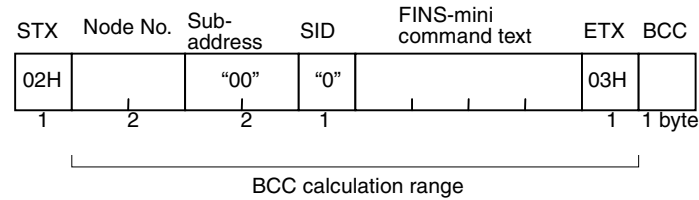


5-2 Data Format Structure

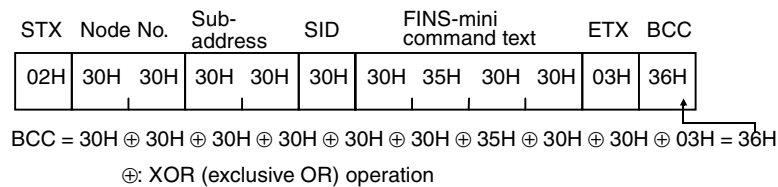
Communications conforming to the CompoWay/F serial communications protocol involve transmission of blocks of data called **frames**. Those sent from the host PC are command frames and those sent from the Temperature Controller are response frames. The structure of these frames is shown below.

In the following frame description, the suffix H added to a numeric value, as in 02H, means the value is a hexadecimal number. And quotation marks around an alphanumeric value, as in "00," mean that the value is an ASCII character set. The number underneath each delimiter in a frame indicates the number of bytes.

5-2-1 Command Frame

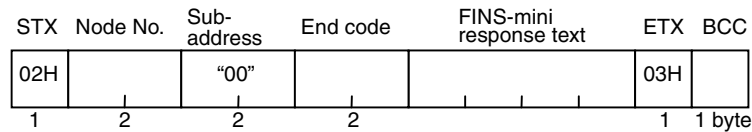


STX	Code indicating the start of a command frame (02H). Be sure to place this code in the first byte of a command frame.
Node No.	Node ID specifying the destination of a command frame. Set this No. to the unit number of the Temperature Controller. If you want to broadcast a command, set the node number to "XX." No response is given from the Temperature Controllers for broadcast commands.
Sub-address	Not used for E5ZN. Always set the sub-address to "00."
SID (Service ID)	Not used for E5ZN. Always set the SID to "0."
FINS-mini command text	Command text
ETX	Code indicating the end of text (03H)
BCC	Block Check Character The result of a block check on the BCC calculation range is stored in this field.



Note How to Determine the BCC:
The BCC is determined by XOR operation on a byte-by-byte basis of the values within the range from the node number field to the ETX field. The result (36H in the example shown above) is placed in the BCC field.

5-2-2 Response Frame



Note The Temperature Controller will not respond to any command frame that does not end in the ETX and BCC.

STX	Code indicating the start of a response frame (02H). Be sure to place this code in the first byte of the response frame.
Node No.	The node number is set to the value that was specified in the corresponding command frame. The unit number of the Temperature Controller that returns the response is set in this field.
Sub-address	Not used for E5ZN. This field is always set to "00."
End code	This field contains the result of execution of the corresponding command frame.
FINS-mini response text	Response text
ETX	Code indicating the end of text (03H)
BCC	Block Check Character The result of a block check on the BCC calculation range is stored in this field.

End Code

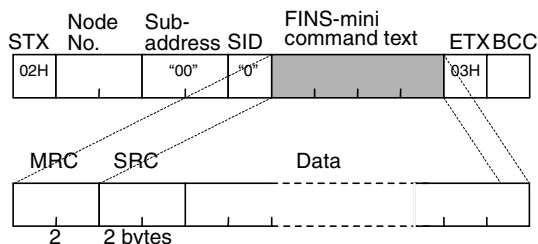
End code	Code name	Description	Error detection priority
"0F"	FINS command error	The specified FINS command could not be executed.	8
"10"	Parity error	The sum of the bits (received data (1)) does not match.	2
"11"	Framing error	The number of character stop bits for the command frame was 0.	1
"12"	Overrun error	A data transfer was attempted when the reception data buffer was already full.	3
"13"	BCC error	The received BCC was different from the calculated BCC	5
"14"	Format error	The command text contains characters other than "0" to "9" and "A" to "F". No SID and command text. MRC and SRC in the command text were not included in the command text.	7
"16"	Sub-address error	No sub-address, SID, and command text. This error is not covered by the echoback test. The size of the sub-address was less than two characters, and no SID and command text were found.	6
"18"	Frame length error	The size of the received frame exceeded the specified number of bytes.	4
"00"	Normal completion	The command was successfully executed.	None

5-3 Structure of Command/Response Text

The command/response text constitutes the main body of a command/response frame. The structure of the command/response text is described below.

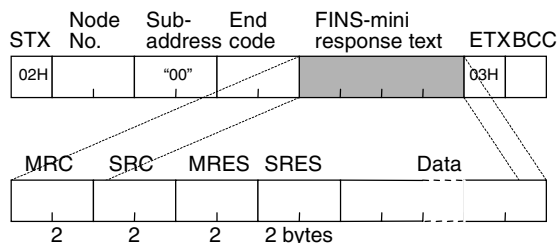
Command Text

The command text consists of the MRC (Main Request Code) and the SRC (Sub Request Code), followed by the required data.



Response Text

The response text consists of the MRC and SRC, followed by the MRES (Main Response Code), the SRES (Sub Response Code), and the required data.



If the Temperature Controller fails to execute a specified command, it generates a response consisting of the MRC, SRC, MRES, and SRES only.

List of Services

MRC	SRC	Service name	Description
"01"	"01"	Read from Variable Area	This service reads from the variable area.
"01"	"02"	Write to Variable Area	This service writes to the variable area.
"01"	"04"	Read from Multiple Variable Area	This service performs non-consecutive multiple reads from the variable area.
"01"	"13"	Write to Multiple Variable Area	This service performs non-consecutive multiple writes to the variable area.
"05"	"03"	Read Controller Attribute	This service reads the model number and the communications buffer size.
"06"	"01"	Read Controller Status	This service reads the run status of the Controller.
"08"	"01"	Echoback Test	This service performs the echoback test.
"30"	"05"	Operation Commands	This service performs RUN/STOP, AT Execute/Cancel, Move for Setting Area 1, etc.