9 SLMP COMMUNICATIONS

Without using a module that serves as a master station, CPU modules can perform SLMP communications as long as they are paired with external devices that can send/receive messages according to the SLMP control procedure. Because the network interface module performs data processing and sends/receives data according to the SLMP command from the external device, create required control programs in the external device. For details on SLMP, refer to the following.

Precautions

■Network setting switches

Check that the switches are set as follows. (I Page 77 Network mode setting)



- Switch 1: Off
- Switch 2: Off
- Switch 3: On
 Switch 4: Off

■Wiring

Check that the Ethernet cable is connected to P1. (Do not use P2.)

9.1 Communication Procedure

The following figure shows the procedure for performing SLMP communications. For the procedure for connecting to an external device, refer to the following.

Page 74 PROCEDURES BEFORE OPERATION



Point P

The specifications for SLMP communications on the network interface modules are as follows.

- Communication method: UDP/IP
- Port number: 45237
- Communication data code: Binary

9.2 Functions

This section describes the details on the functions available only when communications are performed using SLMP. For the common functions of the network interface modules available for SLMP communications, refer to the following.

Communication status monitoring function

Request messages are received periodically from external devices by setting the request message monitoring interval, resulting in monitoring the communication status.

Reset remotely or power on the network interface module and set the request message monitoring interval in the remote register (Master \rightarrow Remote). Then, the D LINK LED is turned on and communication status monitoring starts.

Item	Туре	Device code	Device No.	Description	Setting range
Request message	Word	B4H	00000FH	Set the interval for monitoring request	0 to 3600 (second)
monitoring interval				messages.	

When the request message monitoring interval is a value within 1 to 3600

- During communication status monitoring: When the next request message is received within the request message monitoring interval, the D LINK LED stays lit.
- Communication status monitoring timeout: When the next request message is not received within the request message monitoring interval, the D LINK LED is turned off and the alarm code (0E20H) is stored in Latest alarm code (RWr1).

For the FA3-TH1T16Y, FA3-TH1T16YE, FA3-AT1T8Y, FA3-TH1M16Y, FA3-TH1M16YE, or FA3-AT1M8Y, the processing to be performed when the D LINK LED is turned off follows the setting of the output HOLD/CLEAR function. Once a request message is received, the D LINK LED is turned on and the HOLD/CLEAR status of output signal is cleared.

When the request message monitoring interval is 0 (default)

The communication status monitoring stops and the D LINK LED is turned off. When a request message is received in this state, the D LINK LED is turned on. After a response message has been sent, the D LINK LED is turned off. In this case, nothing is stored in Latest alarm code (RWr1).



If 3601 or more is set for the request message monitoring interval, the module recognizes it as 3600.

9.3 Message Format

This section describes the format of message to be used for operating the network interface module using SLMP.

Request message

The following is the format of a request message sent from the external device to the network interface module. The data length of request message is up to 2047 bytes.

Header	Subheader	Request	Request	Request	Request	Request	Monitoring	Request data	a		Footer
		network No.	station No.	module I/O No.	multidrop station No.	data longin		Command	Subcommand	Data	

Item	Size (byte)	Description	Message
Header	—	Added on the external device side before sending the message.	-
Subheader	2	■3E frame When sent: 5000H	50H,00H
Request destination network No.	1	00H (fixed)	оон
Request destination station No.	1	FFH (fixed)	FFH
Request destination module I/O No.	2	03FFH (fixed)	FFH,03H
Request destination multidrop station No.	1	00H (fixed)	оон
Request data length	2	Specify the data length from the monitoring timer to the request data in hexadecimal.	■When the request data length is 24 bytes 18H,00H
Monitoring timer	2	Set the waiting time from the read/write processing to transmission of a response message in the network interface module which has received a request message from an external device. If the response message is not sent within the waiting time, the message is canceled. • 0000H: Unlimited wait (until the processing is completed) • 0001H to FFFFH (1 to 65535): Waiting time (unit: 250ms) The following values are recommended for settings. • Normal access: 01H to 28H (0.25 to 10s) • Error clear/data clear: 15H to 40H (5.25 to 10s)	■When specifying 10H for the monitoring timer
Request data	Changeable	Specify the command, subcommand, and data that indicate the request content.	-
Footer	—	Added on the external device side before sending the message.	_

Response message

The following is the format of a response message sent from the network interface module to the external device.

The data length of response message is up to 2048 bytes.

When completed

Header	Subheader	Request destination network No.	Request destination station No.	Request destination module I/O No.	Request destination multidrop station No.	Response data length	End code	Response data	Footer

· When failed

Header	Subheader	Request	Request	Request	Request	Response data length	End code	Error inf	ormation			Footer
		network No.	station No.	module I/O No.	multidrop station No.	data longin						

Item	Size (byte)	Description	Message
Header	—	The header of Ethernet is stored.	—
Subheader	2	■3E frame When sent: D000H	DOH,00H
Request destination network No.	1	00H (fixed)	оон
Request destination station No.	1	FFH (fixed)	FFH
Request destination module I/O No.	2	03FFH (fixed)	FFH,03H
Request destination multidrop station No.	1	00H (fixed)	оон
Response data length	2	The data length from the end code to the response data or from the end code to the error information is stored in hexadecimal.	When the response data length is 22 bytes
End code	2	The command processing result is stored as follows. • When completed: 0000H • When failed: ☞ Page 244 List of end codes	■When completed 00H,00H ■When failed (command error) 59H,C0H
Response data	Changeable	The read data and others corresponding to the command are stored when the processing is completed.	-

Item	Size (byte)	Description	Message
Error information	9	The following information is stored when the processing failed. The description is the same as that of the request message. • Network No. (1 byte) • Station No. (1 byte) • Request destination module I/O No. (2 bytes) • Request destination multidrop station No. (1 byte) • Command (2 bytes) • Subcommand (2 bytes)	
Footer	—	Added on the network interface module before sending the message.	—

SLMP command

SLMP command list

This chapter describes the commands and subcommand to be used for the request data in the request message to be sent to the network interface module.

If a command or subcommand other than those described in the following table are sent, the processing fails and C059H is stored in the end code of the response message. (SP Page 244 End code)

Item		Command	Subcommand	Description
Туре	Operation			
Device	Read	0401H	0000H	Reads a value starting from the specified device for a specified number of points in units of words.
			0001H	Reads a value starting from the specified device for a specified number of points in units of bits.
	Write	1401H	0000H	Writes a value starting from the specified device for a specified number of points in units of words.
			0001H	Writes a value starting from the specified device for a specified number of points in units of bits.
Memory	Read	0613H	0000H	Reads data in the remote buffer memory.
	Write	1613H	0000H	Writes data to the remote buffer memory.
Remote Control	Remote Reset	1006H	0000H	Perform the remote reset to the network interface module.
	Read Type Name	0101H	0000H	Reads the model name and model code of the network interface module to be accessed.

■Precautions of when the Remote Reset command is sent

Once the Remote Reset command is sent, communications cannot be performed for approximately 2 seconds. If any command is sent to the network interface module during this time, the module does not send a response message, resulting in a communication error of an external device.

■Response data for the Read Type Name command

The model name data length is fixed to 16 bytes. If the model name is less than 16 characters, space (20H) is stored for the remaining characters.

The following table lists the response data of the Read Type Name command sent from each network interface module.

Model	Model code
FA3-TH1T16XC	000EH
FA3-TH1T16Y	000FH
FA3-TH1T16YE	0010H
FA3-AT1T8X	0011H
FA3-AT1T8Y	0012H
FA3-TH1M16XC	0013H
FA3-TH1M16Y	0014H
FA3-TH1M16YE	0015H
FA3-AT1M8X	0016H
A3-AT1M8Y	0017H

9

Device

This section describes the device codes and device numbers to be used for the request data in the request message.

Device list

If any device code or device number other than those described below is specified, the processing fails and C05BH is stored in the end code of the response message. (

■Network interface module (digital input/output)

R: Read, W: Write

Device	Туре	Device code	Device No.	Access	Description
Remote input signal (RX)	Bit	9CH	000000H to 00001FH	R	Page 27 Remote I/O Signal
Remote output signal (RY)	Bit	9DH	000000H to 00001FH	R/W	
Remote register (RWw) (Master \rightarrow Remote)	Word	B4H	000000H to 00001FH	R/W	☞ Page 38 Remote Register
Remote register (RWr) (Remote → Master)	Word	AFH	000000H to 00001FH	R	

■Network interface module (analog input/output)

R: Read, W: Write

Device	Туре	Device code	Device No.	Access	Description
Remote input signal (RX)	Bit	9CH	000000H to 00001FH	R	🖙 Page 27 Remote I/O Signal
Remote output signal (RY)	Bit	9DH	000000H to 00001FH	R/W	
Remote register (RWw) (Master \rightarrow Remote)	Word	B4H	000000H to 00001FH	R/W	ে Page 38 Remote Register
Remote register (RWr) (Remote → Master)	Word	AFH	000000H to 00001FH	R	

■Remote register using only SLMP (Master → Remote)

Item	Туре	Device code	Device No.	Description
Request message monitoring interval	Word	B4H	00000FH	Set the interval for monitoring request messages. • Specification range: 0 to 3600 (second) When the monitoring interval is set to 0, the request message is not monitored. (CF Page 240 Communication status monitoring function)

Remote buffer memory

For the address of the remote buffer memory to be used for the request data of the request message, refer to the following.

End code

The following table lists the codes that are stored in the end codes when the network interface module returns an abnormal response.

List of end c	list of end codes								
End code	Error name	Description and cause	Corrective action						
С059Н	SLMP command error	A command or subcommand is incorrectly specified.	Correct the command or subcommand and send it again.						
C05BH	Device specification error	The device is incorrectly specified.	Correct the device and send it again.						
C05CH	Request message error	Request message is incorrect.	Correct the request message and send it again.						
C061H	Request data length error	Request data length does not match the number of data.	Correct the content or length of request data and send it again.						
CEE1H	Request message size error	The size of request message has exceeded the upper limit.	Set the request message of 2047 bytes or less and send it again.						

9.4 Programming

This section describes a setting example of the SLMP command to control each network interface module.

Example of the SLMP command for digital input

The following shows an example of the SLMP command to receive the input signal status of the FA3-TH1T16XC.

System configuration





No.	Description					
(1)	External device					
(2)	FA3-TH1T16XC					
(3)	Digital signal converter					
Input signals						

No.	Input signals	Description	Status
(4)	X0	Push button switch	On
(5)	Х3	Optical sensor	On
(6)	XC to XF	Rotary DIP switch (0H to FH)	ВН

Request message

(*	1)	(2)	(3)	(4	4)	(5)	(6	6)	(7	7)	(8	3)	(9	9)		(10)		(11)	(1	2)
50H	,00H	00Н	FFH	FFH.	03H	00Н	осн	00H	04H	,00H	01H	04H	00Н	00H	оон	00H	,00H	9СН	01H	00H

No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	*
(3)	Request destination station No.	FFH	*
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	*
(6)	Request data length	000CH	The number of send bytes after the monitoring timer is 12.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	0401H	Device batch read
(9)	Subcommand	0000H	In units of words
(10)	Head device No.	000000H	Device name: X0 to XF
(11)	Device code	9CH	Remote input signal (RX)
(12)	Number of device points	0001H	In units of words (16 bits)



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	*
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	*
(6)	Response data length	0004H	End code (2 bytes) + Response data (2 bytes)
(7)	End code	0000H	Completed normally
(8)	Response data	B009H	X0 to XF (2 bytes (16 bits))

Example of the SLMP command for digital output

The following shows an example of the SLMP command to control the devices connected to the FA3-TH1T16Y.

System configuration



No.	Description						
(1)	External device						
(2)	FA3-TH1T16Y						
(3)	Digital signal converter						
Output signals							

No.	Output signals	Description	Status
(4)	Y1	Indicator lamp	On
(5)	Y2	Optical sensor reset	OFF
(6)	Y8 to YF	8-segment display (00 to 99)	01110011 (73H)

Request message

■Bit operation

The following shows the request command to turn on the indicator lamp.



No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Request data length	000DH	The number of send bytes after the monitoring timer is 13.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	1401H	Device batch write
(9)	Subcommand	0001H	In units of bits
(10)	Head device No.	000001H	Device name: Y1
(11)	Device code	9DH	Remote output signal (RY)
(12)	Number of device points	0001H	In units of bits
(13)	Write data	10H	Status of Y1

■Word operation

The following shows the request command to output a value to an eight-segment display. For word operations, the present status of output signals other than that of the signal of the eight-segment display is required to be output.



No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Request data length	000EH	The number of send bytes after the monitoring timer is 14.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	1401H	Device batch write
(9)	Subcommand	0000H	In units of words
(10)	Head device No.	000000H	Device name: Y0 to YF
(11)	Device code	9DH	Remote output signal (RY)
(12)	Number of device points	0001H	1 point
(13)	Write data	7302H	Status of Y0 to YF

(1)	(2)	(3)	(4)	(5)	(6)	(7)
D0H,00H	00H	FFH	FFH,03H	00H	02H,00H	00H,00H

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	*
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Example of the SLMP command for analog input

The following shows an example of the SLMP command to receive the analog conversion value after the processing starts by the parameter set in the device connected to the FA3-AT1T8X.

The parameter write area is divided into three. Write the parameter in three steps.

System configuration



No.	Description
(1)	External device
(2)	FA3-AT1T8X
(3)	Analog signal converter

Input signals

No.	Description	Conversion module	Input value	Digital operation value
(4)	CH1: Displacement sensor	Voltage conversion module (Voltage: 0 to $10V \rightarrow$ Voltage: 1 to 5V)	7.5V	12000
(5)	CH2: Optical sensor measurement distance	Current conversion module (Current: 4 to 20mA \rightarrow Voltage: 1 to 5V)	8mA	4000
(6)	CH6: K type thermocouple	K type thermocouple conversion module (0 to 400°C \rightarrow Voltage: 1 to 5V)	280℃	2700
(7)	CH8: Potentiometer	Signal pass-through module (Pass-through \rightarrow Voltage: 1 to 5V)	2.5V	37

Writing parameters (A/D conversion enable/disable setting)

The following shows the request command to write parameters required for conversion of signals of the sensor connected to the FA3-AT1T8X.

■Request message

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	0011			0011		0.411 0011	4011 4011			0411 0011	5011 0011

No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	*
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	*
(6)	Request data length	000EH	The number of send bytes after the monitoring timer is 14.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	1613H	Buffer memory write
(9)	Subcommand	0000H	0000H (fixed)
(10)	Head address	00000102H	0102H: A/D conversion enable/disable setting C Page 66 CH□ A/D conversion enable/disable setting (0102H)
(11)	Word length	0001H	1 point
(12)	Write data	005CH	A/D conversion enabled for CH1, CH2, CH6, and CH8



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	Ť
(5)	Request destination multidrop station No.	00H	Ť
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Writing parameters (Average processing setting and Time/Count/Moving average)

■Request message



No.	Setting item		Address	Setting value	Setting details
(1)	Subheader	Subheader			Fixed value
(2)	Request destir	ation network No.		00H	
(3)	Request destin	ation station No.		FFH	
(4)	Request destir	ation module I/O No.		03FFH	
(5)	Request destin	ation multidrop station N	lo.	00H	
(6)	Request data l	ength		0020H	The number of send bytes after the monitoring timer is 32.
(7)	Monitoring time	er		0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command			1613H	Buffer memory write
(9)	Subcommand			0000H	0000H (fixed)
(10)	Head address			00000105H	0105H: Averaging processing setting (CH1 to CH4) C Page 66 CH□ Averaging processing setting (0105H, 0106H) C Page 66 CH□ Time average/Count average/Moving average (0107H to 010EH)
(11)	Word length			000AH	10 words
(12)	Write data	Averaging process setting	0105H	0000H	CH1, 2: Sampling processing CH3, 4: Not used
			0106H	2010H	CH5, 7: Not used CH6: Time average CH8: Count average
(13)		Time average/Count	0107H to 010BH	0000H	CH1 to CH5: Not used or Sampling processing
		average/Moving	010CH	1388H	CH6: 5000ms (time for averaging)
		average	010DH	0000H	CH7: Not used
			010EH	0064H	CH8: 100 times (count for averaging)



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	Ť
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Writing parameters (Scaling enable/disable setting and Scaling upper/lower limit value)



No.	Setting item		Address	Setting value	Setting details
(1)	Subheader		:	5000H	Fixed value
(2)	Request destin	ation network No.		00H	
(3)	Request destin	ation station No.		FFH	
(4)	Request destin	ation module I/O No.		03FFH	
(5)	Request destin	ation multidrop station N	lo.	00H	*
(6)	Request data le	ength		002EH	The number of send bytes after the monitoring timer is 46.
(7)	Monitoring time	er		0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command			1613H	Buffer memory write
(9)	Subcommand			0000H	0000H (fixed)
(10)	Head address			00000133H	0133H: Scaling enable/disable setting C클 Page 67 Scaling enable/disable setting (0133H) C클 Page 68 CH미 Scaling upper limit value/lower limit value (0134H to 0143H)
(11)	Word length			0011H	17 words
(12)	Write data	Scaling enable/ disable setting	0133H	005FH	CH6 and CH8: 0 (Enable) CH1 to CH5 and CH7: 1 (Disable)
(13)		Scaling upper/lower	0134H	0000H	CH1: Disable (Scaling lower limit value)
		limit value	0135H	0000H	CH1: Disable (Scaling upper limit value)
			0136H to 013DH	0000H	CH2 to CH5: Disable (Scaling upper/lower limit value)
			013EH	0000H	CH6: 0 (Scaling lower limit value)
			013FH	0FA0H	CH6: 4000 (in units of 0.1°C) (Scaling upper limit value)
			0140H	0000H	CH7: Disable (Scaling lower limit value)
			0141H	0000H	CH7: Disable (Scaling upper limit value)
			0142H	0000H	CH8: 0 (Scaling lower limit value)
			0143H	0064H	CH8: 100 (Scaling upper limit value)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
D0H 00H	00H	FFH	FFH.03H	оон	02H_00H	001.001

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	*
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Initial data setting request flag

To enable the written parameter to start A/D conversion, turn on Initial data setting request flag (device code: 9DH, device number: 000009H) of the remote output (RY) signal.

■Request message

No.

(1)

(2)

(3)

(4)

(5)

(6)

(7)

(8)

(9)

(10)

(11)

(12)

(13)



	L	0 0 0 1 0 0 0 0 0 0 Y9
Setting item	Setting value	Setting details
Subheader	5000H	Fixed value
Request destination network No.	00H	
Request destination station No.	FFH	
Request destination module I/O No.	03FFH	
Request destination multidrop station No.	00H	
Request data length	000DH	The number of send bytes after the monitoring timer is 13.
Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
Command	1401H	Device batch write
Subcommand	0001H	In units of bits
Head device No.	000009H	Device name: Y9

Remote output signal (RY)

In units of bits

Status of Y9

D oononoo	
Response	message

Number of device points

Device code

Write data

(1) (2) (3) (4) (5) (6) (7) D0H,00H 00H FFH FFH,03H 00H 02H,00H 00H,00H

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	Ť
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

9DH

10H

0001H

Initial data setting completion

Check Initial data setting completion flag (device code: 9CH, device number: 000009H) of the remote input (RX) signal.

■Request message

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
50H,00H	00Н	FFH	FFH.03H	оон	0CH,00H	04H,00H	01H,04H	01H,00H	09H,00H,00H	9СН	01H,00H

No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Request data length	000CH	The number of send bytes after the monitoring timer is 12.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	0401H	Device batch read
(9)	Subcommand	0001H	In units of bits
(10)	Head device No.	000009H	Device name: X9
(11)	Device code	9CH	Remote input signal (RX)
(12)	Number of device points	0001H	In units of bits

■Response message



X9

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0003H	End code (2 bytes) + response data (1 byte)
(7)	End code	0000H	Completed normally
(8)	Response data	10H	Status of X9

When Initial data setting completion flag (device code: 9CH, device number: 000009H) of the remote input (RX) signal is turned on, turn off Initial data setting request flag (device code: 9DH, device number: 000009H) of the remote output (RY) signal.

To turn off Initial data setting request flag, set the write data of the request message to 00H and send the message. (EP Page 253 Initial data setting request flag)

Reading A/D conversion completion flag

The following is the request message to read A/D conversion completion flag (X10 to X17).

■Request message

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
5011 0011	0011					0.411.0011	0411 0411	0411 0011			

No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Request data length	000CH	The number of send bytes after the monitoring timer is 12.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	0401H	Device batch read
(9)	Subcommand	0001H	In units of bits
(10)	Head device No.	000010H	Device name: X10
(11)	Device code	9CH	Remote input signal (RX)
(12)	Number of device points	0008H	In units of bits



		1				1			()			()			()				1			()				1	
0	(0 0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	X1	0 (CH	1)		X11	(CH2	2)		X12	(CH3	3)		K 13	(CH4	4)		X14	(CH	5))	K 15	(CH6	6)	>	(16 ((CH7	7))	X17	(CH8	3)

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0006H	End code (2 bytes) + response data (4 bytes)
(7)	End code	0000H	Completed normally
(8)	Response data	01010011H	Conversion completed (CH1 to CH8)

Reading the digital operation value

The following is the request message to read the digital operation value after the completion of A/D conversion (A/D conversion completion flag turns on).

■Request message

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
50H.00H	00Н	FFH	FFH.03H	оон	0CH.00H	04H.00H	01H.04H	00H.00H	02H.00H.00H	AFH	08H.00F

No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	*
(6)	Request data length	000CH	The number of send bytes after the monitoring timer is 12.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	0401H	Device batch read
(9)	Subcommand	0000H	In units of words
(10)	Head device No.	000002H	Device name: RWr2 to RWr9
(11)	Device code	AFH	Remote register (Remote \rightarrow Master)
(12)	Number of device points	0008H	In units of words



No.	Item		Response command	Description
(1)	Subheader		D000H	Fixed value
(2)	Request destination network	No.	00H	
(3)	Request destination station N	0.	FFH	
(4)	Request destination module I	/O No.	03FFH	
(5)	Request destination multidrop	o station No.	00H	
(6)	Response data length		0012H	End code (2 bytes) + response data (16 bytes)
(7)	End code		0000H	Completed normally
(8)	Response data	CH1	2EE0H	12000 (Displacement sensor)
(9)		CH2	0FA0H	4000 (Optical sensor measurement distance)
(10)		СНЗ	0000H	Not used
(11)		CH4	0000H	
(12)		CH5	0000H	
(13)		CH6	0A8CH	2700 (K type thermocouple)
(14)		CH7	0000H	Not used
(15)		CH8	0025H	37 (Potentiometer)

Example of the SLMP command for analog output

The following shows an example of the SLMP command to output an analog signal after the processing starts by the parameter set in the device connected to the FA3-AT1T8Y.

The parameter write area is divided into two. Write the parameter in two steps.

System configuration



No.	Description
(1)	External device
(2)	FA3-AT1T8Y
(3)	Analog signal converter

Output signals

No.	Description	Conversion module	Output value	Analog conversion value		
(4)	CH1: Temperature control device	Voltage conversion module (Voltage: 1 to 5V \rightarrow Voltage: 0 to 10V)	3600	1.9V		
(5)	CH4: Light brightness	Current conversion module (Voltage: 1 to 5V \rightarrow Current: 4 to 20mA)	9600	13.6mA		
(6)	CH7: Inverter	Current conversion module (Voltage: 1 to 5V \rightarrow Current: 4 to 20mA)	15000	19mA		

Writing parameters (D/A conversion enable/disable setting)

■Request message

(1	1)	(2)	(3)	(4	4)	(5)	(6	6)	(7	7)	(8	3)	(9	9)		(1	0)		(1	1)	(1	2)
50H	00H	00H	FFH	FFH	,03H	оон	0EH	00H	04H	,00H	13H	16H	00H	00H	02H	01H	00H	,00H	01H	,00H	B6H	,00H

No.	Setting item	Setting value	Setting details			
(1)	Subheader	5000H	Fixed value			
(2)	Request destination network No.	00H				
(3)	Request destination station No.	FFH				
(4)	Request destination module I/O No.	03FFH				
(5)	Request destination multidrop station No.	00H				
(6)	Request data length	000EH	The number of send bytes after the monitoring timer is 14.			
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)			
(8)	Command	1613H	Buffer memory write			
(9)	Subcommand	0000H	0000H (fixed)			
(10)	Head address	00000102H	0102H: D/A conversion enable/disable setting C Page 71 CH□ D/A conversion enable/disable setting (0102H)			
(11)	Word length	0001H	1 point			
(12)	Write data	00B6H	CH1, CH4, and CH7 can be used.			



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	Ť
(4)	Request destination module I/O No.	03FFH	Ť
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Write parameters (Analog output HOLD/CLEAR setting and Warning output setting)

■Request message



No.	Setting item		Address	Setting value	Setting details		
(1)	Subheader			5000H	Fixed value		
(2)	Request destin	ation network No.		00H			
(3)	Request destin	ation station No.		FFH			
(4)	Request destin	ation module I/O No.		03FFH			
(5)	Request destin	ation multidrop station No.		00H			
(6)	Request data le	ength		0016H	The number of send bytes after the monitoring timer is 20.		
(7)	Monitoring time	er		0004H	1 second (Set 4 as the setting unit is 250ms.)		
(8)	Command			1613H	Buffer memory write		
(9)	Subcommand			0000H	0000H (fixed)		
(10)	Head address			00000105H	 ▷ Page 71 Analog output HOLD/CLEAR setting (0105H, 0106H) ▷ Page 71 Warning output setting (0107H) ▷ Page 72 CH□ Warning output upper/lower limit value (0108H to 0117H) 		
(11)	Word length			0005H	5 words		
(12)	Write data	Analog output HOLD/ CLEAR setting	0105H	0101H	CH1 and CH3: HOLD CH2 and CH4: CLEAR		
			0106H	1010H	CH5 and CH7: CLEAR CH6 and CH8: HOLD		
(13)		Warning output setting	0107H	00FEH	CH1: Enable CH2 to CH7: Disable		
(14)	CH1 Warning output upper limit value		0108H	1F40H	CH1: Warning output upper limit value		
(15)		CH1 Warning output lower limit value	0109H	0000H	CH1: Warning output lower limit value		

(1	I)	(2)	(3)	(4	1)	(5)	(6	5)	(7	7)
D0H	00H	00H	FFH	FFH	03H	00H	02H	100H	00H	00H

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Initial data setting request

To enable the written parameter to start D/A conversion, turn on Initial data setting request flag (device code: 9DH, device number: 000009H) of the remote output (RY) signal.

■Request message



No.	Setting item	Setting value	Setting details				
(1)	Subheader	5000H	Fixed value				
(2)	Request destination network No.	00Н					
(3)	Request destination station No.	FFH	*				
(4)	Request destination module I/O No.	03FFH	*				
(5)	Request destination multidrop station No.	00H	*				
(6)	Request data length	000DH	The number of send bytes after the monitoring timer is 13.				
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)				
(8)	Command	1401H	Device batch write				
(9)	Subcommand	0001H	In units of bits				
(10)	Head device No.	000009H	Device name: Y9				
(11)	Device code	9DH	Remote output signal (RY)				
(12)	Number of device points	0001H	In units of bits				
(13)	Write data	10H	Status of Y9				

0

Y9



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

Initial data setting completion

Check Initial data setting completion flag (device code: 9CH, device number: 000009H) of the remote input (RX) signal.

■Request message

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
50H.00H	оон	FFH	FFH.03H	оон	0CH.00H	04H.00H	01H.04H	01H.00H	09H.00H.00H	9СН	01H.00H

No.	Setting item	Setting value	Setting details		
(1)	Subheader	5000H	Fixed value		
(2)	Request destination network No.	00H			
(3)	Request destination station No.	FFH	*		
(4)	Request destination module I/O No.	03FFH			
(5)	Request destination multidrop station No.	00H	*		
(6)	Request data length	000CH	The number of send bytes after the monitoring timer is 12.		
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)		
(8)	Command	0401H	Device batch read		
(9)	Subcommand	0001H	In units of bits		
(10)	Head device No.	000009H	Device name: X9		
(11)	Device code	9CH	Remote input signal (RX)		
(12)	Number of device points	0001H	In units of bits		

■Response message



X9

No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Response data length	0003H	End code (2 bytes) + response data (1 byte)
(7)	End code	0000H	Completed normally
(8)	Response data	10H	Status of X9

When Initial data setting completion flag (device code: 9CH, device number: 000009H) of the remote input (RX) signal is turned on, turn off Initial data setting request flag (device code: 9DH, device number: 000009H) of the remote output (RY) signal.

To turn off Initial data setting request flag, set the write data of the request message to 00H and send the message. (EP Page 253 Initial data setting request flag)

Digital value setting

The following is the request message to set a digital value corresponding to the output analog value to CH \Box Digital value (device code: B4H, device number: 000002H to 000009H) of the remote register (Master \rightarrow Remote).

■Request message



No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	*
(3)	Request destination station No.	FFH	*
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	*
(6)	Request data length	001CH	The number of send bytes after the monitoring timer is 28.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	1401H	Device batch write
(9)	Subcommand	0000H	In units of words
(10)	Head device No.	000002H	Device name: RWw2 to RWw9
(11)	Device code	B4H	Remote register (Master \rightarrow Remote)
(12)	Number of device points	0008H	In units of words
(13)	CH1 Digital value	0E10H	3600
(14)	CH2 Digital value	0000H	D/A conversion disabled
(15)	CH3 Digital value	0000H	D/A conversion disabled
(16)	CH4 Digital value	2580H	9600
(17)	CH5 Digital value	0000H	D/A conversion disabled
(18)	CH6 Digital value	0000H	D/A conversion disabled
(19)	CH7 Digital value	3A98H	15000
(20)	CH8 Digital value	0000H	D/A conversion disabled



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	*
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	*
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally

D/A conversion output enable/disable setting

The following is the request message to turn on D/A conversion output enable/disable setting flag (Y10 to Y17) to output the analog conversion value.

■Request message



No.	Setting item	Setting value	Setting details
(1)	Subheader	5000H	Fixed value
(2)	Request destination network No.	00H	*
(3)	Request destination station No.	FFH	
(4)	Request destination module I/O No.	03FFH	
(5)	Request destination multidrop station No.	00H	
(6)	Request data length	0010H	The number of send bytes after the monitoring timer is 16.
(7)	Monitoring timer	0004H	1 second (Set 4 as the setting unit is 250ms.)
(8)	Command	1401H	Device batch write
(9)	Subcommand	0001H	In units of bits
(10)	Head device No.	000010H	Device name: Y10 to Y17
(11)	Device code	9DH	Remote output signal (RY)
(12)	Number of device points	0008H	In units of bits
(13)	Write data	10000110H	D/A conversion enabled for CH1, CH4, and CH7



No.	Item	Response command	Description
(1)	Subheader	D000H	Fixed value
(2)	Request destination network No.	00H	
(3)	Request destination station No.	FFH	*
(4)	Request destination module I/O No.	03FFH	*
(5)	Request destination multidrop station No.	00H	*
(6)	Response data length	0002H	End code (2 bytes)
(7)	End code	0000H	Completed normally