Panasonic

ESPA 4.4.4 PROTOCOL IN WEB-SERVER / GATEWAY

Fire alarm solutions technical description

Table of Contents

1. INTRODUCTION

This document describes the messages that the web-server / gateway sends over the serial port for external systems, i.e. pager systems. The web-server / gateway sends messages for fire, key cabinet fault and communication faults. The configuration tool allows the user to configure beeper address length, beeper addresses, beeper signal characteristics and texts messages. The name of this protocol is formerly known as Tateco/Ascom protocol, due to that is was used for a legacy pager system from Tateco/Ascom.

2. ABBREVIATIONS

ACK	Acknowledge
CIE	Control and indicating equipment
ESPA	European Selective Pagers Association

3. GENERAL DESCRIPTION

The underlying protocol uses a polling-select mechanism based on ESPA 4.4.4 Protocol (European Selective Pagers Association).

In brief, the web-server / gateway transmits the select message, waits for acknowledge (ACK), sends the fire/key cabinet/comfault message and waits for acknowledge a second time which completes the process.

The select message is fixed to be EOT '1' ENQ '2' ENQ.
The actual message follows the general pattern SOH '1' STX '1' US pager address RS '2' US fire/key cabinet/comfault RS '3' US beep ETX.

For example, if the user has configured the web-server / gateway for beeper address length 4 and two beeping signals, a fire mes-sage may look as follows.
SOH '1' STX '1' US '1' '0' '0' '9' RS '2' US 'B' 'R' '1' '0' '0' '-' '5' '5' 'F' 'I' 'R' 'E' ' ' ' ' ' ' ' ' RS '3' US '2' ETX.

In this example the web-server / gateway sends "BR100-55FIRE   " addressed to beeper 1009, and the beeper should signal twice.

The following sections describes the underlying protocol and the fire/key cabinet/comfault part of the general pattern.

ESPA 4.4.4 (tateco)

3:rd part external system

Gateway / Web-server

CIE
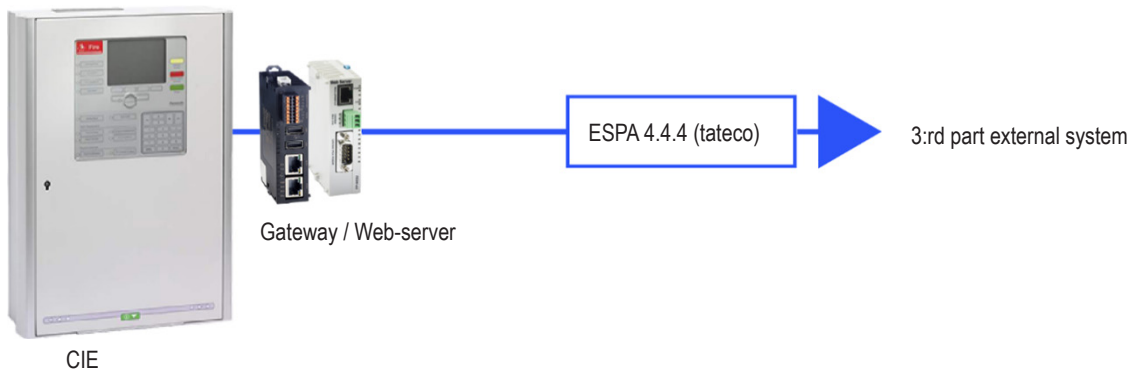
4. PROTOCOL
4.1.   CHARACTER DESCRIPTION
4.1.1.   CHARACTER STRUCTURE
The data communication is a serial, bit synchronous, character asynchronous format as defined by ISO 1177, utilizing one start bit, seven information bits, one even parity bit and two stop bits.

4.1.2.   CHARACTER SET
The character set conforms to the international alphabet number 5 (CCITT V3 & ISO 646).

4.2.   PROTOCOL DEFINITION
The protocol used conforms to International Standard ISO 1745 "Information processing - Basic mode control procedures for data communication systems". It is a multi-drop protocol. The external equipment, the Fire Alarm Control and Indicating Equipment (CIE) acts as control station. The CIE has the address "1" and the receiving system has the address "2".

4.2.1.   POLLING
The Control Station polls a device on the communication line with the sequence <address> ENQ. On receipt of this sequence, the polled device becomes Temporary Master Station.

A polling sequence always follows an EOT.
<address> is the address of the device being polled.

4.2.2.   SELECTING
The polled device sends <address> ENQ, to select the device to which it has data to transfer, or EOT to indicate that it does not have any data to transfer. When the polled device sends <address> ENQ, the selected device sends ACK if it is ready to receive data. The temporary Master Station may now communicate with the selected device which now has become Slave station. If the selected device is not ready to receive data it sends NAK with an appropriate prefix followed by an EOT from the Temporary Master Station.

A selecting sequence never follows an EOT.
<address> is the address of the device being polled

4.2.3. TERMINATION

Upon completion of its transaction(s), the Master Station sends EOT, which both indicates to the Slave Station that the transactions are completed and returns control to the Control Station. If the Control Station does not detect valid transactions within 10 seconds, it sends EOT to terminate the communication.

4.2.4. POLL & SELECT SEQUENCE

An example, when data is to be transferred:

Control Station	Code	Polled Station	Code	Code	Selected Station
Poll seq.	<address> →				
	ENQ →				
		Becomes Temporary Master			
		Select seq.	Address →		
			ENQ →		
				← ACK	Becomes Temporary Slave

Web-server (EBLWeb 2.5.x) will initiate a poll and select sequence every 30 seconds to check that a connection can be established with the receiving system. This polling sequence ends with termination. In EBLWeb 3.1.x, the polling time is configurable with 5 – 120 seconds.

4.3.   DATA BLOCK DESCRIPTION

Character	Value (Hex)
SOH	0x01
STX	0x02
ETX	0x03
EOT	0x04
ENQ	0x05
ACK	0x06
US	0x0F
RS	0x0E
NAK	0x15

A data block uses the following special characters:

Record Separator	RS
Unit Separator	US
Start of text	STX
End of text	ETX
Start of Header	SOH

Data identifier US Data = Record
The structure is as follows:
SOH Header STX Data identifier US Data [for each record: RS Data identifier US Data] ETX BCC

BCC is a simple checksum computed on from Header to ETX with the following algorithm.

```c
unsigned char ChkSum( char *Str, int Len ) {
  unsigned char ChkSum;
  unsigned i;
  ChkSum = 0;
  for ( i = 0; i < Len; i++ )
    ChkSum ^= Str[i];
  if (Use7bitChksum)
    return (ChkSum & 0x7F);
  else
    return (ChkSum);
}
```

The checksum is returned as **ChkSum & 0x7F** when using 7 bits checksum, otherwise it will be returned as **ChkSum** only.

5. HEADERS

Headers that can be used:

"1"   Call to pager

5.1.   RECORDS

Records consist of printable ASCII characters. The following records are used in the protocol.

Data ID	Record	Data	Note
1	Call address	1-7 characters	Address of the pager or group of pagers
2	Display message	Max 48 characters	The message to be displayed
3	Beep coding	'0' to '9'	System dependent

5.1.1.   EXAMPLES OF TRANSACTIONS

EBL CIE		Receiving unit (Pager system)
Termination		
EOT	→	
Poll sequence		
"1" ENQ		
Select sequence		
"2" ENQ	→	
	←	Positive reply to selecting ACK
Sending one block. SOH "1" STX "1" US "1009" RS "2" US "BR100-55FIRE " RS "3" US "2" ETX BCC	→	
	←	Acknowledge ACK
Transmission complete		
EOT	→	

6. MESSAGE

In EBLWeb 3.1.x, the user may configure which messages shall be sent out via ESPA 4.4.4 protocol. The settings are:

• Fire alarm / Key cabinet fault alarm: Default: ON.

• COM Fault: Default: ON.

• Pre-warning: Default: OFF.

• General fault: Default: OFF.

• Disable with TX: Default: OFF. Alarm related message will not be sent when Fire brigade TX is disabled. And fault related messages will not be sent when Fault TX is disabled.

• Polling Time: Default: 30 seconds.

6.1. FIRE MESSAGE

For the fire message, the fire/key cabinet/comfault part of the general pattern start with either 'B' 'R' Z Z Z '-' A A, where ZZZ is the zone and AA is the address, or 'B' 'R' Z Z Z '-' 'A' 'A' in the case of a zone alarm.

Following this is either a user definable text of eight characters, or a text of 40 characters if the web-server / gateway is configured to send FBP texts.

6.2. KEY CABINET FAULT MESSAGE AND COMMUNICATION FAULT MESSAGE

These two messages are defined by the user. Thus the user decides the whole fire/key cabinet/com fault part of the general pattern. Length is fixed to 16 characters.

ESPA 4.4.4 in web-server / gateway protocol is mainly passing forward fire alarms from the EBL-system.

Fault message will only be sent in case there is a communication fault between the EBL-system and the web-server / gateway. This type of fault is sent because the web-server / gateway will not be able to send fire alarm messages to pager system.

6.3. PRE-WARNING MESSAGE

For the pre-warning message, the fire/key cabinet/comfault part of the general pattern starts with 'F' 'V' Z Z Z '-' A A, where ZZZ is the zone and AA is the address.

Following this is either a user definable text of eight characters, or a text of 40 characters if the web-server / gateway is configured to send FBP texts.

6.4. GENERAL FAULT MESSAGE

This message is defined by the user. Thus the user decides the whole fire/key cabinet/com fault part of the general pattern. Length is fixed to 16 characters.

General fault message will be sent in case there is any General fault in the EBL-system.

7. TECHNICAL DATA

1598 WEB-SERVER II

EBL system	EBL128 ≤2.0.X	EBL512	EBL512 G3 ≤2.0.X	EBL128/EBL512 G3 ≥2.0.X
Web-server software:	Web128	Web512	WebG3	EBLWeb
Configuration	Web128II Config Tool	Web512II Config Tool	WebG3 Config Tool	EBLWin

5088 GATEWAY

EBL system	EBL512 G3 ≥2.9.X	EBL512 G3 ≥3.1.X		
Gateway software:	EBLWeb	EBLWeb		
Configuration	EBLWin	EBLWin with support for Pre-warning, General fault and configurations settings.		

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