
Instruction Manual

**PARAMETER LOADER
FOR PAPERLESS
RECORDER**

TYPE: GR200

WARNING

- If an error or improper operation occurs in our product, or customer-made programs should be found defective, protection and safety circuits, etc should be provided for safety of the system to be used. In addition, safety measures should be taken against personal injury or fatal accident to the system.
- A part or all of the information contained herein is prohibited from duplication without SHINKO TECHNOS 's written consent.
- This manual is subject to change without previous notice.
- Although we always keep track of the information contained herein to assure accuracy, SHINKO TECHNOS will not be responsible for any damage to the system due to mistakes, skip or misuse in writing
- Be sure to read the Readme.text file included in CD-ROM.
- Depending on the environment to be used and the usage, it may not operate normally.
- Please note that operation except the Personal Computer which made by maker, such as self-assembled PC and so on, cannot be guaranteed.

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Request

- It is prohibited to transfer part or all of this manual without SHINKO TECHNOS's permission in written format.
- Description in this manual will be changed without prior notice for further improvement.

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1. OUTLINE

1.1 Foreword

This instruction manual describes installation and operation for the parameter loader of the paperless recorder. Read it carefully before use.

1.2 Parameter loader for paperless recorder

Connect the parameter loader (hereafter referred to as loader) to the paperless recorder using commercially available USB cable or LAN cable, and referencing (uploading), editing, and setting (downloading) of each parameter of the paperless recorder can be made. Connect USB miniB type male connector to the paperless recorder.

Note: Optionally available dedicated cable is required to use the loader for program versions V01A to V22A of the paperless recorder GR200 main unit.

1.3 Contents of package

The following items are packaged with the product.

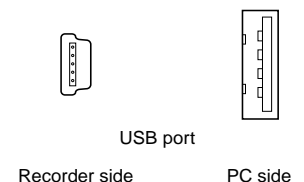
- CD-ROM for installation: 1
- Instruction manual which is installed to above CD-ROM

1.4 Recommended operating environment

- Microsoft Windows 2000 or XP. (Operation by Windows 95/98/Me/NT is not secured.)
- Hard disk with a free capacity of 30MB or more
- RAM with 64MB or more
- USB port
- USB cable [USB(A) male–USB(miniB) male, or Type PHZP1801]
- LAN port (when provided with Ethernet option)
- LAN cable (when provided with Ethernet option)

Note: Hardware requirements of the loader are as follows when it is used for program versions V01A to V22A of the paperless recorder GR200.

- RS-232C serial port (D-sub 9 pin)
- Communication cable dedicated to parameter loader (Option: PHZP0201)



1.5 Installing the parameter loader for paperless recorder

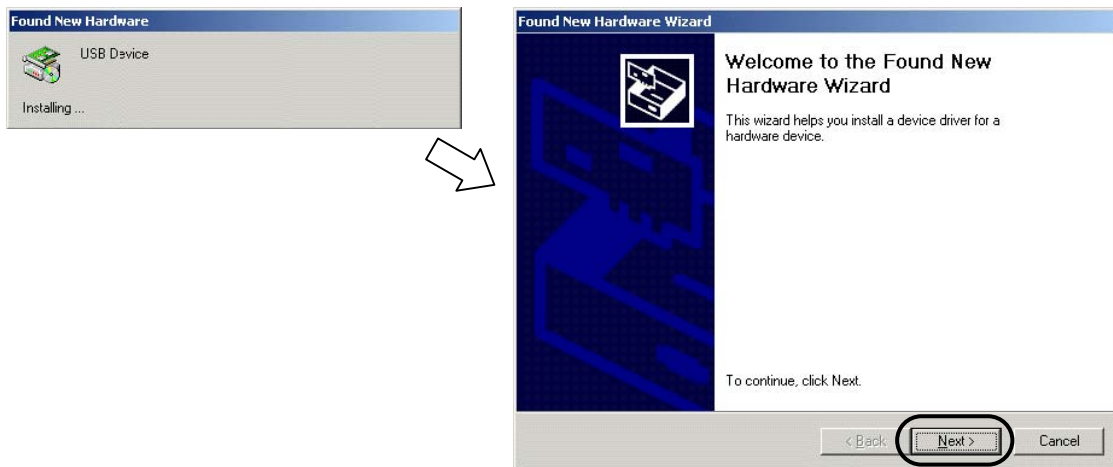
- 1) If other application software programs are open, terminate all of them.
- 2) If the programming loader has been already installed, open “Add/Remove Programs” on Control Panel and delete the parameter loader.
- 3) Set CD-ROM in the personal computer drive.
- 4) Start “Setup. exe” in the CD-ROM.
- 5) Follow the prompts displayed on the screen.
- 6) Please install the main body of the parameter loader.

A message is displayed, prompting you to verify that “Parameter loader setup is complete”.
Now, the Parameter Loader installation is completed.

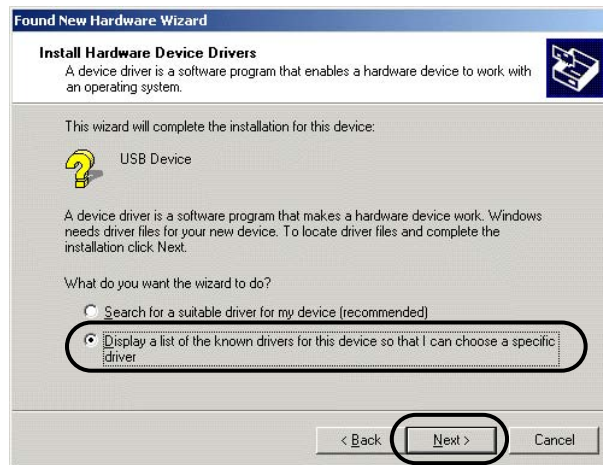
1.6 Installing USB communication driver

The driver can be installed on Windows XP as follows for example.

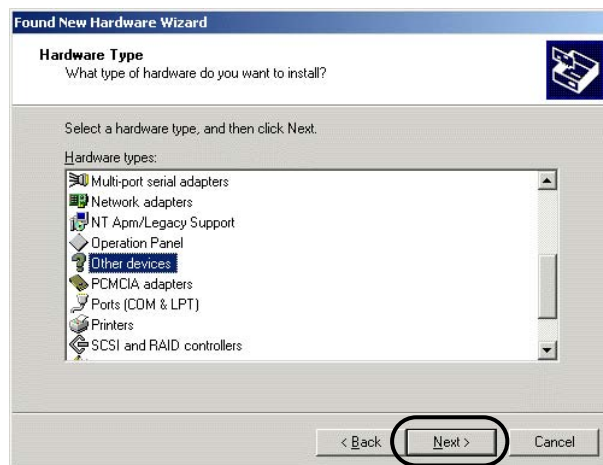
- 1) Connect the USB port of the paperless recorder whose power has been turned on and a running PC with a USB cable.
- 2) The message “Found New Hardware” and then the driver installation wizard appear on the computer. Click the [Next] button.



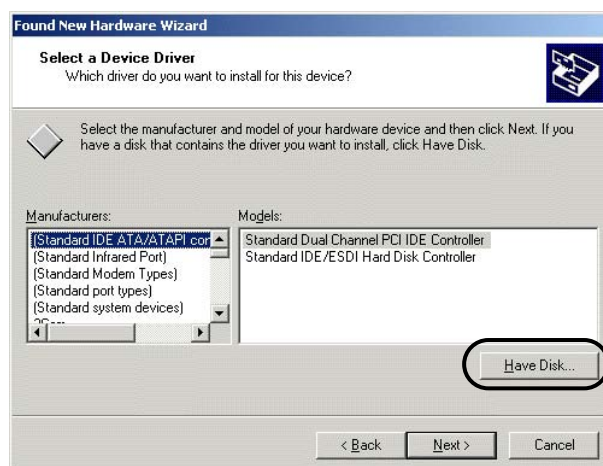
- 3) When the dialog box below is displayed, select [Display a list of the known drivers for this device so that I can choose a specific driver] and click the [Next] button.



- 4) The dialog box below is displayed. Select [Other Devices] and click the [Next] button.



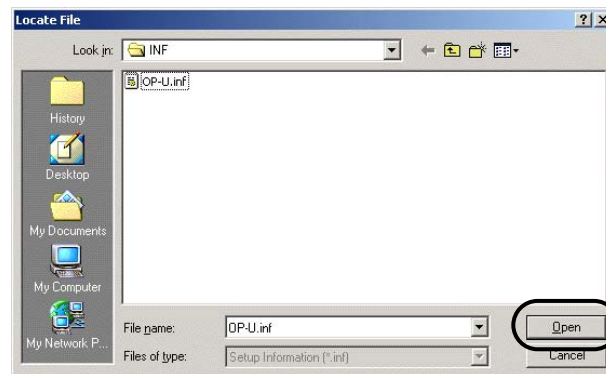
- 5) The dialog box below is displayed. Click [Have Disk].



- 6) The [Install From Disk] dialog box is displayed. Click the [Browse] button.



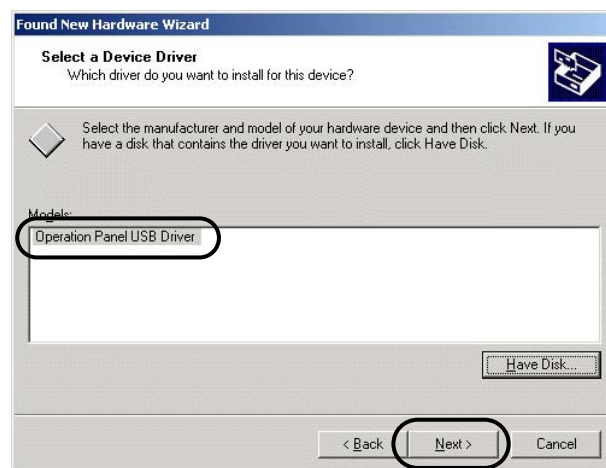
- 7) The USB driver "OP-U.inf" is automatically stored in the "inf" folder within the install folder ("C: ¥ Program Files ¥ ParameterLoader" usually) of the parameter loader. Select the "OP-U.inf" file and then click "Open."



- 8) The previous dialog box is displayed again. Check the path shown under [Copy Manufacturer's Files From:] and click the [OK] button.



- 9) The dialog box below is displayed. Check that [Operation Panel USB Driver] is shown under [Models:]. Click the [Next] button.



10) The driver installation starts.

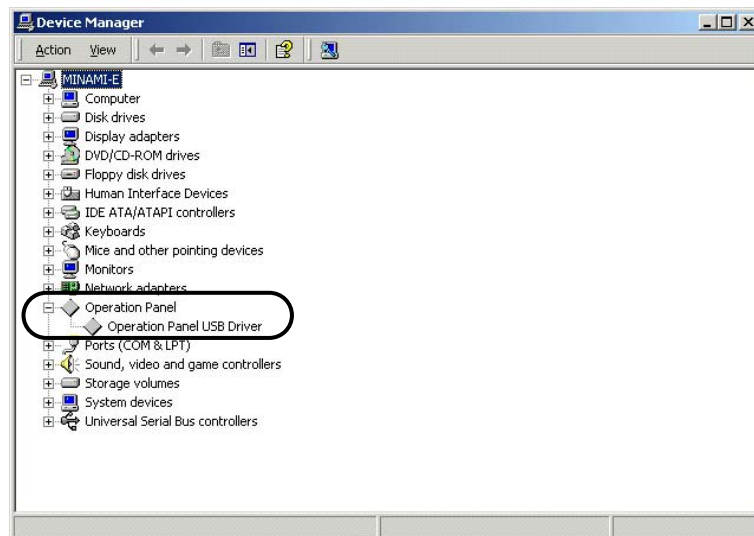


11) The dialog box below is displayed on completion of installation. Click the [Finish] button.



Recognition of USB Driver

When the driver has been installed successfully and the paperless recorder and the computer are connected with a USB cable, the [Device Manager] window shows “Operation Panel - Operation Panel USB Driver.”



This will disappear when the paperless recorder and the computer are disconnected.

If [Other Device] or [?] is shown even while their connection via USB is maintained, the USB driver may not be recognized. If this happens, uninstall the USB driver once and reinstall it.

1.7 Uninstalling the parameter loader software for paperless recorder

For un-installation of the parameter loader for the paperless recorder, proceed from Start of Windows → Setting → Control Panel → Add or delete application. And select Recorder Parameter Loader and follow Windows' instructions and cautions to delete it.

When you install a different version, be sure to un-install the software, which is currently installed, in advance in the above procedures. If not un-installed, it might result in malfunctions such as not starting.

1.8 Cautions

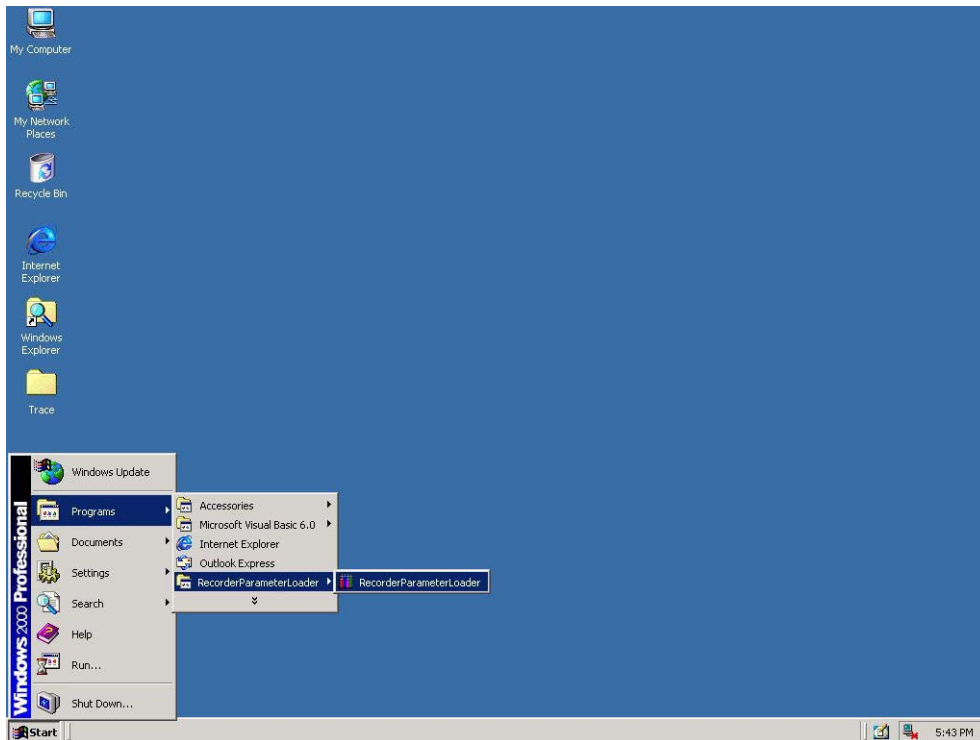
When operating the Loader, be careful of the following items:

- 1) The Loader is used for the paperless recorder only.
- 2) Initial values on each Loader screen may be different from those of the paperless recorder main unit.
- 3) For the communication setting for the paperless recorder (“Main Unit Set” → “Communication Setting”), the Front communication function should be set to ON. (After the Front communication function has been switched from OFF to ON, turn OFF the power once, and then turn it ON.)
- 4) Before starting the paperless recorder, be sure to assure that the Loader setting is reflected to the paperless recorder.
- 5) The Loader cannot use more than 1 window at the same time.
If more than 1 window is open, leave only a single window open and close all of other windows (this can be checked on the Window menu).
- 6) Whenever you want to write the setting data on parameter loader into paperless recorder, please return the display of paperless recorder to Display Mode such as Real Time Trend Screen. Don't display Parameter Setting Screen, or this loader software may miss to write into the paperless recorder.
- 7) When you use this loader to write into the paperless recorder GR200 which the program version is V01A to V05A, and you change the input type to 0 to 5Vdc, paperless recorder receives the input type as 1 to 5Vdc instead of 0 to 5Vdc. And then, this loader's setting is also changed to 1 to 5Vdc. (This is because the main unit does not support 1 to 5Vdc input function.)
- 8) At this loader, some parameters which do not exist on paperless recorder may be displayed. But the parameter which doesn't exist in paperless recorder isn't written.
- 9) **During the paperless recorder is recording or totalizing, it is impossible to write into the equipment from this parameter loader.**

2. BASIC OPERATION

2.1 Start

Click “Programs” ⇒ “Recorder Parameter Loader” ⇒ “Recorder Parameter Loader” from the Start menu.



It is displayed such as following screen.

Note) The screen for maximum channels is displayed, regardless of the number of channels of the paperless recorder.

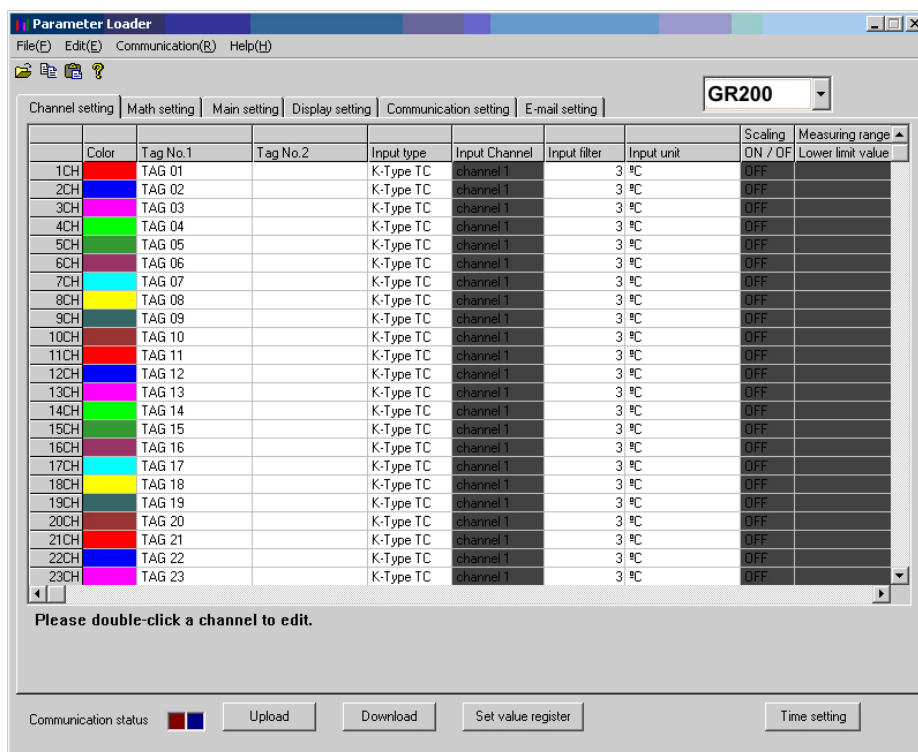


Table of setting channel display

2.2 Table of setting channel display

(7) File menu

(8) Copy the setting value

(2) Communication setting

(1) Selection of setting model

GR200

	Color	Tag No.1	Tag No.2	Input type	Input Channel	Input filter	Input unit	Scaling	Measuring range
1CH	Red	TAG 01		K-Type TC	channel 1		3 °C	OFF	
2CH	Blue	TAG 02		K-Type TC	channel 1		3 °C	OFF	
3CH	Magenta	TAG 03		K-Type TC	channel 1		3 °C	OFF	
4CH	Green	TAG 04		K-Type TC	channel 1		3 °C	OFF	
5CH	Brown	TAG 05		K-Type TC	channel 1		3 °C	OFF	
6CH	Purple	TAG 06		K-Type TC	channel 1		3 °C	OFF	
7CH	Cyan	TAG 07		K-Type TC	channel 1		3 °C	OFF	
8CH	Yellow	TAG 08		K-Type TC	channel 1		3 °C	OFF	
9CH	Grey	TAG 09		K-Type TC	channel 1		3 °C	OFF	
10CH	Dark Red	TAG 10		K-Type TC	channel 1		3 °C	OFF	
11CH	Red	TAG 11		K-Type TC	channel 1		3 °C	OFF	
12CH	Blue	TAG 12		K-Type TC	channel 1		3 °C	OFF	
13CH	Magenta	TAG 13		K-Type TC	channel 1		3 °C	OFF	
14CH	Green	TAG 14		K-Type TC	channel 1		3 °C	OFF	
15CH	Brown	TAG 15		K-Type TC	channel 1		3 °C	OFF	
16CH	Purple	TAG 16		K-Type TC	channel 1		3 °C	OFF	
17CH	Cyan	TAG 17		K-Type TC	channel 1		3 °C	OFF	
18CH	Yellow	TAG 18		K-Type TC	channel 1		3 °C	OFF	
19CH	Grey	TAG 19		K-Type TC	channel 1		3 °C	OFF	
20CH	Dark Red	TAG 20		K-Type TC	channel 1		3 °C	OFF	
21CH	Red	TAG 21		K-Type TC	channel 1		3 °C	OFF	
22CH	Blue	TAG 22		K-Type TC	channel 1		3 °C	OFF	
23CH	Magenta	TAG 23		K-Type TC	channel 1		3 °C	OFF	

Please double-click a channel to edit.

Communication status ■ ■ Upload Download Set value register Time setting

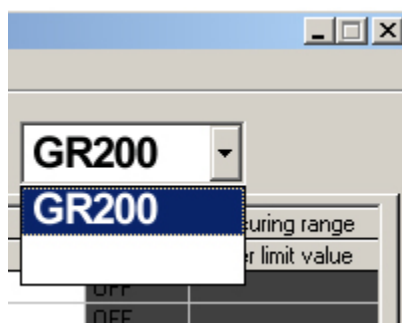
(3) Upload setting value from the paperless recorder

(4) Download setting value to the paperless recorder

(5) Setting of the paperless recorder is stored non-volatile memory

(6) Time setting to the paperless recorder

- (1) Selection of setting model
Setting model can be selected by the parameter loader.



Display contents or setting range on the setting screen varies with each model.

	GR200
Channel setting	18 channels (ch1 to 18)
Calculation channel setting	None
DI setting	10
DO setting range	28
Screen group setting	4 groups

(2) Communication setting

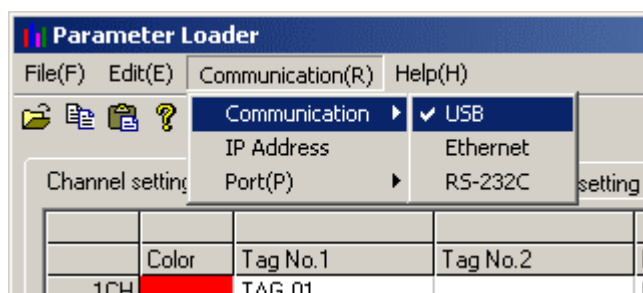
The setting on the communication with the paperless recorder can be made.

a) Communication

The communication method with the paperless recorder can be selected from USB, Ethernet, and RS-232C.

Note:

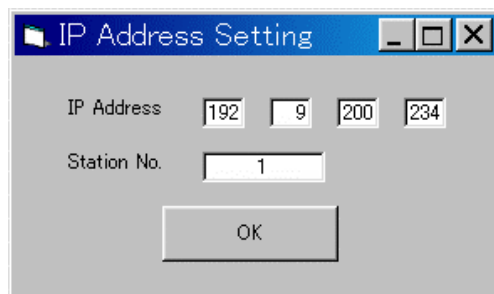
- 1) USB or Ethernet communications cannot be conducted if the program version of the paperless recorder GR200 is V01A to V22A. Make sure to set the station No. of the parameter loader to 1.
- 2) RS-232C communications cannot be conducted if the program version of the paperless recorder GR200 is V27A or later. Note that to conduct Ethernet communications, optional Ethernet communication board is necessary. To conduct USB communications, make sure to set the station No. of the parameter loader to 1.



b) IP Address, Station No.

Setting is necessary to conduct Ethernet communications with the paperless recorder.

IP Address and Station No. of the paperless recorder can be set.



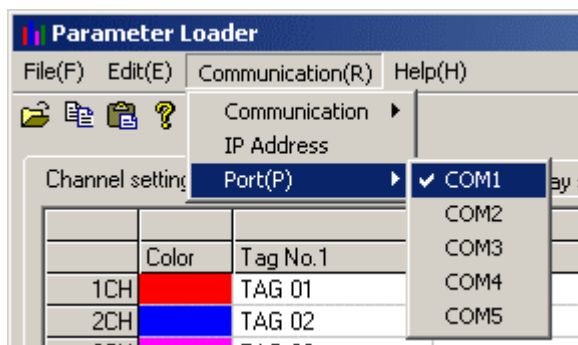
c) Port

Setting is necessary to conduct RS-232C communications with the paperless recorder.

The communication port of the PC used to communicate with the paperless recorder can be set.

This function can change communication port of PC which communicates with paperless recorder. At starting of this loader, COM1 is selected as communication port. Set the port number that you want to use at first.

At the executing screen, click [Com(R)] → [Port(P)] and select using port. Normally, COM1 is selected. (Normally COM1 is selected.)



(3) Upload setting value from the paperless recorder

It is available to upload all the setting such as channel setting, math channel setting, main setting, display setting and so on from the paperless recorder.

(4) Download setting value to the paperless recorder

It is available to download all the setting such as channel setting, math channel setting, main setting, display setting and so on to the paperless recorder.

Note: 1) Download prohibit during recording or totalizing.

2) After the data has been downloaded to the paperless recorder, store non-volatile memory, or the setting value will return to the former value when power is turned OFF.

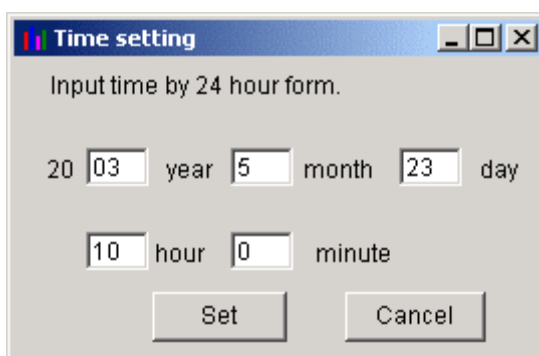
(5) The data downloaded to the paperless recorder can be stored non-volatile memory.

(6) Time setting to the paperless recorder

It is available to change time setting of the paperless recorder. Press [Time setting] button, and screen as shown below appears. Set the time that you want to change. And then press [Change] button.

Note: 1) This setting prohibit during recording or totalizing.

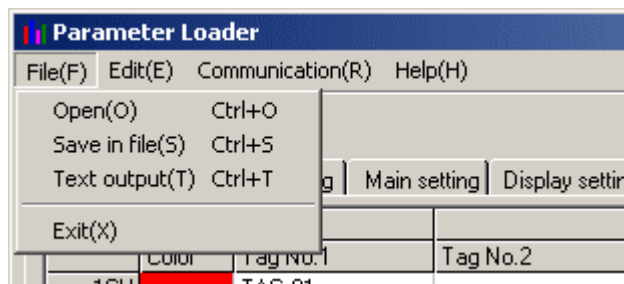
2) This setting is not necessary to be stored non-volatile memory.



Screen of time setting

(7) File menu

This menu, you can use functions as shown below.



a) [Open(O)]

Paperless recorder parameter setting files stored in your PC can be opened.

Parameter setting files stored in the paperless recorder can also be opened.

b) [Save in file(S)]

Parameters currently being set can be stored in your PC. For parameter setting file to be created, extensions vary depending on setting model.

In case of GR200: *****GR200

Parameter setting file to be created: *****.GR200

Substitute ***** with an arbitrary name. Select a file name consisting of alphanumeric characters with 7 uppercase characters or less when a parameter setting file is to be read from a compact flash card to the paperless recorder.

Example:

OK: PARA00.GR200, P123456.GR200 NG: Para00.GR200, P1234567.GR200

(CAUTION)

If the Parameter Loader setting file is made, and to be load from a compact flash card to the old version paperless recorder (V39Aprevious), there are few points that the user needs to be cautions of.

①The password for Start/Stop Recording should be set to"0".

If "0" is not set, everytime during Start/Stop recording operation, the Password Setting screen will display.

②Set all the recording operation channel to "Display Only".

If it is not set to "Display Only", during recording, the operating channel of Measure Value will be recorded.

However, the stated above will not occur when a setting value is written via communication.

When the stated above does occur, the user needs to re-set the setting value again and start all over again.

c) [Text output(T)]

Output setting value as text data..

Please refer to attached “Appendix. 1: Example of setting parameters to be printed out.”

d) [Exit(X)]

Exit this menu.

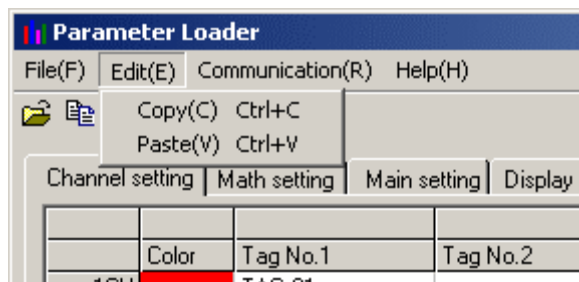
Note: 1) If you change setting value of the paperless recorder, register the setting value before exit this software.

2) If you want to use setting value on another day, it is recommended to save the setting value file of the paperless recorder before exit this software.

(8) Copy the setting value

Copy the setting value such as channel setting, main setting, display setting and so on.

Click in line of original data and press [Copy]. Click in line that you want to copy, and then press [Paste].



2.3 Setting channels

Set the parameter regarding to input, calculation, alarm, display and record of each channel.
On “Table of setting channel display”, double-click the channel you want to change.

And then channel setting display appears.

- * Settable number of channels depends on setting model.
In case of GR200, it is available to set till 18ch regardless of number of channels.
- * There are some screens to be able to display up to 7 characters as channel tag in spite of setting is available up to 8 characters. So don't set 8 characters as channel tag.
- * When you set out of the range, message as shown below appears.



Message in recording range

- * Press [Apply] after changing channel setting, or your setting isn't registered, so when you turn off and on the paperless recorder, setting value returns before you change.

* The input type becomes same kind in every two channels set.

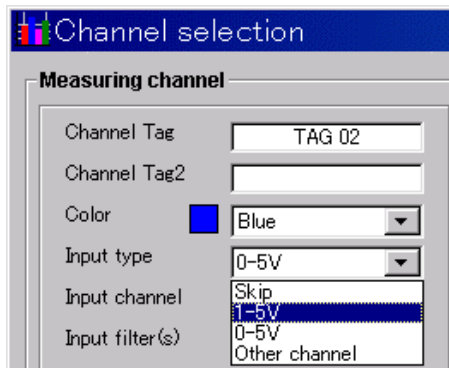
(1) When input type of each channel is changed, setting is subjected to limitations.

In case of GR200: The type setting of channel 2, 4, 6, 8, 11, 13, 15 and 17 is available only with the same input category of previous channel. Note that, channel 9 and 18 can select the input type regardless of other channels.

Input type is shown as follows.

Input category	Input type
Thermocouple, 50mV	K-Type TC, E-Type TC, J-Type TC, T-Type TC, R-Type TC, S-Type TC, B-Type TC, N-Type TC, W-Type TC, L-Type TC, U-Type TC, PN-Type TC, 50mV
Resistance bulb	Pt100Ω, JPt100Ω
500mV	500mV
5V	1 to 5Vdc, 0 to 5Vdc

For example, when channel 1 is set to 1 to 5V, channel 2 is available to set only 1-5V, 0-5V, or Skip as shown below.



Example: Setting input type of each channel

	Input type	Input type	Explanation
Channel 1	K-Type TC	Thermocouple, 50mV	It is available to set any type of TC to each channel.
Channel 2	T-Type TC		
Channel 3	1 to 5V	5V	
Channel 4	0 to 5V		
Channel 5	Pt100	Resistance bulb	It is available to set any type of resistance bulb to each channel.
Channel 6	JPt100		
Channel 7	500mV	500mV	
Channel 8	500mV		
Channel 9	J-Type TC	Thermocouple, 50mV	It is available to set any input type to channel 9.
Channel 10	K-Type TC	Thermocouple, 50mV	The same input type is basically allocated to 2 channels.
Channel 11	50mV		
Channel 12	Skip	5V	It is available to set skip under any input type.
Channel 13	1 to 5V		
Channel 14	Pt100	Resistance bulb	
Channel 15	Skip		
Channel 16	Skip	500mV	
Channel 17	500mV		
Channel 18	50mV	Thermocouple, 50mV	It is available to set any input type to channel 18.

- (2) When the input type of the channel is changed, the initialization of the input type of next channel might be required.

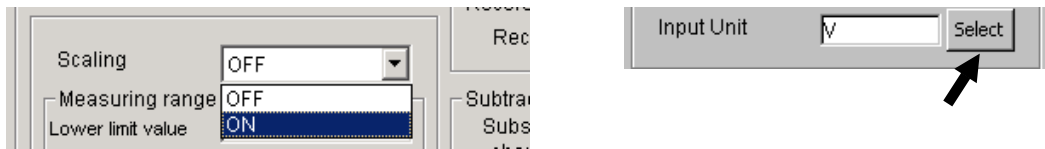
In case of GR200:

When the input type for channels 1, 3, 5, 7, 10, 12, 14 and 16 is changed, the initialization of the next channel might be required.

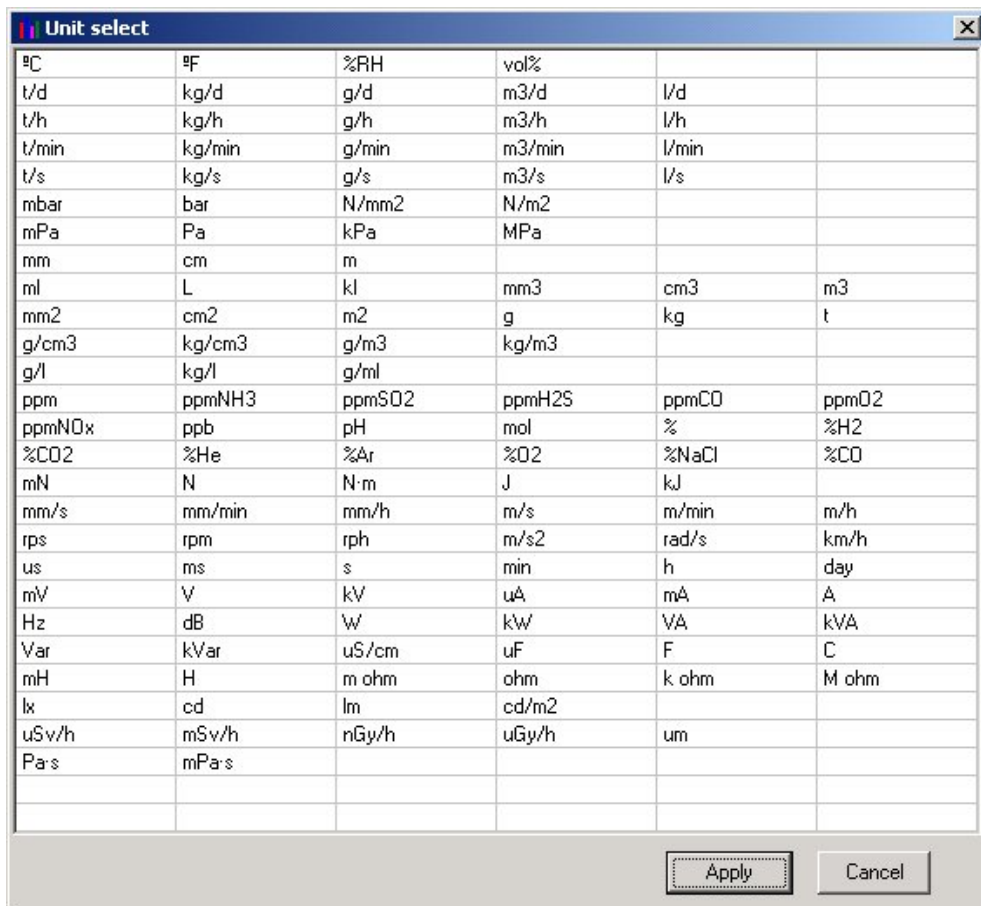


At this screen, if you press [OK] button, the input type of next channel is initialized to the same input type of current displayed channel. In case of 50mV, the next channel becomes K-type TC. In case of resistance bulb, the next becomes Pt100Ω.

- * When you set input unit, set ON the “Scaling” at first. And then press “SELECT” key. In case of Thermocouple or Resistance bulb input, it is available to select either Celsius or Fahrenheit. And the others unit are not displayed.



The Unit Select screen appears. On the screen that is displayed, click a unit and press the [Apply] button. Note that the unit cannot be selected without pressing the [Apply] button.



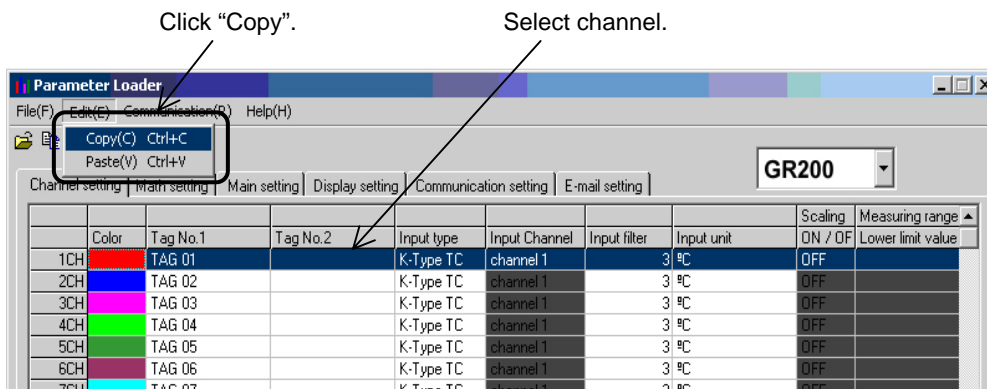
Example: At voltage input and scaling ON

2.3.1 Copying the channel set

This screen allows you to copy one or more set values from one channel to another.

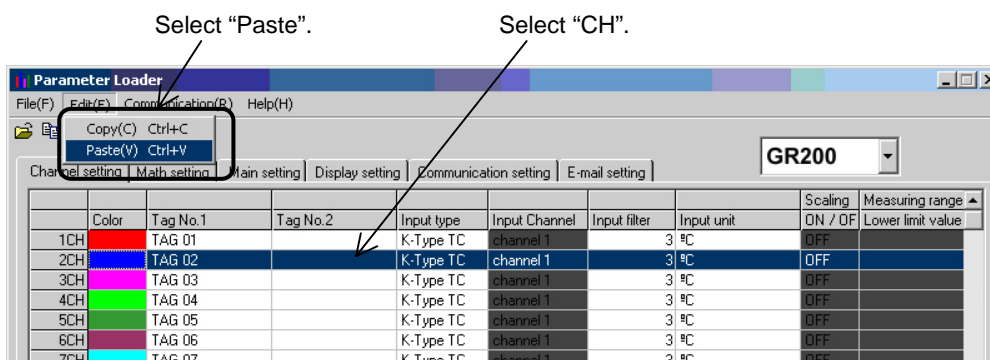
Move the cursor to CH on the Table of Setting Channel display, and click it (channel selection).

Click [Edit] → [Copy].



Move the cursor to CH where you want to paste channel settings and click it (Channel selection).

Click [Edit] → [Paste].



Next, the following message appears, prompting you to select the option.

Click [OK] when you want to copy the channel setting.

If the input type is different between current type and new one, the paperless recorder works such as below.

(1) Copying of Channel Setting in GR200

- 1) When the copy destination is cannels 1 to 8, and 10 to 17:

The same input types (*2) are used for their paired channels (*1).

(*1: The paired channels are 1ch and 2ch, 3ch and 4ch, 5ch and 6ch, 7ch and 8ch, 10ch and 11ch, 12ch and 13ch, 14ch and 15ch, and 16ch and 17ch.)

(*2: The K thermocouple input is used for the thermocouple, and the Pt100Ω input for the resistance thermometer.)

- 2) When the copy destination is 9ch and 18ch:

No channel changes other than 9ch and 18ch.

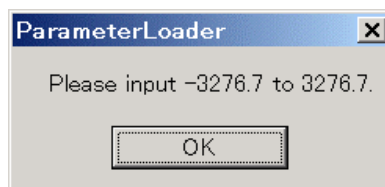


2.4 Setting of Computing Channel

Settings of the arithmetic expression, input, integration, warning and display record for each computing channel are performed. Put the cursor on the desired channel in the screen, displaying the list of the computing channel settings, and double-click it.

The computing channel setting screen appears.

- * Number of math channels differs according to model setting.
When GR200 is selected : It is available to set till 12 channels between ch19 and ch30.
- * There are some screen to be able to display up to 7 characters as channel tag in spite of setting is available up to 8 characters. So don't set 8 characters as channel tag.
- * When you set out of the range, message as shown below appears.

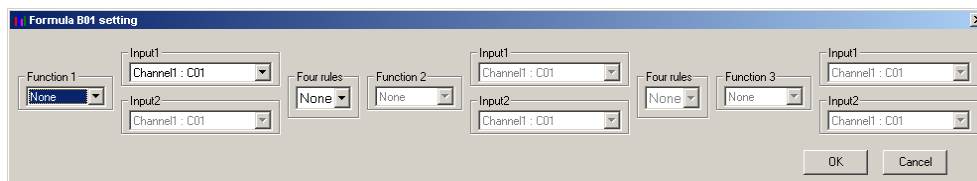


Recording range display

- * Press [Apply] after changing channel setting, or your setting isn't registered, so when you turn off and on the recorder, setting value returns before you change.

2.4.1 Setting of Arithmetic Expression

Click the “Setting” button in the computing channel setting screen.



The arithmetic expression setting screen appears.

Select an arithmetic function and an input value and click “OK”.

< List of functions usable for arithmetic expression >

Display	Function	Description
No display	No arithmetic operation	No arithmetic operation is performed. The input value is used as is.
ABS(A)	Absolute value	The absolute value of the value in the input A is found.
POW(A,B)	Exponentiation	The “input B” power of the value in the input A is calculated.
SQR(A)	Square root	The square root of the value in the input A is calculated.
LOG(A)	Log	The common logarithm in the input A is calculated.
LN(A)	LN	The natural logarithm in the input A is calculated.
EXP(A)	EXP	“e exponentiation” of the value in the input A is calculated.
RH(A,B)	Humidity	The relative humidity is calculated when the input A is dry-bulb temperature and the input B is wet-bulb temperature.
MAX(A,B)	Maximum value (between channels)	The inputs A and B are compared to find the bigger value.
MIN(A,B)	Minimum value (between channels)	The inputs A and B are compared to find the smaller value.
H-P(A)	Maximum value (time)	The maximum value in the input A during a specified time is found.
L-P(A)	Minimum value (time)	The minimum value in the input A during a specified time is found.
AVG(A)	Average value	The average value in the input A during a specified time is calculated
SUM(A,B)	Cumulative value	The cumulative value in the input (A/B) during a specified time is calculated. Cumulating calculation is performed every minute.

< List of inputs usable for arithmetic expression >

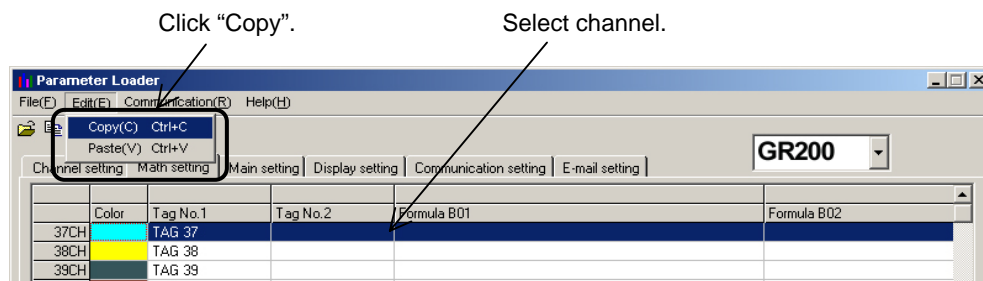
Display	Content	Display example
Channel	Channel input	C01
Cumulating calculation	Channel cumulative value	T01
DI	DI input	D01
Communication	Communication input	M01
Constant	Constant	K01
Temporary data	Result of the last expression	B01

2.4.2 Copying of Computing Channel

A setting value is copied to other computing channel.

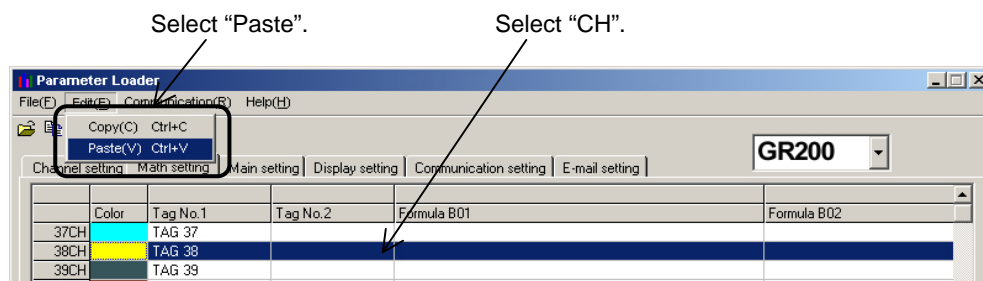
Put the cursor on the channel to be copied in the computing channel setting list screen, and click it (channel selection).

Click the “Edit” menu and select “Copy”.



Put the cursor on the copy destination and click it (channel selection).

Click the “Edit” menu and select “Paste”.



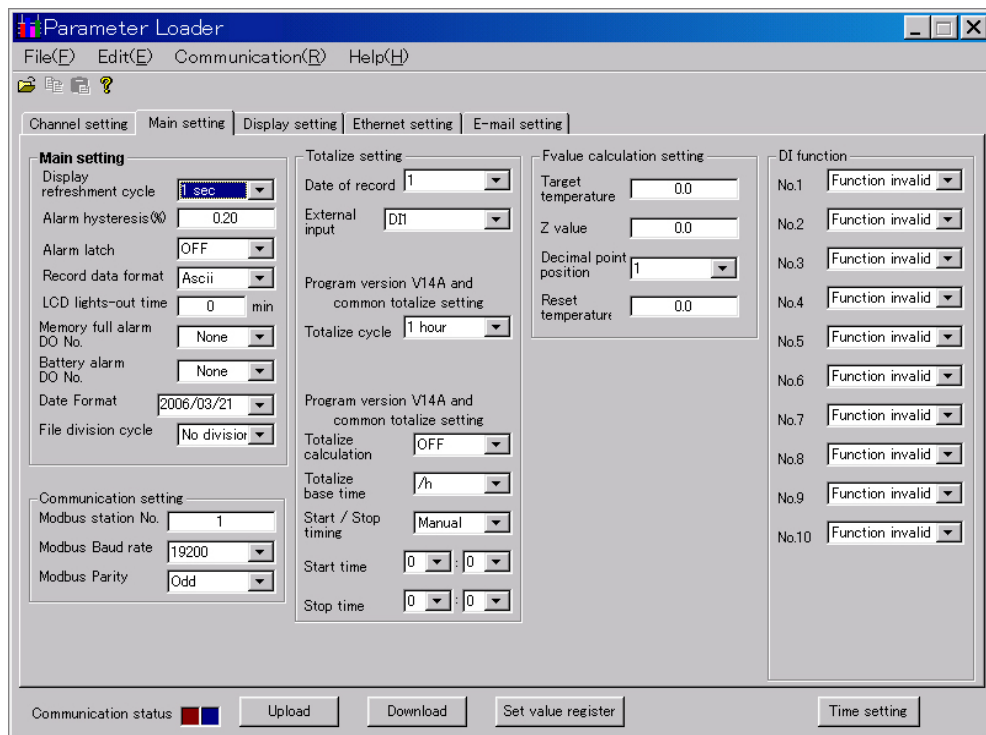
Then the confirmation message appears.

When the “OK” button is pressed, copying is performed.

2.5 Setting the main unit

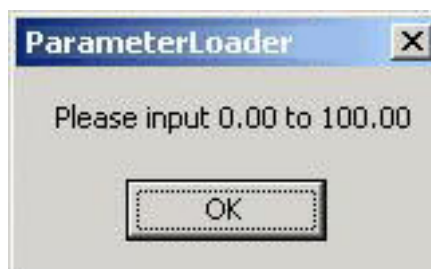
This screen allows you to set the recorder main unit.

Move the cursor to “Main setting” on the Table of Setting Channel display, and click it.



The Main unit Set screen appears.

- * Settable items vary depending on setting model.
(The above screen is displayed when the setting model is GR200.)
- * If values are entered over the specified range, the following message appears.



Alarm Hysteresis message

2.5.1 DI function (external control unit) setting (option)

The DI function determines whether ON/OFF input from external devices connected to external terminal is accepted or not.

DI point varies depending on setting model.

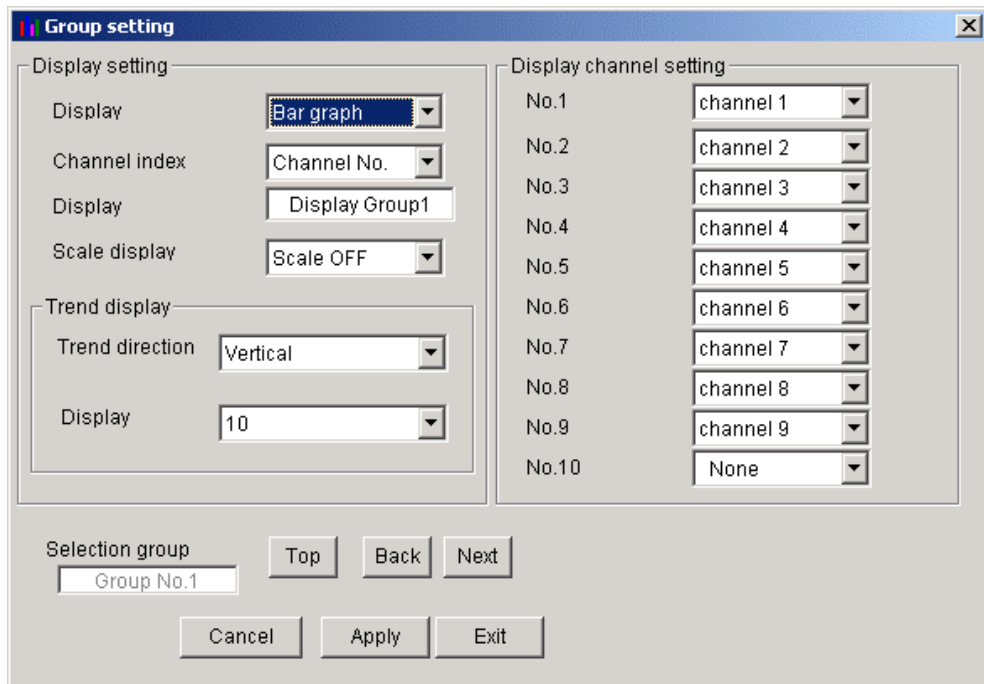
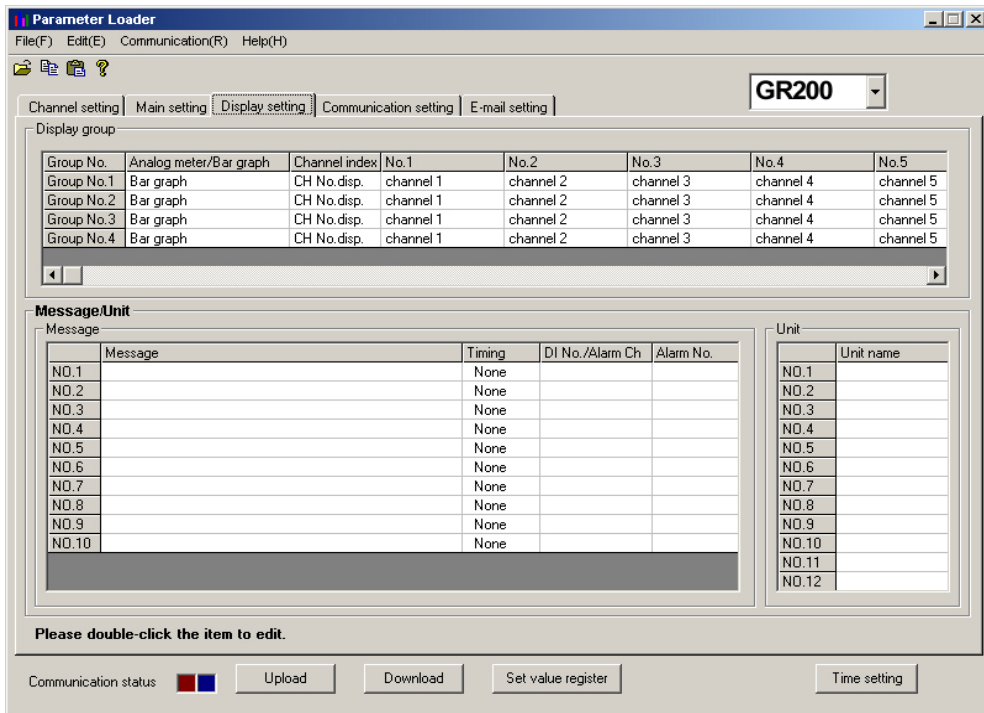
GR200: DI1 to DI10 (Max. 10 points)



Note: Without the DI option, DI function cannot be used.

2.6 Display setting

At this screen, you can see or set regarding to screen setting such as structure of screen, trend display screen and so on. Click “Display setting” tab of Structure of setting channel display.



Setting screen appears and you can see status about screen setting.

2.6.1 Display setting

At this screen, you can set regarding to screen setting such as structure of screen, trend display screen and so on. Double click the group No. at “Display group” column on Display setting screen,

* Edit the displayed group on “Selected group No.”.

-
- * Screen name (up to 16 characters) can be set to the recorder.
 - * If scale display is ON, trend screen is divided in accordance with the scale, not the setting of “Display divided”.

2.6.2 Setting channels

Set the structure of screen.

No.1 at this screen equals to data 1 of “display setting” of the paperless recorder, No.2 equals to data 2.

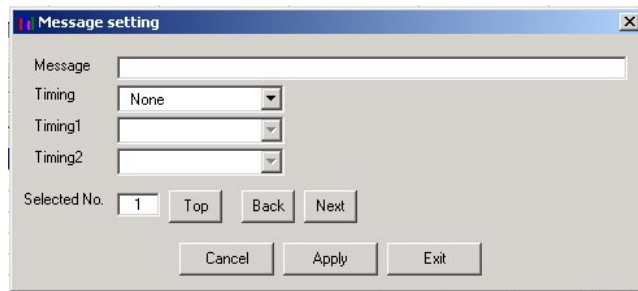
Following is the same as above until No.10.

- * In case of the paperless recorder is 9 inputs type, this screen displays until No.10.

2.6.3 Setting message

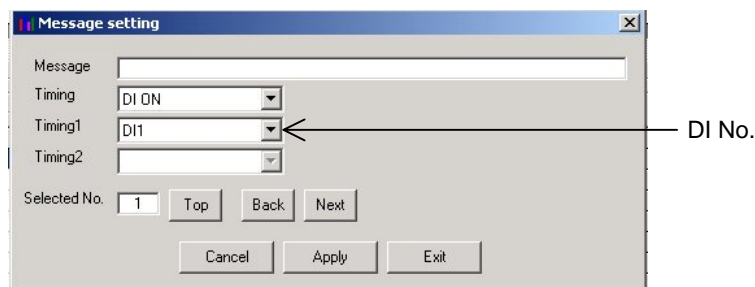
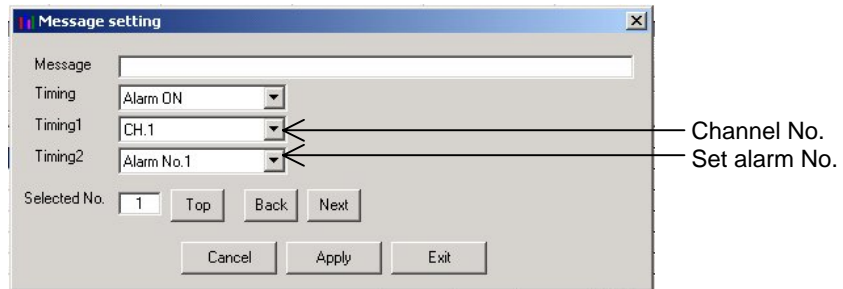
The screen allows you to set messages to be displayed when an event occurs.

Move the cursor to No. of the Message box on the Main Unit Set screen and double-click it.



The Message Setting screen appears.

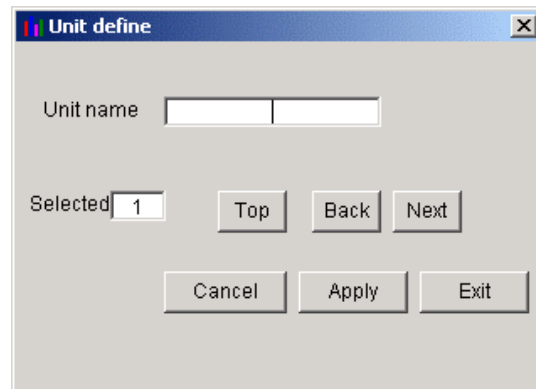
- * Up to 32 characters is available for the message. The characters exceeding 32 cannot be displayed on the recorder main unit.
- * After the input of message set data, be sure to press the "Apply" button, or the message cannot be registered.
- * Message timing is allocated as follows:



2.6.4 Unit coding

Units can be made in alphanumerical characters. This unit can be registered in the input unit when scaling is set to ON on the Channel Setting screen.

Move the cursor to No. of the Unit box on the Main Unit Set screen and double-click it.



The Unit Setting screen appears.

- * A message (unit) consisting of up to 7 characters is available for the recording main unit.
- * After the input of unit set data, be sure to press the “Apply” button, or the unit cannot be registered.

2.7 Ethernet communication setting

Settings related to Ethernet communications such as IP address, user name, operation setting of each Ethernet communication function of the paperless recorder can be checked or made.

- * Ethernet communication function cannot be used unless the paperless recorder main unit is provided with Ethernet communication option.

The screenshot shows the 'Parameter Loader' software window for a 'GR200' device. The interface includes a menu bar (File(F), Edit(E), Communication(R), Help(H)), a toolbar, and several tabs: Channel setting, Main setting, Display setting, Communication setting, and E-mail setting. The 'Communication setting' tab is active, displaying the following sections:

- Ethernet setting:** IP Address (192.168.1.2), Subnet mask (255.255.255.0), Default gateway (0.0.0.0).
- User account table:**

	User name	Password	User level
1.	SystemTaro	a19b23	administrator
2.	Kirokukeiho	65790	guest
3.			administrator
4.			administrator
5.			administrator
6.			administrator
7.			administrator
8.			administrator
- FTP server setting:** FTP server function (ON), FTP access control (ON).
- Web server setting:** Web server function (ON).
- E-mail setting:** E-mail function (ON).
- MODBUS TCP/IP setting:** MODBUS TCP/IP function (ON).
- Communication setting:** MODBUS station No. (1), MODBUS baud rate(bps) (19200), MODBUS Parity (Odd).

At the bottom, there is a warning: "When you change parameters other than "User account", please re-switch on a power supply." Below this are buttons for "Communication status" (with a red and blue indicator), "Upload", "Download", "Set value register", and "Time setting".

- * Up to 16 characters can be entered as user name.
- * Up to 8 characters can be entered as password.

2.8 E-mail communication setting

Settings related to E-mail communications such as send/receive address and send trigger can be made.

- * E-mail communication function cannot be used unless the paperless recorder main unit is provided with Ethernet communication option.

The screenshot shows the 'Parameter Loader' software interface. The 'E-mail setting' tab is active, displaying the following fields:

- SMTP(Mail server) IP address: 192 . 168 . 0 . 1
- Sender's mail address: boiler035@test.co.jp
- Sender's name: Boiler035
- Receiver's mail address: A list of 8 addresses, with the first two being System-Taro@test.co.jp and Kiroku-Keiko@test.co.jp.

The 'E-mail trigger setting' tab is also visible, showing a table with the following data:

	Title	Text 1	Text 2
1	Manufacture start.	Manufacture start.	Boiler035
2	Boiler035 a regular report	a regular report	Boiler035
3	The temperaturo is abnormal !	The temperature is abnormal !	Boiler035
4			
5			
6			
7			

At the bottom of the interface, there are buttons for 'Communication status' (with a red and blue indicator), 'Upload', 'Download', 'Set value register', and 'Time setting'.

- * Up to 64 characters can be entered as send/receive address.
- * Up to 32 characters can be entered as sender name.

2.8.1 E-mail trigger setting

Other conditions for E-mail transmission can be selected as follows.

Move the cursor to “E-mail trigger” on the E-mail setting screen and double-click it.

The screenshot shows the 'E-mail trigger setting' dialog box. The 'Trigger timing' is set to 'None'. There are two empty dropdown menus below it. The 'Alarm No.' is also set to a dropdown menu. The 'Title', 'Comment1', and 'Comment2' fields are empty text boxes. The 'PV value affixation' is set to 'OFF'. The 'Receiver's mail address No.' section has checkboxes for 1 through 8. Below this is a 'Selected No.' field with '1' entered, and 'Top', 'Back', and 'Next' buttons. At the bottom are 'Cancel', 'Apply', and 'Exit' buttons.

- * Up to 32 characters can be entered as the title of E-mail and comments 1 and 2.
- * Be sure to press the [Apply] button to confirm the E-mail trigger setting data that has been entered.
- * E-mail trigger timing is allocated as shown below.

- When sending E-mail by DI operation

This screenshot shows the 'E-mail trigger setting' dialog box configured for DI operation. The 'Trigger timing' is set to 'DI ON'. The 'DI No.' dropdown is set to 'DI1', and an arrow points from this dropdown to a 'DI No.' text input field. The 'Alarm No.' is set to a dropdown menu. The 'Title', 'Comment1', and 'Comment2' fields are empty. The 'PV value affixation' is set to 'OFF'. The 'Receiver's mail address No.' has checkboxes for 1 through 8. Below this is a 'Selected No.' field with '1' entered, and 'Top', 'Back', and 'Next' buttons. At the bottom are 'Cancel', 'Apply', and 'Exit' buttons.

- When sending E-mail by alarm operation

This screenshot shows the 'E-mail trigger setting' dialog box configured for alarm operation. The 'Trigger timing' is set to 'Alarm ON'. The 'Alarm CH' dropdown is set to 'channnel1', and an arrow points from this dropdown to a 'Channel No.' text input field. The 'Alarm No.' is set to 'No.1', and an arrow points from this dropdown to an 'Alarm No.' text input field. The 'Title', 'Comment1', and 'Comment2' fields are empty. The 'PV value affixation' is set to 'OFF'. The 'Receiver's mail address No.' has checkboxes for 1 through 8. Below this is a 'Selected No.' field with '1' entered, and 'Top', 'Back', and 'Next' buttons. At the bottom are 'Cancel', 'Apply', and 'Exit' buttons.

- When sending E-mail by alarm operation of the main unit
- When sending E-mail at fixed intervals

The screenshot shows the 'E-mail trigger setting' dialog box with the following fields and controls:

- Trigger timing:** A dropdown menu set to 'Warning'.
- Warning type:** A dropdown menu set to 'Alarm ON(All ch)'. An arrow points from this dropdown to a text box labeled 'Alarm contents'.
- Title:** A text input field.
- Text 1:** A text input field.
- Text 2:** A text input field.
- PV value affixation:** A dropdown menu set to 'OFF'.
- Receiver's mail address No.:** A row of eight checkboxes labeled 1 through 8.
- Selected No.:** A dropdown menu set to '4', with 'Top', 'Back', and 'Next' buttons.
- Buttons:** 'Cancel', 'Apply', and 'Exit' buttons at the bottom.

The screenshot shows the 'E-mail trigger setting' dialog box with the following fields and controls:

- Trigger timing:** A dropdown menu set to 'Timer cycle'.
- Time:** A dropdown menu set to '1hour'. An arrow points from this dropdown to a text box labeled 'Transmission interval'.
- Time base(hour):** A dropdown menu set to '00:00'. An arrow points from this dropdown to a text box labeled 'Reference time'.
- Title:** A text input field.
- Text 1:** A text input field.
- Text 2:** A text input field.
- PV value affixation:** A dropdown menu set to 'OFF'.
- Receiver's mail address No.:** A row of eight checkboxes labeled 1 through 8.
- Selected No.:** A dropdown menu set to '4', with 'Top', 'Back', and 'Next' buttons.
- Buttons:** 'Cancel', 'Apply', and 'Exit' buttons at the bottom.

APPENDIX.1 EXAMPLE OF SETTING PARAMETERS TO BE PRINTED OUT

2006/03/21 20:20:39

PLC : GR200-OAM000006020
 Ser.No. : LYT0006T
 Ver. : V31A

*****Channel setting*****

CH	Input type	Color	Tag No.1	Tag No.2	Input unit	Other CH Input	Scaling ON/OFF1	Measuring range		Engineering unit	
								Min	Max	Min	Max
CH1	K-Type TC	Sky blue	Tag 01	Tag 2-01	°C	channel 1	OFF	0.0	500.0	0.0	500.0
CH2	T-Type TC	Yellowish green	Tag 02	Tag 2-02	°F	channel 1	OFF	0.0	500.0	0.0	500.0
CH3	Pt100	Violet	Tag 03	Tag 2-03	°F	channel 1	OFF	0.0	500.0	0.0	500.0
CH4	JPt100	Green	Tag 04	Tag 2-04	°C	channel 1	OFF	0.0	500.0	0.0	500.0
CH5	500mV	Deep green	Tag 05	Tag 2-05	mV	channel 1	ON	2.0	522.0	-500.0	550.0
CH6	500mV	Purple	Tag 06	Tag 2-06	mV	channel 1	OFF	0.0	500.0	0.0	500.0
CH7	500mV	Red	Tag 07	Tag 2-07	mV	channel 1	OFF	0.0	500.0	0.0	500.0
CH8	500mV	Yellow	Tag 08	Tag 2-08	mV	channel 1	OFF	0.0	500.0	0.0	500.0
CH9	0-5V	Indigo	Tag 09	Tag 2-09	V	channel 1	ON	0.123	5.123	1.900	5.900
CH10	B-Type TC	Dark red	Tag 10	Tag 2-10	°C	channel 1	OFF	0.0	500.0	0.0	500.0
CH11	50mV	Red	Tag 11	Tag 2-11	mV	channel 1	OFF	0.00	50.00	0.00	50.00
CH12	500mV	Blue	Tag 12	Tag 2-12	mV	channel 1	ON	10.0	502.0	0.5200	0.0000
CH13	500mV	Violet	Tag 13	Tag 2-13	mV	channel 1	OFF	0.0	500.0	0.0	500.0
CH14	JPt100	Purple	Tag 14	Tag 2-14	°F	channel 1	OFF	0.0	500.0	0.0	500.0
CH15	Pt100	Deep green	Tag 15	Tag 2-15	°F	channel 1	OFF	0.0	500.0	0.0	500.0
CH16	0-5V	Purple	Tag 16	Tag 2-16	V	channel 1	OFF	0.000	5.000	0.000	5.000
CH17	0-5V	Pale blue	Tag 17	Tag 2-17	V	channel 1	OFF	0.000	5.000	0.000	5.000
CH18	1-5V	Blue	Tag 18	Tag 2-18	V	channel 1	ON	2.000	4.000	80	5008

CH	Square Input		PV shift	PV gain	channel	Subtract cal.	Fvalue mode	Recording type	RecordingDiplay range	
	Rooter	filter							Min	Max
CH1	OFF	3	1.0	100.01	None	OFF	With record	Min-Max value	0.0	200.0
CH2	OFF	0	0.2	100.02	None	OFF	With record	Point value	32.0	572.0
CH3	OFF	3	0.3	100.03	channel 2	OFF	With record	Average value	32.0	932.0
CH4	OFF	4	400.0	140.00	channel 9	ON	With record	Min-Max value	4.000	5.004
CH5	OFF	5	-50.0	50.00	channel 4	OFF	With record	Point value	0.5	500.0
CH6	OFF	6	0.6	100.00	channel 5	OFF	With record	Average value	0.6	500.6
CH7	OFF	7	0.0	100.00	None	OFF	With record	Min-Max value	0.0	500.0
CH8	OFF	8	0.0	100.00	None	OFF	With record	Point value	0.0	500.0
CH9	ON	0	9.000	109.00	channel 2	ON	With record	Average value	0.900	5.090
CH10	OFF	3	1.0	101.00	None	OFF	With record	Min-Max value	600.0	700.0
CH11	OFF	3	0.00	100.00	None	OFF	With record	Point value	0.00	50.00
CH12	ON	90	0.1000	100.00	channel 18	ON	With record	Average value	5.000	0.000
CH13	OFF	3	0.0	100.00	None	OFF	With record	Min-Max value	0.0	500.0
CH14	OFF	10	10.0	90.00	channel 18	ON	With record	Point value	0.000	5.000
CH15	OFF	5	0.0	100.00	channel 3	OFF	With record	Average value	0.0	500.0
CH16	OFF	3	0.000	100.00	None	OFF	With record	Min-Max value	0.000	5.000
CH17	OFF	3	0.000	100.00	None	OFF	With record	Point value	0.000	5.000
CH18	ON	20	0	0.00	None	OFF	With record	Point value	1	10

*****Totalize setting*****

CH	Totalize Tag	Totalize cal.c.	Totalize Type	External input	Totalize Base time	Reset operation	Totalize Unit	Totalize Cut value	Totalize Scale value
CH2	TAG 02	Totalizer	OFF	Ch1 Alarm2	/min	OFF	rps	0.0	3
CH3	STAG 03	Totalizer	Daily	DI1	/h	ON	SEC	0.0	4
CH4	TAG 04	Totalizer	Daily	DI1	/h	ON	m/s2	0.010	3600
CH5	STAG 05	Totalizer	Daily	DI3	/min	OFF	uGy/h	50.0	9999
CH6	STAG 06	Totalizer	Annual	Ch6 Alarm3	/day	OFF	dB	60.0	160
CH7	STAG 07	Totalizer	OFF	DI1	/h	ON	%NaCl	0.0	32767
CH8	TAG 08	Totalizer	Daily	DI1	/h	ON		0.0	1
CH9	STAG 09	Totalizer	Monthly	Ch13 Alarm3	/day	ON	m/min	0.090	19
CH10	STAG 10	Totalizer	External input	DI1	/min	ON	mol	370.0	32
CH11	STAG 11	Totalizer	Daily	DI1	/h	ON		0.00	100
CH12	STAG 12	Totalizer	OFF	DI9	/s	OFF	km/h	1.200	54
CH13	STAG 13	Totalizer	Daily	DI1	/h	ON		0.0	3
CH14	STAG 14	Totalizer	Daily	DI1	/h	ON	min	1.100	1
CH15	STAG 15	Totalizer	OFF	DI1	/min	OFF	mm/min	-10.0	15
CH16	STAG 16	Totalizer	Daily	DI1	/h	ON		0.000	65
CH17	STAG 17	Totalizer	OFF	DI1	/s	ON	uGy/h	0.170	17
CH18	STAG 18	Totalizer	Daily	DI1	/h	ON		0	18

*****Alarm setting*****

Alarm No. 1			Alarm No. 2			Alarm No. 3			Alarm No. 4			
Alarm type	Alarm set value	DO relay No.	Alarm type	Alarm set value	DO relay No.	Alarm type	Alarm set value	DO relay No.	Alarm type	Alarm set value	DO relay No.	
CH1	H	100.0	1	H	100.0	2	H	100.0	3	H	100.0	4
CH2	H	800.0	None	OFF	0.0	None	OFF	0.0	None	L	200.0	None
CH3	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH4	H	0.400	1	OFF	0.040	2	L	0.004	5	OFF	4.000	3
CH5	H	50.0	28	L	50.0	27	H	50.0	26	L	50.0	25
CH6	H	500.0	1	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH7	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH8	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH9	L	0.900	3	H	0.900	5	L	0.900	6	H	0.900	28
CH10	OFF	600.0	5	H	600.0	None	L	600.0	22	H	600.0	None
CH11	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None
CH12	L	0.100	4	H	0.200	6	OFF	0.300	None	OFF	0.400	27
CH13	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH14	H	0.000	None	L	0.000	None	OFF	0.300	None	OFF	0.500	None
CH15	L	40.0	None	H	30.0	5	H	20.0	27	OFF	10.0	4
CH16	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None
CH17	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None
CH18	OFF	1000	None	H	1000	None	L	1000	None	H	1000	None

*****Main setting*****

Display refreshment cycle 1 sec Alarm hysteresis 1.32 (%) Alarm latch OFF
 LCD lights-out time 0 min Memory full alarm DO No. 5 Battery alarm DO No. 4
 Modbus station No. 1 Modbus baud rate 19200 bps Modbus parity Odd
 Recording data format Binary Display time format Mar-21-06 File division cycle No division

*****Fvalue calculation setting*****

Target temperature 100.0 °C Z value 200.0 °C Decimal point position 3
 Reset temperature 10.0 °C

*****Totalize setting*****

Daily totalize cycle 12 hour Annual base day 31
 Extrnal input DI1

Program version V14A exclusive use totalize setting

Totalize calculation OFF Totalize base time /h Totalize recording cycle 12 hour
 Start/Stop timing Manual Start time-Stop time 23:06 - 22:59

*****Display setting*****

Content of screen composition											
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10	
Display group1	channel 1	channel 2	channel 3	channel 4	channel 5	channel 6	channel 7	channel 8	channel 9	channel 10	
Display group2	channel 11	channel 12	channel 13	channel 14	None	None	None	None	None	None	
Display group3	channel 15	channel 16	channel 17	channel 18	None	None	None	None	None	None	
Display group4	channel 1	channel 2	channel 3	channel 4	None	None	None	None	None	None	

	Trend	Display	Scale	Bar graph/	Color bar
Display name	direction	display on No.	display	Analog meter	display selection
Display group1 1. Display Group1	Vertical	20	ON	Bar graph	Tag No.
Display group2 2. Display Group2	Horizontal	13	ON	Analog meter	Channel No.
Display group3 3. Display Group3	Vertical	7	OFF	Bar graph	Unit
Display group4 4. Display Group4	Horizontal	10	OFF	Analog meter	Tag No.

*****Message setting*****

Message	Timing1	DI NO. /	Alarm Channel	Alarm NO.
No. 1 Message DI 1 ON	DI ON	DI 1		
No. 2 Message DI 5 OFF	DI OFF	DI 5		
No. 3 Message Channel 18 Alarm No. 1 ON		Alarm ON	CH. 18	Alarm No. 1
No. 4 Message Channel 18 Alarm No. 1 OF		Alarm OFF	CH. 18	Alarm No. 1
No. 5 Message DI 4 ON	DI ON	DI 4		
No. 6 Message Channel 18 Alarm No. 3 OFF		Alarm OFF	CH. 18	Alarm No. 3
No. 7 Message Channel 18 Alarm No. 2 ON		Alarm ON	CH. 18	Alarm No. 2
No. 8 Message DI 4 OFF	DI OFF	DI 4		
No. 9 Message Channel 05 Alarm No. 4 OFF		Alarm OFF	CH. 5	Alarm No. 4
No. 10 Message Channel 04 Alarm No. 2 ON		Alarm ON	CH. 4	Alarm No. 2

*****Original Unit definition*****

Unit	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
		mPa	SEC			
Unit	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12

*****DI function setting*****

DI-1 Rec start/stop DI-6 Rec start/stop
 DI-2 Fvalue calc. reset DI-7 Rec start/stop
 DI-3 Totalize start/stop DI-8 Fvalue calc. reset
 DI-4 Function invalid DI-9 Totalize start/stop
 DI-5 Rec start/stop DI-10 Totalize reset

****Ethernet setting****

Ethernet setting
 IP Address 192 . 168 . 0 . 2
 Subnet mask 255 . 255 . 255 . 0
 Default gateway 0 . 0 . 0 . 0

FTP server setting
 FTP server function ON
 Access control ON

Web Server setting
 Web server function ON

E-mail setting
 E-mail function ON

MODBUS TCP/IP setting
 MODBUS TCP/IP function ON

User account setting

User name	Password	User level
1. SystemTaro	a19b23	Administrator
2. Ki rokuKei ko	65790	Guest
3.		Administrator
4.		Administrator
5.		Administrator
6.		Administrator
7.		Administrator
8.		Administrator

****E-mail setting****

SMTP(Mail server) IP address 192 . 198 . 0 . 1
 Sender's mail address boiler035@test.co.jp
 Sender's name Boiler035

Receiver's mail address

1. System-Taro@test.co.jp
2. Ki roku-Kei ko@test.co.jp
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

E-mail trigger setting

No.	Title	Text 1	Text 2
No. 1	Product1 manufacturing begi nni ng	Product1 manufacturi ng begi nni ng	Boi ler035
No. 2	Boiler035 report at regul ar time	Report at regular time	Boi ler035
No. 3	The temperature is abnormal!	The temperature is abnormal.	Boi ler035
No. 4			
No. 5			
No. 6			
No. 7			
No. 8			
No. 9			
No. 10			

Trigger timmi ng	Timmi ng1	Timmi ng2	PV Val ue	No1	No2	No3	No4	No5	No6	No7	No8
No. 1	DI ON	DI 2	-	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
No. 2	Timer cycle	12hour	01:00	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
No. 3	Al arm ON	channel 1	No. 4	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
No. 4	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
No. 5	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
No. 6	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
No. 7	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
No. 8	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
No. 9	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
No. 10	None	-	-	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

SHINKO TECHNOS CO., LTD.

OVERSEAS DIVISION

Reg. Office : 2-5-1, Senbahigashi, Minoo, Osaka, 562-0035, Japan

Tel : 81-72-727-6100

Fax : 81-72-727-7006

URL : <http://www.shinko-technos.co.jp>

E-mail : overseas@shinko-technos.co.jp