

APPLICATION NOTE

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(ESP) Enhanced Systems Protocol

ESP the communication solution for today's intelligent fire detection and tomorrow's fully integrated systems.

ESP has been designed with a multi-purpose structure that provides the flexibility and expansion to accommodate simple addressable systems through to sophisticated integrated building management and safety systems. Whereas the system components may be subject to technological changes, ESP has been designed such that it will not, thereby satisfying future system needs for decades to come.

Main Features

- Digital serial communication with immunity to noise
- Built in Interrupt capability for fast response to call point operation and sensor fire alarms
- High resolution analogue readings
- Low Power Mode reduces loop standby currents when operating on batteries
- Supports multi I/O devices allowing up to 8 digital inputs and outputs per address
- Built in functions to help find and protect against double addressing faults
- Supports group commands for sounder activation and synchronisation
- Supports up to 240 different device types
- Addressing in any sequence provides flexible data gathering and output activation
- Simple transmission method for easy fire alarm control panel interface and reliable operation

Noise Immunity

Unlike most existing fire detection communication protocols each ESP message transmission incorporates a checksum which provides comprehensive error checking. This, together with acknowledgement handshaking for output commands, makes ESP immune to noise and other communication problems such as loop cross-talk, thereby eliminating false alarms due to data corruption. Any persistent data corruption problems that occur are processed by the system as a communication fault and can be logged for future investigation, they are not logged as a device fault and will not create false alarms. The system will continue to communicate and operate reliably under such conditions.

System Response

ESP operates using a relatively low transmission rate enabling reliable error free communication over long distances using the many industry standard fire cables. Overall polling rate is approx. 7.5 seconds per loop. A built in Interrupt system ensures fast response from devices as required by today's systems and standards. An interrupt is generated when a call point operates, by a sensor when the smoke density exceeds it's threshold level or by a digital input change. The system can guarantee finding the interrupting device from any address on the loop within 1.5 seconds.

Low Power Mode

Low Power Mode is enabled by the fire alarm control panel when operating on batteries during mains power loss. When activated the loop polling rate is reduced and the device CPU's are 'put to sleep' during polls. This significantly reduces the device standby current and hence the overall loop loading, Loop current is reduced by 60 to 70% thereby allowing smaller batteries to be installed. Fast call point and sensor fire response is maintained by the built in interrupt system and overall system performance still meets the current standards' requirements.

Compatible Devices

The **ASX Range** of fire detection products is fully compatible with ESP and provides the system designer with a very comprehensive range for most intelligent fire detection applications. Field Device addressing is achieved via simple and reliable 7 bit DIL switch and the Sensors are addressed via a hand held programmer this will allow up to 127 devices to be addressed on each loop. The range consists of:-

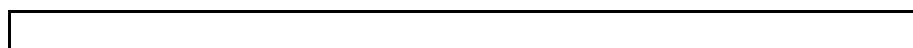
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|--|--------------------|
| • Multi Sensor (ACA-E) | EN54 parts 5 and 7 |
| • Photoelectric Smoke Sensor (ALG-E and ALG-E(NP)) | EN54 part 7 |
| • Ionisation Smoke Sensor (AIE-E and AIE-E(NP)) | EN54 part 7 |
| • Heat Sensor (ATG-E and ATG-E(NP)) | EN54 part 7 |

- Sensor Base (YBN-R/3)
- Short Circuit Isolator (YBO-R/SCI)
- Relay Output Module (CHQ-R)
- Mini-Zone Monitor (CHQ-MZ)
- Zone Monitor (CHQ-Z)
- Dual Switch Monitor (CHQ -S)
- Manual Call Point (MCP-E)
- Weatherproof Manual Call Point (MCP-W)
- Dual Circuit Sounder Controller (CHQ-B)

LPC approved
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 EFSG
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 EFSG
 BS5839 part 2
 LPC approved
 EFSG

Product currently submitted for approval

- Single Input/Output Module (CHQ-SIO)



Enhanced Systems Protocol (ESP):

Transmission Type	Half duplex, serial asynchronous digital 2 wire, Voltage transmit, Current receive
Data format	8 data bits, 1 start and 1 stop bit
Data rate	1200 bits/second
Operating voltage	Digital 0 - 24Vdc Digital 1 - 32Vdc
Operating current	Digital 0 - Loop current + 22mA Digital 1 - Loop current + 0mA
Error checking	Byte - Even parity Message - 8 bit checksum
Command Types	Polling, Control, Interrupt and Group
Polling rate	7.5 seconds per loop
Interrupt response time	1.5 seconds max., 1.0 seconds typ.



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