

# Magnescale

Display Unit

# LT80-NE

Read all the instructions in the manual carefully before use and strictly follow them.  
Keep the manual for future references.  
This manual corresponds to LT80-NE software version 1.06.00 or later.

System Port Command Reference Manual

|   |           |
|---|-----------|
| <b>1. Overview</b> .....  | <b>4</b>  |
| <b>2. Communication Specifications</b> .....  | <b>4</b>  |
| <b>2.1. Connection specifications</b> .....   | <b>4</b>  |
| <b>2.1.1. Network settings</b> .....  | <b>4</b>  |
| 2.1.1.1. System port IP address.....  | 4         |
| 2.1.1.2. System port subnet mask.....   | 5         |
| 2.1.1.3. System port gateway.....   | 5         |
| <b>2.1.2. Factory settings</b> .....  | <b>5</b>  |
| <b>2.2. System port command specifications</b> .....  | <b>6</b>  |
| <b>2.2.1. Setup command specifications</b> .....  | <b>6</b>  |
| <b>2.2.2. Operation command specifications</b> .....  | <b>9</b>  |
| <b>2.2.3. PLC link command specifications</b> .....   | <b>10</b> |
| <b>2.3. Items common to each command</b> .....  | <b>11</b> |
| <b>2.3.1. Concerning the target module</b> .....  | <b>11</b> |
| <b>2.3.2. Concerning the designated axis</b> .....  | <b>11</b> |
| <b>2.3.3. Concerning the display ID</b> .....   | <b>11</b> |
| <b>2.3.4. Concerning the target I/O</b> .....   | <b>11</b> |
| <b>2.3.5. Concerning the relationship between the target axis and the display ID</b><br>..... | <b>12</b> |
| <b>2.4. Detailed description of setup commands</b> .....                                      | <b>12</b> |
| <b>2.4.1. Basic settings</b> .....  | <b>12</b> |
| 2.4.1.1. Configuration information.....   | 12        |
| 2.4.1.2. Unit of display.....   | 12        |
| <b>2.4.2. Measuring unit settings</b> .....   | <b>13</b> |
| 2.4.2.1. Input resolution.....  | 13        |
| 2.4.2.2. Reference point.....   | 13        |
| 2.4.2.3. Master preset.....   | 14        |
| <b>2.4.3. View frame settings</b> .....   | <b>14</b> |
| 2.4.3.1. Number of view frames.....   | 14        |
| 2.4.3.2. Frame calculation.....   | 15        |
| 2.4.3.3. Frame coefficient.....   | 15        |
| 2.4.3.4. Preset.....  | 16        |
| 2.4.3.5. Output data.....   | 16        |
| 2.4.3.6. Display resolution.....  | 17        |

|  |           |
|--|-----------|
| <b>2.4.4. Comparator settings</b> .....                      | 17        |
| 2.4.4.1. Comparator set number .....                         | 17        |
| 2.4.4.2. Comparator mode .....                               | 18        |
| 2.4.4.3. Comparator value.....                               | 18        |
| <b>2.4.5. Latch module settings</b> .....                    | 19        |
| 2.4.5.1. Latch mode.....                                     | 19        |
| 2.4.5.2. Latch direction .....                               | 20        |
| 2.4.5.3. Measurement latch count.....                        | 20        |
| 2.4.5.4. Measurement latch interval .....                    | 21        |
| 2.4.5.5. Encoder kind.....                                   | 21        |
| 2.4.5.6. Encoder resolution.....                             | 21        |
| 2.4.5.7. Encoder multiplication .....                        | 22        |
| 2.4.5.8. Encoder reference point .....                       | 22        |
| 2.4.5.9. Encoder offset.....                                 | 23        |
| 2.4.5.10. Encoder preset.....                                | 24        |
| <b>2.4.6. Display settings</b> .....                         | 25        |
| 2.4.6.1. Number of view frames .....                         | 25        |
| <b>2.4.7. I/O terminal settings</b> .....                    | 25        |
| 2.4.7.1. Display I/O functions .....                         | 25        |
| 2.4.7.2. I/O module functions .....                          | 27        |
| <b>2.4.8. System time</b> .....                              | 28        |
| <b>2.4.9. Save data settings</b> .....                       | 29        |
| 2.4.9.1. Connected media list.....                           | 29        |
| 2.4.9.2. Storage destination media .....                     | 29        |
| 2.4.9.3. Date format .....                                   | 30        |
| 2.4.9.4. Time format.....                                    | 30        |
| 2.4.9.5. Measurement decimal point separator.....            | 31        |
| 2.4.9.6. Data save trigger kind .....                        | 31        |
| 2.4.9.7. Number of save data .....                           | 32        |
| 2.4.9.8. Remove media .....                                  | 32        |
| <b>2.5. Detailed description of operation commands</b> ..... | <b>33</b> |
| 2.5.1.1. Apply settings .....                                | 33        |
| 2.5.1.2. Save parameters .....                               | 33        |
| 2.5.1.3. Parameter folder list.....                          | 33        |
| 2.5.1.4. Import parameters.....                              | 34        |
| 2.5.1.5. Reload setting parameters.....                      | 34        |
| 2.5.1.6. Save measurement data .....                         | 35        |
| 2.5.1.7. Cache clear .....                                   | 35        |

|   |           |
|---|-----------|
| 2.5.1.8. Number of measurement data .....                         | 35        |
| 2.5.1.9. Measurement data cache .....                             | 36        |
| 2.5.1.10. Data cache trigger.....                                 | 36        |
| 2.5.1.11. Display comparator set number.....                      | 37        |
| 2.5.1.12. Display output data.....                                | 37        |
| 2.5.1.13. Preset recall.....                                      | 37        |
| 2.5.1.14. Reference point clear.....                              | 38        |
| 2.5.1.15. Reference point preset recall.....                      | 38        |
| 2.5.1.16. Measurement reset .....                                 | 38        |
| 2.5.1.17. Measurement restart .....                               | 39        |
| 2.5.1.18. Measurement pause.....                                  | 39        |
| 2.5.1.19. Frame measurement value.....                            | 40        |
| 2.5.1.20. Latch measurement start.....                            | 40        |
| 2.5.1.21. Latch measurement status .....                          | 41        |
| 2.5.1.22. System restart .....                                    | 41        |
| <b>2.6. Detailed description of PLC link setup commands .....</b> | <b>42</b> |
| <b>2.6.1. PLC IP address .....</b>                                | <b>42</b> |
| <b>2.6.2. PLC port number.....</b>                                | <b>42</b> |
| <b>2.6.3. PLC link operation .....</b>                            | <b>42</b> |
| <b>2.6.4. PLC link protocol.....</b>                              | <b>43</b> |
| <b>2.6.5. [FINS]DNA/SNA .....</b>                                 | <b>43</b> |
| <b>2.6.6. [FINS]DA1 .....</b>                                     | <b>43</b> |
| <b>2.6.7. [FINS]SA1 .....</b>                                     | <b>44</b> |
| <b>2.6.8. Operation flag area .....</b>                           | <b>44</b> |
| <b>2.6.9. Command area.....</b>                                   | <b>44</b> |
| <b>2.6.10. Measurement data area .....</b>                        | <b>44</b> |
| <b>2.6.11. Display parameter area.....</b>                        | <b>45</b> |
| <b>3. Measurement Result Data Specifications .....</b>            | <b>46</b> |
| <b>4. Error Code Specifications .....</b>                         | <b>47</b> |

## 1. Overview

This Command Reference Manual defines the communication specifications with the host system that uses the LAN port (hereafter, "system port") of the LT80-NE.

## 2. Communication Specifications

### 2.1. Connection specifications

The communication protocol for using system port commands is TCP/IP. The LT80-NE passively opens port 22000 and performs handshake by requesting connection from the host PC.

The commands defined by this manual are treated as a single sequence upon the response of the LT80-NE after command issue by the host PC.

Unexpected operations may result if the host PC issues a command without waiting for a response from the LT80-NE.

In addition, unexpected operations may result if the LT80-NE is operated directly while connected to the system port.

Commands other than the GetCacheData command have a response time of 50 ms or less.

For the GetCacheData command, this is the time to transfer one data consisting of 672 bytes, and at an effective rate of 50 Mbps it takes approximately 40 seconds to transfer 300,000 data.

#### 2.1.1. Network settings

These functions are used to make the detailed network settings for the LT80-NE.

The IP address of the system port of the LT80-NE is "192.168.3.100" (IPv4) when shipped from the factory.

##### 2.1.1.1. System port IP address

Table 2-1-1 shows the specification of the system port IP address command used to set the IP address of the system port.

The set IP address becomes valid once the LT80-NE is restarted.

\* Addresses belonging to the 192.168.0.xx, 192.168.1.xx, and 192.168.2.xx networks cannot be set.

**Table 2-1-1 System port IP address command specification**

|                | Setting   | Acquisition                  |                     |                  |
|----------------|---|------------------------------|---------------------|------------------|
| Command format | SysPortAddress=<IP address>;<br><table border="1" data-bbox="352 1688 1003 1738"><tr><td>&lt;IP address&gt;</td><td>IPv4 format address</td></tr></table><br>* Addresses belonging to the 192.168.0.xx, 192.168.1.xx, and 192.168.2.xx networks are prohibited. | <IP address>                 | IPv4 format address | SysPortAddress?; |
| <IP address>   | IPv4 format address   |                              |                     |                  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | SysPortAddress=<IP address>; |                     |                  |

### 2.1.1.2. System port subnet mask

Table 2-1-2 shows the specification of the system port subnet mask command used to set the subnet mask of the system port.

The set subnet mask becomes valid once the LT80-NE is restarted.

**Table 2-1-2 System port subnet mask command specification**

|                | Setting   | Acquisition                  |
|----------------|---|------------------------------|
| Command format | SysPortSubnet=<Subnet mask>;<br><div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">             &lt;Subnet mask&gt;    IPv4 format subnet mask           </div><br>* In conjunction with the IP address, settings that include the 192.168.0.xx, 192.168.1.xx, and 192.168.2.xx networks are prohibited. | SysPortSubnet?;              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | SysPortSubnet=<Subnet mask>; |

### 2.1.1.3. System port gateway

Table 2-1-3 shows the specification of the system port gateway command used to set the default gateway of the system port.

The set gateway address becomes valid once the LT80-NE is restarted.

**Table 2-1-3 System port gateway command specification**

|                | Setting  | Acquisition                       |
|----------------|--|-----------------------------------|
| Command format | SysPortGateway=<Gateway address>;<br><div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px 0;">             &lt;Gateway address&gt;    IPv4 format IP address           </div><br>* Specify an address on the network to which the IP address belongs. | SysPortGateway?;                  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | SysPortGateway=<Gateway address>; |

### 2.1.2. Factory settings

Table 2-1-4 shows the specification of the factory settings command used to return the system to the factory settings.

When this command is issued, the parameter files saved in the system will be cleared and the system will be returned to the factory settings.

This command becomes valid when it is received three times in succession.

**Table 2-1-4 Factory settings command specification**

|                | Command  |
|----------------|--|
| Command format | !FactoryReset!;  |
| Return value   | Successful completion: PRO01; (1st time), PRO02; (2nd time), OK000; (3rd time) |

## 2.2. System port command specifications

System port commands are classified into setup commands and operation commands. Setup commands are used to make display unit settings, and operation commands are used to operate the display unit.

### 2.2.1. Setup command specifications

The setup commands are as follows.

The setup commands "reference point setting" and "master preset" are immediately applied to measurement.

To apply other settings, issue the operation command "apply settings."

**Table 2-2-1 List of setup commands**

| Function                  |             | Command   |
|---------------------------|-------------|---|
| Configuration information | Acquisition | Config?;  |
| Unit of display           | Setting     | Unit=<Unit>;  |
|                           | Acquisition | Unit?;  |
| Input resolution          | Setting     | InResol/Target module/Designated axis=<Sign><Resolution>; |
|                           | Acquisition | InResol/Target module/Designated axis?;                   |
| Reference point           | Setting     | UseRef/Target module/Designated axis=<Mode>;              |
|                           | Acquisition | UseRef/Target module/Designated axis?;                    |
| Master preset             | Setting     | MasterPreset/Target module/Designated axis=<Value>;       |
|                           | Acquisition | MasterPreset/Target module/Designated axis?;              |
| Number of view frames     | Setting     | FrameNum/Target module=<Value>;                           |
|                           | Acquisition | FrameNum/Target module?;                                  |
| Frame calculation         | Setting     | FrameCalc/Target module/Display ID=<Formula>;             |
|                           | Acquisition | FrameCalc/Target module/Display ID?;                      |
| Frame coefficient         | Setting     | FrameScaling/Target module/Display ID=<Value>;            |
|                           | Acquisition | FrameScaling/Target module/Display ID?;                   |

|   |             |  |
|---|-------------|--|
| Preset  | Setting     | Preset/Target module/Display ID=<Value>;         |
|   | Acquisition | Preset/Target module/Display ID?;                |
| Output data   | Setting     | OutData/Target module/Display ID=<Data>;         |
|   | Acquisition | OutData/Target module/Display ID?;               |
| Display resolution  | Setting     | DispResol/Target module/Display ID=<Resolution>; |
|   | Acquisition | DispResol/Target module/Display ID?;             |
| Comparator set number                                     | Setting     | CompSet/Target module/Display ID=<Set number>;   |
|   | Acquisition | CompSet/Target module/Display ID?;               |
| Comparator mode   | Setting     | CompMode/Target module/Display ID=<Mode>;        |
|   | Acquisition | CompMode/Target module/Display ID?;              |
| Comparator value  | Setting     | CompVal/Target module/Display ID/Set=<Value>;    |
|   | Acquisition | CompVal/Target module/Display ID/Set?;           |
| Latch mode  | Setting     | LatchMode/Target module=<Mode>;                  |
|   | Acquisition | LatchMode/Target module?;                        |
| Latch direction   | Setting     | LatchDir/Target module=<Direction>;              |
|   | Acquisition | LatchDir/Target module?;                         |
| Measurement latch count                                   | Setting     | LatchCount/Target module=<Value>;                |
|   | Acquisition | LatchCount/Target module?;                       |
| Measurement latch interval                                | Setting     | LatchInterval/Target module=<Value>;             |
|   | Acquisition | LatchInterval/Target module?;                    |
| Encoder kind  | Setting     | EncKind/Target module=<Kind>;                    |
|   | Acquisition | EncKind/Target module?;                          |
| Encoder resolution  | Setting     | EncResol/Target module=<Resolution>;             |
|   | Acquisition | EncResol/Target module?;                         |
| Encoder multiplication                                    | Setting     | EncMulti/Target module=<Multiplier>;             |
|   | Acquisition | EncMulti/Target module?;                         |
| Encoder reference point                                   | Setting     | EncUseRef/Target module=<Mode>;                  |
|   | Acquisition | EncUseRef/Target module?;                        |
| Encoder offset  | Setting     | EncRefOffset/Target module=<Value>;              |
|   | Acquisition | EncRefOffset/Target module?;                     |
| Encoder preset<br>* Available with Ver.<br>1.07 and later | Setting     | EncPreset/Target module=<Value>;                 |
|   | Acquisition | EncPreset/Target module?;                        |
| Number of view frames                                     | Setting     | DispFrames=<Value>;                              |
|   | Acquisition | DispFrames?;                                     |
| Display I/O functions                                     | Setting     | LT80IOFunc/IO/Bit=<Mode>;                        |
|   | Acquisition | LT80IOFunc/IO/Bit?;                              |



|                                     |             |   |
|-------------------------------------|-------------|---|
| I/O module functions                | Setting     | MG80IOFunc/Target module/IO module/IO/Bit=<Mode>;             |
|                                     | Acquisition | MG80IOFunc/Target module/IO module/IO/Bit?;                   |
| System time                         | Setting     | SystemTime=<Year>/<Month>/<Day>┐<br><Hour>:<Minute>:<Second>; |
|                                     | Acquisition | SystemTime?;  |
| Connected media list                | Acquisition | MediaList?;   |
| Storage destination media           | Setting     | StorageMedia=<Media>;   |
|                                     | Acquisition | StorageMedia?;  |
| Date format                         | Setting     | DateFormat=<Date format>;                                     |
|                                     | Acquisition | DateFormat?;  |
| Time format                         | Setting     | TimeFormat=<Time format>;                                     |
|                                     | Acquisition | TimeFormat?;  |
| Measurement decimal point separator | Setting     | DecimalSeparator=<Separator character>;                       |
|                                     | Acquisition | DecimalSeparator?;  |
| Data save trigger kind              | Setting     | SaveMeasureTrigger=<Kind>;                                    |
|                                     | Acquisition | SaveMeasureTrigger?;  |
| Number of save data                 | Setting     | SaveMeasureNum=<Number of data>;                              |
|                                     | Acquisition | SaveMeasureNum?;  |
| Remove media                        | Setting     | RemoveMedia/Media;  |
| System port IP address              | Setting     | SysPortAddress=<IP address>;                                  |
|                                     | Acquisition | SysPortAddress?;  |
| System port subnet mask             | Setting     | SysPortSubnet=<Subnet mask>;                                  |
|                                     | Acquisition | SysPortSubnet?;   |
| System port gateway                 | Setting     | SysPortGateway=<Gateway address>;                             |
|                                     | Acquisition | SysPortGateway?;  |
| Factory settings                    |             | !FactoryReset!;   |

### 2.2.2. Operation command specifications

The operation commands are as follows.

**Table 2-2-2 List of operation commands**

| Function                      |             | Command  |
|-------------------------------|-------------|--|
| Apply settings                |             | ApplySetting;                                      |
| Save parameters               |             | SaveParam/Media;                                   |
| Parameter folder list         |             | ListParam/Media;                                   |
| Import parameters             |             | LoadParam/Media/Folder name;                       |
| Reload setting parameters     |             | ReloadParameter;                                   |
| Save measurement data         |             | SaveMeasure/Media;                                 |
| Cache clear                   |             | ClearCache;  |
| Number of measurement data    | Acquisition | CacheNum?;   |
| Measurement data cache        | Acquisition | GetCacheData/Cache number;                         |
| Data cache trigger            |             | TriggerCache;                                      |
| Display comparator set number | Setting     | DispCompSet/Target module/Display ID=<Set number>; |
|                               | Acquisition | DispCompSet/Target module/Display ID?;             |
| Display output data           | Setting     | DispOutData/Target module/Display ID=<Data>;       |
|                               | Acquisition | DispOutData/Target module/Display ID?;             |
| Preset recall                 |             | PresetRecall/Target module/Display ID;             |
| Reference point clear         |             | RefClear/Target module/Target axis;                |
| Reference point preset recall |             | RefRecall/Target module/Target axis;               |
| Measurement reset             |             | ResetMeasure/Target module/Display ID;             |
| Measurement restart           |             | RestartMeasure/Target module/Display ID;           |
| Measurement pause             | Setting     | PauseMeasure/Target module/Display ID=<Mode>;      |
|                               | Acquisition | PauseMeasure/Target module/Display ID?;            |
| Frame measurement value       | Acquisition | GetFrameMeasure/Target module;                     |
| Latch measurement start       |             | LatchStart=<Value>;                                |
| Latch measurement status      | Acquisition | LatchStatus?;                                      |
| System restart                |             | !SystemRestart!;                                   |

### 2.2.3. PLC link command specifications

The PLC link commands are as follows.

\* PLC link commands are available with Ver. 1.07 and later.

**Table 2-2-3 List of PLC link commands**

| Function               |             | Command  |
|------------------------|-------------|--|
| PLC IP ADDRESS         | Setting     | PlcAddress=<IP address>;                           |
|                        | Acquisition | PlcAddress?;                                       |
| PLC PORT NUMBER        | Setting     | PlcPort=<Port number>,<Used for local port>;       |
|                        | Acquisition | PlcPort?;  |
| PLC LINK OPERATION     | Setting     | PlcLinkMode=<Operation mode>;                      |
|                        | Acquisition | PlcLinkMode?;                                      |
| PLC LINK PROTOCOL      | Setting     | PlcLinkProtocol=<Communication system>,<Protocol>; |
|                        | Acquisition | PlcLinkMode?;                                      |
| [FINS]DNA/SNA          | Setting     | FinsDnaSna=<DNA/SNA>;                              |
|                        | Acquisition | FinsDnaSna?;                                       |
| [FINS]DA1              | Setting     | FinsDa1=<DA1>;                                     |
|                        | Acquisition | FinsDa1?;  |
| [FINS]SA1              | Setting     | FinsSa1=<SA1>;                                     |
|                        | Acquisition | FinsSa1?;  |
| Operation flag area    | Setting     | ProcFlagArea/Target module=<Address>;              |
|                        | Acquisition | ProcFlagArea/Target module?;                       |
| Command area           | Setting     | CommandArea/Target module=<Address>;               |
|                        | Acquisition | CommandArea/Target module?;                        |
| Measurement data area  | Setting     | MeasDataArea/Target module=<Address>;              |
|                        | Acquisition | MeasDataArea/Target module?;                       |
| Display parameter area | Setting     | ParameterArea/Target module/Display ID=<Address>;  |
|                        | Acquisition | ParameterArea/Target module/Display ID?;           |

## 2.3. Items common to each command

The items common to each command are described below.

### 2.3.1. Concerning the target module

The target module designates the ID of the MG80-MA. When "All modules" is selected, all the modules that configure the system become the target regardless of the designated axis and display ID. When "All modules" is designated, only operation commands are valid.

**Table 2-3-1 How to designate the target module**

|               |         |   |
|---------------|---------|---|
| Target module | 1 to 15 | Value set by the rotary switch of the MG80-MA |
| All modules   | *       | All modules that configure the system         |

### 2.3.2. Concerning the designated axis

The designated axis corresponds to the serially numbered MG80-CM (counter module) to which the measuring units are connected.

How to designate the designated axis for the MG80-MA is defined as follows. "All axes" cannot be designated for acquisition commands.

**Table 2-3-2 How to designate the designated axis**

|                 |         |   |
|-----------------|---------|---|
| Designated axis | 1 to 16 | Measuring unit connected to the MG80-CM |
| All axes        | *       |   |

### 2.3.3. Concerning the display ID

The display ID indicates the frames in which the MG80-MA will store the calculation results of each axis. (LT80-NE view frames)

Up to 16 frames can be set for a single MG80-MA. How to designate the display ID is defined as follows.

"All display IDs" cannot be designated for acquisition commands.

**Table 2-3-3 How to designate the display ID**

|                 |        |                                     |
|-----------------|--------|-------------------------------------|
| Display ID      | A to P | View frames assigned to the MG80-MA |
| All display IDs | *      |                                     |

### 2.3.4. Concerning the target I/O

The target I/O designates the ID of the serially numbered LZ80-K (I/O module) connected to the MG80-MA.

**Table 2-3-4 How to designate the target I/O**

|              |        |   |
|--------------|--------|---|
| Target input | 1 to 2 | Corresponds respectively to the LZ80-K1 and LZ80-K2 |
|--------------|--------|---|

### 2.3.5. Concerning the relationship between the target axis and the display ID

The relationship between the target axis and the display ID is defined as follows.

In the MG80 series, the data input/output systems are configured as follows.

- **Input:** Measuring unit (called "axis") connected to the MG80-CM
- **Output:** Frame ID (called "display ID") displayed on the LT80

A single MG80-MA can have up to 16 display IDs.

The designated axis, two-axis calculation, measuring mode, and comparator settings can be made separately for the input and output systems.

## 2.4. Detailed description of setup commands

### 2.4.1. Basic settings

The basic settings are used to set the system configuration and the unit of display.

#### 2.4.1.1. Configuration information

Table 2-4-1 shows the specification of the configuration information command used to set the configuration of the entire system.

**Table 2-4-1 Configuration information command specification**

|                | Acquisition  |
|----------------|--|
| Command format | Config?;   |
| Return value   | Config=<LT80 version>/<Module configuration information>;<br><Module configuration information>:[Module ID]{<Number of latch modules>:<br><Number of counter modules>:<Number of IO modules>:<Firmware version>} |

\* When multiple MG80-MA modules are connected, list the module configuration information in <Module configuration information> separated by slashes ("/").

#### 2.4.1.2. Unit of display

Table 2-4-2 shows the specification of the unit of display command used to set the unit of display.

**Table 2-4-2 Unit of display command specification**

|                | Setting   | Acquisition  |    |        |
|----------------|---|--------------|----|--------|
| Command format | Unit=<Unit>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 50px; height: 20px;">&lt;Unit&gt;</td> <td style="width: 50px; height: 20px;">mm</td> </tr> </table> | <Unit>       | mm | Unit?; |
| <Unit>         | mm  |              |    |        |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | Unit=<Unit>; |    |        |

## 2.4.2. Measuring unit settings

These functions are used to set the details of the measuring units to be connected to the MG80-CM.

### 2.4.2.1. Input resolution

Table 2-4-3 shows the specification of the input resolution command used to set the resolution of the measuring units to be connected.

**Table 2-4-3 Input resolution command specification**

|                | Setting  | Acquisition   |       |              |                       |   |
|----------------|--|---|-------|--------------|-----------------------|---|
| Command format | InResol/Target module/Designated axis<br>=<Sign><Resolution>;<br><table border="1" data-bbox="354 658 920 757"> <tr> <td>&lt;Sign&gt;</td> <td>+ , -</td> </tr> <tr> <td>&lt;Resolution&gt;</td> <td>0.1, 0.5, 1, 2, 5, 10</td> </tr> </table> | <Sign>  | + , - | <Resolution> | 0.1, 0.5, 1, 2, 5, 10 | InResol/Target module/Designated axis?; |
| <Sign>         | + , -  |   |       |              |                       |   |
| <Resolution>   | 0.1, 0.5, 1, 2, 5, 10  |   |       |              |                       |   |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | InResol/Target module/Designated axis=<Sign><Resolution>; |       |              |                       |   |

### 2.4.2.2. Reference point

Table 2-4-4 shows the specification of the reference point use command used to set whether or not to use the reference point.

**Table 2-4-4 Reference point use setting command specification**

|                | Setting  | Acquisition                                  |     |  |    |  |
|----------------|--|--|-----|--|----|--|
| Command format | UseRef/Target module/Designated axis<br>=<Mode>;<br><table border="1" data-bbox="363 1330 818 1429"> <tr> <td>&lt;Mode&gt;</td> <td>OFF</td> </tr> <tr> <td></td> <td>ON</td> </tr> </table> | <Mode>                                       | OFF |  | ON | UseRef/Target module/Designated axis?; |
| <Mode>         | OFF  |  |     |  |    |  |
|                | ON   |  |     |  |    |  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | UseRef/Target module/Designated axis=<Mode>; |     |  |    |  |

### 2.4.2.3. Master preset

Table 2-4-5 shows the specification of the master preset command used to set the master preset values when using the reference point.

**Table 2-4-5 Master preset command specification**

|                | Setting  | Acquisition   |
|----------------|--|---|
| Command format | MasterPreset/Target module/Designated axis<br>=<Value>;<br>* The values that can be set are limited by the input resolution unit.<br>(Signed decimal value with decimal point) | MasterPreset/Target module/Designated axis?;        |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | MasterPreset/Target module/Designated axis=<Value>; |

\* The <Value> setting range is as follows.

| Input resolution | mm display value range  |
|------------------|-------------------------|
| 0.1 μm           | -9999.9999 to 9999.9999 |
| 0.5 μm           | -9999.9995 to 9999.9995 |
| 1 μm             | -99999.999 to 99999.999 |
| 2 μm             | -99999.998 to 99999.998 |
| 5 μm             | -99999.995 to 99999.995 |
| 10 μm            | -999999.99 to 999999.99 |

### 2.4.3. View frame settings

These functions are used to set the contents of the frames to be displayed on the LT80-NE.

#### 2.4.3.1. Number of view frames

Table 2-4-6 shows the specification of the number of view frames command used to set the number of frames to be displayed on the LT80-NE.

**Table 2-4-6 Number of view frames command specification**

|                | Setting   | Acquisition                     |         |                          |
|----------------|---|---------------------------------|---------|--------------------------|
| Command format | FrameNum/Target module=<Value>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 50px;">&lt;Value&gt;</td> <td>0 to 16</td> </tr> </table> | <Value>                         | 0 to 16 | FrameNum/Target module?; |
| <Value>        | 0 to 16   |                                 |         |                          |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | FrameNum/Target module=<Value>; |         |                          |

### 2.4.3.2. Frame calculation

Table 2-4-7 shows the specification of the frame calculation command used to set calculations in the frames to be displayed.

When calculations between axes are enabled by this command, set the reference point use setting of the target frames to OFF.

**Table 2-4-7 Frame calculation command specification**

|                | Setting  | Acquisition                                       |
|----------------|--|---|
| Command format | FrameCalc/Target module/Display ID<br>=<Formula>;<br>* <Formula> is mentioned below.         | FrameCalc/Target module/Display ID?;              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications." | FrameCalc/Target module/Display ID<br>=<Formula>; |

\* Syntax corresponding to <Formula>

| Name                        | Syntax  | Meaning  |
|-----------------------------|---|--|
| Single axis                 | [A<Designated axis>]                              | Displays the measurement value of the designated axis.   |
| Sum of two axes             | [A<Designated axis 1>]+<br>[A<Designated axis 2>] | Displays the sum of the measurement values of designated axis 1 and designated axis 2.             |
| Difference between two axes | [A<Designated axis 1>]-<br>[A<Designated axis 2>] | Displays the difference between the measurement values of designated axis 1 and designated axis 2. |

The valid <Designated axis> range is 1 to 16.

When an invalid <Designated axis> is set, an error response is returned.

### 2.4.3.3. Frame coefficient

Table 2-4-8 shows the specification of the (scaling function) frame coefficient command used to set coefficients in the measurement values.

**Table 2-4-8 Frame coefficient command specification**

|                | Setting  | Acquisition                                     |
|----------------|--|---|
| Command format | FrameScaling/Target module/Display ID=<Value>;<br>The <Value> range is 0.000001 or more to 9.999999 or less. | FrameScaling/Target module /Display ID?;        |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."                 | FrameScaling/Target module /Display ID=<Value>; |



### 2.4.3.4. Preset

Table 2-4-9 shows the specification of the preset command used to set preset values in the measurement values.

**Table 2-4-9 Preset command specification**

|                | Setting   | Acquisition                               |
|----------------|---|---|
| Command format | Preset/Target module/Display ID=<Value>;<br>* The display resolution unit limits the values that can be set.<br>(Signed decimal value with decimal point) | Preset/Target module/Display ID?;         |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | Preset/Target module/Display ID =<Value>; |

The range of values that can be input to <Value> are as follows.

| Display resolution | mm display value range  |
|--------------------|-------------------------|
| 0.1 μm             | -9999.9999 to 9999.9999 |
| 0.5 μm             | -9999.9995 to 9999.9995 |
| 1 μm               | -99999.999 to 99999.999 |
| 2 μm               | -99999.998 to 99999.998 |
| 5 μm               | -99999.995 to 99999.995 |
| 10 μm              | -999999.99 to 999999.99 |

### 2.4.3.5. Output data

Table 2-4-10 shows the specification of the output data command used to set the measuring mode of the measurement values.

**Table 2-4-10 Output data command specification**

|                | Setting  | Acquisition                              |                     |                                    |
|----------------|--|--|---------------------|------------------------------------|
| Command format | OutData/Target module/Display ID=<Data>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 2px 10px;">&lt;Data&gt;</td> <td style="padding: 2px 10px;">REAL, MIN, MAX, P-P</td> </tr> </table> | <Data>                                   | REAL, MIN, MAX, P-P | OutData/Target module/Display ID?; |
| <Data>         | REAL, MIN, MAX, P-P  |  |                     |                                    |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | OutData/Target module/Display ID=<Data>; |                     |                                    |

### 2.4.3.6. Display resolution

Table 2-4-11 shows the specification of the display resolution command used to set the display resolution of the measurement values.

**Table 2-4-11 Display resolution setting command specification**

|                | Setting  | Acquisition  |
|----------------|--|--|
| Command format | DispResol/Target module/Display ID=<br><Resolution>;   | DispResol/Target module/Display ID?;                 |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications." | DispResol/Target module/Display ID=<br><Resolution>; |

The values that can be set in <Resolution> are as follows.

|            |
|------------|
| mm display |
| 0.1        |
| 0.5        |
| 1          |
| 2          |
| 5          |
| 10         |

### 2.4.4. Comparator settings

These functions are used to set the comparator details for each frame.

#### 2.4.4.1. Comparator set number

Table 2-4-12 shows the specification of the comparator set number command used to set the comparator set number.

**Table 2-4-12 Comparator set number command specification**

|                | Setting   | Acquisition                                    |        |                                    |
|----------------|---|--|--------|------------------------------------|
| Command format | CompSet/Target module/Display ID=<Set number>;<br><table border="1" style="margin-left: 20px;"> <tr> <td>&lt;Set number&gt;</td> <td>1 to 8</td> </tr> </table> | <Set number>                                   | 1 to 8 | CompSet/Target module/Display ID?; |
| <Set number>   | 1 to 8  |  |        |                                    |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | CompSet/Target module/Display ID=<Set number>; |        |                                    |

### 2.4.4.2. Comparator mode

Table 2-4-13 shows the specification of the comparator mode command used to set the number of comparator levels.

**Table 2-4-13 Comparator mode command specification**

|                | Setting  | Acquisition                                   |   |          |  |   |          |                                     |
|----------------|--|---|---|----------|--|---|----------|-------------------------------------|
| Command format | CompMode/Target module/Display ID=<br><Mode>;<br><table border="1" data-bbox="331 510 849 609"> <tr> <td>&lt;Mode&gt;</td> <td>2</td> <td>2 levels</td> </tr> <tr> <td></td> <td>4</td> <td>4 levels</td> </tr> </table> | <Mode>  | 2 | 2 levels |  | 4 | 4 levels | CompMode/Target module/Display ID?; |
| <Mode>         | 2  | 2 levels                                      |   |          |  |   |          |                                     |
|                | 4  | 4 levels                                      |   |          |  |   |          |                                     |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | CompMode/Target module/Display ID<br>=<Mode>; |   |          |  |   |          |                                     |

### 2.4.4.3. Comparator value

Table 2-4-14 shows the specification of the comparator value command used to set the comparator thresholds.

**Table 2-4-14 Comparator value command specification**

|                | Setting  | Acquisition                                       |     |                             |         |   |                         |  |
|----------------|--|---|-----|-----------------------------|---------|---|-------------------------|--|
| Command format | CompVal/Target module/Display ID/Set=<br><Value>;<br><table border="1" data-bbox="325 1191 928 1379"> <tr> <td>Set</td> <td>1-8</td> <td>Set number<br/>(Max. 8 sets)</td> </tr> <tr> <td>&lt;Value&gt;</td> <td>*</td> <td>Comparator<br/>threshold</td> </tr> </table> <p>* The display resolution unit limits the values that can be set.<br/>(Signed decimal value with decimal point)</p> | Set   | 1-8 | Set number<br>(Max. 8 sets) | <Value> | * | Comparator<br>threshold | CompVal/Target module/Display ID<br>/Set?; |
| Set            | 1-8  | Set number<br>(Max. 8 sets)                       |     |                             |         |   |                         |  |
| <Value>        | *  | Comparator<br>threshold                           |     |                             |         |   |                         |  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | CompVal/Target module/Display ID<br>/Set=<Value>; |     |                             |         |   |                         |  |

Set values separated by spaces for up to four levels in order from level 1 in <Value>.

When more values are set than the number of levels set by the comparator mode command, the values that are unnecessary for the configuration are ignored.

In addition, when fewer values are set than the number of levels set by the comparator mode command, the values are set in order from level 1.

Example 1) Two comparator levels, CompVal/1/1/1 = -5.0000 -2.5000 2.5000 5.0000;

→ Level 1: -5.0000 and level 2: -2.5000 are set.

Example 2) Four comparator levels, CompVal/1/1/1 = -5.0000 -2.5000 2.5000;

→ Level 1: -5.0000, level 2: -2.5000, and level 3: 2.5000 are set, and level 4 is not newly set.

The range of values that can be input to <Value> above is as follows.

| Display resolution | mm display value range  |
|--------------------|-------------------------|
| 0.1 μm             | -9999.9999 to 9999.9999 |
| 0.5 μm             | -9999.9995 to 9999.9995 |
| 1 μm               | -99999.999 to 99999.999 |
| 2 μm               | -99999.998 to 99999.998 |
| 5 μm               | -99999.995 to 99999.995 |
| 10 μm              | -999999.99 to 999999.99 |

## 2.4.5. Latch module settings

These functions are used to set the MG80-LM (latch module) details.

When a latch module is not connected, these settings are ignored.

The values can be checked at all times by using the acquisition commands, but when a latch module is not connected, undetermined values are returned.

### 2.4.5.1. Latch mode

Table 2-4-15 shows the specification of the latch mode command used to set the latch mode.

**Table 2-4-15 Latch mode command specification**

|                | Setting   | Acquisition                      |                                 |                           |
|----------------|---|----------------------------------|---------------------------------|---------------------------|
| Command format | LatchMode/Target module=<Mode>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="padding: 2px 10px;">&lt;Mode&gt;</td> <td style="padding: 2px 10px;">Internal, Encoder, HighSpeedEnc</td> </tr> </table> | <Mode>                           | Internal, Encoder, HighSpeedEnc | LatchMode/Target module?; |
| <Mode>         | Internal, Encoder, HighSpeedEnc   |                                  |                                 |                           |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | LatchMode/Target module =<Mode>; |                                 |                           |

The modes correspond to Internal, Encoder, and HighSpeedEnc on the LT80 settings screen.

### 2.4.5.2. Latch direction

Table 2-4-16 shows the specification of the latch direction command used to set the latch direction. This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-16 Latch direction command specification**

|                | Setting  | Acquisition                         |   |                          |
|----------------|--|-------------------------------------|---|--------------------------|
| Command format | LatchDir/Target module=<Direction>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">&lt;Direction&gt;</td> <td>Bidirection<br/>+Direction<br/>-Direction</td> </tr> </table> | <Direction>                         | Bidirection<br>+Direction<br>-Direction | LatchDir/Target module?; |
| <Direction>    | Bidirection<br>+Direction<br>-Direction  |                                     |   |                          |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | LatchDir/Target module=<Direction>; |   |                          |

### 2.4.5.3. Measurement latch count

Table 2-4-17 shows the specification of the measurement latch count command used to set the latch count during measurement.

This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-17 Measurement latch count command specification**

|                | Setting  | Acquisition                       |
|----------------|--|-----------------------------------|
| Command format | LatchCount/Target module=<Value>;<br>Input the number of measuring points (number of latch times) in one measuring sequence in <Value>.<br>* Unsigned integer value from 1 to 300000 | LatchCount/Target module?;        |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | LatchCount/Target module=<Value>; |

#### 2.4.5.4. Measurement latch interval

Table 2-4-18 shows the specification of the measurement latch interval command used to set the latch interval during measurement. This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-18 Measurement latch interval command specification**

|                | Setting  | Acquisition                          |
|----------------|--|--------------------------------------|
| Command format | LatchInterval/Target module=<Value>;<br>Input the encoder count (range: 1 to 300000) for each data latch in <Value>. | LatchInterval/Target module?;        |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."                         | LatchInterval/Target module=<Value>; |

#### 2.4.5.5. Encoder kind

Table 2-4-19 shows the specification of the encoder kind command used to set the kind of encoder to be used for latch. This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-19 Encoder kind command specification**

|                | Setting  | Acquisition                   |                |                         |
|----------------|--|-------------------------------|----------------|-------------------------|
| Command format | EncKind/Target module=<Kind>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 2px 5px;">&lt;Kind&gt;</td> <td style="padding: 2px 5px;">Rotary, Linear</td> </tr> </table> | <Kind>                        | Rotary, Linear | EncKind/Target module?; |
| <Kind>         | Rotary, Linear   |                               |                |                         |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | EncKind/Target module=<Kind>; |                |                         |

#### 2.4.5.6. Encoder resolution

Table 2-4-20 shows the specification of the encoder resolution command used to set the resolution of the encoder to be used for latch.

This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-20 Encoder resolution command specification**

|                | Setting   | Acquisition                          |   |                          |
|----------------|---|--------------------------------------|---|--------------------------|
| Command format | EncResol/Target module=<Resolution>;<br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">&lt;Resolution&gt;</td> <td style="padding: 5px;">                             Rotary: 360 degree count<br/>                             * Signed integer<br/>                             (The integer part range is 1 to 900000.)<br/><br/>                             Linear: Distance per count [<math>\mu\text{m}</math>]<br/>                             * Signed decimal value with decimal point (The decimal value range is 0.1 to 9999.9 (up to the first decimal place).)                         </td> </tr> </table> | <Resolution>                         | Rotary: 360 degree count<br>* Signed integer<br>(The integer part range is 1 to 900000.)<br><br>Linear: Distance per count [ $\mu\text{m}$ ]<br>* Signed decimal value with decimal point (The decimal value range is 0.1 to 9999.9 (up to the first decimal place).) | EncResol/Target module?; |
| <Resolution>   | Rotary: 360 degree count<br>* Signed integer<br>(The integer part range is 1 to 900000.)<br><br>Linear: Distance per count [ $\mu\text{m}$ ]<br>* Signed decimal value with decimal point (The decimal value range is 0.1 to 9999.9 (up to the first decimal place).)   |                                      |   |                          |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | EncResol/Target module=<Resolution>; |   |                          |

**2.4.5.7. Encoder multiplication**

Table 2-4-21 shows the specification of the encoder multiplication command used to set the A/B quadrature multiplication of the encoder to be used for latch. This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-21 Encoder multiplication command specification**

|                | Setting  | Acquisition                          |
|----------------|--|--------------------------------------|
| Command format | EncMulti/Target module=<Multiplier>;<br>Input the multiplier (1 or 2 or 4) in <Multiplier>.  | EncMulti/Target module?;             |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications." | EncMulti/Target module=<Multiplier>; |

**2.4.5.8. Encoder reference point**

Table 2-4-22 shows the specification of the encoder reference point setting command used to set whether or not to use the reference point of the encoder to be used for latch.

This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-22 Encoder reference point setting command specification**

|                | Setting   | Acquisition                     |         |                           |
|----------------|---|---------------------------------|---------|---------------------------|
| Command format | EncUseRef/Target module=<Mode>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 100px; height: 20px; text-align: center;">&lt;Mode&gt;</td> <td style="width: 100px; height: 20px; text-align: center;">ON, OFF</td> </tr> </table> | <Mode>                          | ON, OFF | EncUseRef/Target module?; |
| <Mode>         | ON, OFF   |                                 |         |                           |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | EncUseRef/Target module=<Mode>; |         |                           |

#### 2.4.5.9. Encoder offset

Table 2-4-23 shows the specification of the reference point encoder offset command used to set the reference point offset value of the encoder to be used for latch.

This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

**Table 2-4-23 Encoder offset command specification**

|                | Setting  | Acquisition                         |
|----------------|--|-------------------------------------|
| Command format | EncRefOffset/Target module=<Value>;<br>Input the encoder offset count in <Value>.            | EncRefOffset/Target module?;        |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications." | EncRefOffset/Target module=<Value>; |

Use the following calculation formula to obtain the offset count value (deg or mm).

C is the count value, R is the resolution, M is the multiplication, and V is the offset amount.

$$\text{Rotary (deg): } C = \frac{RVM}{360} \qquad \text{Linear (mm): } C = \frac{1000V}{R}$$

For a rotary encoder, the count value is 0 deg or more to less than 360 deg.

For a linear encoder, the count value is -9999.9999 mm or more to 9999.9999 mm or less.

Example 1) For a rotary encoder with a resolution of 3600 (multiplier: 1) and an offset of 1 deg, set 10.

Example 2) For a rotary encoder with a resolution of 360 (multiplier: 4) and an offset of 1 deg, set 4.

Example 3) For a linear encoder with a resolution of 0.1 (multiplier: 4) and an offset of 1 mm, set 10000.



### 2.4.5.10. Encoder preset

Table 2-4-24 shows the specification of the encoder preset command used to set preset value of the latch start position the in the latch function.

This command is enabled once "Encoder" or "HighSpeedEnc" has been set by the latch mode command.

\* The encoder preset command is available with Ver.1.07 and later.

**Table 2-4-24 Encoder preset command specification**

|                | Setting  | Acquisition                          |
|----------------|--|--------------------------------------|
| Command format | EncPreset/Target module=<Value>;<br>Input the encoder preset value in <Value>.               | EncPreset/Target module?;            |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications." | EncPreset/Target module=<br><Value>; |

Set the preset value in deg or mm units in <Value>.

The input range is 0 to 359.999 deg when a rotary encoder is set, and -9999.9999 to 9999.9999 mm when a linear encoder is set. In either case, the significant digits are up to the fourth decimal place.

## 2.4.6. Display settings

These functions are used to set the number of frames to be displayed on the LT80-NE and the I/O functions.

### 2.4.6.1. Number of view frames

Table 2-4-25 shows the specification of the view frames setting command used to set the number of frames to be displayed.

**Table 2-4-25 View frames setting command specification**

|                | Setting   | Acquisition         |   |                 |  |   |                 |  |   |                 |  |    |                  |              |
|----------------|---|---------------------|---|-----------------|--|---|-----------------|--|---|-----------------|--|----|------------------|--------------|
| Command format | DispFrames=<Value>;<br><table border="1"> <tr> <td>&lt;Value&gt;</td> <td>2</td> <td>2-frame display</td> </tr> <tr> <td></td> <td>4</td> <td>4-frame display</td> </tr> <tr> <td></td> <td>8</td> <td>8-frame display</td> </tr> <tr> <td></td> <td>16</td> <td>16-frame display</td> </tr> </table> | <Value>             | 2 | 2-frame display |  | 4 | 4-frame display |  | 8 | 8-frame display |  | 16 | 16-frame display | DispFrames?; |
| <Value>        | 2   | 2-frame display     |   |                 |  |   |                 |  |   |                 |  |    |                  |              |
|                | 4   | 4-frame display     |   |                 |  |   |                 |  |   |                 |  |    |                  |              |
|                | 8   | 8-frame display     |   |                 |  |   |                 |  |   |                 |  |    |                  |              |
|                | 16  | 16-frame display    |   |                 |  |   |                 |  |   |                 |  |    |                  |              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | DispFrames=<Value>; |   |                 |  |   |                 |  |   |                 |  |    |                  |              |

## 2.4.7. I/O terminal settings

These functions are used to set the I/O functions of the LT80-NE display unit.

### 2.4.7.1. Display I/O functions

Table 2-4-26 shows the specification of the display I/O function assignment command.

**Table 2-4-26 Display I/O function assignment command specification**

|                | Setting   | Acquisition               |
|----------------|---|---------------------------|
| Command format | LT80IOFunc/IO/Bit=<Mode>;<br>* Designate In or Out for "IO."<br>* Designate a number from 1 to 4 for "Bit." | LT80IOFunc/IO/Bit?;       |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."                | LT80IOFunc/IO/Bit=<Mode>; |

\* If the same function is assigned to multiple bits, an error results.

**Table 2-4-27 Description of input function assignments**

| Function name  | Mode | Description   |
|----------------|------|---|
| Pause          | 0    | Pause all frames  |
| Reset          | 1    | Reset all frames  |
| Preset         | 2    | Recall presets of all frames  |
| D-Trig/LMStart | 3    | Measurement data cache (internal trigger)<br>Start encoder synchronous measurement<br>(encoder synchronization) |
| RefReload      | 4    | Reload reference points of all frames   |
| Start          | 5    | Start all frames  |
| SaveMeas       | 6    | Save measurement data   |
| NO_FUNC        | X    | No function assignment  |

**Table 2-4-28 Description of output function assignments**

| Function name | Mode | Description  |
|---------------|------|--|
| SysAlm        | 0    | Alarm output   |
| StatMon       | 1    | Operating status monitor                                   |
| CompNG        | 2    | Comparator NG output                                       |
| RefPass       | 3    | Reference point pass output                                |
| LMAlarm       | 4    | Latch module alarm output                                  |
| LMProcStatus  | 5    | Latch module measuring status output                       |
| SaveProc      | 6    | Measurement data save processing status<br>output          |
| CompOK        | 7    | Comparator OK output<br>*Available with Ver. 1.07 or later |
| NO_FUNC       | X    | No function assignment                                     |

### 2.4.7.2. I/O module functions

Table 2-4-29 shows the specification of the LZ80-K (I/O module) function assignment command.

**Table 2-4-29 I/O module function assignment command specification**

|                | Setting  | Acquisition   |
|----------------|--|---|
| Command format | MG80IOFunc/Target module/IO module/IO/Bit<br>=<Mode>;<br>* Designate In or Out for "IO."<br>* Designate a number from 1 to 8 (I/O module terminal number) for "Bit." | MG80IOFunc/Target module/<br>IO module/IO/Bit?;       |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | MG80IOFunc/Target module/<br>IO module/IO/Bit=<Mode>; |

\* If the same function is assigned to multiple bits, an error results.

\* The low-order 5 bits of the I/O module 1 input are fixed to the ADDR[0:3] and DREQ functions, and the low-order 1 bit of the I/O module output is fixed to the DRDY function, so bit designation and mode assignment is not possible for these bits.

**Table 2-4-30 Description of input function assignments**

| Function name | Mode               | Description              |
|---------------|--------------------|--------------------------|
| ADDR0         | Setting prohibited | Target ID (bit0)         |
| ADDR1         | Setting prohibited | Target ID (bit1)         |
| ADDR2         | Setting prohibited | Target ID (bit2)         |
| ADDR3         | Setting prohibited | Target ID (bit3)         |
| DREQ          | Setting prohibited | Data request signal      |
| COMP0         | 5                  | Comparator set (bit0)    |
| COMP1         | 6                  | Comparator set (bit1)    |
| COMP2         | 7                  | Comparator set (bit2)    |
| RESET         | 8                  | Reset command            |
| PRESET        | 9                  | Preset recall command    |
| RESET_ORG     | 10                 | Reload reference point   |
| MODE0         | 11                 | Output value mode (bit0) |
| MODE1         | 12                 | Output value mode (bit1) |
| START         | 13                 | Start signal             |
| PAUSE         | 14                 | Pause signal             |
| NO_FUNC       | X                  | No function assignment   |

**Table 2-4-31 Description of output function assignments**

| Function name | Mode               | Description               |
|---------------|--------------------|---------------------------|
| DRDY          | Setting prohibited | Data ready signal         |
| COMP_OUT0     | 1                  | Comparator area 0         |
| COMP_OUT1     | 2                  | Comparator area 1         |
| COMP_OUT2     | 3                  | Comparator area 2         |
| COMP_OUT3     | 4                  | Comparator area 3         |
| COMP_OUT4     | 5                  | Comparator area 4         |
| ALARM         | 6                  | Alarm output              |
| ORG_PASS      | 7                  | Reference point pass flag |
| LM_ERROR      | 8                  | Latch module error        |
| NO_FUNC       | X                  | No function assignment    |

### 2.4.8. System time

This function sets the system time of the LT80-NE.

Table 2-4-32 shows the specification of the system time command.

When the LT80-NE receives this command, the time is set immediately.

\* Do not set a time after 2038/1/19 03:14:07.

**Table 2-4-32 System time command specification**

|                | Setting   | Acquisition   |  |         |      |       |   |        |                            |          |      |          |      |              |
|----------------|---|---|--|---------|------|-------|---|--------|----------------------------|----------|------|----------|------|--------------|
| Command format | SystemTime=<Year>/<Month>/<Day>_<Hour>:<Minute>:<Second>;<br><table border="1"> <tr> <td>&lt;Year&gt;</td> <td>4-digit year notation (Western calendar)</td> </tr> <tr> <td>&lt;Month&gt;</td> <td>1-12</td> </tr> <tr> <td>&lt;Day&gt;</td> <td>1 to 31 (A non-existent day will result in an error.)</td> </tr> <tr> <td>&lt;Hour&gt;</td> <td>0 to 23 (24-hour notation)</td> </tr> <tr> <td>&lt;Minute&gt;</td> <td>0-59</td> </tr> <tr> <td>&lt;Second&gt;</td> <td>0-59</td> </tr> </table> | <Year>  | 4-digit year notation (Western calendar) | <Month> | 1-12 | <Day> | 1 to 31 (A non-existent day will result in an error.) | <Hour> | 0 to 23 (24-hour notation) | <Minute> | 0-59 | <Second> | 0-59 | SystemTime?; |
| <Year>         | 4-digit year notation (Western calendar)  |   |  |         |      |       |   |        |                            |          |      |          |      |              |
| <Month>        | 1-12  |   |  |         |      |       |   |        |                            |          |      |          |      |              |
| <Day>          | 1 to 31 (A non-existent day will result in an error.)   |   |  |         |      |       |   |        |                            |          |      |          |      |              |
| <Hour>         | 0 to 23 (24-hour notation)  |   |  |         |      |       |   |        |                            |          |      |          |      |              |
| <Minute>       | 0-59  |   |  |         |      |       |   |        |                            |          |      |          |      |              |
| <Second>       | 0-59  |   |  |         |      |       |   |        |                            |          |      |          |      |              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | SystemTime=<Year>/<Month>/<Day>_<Hour>:<Minute>:<Second>; |  |         |      |       |   |        |                            |          |      |          |      |              |

## 2.4.9. Save data settings

These functions are used to set the details of the media and the save format used to save data.

### 2.4.9.1. Connected media list

Table 2-4-33 shows the specification of the connected media list command.

A list of the media (USB memory, SD card) connected to the LT80-NE can be acquired by issuing this command.

**Table 2-4-33 Connected media list command specification**

|                | Acquisition   |         |
|----------------|---|---------|
| Command format | MediaList?;   |         |
| Return value   | MediaList=<Media>;  |         |
|                | <Media>   | SD-Card |
|                |   | USB     |
|                | * When multiple media are connected, the media will be displayed separated by spaces. |         |

### 2.4.9.2. Storage destination media

Table 2-4-34 shows the specification of the save destination media command used to set the save destination media.

**Table 2-4-34 Save destination media command specification**

|                | Setting  | Acquisition           |
|----------------|--|-----------------------|
| Command format | StorageMedia=<Media>;  | StorageMedia?;        |
|                | <Media>  | SD-Card               |
|                |  | USB                   |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications." | StorageMedia=<Media>; |

### 2.4.9.3. Date format

Table 2-4-35 shows the specification of the date format command used to set the time stamp format of the measurement data.

**Table 2-4-35 Date format command specification**

|                | Setting   | Acquisition               |            |  |            |  |            |  |            |  |            |  |            |              |
|----------------|---|---------------------------|------------|--|------------|--|------------|--|------------|--|------------|--|------------|--------------|
| Command format | DateFormat=<Date format>;<br><table border="1"> <tr> <td>&lt;Date format&gt;</td> <td>yyyy/MM/dd</td> </tr> <tr> <td></td> <td>yyyy.MM.dd</td> </tr> <tr> <td></td> <td>MM/dd/yyyy</td> </tr> <tr> <td></td> <td>MM.dd.yyyy</td> </tr> <tr> <td></td> <td>dd/MM/yyyy</td> </tr> <tr> <td></td> <td>dd.MM.yyyy</td> </tr> </table> | <Date format>             | yyyy/MM/dd |  | yyyy.MM.dd |  | MM/dd/yyyy |  | MM.dd.yyyy |  | dd/MM/yyyy |  | dd.MM.yyyy | DateFormat?; |
| <Date format>  | yyyy/MM/dd  |                           |            |  |            |  |            |  |            |  |            |  |            |              |
|                | yyyy.MM.dd  |                           |            |  |            |  |            |  |            |  |            |  |            |              |
|                | MM/dd/yyyy  |                           |            |  |            |  |            |  |            |  |            |  |            |              |
|                | MM.dd.yyyy  |                           |            |  |            |  |            |  |            |  |            |  |            |              |
|                | dd/MM/yyyy  |                           |            |  |            |  |            |  |            |  |            |  |            |              |
|                | dd.MM.yyyy  |                           |            |  |            |  |            |  |            |  |            |  |            |              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | DateFormat=<Date format>; |            |  |            |  |            |  |            |  |            |  |            |              |

### 2.4.9.4. Time format

Table 2-4-36 shows the specification of the time format command used to set the time stamp format of the measurement data.

**Table 2-4-36 Time format command specification**

|                | Setting   | Acquisition               |         |  |             |              |
|----------------|---|---------------------------|---------|--|-------------|--------------|
| Command format | TimeFormat=<Time format>;<br><table border="1"> <tr> <td>&lt;Time format&gt;</td> <td>H:mm:ss</td> </tr> <tr> <td></td> <td>h:mm:ss_ AP</td> </tr> </table> | <Time format>             | H:mm:ss |  | h:mm:ss_ AP | TimeFormat?; |
| <Time format>  | H:mm:ss   |                           |         |  |             |              |
|                | h:mm:ss_ AP   |                           |         |  |             |              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | TimeFormat=<Time format>; |         |  |             |              |

### 2.4.9.5. Measurement decimal point separator

Table 2-4-37 shows the specification of the measurement decimal point separator command used to set the decimal point and separator symbol of the measurement data.

**Table 2-4-37 Measurement decimal point separator command specification**

|                       | Setting  | Acquisition                             |         |  |           |                    |
|-----------------------|--|---|---------|--|-----------|--------------------|
| Command format        | DecimalSeparator = <Separator character>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">&lt;Separator character&gt;</td> <td>. (dot)</td> </tr> <tr> <td></td> <td>, (comma)</td> </tr> </table> | <Separator character>                   | . (dot) |  | , (comma) | DecimalSeparator?; |
| <Separator character> | . (dot)  |   |         |  |           |                    |
|                       | , (comma)  |   |         |  |           |                    |
| Return value          | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | DecimalSeparator=<Separator character>; |         |  |           |                    |

### 2.4.9.6. Data save trigger kind

Table 2-4-38 shows the specification of the data save trigger kind command used to set the timing at which to save the measurement data in the media.

**Table 2-4-38 Data save trigger kind command specification**

|                | Setting   | Acquisition                  |        |  |           |                      |
|----------------|---|------------------------------|--------|--|-----------|----------------------|
| Command format | SaveMeasureTrigger = <Kind>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">&lt;Kind&gt;</td> <td>Manual</td> </tr> <tr> <td></td> <td>NumOfData</td> </tr> </table> | <Kind>                       | Manual |  | NumOfData | SaveMeasureTrigger?; |
| <Kind>         | Manual  |                              |        |  |           |                      |
|                | NumOfData   |                              |        |  |           |                      |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | SaveMeasureTrigger = <Kind>; |        |  |           |                      |

Manual: Save manually or by I/O, NumOfData: Automatically saves at the set number of save data.



### 2.4.9.7. Number of save data

Table 2-4-39 shows the specification of the number of save data command used to set the number of data when the measurement data save trigger kind is set to number of data (NumOfData).

**Table 2-4-39 Number of save data command specification**

|                  | Setting   | Acquisition                      |              |                  |
|------------------|---|----------------------------------|--------------|------------------|
| Command format   | SaveMeasureNum=<Number of data>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 150px;">&lt;Number of data&gt;</td> <td>1 to 300000*</td> </tr> </table><br>* When the measuring mode is encoder mode, set a value that is an integer multiple of the latch count.<br>The data save timing is limited to integer multiples of the latch count. | <Number of data>                 | 1 to 300000* | SaveMeasureNum?; |
| <Number of data> | 1 to 300000*  |                                  |              |                  |
| Return value     | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | SaveMeasureNum=<Number of data>; |              |                  |

### 2.4.9.8. Remove media

Table 2-4-40 shows the specification of the remove media command used to prepare to remove media (USB memory, SD card) connected to the LT80-NE.

\* If this command is executed while data write processing is in progress, some of the data may be missing.

**Table 2-4-40 Remove media command specification**

|                | Command   |       |         |  |     |
|----------------|---|-------|---------|--|-----|
| Command format | RemoveMedia/Media;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">Media</td> <td>SD-Card</td> </tr> <tr> <td></td> <td>USB</td> </tr> </table> | Media | SD-Card |  | USB |
| Media          | SD-Card   |       |         |  |     |
|                | USB   |       |         |  |     |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  |       |         |  |     |

## 2.5. Detailed description of operation commands

### 2.5.1.1. Apply settings

Table 2-5-1 shows the specification of the apply settings command used to apply the settings to the LT80-NE.

When this command is issued, the settings notified by the setup commands in section 2.4 will be applied to the LT80-NE display unit.

\* The apply settings command stores the contents set by the setup commands in the LT80-NE display unit.

**Table 2-5-1 Apply settings command specification**

|                | Command                       |
|----------------|-------------------------------|
| Command format | ApplySetting;                 |
| Return value   | Successful completion: OK000; |

### 2.5.1.2. Save parameters

Table 2-5-2 shows the specification of the save parameters command used to save the parameters in the external media.

When this command is issued, the parameter files saved in the system will be copied to the external media.

**Table 2-5-2 Save parameters command specification**

|                | Command   |       |         |  |     |
|----------------|---|-------|---------|--|-----|
| Command format | SaveParam/Media;<br><table border="1" style="margin-left: 20px;"> <tr> <td>Media</td> <td>SD-Card</td> </tr> <tr> <td></td> <td>USB</td> </tr> </table>   | Media | SD-Card |  | USB |
| Media          | SD-Card   |       |         |  |     |
|                | USB   |       |         |  |     |
| Return value   | Successful completion: SaveParam/Media=<Save path>;<br>* <Save path> indicates the relative path with the selected media as the root.<br>When the parameters could not be saved, this is an empty character string. |       |         |  |     |

### 2.5.1.3. Parameter folder list

Table 2-5-3 shows the specification of the parameter folders list command used to display a list of the parameter folders in the external media.

When this command is issued, a list of the parameters saved in the external media will be displayed.

\* Folder names shall be character strings beginning with param.

**Table 2-5-3 Parameter folder list command specification**

|                | Command  |       |         |  |     |
|----------------|--|-------|---------|--|-----|
| Command format | ListParam/Media?;<br><table border="1" style="margin-left: 20px;"> <tr> <td>Media</td> <td>SD-Card</td> </tr> <tr> <td></td> <td>USB</td> </tr> </table>   | Media | SD-Card |  | USB |
| Media          | SD-Card  |       |         |  |     |
|                | USB  |       |         |  |     |
| Return value   | Successful completion: ListParam/Media=<Folder name>[<Folder name>];<br>* <Folder name> is a folder beginning with param that exists in the root of the selected media.<br>When there are multiple folders, the folders will be listed separated by spaces.<br>* When the target media does not exist or there are no folders, an empty character string will be returned following =. |       |         |  |     |

#### 2.5.1.4. Import parameters

Table 2-5-4 shows the specification of the import parameters command used to write parameters saved in the external media in the LT80-NE.

When this command is issued, the parameters saved in the external media will be loaded.

**Table 2-5-4 Import parameters command specification**

|                | Command  |       |         |  |     |             |                                       |
|----------------|--|-------|---------|--|-----|-------------|---------------------------------------|
| Command format | LoadParam/Media/Folder name;<br><table border="1" style="margin-left: 20px;"> <tr> <td>Media</td> <td>SD-Card</td> </tr> <tr> <td></td> <td>USB</td> </tr> <tr> <td>Folder name</td> <td>Character string beginning with param</td> </tr> </table> | Media | SD-Card |  | USB | Folder name | Character string beginning with param |
| Media          | SD-Card  |       |         |  |     |             |                                       |
|                | USB  |       |         |  |     |             |                                       |
| Folder name    | Character string beginning with param  |       |         |  |     |             |                                       |
| Return value   | Successful completion: OK000;<br>* When the designated folder does not exist in the media, an error is returned.   |       |         |  |     |             |                                       |

#### 2.5.1.5. Reload setting parameters

Table 2-5-5 shows the specification of the reload setting parameters command used to export the parameters set in the display unit.

When this command is issued, the parameter files saved in the LT80-NE display unit will be exported.

\* The parameters are exported with the settings applied.

\* When the file does not exist, the default parameters will be exported.

**Table 2-5-5 Reload parameters command specification**

|                | Command                       |
|----------------|-------------------------------|
| Command format | ReloadParameter;              |
| Return value   | Successful completion: OK000; |

### 2.5.1.6. Save measurement data

Table 2-5-6 shows the specification of the save measurement data command used to save the measurement data in the external media.

When this command is issued, the measurement data cached in the LT80-NE will be saved in the external media.

**Table 2-5-6 Save measurement data command specification**

|                | Command   |                |
|----------------|---|----------------|
| Command format | SaveMeasure/Media;  |                |
|                | Media   | SD-Card<br>USB |
| Return value   | Normal completion: SaveMeasure/<Media>=<Save file>;<br>* <Save file> indicates the relative path with the selected media as the root.<br>When the measurement data could not be saved, this is an empty character string. |                |

### 2.5.1.7. Cache clear

Table 2-5-7 shows the specification of the cache clear command used to clear the measurement data cached in the LT80-NE.

When this command is issued, the measurement data cached in the LT80-NE will be cleared.

\* Do not issue this command during latch module operation.

**Table 2-5-7 Cache clear command specification**

|                | Command                       |  |
|----------------|-------------------------------|--|
| Command format | ClearCache;                   |  |
| Return value   | Successful completion: OK000; |  |

### 2.5.1.8. Number of measurement data

Table 2-5-8 shows the specification of the number of measurement data command used to export the number of measurement data cached in the LT80-NE.

When this command is issued, the number of measurement data cached in the LT80-NE will be notified.

**Table 2-5-8 Number of measurement data command specification**

|                | Acquisition                                       |  |
|----------------|---|--|
| Command format | CacheNum?;  |  |
| Return value   | Successful completion: CacheNum=<Number of data>; |  |

### 2.5.1.9. Measurement data cache

Table 2-5-9 shows the specification of the measurement data cache command used to export the measurement data cached in the LT80-NE.

The measurement data cached in the LT80-NE can be acquired by issuing this command.

\* One data can be acquired each time this command is issued.

**Table 2-5-9 Measurement data cache command specification**

|                | Acquisition  |
|----------------|--|
| Command format | GetCacheData/Cache number;<br>* The cache number is less than the value acquired by the [number of measurement data acquisition command], and is the 0-base count value. |
| Return value   | The data specifications are noted in "3. Measurement Result Data Specifications."  |

\* The cache number is the data number at the start of the data.

### 2.5.1.10. Data cache trigger

Table 2-5-10 shows the specification of the data cache trigger command used to cache the current measurement data in the LT80-NE.

When this command is issued, the currently displayed measurement data is cached in the LT80-NE.

\* When an MG80-LM is connected and encoder mode is set, this command is not available.

**Table 2-5-10 Data cache trigger command specification**

|                | Command                       |
|----------------|-------------------------------|
| Command format | TriggerCache;                 |
| Return value   | Successful completion: OK000; |

### 2.5.1.11. Display comparator set number

Table 2-5-11 shows the specification of the display comparator set number command used to designate the comparator set in the view frames.

The comparator set numbers in the view frames can be switched by issuing this command.

**Table 2-5-11 Display comparator set number command specification**

|                | Setting   | Acquisition  |        |  |
|----------------|---|--|--------|--|
| Command format | DispCompSet/Target module/<br>Display ID=<Set number>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">&lt;Set number&gt;</td> <td>1 to 8</td> </tr> </table> | <Set number>                                       | 1 to 8 | DispCompSet/Target module/Display ID?; |
| <Set number>   | 1 to 8  |  |        |  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | DispCompSet/Target module/Display ID=<Set number>; |        |  |

### 2.5.1.12. Display output data

Table 2-5-12 shows the specification of the display output data command used to set the measurement mode in the view frames.

The measurement mode of the output data in the view frames can be switched by issuing this command.

**Table 2-5-12 Display output data command specification**

|                | Setting  | Acquisition                                  |                     |  |
|----------------|--|--|---------------------|--|
| Command format | DispOutData/Target module/<br>Display ID=<Data>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">&lt;Data&gt;</td> <td>REAL, MIN, MAX, P-P</td> </tr> </table> | <Data>                                       | REAL, MIN, MAX, P-P | DispOutData/Target module/Display ID?; |
| <Data>         | REAL, MIN, MAX, P-P  |  |                     |  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | DispOutData/Target module/Display ID=<Data>; |                     |  |

### 2.5.1.13. Preset recall

Table 2-5-13 shows the specification of the preset recall command used to apply the preset values to the measurement data in the view frames.

The preset values set beforehand can be set in the current values by issuing this command.

\* Set the preset values beforehand.

**Table 2-5-13 Preset recall command specification**

|                | Command                                |
|----------------|--|
| Command format | PresetRecall/Target module/Display ID; |
| Return value   | Successful completion: OK000;          |

#### 2.5.1.14. Reference point clear

Table 2-5-14 shows the specification of the reference point clear command used to clear the reference point of the measuring unit.

When this command is issued, the acquired reference point will be cleared.

\* This command is valid only for axes with reference point use set to ON.

**Table 2-5-14 Reference point clear command specification**

|                | Command                             |
|----------------|-------------------------------------|
| Command format | RefClear/Target module/Target axis; |
| Return value   | Successful completion: OK000;       |

#### 2.5.1.15. Reference point preset recall

Table 2-5-15 shows the specification of the reference point preset recall command used to apply the reference point preset value of the measuring unit.

When this command is issued, the offset from the reference point will be calculated and applied to the measurement results.

\* This command is valid only for axes with reference point use set to ON.

**Table 2-5-15 Reference point preset recall command specification**

|                | Command                              |
|----------------|--------------------------------------|
| Command format | RefRecall/Target module/Target axis; |
| Return value   | Successful completion: OK000;        |

#### 2.5.1.16. Measurement reset

Table 2-5-16 shows the specification of the measurement reset command used to reset the measurement data in the view frames to zero.

When this command is issued, the measurement data is reset to zero.

The reference point load status and the alarms are also cleared simultaneously at this time.

\* Alarms are canceled by removing the cause of the alarm, clearing the alarm, and setting to zero.

**Table 2-5-16 Measurement reset command specification**

|                | Command                                |
|----------------|--|
| Command format | ResetMeasure/Target module/Display ID; |
| Return value   | Successful completion: OK000;          |

### 2.5.1.17. Measurement restart

Table 2-5-17 shows the specification of the measurement restart command used to cancel peak hold and restart measurement when using the peak hold function (MAX, MIN, P-P) mode.

|                | Command                                  |
|----------------|--|
| Command format | RestartMeasure/Target module/Display ID; |
| Return value   | Successful completion: OK000;            |

When this command is issued, the held peak values are set to the current values.

**Table 2-5-17 Measurement restart command specification**

|                | Command                                  |
|----------------|--|
| Command format | RestartMeasure/Target module/Display ID; |
| Return value   | Successful completion: OK000;            |

### 2.5.1.18. Measurement pause

Table 2-5-18 shows the specification of the measurement pause command used to stop data updating when using the peak hold function (MAX, MIN, P-P) mode.

Peak hold can be paused and the peak values fixed or peak value fixing can be canceled by issuing this command.

**Table 2-5-18 Measurement pause command specification**

|                | Setting   | Acquisition                                   |         |   |
|----------------|---|---|---------|---|
| Command format | PauseMeasure/Target module/Display ID=<Mode>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 100px;">&lt;Mode&gt;</td> <td>ON, OFF</td> </tr> </table> | <Mode>  | ON, OFF | PauseMeasure/Target module/Display ID?; |
| <Mode>         | ON, OFF   |   |         |   |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | PauseMeasure/Target module/Display ID=<Mode>; |         |   |



### 2.5.1.19. Frame measurement value

Table 2-5-19 shows the specification of the frame measurement value command used to output the measurement data inside the view frames.

Designation is in MG80-MA (main module) units or all modules, and the measurement data of all view frames will be output.

\* Frame designation is not possible.

**Table 2-5-19 Frame measurement value command specification**

|                | Acquisition   |
|----------------|---|
| Command format | GetFrameMeasure/Target module;  |
| Return value   | GetFrameMeasure/Target module=<Module record><br>* When all modules are designated, the data will be listed separated by slashes ("/").<br>The module record is described in "3. Measurement Result Data Specifications." |

In a system with the modules ID1 and ID2 connected

Example 1: Response to GetFrameMeasure/2;

→GetFrameMeasure/2=M2\_00\_00\_00\_00\_12R00\_1.0000\_12R00\_2.0000\_...\_0\_0\_0;

Example 2: Response to GetFrameMeasure/\*;

→GetFrameMeasure/\*=M1\_00\_00\_00\_00\_12R00\_-1.1000\_12R00\_-2.1000\_...\_0\_0\_0\_0/M2\_00\_00\_00\_00\_12R00\_1.2000\_23R08\_2.2000\_...\_0\_0\_0;

### 2.5.1.20. Latch measurement start

Table 2-5-20 shows the specification of the latch measurement start command used to start and stop measurement when using an MG80-LM (latch module).

Measurement start and stop control for encoder synchronization mode can be performed by issuing this command.

\* When the latch status does not change as a result of this command, an error results.

\* When an MG80-LM is not connected or Internal latch mode is set, this command is not available.

**Table 2-5-20 Latch measurement start command specification**

|                | Command  |         |             |
|----------------|--|---------|-------------|
| Command format | LatchStart=<Value>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 100px; height: 20px;">&lt;Value&gt;</td> <td style="width: 100px; height: 20px;">Start, Stop</td> </tr> </table> | <Value> | Start, Stop |
| <Value>        | Start, Stop  |         |             |
| Return value   | Successful completion: OK000;  |         |             |

### 2.5.1.21. Latch measurement status

Table 2-5-21 shows the specification of the latch measurement status acquisition command used to monitor the latch operation status when using an MG80-LM (latch module). The measurement status in encoder synchronization mode can be acquired by issuing this command.

\* When an MG80-LM is not connected or in Internal latch mode, an error results.

**Table 2-5-21 Latch measurement status command specification**

|                | Acquisition                                  |  |
|----------------|--|--|
| Command format | LatchStatus?;                                |  |
| Return value   | Successful completion: LatchStatus=<Status>; |  |
|                | <Status>                                     | Stopped                                      |
|                | Processing                                   | Measurement in progress                      |
|                | Alarm  | Alarm occurring with measurement in progress |

### 2.5.1.22. System restart

Table 2-5-22 shows the specification of the system restart command used to restart the system. When this command is issued, the MG80-MA is reset and then the LT80-NE restarts.

This command becomes valid when it is received three times in succession.

\* This command operates correctly when the MG80-MA version is Ver. 1.06.00 (MA010600) or later.

**Table 2-5-22 System restart command specification**

|                | Command   |
|----------------|---|
| Command format | !SystemRestart!;  |
| Return value   | Successful completion: PRO01; (1st time), PRO02; (2nd time), no response and system restarts (3rd time) |

## 2.6. Detailed description of PLC link setup commands

\* PLC link setup commands are available with Ver. 1.07 or later.

### 2.6.1. PLC IP address

**Table 2-6-1 PLC IP address command specification**

|                | Setting   | Acquisition              |                     |              |
|----------------|---|--------------------------|---------------------|--------------|
| Command format | PlcAddress=<IP address>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 150px;">&lt;IP address&gt;</td> <td>IPv4 format address</td> </tr> </table> <p>* Addresses belonging to the 192.168.0.xx, 192.168.1.xx, and 192.168.2.xx networks cannot be set.</p> | <IP address>             | IPv4 format address | PlcAddress?; |
| <IP address>   | IPv4 format address   |                          |                     |              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | PlcAddress=<IP address>; |                     |              |

### 2.6.2. PLC port number

**Table 2-6-2 PLC port number command specification**

|                       | Setting  | Acquisition            |                      |                       |          |           |
|-----------------------|--|------------------------|----------------------|-----------------------|----------|-----------|
| Command format        | PlcPort=<Port number>,<Used for local port>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 150px;">&lt;Port number&gt;</td> <td>Ethernet port number</td> </tr> <tr> <td>&lt;Used for local port&gt;</td> <td>OFF, ON*</td> </tr> </table> <p>Port numbers 20000, 21000, 21001, and 22000 cannot be set.</p> | <Port number>          | Ethernet port number | <Used for local port> | OFF, ON* | PlcPort?; |
| <Port number>         | Ethernet port number   |                        |                      |                       |          |           |
| <Used for local port> | OFF, ON*   |                        |                      |                       |          |           |
| Return value          | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | PlcPort=<Port number>; |                      |                       |          |           |

\* When "Used for local port" is set to ON in UDP communication, the LT80-NE assigns the set port number to the UDP socket. When set to OFF, the port number will be automatically assigned.

### 2.6.3. PLC link operation

**Table 2-6-3 PLC link operation command specification**

|                  | Setting   | Acquisition                   |  |               |
|------------------|---|-------------------------------|--|---------------|
| Command format   | PlcLinkMode=<Operation mode>;<br><table border="1" style="margin-left: 20px;"> <tr> <td style="width: 150px;">&lt;Operation mode&gt;</td> <td>OFF: PLC link function OFF<br/>ON: PLC link function ON</td> </tr> </table> | <Operation mode>              | OFF: PLC link function OFF<br>ON: PLC link function ON | PlcLinkMode?; |
| <Operation mode> | OFF: PLC link function OFF<br>ON: PLC link function ON  |                               |  |               |
| Return value     | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | PlcLinkMode=<Operation mode>; |  |               |

## 2.6.4. PLC link protocol

**Table 2-6-4 PLC link protocol command specification**

|                        | Setting  | Acquisition  |            |            |   |                   |
|------------------------|--|--|------------|------------|---|-------------------|
| Command format         | PlcLinkProtocol=<Communication system>,<br><Protocol>;<br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">&lt;Communication system&gt;</td> <td style="padding: 2px;">TCP or UDP</td> </tr> <tr> <td style="padding: 2px;">&lt;Protocol&gt;</td> <td style="padding: 2px;">           MC1_ASCII<br/>           MC1_Binary<br/>           MC3_QL_ASCII<br/>           MC3_QL_Binary<br/>           MC3_iQ-R_ASCII<br/>           MC3_iQ-R_Binary<br/>           FINS<br/>           KV         </td> </tr> </table> | <Communication system>                             | TCP or UDP | <Protocol> | MC1_ASCII<br>MC1_Binary<br>MC3_QL_ASCII<br>MC3_QL_Binary<br>MC3_iQ-R_ASCII<br>MC3_iQ-R_Binary<br>FINS<br>KV | PlcLinkProtocol?; |
| <Communication system> | TCP or UDP   |  |            |            |   |                   |
| <Protocol>             | MC1_ASCII<br>MC1_Binary<br>MC3_QL_ASCII<br>MC3_QL_Binary<br>MC3_iQ-R_ASCII<br>MC3_iQ-R_Binary<br>FINS<br>KV  |  |            |            |   |                   |
| Return value           | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | PlcLinkProtocol=<Communication system>,<Protocol>; |            |            |   |                   |

## 2.6.5. [FINS]DNA/SNA

**Table 2-6-5 [FINS]DNA/SNA command specification**

|                | Setting   | Acquisition           |                             |              |
|----------------|---|-----------------------|-----------------------------|--------------|
| Command format | FinsDnaSna=<DNA/SNA>;<br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">&lt; DNA/SNA &gt;</td> <td style="padding: 2px;">Integer value from 0 to 127</td> </tr> </table> | < DNA/SNA >           | Integer value from 0 to 127 | FinsDnaSna?; |
| < DNA/SNA >    | Integer value from 0 to 127   |                       |                             |              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | FinsDnaSna=<DNA/SNA>; |                             |              |

## 2.6.6. [FINS]DA1

**Table 2-6-6 [FINS]DA1 command specification**

|                | Setting   | Acquisition    |                             |           |
|----------------|---|----------------|-----------------------------|-----------|
| Command format | FinsDa1=<DA1>;<br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 2px;">&lt; DA1&gt;</td> <td style="padding: 2px;">Integer value from 1 to 254</td> </tr> </table> | < DA1>         | Integer value from 1 to 254 | FinsDa1?; |
| < DA1>         | Integer value from 1 to 254   |                |                             |           |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | FinsDa1=<DA1>; |                             |           |

### 2.6.7. [FINS]SA1

**Table 2-6-7 [FINS]SA1 command specification**

|                | Setting   | Acquisition    |                             |           |
|----------------|---|----------------|-----------------------------|-----------|
| Command format | FinsSa1=<SA1>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 100px;">&lt; SA1 &gt;</td> <td>Integer value from 1 to 254</td> </tr> </table> | < SA1 >        | Integer value from 1 to 254 | FinsSa1?; |
| < SA1 >        | Integer value from 1 to 254   |                |                             |           |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | FinsSa1=<SA1>; |                             |           |

### 2.6.8. Operation flag area

**Table 2-6-8 Operation flag area command specification**

|                | Setting   | Acquisition                           |                            |                              |
|----------------|---|---------------------------------------|----------------------------|------------------------------|
| Command format | ProcFlagArea/Target module=<Address>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 100px;">&lt;Address&gt;</td> <td>Integer value of 0 or more</td> </tr> </table> | <Address>                             | Integer value of 0 or more | ProcFlagArea/Target module?; |
| <Address>      | Integer value of 0 or more  |                                       |                            |                              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | ProcFlagArea/Target module=<Address>; |                            |                              |

### 2.6.9. Command area

**Table 2-6-9 Command area command specification**

|                | Setting  | Acquisition                          |                            |                             |
|----------------|--|--------------------------------------|----------------------------|-----------------------------|
| Command format | CommandArea/Target module=<Address>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 100px;">&lt;Address&gt;</td> <td>Integer value of 0 or more</td> </tr> </table> | <Address>                            | Integer value of 0 or more | CommandArea/Target module?; |
| <Address>      | Integer value of 0 or more   |                                      |                            |                             |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."   | CommandArea/Target module=<Address>; |                            |                             |

### 2.6.10. Measurement data area

**Table 2-6-10 Measurement data area command specification**

|                | Setting   | Acquisition                           |                            |                              |
|----------------|---|---------------------------------------|----------------------------|------------------------------|
| Command format | MeasDataArea/Target module=<Address>;<br><table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 100px;">&lt;Address&gt;</td> <td>Integer value of 0 or more</td> </tr> </table> | <Address>                             | Integer value of 0 or more | MeasDataArea/Target module?; |
| <Address>      | Integer value of 0 or more  |                                       |                            |                              |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | MeasDataArea/Target module=<Address>; |                            |                              |

### 2.6.11. Display parameter area

**Table 2-6-11 Display parameter area command specification**

|                | Setting   | Acquisition   |                         |  |
|----------------|---|---|-------------------------|--|
| Command format | ParameterArea/Target module/Display ID<br>=<Address>;<br><table border="1" data-bbox="352 421 911 472"> <tr> <td>&lt;Address&gt;</td> <td>Integer value 0 or more</td> </tr> </table> | <Address>   | Integer value 0 or more | ParameterArea/Target module/<br>Display ID?; |
| <Address>      | Integer value 0 or more   |   |                         |  |
| Return value   | Successful completion: OK000;<br>Error completion: *Refer to "4. Error Code Specifications."  | ParameterArea/Target module/<br>Display ID=<Address>; |                         |  |

### 3. Measurement Result Data Specifications

The data structure of the measurement results obtained by the system port [measurement data cache command] is as follows.

All data are ASCII character strings.

● **Data structure**

```
GetCacheData/xxx=<Module 1 record>/<Module 2 record>/
<Module 3 record>/<Module 4 record>;
```

● **Module record**

```
<Module ID>_<IN1>_<IN2>_<OUT1>_<OUT2>_<Display A status>_<Display A
measurement value>_<Display B status>_<Display B measurement value>...<Display P
status>_<Display P measurement value>_<Latch status>_<Latch count>_<Latch
position>
```

IN1 and IN2: IO module 1 and 2 input port status, 2-character hexadecimal character string

OUT1 and OUT2: IO module 1 and 2 output port status, 2-character hexadecimal character string

Table 3-1 shows the detailed byte sequence of the display x status information.

**Table 3-1 Detailed description of display x status comparator information**

|         |   |
|---------|---|
| byte1   | Comparator set number 1 to 8 (ASCII characters)                                   |
| byte2   | Comparator result 0 to 4 (ASCII characters)                                       |
| byte3   | Display mode (R: Current value, I: Minimum value, A: Maximum value, P: P-P value) |
| byte4-5 | Counter status (2-character hexadecimal ASCII characters)                         |

Table 3-2 shows the details of the 8-bit counter status that corresponds to byte4-5 in Table 3-1.

**Table 3-2 Detailed description of counter status**

|      |  |
|------|--|
| bit7 | 1: CRC error occurred, 0: No CRC error                       |
| bit6 | 1: Pause ON, 0: Pause OFF                                    |
| bit5 | Reserved   |
| bit4 | Reserved   |
| bit3 | 1: Reference point passed, 0: Reference point not passed     |
| bit2 | Reserved   |
| bit1 | 1: Counter unit error detected, 0: No counter unit error     |
| bit0 | 1: Measuring unit error detected, 0: No measuring unit error |

Table 3-3 shows the details of the 8-bit latch status (LT status).

**Table 3-3 Detailed description of latch status**

|      |  |
|------|--|
| bit7 | 1: CRC error occurred, 0: No CRC error                                 |
| bit6 | Reserved   |
| bit5 | Reserved   |
| bit4 | Reserved   |
| bit3 | 1: Reference point position held, 0: Reference point position not held |
| bit2 | Reserved   |
| bit1 | 1: Latch module error detected, 0: No latch module error               |
| bit0 | 1: Encoder error detected, 0: No encoder error                         |

The latch count value indicates what number data when measuring in encoder latch mode.

The display x measurement value is the mm-unit physical quantity (real number) converted to an ASCII character string.

In addition, the latch position is the deg-unit (rotary) or mm-unit (linear) physical quantity (real number) converted to an ASCII character string.

#### 4. Error Code Specifications

The error codes used as responses to system port commands are as follows.

|          |   |
|----------|---|
| OK000;   | Successful completion   |
| CAUTION; | The input value was rounded.<br>The input value was clipped at the upper/lower limit value.<br>Part of the input value was ignored.   |
| ERROR;   | Abnormal command syntax<br>An undefined command was input.<br>A non-existent module ID was selected.<br>A non-existent measuring unit ID was selected.<br>A non-existent frame ID was selected.<br>An illegal value was input.<br>Abnormal status<br>There is no MG80-MA in the started system. |



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