



杭州长川科技股份有限公司

Hangzhou Changchuan Technology Co., Ltd.

## GPIB Programming Guide

## GENERAL

The general-purpose interface bus (GPIB) is used to connect the tester to the handler.

The handler will send information to the tester and receive information from the tester.

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## 1. Command Format

1.1. All output data consist of ASCII characters.

1.2. Formats of output data will be different due to the number of data items:

<output only one data item>

h...h\_d.....d CR LF <EOI>

<output multiple data items>

Multiple data items

h...h\_d.....d, d.....d; CR LF <EOI>

1.3. Descriptions of Data

1.3.1. Block delimiter

A block delimiter is output to indicate the end of one data item.

CR LF <EOI>

1.3.2. String delimiter (separator)

A string delimiter is output to separate continuous data items and messages.

There are three types of string delimiters.

- " " (Space) : Used to separate headers and data items.
- "," (Comma) : Used to separate data items.
- ";" (Semi-colon) : Used to separate the end of strings.

## 2. SRQ (Service Request) Code

When the handler needs to perform test operations, the following SRQ data will be generated:

Test Start SRQ: SRQ 65 (0x41)

Test Start SQR indicates tests will start on sites 1~site 32.

### 3. Commands Sent by the Tester to the Handler

Command	Parameter	Description																																		
FULLSITES	?	Inquires the sites among site 1 to site 32 on which tests will be performed. “FULLSITES?”																																		
BINON		<p>Sends test results to the handler and requests the handler to return the results received. The number of data items depends on the number of sites.</p> <p>"BINON:xxxxxxxx,xxxxxxxx,xxxxxxxx,xxxxxxxx;"</p> <p>Each digit indicates a binning result of a site. The rightmost digit is the test result of site 1 and the leftmost digit is the test result of site 32.</p> <p>Relationship between BIN and characters:</p> <p>0~15 BIN:</p> <table><tr><td>BIN</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr><tr><td>Param</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr></table> <p>“0” indicates that no tests have been performed on this site. For example, if the handler only performed tests on site 4, test result is BIN 15, and the results will be:</p> <p>“BINON:00000000,00000000,00000000,0000F000;”</p>	BIN	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Param	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
BIN	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15																				
Param	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F																				
ECHOOK		<p>Notify the handler that the BINON command returned by the handler is correct. When the handler receives this command, the BINON command will be set as class data.</p> <p>“ECHOOK”</p>																																		
ECHONG		<p>Notify the handler that the BINON command returned by the handler is not correct. When the first time the handler receives this command, the handler will not perform any operations and wait for the tester to send a BINON command again. If the handler receives the command the third time, alarms will be sent.</p>																																		

### 4. Commands Sent from the Handler to the Tester

Command	Parameter	Description
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FULLSITES	0-F	<p>The command is sent by the handler to reply the command “FULLSITES?” sent by the tester.</p> <p>"FULLSITES xxxxxxxx"</p>																																														
		<p>Notify the tester of test sites that will be needed. Data block that is composed of four sites will be represented by four digits. Each digit represents the on/off state of a site. LSB represents site 1 and when MSB represents site 4, the length of data to be sent depends on the number of sites on which parallel tests will be performed.</p>																																														
		<p>Example: for 32-DUT handlers</p> <p>"FULLSITES E7E7E7E7"</p> <p>Please note that there is a space between the command and the parameter.</p>																																														
		<table><tr><td>1110</td><td>01</td><td>11</td><td></td><td>1110</td><td>01</td><td>11</td><td></td><td>1110</td><td>01</td><td>11</td><td></td><td>1110</td><td>01</td><td>11</td><td></td></tr><tr><td>^</td><td>^</td><td>^</td><td></td><td>^</td><td>^</td><td>^</td><td></td><td>^</td><td>^</td><td>^</td><td></td><td>^</td><td>^</td><td>^</td><td></td></tr><tr><td>32</td><td>28</td><td>25</td><td></td><td>24</td><td>20</td><td>17</td><td></td><td>16</td><td>12</td><td>9</td><td></td><td>8</td><td>4</td><td>1</td><td></td></tr></table>	1110	01	11		1110	01	11		1110	01	11		1110	01	11		^	^	^		^	^	^		^	^	^		^	^	^		32	28	25		24	20	17		16	12	9		8	4
1110	01	11		1110	01	11		1110	01	11		1110	01	11																																		
^	^	^		^	^	^		^	^	^		^	^	^																																		
32	28	25		24	20	17		16	12	9		8	4	1																																		
		<p>This means that tests will be performed on 24 sites (site 1~site 3, site 6~site 11, site 14~site 19, site 22~site 27, and site 30~site 32).</p>																																														
ECHO		<p>The command is sent by the handler to reply the “BINON” command sent by the tester.</p> <p>Content of ECHO command and content of BINON test results sent by the tester are the same.</p> <p>Example: the tester sends “BINON:00000000,00000000,00000000,00001141;”.</p> <p>After the test is completed, the handler will send “ECHO:00000000,00000000,00000000,00001141”.</p>																																														

(A) Accept the condition where there is no BarCode process and only with test process

(B) In the BarCode process, accept the condition where there is no “ECHOCODE” process

Command	Parameter	Description
BARCODE	?	Inquires the barcode information of site 32~site 1. “BARCODE?”
ECHOCODE		This command is sent by the tester to the handler to confirm that the barcode information received by the tester is correct. (Optional) “ECHOCODE:0,DQ000000 000002701;”

Command	Parameter	Description
BARCODE		The handler sends barcode information of site 32~site 1 to the tester.  “BARCODE:0,DQ0000000 00002701;”
ECHOCODEOK		This command is sent by the handler to reply the ECHOCODE sent by the tester to confirm that the information is correct. “ECHOCODEOK”

## 7. Flow Chart

