computer the initial location plan with the location of the affected system or zone highlighted in an appropriate colour (e.g. red for alarm).
- Sounding of an audible alarm at the colour graphics display location.

- Writing of the details of the actuation to a system log file on the colour graphics system hard disk drive.
- Optional Automatic printing of a pre-defined graphic map of the first device to alarm.

The printed graphic map shall have the alarm location highlighted in red. It shall be possible to manually obtain a graphic print of any map being displayed when connected to a printer. Graphic map prints shall be completed in less than 60 seconds.

1.1.6 The graphical screens shall be designed in a hierarchical manner to provide a single screen overview of the complete system with on-screen navigation buttons or similar to "zoom" into any area and view the status of individual zones and points. Zones and points shall be able to be labelled with custom location text. The location text shall be able to be unique for each point and zone and shall be a minimum of 70 characters long.

1.1.7 The system shall have the capability of:
- Acknowledging,
- Disabling and enabling
- Resetting alarm and fault zone conditions, and disabling and enabling point conditions on the fire indicator panel, all from the computer screen.
- DSS - Distributed Switch System functionality for mimicking VIGILANT *MX1* On / Off / Auto controls and indications for 1668 fans, pump indications, damper controls and others as required.

1.1.8 Resetting alarm and fault zone conditions, and disabling and enabling point conditions on the fire indicator panel, all from the computer screen.

1.1.9 Alarms shall be prioritised over faults and other conditions, and any new alarm shall be automatically displayed.

1.1.10 Controls shall be provided on the graphical screens for at least the following commands:
- "Home", to return the view to the main graphics screen.
- "Back", "Forward," "Pan", "Zoom", to allow the operator to re-navigate previously viewed screens.
- "Text/Graphics", to allow the user to change the representation of the fire network from a graphical display to an interactive textual listing of all active events.
- "Reset," "Silence" and "Acknowledge," to provide a means to quickly issue common global commands.
- Menu access to all of the above, as well as to the history of all logged events and commands.

1.1.11 The system shall have the ability to import existing AutoCAD drawing files, scanned images, digital camera images, or any other P.C. produced images. The graphics program is to use a mouse driven overlay process to superimpose the alarm device icons on the imported image files. AutoCAD imports shall be capable of panning

and zooming.

1.1.12 The system shall have the capacity to sequence up to 2000 simultaneous alarms, faults, and circuit/point, isolate events.

1.1.13 Streaming video feeds from on-site shall be able to be displayed on the graphical system. The video feeds shall display automatically on annunciation of a relevant alarm. The operator shall also be able to view the video feeds manually.

1.1.14 The system should support the connection of a second monitor to enable Graphics and Text alarms to be displayed on separate screens if required.

1.2   Equipment

1.2.1 Furnish a suitable personal computer running Windows 7 professional, for the server functions of the graphics system.

1.2.2 The computer shall have a minimum of one serial RS232 input/output port configured as COM1, plus spare Universal Serial Bus ports for communications with the optional touch screen and the fire panel and/or evacuation panel network. Communications to the fire alarm/evacuation network shall be via an intelligent microprocessor based modular network system designed for operational interface to the fire/evacuation graphics system and the various fire alarm/evacuation panels as required.

1.2.3 The hard disk drive shall be sized to suit the installation with 25% spare space, and with a minimum of 250 gigabytes.

1.2.4 The monitor shall be high resolution (at least 1920 horizontal and 1080 vertical pixels). Screen size shall be at least 65cm diagonal measurement, unless detailed otherwise on the drawings. Optional screen sizes larger than 65cm shall be available. An interface shall be available for front projector large screen display if required.

1.2.5 (Delete if not applicable) The monitor shall also be fitted with a "touch screen" if required by the drawings. The touch screen shall consist of a transparent membrane fitted to the monitor screen and shall be an integral part of the monitor. The life of the touch screen shall be more than 1 million touches in any one point with a mean time between failures of 2,000,000 hours. The touch screen must be capable of being operated by a gloved hand.

1.2.6 (Delete if not applicable) A second monitor shall be provided if required by the drawings. The graphics system shall utilise the second monitor to display an interactive list of active events on this screen, while the first screen displays the graphical site or active screen layout.

1.2.7 (Delete if not applicable) A colour graphics printer shall be installed adjacent to the graphics terminal as shown on the drawings. This printer shall be a colour inkjet printer compatible with the graphics software and print the graphical screens when required. The printer shall use a minimum page size of A4. If required, the system shall be capable of operating a printer using paper size of A3. The graphics PC shall scale the graphics screens for printing so they occupy a whole printed page for easy viewing.

1.2.8 (Delete if not applicable) The PC and printers shall be powered by an uninterruptable power supply (UPS) with a capacity to power these units for at least 1 hour on mains failure.

1.3   Software

1.3.1 The software shall control the operations, functions and display of the graphics system and provide for automatic boot up and operation from the hard disk drive of the computer. All project specific or zone specific custom programming shall be capable of being carried out on site via password access. Instructions and utilities shall be provided for backing up all custom programmed data. A software security facility shall be provided to prevent unauthorised access to the operating system, drives, or configuration menus. The software shall include an automatic database rebuild utility to aid system recovery in the event of unexpected system failure.

1.3.2 All project specific actuating device programming shall be capable of being carried out on site via password access.

1.3.3 The system shall be capable of supporting connection to all types of fire alarm panels/Evacuation Panels via one (1) network on the site for annunciation and control. Connection to existing site panels shall be by high-level interface where the site panel supports this and by low-level hard contact where a high-level interface is not available. The graphics system offered shall currently have as a minimum, existing high level interfaces to panels from different manufacturers. As a minimum, SIMPLEX 4100, Tyco *MX*, VIGILANT *MX1* and VIGILANT QE90 panels plus hard contact low level interfaces shall be supported. For other panels that require a high level interface, make allowance to develop a suitable interface if required. The principal will supply communication protocols for any site panels requiring the development of a high level interface.

1.3.4 The graphics PC shall provide a library of colour coded icons to enable different device types to be allocated separate icons or same devices different colours for easy identification.

1.3.5 The graphics display system shall be capable of importing actuating device programming from fire indicator panels that have already been programmed. As a minimum, the graphics system shall be capable of importing the device configuration settings from SIMPLEX 4100 and Tyco *MX* / VIGILANT *MX1* fire indicator panels and the VIGILANT QE90 Evacuation panels.

1.3.6 The graphics system shall monitor all alarms, Circuit/Point activations, and faults, ancillary and disable events generated by any connected fire alarm control panel and provide disk based log files of these events. These logs may be enabled, disabled, or cleared with password access. These log files are to be continually appended with events so as to provide complete historical information of all alarms and faults. This log information is not to be lost upon power failure or fire alarm control panel reset. A database utility shall be provided to sort the log data by date, date range, device type, device range, event type, location, and selected text. Any combinations of these parameters shall be selectable and the results shown in suitable colour on the screen and printed if required.

1.3.7 The graphics PC shall be capable of displaying analogue values of detectors and

support device sub-points to indicate individual smoke, heat alarms for multi-sensors and the specific input that has been activated for multi-input devices. When all sub-points on a device are isolated, only one event is to be shown.

1.3.8   The system shall be capable of automatically displaying a device specific custom message of 70 characters for each actuating device connected to the fire alarm control panel. Up to 1000 current alarms and 1000 current faults shall be capable of being displayed.

1.3.9   When an event is registered at any fire alarm control panel or evacuation panel, the graphics system shall display the first screen image for the first actuated device. The option shall be available to display the first screen image for the most recent fire alarm if required. The system shall be capable of zooming in for further information up to ten (10) times if required. At all times when in the alarm or fault mode the fire control panel status, i.e., number of current alarms and/or faults is to be displayed on the graphics screen.

1.3.10 It shall be possible to easily and quickly hand off whole sections of the fire detection network for a set period of time, for maintenance purposes. Events generated by devices that have been handed off shall not annunciate to the operator. However, these events shall be logged in the same manner as all other events and actuations. Once initiated, the operator shall have the capacity to override the handoff manually at any time.

1.3.11 The main screen shall consist of the following as a minimum requirement:
-       A graphical representation of the site fire/evacuation network. When dual monitors are in use, one monitor shall provide a graphical representation of the site and the second shall provide an interactive list of all active events. The facility to switch between one and the other on a single monitor shall also be possible;
-       An indication of the total number of different events that are active in the fire network (alarms, faults, etc.);
-       The facility to issue commands to devices in the network, both individually and globally;

1.3.12 The colour graphics shall be capable of adding an icon to facilitate running a remote access connection to allow an operator to connect into a specific panel on the network and control it.

1.3.13 The system shall be capable of playing wave files for each event type (i.e. alarm fault etc.) to enable customisation of events.

1.3.14   The system shall be capable of incorporating a range of On / Off / Auto controls and indications also known as DSS - Distributed Switch System, to replicate the status and control of any VIGILANT *MX1* 1668 fans, pump indications, damper controls and others as required. DSS controls and indications shall be capable of being grouped together onto dedicated DSS screens or placed onto the detection graphic screens.

1.3.15   The Colour Graphics System shall be of proven manufacture and consist of the software as detailed above, plus optional network modules designed so that the colour graphics system may co-exist on the fire alarm and evacuation panel network to form a dedicated site wide network monitoring system.

2   OPC Server Application

(Delete if not applicable) The graphics shall provide an optional OPC Server function. OPC (Object linking and embedding for Process Control) enables data to be shared between (insert system -SCADA / BMS / other)** systems for (add reason)** (example: air-conditioning systems, security systems, lift/elevator controllers)
The OPC server function shall be capable of – exporting events as they occur or data such as names, status, analogue values, etc. and receive commands to control points on/off.
The OPC server data shall link via an industry standard IP network connection.

3   Performance

The tenderer shall supply evidence of successful operation of the colour graphics supporting a combined fire and evacuation networked system offered in at least two (2) major existing complexes. Evidence of successful operation of the colour graphics software in installations for at least five years shall also be provided. Tenderers that cannot fulfil these requirements will not be considered.