Instruction Manual

PARAMETER LOADER FOR PAPERLESS RECORDER

TYPE: PHL

Fuji Electric Instruments Co., Ltd.

INP-TN513995-E

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 Fuji'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, Fuji 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.

(Note) Windows 98/2000/XP are registered trademarks of Microsoft Corporation.

Request

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

Issued in March, 2004

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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

The parameter loader (hereinafter referred to as Loader) for the paperless recorder allows you to view (upload), edit, and set (download) parameters for the paperless recorder by connecting dedicated cable (option) of the Loader to the paperless recorder.

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 98, 2000 or XP.
- Hard disk with a free capacity of 30MB or more
- RAM with 64MB or more
- RS-232C serial port
- Communication cable dedicated to parameter loader only (Option: PHZP0201)

  Note: 1) Operation by the self-made AT compatible machine and the remodeling machine is not secured.
  Trouble might be caused in operation in a part of AT compatible machine or OS.
  2) Operation by Windows 95/Me/NT is not secured.

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) Execute “E_top.pdf” saved at “English” folder in the CD-ROM.
5) Follow the prompts displayed on the screen.
6) A message is displayed, prompting you to verify that “Parameter loader setup is complete”. Now, the Parameter Loader installation is completed.

1.6 Uninstalling the parameter loader software for paperless recorder

Follow Windows operation.
In case of installation of new loader software, you should delete current loader software which you use before installation of new loader software.

1.7 Cautions

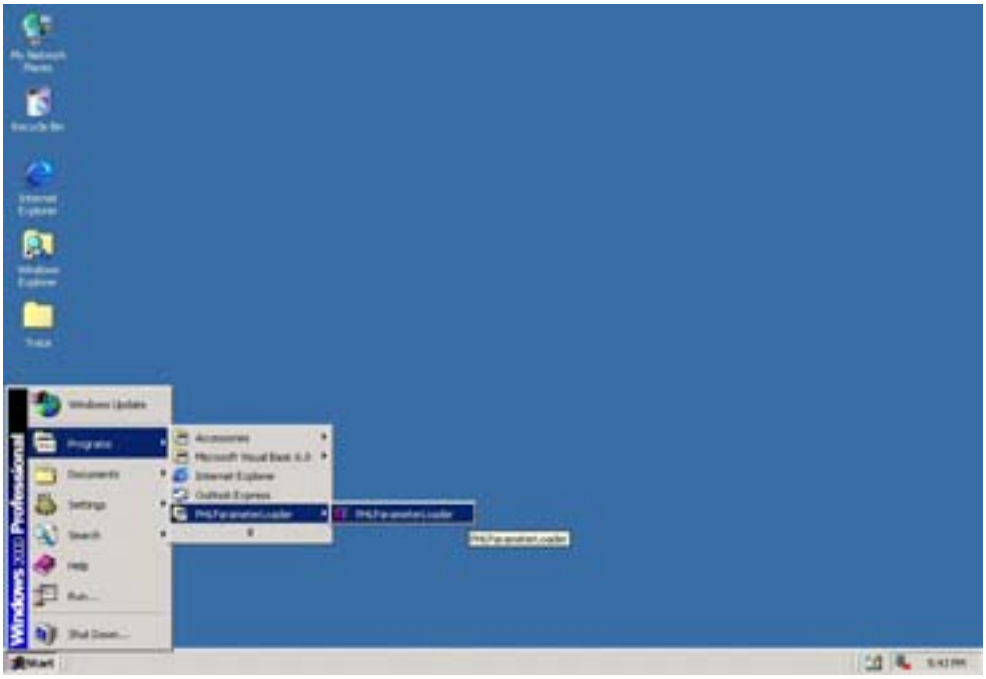
When operating the Loader, be careful of the following items:

- Before starting the paperless recorder, be sure to assure that the Loader setting is reflected to the paperless recorder.
- For the communication setting for the paperless recorder ("Main Unit Set" → "System Setting"), the MODBUS communication function should be set to ON. After the MODBUS communication function has been switched from OFF to ON, turn OFF the power once, and then turn it ON.
- 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).
- The Loader is used for the paperless recorder only.
- Initial values on each Loader screen may be different from those of the paperless recorder main unit.
- Whenever you want to write the setting data on parameter loader into paperless recorder, please return the display of PHL 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 PHL.
- At this loader, some parameters which do not exist on PHL may be displayed. But the parameter which doesn't exist in the PHL isn't written.
- **During PHL is recording or totalizing, it is impossible to write into PHL from this parameter loader.**

2. BASIC OPERATION

2.1 Start

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



It is displayed such as following screen.

Note: Whenever, this screen is for 18th inputs. It doesn’t depend on the input points.

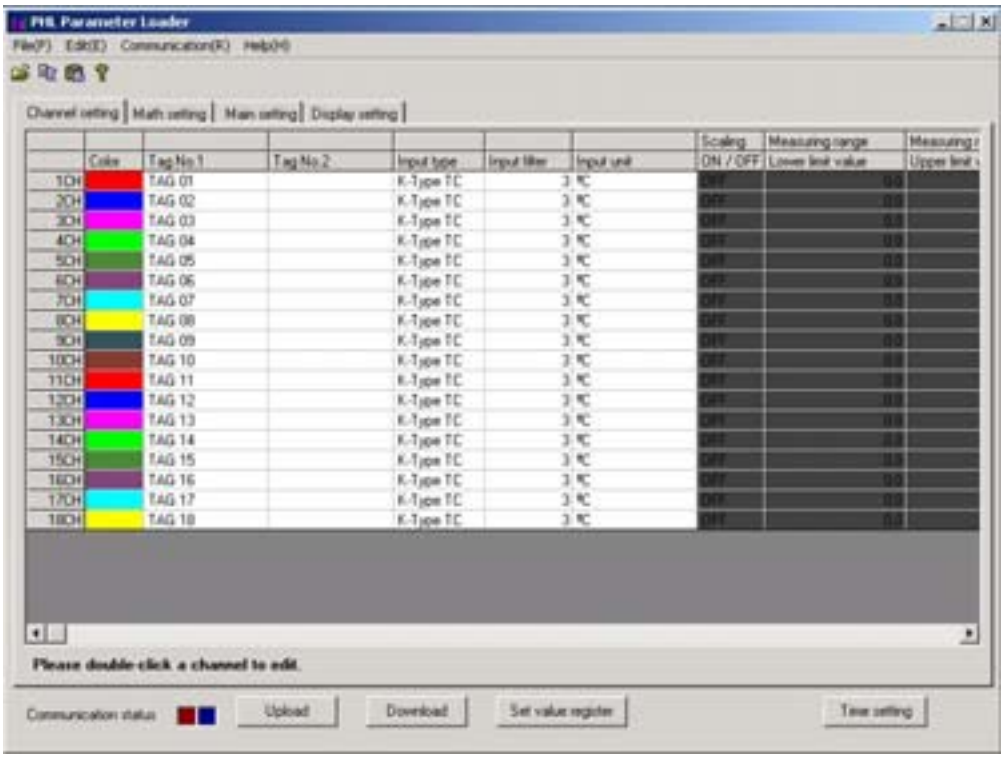
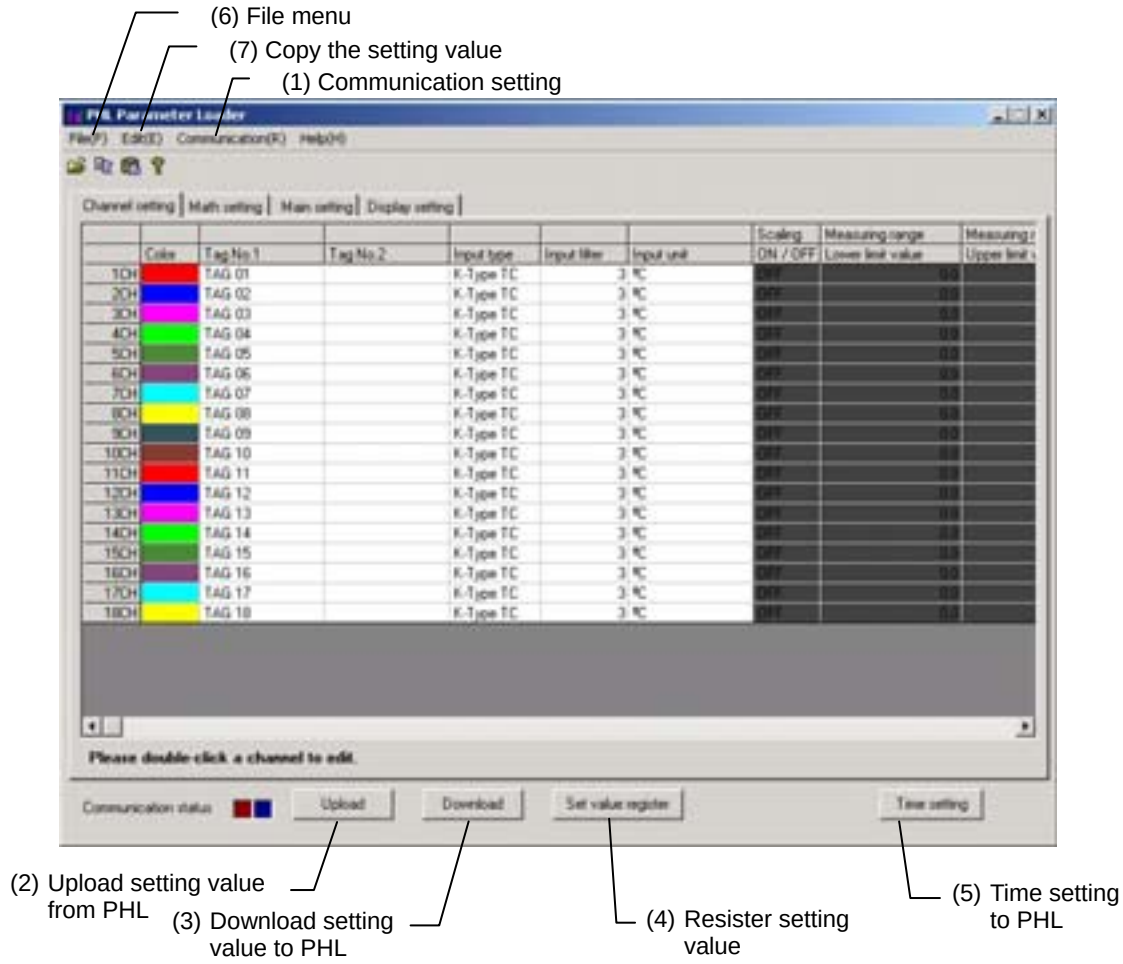


Table of setting channel display

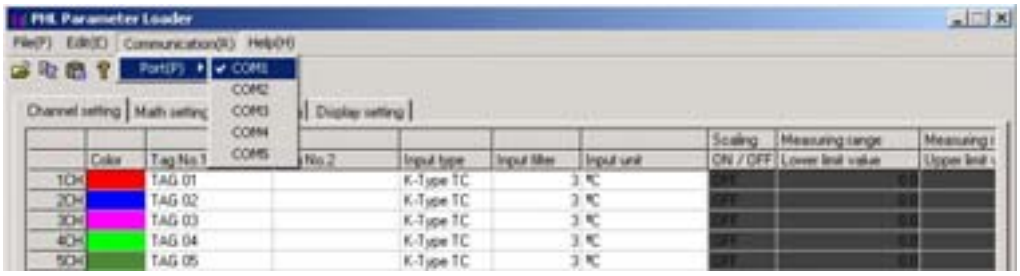
2.2 Table of setting channel display



(1) Communication setting

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.



(2) Upload setting value from PHL

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

(3) Download setting value to PHL

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

Note: 1) Download prohibit during recording or totalizing.

2) Be careful that if you don't register set value, your setting isn't registered, so when you turn off and on the PHL, setting value returns before you change.

(4) Resister setting value

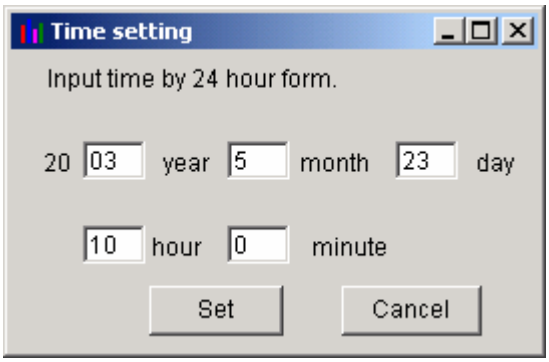
It is available to register setting value to Flash ROM.

(5) Time setting to PHL

It is available to change time setting of PHL. 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.

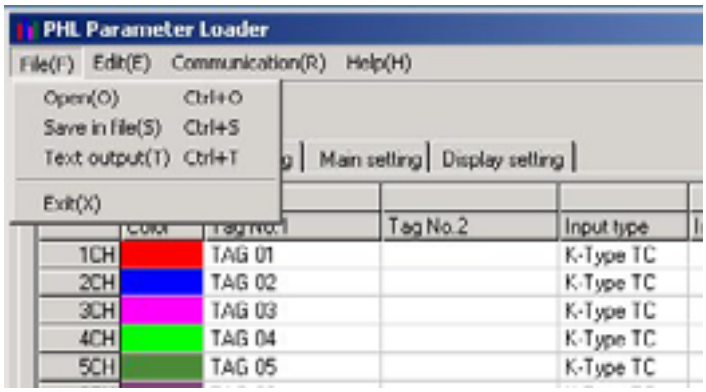
2) This setting is not necessary to register set value.



Screen of time setting

(6) File menu

This menu, you can use functions as shown below.



a) Open

Open the setting value file of PHL.

b) Save

Save into the setting value file of PHL, which name is *****. PHL.

Note: ***** is free.

c) Text output

Output setting value as text data..

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

d) Exit

Exit this menu.

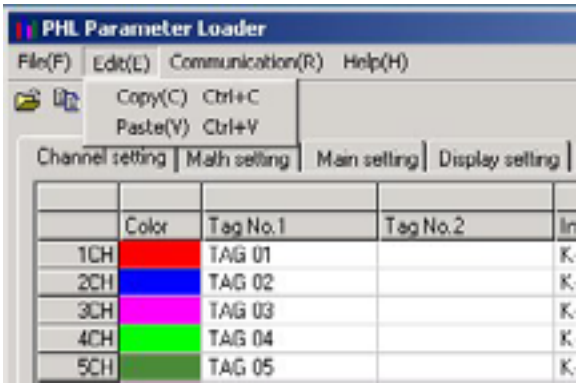
Note: 1) If you change setting value of PHL, press [Set value register] before exit this software, or your setting isn’t registered, so when you turn off and on the PHL, setting value returns before you change.

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

(7) Copy the setting value

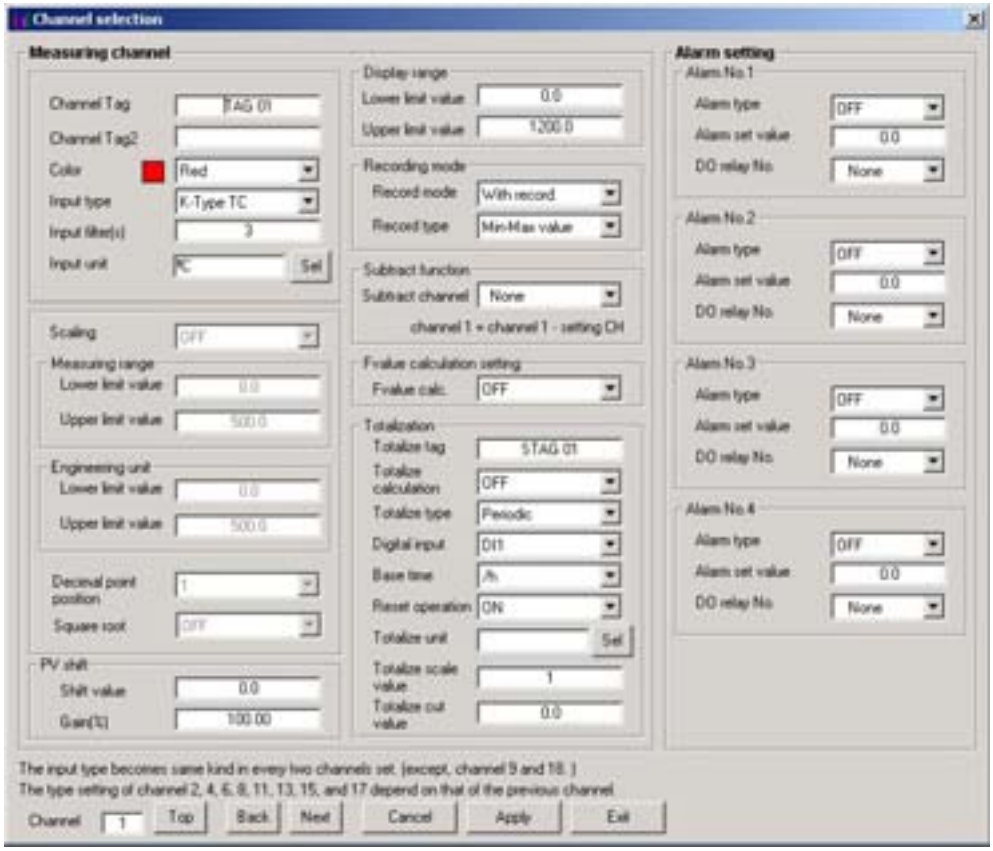
Copy the setting value such as channel setting, main setting, display setting and so on.

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



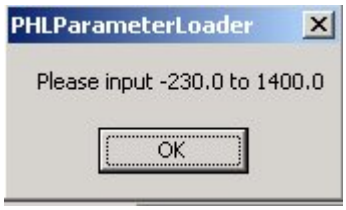
2.3 Setting channels

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.

* It is available to set till 18ch whichever PHL is 9 or 18 input points.
* 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.



Message in recording range

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

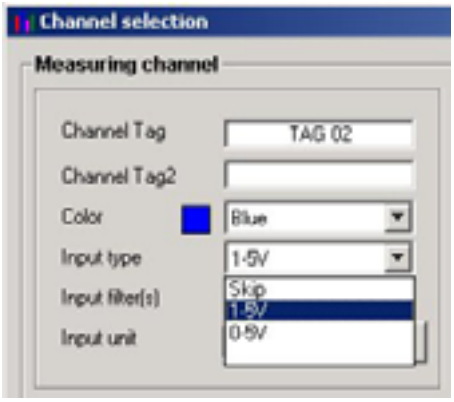
* The input type becomes same kind in every two channels set.

(1) The type setting of channel 2, 4, 6, 8, 11, 13, 15 and 17 is available only the same input category of previous channel. 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, Ni100Ω, Pt50Ω, Cu50Ω
500mV	500mV
5V	1 to 5Vdc, 0 to 5Vdc

The type setting of channel 9 and 18, there are no limit.

For example, when channel 1 is set to 1 to 5Vdc, channel 2 is available to be set only 1 to 5Vdc, 0 to 5Vdc or skip as shown below.



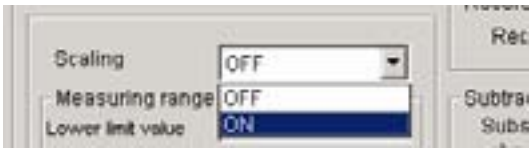
Example: Setting input type of each channel

	Input type	Input type	Explanation
Channel 1	K-Type TC	Thermocouple, 50mV	It is available to set any type of TC or 50mV.
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 Pt100Ω or JPt100Ω.
Channel 6	JPt100		
Channel 7	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	It is available to set any type of TC or 50mV.
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.

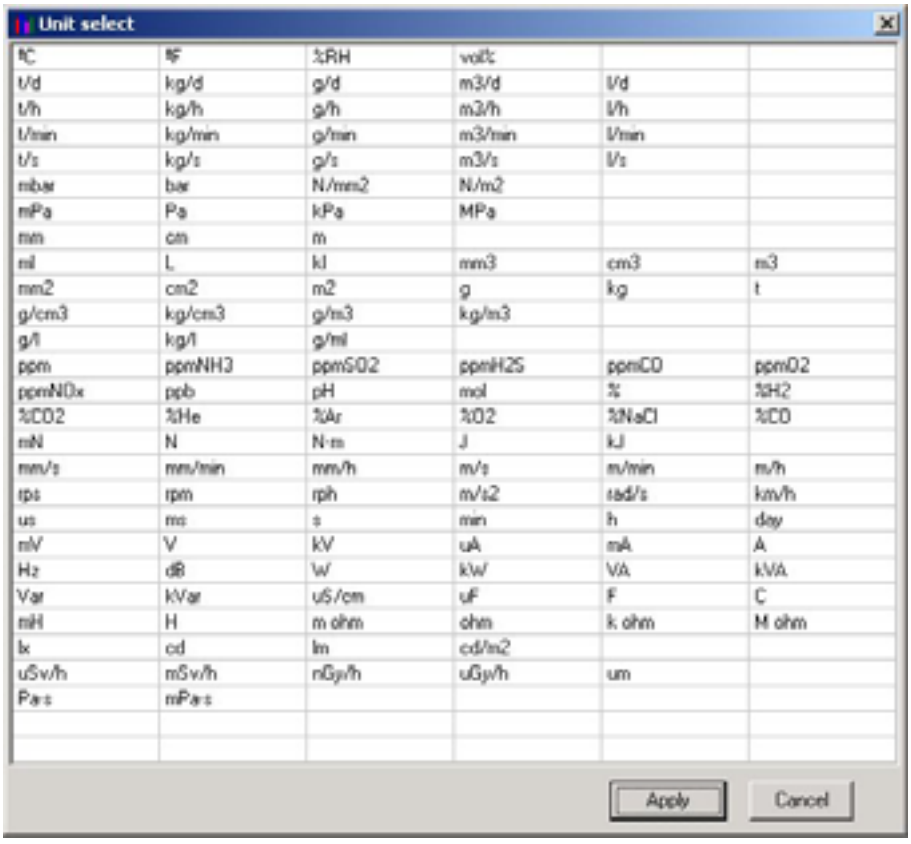
(2) When you press [Apply] after changing input type setting of channel 1, 3, 5, 7, 10, 12, 14 and 16, sometimes the screen as shown below appears.

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.



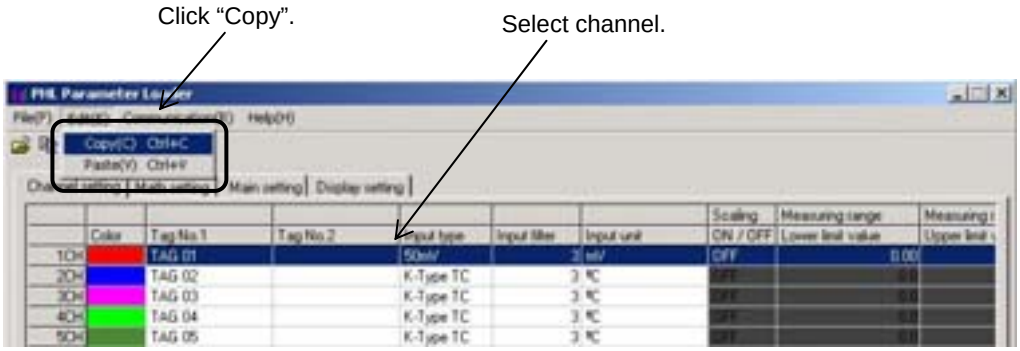
The Unit Select screen appears. On the screen that is displayed, click a unit and press the "Apply" button. Note that the unit cannot be selected without pressing the "Apply" button.



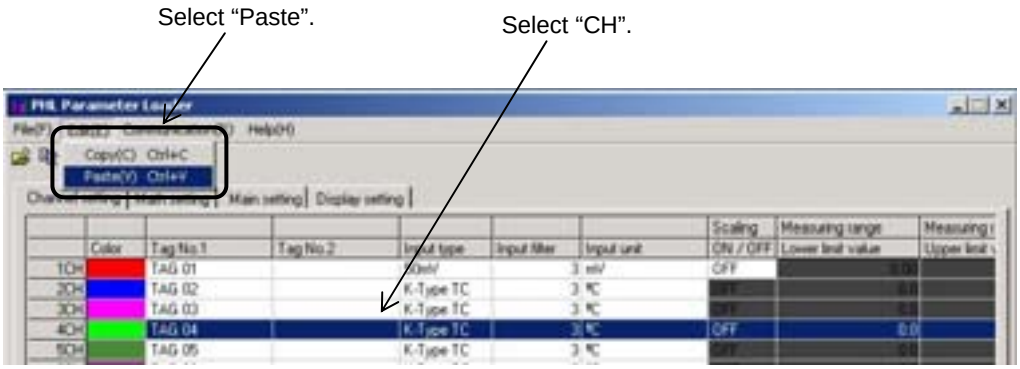
Example: At voltage input and scaling ON

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”.



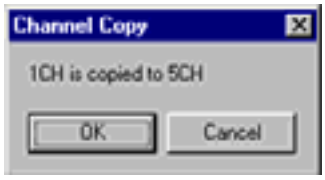
Move the cursor to CH where you want to paste channel settings and click it (Channel selection).
Click “Edit” ⇒ “Paste”.



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, PHL works such as below.

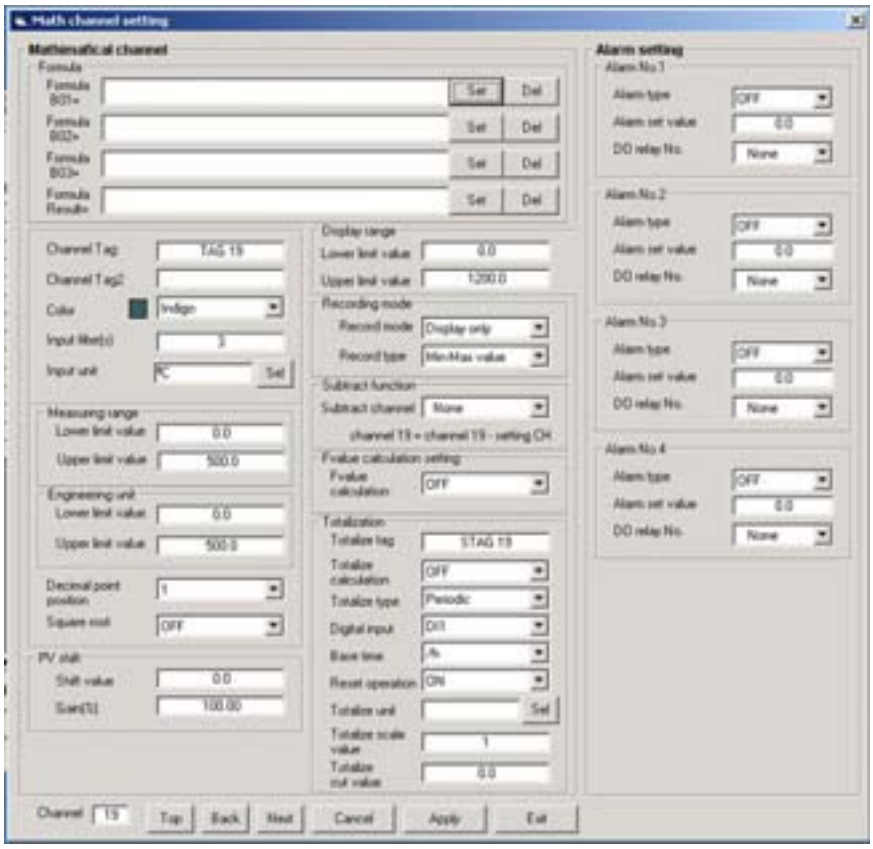
1) Copy to ch1 to ch8 or ch10 to ch17:
The input type becomes same kind in every two channels, ch1 and ch2, ch3 and ch4, ch5 and ch6, ch7 and ch8, ch10 and ch11, ch12 and ch13, ch14 and ch15, ch16 and ch17, set. If new input type is thermocouple, another channel’s type becomes K type thermocouple. And if new one is Resistance bulb, another’s becomes Pt100ohm type.

2) Copy to ch9 or ch18:
No influence to the other input types.



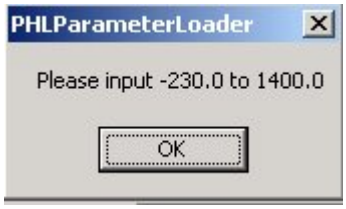
2.4 Setting math channels

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



And then math channel setting display appears.

* It is available to set till 18ch whichever PHL is 19 to 30 input points.
* 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.

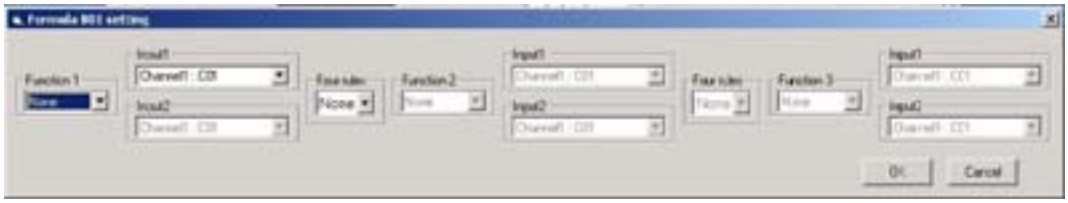


Message in recording range

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

2.4.1 Formula setting

Please click the [Set] button in the column of formula of Math channel setting to set the formula.



The Formula setting screen appears.

* Please select the operational expression and the value respectively, push the [OK] button, and fix it.

<List of functions that can be used for Formula setting>

Grammar	Operation	Explanation
None	No operation	Argument is used with no operation performed.
ABS(A)	Absolute value	Finds the absolute value of input A.
POW(A,B)	Power	Finds the value of input A to “input B”th power.
SQR(A)	Square root	Finds the square root of the value of input A.
LOG(A)	Common logarithm	Finds the common logarithm of the value of input A.
LN(A)	Natural logarithm	Finds the natural logarithm of the value of input A.
EXP(A)	EXP	Finds the exponentiation of the value of input A with base “e.”
RH(A,B)	Humidity	Finds the relative humidity with input A assumed to represent dry-bulb temperature and input B wet-bulb temperature.
MAX(A,B)	Maximum (between channels)	Compares input A and B and finds the larger value.
MIN(A,B)	Minimum (between channels)	Compares input A and B and finds the smaller value.
H-P(A)	Maximum (time)	Finds the maximum value of input A within a certain period of time.
L-P(A)	Minimum (time)	Finds the minimum value of input A within a certain period of time.
AVG(A)	Average	Finds the average value of input A within a certain period of time.
SUM(A)	Summation	Finds the sum of input A within a certain period of time.

<List of arguments (input) value that can be used for Formula setting>

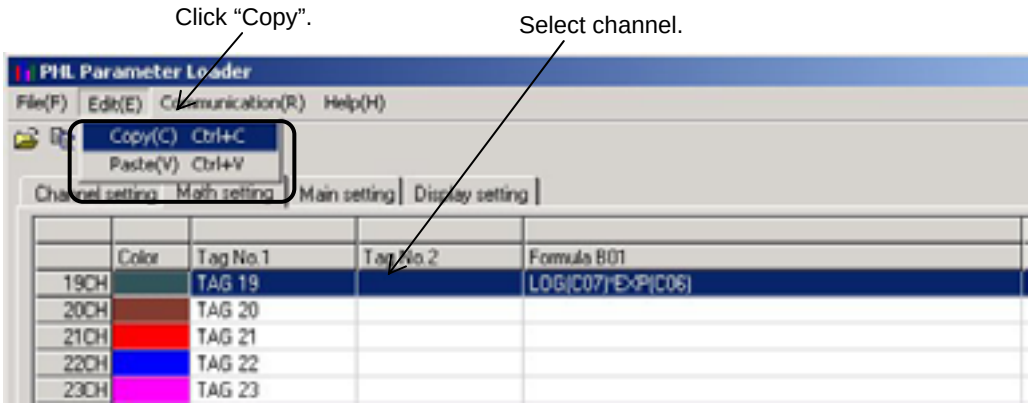
Argument	Explanation	Example
Channel	Input channel	C01
Totalize	Totalize channel	T01
DI	Digital input	D01
Communication	Communication input	M01
Constant	Constant	K01
Temporary data	Result of previous operation	B01

2.4.2 Copying the math channel set

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

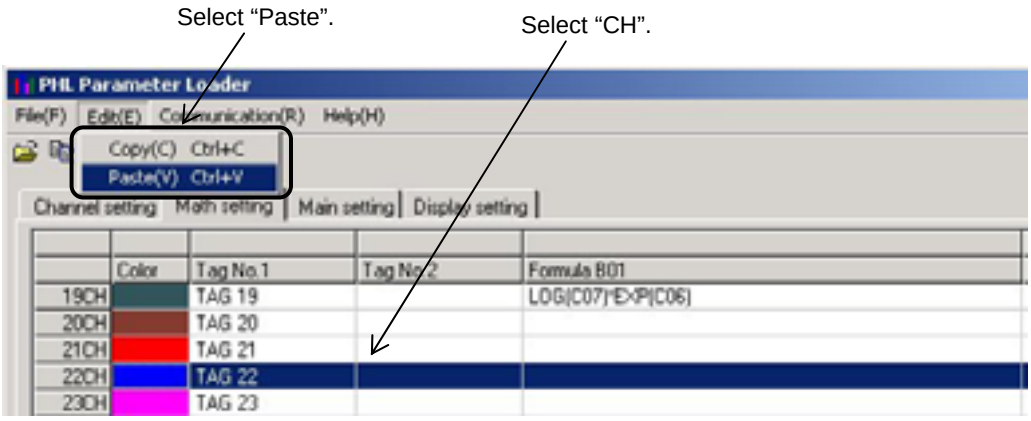
Move the cursor to CH on the Table of Setting Channel display, and click it (channel selection).

Click “Edit” ⇒ “Copy”.



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

Click “Edit” ⇒ “Paste”.



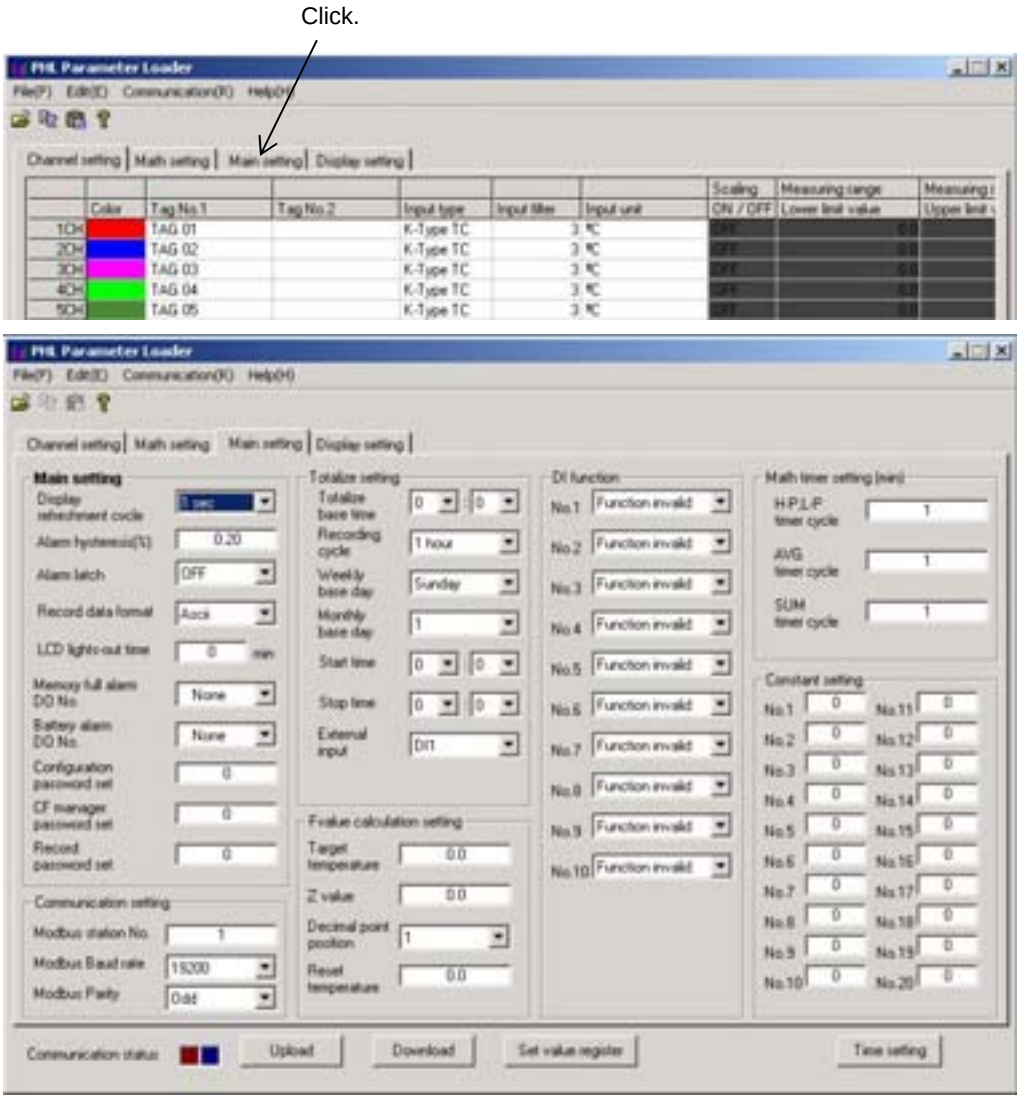
Next, the following message appears, prompting you to select the option.

Click “OK” when you want to copy the channel setting.

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

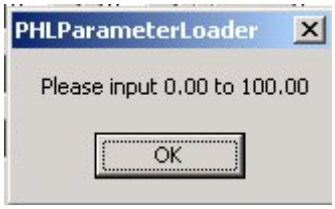
2.5 Setting the main unit

This screen allows you to set the recorder main unit.
Move the cursor to MAIN UNIT on the Table of Setting Channel display, and click it.



The Main unit Set screen appears.

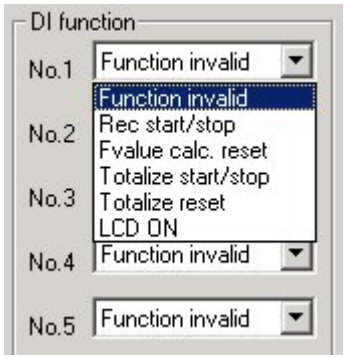
* If values are entered over the specified range, the following message appears.



Alarm Hysteresis message

2.5.1 DI function setting (option)

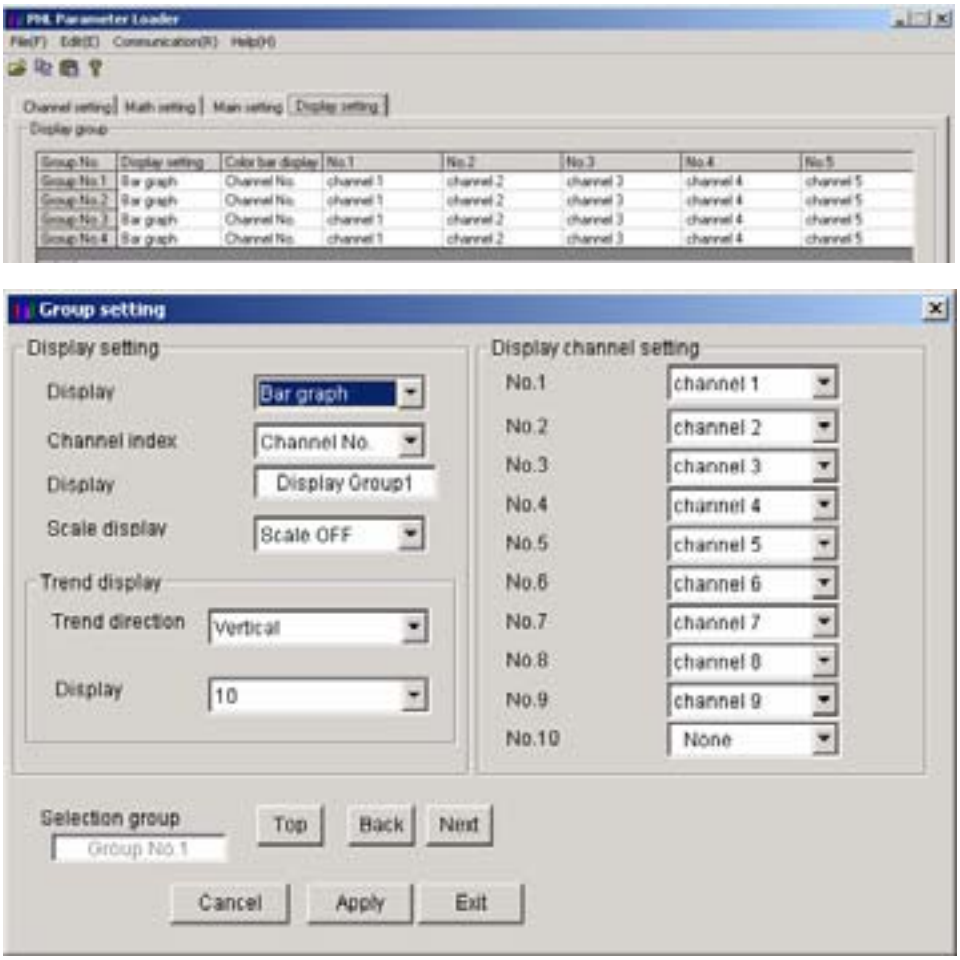
The DI function allows you to accept the ON/OFF input from external devices connected to external terminals of DI1 to DI0.



Note: DI1-DI5 cannot be used because DI (external control unit) option cannot be mounted when the input point is 18 points.
Without the communication function, DI6-DI10 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 can set to PHL up to 16 characters.
* 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

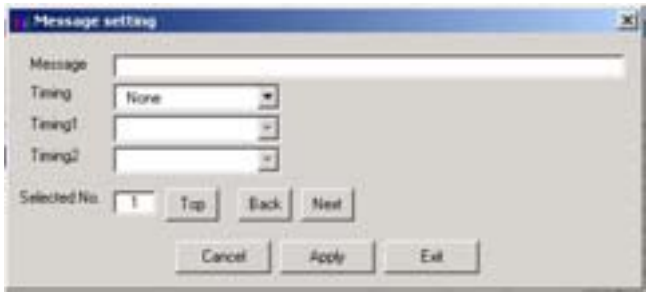
Set the structure of screen.

No.1 at this screen equals to data 1 of “display setting” of PHL, No.2 equals to data 2. Following is the same as above until No.10.

* In case of PHL 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.

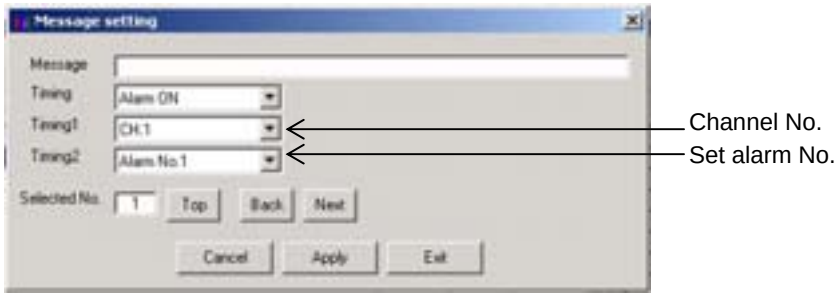


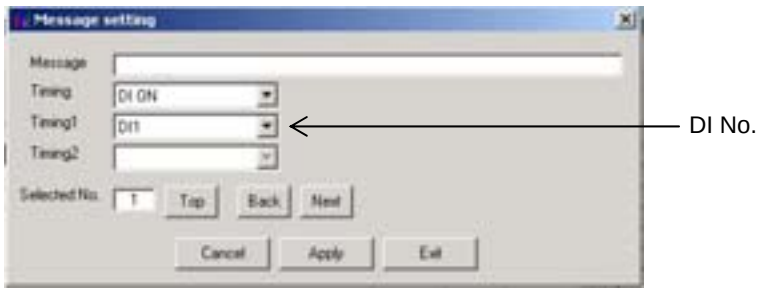
The Message Setting screen appears.

* 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.

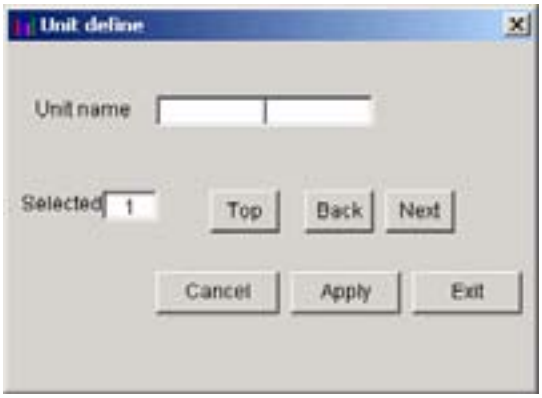
* Message timing is allocated as follows:





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.

APPENDIX.1 EXAMPLE OF SETTING PARAMETERS TO BE PRINTED OUT

2004/04/14 13:07:30

PILC : PHL11B11-E10RY
Ser.No.: Z4A0001T
Ver. : V07L

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

	Input type	Color	Tag No.1	Tag No.2	Input unit	Scaling ON/OFF	Measuring range Start	Measuring range End	Engineering unit Start	Engineering unit End	Square rooter
CH1	Pt100	Red	TAG 01	TAG 31	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH2	Pt50	Blue	TAG 02	TAG 32	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH3	50mV	Violet	TAG 03	TAG 33	MV	OFF	0.00	50.00	0.00	50.00	OFF
CH4	K-Type TC	Green	TAG 04	TAG 34	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH5	500mV	Deep green	TAG 05	TAG 35	MV	OFF	0.0	500.0	0.0	500.0	OFF
CH6	500mV	Purple	TAG 06	TAG 36	MV	ON	0.0	500.0	0.0	500.0	OFF
CH7	1-5V	Sky blue	TAG 07	TAG 37	V	ON	1.000	5.000	0.000	5.000	OFF
CH8	0-5V	Yellow	TAG 08	TAG 38	V	OFF	0.000	5.000	0.000	5.000	OFF
CH9	T-Type TC	Indigo	TAG 09	TAG 39	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH10	Ni100	Dark red	TAG 10	TAG 40	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH11	Cu50	Red	TAG 11	TAG 41	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH12	50mV	Blue	TAG 12	TAG 42	MV	ON	0.00	50.00	0.00	50.00	OFF
CH13	K-Type TC	Violet	TAG 13	TAG 43	℃	OFF	0.0	500.0	0.0	500.0	OFF
CH14	500mV	Green	TAG 14	TAG 44	MV	OFF	0.0	500.0	0.0	500.0	OFF
CH15	500mV	Deep green	TAG 15	TAG 45	MV	ON	0.0	500.0	0.0	500.0	OFF
CH16	1-5V	Purple	TAG 16	TAG 46	V	OFF	1.000	5.000	0.000	5.000	OFF
CH17	0-5V	Sky blue	TAG 17	TAG 47	V	ON	0.000	5.000	0.000	5.000	OFF
CH18	PN-Type TC	Yellow	TAG 18	TAG 48	℃	OFF	0.0	500.0	0.0	500.0	OFF

	Input Filter	PV shift	PV gain	Subtract channel	Fvalue calc.	Recording Mode	Recording type	Display range Start	Display range End
CH1	1	0.0	100.00	None	OFF	With record	Min-Max value	0.0	500.0
CH2	1	0.0	100.00	channel1	OFF	With record	Point value	0.0	500.0
CH3	1	0.00	100.00	None	OFF	With record	Average value	0.00	50.00
CH4	1	0.0	100.00	None	ON	With record	Min-Max value	0.00	120.00
CH5	1	0.0	100.00	None	OFF	With record	Point value	0.0	500.0
CH6	1	0.0	100.00	None	OFF	With record	Average value	0.0	500.0
CH7	1	0.000	100.00	channel16	OFF	With record	Min-Max value	1.000	5.000
CH8	1	0.000	100.00	None	OFF	With record	Point value	0.000	5.000
CH9	1	0.0	100.00	channel4	ON	With record	Average value	0.00	30.00
CH10	1	0.0	100.00	None	OFF	With record	Min-Max value	0.0	150.0
CH11	1	0.0	100.00	None	ON	With record	Point value	0.00	15.00
CH12	1	0.00	100.00	channel3	OFF	With record	Average value	0.00	50.00
CH13	1	0.0	100.00	None	OFF	With record	Min-Max value	0.0	1200.0
CH14	1	0.0	100.00	channel5	OFF	With record	Point value	0.0	500.0
CH15	1	0.0	100.00	Channel6	OFF	With record	Average value	0.0	500.0
CH16	1	0.000	100.00	None	OFF	With record	Min-Max value	1.000	5.000
CH17	1	0.000	100.00	channel8	OFF	With record	Point value	0.000	5.000
CH18	1	0.0	100.00	channel9	ON	With record	Average value	0.00	130.00

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

	Totalize Tag	Totalize calc.	Totalize Type	Digital input	Totalize Base time	Reset operation	Totalize Unit	Totalize Cut value	Totalize Scale value
CH1	STAG 01	Totalizer	Periodic	DI1	/s	ON	Unit 01	0.0	1
CH2	STAG 02	Totalizer	Daily	DI1	/s	ON	Unit 02	0.0	1
CH3	STAG 03	Totalizer	Weekly	DI1	/s	ON	Unit 03	0.00	1
CH4	STAG 04	Totalizer	Monthly	DI1	/s	ON	Unit 04	0.00	1
CH5	STAG 05	Totalizer	Annual	DI1	/s	ON	Unit 05	0.0	1
CH6	STAG 06	Totalizer	Daily(Time set)	DI1	/s	ON	Unit 06	0.0	1
CH7	STAG 07	Totalizer	External	DI1	/s	OFF	Unit 07	0.000	1
CH8	STAG 08	Counter	Periodic	Ch30 Alarm4	/day	ON	Unit 08	0.000	1
CH9	STAG 09	Counter	Daily	Ch30 Alarm3	/min	ON	Unit 09	0.00	1
CH10	STAG 10	Counter	Weekly	Ch30 Alarm2	/min	OFF	Unit 10	0.0	1
CH11	STAG 11	Counter	Monthly	Ch30 Alarm1	/day	ON	Unit 11	0.00	1
CH12	STAG 12	Counter	Annual	Ch1 Alarm1	/day	ON	Unit 12	0.00	1
CH13	STAG 13	Counter	Daily(Time set)	Ch1 Alarm2	/s	OFF		0.0	5
CH14	STAG 14	Counter	External	Ch1 Alarm3	/min	ON		0.0	100
CH15	STAG 15	Timer	Periodic	Ch10 Alarm1	/s	ON		10.0	1
CH16	STAG 16	Timer	Daily	DI1	/h	ON		0.500	1
CH17	STAG 17	Timer	Weekly	DI1	/day	ON		0.005	1
CH18	STAG 18	Timer	Monthly	DI1	/day	ON		1.05	1

*****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	10.0	1	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH2	OFF	0.0	None	H	20.0	5	OFF	0.0	None	OFF	0.0	None
CH3	OFF	0.00	None	OFF	0.00	None	H	0.00	7	OFF	0.00	None
CH4	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None	H	40.00	10
CH5	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH6	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH7	OFF	1.000	None	OFF	1.000	None	OFF	1.000	None	OFF	1.000	None
CH8	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None
CH9	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None
CH10	L	-10.0	11	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH11	OFF	0.00	None	L	20.00	15	OFF	0.00	None	OFF	0.00	None
CH12	OFF	0.00	None	OFF	0.00	None	L	30.00	20	OFF	0.00	None
CH13	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	L	-50.0	25
CH14	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH15	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH16	OFF	1.000	None	OFF	1.000	None	OFF	1.000	None	OFF	1.000	None
CH17	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None
CH18	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None

*****Math channel setting*****

	Formula				Formula		
CH19	B01	=	ABS(K01)+POW(K02,K04)/SQR(K03)	CH25	B01	=	
	B02	=	LOG(K05)*EXP(K03)-LN(K06)		B02	=	
	B03	=	B01-MAX(K07,K09)*MIN(K08,K10)		B03	=	
	Result	=	B01/B02+B03		Result	=	EXP(M09)
CH20	B01	=		CH26	B01	=	
	B02	=			B02	=	
	B03	=			B03	=	
	Result	=	ABS(C17)		Result	=	RH(T26,D06)
CH21	B01	=		CH27	B01	=	
	B02	=			B02	=	
	B03	=			B03	=	
	Result	=	POW(T14,M04)		Result	=	MAX(T09,K16)
CH22	B01	=		CH28	B01	=	
	B02	=			B02	=	
	B03	=			B03	=	
	Result	=	SQR(M08)		Result	=	H-P(M03)
CH23	B01	=		CH29	B01	=	
	B02	=			B02	=	
	B03	=			B03	=	
	Result	=	LOG(K17)		Result	=	AVG(K10)
CH24	B01	=		CH30	B01	=	
	B02	=			B02	=	
	B03	=			B03	=	
	Result	=	LN(K20)		Result	=	SUM(C01,C07)

	Color	Tag No.1	Tag No.2	Input unit	Measuring range		Engineering unit		Square rooter
					Start	End	Start	End	
CH19	Indigo	TAG 19	TAG 49	°C	0.000	5.000	0.000	5.000	OFF
CH20	Dark red	TAG 20	TAG 50	°C	0.000	5.000	0.000	5.000	OFF
CH21	Red	TAG 21	TAG 51	°C	0.0	500.0	0.0	500.0	OFF
CH22	Blue	TAG 22	TAG 52	°C	0.00	50.00	0.00	50.00	OFF
CH23	Violet	TAG 23	TAG 53	°C	0	5000	0	5000	OFF
CH24	Green	TAG 24	TAG 54	°C	0.0	500.0	0.0	500.0	OFF
CH25	Deep green	TAG 25	TAG 55	°C	0.0	500.0	0.0	500.0	OFF
CH26	Purple	TAG 26	TAG 56	°C	0.0	500.0	0.0	500.0	OFF
CH27	Sky blue	TAG 27	TAG 57	°C	0.0	500.0	0.0	500.0	OFF
CH28	Yellow	TAG 28	TAG 58	°C	0.0	500.0	0.0	500.0	OFF
CH29	Indigo	TAG 29	TAG 59	°C	0	5000	0	5000	OFF
CH30	Dark red	TAG 30	TAG 60	°C	0.0	500.0	0.0	500.0	OFF

	Input Filter	PV shift	PV gain	Subtract channel	Fvalue calc.	Recording Mode	Recording type	Display range	
								Start	End
CH19	0	0.000	100.00	None	OFF	With record	Min-Max value	0.000	12.000
CH20	0	0.000	100.00	None	OFF	With record	Point value	0.000	12.000
CH21	0	0.0	100.00	None	OFF	With record	Average value	0.0	1200.0
CH22	0	0.00	100.00	None	OFF	With record	Min-Max value	0.00	120.00
CH23	0	0	100.00	None	OFF	With record	Point value	0	12000
CH24	0	0.0	100.00	None	OFF	With record	Average value	0.0	1200.0
CH25	0	0.0	100.00	None	OFF	With record	Min-Max value	0.0	1200.0
CH26	0	0.0	100.00	None	OFF	With record	Point value	0.0	1200.0
CH27	0	0.0	100.00	None	OFF	With record	Average value	0.0	1200.0
CH28	0	0.0	100.00	None	OFF	With record	Min-Max value	0.0	1200.0
CH29	0	0	100.00	None	OFF	With record	Point value	0	12000
CH30	0	0.0	100.00	None	OFF	With record	Average value	0.0	1200.0

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

	Totalize Tag	Totalize calc.	Totalize Type	Digital input	Totalize Base time	Reset operation	Totalize Unit	Totalize Cut value	Totalize Scale value
CH19	STAG 19	Totalizer	Periodic	Ch3 Alarm2	/day	OFF		0.000	1
CH20	STAG 20	OFF	Periodic	DI1	/h	ON		0.000	1
CH21	STAG 21	OFF	Periodic	DI1	/h	ON		0.0	1
CH22	STAG 22	OFF	Periodic	Ch6 Alarm3	/min	OFF		0.00	1
CH23	STAG 23	OFF	Periodic	DI1	/h	ON		0	1
CH24	STAG 24	OFF	Periodic	DI1	/h	ON		0.0	1
CH25	STAG 25	Totalizer	Monthly	Ch10 Alarm2	/s	OFF		0.0	1
CH26	STAG 26	OFF	Periodic	DI1	/h	ON		0.0	1
CH27	STAG 27	OFF	Periodic	DI1	/h	ON		0.0	1
CH28	STAG 28	OFF	Periodic	DI1	/h	ON		0.0	1
CH29	STAG 29	OFF	Periodic	DI1	/h	ON		0	1
CH30	STAG 30	OFF	Periodic	DI1	/h	ON		0.0	1

*****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.
CH19	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None
CH20	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None	OFF	0.000	None
CH21	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH22	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None	OFF	0.00	None
CH23	OFF	0	None	OFF	0	None	OFF	0	None	OFF	0	None
CH24	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH25	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH26	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH27	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH28	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None
CH29	OFF	0	None	OFF	0	None	OFF	0	None	OFF	0	None
CH30	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None	OFF	0.0	None

*****Basic setting*****

Display refreshment cycle 1 min Alarm hysteresis 0.50 (%) Alarm latch ON
LCD lights-out time 10 min Memory full alarm DO relay No. 5 Battery alarm DO relay No. 25
MODBUS Station NO. 255 MODBUS baud rate 9600 bps MODBUS parity Even
Recording data format Binary
Configuration password 1357 CF manager password 2468 REC key password 9753

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

Target temperature 100.0 °C Z value 10.0 °C Decimal point position 2
Fvalue reset temperature 5.0 °C

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

Totalize base time 12:30 Totalize recording cycle 10 min
Weekly base day Wednesday Monthly base day 15
Totalize start time 10:30 stop time 20:30
Extrnal input Ch30 Alarm4

*****Math timer setting*****

H-P/L-P operation 5 min AVG operation 2 min SUM operation 10 min

*****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	channel1	channel2	channel3	channel4	channel5	channel6	channel7	channel8	channel9	channel10
Display group2	channel11	channel12	channel13	channel14	channel15	channel16	channel17	channel18	channel19	channel20
Display group3	channel21	channel22	channel23	channel24	channel25	channel26	channel27	channel28	channel29	channel30
Display group4	channel1	None	None	channel10	None	None	channel19	None	None	channel30

	Display name	Trend direction	Display division No.	Scale display	Bar graph/ Analog meter	Color bar display selection
Display group1	Display Group 1	Vertical	1	ON	Bar graph	Channel No.
Display group2	Display Group 2	Horizontal	20	ON	Bar graph	Tag No.
Display group3	Display Group 3	Vertical	5	ON	Analog meter	Unit
Display group4	Display Group 4	Horizontal	15	ON	Analog meter	Tag No.

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

	Message	Timing1	DI NO./ Alarm Channel	Alarm NO.
No.1	Message DI 4 ON	DI ON	DI4	
No.2	Message DI 10 OFF	DI OFF	DI10	
No.3	Message Alarm 1 No.1 ON	Alarm ON	CH.1	Alarm No.1
No.4	Message Alarm 5 No.4 OFF	Alarm OFF	CH.5	Alarm No.4
No.5	Message Alarm 10 No.2 ON	Alarm ON	CH.10	Alarm No.2
No.6	Message Alarm 18 No.3 OFF	Alarm OFF	CH.18	Alarm No.3
No.7	Message DI 2 ON	DI ON	DI2	
No.8	Message DI 7 OFF	DI OFF	DI7	
No.9	Message Alarm 21 No.2 ON	Alarm ON	CH.21	Alarm No.2
No.10	Message Alarm 30 No.4 OFF	Alarm OFF	CH.30	Alarm No.4

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

	No.1	No.2	No.3	No.4	No.5	No.6
Unit	Unit 01	Unit 02	Unit 03	Unit 04	Unit 05	Unit 06
	No.7	No.8	No.9	No.10	No.11	No.12
Unit	Unit 07	Unit 08	Unit 09	Unit 10	Unit 11	Unit 12

*****DI functionting*****

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

*****Constant setting*****

Constant1	1.00	Constant11	-32767
Constant2	20.0	Constant12	32767
Constant3	3.000	Constant13	-3276.7
Constant4	0.04	Constant14	3276.7
Constant5	0.0005	Constant15	-327.67
Constant6	66.6	Constant16	327.67
Constant7	700.0	Constant17	-32.767
Constant8	80.00	Constant18	32.767
Constant9	0.009	Constant19	-3.2767
Constant10	10	Constant20	3.2767

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