Magnescale

EtherNet/IP Interface Module

MG80-EI

Read all the instructions in the manual carefully before use and strictly follow them.
Keep the manual for future references.

Operating Manual

Contents

Revision history

Revision	Date	Description	Pages
1.00	2020/04/16		All
1.01	2020/05/18	Corrections of errors and additions	All
1.02	2020/10/12	Corrections of errors	All
1.03	2020/11/16	Add Status code table	71
1.04	2021/05/25	Corrections of errors and additions	All
1.05	2022/04/27	Add response data for CIP communication command Corrections of errors and additions	All

1. Overview

MG80-EI is an interface unit main module which enables acquisition of the multi-axis measurement data by connecting with a PC or PLC via EtherNet/IP communication protocol. This manual explains the setup procedure and detail of the functions.

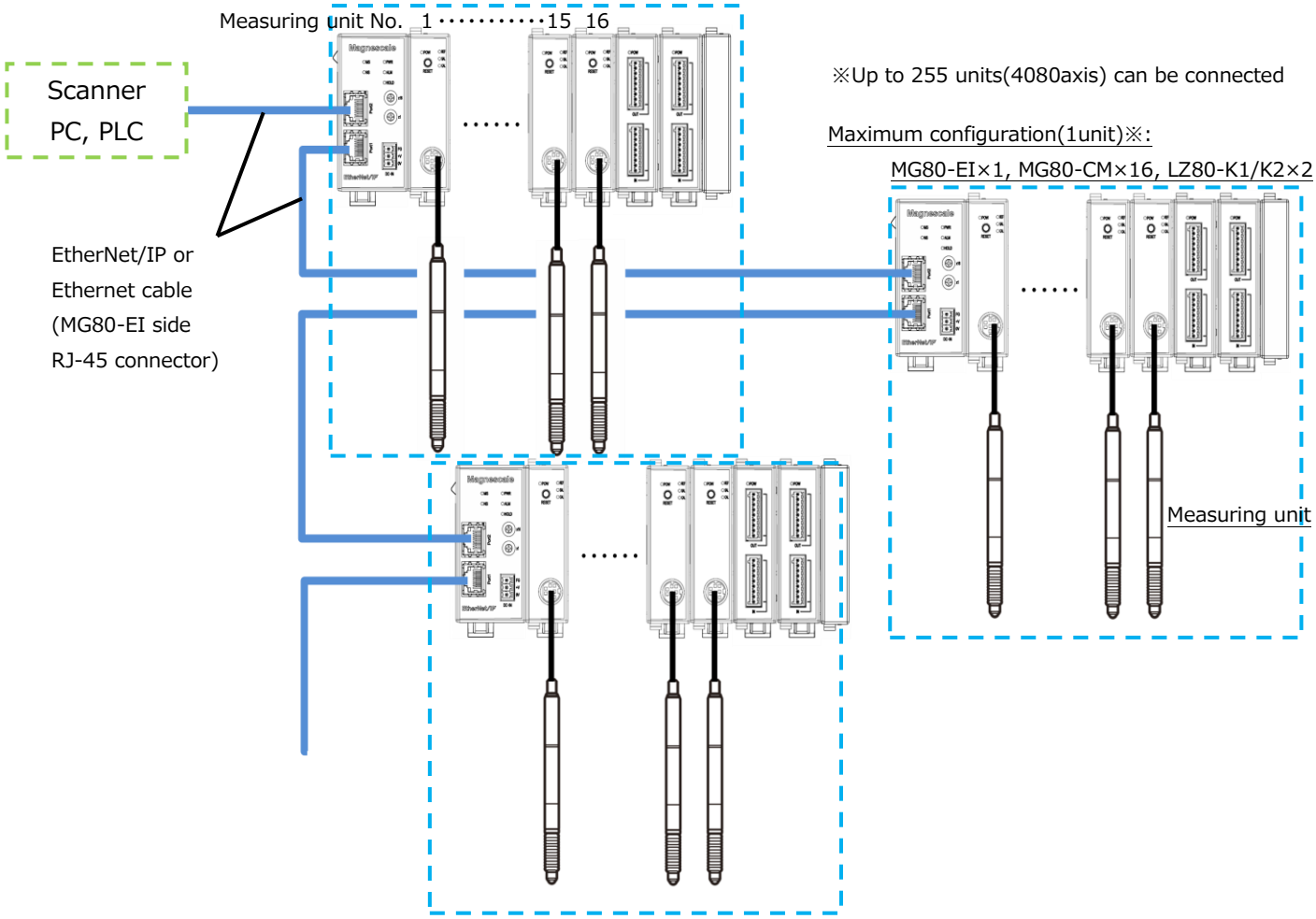
For specification of MG80-EI, MG80-CM and LZ80, refer to the instruction manual of each product. For detail of EtherNet/IP communication with PC or PLC, refer to the manual of the each manufacturer.

2. Basic information

EtherNet/IP uses the terms “scanner” and “adapter” in place of “master” and “slave”, respectively. MG80-EI is the adapter.
This section shows the adapter (MG80-EI) side components and its configuration, which names and terms also appear in other sections of this manual.

2.1. System configuration

The following diagram shows the example of maximum configuration using MG80 series lineup. A counter module MG80-CM is necessary for a connecting a measuring unit, and I/O module LZ80-K1/K2 which enables control of the units with external signal, are available for configuration with MG80-EI.



・Up to 16 counter module MG80-CM can be connected to one MG80-EI.
・Connect the measuring unit DK series to MG80-CM.
・Measuring unit numbers are automatically assigned in order from 1 closest to MG80-EI.
・For EtherNet/IP or Ethernet connection, prepare a shielded cable with RJ-45(8P8C) connector.
(Both straight and cross cables can be used.)
・The number of connectable unit depend on the available lower 1byte of the IP address.
If the available IP address is 1 (0x01) to 255(0xFF), maximum of 255units of MG80-EI
(4,080 axes of measuring units) can be connected.

3. Setting

3.1. Download setting application and EDS file

1. Access Magnescale Website and download “Setting application for Windows PC” and “Setting file” (EDS file). (https://www.magnescale.com)
   EDS file can be used regardless of the PLC manufacture and the number of axes used.

2. Save the files and extract with decompression software.

3.2. About IO data

When EDS file is imported to the development environment, the IO data is handled as Byte array data. Refer “6. Communication” in this manual for IO data mapping.

3.3. Setting various parameters

Setting for MG80-EI can be changed with the application for Windows PC “MG80SettingTool.exe”.

3.3.1. Connecting MG80-EI with PC

1. Place the downloaded files in the suitable location of the PC.

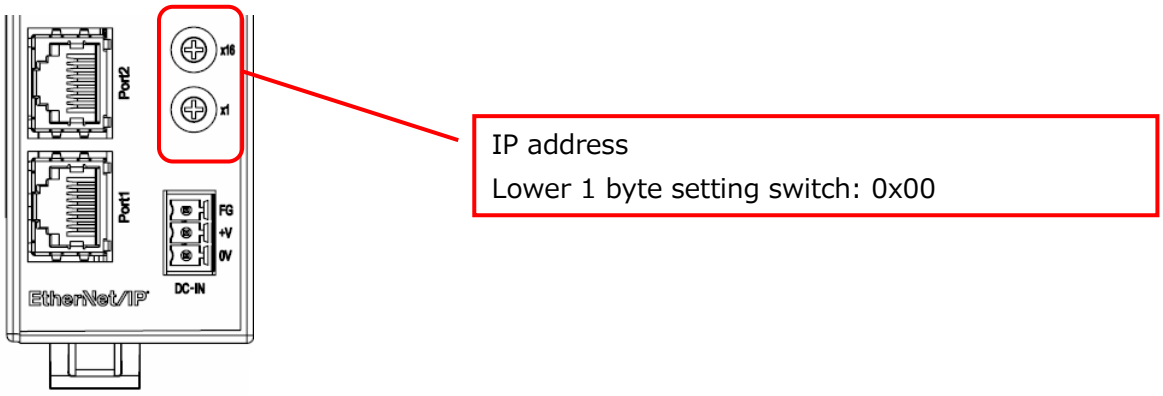
2. Set IP address of the PC as shown below.

   IP address : 192.168.100. XXX※
   Subnet mask : 255.255.255.0

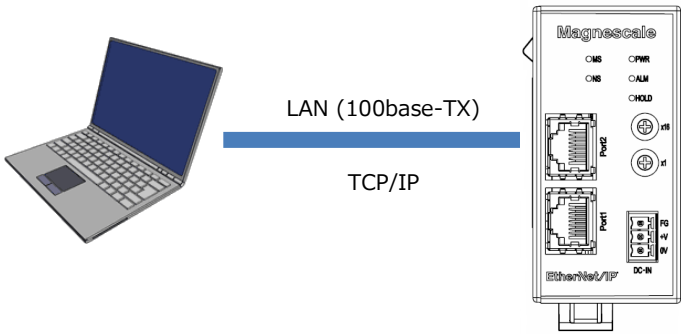
   ※Values to avoid in XXX
   - “1” (It will be used by MG80-EI in setting mode)
   - Same address with other connecting devices.

3. Set MG80-EI IP address switches to “0x00”. This will activate the setting mode. In this mode, IP address will be fixed as shown below.

   IP address : 192.168.100.1
   Subnet mask : 255.255.255.0



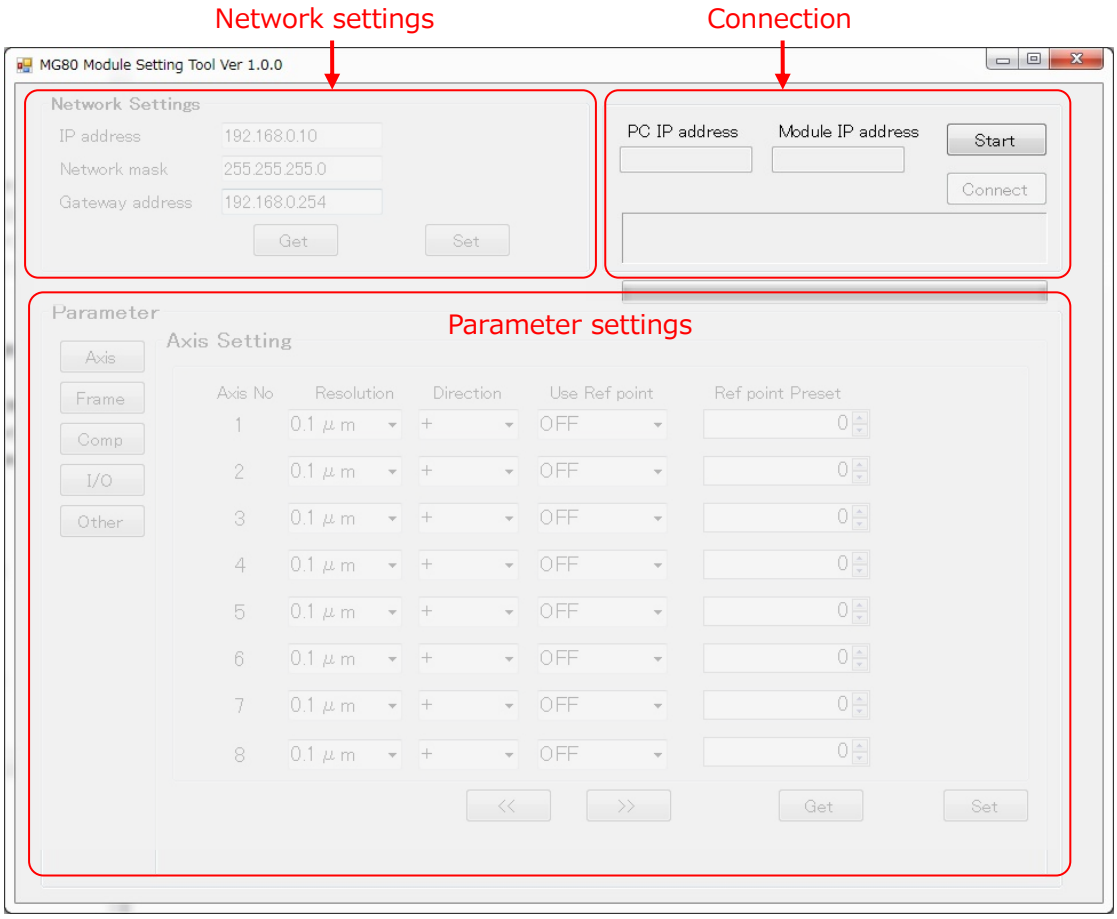
4. Connect PC and MG80-EI directly with the Ethernet cable.
   Then connect power supply to turn on the MG80-EI.



5. Click “MG80SettingTool.exe” in the PC and start the application.

3.3.2. Parameter Setting

Various parameters can be set with MG80SettingTool.
Following display will show when the software is opened.

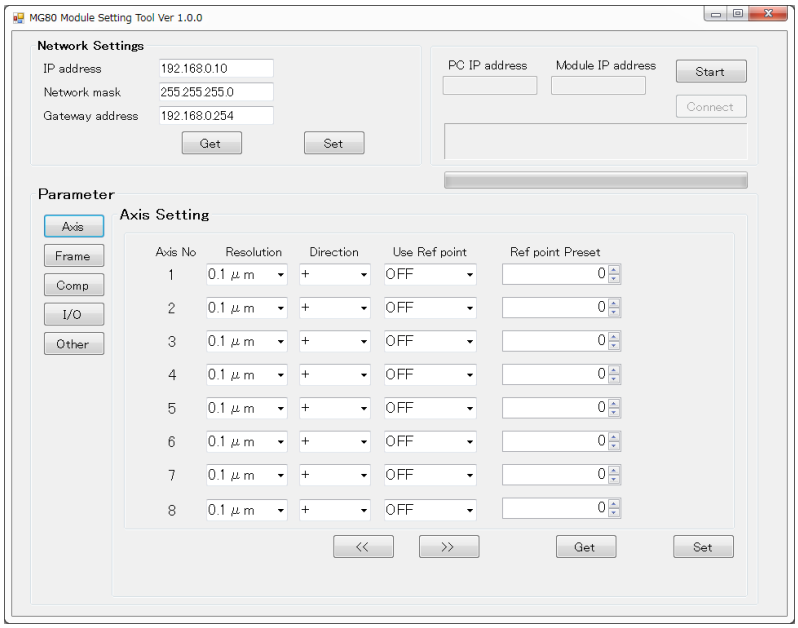


Follow the steps below to connect with the MG80-EI.

1. Click the Start button at the top right corner.

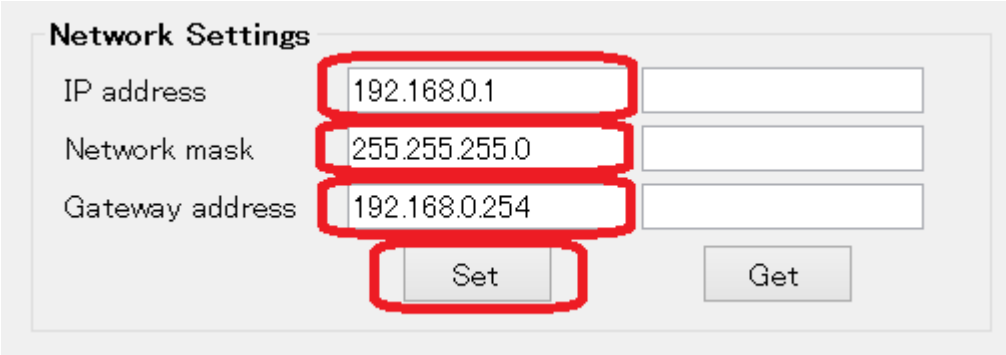
2. Click the Connect button.

3. If the connection is successful, “Network settings” and “Parameter” field will become valid.



If the connection fails, turn off MG80-EI power and close PC application, then restart the procedure.

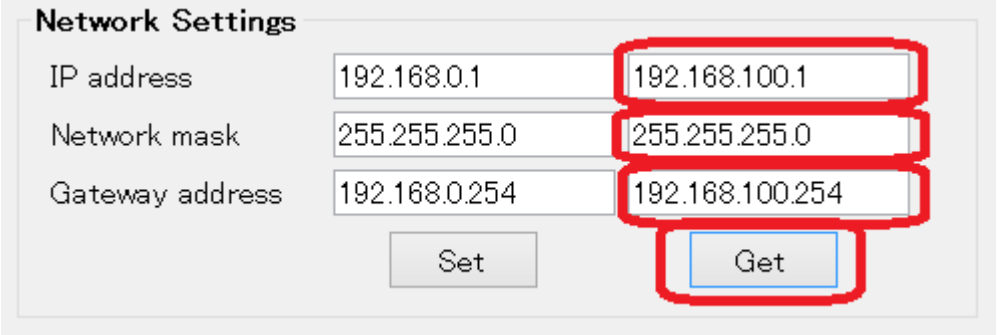
4. Follow the steps below to change the MG80-EI Network Settings.
The IP address set in this field will be applied in the actual measuring environment.
The lowest 1byte of the IP address (In this case “1”) must also be set with the switches on the MG80-EI, after setup with this software.



Enter the settings as in red frame above, then click “Set” button to transfer the information to the MG80-EI.

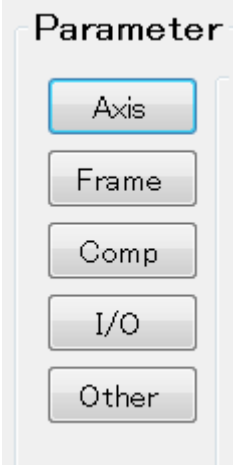
*Note
IP address = IP address
Network mask = Subnet mask
Gateway address = Default gateway

Click “Get” button to confirm the settings saved in the MG80-EI.

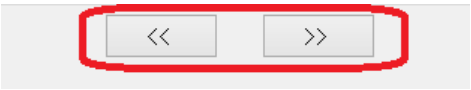


3.3.2.1. Measurement parameter setting

Make sure the Parameter field is valid.
If the field is not valid, restart the connection procedure.

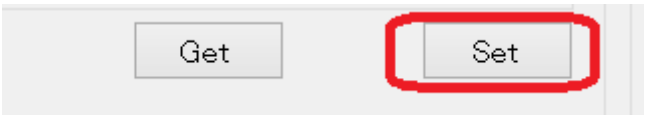


If there are multiple pages on the parameter screen, switch pages by pressing the page forward/backward buttons.



After setting the parameters, click the “Set” button at the bottom of the screen to save the parameters in MG80-EI.

Note) Make sure to click the “Set” button in each screen, otherwise parameters will not be save in MG80-EI.

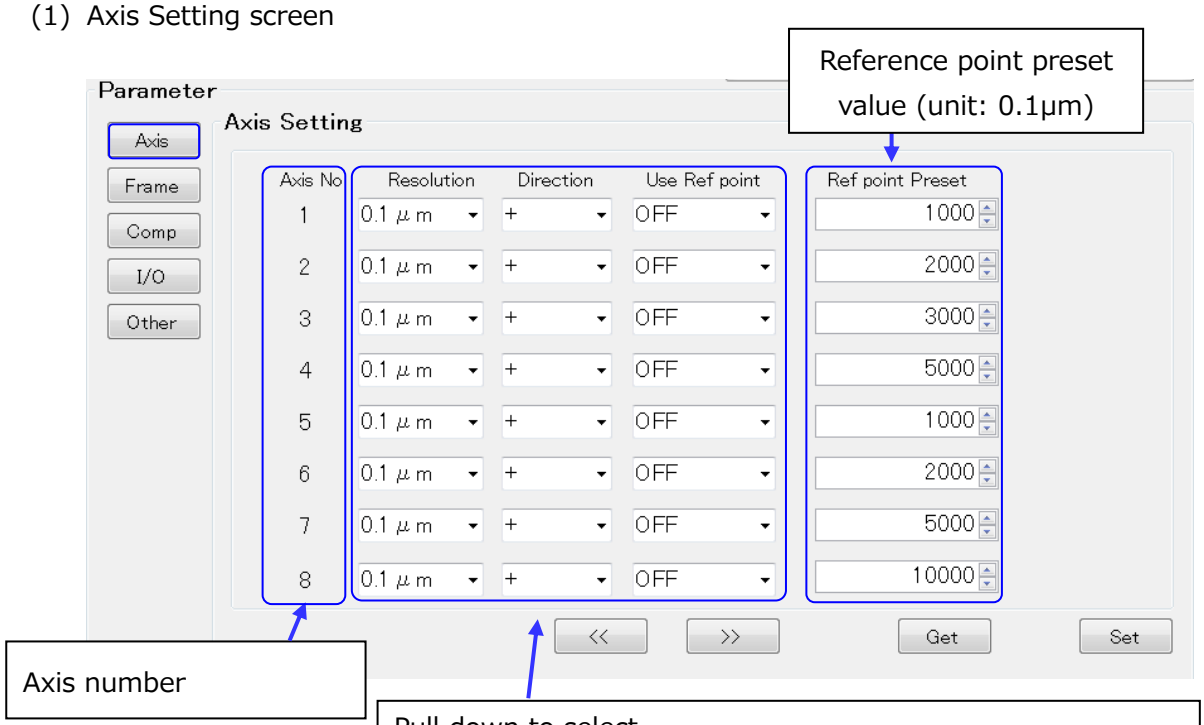


In order to get the parameters currently stored in the MG80-EI, press the “Get” button at the bottom of the screen on each parameter screen.

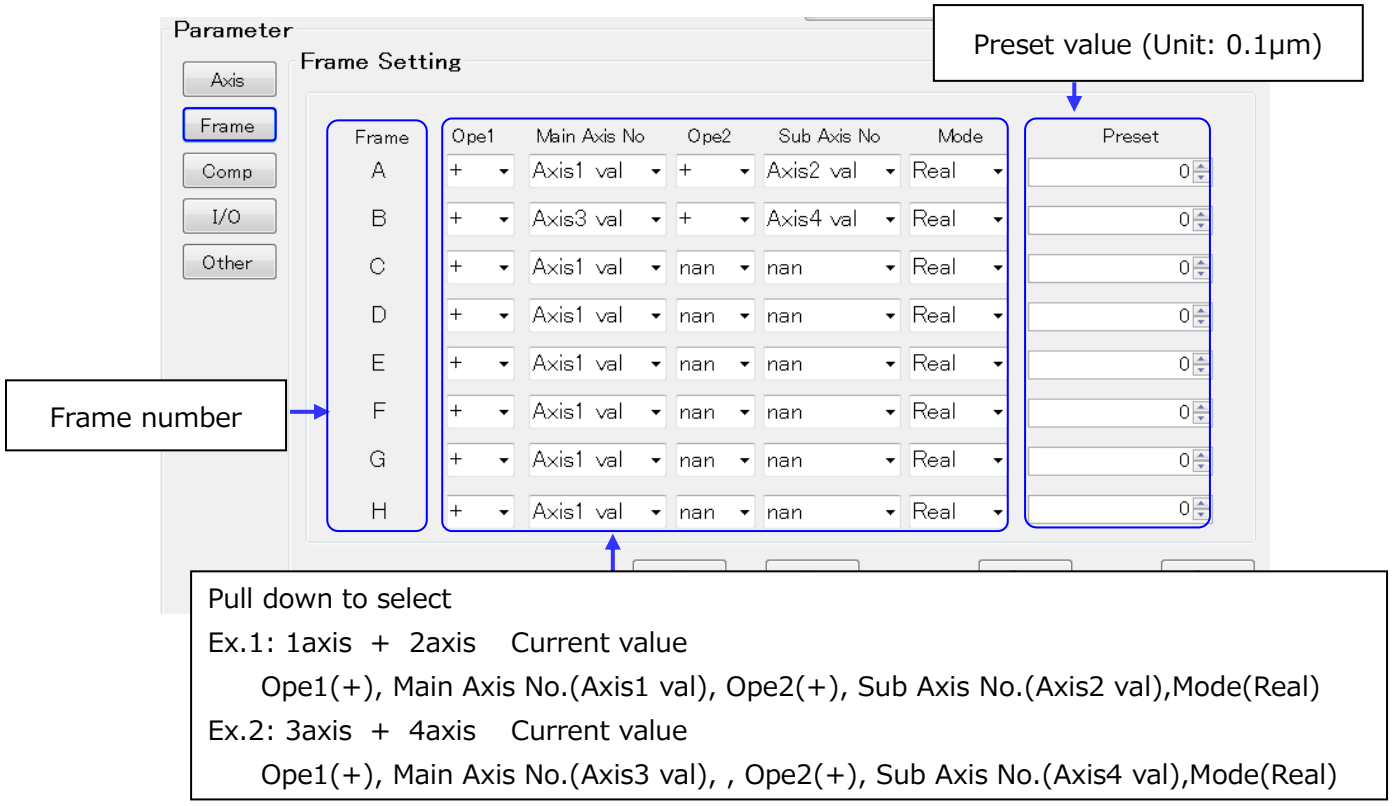
Setting items

No	Parameters (Parameter name)	Description
1	Axis (Axis Setting)	Setting for connected Measuring device. Enter Resolution, Direction, use of Reference point, and Master preset value of each axis here.
2	Frame (Frame Setting)	Setting for what data to carry in each Frames. Calculation (Addition, Subtraction) result of selected axis, Output mode, Preset value of each frame.
3	Comp (Comparator Setting)	Setting for Comparator. Enter Threshold, Steps, Group to apply on the frame.
4	I/O (I/O Setting)	Setting for I/O terminal function. Enter function to each of the output terminal.
5	Other (Other Setting)	Settings other than the above items.

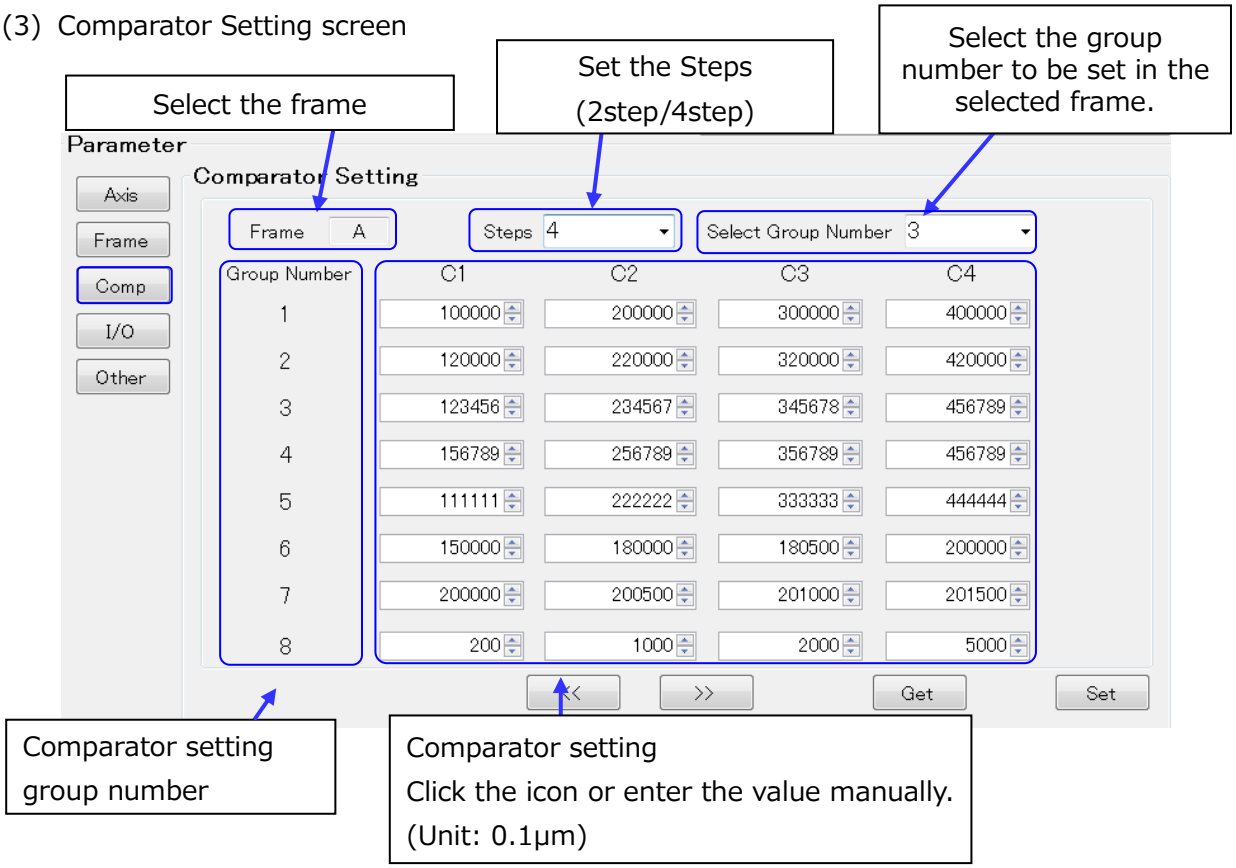
(1) Axis Setting screen



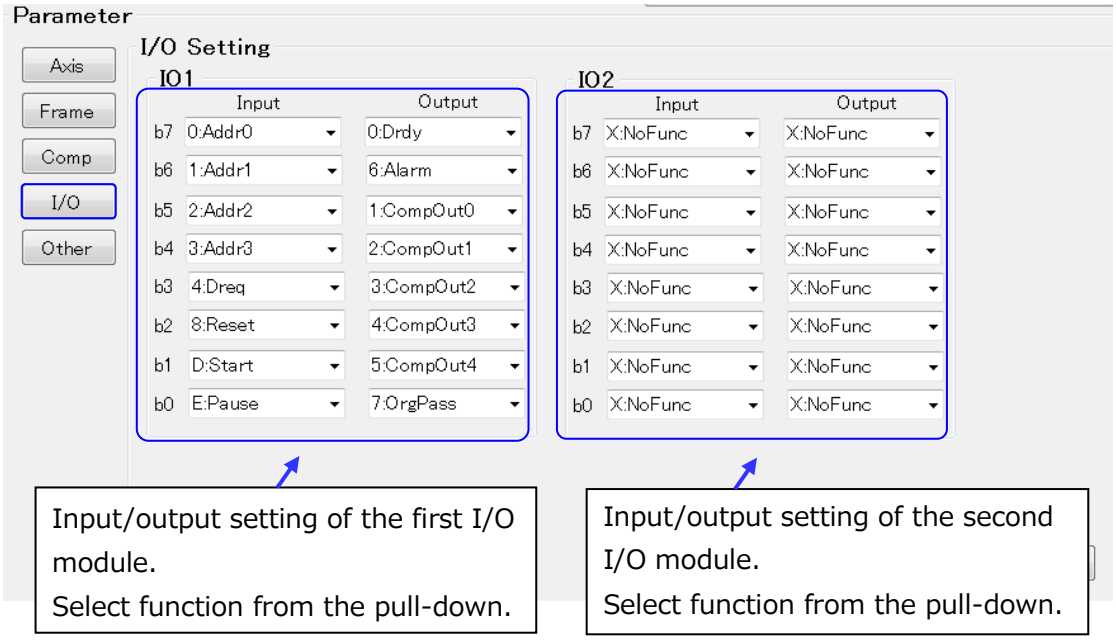
(2) Frame Setting screen



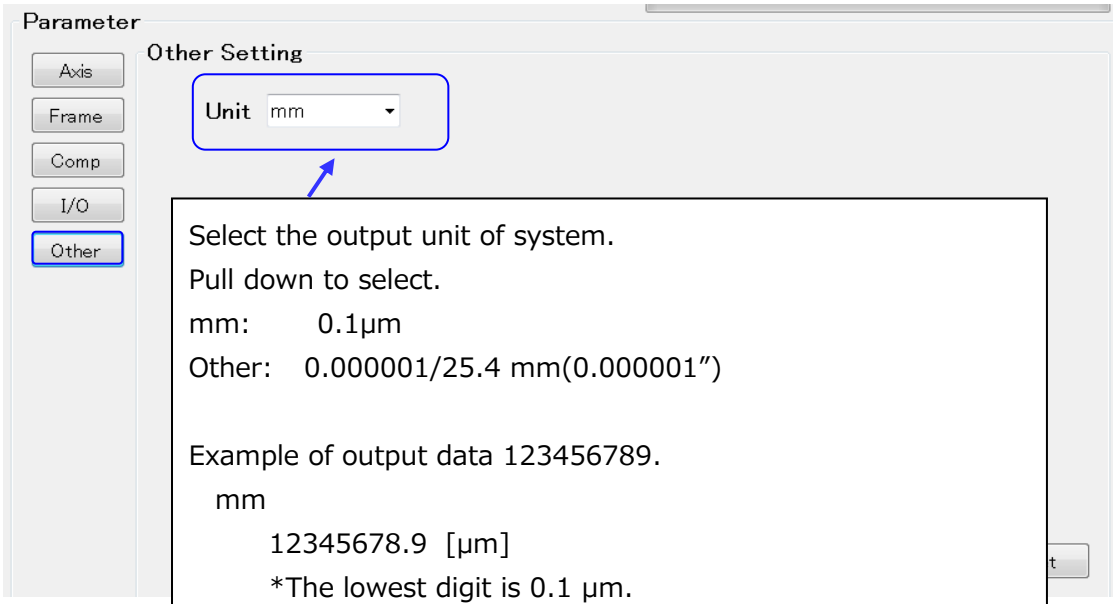
(3) Comparator Setting screen



(4) I/O Setting screen



(5) Other Setting screen



Select the output unit of system.
Pull down to select.
mm: 0.1μm
Other: 0.000001/25.4 mm(0.000001")

Example of output data 123456789.
mm
12345678.9 [μm]
*The lowest digit is 0.1 μm.
Other
123.456789 [1/25.4 mm(")]

This manual is written based on the μm unit setting. If you select "Other", please read 0.1μm unit as 0.000001/25.4 mm (0.000001") unit.

3.3.3. Restart MG80-EI

1. After setting all parameters, turn off the power.

2. Set lower 1 byte of the IP address for measurement, by changing the IP address switches on the MG80-EI.

3. Restart the power to operate with the saved parameters.

4. Specifications

4.1. Interface specifications

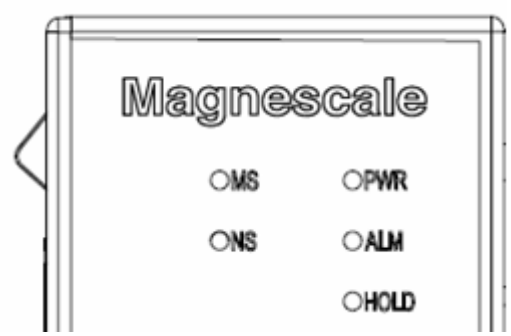
<table>
<tr><th colspan="3">Terms and Functions</th><th>Specifications</th></tr>
<tr><td rowspan="2">Switch and Indication</td><td>Switch</td><td>IP address setting</td><td>Setting switch×2 pcs. (Hexadecimal output 8bit)
<table>
<tr><th>Setting value</th><th></th></tr>
<tr><td>0x00</td><td>「Setting mode」
IP address will be fixed to 192.168.100.1</td></tr>
<tr><td>0x01
～
0xFF</td><td>「IP address setting for measurement」
Set lower 1byte of IP address with switches.

Example:
Set the upper 3bytes of the IP address with Windows application to 192.168.0.__., then turn the IP address setting switches to “A” for 192.168.0.”10.”</td></tr>
</table></td></tr>
<tr><td>Indication</td><td>LED lamp status</td><td>Refer to 4.2 LED indicator</td></tr>
<tr><td rowspan="3">Communi-cation I/F</td><td colspan="2">LAN connector</td><td>RJ-45×2（100BASE-TX）
Shielded cable.</td></tr>
<tr><td></td><td>EtherNet/IP communication</td><td>・Transmits the count value, error status, and calculation result obtained from the measuring unit.
・Receives commands from the host device.
・The communication standard is the EtherNet/IP specification.</td></tr>
<tr><td></td><td>TCP/IP communication</td><td>・When switches are set to “0x00”, MG80-EI enters “Setting mode” with IP address fixed to 192.168.100.1. for TCP/IP communication.

This allows IP address and parameters to be changed, using application for Windows PC.</td></tr>
<tr><td>Power</td><td>FG ×1
+V ×1
0V ×1</td><td>Terminal ×1
(3 pole)</td><td>All modules and measuring units connected to MG80-EI are supplied from this power supply terminal.</td></tr>
</table>

4.2. LED indicator

The function of LED display is described below.



[PWR] Power LED : Displays the operation status of this module

Color	Status	Contents
Green	Off	Power off
	On	Ready for operation after power on

[ALM] Alarm LED : Displays the alarm status of all modules.

Color	Status	Contents
Red	Off	Normal operation
	On	Lights when an alarm occurs on any module.

[HOLD] Hold LED :Displays Hold status

Color	Status	Contents
Orange	Off	All count data is released from hold.
	On	Any count data is in hold status.

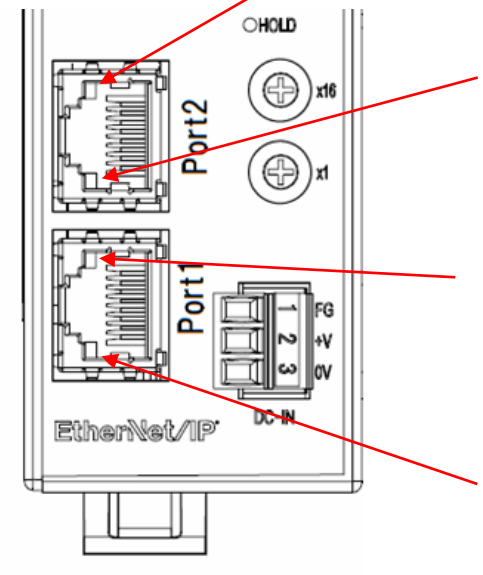
[MS] Module status LED : Displays the module status according to the EtherNet/IP standard.

Color	Status	Contents
–	Off	Power off or no IP address
Green	On	RUN status
	Flashing	IDLE status
Red	On	Error status
	Flashing	Recoverable failure is occurred.

[NS] Network status LED : Displays the network status according to the EtherNet/IP standard.

Color	Status	Contents
–	Off	Power off or no IP address
Green	On	Connection established
	Flashing	Connection not established
Red	On	The IP address is duplicated. Fatal error occurred.
	Flashing	Connection timed out

Communication port status LED



Displays the link status of communication port 2

Color	Status	Description
Green	Off	Link not established
	On	Link established

Displays the link speed of communication port 2

Color	Status	Description
Orange	Off	Abnormal communication speed
	On	Communication speed is normal

Displays the link status of communication port 1

Color	Status	Description
Green	Off	Link not established
	On	Link established

Displays the link speed of communication port 1

Color	Status	Description
Orange	Off	Abnormal communication speed
	On	Communication speed is normal

5. Function

5.1. Functions list

Item / Condition	Contents
Module configuration	
Whole system	MG80-EI can be expanded to 255 units via EtherNet/IP network (total 4080axes)
Number of connectable modules	Counter module MG80-CM : From 1 to 16units (Measuring unit 1 to 16 axes) I/O module LZ80-K1/K2 : Max. 2units
Resolution	
Measuring unit Input resolution	0.1μm/0.5μm/1μm/2μm/5μm/10μm
Data capture capability	
10Mbps	Max. 10000 data/sec.
Data format	Integer type 9 digits ※ μm mode: 5 digits for the integer part, 4 digits for the decimal part Other mode : 4 digits for the integer part, 6 digits for the decimal part
Peak hold function	Stores the maximum value, minimum value, and peak-to-peak(max-min) values of each frame.
	Hold updating peak value during pause period.
	Starts recalculation of the peak value with start command or I/O input.
Output mode	
Single axis	Current(real) value, maximum value, minimum value, peak to peak value of each axis
Addition and subtraction function	Current(real) value, maximum value, minimum value, peak to peak value of 2-axis added or subtracted.
Comparator	A measurement data in frame* compared with the thresholds, and output areal information in a number.
Number of steps	2 steps／4 steps
Number of groups	8 groups
Reset	Reset count value to zero
Reference point	Geometrical point on measuring device with signal output. Combine with Master preset function for an absolute mode.
Preset	Overwrite the current frame value to the Preset value by command.
Master preset	A preset value with relative position from the reference point memorized. When restarting, Master preset value will be called.
I/O module	A function can be assigned to each terminal of the I/O module. Input and ouput will be performed accordingly.

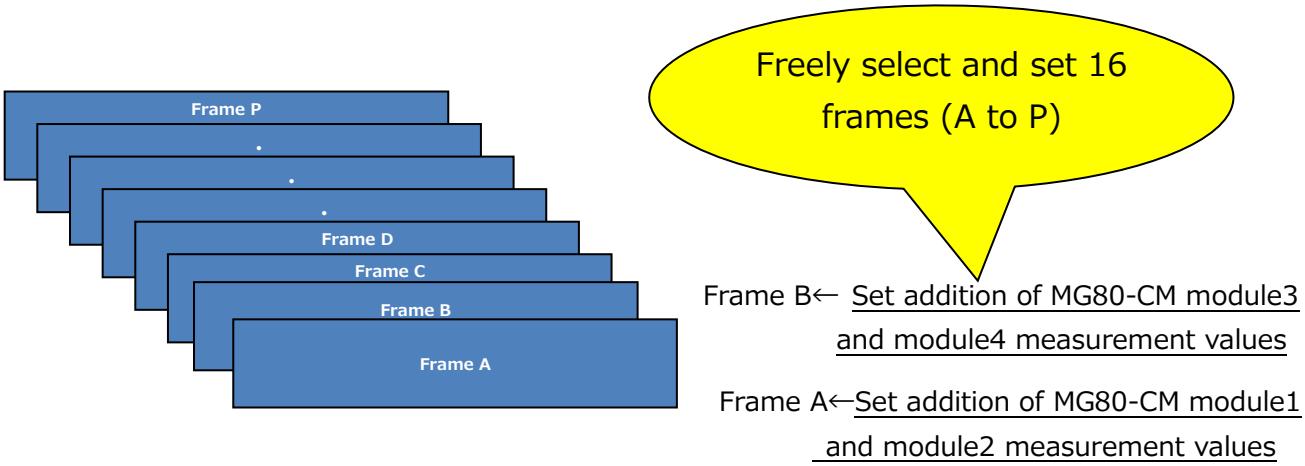
※ “Frame” is a function that sets the measurerd and calculated values of the measuring unit in a frame, prepared in advance and can be called up with a command. Details are explained in next page (5.2).

5.2. Frame definition

A frame is a constituent unit of the implicit communication of EtherNet/IP, which can carry various types of outuput.

MG80-EI has 16 frames, numbered in alphabet A to P.
Each frame can carry output of freely selected axis, and its ouput type.
Default setting of the frames are Axis1～Axis16 in FrameA～FrameP with Current (Real) value data.

Up to 16 frames can be used in each unit (maximum connection configuration: MG80-EI x1, MG80-CM x 16, LZ80-K1/K2 x2).
The following is a setting example.



16 frames (frame number: A to P)

As above example, contents to output can be freely selected and set in one frame. Various settings for each frame can be done with application for Windows PC. The frame can be set freely from 1 to 16 regardless of the number of connected MG80-CM. For example, the same settings (Axis and ouput type) can be applied on all frames.

(Note)

-Calculations between different frames, such as adding frame A and frame B, cannot be performed.

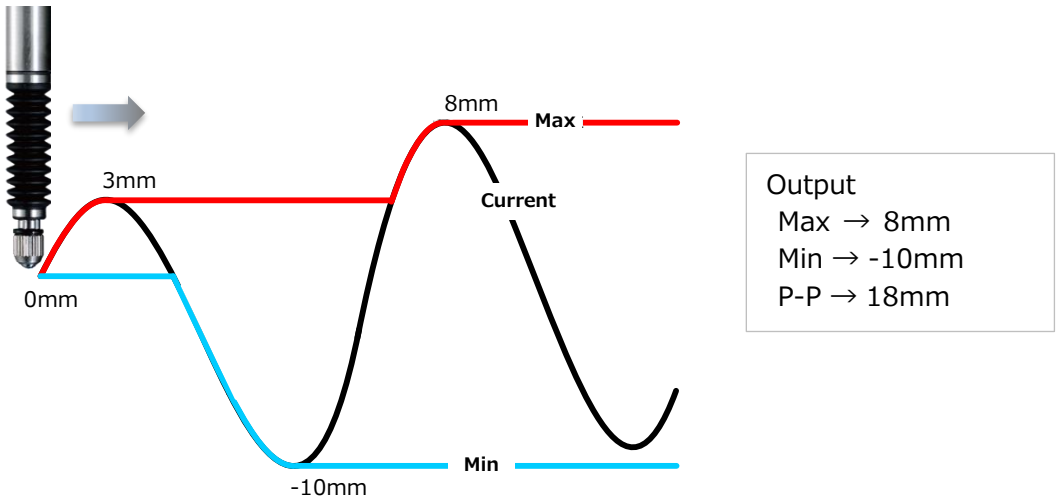
-The calculation function can be used only in one unit (MG80-CM connected to MG80-EI).

5.3. Detail of function

5.3.1. Peak hold

Stores maximum, minimum, peak to peak(maximum-mininum) values of the frame.

Example of output in each mode are shown below.
Black line indicates the measurement (current) value, red line indicates the maximum value, blue line indicates the minimum value. When the measuring unit moves from left to right, each of the peak value are updated and output as a frame data.



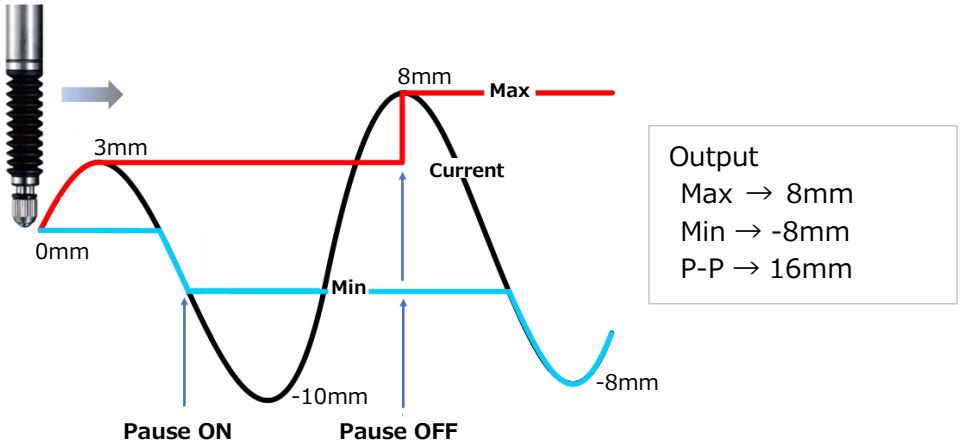
Examples of output with Peak hold

Peak values are updated to satisfy the following formula, and stored in the RAM

Minimum value ≦ Current value ≦ Maximum value
Peak to peak value＝Maximum value－Minimum value

5.3.2. Pause

Stopps updating the comparator and peak value calculation of a frame with pause function ON. Transition of the pause function of ON/OFF are shown below.



Example of using Pause function

5.3.3. Start

Starts storing the peak value of the specified frame.
(The count starts from the current value in Maximum Minimum mode.
The count starts from zero in Peak to Peak mode)

5.3.4. Reset

Sets the specified frame value to zero.

5.3.5. Preset

Overwrites the current frame value to a Preset value.

5.3.6. Master preset

By using the reference point of the measuring unit, a datum point and its value (Master preset value) can be memorized. The position and its value will be reloaded after restarting power and detecting reference point. Output will be absolute value, reference to the Master preset position and value.

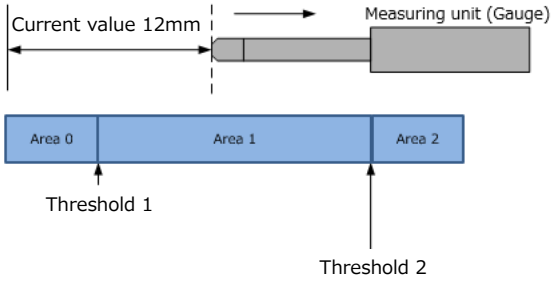
1. Turn the Reference point detection “ON” by PC application or the Command.
2. Turn the power on and move the measuring unit past the reference point.
3. Set the master work or stop the measuring unit at the required position.
4. Set preset value with “Master preset value setting” command, then call Master preset value by “Master preset call” command.
5. Restart the power and move the measuring unit past the reference point.
   Absolute value from the Master preset position will be loaded.

5.3.7. Comparator

Up to 8 sets of comparetor settings are available for each frame.
Each comparator has option of 2 modes (2 or 4 steps of threshold).
Output will be the “area” number. Examples are shown below.

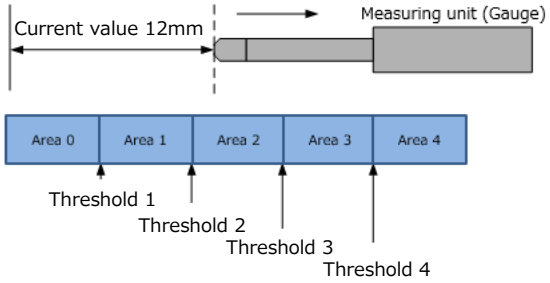
<Mode = 2 steps>
Threshold 1 = 5mm
Threshold 2 = 20mm

Current value = 12mm
Output → area “1”



<Mode = 4 steps>
Comparator threshold 1 = 5mm
Comparator threshold 2 = 10mm
Comparator threshold 3 = 15mm
Comparator threshold 4 = 20mm

Current value = 12mm
Output → area “2”



Example of comparator judgment

5.3.8. Addition/Subtraction

This function will allow calculation (Addition/Subtraction) of the two different measuring units and output result in a frame. The calculation result will be current (Real) value. All 16 frames are available with this function. The calculation formula is shown below.

Axis calculation result (current value)
= <Sign1> Measurement value of measuring unit Ⓐ
+ <Sign2> Measurement value of measuring unit Ⓑ

(Example)
Measurement value of measuring unit Ⓐ = 10[μm]
Measurement value of measuring unit Ⓑ = 5[μm]
Calculation setting : Sign1 = +, Sign2 = −
Result after calculation(Current value) = (+10) + (−5) = 5[μm]

5.3.9. I/O module control

Functions can be assigned freely to the terminals of the I/O module.
Function with multiple selection, such as comparator groups, can be changed by input signal during the operation. The function and detail are described below.

Function assignment of input of I/O terminal

Function	Contents
Target frame number (4bits:Addr0 to Addr3)	Specify the target frame number with the assigned 4 bits. * Target frame number = A to P(4 bits: 0000b to 1111b)
Data request input signal (1bit:Dreq)	When this signal is at Low level, the functions assigned to the bits corresponding to each input terminal are executed.
Comparator group number (3bits:Comp0 to Comp3)	Specify the comparator group number with the assigned 3 bits. * Comparator group number =1 to 8 (The 3 bits to be set are 000b to 111b)
Reset (1bit:Reset)	When this signal and the data request input signal are both Low level, the frame specified by the target frame number (Addr0 to Addr3) is reset.
Preset (1bit:Preset)	When this signal and the data request input signal are both Low level, preset call is executed for the frame specified by the target frame number (Addr0 to Addr3).
Reference point clear (1bit:ResetOrg)	When the digital gauge of the frame indicated by the target frame number is set to use the reference point, the reference point positon clear is executed when this signal and the data request input signal are at Low level.
Output mode (2bits:Mode0 to Mode1)	Specify the output mode with the assigned 2 bits. * Output mode 00b: Current value 01b: Maximum value 10b: Minimum value 11b: Peak-to-peak value

Start (1bit:Start)	When this signal and the data request input signal are both Low level, the frame specified by the target frame number is started.
Pause (1bit:Pause)	When this signal and the data request input signal are both Low level, pause ON is executed for the frame specified by the target frame number. Also, when the data request input signal becomes Low level while this signal is High level, puse OFF is executed for the frame specified by the target frame number.
No function (No_Func)	The terminal assigned to this function does not perform any operation.

Function assignment of I/O output terminal

Function	Contents
Data ready output signal (1bit:Drdy)	When this signal is Low level, the output information assingned to each output terminal is output.
Comparator area number (5bits:Comp_Out0 to Comp_Out4)	The comparator area number is indicated by the assigned 5 bits. When the above Data ready output signal becomes Low level, the comparator area number is output to the output terminal assigned to this fuction.
Alarm occurrence (1bit:Alarm)	The alarm occurrence status is indicated by the assigned 1bit. When the above Data ready output signal becomes Low level, the comparator area number is output to the output terminal assigned to this function.
Reference point pass (1bit:Org_pass)	The reference point pass status is indicated by the assigned 1 bit. When the above Data ready output signal becomes Low level, the comaparator area number is output to the output terminal assigned to this function.
No function (No_Func)	The terminal assigned to this fuction does not perform any operation.

* Output signal are output when the data request input signal is Low level.

6. Communication

6.1. Communication with EtherNet/IP device (Scanner)

MG80-EI supports CIP (Common Industrial Protocol) service functions of the EtherNet/IP standard.

6.1.1. Tag data link (Implicit message)

MG80-EI supports Implicit message of EtherNet/IP standard and performs cyclic communication (Tag data link) with the scanner (EtherNet/IP PLC).

MG80-EI performs cyclic communication (tag data link) with the following instances of Class0x4.

Instance 111 Output (Scanner : PLC→Adapter : MG80-EI) 34byte

Instance 124 Input (Adapter : MG80-EI→Scanner : PLC) 202byte

The communication cycle (RPI) should be set to a value of 2 ms or more.

Instance 111 data structure details

Type	Offset		Variable type	Label	Remarks
	byte	bit			
Output	0	0	BOOL	IF1.ST2.BW_QuitChannel_A	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST2.BW_QuitChannel_B	
		2	BOOL	IF1.ST2.BW_QuitChannel_R	
		3～7	–	–	
	1	0	BOOL	IF1.ST2.Encoder01Reset	
		1～7	–	–	
	2	0	BOOL	IF1.ST3.BW_QuitChannel_A	
		1	BOOL	IF1.ST3.BW_QuitChannel_B	
		2	BOOL	IF1.ST3.BW_QuitChannel_R	
		3～7	–	–	
	3	0	BOOL	IF1.ST3.Encoder01Reset	
		1～7	–	–	
	4	0	BOOL	IF1.ST4.BW_QuitChannel_A	
		1	BOOL	IF1.ST4.BW_QuitChannel_B	
		2	BOOL	IF1.ST4.BW_QuitChannel_R	
		3～7	–	–	
	5	0	BOOL	IF1.ST4.Encoder01Reset	
		1～7	–	–	
	6	0	BOOL	IF1.ST5.BW_QuitChannel_A	
		1	BOOL	IF1.ST5.BW_QuitChannel_B	
		2	BOOL	IF1.ST5.BW_QuitChannel_R	
		3～7	–	–	
	7	0	BOOL	IF1.ST5.Encoder01Reset	
		1～7	–	–	

	8	0	BOOL	IF1.ST6.BW_QuitChannel_A	
		1	BOOL	IF1.ST6.BW_QuitChannel_B	
		2	BOOL	IF1.ST6.BW_QuitChannel_R	
		3～7	–	–	
	9	0	BOOL	IF1.ST6.Encoder01Reset	
		1～7	–	–	
	10	0	BOOL	IF1.ST7.BW_QuitChannel_A	
		1	BOOL	IF1.ST7.BW_QuitChannel_B	
		2	BOOL	IF1.ST7.BW_QuitChannel_R	
		3～7	–	–	
	11	0	BOOL	IF1.ST7.Encoder01Reset	
		1～7	–	–	
	12	0	BOOL	IF1.ST8.BW_QuitChannel_A	
		1	BOOL	IF1.ST8.BW_QuitChannel_B	
		2	BOOL	IF1.ST8.BW_QuitChannel_R	
		3～7	–	–	
	13	0	BOOL	IF1.ST8.Encoder01Reset	
		1～7	–	–	
	14	0	BOOL	IF1.ST9.BW_QuitChannel_A	
		1	BOOL	IF1.ST9.BW_QuitChannel_B	
		2	BOOL	IF1.ST9.BW_QuitChannel_R	
		3～7	–	–	
	15	0	BOOL	IF1.ST9.Encoder01Reset	
		1～7	–	–	
	16	0	BOOL	IF1.ST10.BW_QuitChannel_A	
		1	BOOL	IF1.ST10.BW_QuitChannel_B	
		2	BOOL	IF1.ST10.BW_QuitChannel_R	
		3～7	–	–	
	17	0	BOOL	IF1.ST10.Encoder01Reset	
		1～7	–	–	
	18	0	BOOL	IF1.ST11.BW_QuitChannel_A	
		1	BOOL	IF1.ST11.BW_QuitChannel_B	
		2	BOOL	IF1.ST11.BW_QuitChannel_R	
		3～7	–	–	
	19	0	BOOL	IF1.ST11.Encoder01Reset	
		1～7	–	–	
	20	0	BOOL	IF1.ST12.BW_QuitChannel_A	
		1	BOOL	IF1.ST12.BW_QuitChannel_B	
		2	BOOL	IF1.ST12.BW_QuitChannel_R	
		3～7	–	–	

	21	0	BOOL	IF1.ST12.Encoder01Reset	
		1～7	–	–	
	22	0	BOOL	IF1.ST13.BW_QuitChannel_A	
		1	BOOL	IF1.ST13.BW_QuitChannel_B	
		2	BOOL	IF1.ST13.BW_QuitChannel_R	
		3～7	–	–	
	23	0	BOOL	IF1.ST13.Encoder01Reset	
		1～7	–	–	
	24	0	BOOL	IF1.ST14.BW_QuitChannel_A	
		1	BOOL	IF1.ST14.BW_QuitChannel_B	
		2	BOOL	IF1.ST14.BW_QuitChannel_R	
		3～7	–	–	
	25	0	BOOL	IF1.ST14.Encoder01Reset	
		1～7	–	–	
	26	0	BOOL	IF1.ST15.BW_QuitChannel_A	
		1	BOOL	IF1.ST15.BW_QuitChannel_B	
		2	BOOL	IF1.ST15.BW_QuitChannel_R	
		3～7	–	–	
	27	0	BOOL	IF1.ST15.Encoder01Reset	
		1～7	–	–	
	28	0	BOOL	IF1.ST16.BW_QuitChannel_A	
		1	BOOL	IF1.ST16.BW_QuitChannel_B	
		2	BOOL	IF1.ST16.BW_QuitChannel_R	
		3～7	–	–	
	29	0	BOOL	IF1.ST16.Encoder01Reset	
		1～7	–	Reserved	
	30	0	BOOL	IF1.ST17.BW_QuitChannel_A	
		1	BOOL	IF1.ST17.BW_QuitChannel_B	
		2	BOOL	IF1.ST17.BW_QuitChannel_R	
		3～7	–	–	
	31	0	BOOL	IF1.ST17.Encoder01Reset	
		1～7	–	–	
	32	0	BOOL	IF1.STxx.Ref	
		1	BOOL	IF1.STxx.Preset	
		2	BOOL	IF1.STxx.Trig	
		3	BOOL	IF1.STxx.Start	
		4	BOOL	IF1.STxx.Pause	
		5	BOOL	IF1.STxx.Rsv1	Reserve 1. Outputs zero
		6	BOOL	IF1.STxx.Rsv2	Reserve 2. Outputs zero
		7	BOOL	IF1.STxx.Rsv3	Reserve 3. Outputs zero

	33	0	BOOL	IF1.STxx.Rsv4	Reserve 4. Outputs zero
		1～7	–	–	Unused. Outputs zero

Instance 124 data structure details

Type	Offset		Variable type	Label	Remarks
	Byte	Bit			
Input	0～3	0～7	DINT	IF1.ST2.Encoder01	Frame A measured value
	4～7	0～7	DINT	IF1.ST3.Encoder01	Frame B measured value
	8～11	0～7	DINT	IF1.ST4.Encoder01	Frame C measured value
	12～15	0～7	DINT	IF1.ST5.Encoder01	Frame D measured value
	16～19	0～7	DINT	IF1.ST6.Encoder01	Frame E measured value
	20～23	0～7	DINT	IF1.ST7.Encoder01	Frame F measured value
	24～27	0～7	DINT	IF1.ST8.Encoder01	Frame G measured value
	28～31	0～7	DINT	IF1.ST9.Encoder01	Frame H measured value
	32～35	0～7	DINT	IF1.ST10.Encoder01	Frame I measured value
	36～39	0～7	DINT	IF1.ST11.Encoder01	Frame J measured value
	40～43	0～7	DINT	IF1.ST12.Encoder01	Frame K measured value
	44～47	0～7	DINT	IF1.ST13.Encoder01	Frame L measured value
	48～51	0～7	DINT	IF1.ST14.Encoder01	Frame M measured value
	52～55	0～7	DINT	IF1.ST15.Encoder01	Frame N measured value
	56～59	0～7	DINT	IF1.ST16.Encoder01	Frame O measured value
	60～63	0～7	DINT	IF1.ST17.Encoder01	Frame P measured value
	64	0	BOOL	IF1.ST1.StatusInput01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST1.StatusInput02	
		2～7	–	–	
	65	0～7	SINT	IF1.ST1.SupplyCurrent	
	66	0～7	SINT	IF1.ST1.SupplyVoltage	
	67	0	BOOL	IF1.ST2.PowerSupply01	
		1	BOOL	IF1.ST2.PowerSupply02	
		2～7	–	–	
	68	0	BOOL	IF1.ST2.BW_Channel_A	A signal of axis 1
		1	BOOL	IF1.ST2.BW_Channel_B	B signal of axis 1
		2	BOOL	IF1.ST2.BW_Channel_R	Z signal of axis 1
		3～7	–	–	Unused Outputs zero
	69	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST2.DigitalInput01	
		5	BOOL	IF1.ST2.DigitalInput02	
		6～7	–	–	
	70	0	BOOL	IF1.ST3.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST3.PowerSupply02	
		2～7	–	–	

	71	0	BOOL	IF1.ST3.BW_Channel_A	A signal of axis 2
		1	BOOL	IF1.ST3.BW_Channel_B	B signal of axis 2
		2	BOOL	IF1.ST3.BW_Channel_R	Z signal of axis 2
		3～7	–	–	Unused Outputs zero
	72	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST3.DigitalInput01	
		5	BOOL	IF1.ST3.DigitalInput02	
		6～7	–	–	
	73	0	BOOL	IF1.ST4.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST4.PowerSupply02	
		2～7	–	–	
	74	0	BOOL	IF1.ST4.BW_Channel_A	A signal of axis 3
		1	BOOL	IF1.ST4.BW_Channel_B	B signal of axis 3
		2	BOOL	IF1.ST4.BW_Channel_R	Z signal of axis 3
		3～7	–	–	Unused Outputs zero
	75	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST4.DigitalInput01	
		5	BOOL	IF1.ST4.DigitalInput02	
		6～7	–	–	
	76	0	BOOL	IF1.ST5.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST5.PowerSupply02	
		2～7	–	–	
	77	0	BOOL	IF1.ST5.BW_Channel_A	A signal of axis 4
		1	BOOL	IF1.ST5.BW_Channel_B	B signal of axis 4
		2	BOOL	IF1.ST5.BW_Channel_R	Z signal of axis 4
		3～7	–	–	Unused Outputs zero
	78	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST5.DigitalInput01	
		5	BOOL	IF1.ST5.DigitalInput02	
		6～7	–	–	
	79	0	BOOL	IF1.ST6.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST6.PowerSupply02	
		2～7	–	–	
	80	0	BOOL	IF1.ST6.BW_Channel_A	A signal of axis 5
		1	BOOL	IF1.ST6.BW_Channel_B	B signal of axis 5
		2	BOOL	IF1.ST6.BW_Channel_R	Z signal of axis 5
		3～7	–	–	Unused Outputs zero
	81	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST6.DigitalInput01	
		5	BOOL	IF1.ST6.DigitalInput02	
		6～7	–	–	

	82	0	BOOL	IF1.ST7.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST7.PowerSupply02	
		2～7	–	–	
	83	0	BOOL	IF1.ST7.BW_Channel_A	A signal of axis 6
		1	BOOL	IF1.ST7.BW_Channel_B	B signal of axis 6
		2	BOOL	IF1.ST7.BW_Channel_R	Z signal of axis 6
		3～7	–	–	Unused Outputs zero
	84	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST7.DigitalInput01	
		5	BOOL	IF1.ST7.DigitalInput02	
		6～7	–	–	
	85	0	BOOL	IF1.ST8.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST8.PowerSupply02	
		2～7	–	–	
	86	0	BOOL	IF1.ST8.BW_Channel_A	A signal of axis 7
		1	BOOL	IF1.ST8.BW_Channel_B	B signal of axis 7
		2	BOOL	IF1.ST8.BW_Channel_R	Z signal of axis 7
		3～7	–	–	Unused Outputs zero
	87	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST8.DigitalInput01	
		5	BOOL	IF1.ST8.DigitalInput02	
		6～7	–	–	
	88	0	BOOL	IF1.ST9.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST9.PowerSupply02	
		2～7	–	–	
	89	0	BOOL	IF1.ST9.BW_Channel_A	A signal of axis 8
		1	BOOL	IF1.ST9.BW_Channel_B	B signal of axis 8
		2	BOOL	IF1.ST9.BW_Channel_R	Z signal of axis 8
		3～7	–	–	Unused Outputs zero
	90	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST9.DigitalInput01	
		5	BOOL	IF1.ST9.DigitalInput02	
		6～7	–	–	
	91	0	BOOL	IF1.ST10.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST10.PowerSupply02	
		2～7	–	–	
	92	0	BOOL	IF1.ST10.BW_Channel_A	A signal of axis 9
		1	BOOL	IF1.ST10.BW_Channel_B	B signal of axis 9
		2	BOOL	IF1.ST10.BW_Channel_R	Z signal of axis 9
		3～7	–	–	Unused Outputs zero

	93	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST10.DigitalInput01	
		5	BOOL	IF1.ST10.DigitalInput02	
		6～7	–	–	
	94	0	BOOL	IF1.ST11.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST11.PowerSupply02	
		2～7	–	–	
	95	0	BOOL	IF1.ST11.BW_Channel_A	A signal of axis 10
		1	BOOL	IF1.ST11.BW_Channel_B	B signal of axis 10
		2	BOOL	IF1.ST11.BW_Channel_R	Z signal of axis 10
		3～7	–	–	Unused Outputs zero
	96	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST11.DigitalInput01	
		5	BOOL	IF1.ST11.DigitalInput02	
		6～7	–	–	
	97	0	BOOL	IF1.ST12.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST12.PowerSupply02	
		2～7	–	–	
	98	0	BOOL	IF1.ST12.BW_Channel_A	A signal of axis 11
		1	BOOL	IF1.ST12.BW_Channel_B	B signal of axis 11
		2	BOOL	IF1.ST12.BW_Channel_R	Z signal of axis 11
		3～7	–	–	Unused Outputs zero
	99	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST12.DigitalInput01	
		5	BOOL	IF1.ST12.DigitalInput02	
		6～7	–	–	
	100	0	BOOL	IF1.ST13.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST13.PowerSupply02	
		2～7	–	–	
	101	0	BOOL	IF1.ST13.BW_Channel_A	A signal of axis 12
		1	BOOL	IF1.ST13.BW_Channel_B	B signal of axis 12
		2	BOOL	IF1.ST13.BW_Channel_R	Z signal of axis 12
		3～7	–	–	Unused Outputs zero
	102	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST13.DigitalInput01	
		5	BOOL	IF1.ST13.DigitalInput02	
		6～7	–	–	
	103	0	BOOL	IF1.ST14.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST14.PowerSupply02	
		2～7	–	–	

	104	0	BOOL	IF1.ST14.BW_Channel_A	A signal of axis 13
		1	BOOL	IF1.ST14.BW_Channel_B	B signal of axis 13
		2	BOOL	IF1.ST14.BW_Channel_R	Z signal of axis 13
		3～7	–	–	Unused Outputs zero
	105	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST14.DigitalInput01	
		5	BOOL	IF1.ST14.DigitalInput02	
		6～7	–	–	
	106	0	BOOL	IF1.ST15.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST15.PowerSupply02	
		2～7	–	–	
	107	0	BOOL	IF1.ST15.BW_Channel_A	A signal of axis 14
		1	BOOL	IF1.ST15.BW_Channel_B	B signal of axis 14
		2	BOOL	IF1.ST15.BW_Channel_R	Z signal of axis 14
		3～7	–	–	Unused Outputs zero
	108	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST15.DigitalInput01	
		5	BOOL	IF1.ST15.DigitalInput02	
		6～7	–	–	
	109	0	BOOL	IF1.ST16.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST16.PowerSupply02	
		2～7	–	–	
	110	0	BOOL	IF1.ST16.BW_Channel_A	A signal of axis 15
		1	BOOL	IF1.ST16.BW_Channel_B	B signal of axis 15
		2	BOOL	IF1.ST16.BW_Channel_R	Z signal of axis 15
		3～7	–	–	Unused Outputs zero
	111	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST16.DigitalInput01	
		5	BOOL	IF1.ST16.DigitalInput02	
		6～7	–	–	
	112	0	BOOL	IF1.ST17.PowerSupply01	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		1	BOOL	IF1.ST17.PowerSupply02	
		2～7	–	–	
	113	0	BOOL	IF1.ST17.BW_Channel_A	A signal of axis 16
		1	BOOL	IF1.ST17.BW_Channel_B	B signal of axis 16
		2	BOOL	IF1.ST17.BW_Channel_R	Z signal of axis 16
		3～7	–	–	Unused Outputs zero
	114	0～3	–	–	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
		4	BOOL	IF1.ST17.DigitalInput01	
		5	BOOL	IF1.ST17.DigitalInput02	
		6～7	–	–	

	115	0～7	–	–	Unused Outputs zero
	116	0～7	SINT	IF1.ST1.ModuleOk	MG80-EI will output zero. Labels in the left field are used in previous model MG70-EI.
	117	0～7	SINT	IF1.ST2.ModuleOk	Status of MG80-CM 1 *See chapter 7.2.
	118	0～7	SINT	IF1.ST3.ModuleOk	Status of MG80-CM 2 *See chapter 7.2.
	119	0～7	SINT	IF1.ST4.ModuleOk	Status of MG80-CM 3 *See chapter 7.2.
	120	0～7	SINT	IF1.ST5.ModuleOk	Status of MG80-CM 4 *See chapter 7.2.
	121	0～7	SINT	IF1.ST6.ModuleOk	Status of MG80-CM 5 *See chapter 7.2.
	122	0～7	SINT	IF1.ST7.ModuleOk	Status of MG80-CM 6 *See chapter 7.2.
	123	0～7	SINT	IF1.ST8.ModuleOk	Status of MG80-CM 7 *See chapter 7.2.
	124	0～7	SINT	IF1.ST9.ModuleOk	Status of MG80-CM 8 *See chapter 7.2.
	125	0～7	SINT	IF1.ST10.ModuleOk	Status of MG80-CM 9 *See chapter 7.2.
	126	0～7	SINT	IF1.ST11.ModuleOk	Status of MG80-CM 10*See chapter 7.2.
	127	0～7	SINT	IF1.ST12.ModuleOk	Status of MG80-CM 11*See chapter 7.2.
	128	0～7	SINT	IF1.ST13.ModuleOk	Status of MG80-CM 12*See chapter 7.2.
	129	0～7	SINT	IF1.ST14.ModuleOk	Status of MG80-CM 13*See chapter 7.2.
	130	0～7	SINT	IF1.ST15.ModuleOk	Status of MG80-CM 14*See chapter 7.2.
	131	0～7	SINT	IF1.ST16.ModuleOk	Status of MG80-CM 15*See chapter 7.2.
	132	0～7	SINT	IF1.ST17.ModuleOk	Status of MG80-CM 16*See chapter 7.2.
	133	0～7	SINT	IF1.ST2.CompResult	Frame A comparator result
	134	0～7	SINT	IF1.ST2.OutKind	Frame A output mode
	135	0～7	SINT	IF1.ST2.CompKumiNum	Frame A comparator group number
	136	0～7	SINT	IF1.ST3.CompResult	Frame B comparator result
	137	0～7	SINT	IF1.ST3.OutKind	Frame B output mode
	138	0～7	SINT	IF1.ST3.CompKumiNum	Frame B comparator group number
	139	0～7	SINT	IF1.ST4.CompResult	Frame C comparator result
	140	0～7	SINT	IF1.ST4.OutKind	Frame C output mode
	141	0～7	SINT	IF1.ST4.CompKumiNum	Frame C comparator group number
	142	0～7	SINT	IF1.ST5.CompResult	Frame D comparator result
	143	0～7	SINT	IF1.ST5.OutKind	Frame D output mode
	144	0～7	SINT	IF1.ST5.CompKumiNum	Frame D comparator group number
	145	0～7	SINT	IF1.ST6.CompResult	Frame E comparator result
	146	0～7	SINT	IF1.ST6.OutKind	Frame E output mode
	147	0～7	SINT	IF1.ST6.CompKumiNum	Frame E comparator group number
	148	0～7	SINT	IF1.ST7.CompResult	Frame F comparator result
	149	0～7	SINT	IF1.ST7.OutKind	Frame F output mode
	150	0～7	SINT	IF1.ST7.CompKumiNum	Frame F comparator group number
	151	0～7	SINT	IF1.ST8.CompResult	Frame G comparator result
	152	0～7	SINT	IF1.ST8.OutKind	Frame G output mode
	153	0～7	SINT	IF1.ST8.CompKumiNum	Frame G comparator group number

	154	0～7	SINT	IF1.ST9.CompResult	Frame H comparator result
	155	0～7	SINT	IF1.ST9.OutKind	Frame H output mode
	156	0～7	SINT	IF1.ST9.CompKumiNum	Frame H comparator group number
	157	0～7	SINT	IF1.ST10.CompResult	Frame I comparator result
	158	0～7	SINT	IF1.ST10.OutKind	Frame I output mode
	159	0～7	SINT	IF1.ST10.CompKumiNum	Frame I comparator group number
	160	0～7	SINT	IF1.ST11.CompResult	Frame J comparator result
	161	0～7	SINT	IF1.ST11.OutKind	Frame J output mode
	162	0～7	SINT	IF1.ST11.CompKumiNum	Frame J comparator group number
	163	0～7	SINT	IF1.ST12.CompResult	Frame K comparator result
	164	0～7	SINT	IF1.ST12.OutKind	Frame K output mode
	165	0～7	SINT	IF1.ST12.CompKumiNum	Frame K comparator group number
	166	0～7	SINT	IF1.ST13.CompResult	Frame L comparator result
	167	0～7	SINT	IF1.ST13.OutKind	Frame L output mode
	168	0～7	SINT	IF1.ST13.CompKumiNum	Frame L comparator group number
	169	0～7	SINT	IF1.ST14.CompResult	Frame M comparator result
	170	0～7	SINT	IF1.ST14.OutKind	Frame M output mode
	171	0～7	SINT	IF1.ST14.CompKumiNum	Frame M comparator group number
	172	0～7	SINT	IF1.ST15.CompResult	Frame N comparator result
	173	0～7	SINT	IF1.ST15.OutKind	Frame N output mode
	174	0～7	SINT	IF1.ST15.CompKumiNum	Frame N comparator group number
	175	0～7	SINT	IF1.ST16.CompResult	Frame O comparator result
	176	0～7	SINT	IF1.ST16.OutKind	Frame O output mode
	177	0～7	SINT	IF1.ST16.CompKumiNum	Frame O comparator group number
	178	0～7	SINT	IF1.ST17.CompResult	Frame P comparator result
	179	0～7	SINT	IF1.ST17.OutKind	Frame P output mode
	180	0～7	SINT	IF1.ST17.CompKumiNum	Frame P comparator group number
	181	0～7	SINT	IF1.STxx.IoIN1	Input signal of I/O module 1
	182	0～7	SINT	IF1.STxx.IoOUT1	Output signal of I/O module 1
	183	0～7	SINT	IF1.STxx.IoIN2	Input signal of I/O module 2
	184	0～7	SINT	IF1.STxx.IoOUT2	Output signal of I/O module 2
	185～188	0～7	DINT	IF1.ST5.LatchNum	Unused Outputs zero
	189～192	0～7	DINT	IF1.ST5.EncCount	Unused Outputs zero
	193	0～7	SINT	IF1.ST5.LatchStatus	Unused Outputs zero
	194～197	0～7	DINT	Reserved	Unused Outputs zero
	198～201	0～7	DINT	Reserved	Unused Outputs zero

6.1.2. CIP communication (Explicit message)

Use CIP communication (Explicit message) to send commands from scanner (PLC of EtherNet/IP device) to the MG80-EI at intended timing.
Commands such as parameter change, Reset, Preset Call, etc. are performed by CIP communication.
Communication with MG80-EI is done by Instance Class 0x4.

Instance 104 Output (Scanner : PLC→Adapter : MG80-EI) 16byte
Instance 105 Input (Adapter : MG80-EI→Scanner : PLC) 16byte

Use the following information for command with CIP communication.

CIP information for command transmission

CIP information		Value	Description
Path	Class	4	CIP class 0x4
	Instance	104	CIP object instance 104
	Attribute	3	CIP attributes
Service		16	CIP service 0x10 : SetAttribute-Single
Transmission data		16Byte	16-byte transmission command data

The transmission command is 16 bytes including the dummy.
The data structure of the command is shown below.

Data structure of command transmission

Offset	Label	Item	Description
0	INC	Transmission count	Set different value from the value used in previous command.
1	CMD	Command number	Set the command number (Hex value) to be sent. *Refer to the CIP communication command list for details.
2	RSV1	Reserved	Unused, it is set to zero.
3	RSV2	Reserved	Unused, it is set to zero.
4～15	DATA1 ～ DATA12	Transmission data	12 bytes data *The description of the transmission data changed due to the command to be transmitted. The dummy part is filled with zeros. For details, refer to 6.1.3. CIP communication command list.

When receiving a command response, execute the command according to the following CIP information.

CIP information of command response reception

CIP information		Value	Description
Path	Class	4	CIP class 0x4
	Instance	105	CIP object instance 105
	Attribute	3	CIP attributes
Service		14	CIP service 0xE : Get Attribute-Single
Transmission data		0Byte	No transmission data required

The response data is 8bytes of header information and 16bytes of response data. The following shows the data structure.

Response data structure

Offset	Label	Item	Description
0～7	HEAD	Header information	8-byte CIP header information
8～23	DATA	Response data	16-byte response data *The description of the transmission data changed due to the command to be transmitted. The dummy part is filled with zeros.

The procedure for sending a command is as follows.

(1) Specify instance 104 and send the command.
Receive the result.

(2) Request response data by specifying instance 105.
Receive the response data of the command

A wait time is required between each command transmission.

(1) -> (2)

The following commands require 200ms.
Command Number 8(0x08) Reference point position clear
Command Number 27(0x1B) Master preset call
Command Number 57(0x39) Unit setting
Command Number 62(0x3E) Parameter save
Other than the above commands, 2ms is required.

(2) -> (1) (when sending the next command in succession)

Always 2ms is required.

6.1.3. CIP communication command list

The following is a CIP communication command list.

CIP communication command list

Command number	Command	Overview
4(0x04)	Input resolution setting	[Axis number]、[Sign]、[Input resolution setting value]
5(0x05)	Input resolution acquisition	[Axis number]
6(0x06)	Reference point use setting	[Axis number]、[Reference point use setting]
7(0x07)	Reference point use setting acquisition	[Axis number]
8(0x08)	Reference point clear	[Axis number]
9(0x09)	Axis calculation setting	[Frame number]、[Sign]、[Measurement value of measuring unit Ⓐ number]、[Sign]、[Measurement value of measuring unit Ⓑnumber]
10(0x0A)	Axis calculation acquisition	[Frame number]
11(0x0B)	Output mode setting	[Frame number]、[Output mode setting]
12(0x0C)	Output mode acquisition	[Frame number]
13(0x0D)	Comparator group number setting	[Frame number]、[Comparator group number setting]
14(0x0E)	Comparator group number acquisition	[Frame number]
15(0x0F)	Comparator step number setting	[Frame number]、[Comparator step number mode setting]
16(0x10)	Comparator step number acquisition	[Frame number]
17(0x11)	Comparator threshold setting	[Frame number]、[Group number]、[Step number]、[Comparator threshold setting]
18(0x12)	Comparator threshold acquisition	[Frame number]、[Group number]、[Step number]
19(0x13)	I / O function assignment setting	[Target IO number]、[Input/output identification]、[Terminal number]、[Input or output function setting]
20(0x14)	I / O function assignment acquisition	[Target IO number]、[Input/output identification]、[Terminal number]
21(0x15)	Reset	[Frame number]
22(0x16)	Preset value setting	[Frame number]、[Preset value setting]
23(0x17)	Preset value acquisition	[Frame number]
24(0x18)	Preset call	[Frame number]
25(0x19)	Master preset value setting	[Axis number]、[Master preset value setting]
26(0x1A)	Master preset value acquisition	[Axis number]
27(0x1B)	Master preset call	[Axis number]
31(0x1F)	Start	[Frame number]
32(0x20)	Pause ON / OFF setting	[Frame number]、[Pause ON / OFF setting]
33(0x21)	Pause ON / OFF acquisition	[Frame number]
57(0x39)	Unit setting	[Unit setting]
58(0x3A)	Unit acquisition	–
62(0x3E)	Parameter save	–
63(0x3F)	Parameter initialization	–

The following shows the details of the CIP communication command.

(1) Input resolution setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x04</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Axis number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Sign</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Input resolution</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’ : 0.1μm</td><td>0x31</td></tr>
<tr><td>‘2’ : 0.5μm</td><td>0x32</td></tr>
<tr><td>‘3’ : 1.0μm</td><td>0x33</td></tr>
<tr><td>‘4’ : 2.0μm</td><td>0x34</td></tr>
<tr><td>‘5’ : 5.0μm</td><td>0x35</td></tr>
<tr><td>‘6’ : 10.0μm</td><td>0x36</td></tr>
</table></td></tr>
<tr><td>7～15</td><td>DATA4
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x04</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5
～
DATA9</td><td>Success or failure of setting　※ASCII code
<table>
<tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr>
<tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr>
</table>
</td></tr>
<tr><td>13～19</td><td>DATA10
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(2) Input resolution acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x05
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x05
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
9	DATA6	※ASCII code Sign: Setting value (Hex) '+': 0x2B '−': 0x2D
10	DATA7	※ASCII code Input resolution: Setting value (Hex) '1' : 0.1μm: 0x31 '2' : 0.5μm: 0x32 '3' : 1.0μm: 0x33 '4' : 2.0μm: 0x34 '5' : 5.0μm: 0x35 '6' : 10.0μm: 0x36
11～19	DATA8 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(3) Reference point use setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x06
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5	DATA2	※ASCII code Use reference point: Setting value (Hex) '0' : OFF: 0x30 '1' : ON: 0x31
6～15	DATA3 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x06
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: Value (Hex): Contents "OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(4) Reference point use acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x07
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x07
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
9	DATA6	※ASCII code Reference point use: Setting value (Hex) '0' : OFF: 0x30 '1' : ON: 0x31
10～19	DATA7 ～ DATA16	ダミー 0x00

*See chapter 6.1.4. for error information.

(5) Reference position clear command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x08
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x08
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: "OK000" / Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 / Contents: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(6) Axis calculation setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x09</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※Code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Sign1</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓐ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>7</td><td>DATA4</td><td>※ASCII code
<table>
<tr><th>Sign2</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
<tr><td>‘ ’</td><td>0x20</td></tr>
</table>
To set the measuring unit Ⓐ only
(measuring unit Ⓑdisabled), leave the Sign 2 blank (0x20).</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓑ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9～15</td><td>DATA6
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x09</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5
～
DATA9</td><td>Success or failure of setting　※ASCII code
<table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(7) Axis calculation acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x0A</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※Code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～‘J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～‘P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5～15</td><td>DATA2
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x0A</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Sign1</th><th>Hex値</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
</table></td></tr>
<tr><td>10</td><td>DATA7</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓐ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>11</td><td>DATA8</td><td>※ASCII code
<table>
<tr><th>Sign2</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
<tr><td>‘ ’</td><td>0x20</td></tr>
</table>
To set the measuring unit Ⓐ only
(measuring unit Ⓑdisabled), leave the Sign2 blank (0x20).</td></tr>
<tr><td>12</td><td>DATA9</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓑ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>13～19</td><td>DATA10
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(8) Output Mode setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x0B</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※Code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Output Mode</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : Current values</td><td>0x30</td></tr>
<tr><td>‘1’ : Maximum values</td><td>0x31</td></tr>
<tr><td>‘2’ : Minimum values</td><td>0x32</td></tr>
<tr><td>‘3’ : Peak to peak values</td><td>0x33</td></tr>
</table>
The output data of the MG70-EI are number of pulses collected from the measuring unit. Calculation is needed in the program to convert those into measurement values.
measurement values = number of pulses × sensor resolution
Output data of the MG80-EI is measurement value in 0.1μm unit. It is necessary to remove the calculation program when replacing MG70-EI to MG80-EI.</td></tr>
<tr><td>6～15</td><td>DATA3
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x0B</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5
～
DATA9</td><td>Success or failure of setting　※ASCII code
<table>
<tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr>
<tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr>
</table></td></tr>
<tr><td>13～19</td><td>DATA10
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(9) Output mode acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x0C
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※Code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Setting value (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x0C
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
9	DATA6	※ASCII code Output Mode: Setting value (Hex) '0' : Current values: 0x30 '1' : Maximum values: 0x31 '2' : Minimum values: 0x32 '3' : Peak to peak values: 0x33
10～19	DATA7 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(10) Comparator group number setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x0D
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5	DATA2	※ASCII code Comparator group number: Setting value (Hex) '1': 0x31 '2': 0x32 '3': 0x33 '4': 0x34 '5': 0x35 '6': 0x36 '7': 0x37 '8': 0x38
6～15	DATA3 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x0D
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: Value (Hex): Contents "OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(11) Comparator group number acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x0E
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII Code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x0E
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
9	DATA6	※ASCII code Comparator group number: Setting value (Hex) '1': 0x31 '2': 0x32 '3': 0x33 '4': 0x34 '5': 0x35 '6': 0x36 '7': 0x37 '8': 0x38
10～19	DATA7 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(12) Comparator step number setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x0F
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5	DATA2	※ASCII code Comparator step number mode number: Setting value (Hex) '0' : 0 steps: 0x30 '2' : 2 steps: 0x32 '4' : 4 steps: 0x34
6～15	DATA3 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x0F
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: Value (Hex): Contents "OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(13) Comparator step number acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x10
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x10
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
9	DATA6	※ASCII code Comparator step number: Setting value (Hex) '0' : 0 steps: 0x30 '2' : 2 steps: 0x32 '4' : 4 steps: 0x34
10～19	DATA7 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(14) Comparator threshold setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x11</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Comparator group number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
<tr><td>‘8’</td><td>0x38</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>7
～
10</td><td>DATA4
～
DATA7</td><td>Comparator threshold
※ 0.1μm unit(4Byte integer)

(Example)
＋0.1μm → ＋1 (0x01)
－0.1μm → －1 (0xFFFFFFFF)

＋12.3456mm → ＋123456 (0x19C53)
－12.3456mm → －123456 (0xFFFE1DC0)</td></tr>
<tr><td>11～15</td><td>DATA8
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x11</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5
～
DATA9</td><td>Success or failure of setting　※ASCII code
<table>
<tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr>
<tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr>
</table>
</td></tr>
<tr><td>13～19</td><td>DATA10
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(15) Comparator threshold acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x12</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Comparator group number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
<tr><td>‘8’</td><td>0x38</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>7～15</td><td>DATA4
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x12</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Comparator group number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
<tr><td>‘8’</td><td>0x38</td></tr>
</table></td></tr>
<tr><td>10</td><td>DATA7</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>11
～
14</td><td>DATA8
～
DATA11</td><td>Comparator threshold value
※ 0.1μm unit(4Byte integer)

(Example)
＋0.1μm → ＋1 (0x01)
－0.1μm → －1 (0xFFFFFFFF)</td></tr>
<tr><td>15～19</td><td>DATA12
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(16) I/O function assignment setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x13</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Target I / O module number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : IO1</td><td>0x30</td></tr>
<tr><td>‘1’ : IO2</td><td>0x31</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘I’ : Input</td><td>0x49</td></tr>
<tr><td>‘O’ : Output</td><td>0x4F</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Terminal number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’</td><td>0x30</td></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
</table></td></tr>
<tr><td>7</td><td>DATA4</td><td>※ASCII code
<table>
<tr><th>Input function</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : Addr0</td><td>0x30</td></tr>
<tr><td>‘1’ : Addr1</td><td>0x31</td></tr>
<tr><td>‘2’ : Addr2</td><td>0x32</td></tr>
<tr><td>‘3’ : Addr3</td><td>0x33</td></tr>
<tr><td>‘4’ : Dreq</td><td>0x34</td></tr>
<tr><td>‘5’ : Comp0</td><td>0x35</td></tr>
<tr><td>‘6’ : Comp1</td><td>0x36</td></tr>
<tr><td>‘7’ : Comp2</td><td>0x37</td></tr>
<tr><td>‘8’ : Reset</td><td>0x38</td></tr>
<tr><td>‘9’ : Preset</td><td>0x39</td></tr>
<tr><td>‘A’ : Reset_org</td><td>0x41</td></tr>
<tr><td>‘B’ : Mode0</td><td>0x42</td></tr>
<tr><td>‘C’ : Mode1</td><td>0x43</td></tr>
<tr><td>‘D’ : Start</td><td>0x44</td></tr>
<tr><td>‘E’ : Pause</td><td>0x45</td></tr>
<tr><td>‘X’ : No_Func</td><td>0x58</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td><td>※ASCII code
<table><tr><th>Output function</th><th>Setting value (Hex)</th></tr><tr><td>‘0’ : Drdy</td><td>0x30</td></tr><tr><td>‘1’ : Comp_out0</td><td>0x31</td></tr><tr><td>‘2’ : Comp_out1</td><td>0x32</td></tr><tr><td>‘3’ : Comp_out2</td><td>0x33</td></tr><tr><td>‘4’ : Comp_out3</td><td>0x34</td></tr><tr><td>‘5’ : Comp_out4</td><td>0x35</td></tr><tr><td>‘6’ : Alarm</td><td>0x36</td></tr><tr><td>‘7’ : Org_pass</td><td>0x37</td></tr><tr><td>‘X’ : No_Func</td><td>0x58</td></tr></table></td></tr>
<tr><td>8～15</td><td>DATA5
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x13</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5
～
DATA9</td><td>Success or failure of setting　※ASCII code
<table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(17)　I / O function assignment acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x14</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>I / O module number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : IO1</td><td>0x30</td></tr>
<tr><td>‘1’ : IO2</td><td>0x31</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘I’ :　Input type</td><td>0x49</td></tr>
<tr><td>‘O’ : Output type</td><td>0x4F</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Terminal number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’</td><td>0x30</td></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
</table></td></tr>
<tr><td>7～15</td><td>DATA4
～
DATA12</td><td>Dummy
0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>CIP header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x14</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Target I / O module number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : IO1</td><td>0x30</td></tr>
<tr><td>‘1’ : IO2</td><td>0x31</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘I’ : Input</td><td>0x49</td></tr>
<tr><td>‘O’ : Output</td><td>0x4F</td></tr>
</table></td></tr>
<tr><td>10</td><td>DATA7</td><td>※ASCII code
<table>
<tr><th>Terminal number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’</td><td>0x30</td></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
</table></td></tr>
<tr><td>11</td><td>DATA8</td><td>※ASCII code
<table>
<tr><th>Input function</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : Addr0</td><td>0x30</td></tr>
<tr><td>‘1’ : Addr1</td><td>0x31</td></tr>
<tr><td>‘2’ : Addr2</td><td>0x32</td></tr>
<tr><td>‘3’ : Addr3</td><td>0x33</td></tr>
<tr><td>‘4’ : Dreq</td><td>0x34</td></tr>
<tr><td>‘5’ : Comp0</td><td>0x35</td></tr>
<tr><td>‘6’ : Comp1</td><td>0x36</td></tr>
<tr><td>‘7’ : Comp2</td><td>0x37</td></tr>
<tr><td>‘8’ : Reset</td><td>0x38</td></tr>
<tr><td>‘9’ : Preset</td><td>0x39</td></tr>
<tr><td>‘A’ : Reset_org</td><td>0x41</td></tr>
<tr><td>‘B’ : Mode0</td><td>0x42</td></tr>
<tr><td>‘C’ : Mode1</td><td>0x43</td></tr>
<tr><td>‘D’ : Start</td><td>0x44</td></tr>
<tr><td>‘E’ : Pause</td><td>0x45</td></tr>
<tr><td>‘X’ : No_Func</td><td>0x58</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td><td>※ASCII code
<table><tr><th>Output function</th><th>Setting value (Hex)</th></tr><tr><td>‘0’ : Drdy</td><td>0x30</td></tr><tr><td>‘1’ : Comp_out0</td><td>0x31</td></tr><tr><td>‘2’ : Comp_out1</td><td>0x32</td></tr><tr><td>‘3’ : Comp_out2</td><td>0x33</td></tr><tr><td>‘4’ : Comp_out3</td><td>0x34</td></tr><tr><td>‘5’ : Comp_out4</td><td>0x35</td></tr><tr><td>‘6’ : Alarm</td><td>0x36</td></tr><tr><td>‘7’ : Org_pass</td><td>0x37</td></tr><tr><td>‘X’ : No_Func</td><td>0x58</td></tr></table></td></tr>
<tr><td>12～19</td><td>DATA9
～
DATA16</td><td>Dummy
0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(18) Reset command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x15
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※Code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x15
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: "OK000" / Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 / Contents: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(19) Preset value setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x16
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5 ～ 8	DATA2 ～ DATA5	Preset value ※ 0.1μm unit(4Byte integer) (Example) ＋0.1μm → ＋1 (0x01) －0.1μm → －1 (0xFFFFFFFF) ＋12.3456mm → ＋123456 (0x19C53) －12.3456mm → －123456 (0xFFFE1DC0)
9～15	DATA6 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x16
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: Value (Hex): Contents "OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(20) Preset value acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x17
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x17
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
9 ～ 12	DATA6 ～ DATA9	Preset value ※ 0.1μm unit(4Byte integer) (例) ＋0.1μm → ＋1 (0x01) －0.1μm → －1 (0xFFFFFFFF)
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(21) Preset call command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x18
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※Code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x18
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: "OK000"; Value (Hex): 0x4F 0x4B 0x30 0x30 0x30; Contents: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(22) Master preset value setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x19
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5 ～ 8	DATA2 ～ DATA5	Master preset value ※ 0.1μm unit(4Byte integer) (Example) ＋0.1μm → ＋1 (0x01) －0.1μm → －1 (0xFFFFFFFF) ＋12.3456mm → ＋123456 (0x19C53) －12.3456mm → －123456 (0xFFFE1DC0)
9～15	DATA6 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x19
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: "OK000"; Value (Hex): 0x4F 0x4B 0x30 0x30 0x30; Contents: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(23) Master preset value acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x1A
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x1A
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
9 ～ 12	DATA6 ～ DATA9	Master preset value ※ 0.1μm unit(4Byte integer) (例) ＋0.1μm → ＋1 (0x01) －0.1μm → －1 (0xFFFFFFFF)
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(24) Master preset call command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x1B
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x1B
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Axis number: Setting value (Hex) '1'～'10': 0x30～0x39 '11'～'16': 0x41～0x46
9 ～ 12	DATA6 ～ DATA9	Master preset value ※ 0.1μm unit(4Byte integer) (Example) ＋0.1μm → ＋1 (0x01) －0.1μm → －1 (0xFFFFFFFF)
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(25) Start command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x1F
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※Code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x1F
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data: "OK000"; Value (Hex): 0x4F 0x4B 0x30 0x30 0x30; Contents: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(26)　Pause ON / OFF setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x20
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5	DATA2	※ASCII code Pause ON/OFF: Setting value (Hex) '0' : OFF: 0x30 '1' : ON: 0x31
6～15	DATA3 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x20
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting　※ASCII code Data: Value (Hex): Contents "OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(27)　Pause ON / OFF setting acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x21
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x21
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※ASCII code Frame number: Setting value (Hex) 'A'～'J': 0x30～0x39 'K'～'P': 0x41～0x46
9	DATA6	※ASCII code Pause ON/OFF: Setting value (Hex) '0' : OFF: 0x30 '1' : ON: 0x31
10～19	DATA7 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(28) Unit setting command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x39
2	RSV1	0x00
3	RSV2	0x00
4	DATA1	※ASCII code Unit / Setting value (Hex) '0' : mm / 0x30 '1' : other / 0x31
5～15	DATA2 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x39
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data / Value (Hex) / Contents "OK000" / 0x4F 0x4B 0x30 0x30 0x30 / Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

(29)　Unit acquisition command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x3A
2	RSV1	0x00
3	RSV2	0x00
4～15	DATA1 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x3A
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8	DATA5	※アスキーコード Unit / Setting value (Hex) ‘0’ : 0.1μm / 0x30 ‘1’ : other 0.000001/25.4 mm / 0x31
9～19	DATA6 ～ DATA16	ダミー 0x00

*See chapter 6.1.4. for error information.

(30) Parameter save command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x3E
2	RSV1	0x00
3	RSV2	0x00
4～15	DATA1 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : ＊＊
5	DATA2	CMD : 0x3E
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code
13～19	DATA10 ～ DATA16	Dummy 0x00

Data	Value (Hex)	Contents
“OK000”	0x4F 0x4B 0x30 0x30 0x30	Successful termination

*See chapter 6.1.4. for error information.

(31) Parameter initialization command

Offset	Label	Setting value (Hex)
0	INC	Enter an arbitrary value different from the value previously sent.
1	CMD	0x3F
2	RSV1	0x00
3	RSV2	0x00
4～15	DATA1 ～ DATA12	Dummy 0x00

Response data

Offset	Label	Response data (Hex)
0～3	HEAD	CIP header information
4	DATA1	INC : * *
5	DATA2	CMD : 0x3F
6	DATA3	RSV1 : 0x00
7	DATA4	RSV2 : 0x00
8～12	DATA5 ～ DATA9	Success or failure of setting ※ASCII code Data / Value (Hex) / Contents "OK000" / 0x4F 0x4B 0x30 0x30 0x30 / Successful termination
13～19	DATA10 ～ DATA16	Dummy 0x00

*See chapter 6.1.4. for error information.

6.1.4. Command error in CIP communication

When an error occurs in the command, the following error code (ASCII code) will be stored in DATA5 to DATA9.

Data	Value (Hex)	Contents
“ERR01”	0x45 0x52 0x52 0x30 0x31	Installation mode error
“ERR02”	0x45 0x52 0x52 0x30 0x32	Command format error
“ERR03”	0x45 0x52 0x52 0x30 0x33	Parameter value error
“ERR04”	0x45 0x52 0x52 0x30 0x34	Time-out occurred
“ERR05”	0x45 0x52 0x52 0x30 0x35	Frame number error
“ERR06”	0x45 0x52 0x52 0x30 0x36	Checksum error
“ERR07”	0x45 0x52 0x52 0x30 0x37	Parameter save error
“ERR70”	0x45 0x52 0x52 0x37 0x30	Wait time insufficient error
“ERR80”	0x45 0x52 0x52 0x38 0x30	Command number error
“ERR99”	0x45 0x52 0x52 0x39 0x39	Errors other than the above

6.2. CIP object

The CIP (Common Industrial Protocol) object specifications of EtherNet/IP supported by MG80-EI are listed below.

6.2.1. Supported CIP object

CIP ID	Name
0x01	Identity object
0x04	Assembly object
0x06	Connection manager object
0xF5	TCP/IP interface object
0xF6	Ethernet link object
0x64	Vendor Specific Class（Bus controller）
0x65	Vendor Specific Class（I/O module）

6.2.2. CIP Class 0x01 Identity object

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	1
0x2	Get	UINT	Max instance	1
0x3	Get	UINT	Number of instances	1
0x6	Get	UDINT	Maximum ID Number Class Attributes	7
0x7	Get	UDINT	Maximum ID Number Instance Attributes	8

Class service

ID	Servicess
0x1	Get_Attributes_All
0xE	Get_Attribute_Single

Instance attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Vendor ID	0x63A (1594)
0x2	Get	UINT	Device type	0x0C (12) " Communications Adapter "
0x3	Get	UINT	Product code	0x998 (2456)
0x4	Get	STRUCT of		
		USINT	Major revision	1
		USINT	Minor revision	1
0x5	Get	WORD	Status	
0x6	Get	UDINT	Serial number	
0x7	Get	SHORTSTRING	Product name	"MGS Interface module MG80-EI"
0x8	Get	USINT	Status	

Instance service

ID	Servicess
0x1	Get_Attributes_All
0x5	Reset
0xE	Get_Attribute_Single

6.2.3. CIP Class 0x04 Assembly object

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	2
0x2	Get	UINT	Max instance	199
0x3	Get	UINT	Number of instances	8
0x6	Get	UDINT	Maximum ID Number Class Attributes	7
0x7	Get	UDINT	Maximum ID Number Instance Attributes	3

Class service

ID	Servicess
0xE	Get_Attribute_Single

Instance attribute

ID	Access	Data Type	Description	Default
0x3	Get／Set	Array of Byte	Data	

Instance service

ID	Services
0xE	Get_Attribute_Single
0x10	Set_Attribute_Single

6.2.4. CIP Class 0x06 Connection Manager object

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	1
0x2	Get	UINT	Max instance	1
0x3	Get	UINT	Number of instances	1
0x6	Get	UDINT	Maximum ID Number Class Attributes	7
0x7	Get	UDINT	Maximum ID Number Instance Attributes	8

Class service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

Instance attribute

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Open Requests	1
0x2	Get	UINT	Open Format Rejects	0
0x3	Get	UINT	Open Resource Rejects	0
0x4	Get	UINT	Open Other Rejects	0
0x5	Get	UINT	Close Requests	0
0x6	Get	UINT	Close Format Requests	0
0x7	Get	UINT	Close Other Requests	0
0x8	Get	UINT	Connection Timeouts	0

Instance service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single
0x4E	Forward_Close
0x52	Unconnected_Send
0x54	Forward_Open

6.2.5. CIP Class 0xF5　TCP/IP Interface object

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	4
0x2	Get	UINT	Max instance	1
0x3	Get	UINT	Number of instances	1
0x6	Get	UDINT	Maximum ID Number Class Attributes	7
0x7	Get	UDINT	Maximum ID Number Instance Attributes	8

Class service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

Instance attribute

ID	Access	Data Type	Description	Default
0x1	Get	DWORD	Status	0x00000002(2)
0x2	Get	DWORD	Configuration Capability	0x00000060(96)
0x3	Get	DWORD	Configuration Control	0x00000000(0)
0x4	Get	Struct of	Physical Link	020h F6h 24h 01h
0x5	Get	Struct of	Interface Configuration	IP Address:192.168.0.1 Network Mask:255.255.255.0 Gateway Address:192.168.0.254
0x6	Get	String	Host Name	
0xD	Get	UINT	Encapsulation_Inactivity_Timeout	120

Instance service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

6.2.6. CIP Class 0xF6 Ethernet Link object

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	4
0x2	Get	UINT	Max instance	1
0x3	Get	UINT	Number of instances	1
0x6	Get	UDINT	Maximum ID Number Class Attributes	7
0x7	Get	UDINT	Maximum ID Number Instance Attributes	11

Class service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

Instance attribute

ID	Access	Data Type	Description	Default
0x1	Get	UDINT	Interface Speed	100[Mbps]
0x2	Get	DWORD	Interface Flags	0x0000000F (15)
0x3	Get	Arry of USINT	Physical Address	
0xB	Get	UINT	Interface Capability	0 : Auto-Nego , Auto-MDIX

Instance service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

6.2.7. CIP Class 0x64Vendor Specific Class (Bus controller)

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	1
0x2	Get	UINT	Max instance	0xE5

Class service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

Instance attribute

ID	Access	Data Type	Description	Default
0x1	Get	UDINT	Adapter status	0
0x2	Get	UINT	Hardware major revision	1
0x3	Get	UINT	Hardware minor revision	1
0x4	Get	UINT	FPGA hardware revision	0
0x5	Get	UINT	Active boot block	1
0x6	Get	UINT	Default firmware major revision	1
0x7	Get	UINT	Default firmware minor revision	1
0x8	Get	UINT	Update firmware major revision	1
0x9	Get	UINT	Update firmware minor revision	1
0xA	Get	UINT	Default FPGA software revision	0
0xB	Get	UINT	Update FPGA software revision	0
0x20	Get	UINT	Number of modules	16 ※Fixed to 16 modules.
0x21	Get	UINT	Length of the analog input data in bytes	64 ※Total size of instance 120 16 frames x 4 bytes = 64 bytes fixed.
0x22	Get	UINT	Length of the analog output data in bytes	0 ※Total size of instance 110 0 bytes fixed.
0x23	Get	UINT	Length of the digital input data in bytes	52 ※Total size of instance 121 3Byte + (16 frames x 3Byte) + 1Byte = 52Byte.
0x24	Get	UINT	Length of the digital output data in bytes	34 ※Total size of instance 111 (16 frames x 2 bytes)+2 bytes= 34 bytes.

0x25	Get	UINT	Length of the X2X network status information in bytes	17 ※Total size of instance 122 (16 frames x 1Byte) + 1Byte = 17Byte
0x26	Get	UINT	Length of the output status information in bytes	69 ※Total size of instance 123 (16 frames x 3 bytes) + 4bytes +17 bytes = 69 bytes
0x27	Get	UINT	Highest X2X station number currently in use	0 0 FIXED.
0x40	Get	UINT	Size of the analog input assembly in bytes (AI)	64 ※Total size of instance 120＝64Byte
0x41	Get	UINT	Size of the analog output assembly in bytes (AO)	0 ※Total size of instance 110＝0Byte
0x42	Get	UINT	Size of the digital input assembly in bytes (DI)	52 ※Total size of instance 121＝52Byte
0x43	Get	UINT	Size of the digital output assembly in bytes (DO)	34 ※Total size of instance 111＝34Byte
0x44	Get	UINT	Size of the X2X network status assembly in bytes (NS)	17 ※Total size of instance 122＝17Byte
0x45	Get	UINT	Size of the output status assembly in bytes (OS)	69 ※Total size of instance 123＝69Byte
0x46	Get	UINT	Composition of the combination input assembly	202 ※Total size of instance 124 = Total size of instance 120 to123＝202Byte
0x60	Get	UINT	Global action delay time [ms]	0 0 FIXED.
0x61	Get	UINT	Communication loss (timeout) action	1 ※1 FIXED.
0x62	Get	UINT	Communication loss (timeout) scope	1 ※1 FIXED.
0x63	Get	UINT	Communication loss (timeout) reset mode	1 ※1 FIXED.
0x64	Get	UINT	Program mode (idle) action	1 ※1 FIXED.
0x65	Get	UINT	Program mode (idle) scope	1 ※1 FIXED.
0x66	Get	UINT	Action for faulty or missing module in state "Operational"	1 ※1 FIXED.
0x67	Get	UINT	Action for missing module(s) during the boot phase	1 ※1 FIXED.
0x68	Get	UINT	Action for incorrect module type(s) during the boot phase	1 ※1 FIXED.
0x80	Get	UINT	X2X Link configuration	6 ※ 6 : 1[ms]
0x81	Get	UINT	X2X Link cable length [m]	0 0 FIXED.

0xE0	Get	UINT	Reading network address switches	※ IP address switch value (0x01～0xFF)
0xE1	Get	UINT	Module initialization delay [ms]	3000 ※ 3000[ms]
0xE2	Get	UINT	Enable/disable the Telnet password	0 0 : Password invalid
0xE3	Get	UINT	IP maximum transmission unit [bytes]	1500 ※ 1500 bytes
0xE4	Get	UINT	Current boot config assembly ID	0 0 FIXED.
0xE5	Get	UINT	Read the number of configured I/O modules	2 ※I / O module, 2 units

Instance service

ID	Services
0x1	Get_Attribute_All
0xE	Get_Attribute_Single

6.2.8. CIP Class 0x65Vendor Specific Class (I/O module)

Class attributes

ID	Access	Data Type	Description	Default
0x1	Get	UINT	Revision	1
0x2	Get	UINT	Max instance	0xFD

Class service

ID	Services
0xE	Get_Attribute_Single

Instance attribute

ID	Access	Data Type	Description	Default
0x1	Get	Array of Byte	Configured module hardware ID	0 0 FIXED
0x2	Get	Array of Byte	Current module hardware ID	0 0 FIXED
0x3	Get	USINT	Total length of input data	0 0 FIXED

0x5	Get	USINT	Total length of output data	0 0 FIXED
0xA0	Get	UINT	Read the number of I/O module registers	0 0 FIXED
0xA1	Get	Array of fUDINT	List of register addresses for an I/O module	0 0 FIXED
0xA2	Get	Array of fUDINT	List of register values for an I/O module	0 0 FIXED
0xE0	Get	UINT	Analog input data length in bytes (AI)	0 0 FIXED
0xE1	Get	UINT	Analog output data length in bytes (AO)	0 0 FIXED
0xE2	Get	UINT	Digital input data length in bytes (DI)	0 0 FIXED
0xE3	Get	UINT	Digital output data length in bytes (DO)	0 0 FIXED
0xE4	Get	UINT	Network status data length in bytes (NS)	0 0 FIXED
0xE5	Get	UINT	Output status data length in bytes (OS)	0 0 FIXED
0xFA	Get	UINT	Module firmware version	0 0 FIXED
0xFB	Get	UINT	Module hardware variant	0 0 FIXED
0xFC	Get	UDINT	Module serial number	0 0 FIXED
0xFD	Get	UINT	Module status	0 0 FIXED

Instance service

ID	Services
0xE	Get_Attribute_Single

7. Appendix

7.1. Parameter list

Parameter list

Item			Set value (ASCII code)		Lower limit	Upper limit	Default
Network information			IP address		0x00000000	0xFFFFFFFF	0xC0A86401
			Subnet mask		0x00000000	0xFFFFFFFF	0xFFFFFF00
			Default gateway		0x00000000	0xFFFFFFFF	0xC0A864FE
			Reserved		-	-	-
Input resolution	Measuring unit 1 ～ Measuring unit 16	Sign	+	Positive direction	+	-	+
			-	Minus direction			
		Resolution	1	0.1μm	1	6	1
			2	0.5μm			
			3	1.0μm			
			4	2.0μm			
			5	5.0μm			
			6	10.0μm			
		Reference point	0	OFF	0	1	0
			1	ON			
output	Frame A ～ Frame P	Output type	0	Current values	0	3	0
			1	Maximμm values			
			2	Minimμm values			
			3	Peak to peak values			

Item			Set value (ASCII code)		Lower limit	Upper limit	Default
Axis calculation	Flame A ～ Flame P	Sign of measuring unit Ⓐ	+	Plus sign	+	–	+
			–	Minus sign			
		measuring unit Ⓐ number	0	Measuring unit 1 value	0	F	Same value as frame number
			1	Measuring unit 2 value			
			2	Measuring unit 3 value			
			3	Measuring unit 4 value			
			4	Measuring unit 5 value			
			5	Measuring unit 6 value			
			6	Measuring unit 7 value			
			7	Measuring unit 8 value			
			8	Measuring unit 9 value			
			9	Measuring unit 10 value			
			A	Measuring unit 11 value			
			B	Measuring unit 12 value			
			C	Measuring unit 13 value			
			D	Measuring unit 14 value			
			E	Measuring unit 15 value			
			F	Measuring unit 16 value			
		Sign of measuring unit Ⓑ	+	Plus sign	+	–	+
			–	Minus sign			
		measuring unit Ⓑ number	0	Measuring unit 1 value	0	F	Blank
			1	Measuring unit 2 value			
			2	Measuring unit 3 value			
			3	Measuring unit 4 value			
			4	Measuring unit 5 value			
			5	Measuring unit 6 value			
			6	Measuring unit 7 value			
			7	Measuring unit 8 value			
			8	Measuring unit 9 value			
			9	Measuring unit 10 value			
			A	Measuring unit 11 value			
			B	Measuring unit 12 value			
			C	Measuring unit 13 value			
			D	Measuring unit 14 value			
			E	Measuring unit 15 value			
			F	Measuring unit 16 value			

Item			Set value(ASCII code)		Lower limit	Upper limit	Default
Comparator setting	Flame A ～ Flame P	Comparator group number	1	Group 1	1	8	1
			2	Group 2			
			3	Group 3			
			4	Group 4			
			5	Group 5			
			6	Group 6			
			7	Group 7			
			8	Group 8			
		Mode	0	None	0	2	0
			1	Step 2			
			2	Step 4			
		Comparator thresholds for groups 1 to 8	Step 1	Compare threshold1	-99999999	99999999	0
			Step 2	Compare threshold2			
			Step 3	Compare threshold3			
			Step 4	Compare threshold4			
I/O	IO1～IO2	Input function for each bit Bit 0～7	0	Target ID(bit0)	0	X	X
			1	Target ID(bit1)			
			2	Target ID(bit2)			
			3	Target ID(bit3)			
			4	Data request signal			
			5	Comparator group (bit0)			
			6	Comparator group (bit1)			
			7	Comparator group (bit2)			
			8	Reset command			
			9	Preset call command			
			A	Reference point reacquisition			
			B	Output value mode (bit0)			
			C	Output value mode (bit1)			
			D	Start signal			
			E	Pause signal			
			X	None			
		Output function Bit 0～7	0	Data ready signal	0	7	X
			1	Comparator area 0			
			2	Comparator area 1			
			3	Comparator area 2			
			4	Comparator area 3			
			5	Comparator area 4			
			6	Alarm output			
			7	Reference point pass flag			
			X	None			

Item			Set value(ASCII code)		Lower limit	Upper limit	Default
Preset	Flame A ～ Flame P	Presets for each frame	Preset value		-99999999	99999999	0
Master preset	Measuring unit 1 ～ Measuring unit16	Preset for each measuring unit	Master preset value		-99999999	99999999	0
Pause	Flame A ～ Flame P	Pause for each frame	0	Pause OFF	0	1	0
			1	Pause ON			

7.2. Status code

Status code list

bit number	Status
7	Communication error between modules (Error: 1, No error: 0)
6	Pause (ON:1, OFF:0)
5	Reservation
4	Reservation
3	Reference point information (Reference point derected:1, Reference point not detecred:0)
2	Reservation
1	MG80-CM Error (Error: 1, No error: 0))
0	Error occurred (Error: 1, No error: 0)

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