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FIRECODER AND STATION END SYSTEMS

READY FOR ESN

COMMUNICATION IS CRUCIAL

For all fire and rescue services (FRS), the ability to react effectively and efficiently to an incident is of paramount importance. Delays in either receiving critical information or getting firefighters to and back out of the station could cost lives. To ensure deployment happens in the shortest possible time, reliable communications and automation is crucial.

Multitone have been working with the emergency services since the 1970s. This pedigree ensures that we are not just aware of the technical requirements of the FRS, but also the processes involved in working with different types of stations. As such we have developed a combination of station end hardware and software to ensure that the emergency services are able to get to the scene in good time, every time – foremost amongst these is the Multitone FireCoder.

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Examples of FireCoder Activity:

- Mobilisation alerts sent to designated staff automatically via alerters and Appear Crew app.
- Audible alarms within the fire station are activated.
- Playing canned/digitally generated messages via PA system.
- Lights at the station are switched on/off.
- Fire station doors are automatically opened.
- Call out information is displayed on screens and printed.
- Appliance exhaust extraction fans are switched on/off.
- Cookers are automatically switched off.

MULTITONE FIRECODER: RESILIENCE IN ACTION

The FireCoder is a robust station end communication encoder that delivers the exceptionally high levels of resilience and reliability required by the emergency services. Once the command-and-control centre has determined the most appropriate fire station to respond to an emergency situation, the mobilising message is delivered to the station FireCoder.

The command is received via multiple bearers as required. These may be IP (TCP/IP or UDP), ESN (4G/LTE), GSM (CSD), (legacy bearers including PSTN, ISDN, Tetra and Radio B) or a combination of options, dependent upon the station's requirements. The FireCoder, configured to the specific fire station's requirements, whether a retained or wholetime station, will then initiate a series of automated actions. The FireCoder functionality is highly configurable and can be adapted to deliver most actions and reporting requirements in and beyond the fire station.

Ultimately the FireCoder alerts the correct fire teams, delivers specific information based on the emergency, and ensures that all internal functions and housekeeping requirements for a rapid mobilisation of crews are completed. This allows the fire teams to focus on getting to the emergency safely, with the correct equipment and crews.

Confidence and Resilience as Standard

It is imperative that all of the equipment housed within the station is tested regularly to prevent failures at critical moments. As a fully compliant GD92 encoder the Multitone FireCoder will send solicited and unsolicited failure and alarm messages back to Command and Control. In addition, the FireCoder can communicate with Multitone's network management application (Network status manager), and should some aspect of the system or fire station not be functioning within defined parameters, a manual or automatic message can be sent via email, SMS, paging or desktop notification so immediate and corrective action can be taken.

The FireCoder's ability to monitor activity and inform of any anomalies during inactive periods provides a level of resilience that instils confidence in not just the equipment, but the station's ability to function as and when it needs to.

Key Benefits:

- Designed to meet the requirements of emergency service station ends, both wholetime and retained.
- The software protocol used for communication is the Home Office GD92 protocol.
- Software supports the Home Office specification MG4 for firefighting alerting.
- Delivers automatic messages to Command and Control and an optional GD92 network manager, giving a degree of self-monitoring.
- Is a self-contained programmable GD92/MG4 encoder.

RPE1700 FireCoder Key Technical Details:

- Industrial standard ITX motherboard
- Ethernet LAN x 2
- 6 RS232 – 9 Pin
- PCIe expansion card slot
- 5 USB Peripheral connectors
- Operating Systems Win IoT (Patchable)
- Managed and configured using either MFW (Windows application) or iEngineering (web interface)

Multitone i-Console

i-Console provides a touch-screen interface for the monitoring and management of the station end equipment controlled by the FireCoder, and can alert staff in the station if a failure is detected. It can also be used to assign and keep track of tasks via the station routines manager. Able to be installed according to each fire station's needs, i-Console can comprise of a single or multiple screens.

i-Console Shows the Following Activity:

- Displays printer status, bearer status and local alarms
- All previous and the most recent mobilise print messages
- Large manual acknowledgement (ManAck) pop-up button following mobilisation
- General fire station alarms: front door, intruder, power fail etc
- Alerter team activation
- Lights and bells activation
- Crew status display
- Mobilise response display

> *"We would definitely recommend Multitone and its products to other emergency services organisations."*
>
> **ICT Project Manager, Norfolk Fire and Rescue**

OTHER STATION END EQUIPMENT AND SOFTWARE

RP1102 Transmitter

The RPT1102 VHF paging transmitter has been designed specifically to interface with Multitone's paging and messaging systems. With up to 50 Watts of output power, the RPT1102 is designed for robust and resilient communication.

Key Features:

- MG4 compliant
- POCSAG CCIR 1
- Remote configuration over bearers
- Alarm integration with GD92 network

EMS-PSU-Mk2

The Power Supply Unit for our station end equipment features:

- Intelligent battery charging
- Multiple DC outputs (12V & 24V)
- Battery protection
- Mains failure alarm
- 24h+ battery autonomy

Firecomms+ Communications Processor (CCP)

Firecomms+ is a suite of software applications specifically designed for emergency service mobilisation. Firecomms+ plays an integral part in any GD92 communications system. It is the link between a command-and-control system and the communication bearers through to the station ends.

FIRECOMMS+ COMMUNICATIONS PROCESSOR (CCP)

A command and control system links to Firecomms+ CCPs (normally two or more are provided for resilience) via a dual redundant LAN, or via serial ports. Any supported bearer or combination of bearers can be used for interconnection to command and control systems or to other Firecomms+ CCPs.

As the message arrives into the CCP, the CCP will check the destination of the message and look in its router table for the method of delivery. A station can have many routes via multiple bearers for message delivery. In all cases, a station route will have:

- Primary bearer
- Secondary bearer
- Probable tertiary bearer

The CCP software will first try to send the message via its primary bearer. If this is not available then the CCP will attempt to send the message via the secondary bearer, tertiary bearer and so on until all bearers are exhausted. A bearer and/or message delivery fail will be returned to the command and control system.

Port Functions

The 63 ports can also support the following GD92 agents:

- Printer agent (serial or parallel port)
- Mobilise agent
- Virtual agent (data transfer through GD92)
- Console agent
- Gateway agent (link to email, national, paging etc.)
- Button box agent
- MG4 external alerter agent
- MG4 emulation agent
- Message boards
- Sound agent to public address systems
- Peripheral agents
- SDS messaging
- Alarm agents (various types)
- Display agent

Key Features:

- Reliable communication equipment.
- Software designed specifically for the emergency services.
- Links command and control system with the communication bearers through to the station ends.
- Multiple bearers for message delivery.
- The possible 63 physical ports available on each CCP server can support GD92 agents.
- Flexible, resilient and well proven software.

Bearer Types

There are a possible 63 physical ports available on each CCP server. Each port can be individually programmed to accommodate the following Message Transfer Agents MTA) types: IP (TCP/IP or UDP), ESN (4G/LTE), GSM (CSD), (legacy bearers including PSTN, ISDN, Tetra and Radio B).

Software

The Firecomms+ Central Communications Processor software is derived from our MFWC application, which also includes the Network Status Manager (NSM) application and station end application. As such it is flexible, resilient and well proven.

Hardware

Any Windows based server would be suitable to run this application. For a list of the servers we recommend for resilience, please contact Multitone.

FIRECOMMS+ NETWORK STATUS MANAGER (NSM)

Firecomms+ NSM is an optional service application, monitoring and dynamically testing all GD92 nodes on any given network. The NSM interfaces into the GD92 network via any of the existing multiple bearers and connects to the network at any location, but typically this would be located centrally, usually alongside the Central Communication Processor (CCP) or within the fire service's engineering department.

Alarm Monitoring

Unsolicited alarm messages from the remote station ends and CCPs are routed through the GD92 network to the Firecomms+ NSM. Upon receipt, the alarm messages can be displayed locally on the NSM monitor, or delivered to any of the following media:

- Email
- SMS text
- National or local paging
- LAN wide pop-up menus and/or .WAV files
- PA audio announcements
- Message scrolling boards
- Alarm sounder or light activation (closing contact)

Alarms not responded to can be escalated a number of times and re-routed to alternative destinations. Destination escalation timing and communications media are configurable and completely flexible.

> "*Multitone has the in-house expertise to review software requirements and adapt it to cater for the specific needs of your fire service.*"
>
> **Head of Information & Communications Technology, Mid and West Wales Fire Authority**

Key Benefits

- Monitors and tests all GD92 nodes on any given network.
- Interfaces into the GD92 network via any of the existing multiple bearers.
- Connects to the network at any location.
- Unsolicited alarm messages from the remote station ends and CCPs are routed through the GD92 network to the Firecomms+ NSM.
- Alarms not responded to can be escalated a number of times and re-routed to alternative destinations.
- Destinations, escalation timing and communications media are all completely flexible.

Dynamic Network Testing

The Firecomms+ NSM software application can be configured to automatically and routinely test any or all of the GD92 nodes on the network. Test timings are programmable and flexible, allowing the testing to be carried out at convenient times, daily or every few hours. Individual bearer types can be selected and the tests can include physical actions at the remote ends such as contact closure or paging call transmission. A failed test would instigate an alarm message which can be escalated until resolved.

Software

The Firecomms+ NSM software is derived from our MFWC application, which also includes the CCP application and station end application. As such it is flexible, resilient and well proven. This software operates on a Windows platform and is normally run as a system service.

Hardware

Any Windows based PC or server would be suitable to run this application. For a list of servers we recommend for resilience, please contact Multitone.

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