

TCP Headers

Overview

JBM Electronics Co. has developed a set of headers to provide a mechanism for bridging the different characteristics between the "frame-type" data of a polled legacy protocol and the "stream-type" data of a TCP/IP connection. The headers pass information between a customer-developed application and the Gateway. The header is stripped before the data is sent to the serial device.

The Gateways support different types of headers: Standard, Extended I, Extended II and Custom. The header type is selected through the TCP Port definition on the Configuration Menus.

We provide an expanded theory of operation, examples of header processing logic and example code which can be used to as a guide when adding support for our headers to a TCP application. This code will simplify the effort necessary to support the headers. The available information on our home page is:

Headers	Headers.pdf	Smspeccs.pdf
Status Message Examples	This document	Smexex2.pdf
Header Example Code	Chdrproc.pdf	hdtst.zip

Standard Headers

The Standard Header is a bare-bones block-to-stream conversion aid, consisting simply of a two-byte length field preceding the data. The headers allows the TCP application (or Gateway) to assemble the entire message before processing. The inbound (serial) data is assembled at the port and then transferred to the TCP application.

The header sent by the TCP application is used by the Gateway to assemble the message prior to transfer to the serial port. Once the serial port has received the message, it can be sent to the remote device using normal protocol handling.

Byte	Field	Description
0	Block Length (MSB)	'Block' length attribute, two byte binary value sent in network byte order (MSB first). The data following will be text.
1	Block Length (LSB)	

Extended Headers - Type I

The Extended Header expands the Standard Header by adding status data. The additional information provides for more control over the connection by the TCP application.

The Type 1 Extended Header is intended to be used between two Port Controllers supporting multiple (sub)addresses.

Byte	Bit(s)	Field	Description
0	7-0	Block Length (MSB)	'Block' length attribute, two byte binary value sent in network byte order (MSB first).
1	7-0	Block Length (LSB)	
2	7-6	Reserved.	Reserved.
	5-4	Confirmation	This field is used to coordinate end-to-end delivery confirmation operations. It is not necessarily supported by all Port Controllers. The following values have been defined: 00 - No Confirmation required. 01 - Confirmation requested. 10 - Positive confirmation response. 11 - Negative confirmation response.
	3-0	Data Type	This field is used to identify the type of data being carried within the message, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined: 0000 - Undefined. 0001 - Bisync 3270. 0010 - Raw Binary. 0011 - SCS (SNA Character Set). 0100 - SNA 3270. 0101 - SNA 5250. 0110 - UTS. All other values are reserved.
3	7-4	Data Encoding	This field is used to identify the manner in which the data is encoded, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined: 0000 - Unencoded. 0001 - ASCII. 0010 - BCD. 0011 - Compressed. 0100 - EBCD. 0101 - EBCDIC. All other values are reserved.

Extended Header - Type 1 (continued)

Byte	Bit(s)	Field	Description
3	3-2	Message Mode	<p>This field is used to identify the mode of the message, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined:</p> <p>00 - Non-Modal. 01 - Formatted. 10 - Unformatted. 11 - Status.</p> <p>The status mode is the method by which applications can interact with low-level mechanisms within the Gateway software. The status message format is available on our homepage.</p>
	1-0	Block Indicator	<p>This field is used to identify the block position of the message, in relation to past and future blocks, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined:</p> <p>00 - Middle. 01 - First. 10 - Last. 11 - Only (First and Last).</p>

Extended Header - Type 2

The Type 2 Extended Header is intended to be used with a two Port Controller supporting only a single (sub)addresses. The effect of multiple channels of communication is achieved by embedding addressing information into the header itself, which requires that this header type be used in configuration including a JBM Multiplexing Dynamic Router. The header then conforms to the following format:

Byte	Bit(s)	Field	Description
0	7-0	Block Length (MSB)	'Block' length attribute, two byte binary value sent in network byte order (MSB first).
1	7-0	Block Length (LSB)	
2	7-6	Reserved.	Reserved.
	5-4	Confirmation	This field is used to coordinate end-to-end delivery confirmation operations. It is not necessarily supported by all Port Controllers. The following values have been defined: 00 - No Confirmation required. 01 - Confirmation requested. 10 - Positive confirmation response. 11 - Negative confirmation response.
	3-0	Data Type	This field is used to identify the type of data being carried within the message, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined: 0000 - Undefined. 0001 - Bisync 3270. 0010 - Raw Binary. 0011 - SCS (SNA Character Set). 0100 - SNA 3270. 0101 - SNA 5250. 0110 - UTS. All other values are reserved.
3	7-4	Data Encoding	This field is used to identify the manner in which the data is encoded, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined: 0000 - Unencoded. 0001 - ASCII. 0010 - BCD. 0011 - Compressed. 0100 - EBCD. 0101 - EBCDIC. All other values are reserved.

Extended Header - Type 2 (continued)

Byte	Bit(s)	Field	Description
3	3-2	Message Mode	<p>This field is used to identify the mode of the message, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined:</p> <p>00 – Non-Modal. 01 – Formatted. 10 – Unformatted. 11 – Status.</p> <p>The status mode is the method by which applications can interact with low-level mechanisms within the Gateway software. The status message format is available on our homepage.</p>
	1-0	Block Indicator	<p>This field is used to identify the block position of the message, in relation to past and future blocks, for those protocols that support the notion and for those Port Controllers capable of detecting and reporting it. The following values have been defined:</p> <p>00 – Middle. 01 – First. 10 – Last. 11 – Only (First and Last).</p>
4	7-0	Poll Code 1	ASCII character used to identify a target device. Corresponds to Multiplexing Dynamic Router Group Member (slave) address 1.
5	7-0	Poll Code 2	ASCII character used to identify a target device. Corresponds to Multiplexing Dynamic Router Group Member (slave) Address 2.

Custom Headers

The Custom Headers use the Extended Headers as a base. Additional bytes are assigned for address mapping, enhanced information and control. With the Custom Headers, the Gateway can communicate with a TCP/IP application to provide message delivery validation, port status and other information. These headers also support the embedding of the serial addresses so that one TCP session can support many serial addresses. This capability of the custom header can eliminate extra traffic, reduce server overhead and simplify control of the network. Contact JBM Electronics for further information.

If you have any questions on the headers, please contact us at the numbers below:

Phone: 1-800-489-7781
 Email: support@jbmelectronics.com
 Home page: www.jbmelectronics.com