Instruction Manual

PAPERLESS RECORDER COMMUNICATION FUNCTIONS
(Ethernet)

TYPE: PHW

Fuji Electric Co., Ltd.

INP-TN5A0165a-E

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NOTICE

1. Exemption items from responsibility

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1. COMMUNICATION FUNCTIONS

1.1 General

This equipment provides a communication function (optional) using an Ethernet interface.

・ The following functions are available as Ethernet communication functions.

(1) FTP server function
Permits take-out of files from the compact flash of the paperless recorder, using personal computer's browser (Internet Explorer Ver.6) or DOS prompt.

(2) Web server function
Permits check of measured values and event information recorded in the paperless recorder, using personal computer's browser (Internet Explorer Ver.6).

(3) E-mail send function
Permits E-mail transmission in a fixed period and also on occurrence of an alarm.

(4) MODBUS TCP/IP function
Permits exchange of data with host computer, programmable controller, graphic display panel, data viewer, etc. by MODBUS TCP/IP communication.

Note: The other browsers, for example Netscape, Mozilla Fire-fox, are not available.

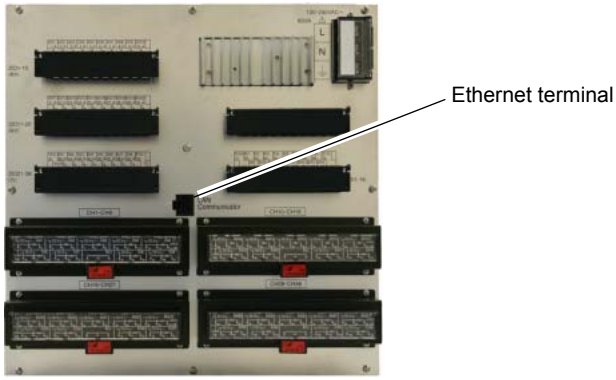
2. ETHERNET COMMUNICATION FUNCTIONS

FTP server function, web server function, E-mail send function and MODBUS TCP/IP function can be used for Ethernet communication.
Setting of IP address, etc. is essential for connection of a paperless recorder to Ethernet. Be sure to consult with the system manager of your company.

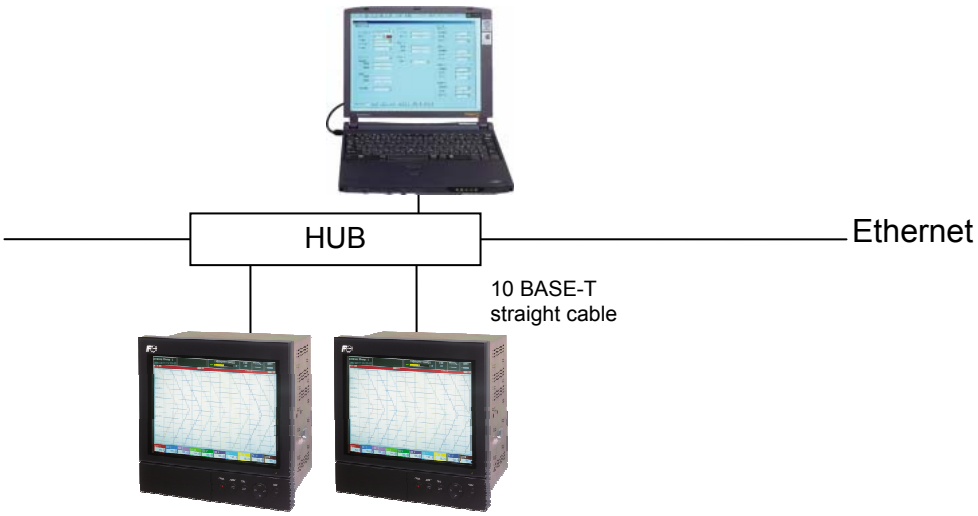
2.1 LAN port specification

Item	Specification
Transmission rate	10 Mbps 10BASE-T
Transmission method	Base band
Maximum network length or maximum node interval	500 m (cascade in 4 stages)
Maximum segment length	100 m (between node and hub)
Cable for connection	UTP (twisted-pair cable without shield) 22-26 AWG
Protocol	TCP/IP

2.2 Connection to the terminal



2.3 Connection



Node to hub distance : Up to 100 m
Maximum number of nodes per network : 100 nodes
Recommended cable : 10 BASE-T twisted-pair cable, Category 5

2.4 Setting Ethernet communicating conditions

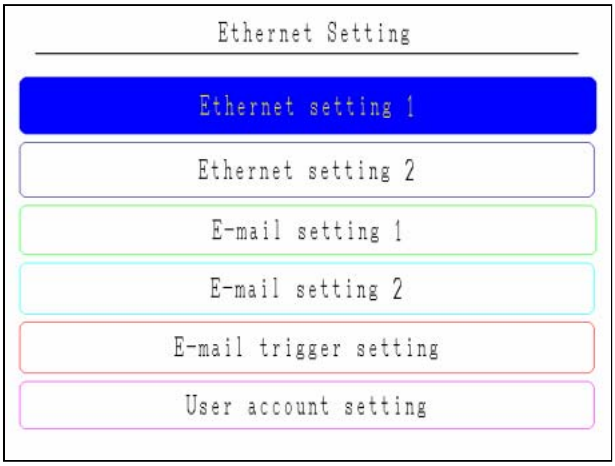
- Set IP address, subnet mask and default gateway for connection of the paperless recorder to Ethernet. (Consult with the system manager of your company for the values to be set.)

- Communicating conditions setting items

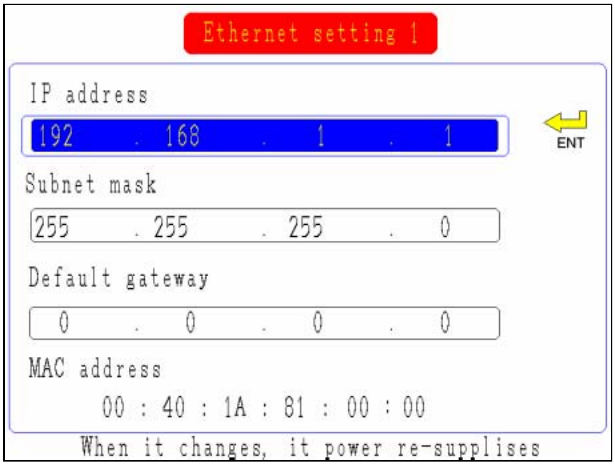
Item	Value at delivery	Setting range	Remarks
IP address	192.168. 1. 1	0 to 255 for each digit	Turn ON the power again after setting change.
Sugnet mask	255.255.255. 0	0 to 255 for each digit	
Default gateway	0. 0. 0. 0	0 to 255 for each digit	

2.5 Ethernet communicating conditions setting operation

(1) Select “Main unit” → “Ethernet communication setting” on the parameter setting screen, and the “Ethernet communication setting” screen appears.



(2) Select “Ethernet setting 1”, and the following screen appears.



(3) Move the cursor to “IP address” and set an IP address.
(4) Move the cursor to “Subnet mask”, and set a subnet mask.
(5) Move the cursor to “Default gateway”, and set a default gateway.

3. FTP SERVER FUNCTION

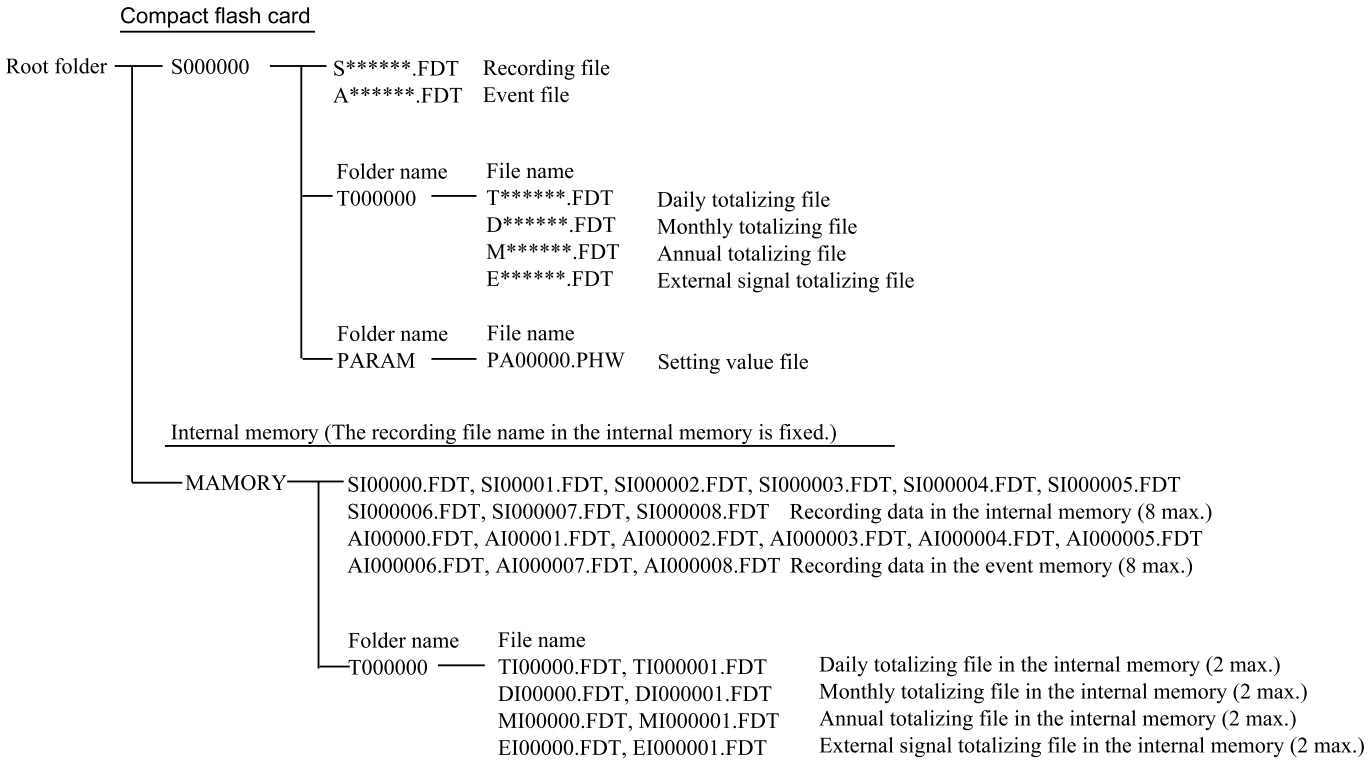
3.1 Description of FTP server function

- This function permits take-out of record files from the compact flash of the recorder, using browser or DOS prompt.
- This function permits reading recording data stored in the internal memory of the recorder.
- This function permits deletion of record files from the compact flash of the recorder, using browser or DOS prompt. (This function is available only to a user of administration level.)
- This function permits changing names of record files recorded on the compact flash of the recorder, using browser or DOS prompt. (This function is available only to a user of administration level.)
- Use Internet Explorer made by Microsoft as the personal computer's browser.
- Up to eight (8) user names and passwords may be set for those who are permitted to log in the FTP server.
- If the FTP access control function is OFF, log-in to the FTP server is permitted with common user name “ftp” (without password).
- When log-in or log-off to/from the FTP server is executed, the subject information is displayed on the Ethernet log screen.
- The FTP server permits log-in by one user only at a time.
- The internal memory of the recorder appears as binary format irrespective of “record data format” setting of the equipment.
- Folder configuration of the FTP server is as follows.

[Caution]

- The communication automatically disconnects, if no FTP communication request is made for 10 minutes.
- The display motion of the paperless recorder may slow down when taking out a file of large size.
- While the compact flash of the paperless recorder is accessed by FTP communication, do not take out the compact flash.
  Furthermore, when the FTP server function is used, inhibit access to the compact flash in the "Memory card abstract" screen, before taking out the compact flash.
- Do not delete or change the name of a file while the file is being recorded or integrated.
- Attributes of all files in the FTP server are displayed as read-only as hidden files.
- If the Ethernet communication is shut down while the FTP server is in log-in status, log-in is not permitted until the communication is automatically disconnected ten (10) minutes later.
- Data files cannot be written into the compact flash installed in the paperless recorder via FTP communication.
- Update time that appears on the list of files contained in the compact flash may differ from the actual update time if the file list is displayed via FTP communication.

Folder configuration of the FTP server



3.2 Setting FTP server function

- Execute setting of FTP server function and of access verification, for using the FTP server function. Furthermore, set names and passwords of those who use the FTP server function.

- FTP server function setting items

Item	Value at delivery	Setting range	Remarks
FTP server function	OFF	ON, OFF	Turn ON the power again after setting is changed.
FTP access control	OFF	ON, OFF	

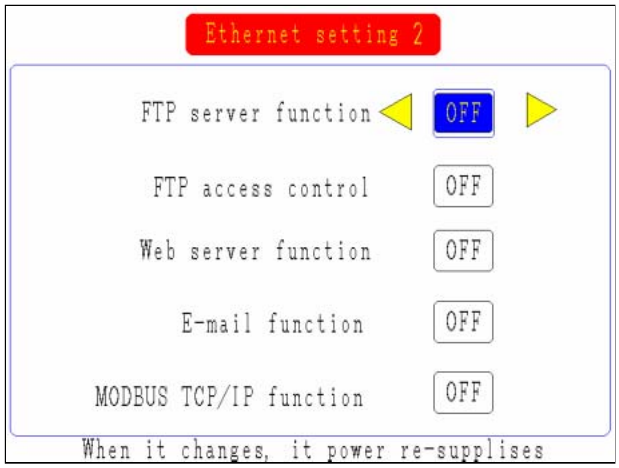
- User name setting items

Item	Value at delivery	Setting range	Remarks
User 1 to 8 name	(Blank)	Up to 16 letters may be set.	
User 1 to 8 password	(Blank)	Up to 8 letters may be set.	
User 1 to 8 level	Administrator	Administrator, guest	

3.3 FTP server function setting operation

- **FTP server function setting**

(1) Select “Main unit” → “Ethernet communication setting” → “Ethernet setting 2” on the parameter setting screen, and the following screen appears.

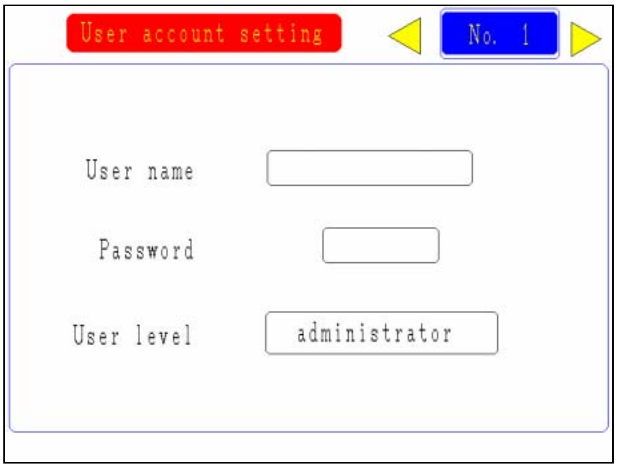


(2) Move the cursor to “FTP server function”, and select FTP server function ON/OFF. The FTP server function can be used, if ON is set.

(3) Move the cursor to “FTP access control”, and select FTP access control function ON/OFF. No password is required at the time of log-in to the FTP server, if OFF is set.

- **User name setting**

(1) Select “Main unit” → “Ethernet communication setting” → “User account setting” on the parameter setting screen, and the following screen appears.



(2) Select a user No. to be set.
(3) Set a user name using up to 16 letters.
(4) Set a password using up to 8 letters.
(5) Select a user access level out of “administrator” and “guest”.
If “guest” was selected, file deletion is not permitted, although log-in to the FTP server is permitted.

3.4 FTP server operation

- Connect the FTP server to the paperless recorder from the browser, by performing operation in the sequence indicated below.

(1) Start Internet Explorer from a personal computer on Ethernet.
(2) Enter the IP address of the paperless recorder in the address column in the following manner.
FTP: //(paperless recorder's IP address)
Enter FTP: //192.168.1.2 in case the IP address of the paperless recorder is 192.168.1.2.
(3) The screen that requests entry of user name and password appears. Enter a user name and password.
(4) “S000000” and “MEMORY” directories are displayed on the browser.
If you wish to display the recording file in the compact flash, select “S000000” folder.
To display the recording file in the internal memory, select “MEMORY” folder.
(5) The recording file recorded in the browser is displayed.
(6) Select the file to be read, and copy to the desired folder in the PC.
(7) When the compact flash is selected, it is available to delete the recording flie.
Select the file to be deleted, and delete the file.

4. Web server function

4.1 Description of web server function

- The web server function permits monitoring of measured values and event log in the paperless recorder using personal computer's browser.
- Use Internet Explorer made by Microsoft as the personal computer's browser.

[Caution]
- Monitoring from cell phone's browser is not permitted. If connection to recorder's web server is made from a cell phone, the recorder may halt in the worst case. Do not attempt to monitor data in the paperless recorder from a cell phone.
- An error may arise depending on the circumstances of the communication, as the period of update of the browser is 10 seconds.
  The screen of the PC is displayed again, if the update button of the browser is pressed in such a case.
- The characters may not be displayed normally depending on the setting of the browser.
- With the type of 9-channel specifications, 0.0°C is displayed as the reading of channels 10 to 36 on the measured value display screen.

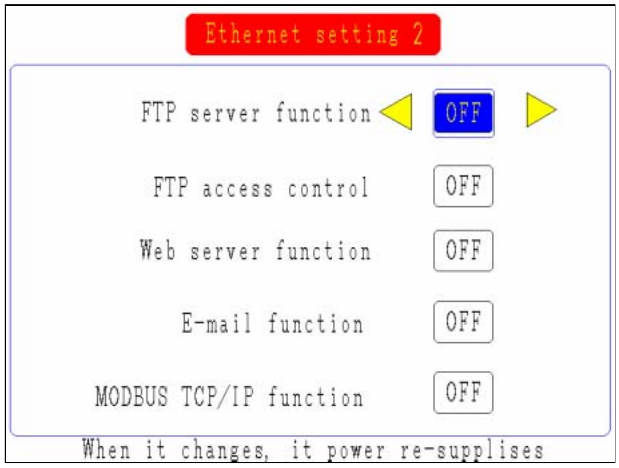
4.2 Setting web server function

- Set the web server function for permitting its use.
- Set items

Item	Value at delivery	Setting range	Remarks
Web server function	OFF	ON, OFF	Turn ON the power again after setting is changed.

4.3 Web server function setting operation

(1) Select “Main unit” → “Ethernet communication setting” → “Ethernet setting 2” on the parameter setting screen, and the follow screen appears.



(2) Move the cursor to “Web server function”, and select web server function ON/OFF. Use of the web server function is permitted if ON is set.

4.4 Web server operation

- Connect the web server to the paperless recorder from the personal computer's browser, by performing operation in the sequence indicated below.

(1) Start Internet Explorer from a personal computer on Ethernet.

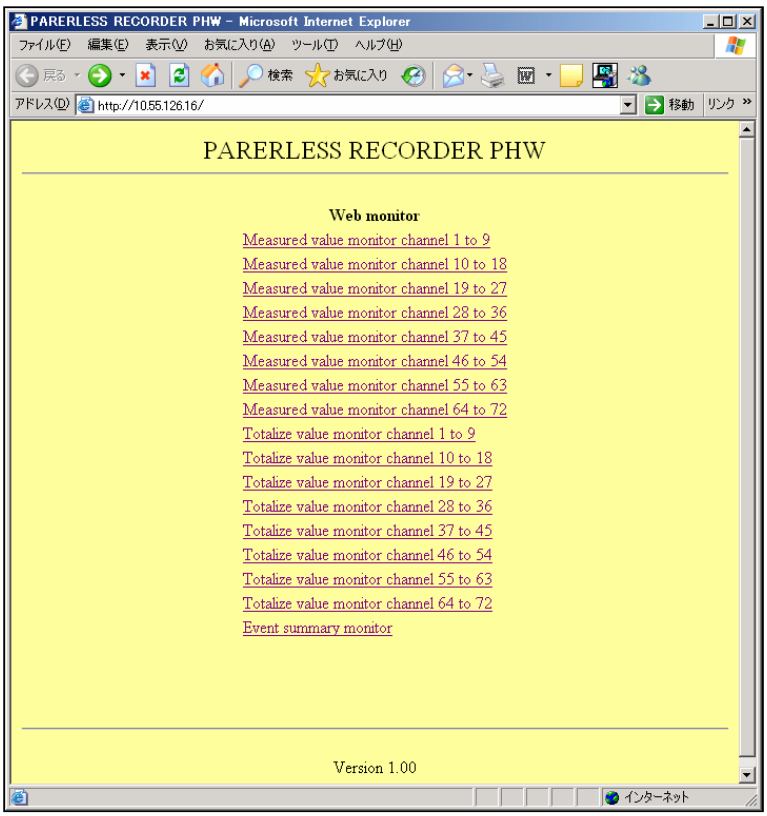
(2) Enter the IP address of the paperless recorder in the address column in the following manner.
http: //(paperless recorder's IP address)
Enter http: //192.168.1.2 in case the IP address of the paperless recorder is 192.168.1.2.

(3) The paperless recorder monitor screen is displayed on the browser.

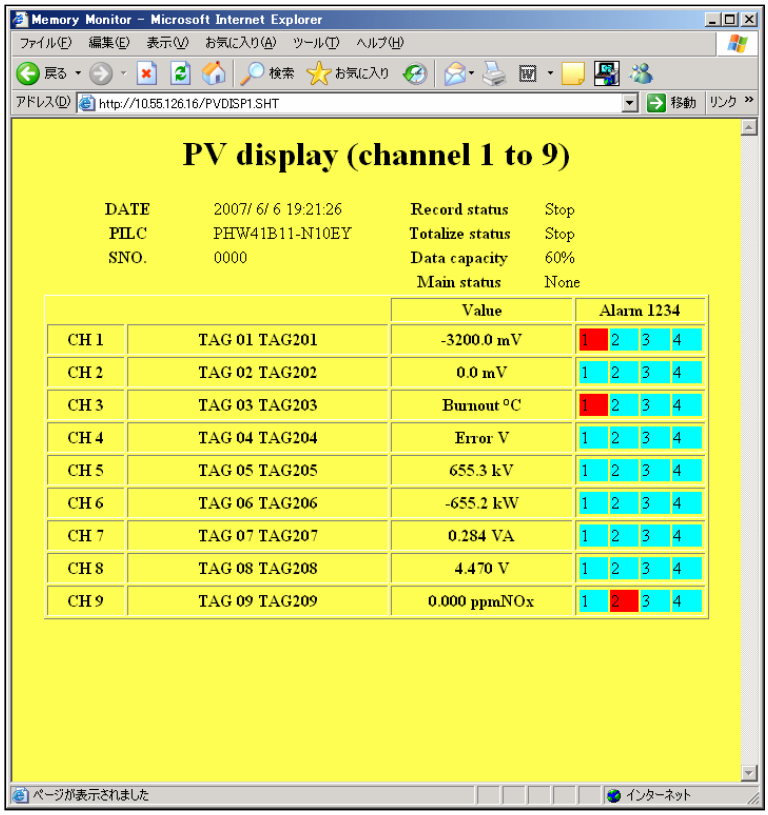
4.5 Web monitor screen

- Connect to the web server of the paperless recorder, and the following screen appears.

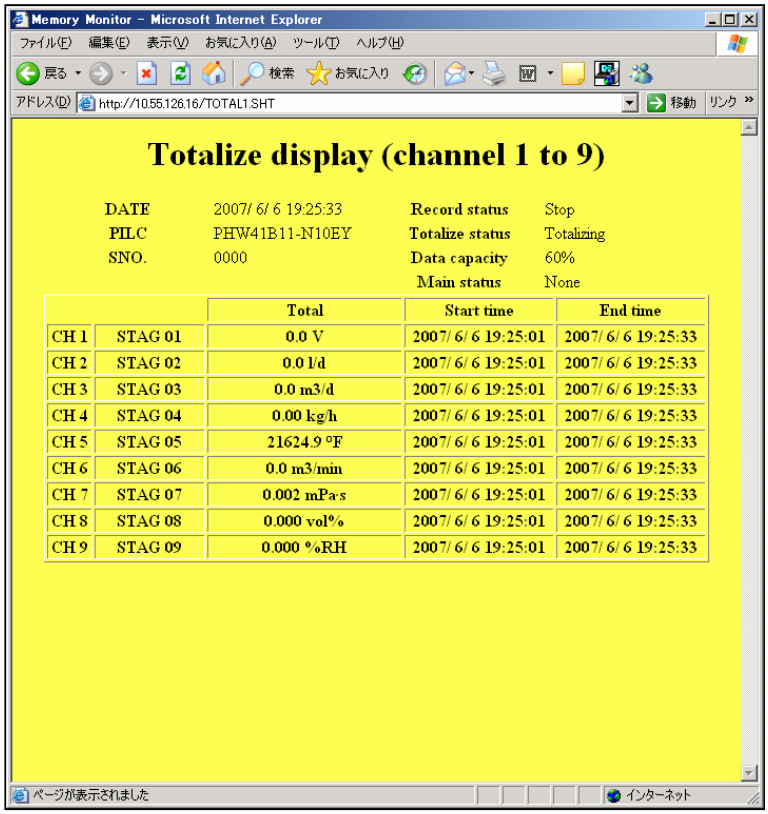
(1) Web monitor menu screen



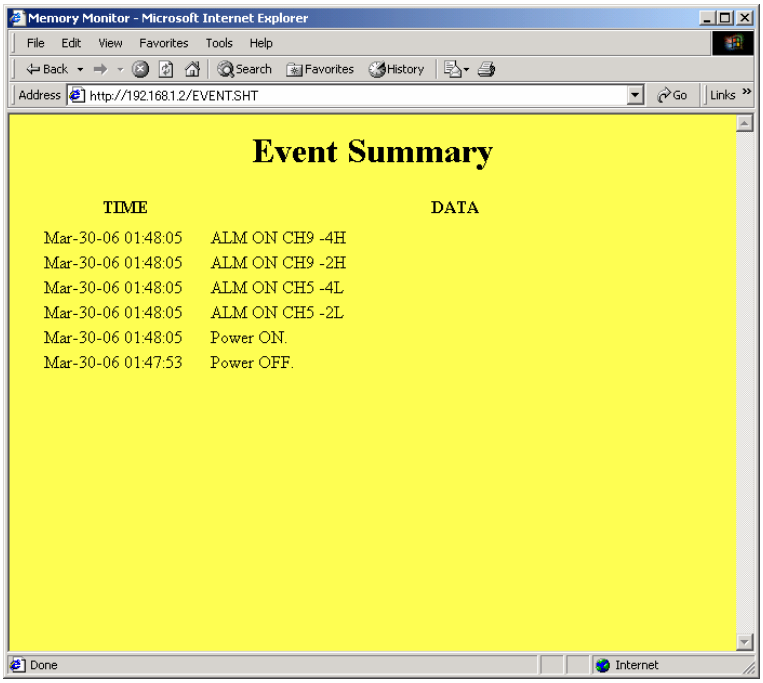
(2) PV display screen



(3) Totalize display screen



(4) Event Summary display screen



5. E-MAIL SEND FUNCTION

5.1 Description of E-mail send function

- E-mails can be transmitted from the paperless recorder. (Receipt of E-mails is not permitted.)
- E-mails can be transmitted in any of the states indicated below.
  (1) An alarm arose or was cancelled.
  (2) An external input (DI) was ON or OFF.
  (3) Any error occurred to the main unit. (When battery end, memory card full, or one of the alarms of all the channels should occur)
  (4) Once every fixed period (The period may be selected out of 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 12 hours and 24 hours.)
- Up to eight (8) addresses can be registered for transmission of E-mails.
- Measured values of each channel can be attached to each E-mail.
- E-mail transmission test can be conducted in the E-mail trigger setting screen.

[Caution]

- Up to sixteen (16) E-mail send requests can be transmitted continuously, but not more than 16.
  No transmission will be implemented if the number of E-mail send requests exceeds 16. Therefore, make setting so that E-mail send requests will not occur continuously.
- For sending E-mails, it is necessary to register the paperless recorder in the mail server.
  Consult with the system manager of your company, for registration to the mail server.
- If E-mail send fails, the E-mail send requests are cancelled.
- Even if E-mail is sent, there is a possibility where the E-mail does not reach the destination because of incorrect address, etc.
- If two or more E-mail addresses are set as send destinations in the E-mail trigger setting, the error message is not recorded on the Ethernet log screen unless all the attempts to send E-mails fail.

5.2 Setting E-mail function

- Set E-mail send/receive addresses and E-mail send trigger, for permitting use of the E-mail function.
  (Consult with the system manager of your company, for the values to be set.)

- E-mail function set items

Item	Value at delivery	Setting range	Remarks
E-mail function	OFF	ON, OFF	Turn ON the power again after setting change.

- E-mail send/receive address set items

Item	Value at delivery	Setting range	Remarks
SMPT IP address	0. 0. 0. 0	0 to 255 for each digit	
Sender's mail address	(Blank)	Up to 64 letters may be set.	
Sender's mail name	(Blank)	Up to 32 letters may be set.	
Receiver's mail address 1 to 8	(Blank)	Up to 64 letters may be set.	

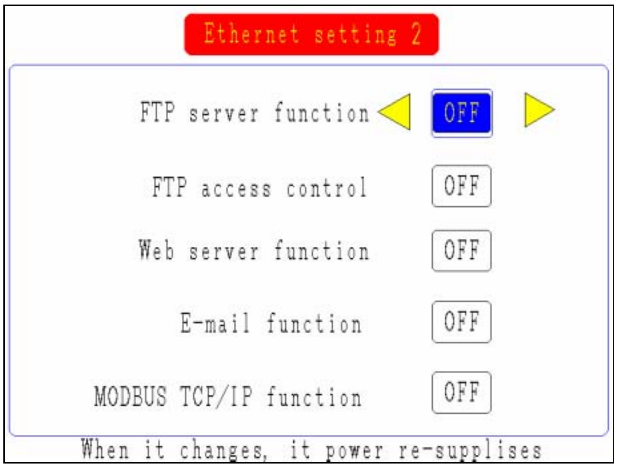
- E-mail send trigger set items

Item	Value at delivery	Setting range	Remarks
Title	(Blank)	Up to 32 letters may be set.	
Trigger timing	None	None, DI ON, DI OFF, Alarm ON, Alarm OFF, Warning, Timer cycle	
DI No.	DI 1	DI 1 to 16	Trigger timing = DI ON, DI OFF
Alarm Channel	Channel 1	Channel 1 to 72	Trigger timing = Alarm ON, OFF
Alarm No.	1	1 to 4	
Warning type	Alarm ON (All ch)	All alarm or output, All warning or output, No battery, Memory card full	Trigger timing = Warning
Time cycle	1 hour	1, 2, 3, 4, 6, 12 hour, 1 day	Trigger timing = Timer cycle
Time base (hour)	0:00	0:00 to 23:00	
Text 1	(Blank)	Up to 32 letters may be set.	
Text 2	(Blank)	Up to 32 letters may be set.	
PV value affixation	OFF	ON, OFF	
Receiver's add No.	None	Receiver's address No. 1, 2, 3, 4, 5, 6, 7, 8	

5.3 E-mail function setting operation

- **Setting E-mail function**

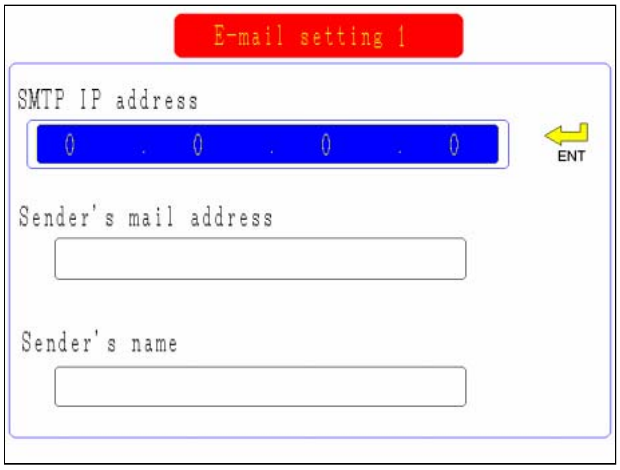
(1) Select "Main unit" → "Ethernet communication setting" → "Ethernet setting 2" on the parameter setting screen, and the following screen appears.



(2) Move the cursor to "E-mail function", and select E-mail function ON/OFF. The E-mail send function can be used, if ON is set.

- **Setting E-mail send/receive addresses**

(1) Select “Main unit” → “Ethernet communication setting” → “E-mail setting 1” on the parameter setting screen, and the following screen appears.

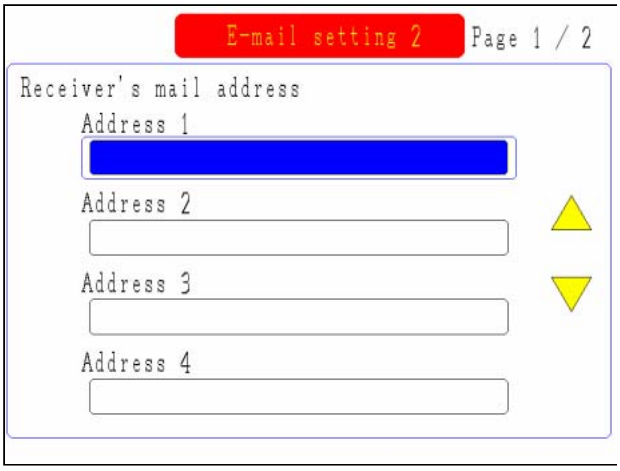


(2) Move the cursor to “SMTP IP address”, and set the IP address of the mail server.

(3) Move the cursor to “Sender’s mail Add”, and set the sender's mail address.

(4) Move the cursor to “Sender’s mail Name”, and set the sender's name.

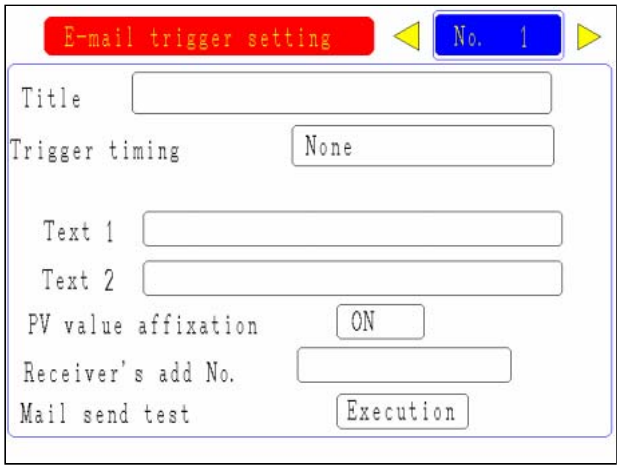
(5) Select “Main unit” → “Ethernet communication setting” → “E-mail setting 2” on the parameter setting screen, and the following screen appears.



(6) Move the cursor to “Receiver’s mail Add”, and set up to eight (8) receivers' mail addresses.

- **Setting E-mail send trigger**

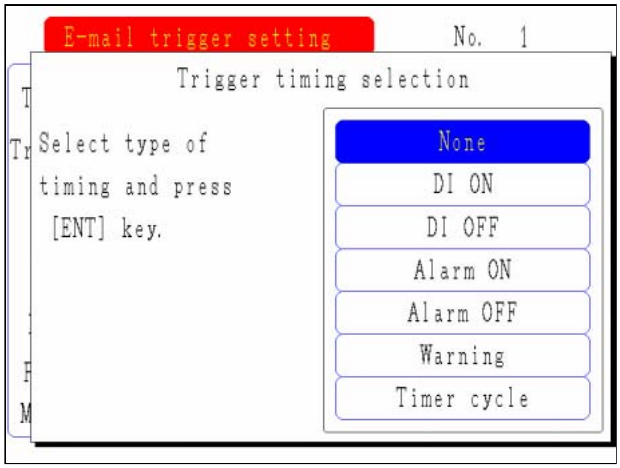
(1) Select “Main unit” → “Ethernet communication setting” → “E-mail trigger setting” on the parameter setting screen, and the following screen appears.



(2) Up to ten (10) patterns of E-mail send timing may be set.
Select a send timing to be selected, and press the [ENT] key.

(3) Move the cursor to “Title”, and set the E-mail title.

(4) Move the cursor to “Trigger timing”, and select an E-mail send timing.



Select one of the followings as an E-mail send timing.
When a timing is selected, particulars set items are displayed for each timing type. Set these items also.

1) DI ON, DI OFF
E-mails can be sent by DI ON/OFF.
When DI ON/OFF timing is selected, set items for the DI No. to be used are displayed. Set the DI No. to be used for judgment.

2) Alarm ON, Alarm OFF
E-mails can be sent by the alarm occur/cancel information.
When alarm ON/OFF timing is selected, set items for the channel No. and alarm No. to be used are displayed. Set the channel No. and alarm No. to be used for judgment.

3) Warning
E-mails can be sent by warning occur information.
When warning is selected, set items for the warning information to be used are displayed. Set the warning information to be used for judgment.

4) Timer cycle
E-mails can be sent in a fixed period.
When timer cycle is selected, set items for the send period and reference time are displayed. Set the E-mail send period and reference time.

(5) Move the cursor to “Text 1”, “Text 2”, and set a comment of two (2) lines to be described in the E-mail.
(6) Move the cursor to “PV value affixation”, and set whether to indicate measured values of all the channels in the E-mail. All the channels can be indicated , ON is set.
(7) Move the cursor to “Receiver’s add No.”, and select an address No. to receive the E-mail.
The E-mail is sent to each address No. for which ON was set.

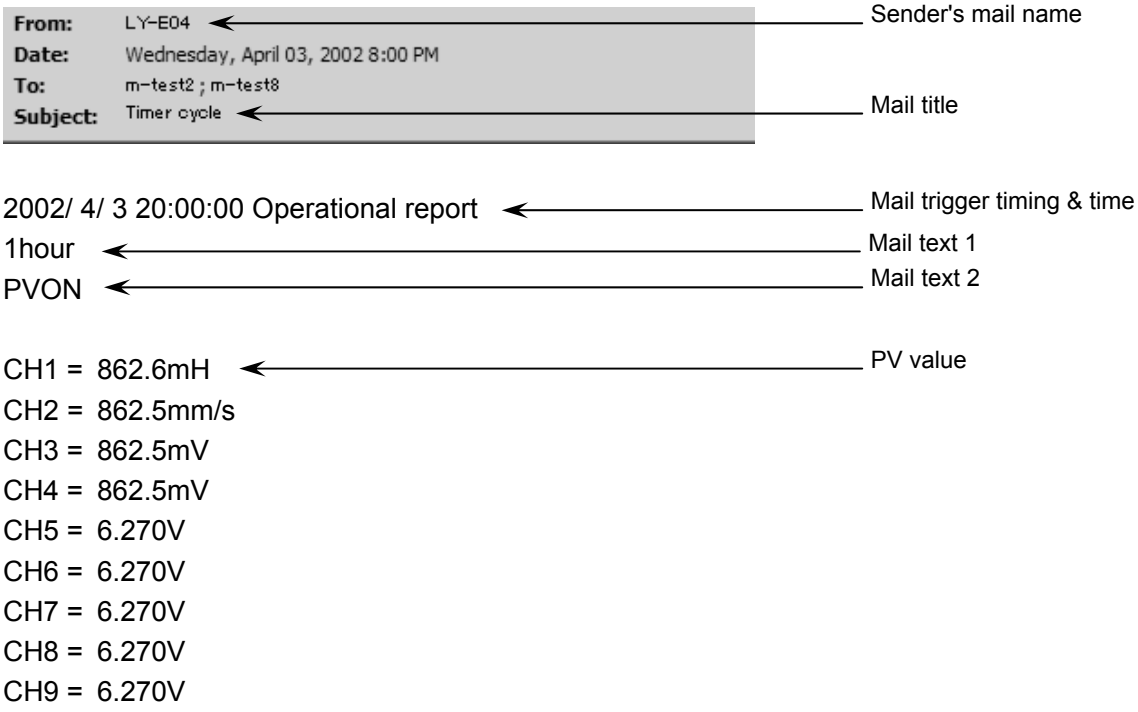
5.4 E-mail send test operation

- Conduct an E-mail send test with the paperless recorder, by performing operation in the sequence indicated below.

(1) Select “Main unit” → “Ethernet communication setting” → “E-mail trigger setting”.
(2) Select an E-mail trigger setting No. to conduct a send test.
(3) Move the cursor to “Mail send test”, and press the [ENT] key. Then, an E-mail send test can be conducted.

5.5 E-mail send contents

- The paperless recorder sends an E-mail with following contents.



6. MODBUS TCP/IP FUNCTION

6.1 Description of MODBUS TCP/IP function

- The MODBUS TCP/IP protocol permits use of MODBUS protocol (MODBUS RTU) on an Ethernet interface.
- MODBUS TCP/IP communication is executed through port 502.
- The MODBUS TCP/IP function permits read/write of set values from/to the paperless recorder.

6.2 Setting MODBUS TCP/IP function

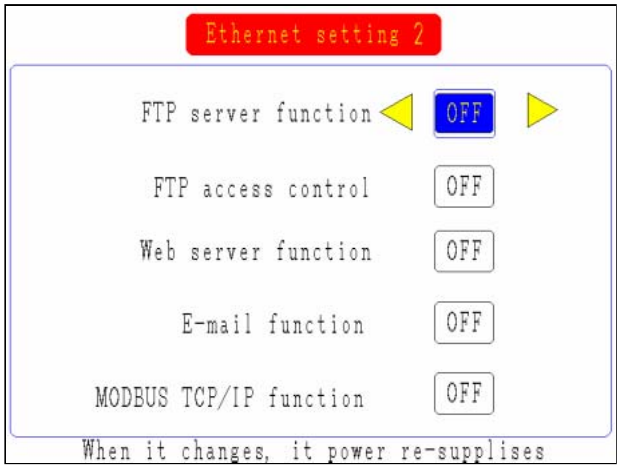
- Make MODBUS TCP/IP function setting to permit the use of MODBUS TCP/IP function.
- Specify station No. to evaluate the device with which communication is to be carried out.

- Set items

Item	Factory default	Setting range	Remarks
MODBUS TCP/IP	OFF	ON, OFF	Turn on the power after the setting is changed.
MODBUS Station NO.	1	0 to 255	Communication is not carried out if 0 is selected.

6.3 MODBUS TCP/IP function setting operation

(1) Select Select “Main unit” → “Ethernet communication setting” → “Ethernet setting 2” on the parameter setting screen, and the following screen appears.



(2) Move the cursor to “MODBUS TCP/IP”, and select MODBUS TCP/IP function ON/OFF. The MODBUS TCP/IP function can be used, if ON is set.
(3) Select “Main unit” → “Communication setting” on the parameter setting screen.
(4) Move the cursor to “MODBUS Station No.” and select a desired station No.

7. MODBUS TCP/IP COMMUNICATION PROTOCOL

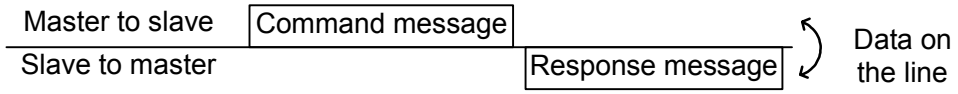
7.1 General

The communication system by the MODBUS TCP/IP protocol is that the communication is always started from the master station and a slave station responds to the received message.

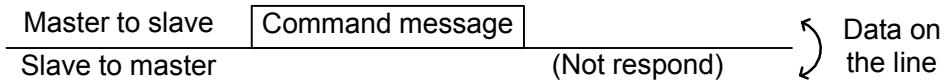
Transmission procedures is as shown below.

1) The master station sends a command message to a slave station.
2) The slave station checks that the station No. in the received message matches with the own station No. or not.
3) If matched, the slave station executes the command and sends back the response message.
4) If mismatched, the slave station leaves the command message and wait for the next command message.

a) In case when the station No. in the received command message matches with the own slave station No.



b) In case when the station No. in the received command message mismatches with the own slave station No.



5) To assure safety, provide a structure where the response message is checked and retry is made three (3) times or more if no response is made or an error occurs.

The master station can individually communicate with any one of slave stations connected on the same line upon setting the station No. in the command message.

7.2 Composition of Message

Command message and response message consist of 6 fields ; Transaction Identifier, Protocol Identifier, Length Unit Identifier, Station No., Function code and Data code. And these are send in this order.

Transaction Identifier (2 bytes)
Protocol Identifier (2 bytes)
Length Unit Identifier (2 bytes)
Station No. (1 byte)
Function code (1 byte)
Data (2 to 133 bytes)

Fig.7-1 Composition of message

In the following, each field is explained.

(1) Transaction Identifier

Identification of a MODBUS Request / Response transaction.

(2) Protocol Identifier

Set 0 for MODBUS TCP/IP.

(3) Length Unit Identifier

Number of bytes of data part.

(4) Station No.

Station No. is the number specifiing a slave station. The command message is received and operated only by the slave station whose station No. matches with the No. set in the parameter " MODBUS Station No."
For details of setting the parameter " MODBUS Station No.", refer to chapter 6.

(5) Function code

This is a code to designate the function executed at a slave station.
For details, refer to section 7.4.

(6) Data

Data are the data required for executing function codes. The composition of data varies with function codes.
For details, refer to chapter 8.
A register number is assigned to each data in the recorder. For reading/writing
the data by communication, designate the register number.
Note that the register number transmitted on message is expressed as its relative address.
The relative address is calculated by the following expression.

$$\boxed{\text{Relative address}} = \left(\text{The lower 4 digits of the } \boxed{\text{register number}} \right) - 1$$

For example, when the resister number designated by a function code is 40003,

Relative address = (lower 4 digits of 40003) − 1
= 0002

is used on the message.

7.3 Response of Slave Station

(1) Response for normal command

To a relevant message, the slave station creates and sends back a response message which corresponds to the command message. The composition of message in this case is the same as in section 7.2.
Contents of the data field depend on the function code. For details, refer to Chapter 8.

(2) Response for abnormal command

If contents of a command message have an abnormality (for example, non-actual function code is designated) other than transmission error, the slave station does not execute that command but creates and sends back a response message at error detection.
The composition of response message at error detection is as shown in Fig.7-2 The value used for function code field is function code of command message plus 80_H.
Table 7-1 gives error codes.

Transaction Identifier
Protocol Identifier
Length Unit Identifier
Station No.
Function code + 80H
Error code

Fig.7-2 Response message at error detection

Table 7-1 Error Code

Error code	Contents	Description
01H	Illegal function code	Non-actual function code is designated. Check for the function code.
02H	Illegal data address	A relative address of a resister number to which the designated function code can not be used.
03H	Illegal data number	Because the designation of number is too much, the area where resister number do not exist is designated.
04H	Device error	Communication with slave equipment failed. Check the communication specification for the slave equipment.

(3) No response

Under any of the following items, the slave station takes no action of the command message and sends back no response.

- A station number transmitted in the command message differs from the station number specified to the slave station.
- A transmission error is detected.
- Station No. of a slave station is set to 0.

7.4 Function Code

According to MODBUS protocol, register numbers are assigned by function codes.
Each function code acts on specific register number.
This correspondence is shown in Table 7-2, and the message length by function is shown in Table 7-3.

Table 7-2 Correspondence between function codes and objective address

Function code			⟷	Resister No.	
No.	Function	Object		No.	Contents
03_H	Read-out (continuously)	Holding register		4xxxx	Read-out/write-in word data
04_H	Read-out (continuously)	Input register		3xxxx	Read-out word data
10_H	Write-in (continuously)	Holding register		4xxxx	Read-out/write-in word data

Table 7-3 Function code and message length

[Unit: byte]

Function code	Contents	Number of designatable data	Command message		Response message	
			Minimum	Maximum	Minimum	Maximum
03_H	Read-out of word data	64 words	12	12	11	137
04_H	Read-out of word data (read-out only)	64 words	12	12	11	137
10_H	Write-in of continuous word data	64 words	15	141	12	12

7.5 FIX Processing (Cautions in data write)

The instrument is provided inside with a non-volatile memory (F-ROM) for holding the setting parameters.
Data written in the non-volatile memory is not lost even if turning off the power.
To hold parameters that were written in the internal memory via communication after turning off the power, the FIX process is effective. It allows parameters to be written in nonvolatile memory.
Fig.7-3 shows the FIX procedure.

Cautions:

- Write in the non-volatile memory takes approximately 2 seconds.
- While writing, do not turn off the power of the PHF. Otherwise, the data in the non-volatile memory will be destroyed, whereby the PHF could not be used any longer.
- Don't change parameters on the front panel when performing the FIX procedure, or memory error may result.
- The non-volatile memory (F-ROM) is a device where the number of write-in times is limited. The guaranteed number of write-in times of the non-volatile memory used on the instrument is 100,000 minimum. Therefore, limit the times of change of parameter setting to absolute minimum. Refrain from carrying out the FIX processing periodically for example or while such is not absolutely required.

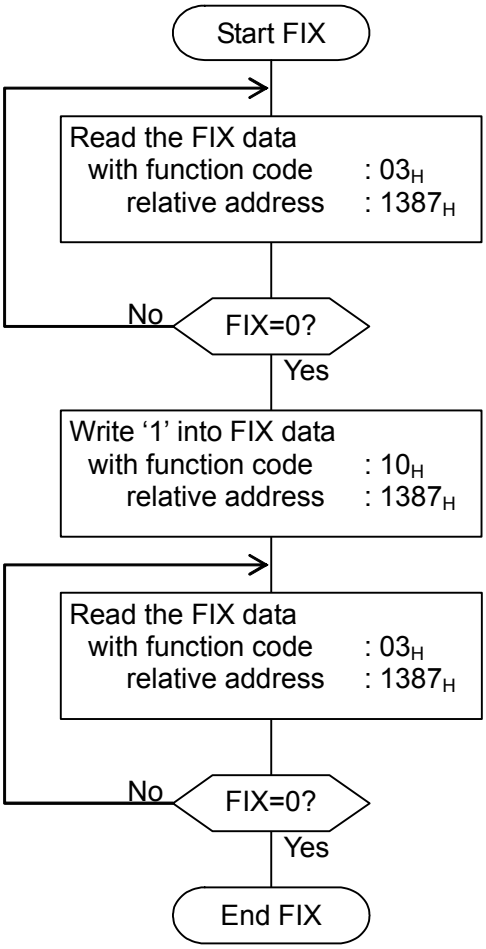


Fig.7-3 FIX procedure

8. DETAILS OF MESSAGE

8.1 Read-out of Word Data [Function code : 03_H]

Function code	Max. word number read-out in one message	Relative data address	Register No.	Kind of data
03_H	64 words	0000_H to 1386_H	40001 to 44999	Storage enable data
		1387_H to $157B_H$	45000 to 45500	Storage enable data
		$157C_H$ to $1B57_H$	45501 to 47000	Storage enable data

(1) Message composition

Command message composition(byte)

Transaction Identifier	Upper
	Lower
Protocol Identifier	Upper
	Lower
Length Unit Identifier	Upper
	Lower
Station No.	
Function code	
Read-out start No. (relative address)	Upper
	Lower
Read-out word number	Upper
	Lower

} 1 to 64

Response message composition(byte)

Transaction Identifier	Upper
	Lower
Protocol Identifier	Upper
	Lower
Length Unit Identifier	Upper
	Lower
Station No.	
Function code	
Read-out byte number	
Contents of the first word data	Upper
	Lower
Contents of the next word data	Upper
	Lower
~	~
Contents of the last word data	Upper
	Lower

Read-out word number×2

* Arrangement of read-out word data

MSB LSB
Upper byte of contents of the first word data
Lower byte of contents of the first word data
Upper byte of contents of the next word data
Lower byte of contents of the next word data
~ ~
Upper byte of contents of the last word data
Lower byte of contents of the last word data

(2) Function explanations

Word data of continuous word numbers from the read-out start No. can be read. Read-out word data are transmitted from the slave station in the order of upper and lower bytes.

(3) Message transmission (example)

Reading range start and range end in Channel 1 from No. 2 station is shown below.
Relative address of range start in Channel 1: $001B_H$ (Register No.40028), Data number: 02_H

Command message composition (byte)

Transaction Identifier	Upper	00_H
	Lower	00_H
Protocol Identifier	Upper	00_H
	Lower	00_H
Length Unit Identifier	Upper	00_H
	Lower	06_H
Station No.		02_H
Function code		03_H
Read-out start No. (relative address)	Upper	00_H
	Lower	$1B_H$
Read-out word number	Upper	00_H
	Lower	02_H

Response message composition (byte)

Transaction Identifier	Upper	00_H
	Lower	00_H
Protocol Identifier	Upper	00_H
	Lower	00_H
Length Unit Identifier	Upper	00_H
	Lower	07_H
Station No.		02_H
Function code		03_H
Read-out byte number		04_H
Contents of the first word data	Upper	00_H
	Lower	00_H
Contents of the next word data	Upper	$0F_H$
	Lower	$A0_H$

* Meaning of data to be read

Channel 1 Range start (contents of the first word data) $00\ 00_H = 0$

Channel 1 Range end (contents of the next word data) $0F\ A0_H = 4000$

Where the unit is °C with decimal point position set at 1,

Channel 1 Range start = 0.0°C

Channel 1 Range end = 400.0°C

〉Point〈 For “Point” decimal point, refer to Section 9.1.

8.2 Read-out of Read-out Only Word Data [Function code : 04_H]

Function code	Max. word number readout in one message	Relative data address	Register No.
04_H	64 words	0000_H to $07CF_H$	30001 to 32000

(1) Message composition

Command message composition(byte)

Transaction Identifier	Upper	
	Lower	
Protocol Identifier	Upper	
	Lower	
Length Unit Identifier	Upper	
	Lower	
Station No.		
Function code		
Read-out start No. (relative address)	Upper	
	Lower	
Read-out word number	Upper	} 1 to 64
	Lower	

Response message composition(byte)

Transaction Identifier	Upper	
	Lower	
Protocol Identifier	Upper	
	Lower	
Length Unit Identifier	Upper	
	Lower	
Station No.		
Function code		
Read-out byte number		Read-out word number×2
Contents of the first word data	Upper	
	Lower	
Contents of the next word data	Upper	
	Lower	
~		~
Contents of the last word data	Upper	
	Lower	

* Arrangement of read-out word data

MSB LSB
Upper byte of contents of the first word data
Lower byte of contents of the first word data
Upper byte of contents of the next word data
Lower byte of contents of the next word data
~
Upper byte of contents of the last word data
Lower byte of contents of the last word data

(2) Function explanations

Word data of continuous word numbers from the read-out start No. can be read. Read-out word data are transmitted from the slave station in the order of upper and lower bytes.

(3) Message transmission (example)

Reading range start and range end in Channel 2 from No. 1 station is shown below.
Relative address of range start in Channel 2: 0065_H (Register No.30102), Data number: 01_H

Command message composition (byte)

Transaction Identifier	Upper	00_H
	Lower	00_H
Protocol Identifier	Upper	00_H
	Lower	00_H
Length Unit Identifier	Upper	00_H
	Lower	06_H
Station No.		01_H
Function code		04_H
Read-out start No. (relative address)	Upper	00_H
	Lower	65_H
Read-out word number	Upper	00_H
	Lower	01_H

Response message composition (byte)

Transaction Identifier	Upper	00_H
	Lower	00_H
Protocol Identifier	Upper	00_H
	Lower	00_H
Length Unit Identifier	Upper	00_H
	Lower	05_H
Station No.		01_H
Function code		04_H
Read-out byte number		02_H
Contents of the first word data	Upper	01_H
	Lower	$4F_H$

* Meaning of data to be read
Channel 1 Range start (contents of the first word data) $01\ 4F_H = 335$

Where the unit is °C with decimal point position set at 1,
Channel 2 Measured value = 33.5°C

〉Point〈 For “Point” decimal point, refer to Section 9.1.

8.3 Write-in of Continuous Word Data [Function code : 10_H]

Function code	Max. word number read-out in one message	Relative data address	Register No.	Kind of data
10_H	64 words	0000_H to 1386_H	40001 to 44999	Storage enable data
		1387_H to $157B_H$	45000 to 45500	Storage diable data
		$157C_H$ to $1B57_H$	45501 to 47000	Storage enable data

(1) Message composition

Command message composition(byte)

Transaction Identifier	Upper	
	Lower	
Protocol Identifier	Upper	
	Lower	
Length Unit Identifier	Upper	
	Lower	
Station No.		
Function code		
Write-in start No. (relative address)	Upper	
	Lower	
Write-in word number	Upper	} 1 to 64
	Lower	
Write-in byte number		Write-in word number×2
First write-in word data	Upper	
	Lower	
Next write-in word data	Upper	
	Lower	
~		~
Last write-in word data	Upper	
	Lower	

Response message composition(byte)

Transaction Identifier	Upper
	Lower
Protocol Identifier	Upper
	Lower
Length Unit Identifier	Upper
	Lower
Station No.	
Function code	
Write-in start No. (relative address)	Upper
	Lower
Write-in word number	Upper
	Lower

* Arrangement of read-out word data

MSB LSB
Upper byte of contents of the first word data
Lower byte of contents of the first word data
Upper byte of contents of the next word data
Lower byte of contents of the next word data
~
Upper byte of contents of the last word data
Lower byte of contents of the last word data

(2) Function explanations

Word data of continuous word number is written from write-in start address. Write-in word data are transmitted from master station in the order of upper and lower bytes.

(3) Message transmission (example)

Writing Subtract channel = channel 2, PV shift = 20.0℃, and PV gain = 110.0% in Channel 1 of No. 1 station is shown below.

Subtract channel = 0002_H (= 2D : channel 2)

PV shift = $00C8_H$ (= 200D)

Input filter = $044C_H$ (= 1100D)

Relative address of Subtract channel in Channel 1: 0014_H(Register No.40021), Data number: 03_H

Command message composition (byte)

Transaction Identifier	Upper	00_H
	Lower	00_H
Protocol Identifier	Upper	00_H
	Lower	00_H
Length Unit Identifier	Upper	00_H
	Lower	$0D_H$
Station No.		01_H
Function code		10_H
Write-in start No. (relative address)	Upper	00_H
	Lower	14_H
Write-in word number	Upper	00_H
	Lower	03_H
Write-in byte number		06_H
First write-in word data	Upper	00_H
	Lower	02_H
Next write-in word data	Upper	00_H
	Lower	$C8_H$
Last write-in word data	Upper	04_H
	Lower	$4C_H$

Response message composition (byte)

Transaction Identifier	Upper	00_H
	Lower	00_H
Protocol Identifier	Upper	00_H
	Lower	00_H
Length Unit Identifier	Upper	00_H
	Lower	06_H
Station No.		01_H
Function code		10_H
Write-in start No. (relative address)	Upper	00_H
	Lower	14_H
Write-in word number	Upper	00_H
	Lower	03_H

Point Since the transmission data can not include a decimal point, data of 110.0 is transmitted as "1100".
For transmission format of each data, refer to the address map (Section 9).

Caution If the write-in command message is sent to any slave station during the FIX process, response is not returned from it.

9. ADDRESS MAP AND DATA FORMAT

9.1 Data Format

9.1.1 Transmission data format

Transmitted data is "numeric value" and not "ASCII code".

9.1.2 Control of decimal point

A decimal point is not included on the transmission data.
Align decimal point for data that have decimal point (decimal point is eliminated in transmission, and added in receiving).

9.1.3 Data with input error

When input error (Over, Under, Burnout or Error) occurs in display data, read data from measured values are as follows.

Display data	Read data
Over	32767
Under	–32767
Bunout	–32768
Error	–32768

Detection of input error during communication can be performed at address 30173 = Channel status.

9.1.4 Range of write-in data

When data is written in each parameter, the write-in data should be kept within the setting range. PHW accepts the write-in data beyond the range. However, be careful since the PHW performance will not be guaranteed.

9.2 Address Map

For detailed contents about individual parameter function or setting range, refer to the operation manual.

Data type Long : long data The data of this address is manipulated in unit of word. 1 data/2 address
Word: word data The data of this address is manipulated in unit of word. 1 data/1 address
Byte : byte data The data of this address is manipulated in unit of byte. A maximum of 2 data/1 address
Bit : Bit data The data of this address is manipulated in unit of bit. A maximum of 16 data/1 address

9.2.1 Word data [read-out / write-in] : Function code [03H, 10H]

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
4XXXX						
40001	Byte	Channel 1 setting (64 words)	Tag 1	1st, 2nd characters	Set Tag 1 (8 characters) by the ASCII code.	
40002	Byte			3rd, 4th characters		
40003	Byte			5th, 6th characters		
40004	Byte			7th, 8th characters		
40005	Byte		Tag 2	1st, 2nd characters	Set Tag 2 (8 characters) by the ASCII code.	
40006	Byte			3rd, 4th characters		
40007	Byte			5th, 6th characters		
40008	Byte			7th, 8th characters		
40009	Word		Color		1 to 14 (Please refer to Table 1)	
40010	Word		Input type		0 to 40 (Please refer to Table 2)	
40011	Word		Input filter		0 to 900 (0 to 900 sec)	
40012	Word		Unit		0 to 167 (Please refer to Table 3)	
40013	Word		Scaling		0:OFF, 1:ON	
40014	Word		Masuring start		-1000 to 5500 (Please refer to Table 4)	
40015	Word		Masuring end		-1000 to 5500 (Please refer to Table 4)	
40016	Word		Engineering start		-32767 to 32767	
40017	Word		Engineering end		-32767 to 32767	
40018	Word		Decimal point		0 to 4 (Please refer to Table 5)	
40019	Word		Square rooter		0:OFF, 1:ON	
40020	Word					Reserve
40021	Word		Subtract channel		0 to 72 (0:Subtract OFF, 1 to 72:channel 1 to 72)	
40022	Word		PV shift		-32767 to 32767	
40023	Word		PV gain		0 to 32767 (0.00 to 327.67%)	
40024	Word					Reserve
40025	Word					Reserve
40026	Word		Recording mode		0:With record, 1:Display only	
40027	Word		Recording type		0:Min-Max rec., 1:Point record, 2:Average rec.	
40028	Word		Range start		-32767 to 32767 (Please refer to Table 6)	
40029	Word		Range end		-32767 to 32767 (Please refer to Table 6)	
40030	Word					Reserve
40031	Word					Reserve
40032	Word					Reserve
40033	Word					Reserve
40034	Word					Reserve
40035	Word					Reserve
40036	Word		Fvalue caluculation		0:OFF, 1:ON	
40037	Word		Totalize caluculation		0:OFF, 1:Totalizer, 2:Counter, 3:Timer	
40038	Byte		Totalize tag	1st, 2nd characters	Set Totalize Tag (8 characters) by the ASCII code.	
40039	Byte			3rd, 4th characters		
40040	Byte			5th, 6th characters		
40041	Byte			7th, 8th characters		
40042	Word		Totalize unit		0 to 167 (Please refer to Table 3)	
40043	Word		Totalize cut value		-32767 to 32767 (Please refer to Table 6)	
40044	Word		Totalize scale value		1 to 32767	
40045	Word		Totalize type		0 to 6 (Please refer to Table 7)	
40046	Word		Extern input		0 to 303 (Please refer to Table 8)	
40047	Word		Totalize base time		0:/s, 1:/min, 2:/h, 3:/day	
40048	Word		Reset operation		0:OFF, 1:ON	
40049	Word					Reserve
to						Reserve

Register No.	Data type	Memory contents	Read-out data / Write-in data setting range	Remarks
40065	Word	Channel 2 setting	Same allocation as in Channel 1	
to				
40129	Word	Channel 3 setting	Same allocation as in Channel 1	
to				
40193	Word	Channel 4 setting	Same allocation as in Channel 1	
to				
40257	Word	Channel 5 setting	Same allocation as in Channel 1	
to				
40321	Word	Channel 6 setting	Same allocation as in Channel 1	
to				
40385	Word	Channel 7 setting	Same allocation as in Channel 1	
to				
40449	Word	Channel 8 setting	Same allocation as in Channel 1	
to				
40513	Word	Channel 9 setting	Same allocation as in Channel 1	
to				
40577	Word	Channel 10 setting	Same allocation as in Channel 1	
to				
40641	Word	Channel 11 setting	Same allocation as in Channel 1	
to				
40705	Word	Channel 12 setting	Same allocation as in Channel 1	
to				
40769	Word	Channel 13 setting	Same allocation as in Channel 1	
to				
40833	Word	Channel 14 setting	Same allocation as in Channel 1	
to				
40897	Word	Channel 15 setting	Same allocation as in Channel 1	
to				
40961	Word	Channel 16 setting	Same allocation as in Channel 1	
to				
41025	Word	Channel 17 setting	Same allocation as in Channel 1	
to				
41089	Word	Channel 18 setting	Same allocation as in Channel 1	
to				
41153	Word	Channel 19 setting	Same allocation as in Channel 1	
to				
41217	Word	Channel 20 setting	Same allocation as in Channel 1	
to				
41281	Word	Channel 21 setting	Same allocation as in Channel 1	
to				
41345	Word	Channel 22 setting	Same allocation as in Channel 1	
to				
41409	Word	Channel 23 setting	Same allocation as in Channel 1	
to				
41473	Word	Channel 24 setting	Same allocation as in Channel 1	
to				
41537	Word	Channel 25 setting	Same allocation as in Channel 1	
to				
41601	Word	Channel 26 setting	Same allocation as in Channel 1	
to				
41665	Word	Channel 27 setting	Same allocation as in Channel 1	
to				
41729	Word	Channel 28 setting	Same allocation as in Channel 1	
to				
41793	Word	Channel 29 setting	Same allocation as in Channel 1	
to				
41857	Word	Channel 30 setting	Same allocation as in Channel 1	
to				
41921	Word	Channel 31 setting	Same allocation as in Channel 1	
to				
41985	Word	Channel 32 setting	Same allocation as in Channel 1	
to				
42049	Word	Channel 33 setting	Same allocation as in Channel 1	
to				
42113	Word	Channel 34 setting	Same allocation as in Channel 1	

Register No.	Data type	Memory contents	Read-out data / Write-in data setting range	Remarks
to				
42177	Word	Channel 35 setting	Same allocation as in Channel 1	
to				
42241	Word	Channel 36 setting	Same allocation as in Channel 1	
to				
42305	Word	Channel 37 setting	Same allocation as in Channel 1	
to				
42369	Word	Channel 38 setting	Same allocation as in Channel 1	
to				
42433	Word	Channel 39 setting	Same allocation as in Channel 1	
to				
42497	Word	Channel 40 setting	Same allocation as in Channel 1	
to				
42561	Word	Channel 41 setting	Same allocation as in Channel 1	
to				
42625	Word	Channel 42 setting	Same allocation as in Channel 1	
to				
42689	Word	Channel 43 setting	Same allocation as in Channel 1	
to				
42753	Word	Channel 44 setting	Same allocation as in Channel 1	
to				
42817	Word	Channel 45 setting	Same allocation as in Channel 1	
to				
42881	Word	Channel 46 setting	Same allocation as in Channel 1	
to				
42945	Word	Channel 47 setting	Same allocation as in Channel 1	
to				
43009	Word	Channel 48 setting	Same allocation as in Channel 1	
to				
43073	Word	Channel 49 setting	Same allocation as in Channel 1	
to				
43137	Word	Channel 50 setting	Same allocation as in Channel 1	
to				
43201	Word	Channel 51 setting	Same allocation as in Channel 1	
to				
43265	Word	Channel 52 setting	Same allocation as in Channel 1	
to				
43329	Word	Channel 53 setting	Same allocation as in Channel 1	
to				
43393	Word	Channel 54 setting	Same allocation as in Channel 1	
to				
43457	Word	Channel 55 setting	Same allocation as in Channel 1	
to				
43521	Word	Channel 56 setting	Same allocation as in Channel 1	
to				
43585	Word	Channel 57 setting	Same allocation as in Channel 1	
to				
43649	Word	Channel 58 setting	Same allocation as in Channel 1	
to				
43713	Word	Channel 59 setting	Same allocation as in Channel 1	
to				
43777	Word	Channel 60 setting	Same allocation as in Channel 1	
to				
43841	Word	Channel 61 setting	Same allocation as in Channel 1	
to				
43905	Word	Channel 62 setting	Same allocation as in Channel 1	
to				
43969	Word	Channel 63 setting	Same allocation as in Channel 1	
to				
44033	Word	Channel 64 setting	Same allocation as in Channel 1	
to				
44097	Word	Channel 65 setting	Same allocation as in Channel 1	
to				
44161	Word	Channel 66 setting	Same allocation as in Channel 1	
to				

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
44225	Word	Channel 67 setting			Same allocation as in Channel 1	
to						
44289	Word	Channel 68 setting			Same allocation as in Channel 1	
to						
44353	Word	Channel 69 setting			Same allocation as in Channel 1	
to						
44417	Word	Channel 70 setting			Same allocation as in Channel 1	
to						
44481	Word	Channel 71 setting			Same allocation as in Channel 1	
to						
44545	Word	Channel 72 setting			Same allocation as in Channel 1	
to						
44609	Word	Channel 1 alarm setting (16 words)	Alarm No.1	Alarm type	0:OFF, 1:H alarm, 2:L alarm	
44610	Word			Set point	-32767 to 32767 (Please refer to Table 6)	
44611	Word					Reserve
44612	Word			DO relay No.	0 to 36 (0:None, 1 to 36:DO1 to 36)	
44613	Word		Alarm No.2	Alarm type	0:OFF, 1:H alarm, 2:L alarm	
44614	Word			Set point	-32767 to 32767 (Please refer to Table 6)	
44615	Word					Reserve
44616	Word			DO relay No.	0 to 36 (0:None, 1 to 36:DO1 to 36)	
44617	Word		Alarm No.3	Alarm type	0:OFF, 1:H alarm, 2:L alarm	
44618	Word			Set point	-32767 to 32767 (Please refer to Table 6)	
44619	Word					Reserve
44620	Word			DO relay No.	0 to 36 (0:None, 1 to 36:DO1 to 36)	
44621	Word		Alarm No.4	Alarm type	0:OFF, 1:H alarm, 2:L alarm	
44622	Word			Set point	-32767 to 32767 (Please refer to Table 6)	
44623	Word					Reserve
44624	Word			DO relay No.	0 to 36 (0:None, 1 to 36:DO1 to 36)	
44625	Word	Channel 2 alarm setting			Same allocation as in Channel 1	
to						
44641	Word	Channel 3 alarm setting			Same allocation as in Channel 1	
to						
44657	Word	Channel 4 alarm setting			Same allocation as in Channel 1	
to						
44673	Word	Channel 5 alarm setting			Same allocation as in Channel 1	
to						
44689	Word	Channel 6 alarm setting			Same allocation as in Channel 1	
to						
44705	Word	Channel 7 alarm setting			Same allocation as in Channel 1	
to						
44721	Word	Channel 8 alarm setting			Same allocation as in Channel 1	
to						
44737	Word	Channel 9 alarm setting			Same allocation as in Channel 1	
to						
44753	Word	Channel 10 alarm setting			Same allocation as in Channel 1	
to						
44769	Word	Channel 11 alarm setting			Same allocation as in Channel 1	
to						
44785	Word	Channel 12 alarm setting			Same allocation as in Channel 1	
to						
44801	Word	Channel 13 alarm setting			Same allocation as in Channel 1	
to						
44817	Word	Channel 14 alarm setting			Same allocation as in Channel 1	
to						
44833	Word	Channel 15 alarm setting			Same allocation as in Channel 1	
to						
44849	Word	Channel 16 alarm setting			Same allocation as in Channel 1	
to						
44865	Word	Channel 17 alarm setting			Same allocation as in Channel 1	
to						
44881	Word	Channel 18 alarm setting			Same allocation as in Channel 1	
to						
44897	Word	Channel 19 alarm setting			Same allocation as in Channel 1	
to						
44913	Word	Channel 20 alarm setting			Same allocation as in Channel 1	

Register No.	Data type	Memory contents	Read-out data / Write-in data setting range	Remarks
to				
44929	Word	Channel 21 alarm setting	Same allocation as in Channel 1	
to				
44945	Word	Channel 22 alarm setting	Same allocation as in Channel 1	
to				
44961	Word	Channel 23 alarm setting	Same allocation as in Channel 1	
to				
44977	Word	Channel 24 alarm setting	Same allocation as in Channel 1	
to				
44993	Word	Channel 25 alarm setting	Same allocation as in Channel 1	
to				
45009	Word	Channel 26 alarm setting	Same allocation as in Channel 1	
to				
45025	Word	Channel 27 alarm setting	Same allocation as in Channel 1	
to				
45041	Word	Channel 28 alarm setting	Same allocation as in Channel 1	
to				
45057	Word	Channel 29 alarm setting	Same allocation as in Channel 1	
to				
45073	Word	Channel 30 alarm setting	Same allocation as in Channel 1	
to				
45089	Word	Channel 31 alarm setting	Same allocation as in Channel 1	
to				
45105	Word	Channel 32 alarm setting	Same allocation as in Channel 1	
to				
45121	Word	Channel 33 alarm setting	Same allocation as in Channel 1	
to				
45137	Word	Channel 34 alarm setting	Same allocation as in Channel 1	
to				
45153	Word	Channel 35 alarm setting	Same allocation as in Channel 1	
to				
45169	Word	Channel 36 alarm setting	Same allocation as in Channel 1	
to				
45185	Word	Channel 37 alarm setting	Same allocation as in Channel 1	
to				
45201	Word	Channel 38 alarm setting	Same allocation as in Channel 1	
to				
45217	Word	Channel 39 alarm setting	Same allocation as in Channel 1	
to				
45233	Word	Channel 40 alarm setting	Same allocation as in Channel 1	
to				
45249	Word	Channel 41 alarm setting	Same allocation as in Channel 1	
to				
45265	Word	Channel 42 alarm setting	Same allocation as in Channel 1	
to				
45281	Word	Channel 43 alarm setting	Same allocation as in Channel 1	
to				
45297	Word	Channel 44 alarm setting	Same allocation as in Channel 1	
to				
45313	Word	Channel 45 alarm setting	Same allocation as in Channel 1	
to				
45329	Word	Channel 46 alarm setting	Same allocation as in Channel 1	
to				
45345	Word	Channel 47 alarm setting	Same allocation as in Channel 1	
to				
45361	Word	Channel 48 alarm setting	Same allocation as in Channel 1	
to				
45377	Word	Channel 49 alarm setting	Same allocation as in Channel 1	
to				
45393	Word	Channel 50 alarm setting	Same allocation as in Channel 1	
to				
45409	Word	Channel 51 alarm setting	Same allocation as in Channel 1	
to				
45425	Word	Channel 52 alarm setting	Same allocation as in Channel 1	
to				

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
45441	Word	Channel 53 alarm setting			Same allocation as in Channel 1	
to						
45457	Word	Channel 54 alarm setting			Same allocation as in Channel 1	
to						
45473	Word	Channel 55 alarm setting			Same allocation as in Channel 1	
to						
45489	Word	Channel 56 alarm setting			Same allocation as in Channel 1	
to						
45505	Word	Channel 57 alarm setting			Same allocation as in Channel 1	
to						
45521	Word	Channel 58 alarm setting			Same allocation as in Channel 1	
to						
45537	Word	Channel 59 alarm setting			Same allocation as in Channel 1	
to						
45553	Word	Channel 60 alarm setting			Same allocation as in Channel 1	
to						
45569	Word	Channel 61 alarm setting			Same allocation as in Channel 1	
to						
45585	Word	Channel 62 alarm setting			Same allocation as in Channel 1	
to						
45601	Word	Channel 63 alarm setting			Same allocation as in Channel 1	
to						
45617	Word	Channel 64 alarm setting			Same allocation as in Channel 1	
to						
45633	Word	Channel 65 alarm setting			Same allocation as in Channel 1	
to						
45649	Word	Channel 66 alarm setting			Same allocation as in Channel 1	
to						
45665	Word	Channel 67 alarm setting			Same allocation as in Channel 1	
to						
45681	Word	Channel 68 alarm setting			Same allocation as in Channel 1	
to						
45697	Word	Channel 69 alarm setting			Same allocation as in Channel 1	
to						
45713	Word	Channel 70 alarm setting			Same allocation as in Channel 1	
to						
45729	Word	Channel 71 alarm setting			Same allocation as in Channel 1	
to						
45745	Word	Channel 72 alarm setting			Same allocation as in Channel 1	
to						
45761	Word					Reserve
to						Reserve
45825	Byte	Display group 1 setting (18 words)	Display name	1st, 2nd characters	Set Display name (16 characters) by the ASCII code.	
45826	Byte			3rd, 4th characters		
45827	Byte			5th, 6th characters		
45828	Byte			7th, 8th characters		
45829	Byte			9th, 10th characters		
45830	Byte			11th, 12th characters		
45831	Byte			13th, 14th characters		
45832	Byte			15th, 16th characters		
45833	Word		Display No.1		0:None, 1 to 72:ch1 to 72	
45834	Word		Display No.2		0:None, 1 to 72:ch1 to 72	
45835	Word		Display No.3		0:None, 1 to 72:ch1 to 72	
45836	Word		Display No.4		0:None, 1 to 72:ch1 to 72	
45837	Word		Display No.5		0:None, 1 to 72:ch1 to 72	
45838	Word		Display No.6		0:None, 1 to 72:ch1 to 72	
45839	Word		Display No.7		0:None, 1 to 72:ch1 to 72	
45840	Word		Display No.8		0:None, 1 to 72:ch1 to 72	
45841	Word		Display No.9		0:None, 1 to 72:ch1 to 72	
45842	Word		Display No.10		0:None, 1 to 72:ch1 to 72	
45843	Word	Display group 2 setting			Same allocation as Display group 1	
to						
45861	Word	Display group 3 setting			Same allocation as Display group 1	
to						
45879	Word	Display group 4 setting			Same allocation as Display group 1	

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
to						
45897	Word	Display group 5 setting			Same allocation as Display group 1	
to						
45915	Word	Display group 6 setting			Same allocation as Display group 1	
to						
45933	Word	Display group 7 setting			Same allocation as Display group 1	
to						
45951	Word	Display group 8 setting			Same allocation as Display group 1	
to						
45969	Word					Reserve
45970	Word	Display group 1 setting2 (5 words)	Trend direction		0:Vertical, 1:Horizontal	
45971	Word		Channel index		0:CH No.disp., 1:Tag No.disp., 2:Unit Disp.	
45972	Word		Scale display		0:OFF, 1:ON	
45973	Word					Reserve
45974	Word		Display divided		1 to 20	
45975	Word	Display group 2 setting2			Same allocation as Display group 1	
to						
45980	Word	Display group 3 setting2			Same allocation as Display group 1	
to						
45985	Word	Display group 4 setting2			Same allocation as Display group 1	
to						
45990	Word	Display group 5 setting2			Same allocation as Display group 1	
to						
45995	Word	Display group 6 setting2			Same allocation as Display group 1	
to						
46000	Word	Display group 7 setting2			Same allocation as Display group 1	
to						
46005	Word	Display group 8 setting2			Same allocation as Display group 1	
to						
46010	Word	Display group 1 setting3 (4 words)				Reserve
46011	Word					Reserve
46012	Word					Reserve
46013	Word		Analog meter		0:Bar graph, 1:Analog meter	
46014	Word	Display group 2 setting3			Same allocation as Display group 1	
to						
46018	Word	Display group 3 setting3			Same allocation as Display group 1	
to						
46022	Word	Display group 4 setting3			Same allocation as Display group 1	
to						
46026	Word	Display group 5 setting3			Same allocation as Display group 1	
to						
46030	Word	Display group 6 setting3			Same allocation as Display group 1	
to						
46034	Word	Display group 7 setting3			Same allocation as Display group 1	
to						
46038	Word	Display group 8 setting3			Same allocation as Display group 1	
to						
46042	Word					Reserve
to						Reserve
46051	Word					Reserve
46052	Word	Totalize cycle			0 to 9 (Please refer to Table 9)	
46053	Word					Reserve
46054	Word	Monthly base day			1 to 31 (1 to 31day)	
46055	Word					Reserve
46056	Word					Reserve
46057	Word	External input			0 to 303 (Please refer to Table 8)	
46058	Word	H-P, L-P timer cycle			1 to 32767 (1 to 32767min)	
46059	Word	AVG timer cycle			1 to 32767 (1 to 32767min)	
46060	Word	SUM timer cycle			1 to 32767 (1 to 32767min)	
46061	Word	Math CH 37 setting (36 words)	Formula1	1st calculation	(Please refer to Table 10)	
46062	Word			argument1		
46063	Word			argument2		
46064	Word			2nd calculation		
46065	Word			argument1		
46066	Word			argument2		

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
46067	Word		Formula1	3rd calculation		
46068	Word			argument1		
46069	Word			argument2		
46070	Word		Formula2	1st calculation		
46071	Word			argument1		
46072	Word			argument2		
to						
42584	Word		Formula4	3rd calculation		
42585	Word			argument1		
42586	Word			argument2		
46097	Word	Math channel 38 setting			Same allocation as Channel 37	
to						
46133	Word	Math channel 39 setting			Same allocation as Channel 37	
to						
46169	Word	Math channel 40 setting			Same allocation as Channel 37	
to						
46205	Word	Math channel 41 setting			Same allocation as Channel 37	
to						
46241	Word	Math channel 42 setting			Same allocation as Channel 37	
to						
46277	Word	Math channel 43 setting			Same allocation as Channel 37	
to						
46313	Word	Math channel 44 setting			Same allocation as Channel 37	
to						
46349	Word	Math channel 45 setting			Same allocation as Channel 37	
to						
46385	Word	Math channel 46 setting			Same allocation as Channel 37	
to						
46421	Word	Math channel 47 setting			Same allocation as Channel 37	
to						
46457	Word	Math channel 48 setting			Same allocation as Channel 37	
to						
46493	Word	Math channel 49 setting			Same allocation as Channel 37	
to						
46529	Word	Math channel 50 setting			Same allocation as Channel 37	
to						
46565	Word	Math channel 51 setting			Same allocation as Channel 37	
to						
46601	Word	Math channel 52 setting			Same allocation as Channel 37	
to						
46637	Word	Math channel 53 setting			Same allocation as Channel 37	
to						
46673	Word	Math channel 54 setting			Same allocation as Channel 37	
to						
46709	Word	Math channel 55 setting			Same allocation as Channel 37	
to						
46745	Word	Math channel 56 setting			Same allocation as Channel 37	
to						
46781	Word	Math channel 57 setting			Same allocation as Channel 37	
to						
46817	Word	Math channel 58 setting			Same allocation as Channel 37	
to						
46853	Word	Math channel 59 setting			Same allocation as Channel 37	
to						
46889	Word	Math channel 60 setting			Same allocation as Channel 37	
to						
46925	Word	Math channel 61 setting			Same allocation as Channel 37	
to						
46961	Word	Math channel 62 setting			Same allocation as Channel 37	
to						
46997	Word	Math channel 63 setting			Same allocation as Channel 37	
to						
47033	Word	Math channel 64 setting			Same allocation as Channel 37	
to						
47069	Word	Math channel 65 setting			Same allocation as Channel 37	

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
to						
47105	Word	Math channel 66 setting			Same allocation as Channel 37	
to						
47141	Word	Math channel 67 setting			Same allocation as Channel 37	
to						
47177	Word	Math channel 68 setting			Same allocation as Channel 37	
to						
47213	Word	Math channel 69 setting			Same allocation as Channel 37	
to						
47249	Word	Math channel 70 setting			Same allocation as Channel 37	
to						
47285	Word	Math channel 71 setting			Same allocation as Channel 37	
to						
47321	Word	Math channel 72 setting			Same allocation as Channel 37	
to						
47357	Word	Constant1		Value	-32767 to 32767 (Please refer to Table 11)	
47358	Word			Dicimal point	0 to 4	
to						
47475	Word	Constant60		Value	-32767 to 32767 (Please refer to Table 11)	
47476	Word			Dicimal point	0 to 4	
47477	Word					Reserve
to						Reserve
47482	Word	Time setting		Time set request	1:Time set request.(Automatically clear)	Attention:
47483	Word			Year	1 to 99 (2001 to 2099year)	Don't change the time
47484	Word			Month	1 to 12 (1 to 12month)	absolutely during
47485	Word			Day	1 to 31 (1 to 31day)	recording and totalizing.
47486	Word			Hour	0 to 23 (0 to 23hour)	
47487	Word			Minute	0 to 59 (0 to 59minute)	
47488	Word					Reserve
47489	Word					Reserve
47490	Word	Refreshment cycle			0 to 19 (Please refer to Table 12)	
47491	Word					Reserve
47492	Word	LCD lights-out time			0 to 60 (0: ON all the time, 1 to 60:1 to 60min)	
47493	Word	File division cycle			0 to 4 (Please refer to Table 13)	
47494	Word	Memory full alarm			0 to 36 (0:None, 1 to 36:DO1 to 36)	
47495	Word	Record data format			0:Ascii, 1:Binary	
47496	Word	FValue calculation		Target temperture	-32767 to 32767 (-3276.7 to 3276.7°C)	
47497	Word			Z value	-32767 to 32767 (-3276.7 to 3276.7°C)	
47498	Word			Decimal point	0 to 4 (Please refer to Table 14)	
47499	Word					Reserve
47500	Word			Reset temperature	-32767 to 32767 (-3276.7 to 3276.7°C)	
47501	Word	Battery alarm			0 to 36 (0:None, 1 to 36:DO1 to 36)	
47502	Word	Date format			0 to 4 (Please refer to Table 15)	
47503	Word	File overwrite			0:OFF, 1:ON	
47504	Word	Display compression			0:1/1, 1: 1/10, 2:1/30, 3:1/60	
47505	Word					Reserve
47506	Word	Alarm hysteresis			0 to 10000 (0.00 to 100.00%)	
47507	Word	Alarm latch			0:OFF, 1:ON	
47508	Word	MODBUS Station No.			0 to 255 (0: Communication OFF)	
47509	Word					Reserve
47510	Word					Reserve
47511	Word	Configuration password			0 to 9999	
47512	Word	CF manager password			0 to 9999	
47513	Word	Record password			0 to 9999	
47514	Word					Reserve
to						Reserve
47531	Byte	Message No.1 setting (22 Words)	Messege	1st, 2nd characters	Set Message (32 characters) by the ASCII code.	
47532	Byte			3rd, 4th characters		
47533	Byte			5th, 6th characters		
47534	Byte			7th, 8th characters		
47535	Byte			9th, 10th characters		
47536	Byte			11th, 12th characters		
47537	Byte			13th, 14th characters		

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
47538	Byte	Message No.1 setting (22 Words)	Messege	15th, 16th characters		
47539	Byte			17th, 18th characters		
47540	Byte			19th, 20th characters		
47541	Byte			21th, 22th characters		
47542	Byte			23th, 24th characters		
47543	Byte			25th, 26th characters		
47544	Byte			27th, 28th characters		
47545	Byte			29th, 30th characters		
47546	Byte			31th, 32th characters		
47547	Word					Reserve
47548	Word					Reserve
47549	Word		Messege timing		0 to 2 (Please refer to Table 16)	
47550	Word		Messege timing argument 1			
47551	Word		Messege timing argument 2			
47552	Word					Reserve
47553	Word	Messege No.2 setting			Same allocation as Message No. 1	
to						
47575	Word	Messege No.3 setting			Same allocation as Message No. 1	
to						
47597	Word	Messege No.4 setting			Same allocation as Message No. 1	
to						
47619	Word	Messege No.5 setting			Same allocation as Message No. 1	
to						
47641	Word	Messege No.6 setting			Same allocation as Message No. 1	
to						
47663	Word	Messege No.7 setting			Same allocation as Message No. 1	
to						
47685	Word	Messege No.8 setting			Same allocation as Message No. 1	
to						
47707	Word	Messege No.9 setting			Same allocation as Message No. 1	
to						
47729	Word	Messege No.10 setting			Same allocation as Message No. 1	
to						
47751	Byte	Original unit 1 setting		1st, 2nd characters	Set original unit (7 characters) by the ASCII code.	
47752	Byte			3rd, 4th characters		
47753	Byte			5th, 6th characters		
47754	Byte			7th characters		
47755	Byte					Reserve
47756	Byte					Reserve
47757	Byte					Reserve
47758	Byte	Original unit 2 setting			Same allocation as Original unit 1	
to						
47765	Byte	Original unit 3 setting			Same allocation as Original unit 1	
to						
47772	Byte	Original unit 4 setting			Same allocation as Original unit 1	
to						
47779	Byte	Original unit 5 setting			Same allocation as Original unit 1	
to						
47786	Byte	Original unit 6 setting			Same allocation as Original unit 1	
to						
47793	Byte	Original unit 7 setting			Same allocation as Original unit 1	
to						
47800	Byte	Original unit 8 setting			Same allocation as Original unit 1	
to						
47807	Byte	Original unit 9 setting			Same allocation as Original unit 1	
to						
47814	Byte	Original unit 10 setting			Same allocation as Original unit 1	
to						
47821	Byte	Original unit 11 setting			Same allocation as Original unit 1	
to						
47828	Byte	Original unit 12 setting			Same allocation as Original unit 1	
to						
47835	Word					Reserve
to						Reserve
47836	Word	DI 1 function			0 to 5 (Please refer to Table 17)	

Register No.	Data type	Memory contents		Read-out data / Write-in data setting range	Remarks
47837	Word	DI 2 function		0 to 5	
47838	Word	DI 3 function		0 to 5	
47839	Word	DI 4 function		0 to 5	
47840	Word	DI 5 function		0 to 5	
47841	Word	DI 6 function		0 to 5	
47842	Word	DI 7 function		0 to 5	
47843	Word	DI 8 function		0 to 5	
47844	Word	DI 9 function		0 to 5	
47845	Word	DI 10 function		0 to 5	
47846	Word	DI 11 function		0 to 5	
47847	Word	DI 12 function		0 to 5	
47848	Word	DI 13 function		0 to 5	
47849	Word	DI 14 function		0 to 5	
47850	Word	DI 15 function		0 to 5	
47851	Word	DI 16 function		0 to 5	
47852	Word				Reserve
to					Do not write
47901	Byte	PILC data	1st, 2nd characters		Do not write
47902	Byte		3rd, 4th characters		Do not write
47903	Byte		5th, 6th characters		Do not write
47904	Byte		7th, 8th characters		Do not write
47905	Byte		9th, 10th characters		Do not write
47906	Byte		11th, 12th characters		Do not write
47907	Byte		13th, 14th characters		Do not write
47908	Byte		15th, 16th characters		Do not write
47909	Byte		17th, 18th characters		Do not write
47910	Byte		19th, 20th characters		Do not write
47911	Byte		21th, 22th characters		Do not write
47912	Byte		23th, 24th characters		Do not write
47913	Byte		25th, 26th characters		Do not write
47914	Byte		27th, 28th characters		Do not write
47915	Byte		29th, 30th characters		Do not write
47916	Byte		31th, 32th characters		Do not write
47917	Byte	Serial number	1st, 2nd characters		Do not write
47918	Byte		3rd, 4th characters		Do not write
47919	Byte		5th, 6th characters		Do not write
47920	Byte		7th, 8th characters		Do not write
47921	Byte		9th, 10th characters		Do not write
47922	Byte		11th, 12th characters		Do not write
47923	Byte		13th, 14th characters		Do not write
47924	Byte		15th, 16th characters		Do not write
47925	Word				Do not write
to					Do not write
					Do not write
Following register No.48881 to 49000 will not be recorded in the main unit.					
48900	Word	Register data request		1:Register data (Automatically clear)	
48901	Word				Reserve
48902	Word	Fvalue calculation reset request		1:Fvalue reset (Automatically clear)	
48903	Word	Prohibiting the writing to the memory card		0:Writing permission, 1:Writing prohibition	
48904	Bit	Recorder control		(Please refer to Table 18)	
48905	Bit	Message request		(Please refer to Table 19)	
48906	Word	Totalize reset request		1:Totalize reset (Automatically clear)	
48907	Word	Alarm latch clear request		1:Alarm latch clear (Automatically clear)	
48908	Word				Do not write
to					Do not write
48961	Word	Communication input 1 : M01		-32767 to 32767	
48962	Word	Communication input 2 : M02		-32767 to 32767	
48963	Word	Communication input 3 : M03		-32767 to 32767	
48964	Word	Communication input 4 : M04		-32767 to 32767	
48965	Word	Communication input 5 : M05		-32767 to 32767	
48966	Word	Communication input 6 : M06		-32767 to 32767	
48967	Word	Communication input 7 : M07		-32767 to 32767	
48968	Word	Communication input 8 : M08		-32767 to 32767	
48969	Word	Communication input 9 : M09		-32767 to 32767	

Register No.	Data type	Memory contents	Read-out data / Write-in data setting range	Remarks
48970	Word	Communication input10 : M10	-32767 to 32767	
48971	Word	Communication input11 : M11	-32767 to 32767	
48972	Word	Communication input12 : M12	-32767 to 32767	
48973	Word	Communication input13 : M13	-32767 to 32767	
48974	Word	Communication input14 : M14	-32767 to 32767	
48975	Word	Communication input15 : M15	-32767 to 32767	
48976	Word	Communication input16 : M16	-32767 to 32767	
48977	Word	Communication input17 : M17	-32767 to 32767	
48978	Word	Communication input18 : M18	-32767 to 32767	
48979	Word	Communication input19 : M19	-32767 to 32767	
48980	Word	Communication input20 : M20	-32767 to 32767	
48981	Word	Communication input21 : M21	-32767 to 32767	
48982	Word	Communication input22 : M22	-32767 to 32767	
48983	Word	Communication input23 : M23	-32767 to 32767	
48984	Word	Communication input24 : M24	-32767 to 32767	
48985	Word	Communication input25 : M25	-32767 to 32767	
48986	Word	Communication input26 : M26	-32767 to 32767	
48987	Word	Communication input27 : M27	-32767 to 32767	
48988	Word	Communication input28 : M28	-32767 to 32767	
48989	Word	Communication input29 : M29	-32767 to 32767	
48990	Word	Communication input30 : M30	-32767 to 32767	
48991	Word	Communication input31 : M31	-32767 to 32767	
48992	Word	Communication input32 : M32	-32767 to 32767	
48993	Word	Communication input33 : M33	-32767 to 32767	
48994	Word	Communication input34 : M34	-32767 to 32767	
48995	Word	Communication input35 : M35	-32767 to 32767	
48996	Word	Communication input36 : M36	-32767 to 32767	
to				Do not write

The following addresses are recorded in the main unit.

Register No.	Data type	Memory contents		Read-out data / Write-in data setting range	Remarks
49001	Word				Reserve
49002	Word	E-mail function		0:OFF, 1:ON	
49003	Word	FTP server function		0:OFF, 1:ON	
49004	Word	FTP access control		0:OFF, 1:ON	
49005	Word	Web server function		0:OFF, 1:ON	
49006	Word				Reserve
49007	Word				Reserve
49008	Word	MODBUS TCP/IP function		0:OFF, 1:ON	
49009	Word	IP address	1st number	0 to 255	
49010	Word		2nd number	0 to 255	
49011	Word		3rd number	0 to 255	
49012	Word		4th number	0 to 255	
49013	Word	Subnet mask	1st number	0 to 255	
49014	Word		2nd number	0 to 255	
49015	Word		3rd number	0 to 255	
49016	Word		4th number	0 to 255	
49017	Word	Default gateway	1st number	0 to 255	
49018	Word		2nd number	0 to 255	
49019	Word		3rd number	0 to 255	
49020	Word		4th number	0 to 255	
49021	Word	SMTP IP address	1st number	0 to 255	
49022	Word		2nd number	0 to 255	
49023	Word		3rd number	0 to 255	
49024	Word		4th number	0 to 255	
49025	Byte	Sender's mail address	1st, 2nd characters	Set address (64 characters) by the ASCII code.	
49026	Byte		3rd, 4th characters		
49027	Byte		5th, 6th characters		
49028	Byte		7th, 8th characters		
49029	Byte		9th, 10th characters		
49030	Byte		11th, 12th characters		
49031	Byte		13th, 14th characters		
49032	Byte		15th, 16th characters		
49033	Byte		17th, 18th characters		

Register No.	Data type	Memory contents		Read-out data / Write-in data setting range	Remarks
49034	Byte	Sender's mail address	19th, 20th characters		
49035	Byte		21th, 22th characters		
49036	Byte		23th, 24th characters		
49037	Byte		25th, 26th characters		
49038	Byte		27th, 28th characters		
49039	Byte		29th, 30th characters		
49040	Byte		31th, 32th characters		
49041	Byte		33th, 34th characters		
49042	Byte		35th, 36th characters		
49043	Byte		37th, 38th characters		
49044	Byte		39th, 40th characters		
49045	Byte		41th, 42th characters		
49046	Byte		43th, 44th characters		
49047	Byte		45th, 46th characters		
49048	Byte		47th, 48th characters		
49049	Byte		49th, 50th characters		
49050	Byte		51th, 52th characters		
49051	Byte		53th, 54th characters		
49052	Byte		55th, 56th characters		
49053	Byte		57th, 58th characters		
49054	Byte		59th, 60th characters		
49055	Byte		61th, 62th characters		
49056	Byte		63th, 64th characters		
49057	Byte	Sender's mail name	1st, 2nd characters	Set name (32 characters) by the ASCII code.	
49058	Byte		3rd, 4th characters		
49059	Byte		5th, 6th characters		
49060	Byte		7th, 8th characters		
49061	Byte		9th, 10th characters		
49062	Byte		11th, 12th characters		
49063	Byte		13th, 14th characters		
49064	Byte		15th, 16th characters		
49065	Byte		17th, 18th characters		
49066	Byte		19th, 20th characters		
49067	Byte		21th, 22th characters		
49068	Byte		23th, 24th characters		
49069	Byte		25th, 26th characters		
49070	Byte		27th, 28th characters		
49071	Byte		29th, 30th characters		
49072	Byte		31th, 32th characters		
49073	Byte	Receiver's mail address 1	1st, 2nd characters	Set address (64 characters) by the ASCII code.	
49074	Byte		3rd, 4th characters		
49075	Byte		5th, 6th characters		
49076	Byte		7th, 8th characters		
49077	Byte		9th, 10th characters		
49078	Byte		11th, 12th characters		
49079	Byte		13th, 14th characters		
49080	Byte		15th, 16th characters		
49081	Byte		17th, 18th characters		
49082	Byte		19th, 20th characters		
49083	Byte		21th, 22th characters		
49084	Byte		23th, 24th characters		
49085	Byte		25th, 26th characters		
49086	Byte		27th, 28th characters		
49087	Byte		29th, 30th characters		
49088	Byte		31th, 32th characters		
49089	Byte		33th, 34th characters		
49090	Byte		35th, 36th characters		
49091	Byte		37th, 38th characters		
49092	Byte		39th, 40th characters		
49093	Byte		41th, 42th characters		
49094	Byte		43th, 44th characters		
49095	Byte		45th, 46th characters		
49096	Byte		47th, 48th characters		
49097	Byte		49th, 50th characters		
49098	Byte		51th, 52th characters		

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
49099	Byte	Receiver's mail address 1		53th, 54th characters		
49100	Byte			55th, 56th characters		
49101	Byte			57th, 58th characters		
49102	Byte			59th, 60th characters		
49103	Byte			61th, 62th characters		
49104	Byte			63th, 64th characters		
49105	Byte	Receiver's mail address 2			Same allocation as Receiver's mail address 1	
to						
49137	Byte	Receiver's mail address 3			Same allocation as Receiver's mail address 1	
to						
49169	Byte	Receiver's mail address 4			Same allocation as Receiver's mail address 1	
to						
49201	Byte	Receiver's mail address 5			Same allocation as Receiver's mail address 1	
to						
49233	Byte	Receiver's mail address 6			Same allocation as Receiver's mail address 1	
to						
49265	Byte	Receiver's mail address 7			Same allocation as Receiver's mail address 1	
to						
49297	Byte	Receiver's mail address 8			Same allocation as Receiver's mail address 1	
to						
49329	Word					Reserve
to						Reserve
49331	Byte	User 1 setting	User name	1st, 2nd characters	Set name (16 characters) by the ASCII code.	
49332	Byte			3rd, 4th characters		
49333	Byte			5th, 6th characters		
49334	Byte			7th, 8th characters		
49335	Byte			9th, 10th characters		
49336	Byte			11th, 12th characters		
49337	Byte			13th, 14th characters		
49338	Byte			15th, 16th characters		
49339	Byte		Password	1st, 2nd characters	Set password (8 characters) by the ASCII code.	
49340	Byte			3rd, 4th characters		
49341	Byte			5th, 6th characters		
49342	Byte			7th, 8th characters		
49343	Word		User level		0: Administrator, 1: Guest	
49344	Word					Reserve
49345	Byte	User 2 setting			Same allocation as User 1	
to						
49359	Byte	User 3 setting			Same allocation as User 1	
to						
49373	Byte	User 4 setting			Same allocation as User 1	
to						
49387	Byte	User 5 setting			Same allocation as User 1	
to						
49401	Byte	User 6 setting			Same allocation as User 1	
to						
49415	Byte	User 7 setting			Same allocation as User 1	
to						
49429	Byte	User 8 setting			Same allocation as User 1	
to						
49443	Word					Reserve
to						Reserve
49451	Byte	E-mail trigger 1 setting	Title	1st, 2nd characters	Set title (32 characters) by the ASCII code.	
49452	Byte			3rd, 4th characters		
49453	Byte			5th, 6th characters		
49454	Byte			7th, 8th characters		
49455	Byte			9th, 10th characters		
49456	Byte			11th, 12th characters		
49457	Byte			13th, 14th characters		
49458	Byte			15th, 16th characters		
49459	Byte			17th, 18th characters		
49460	Byte			19th, 20th characters		
49461	Byte			21th, 22th characters		
49462	Byte			23th, 24th characters		
49463	Byte			25th, 26th characters		

Register No.	Data type	Memory contents			Read-out data / Write-in data setting range	Remarks
49464	Byte	E-mail trigger 1 setting	Title	27th, 28th characters		
49465	Byte			29th, 30th characters		
49466	Byte			31th, 32th characters		
49467	Byte		Text 1	1st, 2nd characters	Set text1 (32 characters) by the ASCII code.	
49468	Byte			3rd, 4th characters		
49469	Byte			5th, 6th characters		
49470	Byte			7th, 8th characters		
49471	Byte			9th, 10th characters		
49472	Byte			11th, 12th characters		
49473	Byte			13th, 14th characters		
49474	Byte			15th, 16th characters		
49475	Byte			17th, 18th characters		
49476	Byte			19th, 20th characters		
49477	Byte			21th, 22th characters		
49478	Byte			23th, 24th characters		
49479	Byte			25th, 26th characters		
49480	Byte			27th, 28th characters		
49481	Byte			29th, 30th characters		
49482	Byte			31th, 32th characters		
49483	Byte		Text 2	1st, 2nd characters	Set text2 (32 characters) by the ASCII code.	
49484	Byte			3rd, 4th characters		
49485	Byte			5th, 6th characters		
49486	Byte			7th, 8th characters		
49487	Byte			9th, 10th characters		
49488	Byte			11th, 12th characters		
49489	Byte			13th, 14th characters		
49490	Byte			15th, 16th characters		
49491	Byte			17th, 18th characters		
49492	Byte			19th, 20th characters		
49493	Byte			21th, 22th characters		
49494	Byte			23th, 24th characters		
49495	Byte			25th, 26th characters		
49496	Byte			27th, 28th characters		
49497	Byte			29th, 30th characters		
49498	Byte			31th, 32th characters		
49499	Word		Trigger timing		(Please refer to Table 20)	
49500	Word		Trigger timing argument 1			
49501	Word		Trigger timing argument 2			
49502	Word		PV value affixation		0:OFF, 1:ON	
49503	Word		Receiver's mail address No.		(Please refer to Table 21)	
49504	Word					Reserve
49505	Byte	E-mail trigger 2 setting			Same allocation as E-mail trigger 1	
to						
49559	Byte	E-mail trigger 3 setting			Same allocation as E-mail trigger 1	
to						
49613	Byte	E-mail trigger 4 setting			Same allocation as E-mail trigger 1	
to						
49667	Byte	E-mail trigger 5 setting			Same allocation as E-mail trigger 1	
to						
49721	Byte	E-mail trigger 6 setting			Same allocation as E-mail trigger 1	
to						
49775	Byte	E-mail trigger 7 setting			Same allocation as E-mail trigger 1	
to						
49829	Byte	E-mail trigger 8 setting			Same allocation as E-mail trigger 1	
to						
49883	Byte	E-mail trigger 9 setting			Same allocation as E-mail trigger 1	
to						
49937	Byte	E-mail trigger 10 setting			Same allocation as E-mail trigger 1	
to						
49991	Word					Reserve
to						Reserve
49999	Word	Final address				Reserve

9.2.2 Word data [read-out only] : Function code [04H]

Register No.	Data type	Memory contents		Read-out data	Remarks
3XXXX					
30001	Bit	System information		(Please refer to Table 22)	
30002	Bit				Reserve
30003	Bit	DO information	DO1 to 16	(Please refer to Table 23)	
30004	Bit		DO17 to 32		
30005	Bit		DO33 to 36		
30006	Bit	DI information		(Please refer to Table 24)	
to					Reserve
30076	Word	Memory cord utilization		0 to 1000 (0.00 to 100.0%, 100.0%=Memory FULL)	
to					Reserve
30083	Bit	Channel Alarm information	Channel 1 to 4	(Please refer to Table 25)	
30084	Bit		Channel 5 to 8		
30085	Bit		Channel 9 to 12		
30086	Bit		Channel 13 to 16		
30087	Bit		Channel 17 to 20		
30088	Bit		Channel 21 to 24		
30089	Bit		Channel 25 to 28		
30090	Bit		Channel 29 to 32		
30091	Bit		Channel 33 to 36		
30092	Bit		Channel 37 to 40		
30093	Bit		Channel 41 to 44		
30094	Bit		Channel 45 to 48		
30095	Bit		Channel 49 to 52		
30096	Bit		Channel 53 to 56		
30097	Bit		Channel 57 to 60		
30098	Bit		Channel 61 to 64		
30099	Bit		Channel 65 to 68		
30100	Bit		Channel 69 to 72		
30101	Word	Measured value	Channel 1	-32767 to 32767 （ No decimal point)	
30102	Word		Channel 2	-32767 to 32767 （ No decimal point)	
30103	Word		Channel 3	-32767 to 32767 （ No decimal point)	
to					
30171	Word		Channel 71	-32767 to 32767 （ No decimal point)	
30172	Word		Channel 72	-32767 to 32767 （ No decimal point)	
30173	Word	Channel status	Channel 1	0:Normal, 1:Burnout, 2:Over, 3:Under, 4:Error	
30174	Word		Channel 2	0:Normal, 1:Burnout, 2:Over, 3:Under, 4:Error	
30175	Word		Channel 3	0:Normal, 1:Burnout, 2:Over, 3:Under, 4:Error	
to					
30244	Word		Channel 72	0:Normal, 1:Burnout, 2:Over, 3:Under, 4:Error	
30245	Long	Totalizing value	Channel 1	-999999999 to 999999999 (No decimal point)	
30246	Long		Channel 1		
30247	Long		Channel 2	-999999999 to 999999999 (No decimal point)	
30248	Long		Channel 2		
to					
30387	Long		Channel 72	-999999999 to 999999999 (No decimal point)	
30388	Long		Channel 72		
30389	Long	Totalizing start time	Channel 1	Greenwich Time	
30390	Long		Channel 1		
30391	Long		Channel 2	Greenwich Time	
30392	Long		Channel 2		
to					
30531	Long		Channel 72	Greenwich Time	
30532	Long		Channel 72		
30533	Long	Totalizing end time	Channel 1	Greenwich Time	
30534	Long		Channel 1		
30535	Long		Channel 2	Greenwich Time	
30536	Long		Channel 2		
to					
30675	Long		Channel 72	Greenwich Time	
30676	Long		Channel 72		
30677	Long	Previous totalized value	Channel 1	-999999999 to 999999999 (No decimal point)	

Register No.	Data type	Memory contents		Read-out data	Remarks
30678	Long	Previous totalized value	Channel 1		
30679	Long		Channel 2	-999999999 to 999999999 (No decimal point)	
30680	Long		Channel 2		
to					
30819	Long		Channel 72	-999999999 to 999999999 (No decimal point)	
30820	Long		Channel 72		
30821	Long	Previous totalized start time	Channel 1	Greenwich Time	
30822	Long		Channel 1		
30823	Long		Channel 2	Greenwich Time	
30824	Long		Channel 2		
to					
30963	Long		Channel 72	Greenwich Time	
30964	Long		Channel 72		
30965	Long	Previous totalized end time	Channel 1	Greenwich Time	
30966	Long		Channel 1		
30967	Long		Channel 2	Greenwich Time	
30968	Long		Channel 2		
to					
31107	Long		Channel 72	Greenwich Time	
31108	Long		Channel 72		
31109	Word				Reserve
to					Reserve
31200	Word	Final address			Reserve

Notes) • The area marked (Do not use) is a reserve area. Do not write in there.
• Write 0 into the areas without data.

9.3 Additional Explanation of Address Map

Table 1 Channel color code

Data	color
1	Red
2	Blue
3	Violet
4	Green
5	Sky blue
6	Yellow
7	Gray
8	Indigo
9	Dark red
10	Purple
11	Deep green
12	Pale blue
13	Yellowish green
14	Silver

Table 2 Input type code

Data	Input type		Initial decimal point
0	Skip	Skip	0
1	K-Type TC	Thermocouple	1
2	E-Type TC		
3	J-Type TC		
4	T-Type TC		
5	R-Type TC		
6	S-Type TC		
7	B-Type TC		
8	N-Type TC		
9	W-Type TC		
10	L-Type TC		
11	U-Type TC		
12	PN-Type TC		
20	Pt100	Resistance bulb	1
21	JPt100		
30	50mV	DC voltage	2
31	500mV		1
32	1-5V		3
33	0-5V		
40	Other channel	Other channnel	0

Note) When position of decimal point varies with input type, initialize it.

Table 3 Unit code

Data	Unit	Data	Unit	Data	Unit	Data	Unit	Data	Unit
0	°C	18	t/min	36	mPa	54	mm2	72	ppm
1	°F	19	kg/min	37	Pa	55	cm2	73	ppmNH3
2	%RH	20	g/min	38	kPa	56	m2	74	ppmSO2
3	vol%	21	m3/min	39	MPa	57	g	75	ppmH2S
4		22	l/min	40		58	kg	76	ppmCO
5		23		41		59	t	77	ppmO2
6	t/d	24	t/s	42	mm	60	g/cm3	78	ppmNOx
7	kg/d	25	kg/s	43	cm	61	kg/cm3	79	ppb
8	g/d	26	g/s	44	m	62	g/m3	80	pH
9	m3/d	27	m3/s	45		63	kg/m3	81	mol
10	l/d	28	l/s	46		64		82	%
11		29		47		65		83	%H2
12	t/h	30	mbar	48	ml	66	g/l	84	%CO2
13	kg/h	31	bar	49	L	67	kg/l	85	%He
14	g/h	32	N/mm2	50	kl	68	g/ml	86	%Ar
15	m3/h	33	N/m2	51	mm3	69		87	%O2
16	l/h	34		52	cm3	70		88	%NaCl
17		35		53	m3	71		89	%CO

Data	Unit	Data	Unit	Data	Unit	Data	Unit	Data	Unit
90	mN	108	us	126	Var	144	uSv/h	162	*Unit 7
91	N	109	ms	127	kVar	145	mSv/h	163	*Unit 8
92	N･m	110	s	128	uS/cm	146	nGy/h	164	*Unit 9
93	J	111	min	129	uF	147	uGy/h	165	*Unit 10
94	kJ	112	h	130	F	148	um	166	*Unit 11
95		113	day	131	C	149		167	*Unit 12
96	mm/s	114	mV	132	mH	150	Pa･s		
97	mm/min	115	V	133	H	151	mPa･s		
98	mm/h	116	kV	134	mohm	152			
99	m/s	117	uA	135	ohm	153			
100	m/min	118	mA	136	kohm	154			
101	m/h	119	A	137	Mohm	155			
102	rps	120	Hz	138	lx	156	*Unit1		
103	rpm	121	dB	139	cd	157	*Unit2		
104	rph	122	W	140	lm	158	*Unit3		
105	m/s2	123	kW	141	cd/m2	159	*Unit4		
106	rad/s	124	VA	142		160	*Unit5		
107	km/h	125	kVA	143		161	*Unit6		

Note) The unit that was made in Unit 1 to 12: Original unit definition is selected.

Table 4 Masuring start, Masuring end setting limit

Input type	Masuring start, Masuring end limit
50mV	–1000 to 5500 (–10.00 to 55.00mV)
500mV	–100 to 5500 (–10.0 to 550.0mV)
1-5V	500 to 5500 (0.500 to 5.500V)
0-5V	–100 to 5500 (–0.100 to 5.500V)

Table 5 Decimal point code

Decimal point data	Setting data
0	–32767 to 32767
1	–3276.7 to 3276.7
2	–327.67 to 327.67
3	–32.767 to 32.767
4	–3.2767 to 3.2767

Table 6 Data setting limit

・With Fvalue calculation OFF

Input type TC, Pt

	°C (Centigrade)	°F (Fahrenheit)
	Range start, Range end Alarm No.1 to 4 set point Totalize cut value	Range start, Range end Alarm No.1 to 4 set point Totalize cut value
K-Type TC	–2300 to 14000 (–230.0 to 1400.0°C)	–3820 to 25520 (–382.0 to 2552.0°F)
E-Type TC	–2300 to 8300 (–230.0 to 830.0°C)	–3820 to 15260 (–382.0 to 1526.0°F)
J-Type TC	–2300 to 11300 (–230.0 ot 1130.0°C)	–3820 to 20660 (–382.0 to 2066.0°F)
T-Type TC	–2300 to 4300 (–230.0 to 430.0°C)	–3820 to 8060 (–382.0 to 806.0°F)
R-Type TC	–300 to 17900 (–30.0 to 1790.0°C)	–220 to 32540 (–22.0 to 3254.0°F)
S-Type TC	–300 to 17900 (–30.0 to 1790.0°C)	–220 to 32540 (–22.0 to 3254.0°F)
B-Type TC	3700 to 17900 (370.0 to 1790.0°C)	6980 to 32540 (698.0 to 3254.0°F)
N-Type TC	–300 to 13300 (–30.0 to 1330.0°C)	–220 to 24260 (–22.0 to 2426.0°F)
W-Type TC	–300 to 17900 (–30.0 to 1790.0°C)	–220 to 32540 (–22.0 to 3254.0°F)
L-Type TC	–2300 to 9300 (–230.0 to 930.0°C)	–3820 to 17060 (–382.0 to 1706.0°F)
U-Type TC	–2300 to 4300 (–230.0 to 430.0°C)	–3820 to 8060 (–382.0 to 806.0°F)
PN-Type TC	–300 to 13300 (–30.0 to 1330.0°C)	–220 to 24260 (–22.0 to 2426.0°F)
Pt100	–2300 to 6300 (–230.0 to 630.0°C)	–3820 to 11660 (–382.0 to 1166.0°F)
JPt100	–2300 to 6300 (–230.0 to 630.0°C)	–3820 to 11660 (–382.0 to 1166.0°F)

Input type Volt

	Scaling OFF	Scaling ON
	Range start, Range end Alarm No.1 to 4 set point Totalize cut value	Range start, Range end Alarm No.1 to 4 set point Totalize cut value
50mV	–1000 to 5500 (–10.00 to 55.00mV)	–32767 to 32767 (Please refer to Table 5)
500mV	–100 to 5500 (–10.0 to 550.0mV)	
1-5V	500 to 5500 (0.500 to 5.500V)	
0-5V	–100 to 5500 (–0.100 to 5.500V)	

・With F value calculation ON or Input type other channel

	Range start, Range end Alarm No.1 to 4 set point Totalize cut value
All type	–32767 to 32767 (Please refer to Table 14)

Table 7 Totalize type code

Data	Totalize type
0	Daily
1	Monthly
3	Annual
6	External
15	OFF

Table 8 External input code

Data	Input	Data	Input
0	DI 1	16	CH 1 Alarm No.1
1	DI 2	17	CH 1 Alarm No.2
2	DI 3	18	CH 1 Alarm No.3
3	DI 4	19	CH 1 Alarm No.4
4	DI 5	20	CH 2 Alarm No.1
5	DI 6	21	CH 2 Alarm No.2
6	DI 7	22	CH 2 Alarm No.3
7	DI 8		⋮
8	DI 9	296	CH71 Alarm No.1
9	DI 10	297	CH71 Alarm No.2
10	DI 11	298	CH71 Alarm No.3
11	DI 12	299	CH71 Alarm No.4
12	DI 13	300	CH72 Alarm No.1
13	DI 14	301	CH72 Alarm No.2
14	DI 15	302	CH72 Alarm No.3
15	DI 16	303	CH72 Alarm No.4

Table 9 Totalize cycle code

Data	Totalize cycle
0	10min
1	20min
2	30min
3	1hour
4	2hour
5	3hour
6	4hour
7	6hour
8	12our
9	24hour

Table 10 Formula code

calculation data = four rules calculation data + function data * 256

Data	Function data
0	None
1	ABS
2	POW
3	SQR
4	LOG
5	LN
6	EXP
7	RH
8	MAX
9	MIN
10	H-P
11	L-P
12	AVG
13	SUM

Data	Four rules calculation data
0	Formula end
1	+ (Please set it to the 1st calculation)
2	–
3	*
4	/

argument1,2 data = argument type * 256 + data number

Data	Argument type	Data number limit
0	Input channel	0 to 71 (Channel 1 to 72 : C01 to C72)
1	Totalizer input	0 to 71 (Channel totalizer 1 to 72 : T01 to T72)
2	Digital input	0 to 15 (DI1 to 16 : D01 to D16)
3	Communication input	0 to 35 (Communication input 1 to 36 : M01 to M36)
4	Constant	0 to 59 (Constant 1 to 60 : K01 to K60)
5	Temporary data	0 to 2 (Temporary data 1 to 3 : B01 to B03)

When setting “POW(C01, T02)*K03” in Formula 1 of Channel 37, set the following data.

Address	Data	Display	Breakdown
46061	513	(+)POW	Four rules calc. data : "+" (1) + Function data : "POW"(2 * 256)
46062	0	C01	Argument type : Input channel(0 * 256) + Data number : 1 (0)
46063	257	T02	Argument type : Totalizer input(1 * 256) + Data number : 2 (1)
46064	3	*	Four rules calc. data : "*" (3) + Function data : none (0 * 256)
46065	1026	K03	Argument type : Constant(4 * 256) + Data number : 3 (2)
46066	0	(none)	
46067	0	(End)	
46068	0	(none)	
46069	0	(none)	

Table 11 Constant data

Decimal point data	Constant data
0	–32767 to 32767
1	–3276.7 to 3276.7
2	–327.67 to 327.67
3	–32.767 to 32.767
4	–3.2767 to 3.2767

Table 12 Refreshment cycle code

Data	Date format
0	1sec
1	2sec
2	3sec
3	5sec
4	10sec
5	20sec
6	30sec
7	1min
8	2min
9	3min
10	5min
11	10min
12	20min
13	30min
14	1hour
15	2hour
16	3hour
17	4hour
18	6hour
19	12our

Table 13 File division cycle code

Data	File division cycle
0	No division
1	1 hour
2	1 day
3	1 week
4	1 month

Table 14 F Value calculation decimal point code

Decimal point data	F Value calculation ON channel data
0	–32767 to 32767
1	–3276.7 to 3276.7
2	–327.67 to 327.67
3	–32.767 to 32.767
4	–3.2767 to 3.2767

Table 15 Date format code

Data	Date format
0	2005/10/28
1	28/10/2005
2	28−Oct−05
3	10/28/2005
4	Oct−28−05

Table 16 Message timing data

Message timing argument 1 and 2 have a significant difference according to the contents of Message timing.

Data	Message timing	argument 1	argument 2
0	None	None	None
1	DI ON	0 to 15 (DI1 to 16)	None
2	DI OFF	0 to 15 (DI1 to 16)	None
3	Alarm start	0 to 71 (channel 1 to 72)	0 to 3(Alarm No.1 to 4)
4	Alarm cancel	0 to 71 (channel 1 to 72)	0 to 3(Alarm No.1 to 4)

Table 17 DI function code

Data	DI function
0	Function invalid
1	Rec start/Rec stop
2	Fvalue calc. reset
3	Totalize start/stop
4	Totalize reset
5	LCD ON

Table 18 Recorder control

Bit	Contents	Write data
0	Record start/stop	0:Record stop, 1:Record start
1	Reserve	
2	Totalize start/stop	0:Totalize stop, 1:Totalize start
3	LCD Lighting	0: No change, 1:LCD Lighting
4	Reserve	
5	Reserve	
6	Reserve	
7	Reserve	
8	Reserve	
9	Reserve	
10	Reserve	
11	Reserve	
12	Reserve	
13	Reserve	
14	Reserve	
15	Reserve	

Table 19 Message request

Bit	Contents	Write data
0	Message No.1 request	0: No change, 1:Message request
1	Message No.2 request	0: No change, 1:Message request
2	Message No.3 request	0: No change, 1:Message request
3	Message No.4 request	0: No change, 1:Message request
4	Message No.5 request	0: No change, 1:Message request
5	Message No.6 request	0: No change, 1:Message request
6	Message No.7 request	0: No change, 1:Message request
7	Message No.8 request	0: No change, 1:Message request
8	Message No.9 request	0: No change, 1:Message request
9	Message No.10 request	0: No change, 1:Message request
10	Reserve	
11	Reserve	
12	Reserve	
13	Reserve	
14	Reserve	
15	Reserve	

Table 20 Trigger timing data

Triggaer timing argument 1 and 2 have a significant difference according to the contents of Trigger timing.

Data	Trigger timing	Argument 1	Argument 2
0	None	None	None
1	DI ON	0 to 15 (DI1 to 16)	None
2	DI OFF	0 to 15 (DI1 to 16)	None
3	Alarm ON	0 to 71 (channel 1 to 72)	0 to 3 (Alarm No. 1 to 4)
4	Alarm OFF	0 to 71 (channel 1 to 72)	0 to 3 (Alarm No. 1 to 4)
5	Warning	0 to 3 0: All alarm or output 1: All warning or output 2: No battery 3: Memory card full	None
6	Timer cycle	0 to 6 0: 1 hour 1: 2 hour 2: 3 hour 3: 4 hour 4: 6 hour 5: 12 hour 6: 1 day	0 to 23 (Base time 0:00 to 23:00)

Table 21 Receiver's mail address No.

Bit	Contnets	Data
0	E-mail address No. 1	0: No receive; 1: Address to receive
1	E-mail address No. 2	0: No receive; 1: Address to receive
2	E-mail address No. 3	0: No receive; 1: Address to receive
3	E-mail address No. 4	0: No receive; 1: Address to receive
4	E-mail address No. 5	0: No receive; 1: Address to receive
5	E-mail address No. 6	0: No receive; 1: Address to receive
6	E-mail address No. 7	0: No receive; 1: Address to receive
7	E-mail address No. 8	0: No receive; 1: Address to receive
8	Reserve	
9	Reserve	
10	Reserve	
11	Reserve	
12	Reserve	
13	Reserve	
14	Reserve	
15	Reserve	

Table 22 System information

Bit	Contents	Read data
0	Recording status	0: Stop, 1: Recording
1	CF card capacity	0: capacity available, 1: No capacity
2	Channel alarming status	0: No, 1: Yes
3	Reserve	
4	Reserve	
5	LCD state	0: ON, 1: OFF
6	Reserve	
7	Totalizing condition	0: Stop, 1: Totalizing
8	Battery condition	0: Provided, 1: Not provided
9	Reserve	
10	CF information	0: None, 1: Exist
11	Reserve	
12	Reserve	
13	Reserve	
14	Reserve	
15	Reserve	

Table 23 DO information

Bit	Address 30003		Address 30004		Address 30005	
	Contents	Read data	Contents	Read data	Contents	Read data
0	DO 1 information	0:OFF, 1:ON	DO 17 information	0:OFF, 1:ON	DO 33 information	0:OFF, 1:ON
1	DO 2 information	0:OFF, 1:ON	DO 18 information	0:OFF, 1:ON	DO 34 information	0:OFF, 1:ON
2	DO 3 information	0:OFF, 1:ON	DO 19 information	0:OFF, 1:ON	DO 35 information	0:OFF, 1:ON
3	DO 4 information	0:OFF, 1:ON	DO 20 information	0:OFF, 1:ON	DO 36 information	0:OFF, 1:ON
4	DO 5 information	0:OFF, 1:ON	DO 21 information	0:OFF, 1:ON	Reserve	
5	DO 6 information	0:OFF, 1:ON	DO 22 information	0:OFF, 1:ON	Reserve	
6	DO 7 information	0:OFF, 1:ON	DO 23 information	0:OFF, 1:ON	Reserve	
7	DO 8 information	0:OFF, 1:ON	DO 24 information	0:OFF, 1:ON	Reserve	
8	DO 9 information	0:OFF, 1:ON	DO 25 information	0:OFF, 1:ON	Reserve	
9	DO 10 information	0:OFF, 1:ON	DO 26 information	0:OFF, 1:ON	Reserve	
10	DO 11 information	0:OFF, 1:ON	DO 27 information	0:OFF, 1:ON	Reserve	
11	DO 12 information	0:OFF, 1:ON	DO 28 information	0:OFF, 1:ON	Reserve	
12	DO 13 information	0:OFF, 1:ON	DO 29 information	0:OFF, 1:ON	Reserve	
13	DO 14 information	0:OFF, 1:ON	DO 30 information	0:OFF, 1:ON	Reserve	
14	DO 15 information	0:OFF, 1:ON	DO 31 information	0:OFF, 1:ON	Reserve	
15	DO 16 information	0:OFF, 1:ON	DO 32 information	0:OFF, 1:ON	Reserve	

Table 24 DI information

Bit	Contents	Read data
0	DI 1 information	0:OFF, 1:ON
1	DI 2 information	0:OFF, 1:ON
2	DI 3 information	0:OFF, 1:ON
3	DI 4 information	0:OFF, 1:ON
4	DI 5 information	0:OFF, 1:ON
5	DI 6 information	0:OFF, 1:ON
6	DI 7 information	0:OFF, 1:ON
7	DI 8 information	0:OFF, 1:ON
8	DI 9 information	0:OFF, 1:ON
9	DI 10 information	0:OFF, 1:ON
10	DI 11 information	0:OFF, 1:ON
11	DI 12 information	0:OFF, 1:ON
12	DI 13 information	0:OFF, 1:ON
13	DI 14 information	0:OFF, 1:ON
14	DI 15 information	0:OFF, 1:ON
15	DI 16 information	0:OFF, 1:ON

Table 25 Channel Alarm information

All data 0:Alarm OFF, 1:Alarm ON

Bit	Address 30083		Address 30084		Address 30085		Address 30086	
0	Channel 1	Alarm No.1	Channel 5	Alarm No.1	Channel 9	Alarm No.1	Channel 13	Alarm No.1
1		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
2		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
3		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
4	Channel 2	Alarm No.1	Channel 6	Alarm No.1	Channel 10	Alarm No.1	Channel 14	Alarm No.1
5		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
6		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
7		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
8	Channel 3	Alarm No.1	Channel 7	Alarm No.1	Channel 11	Alarm No.1	Channel 15	Alarm No.1
9		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
10		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
11		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
12	Channel 4	Alarm No.1	Channel 8	Alarm No.1	Channel 12	Alarm No.1	Channel 16	Alarm No.1
13		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
14		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
15		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4

Bit	Address 30087		Address 30088		Address 30089		Address 30090	
0	Channel 17	Alarm No.1	Channel 21	Alarm No.1	Channel 25	Alarm No.1	Channel 29	Alarm No.1
1		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
2		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
3		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
4	Channel 18	Alarm No.1	Channel 22	Alarm No.1	Channel 26	Alarm No.1	Channel 30	Alarm No.1
5		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
6		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
7		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
8	Channel 19	Alarm No.1	Channel 23	Alarm No.1	Channel 27	Alarm No.1	Channel 31	Alarm No.1
9		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
10		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
11		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
12	Channel 20	Alarm No.1	Channel 24	Alarm No.1	Channel 28	Alarm No.1	Channel 32	Alarm No.1
13		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
14		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
15		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4

Bit	Address 30091		Address 30092		Address 30093		Address 30094	
0	Channel 33	Alarm No.1	Channel 37	Alarm No.1	Channel 41	Alarm No.1	Channel 45	Alarm No.1
1		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
2		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
3		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
4	Channel 34	Alarm No.1	Channel 38	Alarm No.1	Channel 42	Alarm No.1	Channel 46	Alarm No.1
5		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
6		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
7		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
8	Channel 35	Alarm No.1	Channel 39	Alarm No.1	Channel 43	Alarm No.1	Channel 47	Alarm No.1
9		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
10		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
11		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
12	Channel 36	Alarm No.1	Channel 40	Alarm No.1	Channel 44	Alarm No.1	Channel 48	Alarm No.1
13		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
14		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
15		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4

Bit	Address 30095		Address 30096		Address 30097		Address 30098	
0	Channel 49	Alarm No.1	Channel 53	Alarm No.1	Channel 57	Alarm No.1	Channel 61	Alarm No.1
1		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
2		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
3		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
4	Channel 50	Alarm No.1	Channel 54	Alarm No.1	Channel 58	Alarm No.1	Channel 62	Alarm No.1
5		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
6		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
7		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
8	Channel 51	Alarm No.1	Channel 55	Alarm No.1	Channel 59	Alarm No.1	Channel 63	Alarm No.1
9		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
10		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
11		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4
12	Channel 52	Alarm No.1	Channel 56	Alarm No.1	Channel 60	Alarm No.1	Channel 64	Alarm No.1
13		Alarm No.2		Alarm No.2		Alarm No.2		Alarm No.2
14		Alarm No.3		Alarm No.3		Alarm No.3		Alarm No.3
15		Alarm No.4		Alarm No.4		Alarm No.4		Alarm No.4

Bit	Address 30099		Address 30100	
0	Channel 65	Alarm No.1	Channel 69	Alarm No.1
1		Alarm No.2		Alarm No.2
2		Alarm No.3		Alarm No.3
3		Alarm No.4		Alarm No.4
4	Channel 66	Alarm No.1	Channel 70	Alarm No.1
5		Alarm No.2		Alarm No.2
6		Alarm No.3		Alarm No.3
7		Alarm No.4		Alarm No.4
8	Channel 67	Alarm No.1	Channel 71	Alarm No.1
9		Alarm No.2		Alarm No.2
10		Alarm No.3		Alarm No.3
11		Alarm No.4		Alarm No.4
12	Channel 68	Alarm No.1	Channel 72	Alarm No.1
13		Alarm No.2		Alarm No.2
14		Alarm No.3		Alarm No.3
15		Alarm No.4		Alarm No.4

10. TROUBLESHOOTING

If the communication is unavailable, check the following items.

Case of Ethernet communication (common to FTP, web, E-mail and MODBUS TCP/IP)

- ☐ Whe ther the power is turned ON again after communication setup change.
- ☐ Whether all devices related to communication are turned ON.
- ☐ Whether connections are correct.
- ☐ Whether the number of connected instruments and connection distance are as specified.
- ☐ Whether conditions for communication are correct.
  - ☐ IP address
  - ☐ Subnet mask
  - ☐ Default gateway
- ☐ Whether the 12th digit of type code of this Recorder is E?
  （PHW□□□□□-□□□E□-□）

Case of FTP server function

- ☐ Whether the user name, the password, and the user level are correct?

Case of E-mail send function

- ☐ Whether conditions for communication are correct.
  - ☐ SMTP address
  - ☐ Sender’s mail address
  - ☐ Receiver’s mail address
- ☐ Whether E-mail send conditions are correct.

Case of MODBUS TCP/IP communication function

- ☐ Whether the station No. designated as send destination by the master station coincides with the station No. of this Recorder been connected.
- ☐ Whether the station No. of this Recorder is set other than 0.
  If it is 0, the communication function does not work.

Fuji Electric Co., Ltd.

International Sales Div
Sales Group

Gate City Ohsaki, East Tower, 11-2, Osaki 1-chome,
Shinagawa-ku, Tokyo 141-0032, Japan
http://www.fujielectric.com
Phone: 81-3-5435-7280, 7281 Fax: 81-3-5435-7425
http://www.fujielectric.com/products/instruments/