Paperless Recorder

VGR-B100

Parameter Loader Instruction Manual

RKC INSTRUMENT

WXPVM70mnAR102E
January, 2021(Rev.12)

Thank you for purchasing this RKC product. In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place the manual in a convenient location for easy reference.

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＜CONTENTS＞

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

This Parameter Loader is software to do various settings of a Paperless Recorder with the personal computer.

The setting preserved on the SD card with the main body of the Recorder can be read, and the setting preserved on the SD card with this software can be read to the main body of the Recorder.

When you insert the SD card in the main body of the Recorder, the folder of the name called "Recorder" is automatically made.

When you read and write the setting data with the main body of the Recorder, please preserve the setting in the folder of "Prm" that exists under the folder of the name called "Recorder".

(Refer item 2.4 for details.)

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 7(SP1 or later) / 8.1/10 (32bit, 64bit)
- Hard disk with free capacity of 500MB or more
- Capacity of RAM necessary so that OS may operate normally
- Memory card. (SD card)
  (Panasonic company 1～32GB or Sandisk company 1～32GB is recommended
  or HAGIWARA Solutions corporation 1～32GB)
- PC made of maker
- The mouse and keyboard corresponding to OS
- The Ethernet communication port (10BASE-T, TCP/IP protocol)
- CD-ROM drive
- Display resolution of 1024×768 pixels (XGA) or more

1.5 Install

1) If other application software programs are open, terminate all of them.
2) It the data viewer has been already installed, delete it from “Add/Remove Programs” on Control Panel.
3) Set CD-ROM in the personal computer drive.
4) The menu is automatically displayed. Follow the instructions on the screen. If the menu is not displayed, please start “index.htm” that CD-ROM drive has. The menu for the installation is displayed, and please installs it according to the instruction of the screen. The Data Viewer and the Parameter Loader are installed at the same time.

* When installing the software, it may be necessary to install ".NET Framework". In that case, please install the software after installing ".NET Framework". When installing the .NET Framework attached to the CD on Windows 7, please install after updating the OS to the latest state. Windows 8.1 / 10 is already installed, so installation is not required.

5) A message is displayed, prompting you to verify that “Data display setup is complete”.
Now, the Data Viewer installation is completed.

1.6 Uninstall

Please uninstall the Parameter Loader by the following operations, and delete it according to the instruction of Windows (Notes are included).
The Data Viewer and the Parameter Loader are uninstalled at the same time.

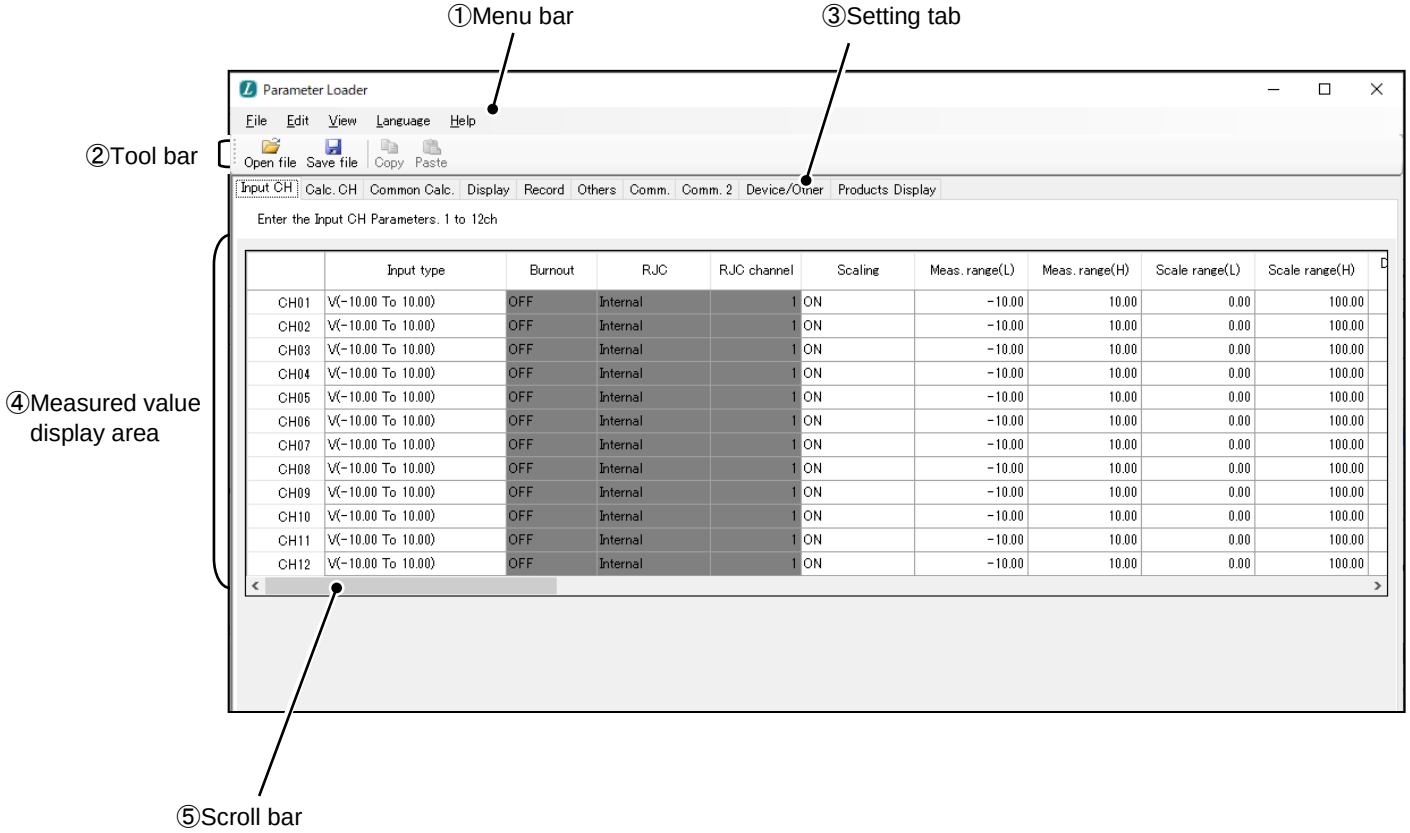
“START of Windows” ⇒ “Control Panel” ⇒ “Add/Remove Programs” ⇒ “VGR-B100”

When you install the differing version, before installing the upcoming version, please uninstall the software that is now by the above-mentioned method. There is a possibility of not operating normally.

2. BASIC SETTING

2.1 Composition of setting display

Select “Programs” ⇒ “VGR-B100” ⇒ “Parameter Loader” from the Start menu.



	Input type	Burnout	RJC	RJC channel	Scaling	Meas. range(L)	Meas. range(H)	Scale range(L)	Scale range(H)
CH01	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH02	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH03	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH04	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH05	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH06	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH07	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH08	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH09	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH10	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH11	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00
CH12	V(-10.00 To 10.00)	OFF	Internal	1	ON	-10.00	10.00	0.00	100.00

① Menu bar

The operation of the file and the setting of the language, etc. functions of the Parameter Loader can be used.

② Tool bar

The function often used is displayed as a shortcut key.

The set of tool bar cannot be changing.

③ Setting tab

The setting display can be changed by selected “③Setting tab”.

④ Measured value display area

Display the measured value. And, measured value can be changed by selecting each item.

⑤ Scroll bar

When the “④Measured value display area” overflows from screen, the display can be changed by sliding “⑤Scroll bar”.

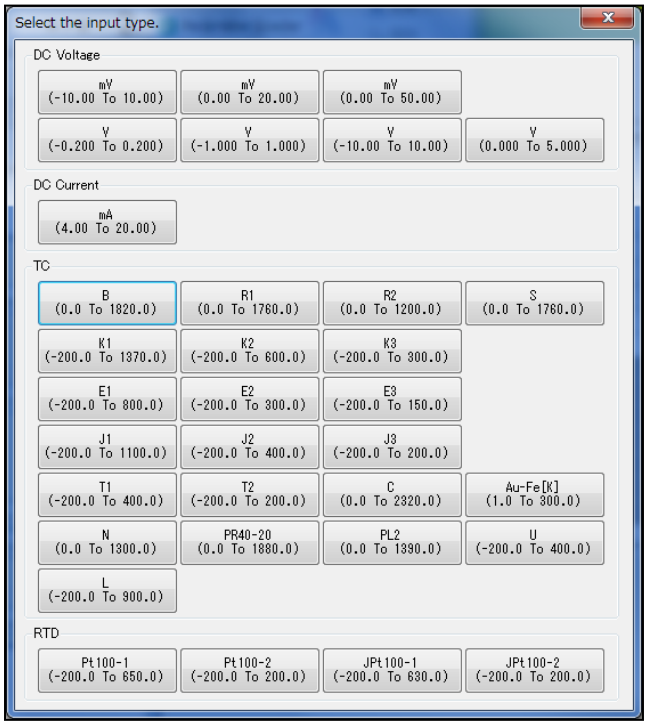
2.2 Basic operation of setting screens

The basic operation of the setting screens is 4 methods.

① When selecting contents to set by the other windows.

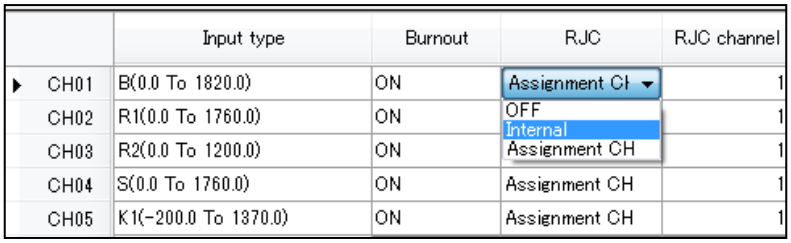
	Input type	Burnout	RJC	RJC channel
▶ CH01	B(0.0 To 1820.0)	ON	Assignment CH	1
CH02	R1(0.0 To 1760.0)	ON	Assignment CH	1
CH03	R2(0.0 To 1200.0)	ON	Assignment CH	1
CH04	S(0.0 To 1760.0)	ON	Assignment CH	1
CH05	K1(-200.0 To 1370.0)	ON	Assignment CH	1

In this case, the channel select screen can be displayed by selects “Input type”.
Select the arbitrarily input type.



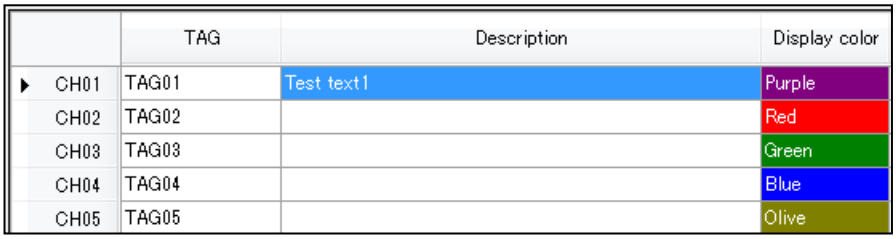
② When selecting contents to set by list.

In this case, the item of “RJC” is selected, and the item that can be selected as a list is displayed. Select the arbitrarily item.



③ When setting contents by entering characters or numerical value.

In this case, when the “Description” is selected, the input of the character or the numerical value becomes possible. Please input the arbitrarily description with the keyboard.



④ When setting contents by entering only numerical value.

In this case, when the ▲, ▼ button of “Z value” is selected, numerical value can be increased and decreased. And the numerical value can be input directly with the keyboard.

2.3 Operational expression

In the Parameter Loader, the following can be done by setting the operational expression.

1）＋、－、×、÷（Arithmetic operation）

Ex） Input “CH01 + CH02 - CH03”, and the result is output to CH13.

Ex） Input “CH04 * CH13 / K001”, and the result is output to CH20.

2） A complex operation can be done by the function prepared beforehand. (General operation)

Ex） The value of CH01 is requested by the involution of x, and the result is output to CH27. (POW function)

Ex） The numerical value of the channel that indicates the largest value in the input value from CH01 to CH12 is output to CH34. (MAXto function)

3） The sum total of the input value by the passage of time is calculated.（SUM operation）

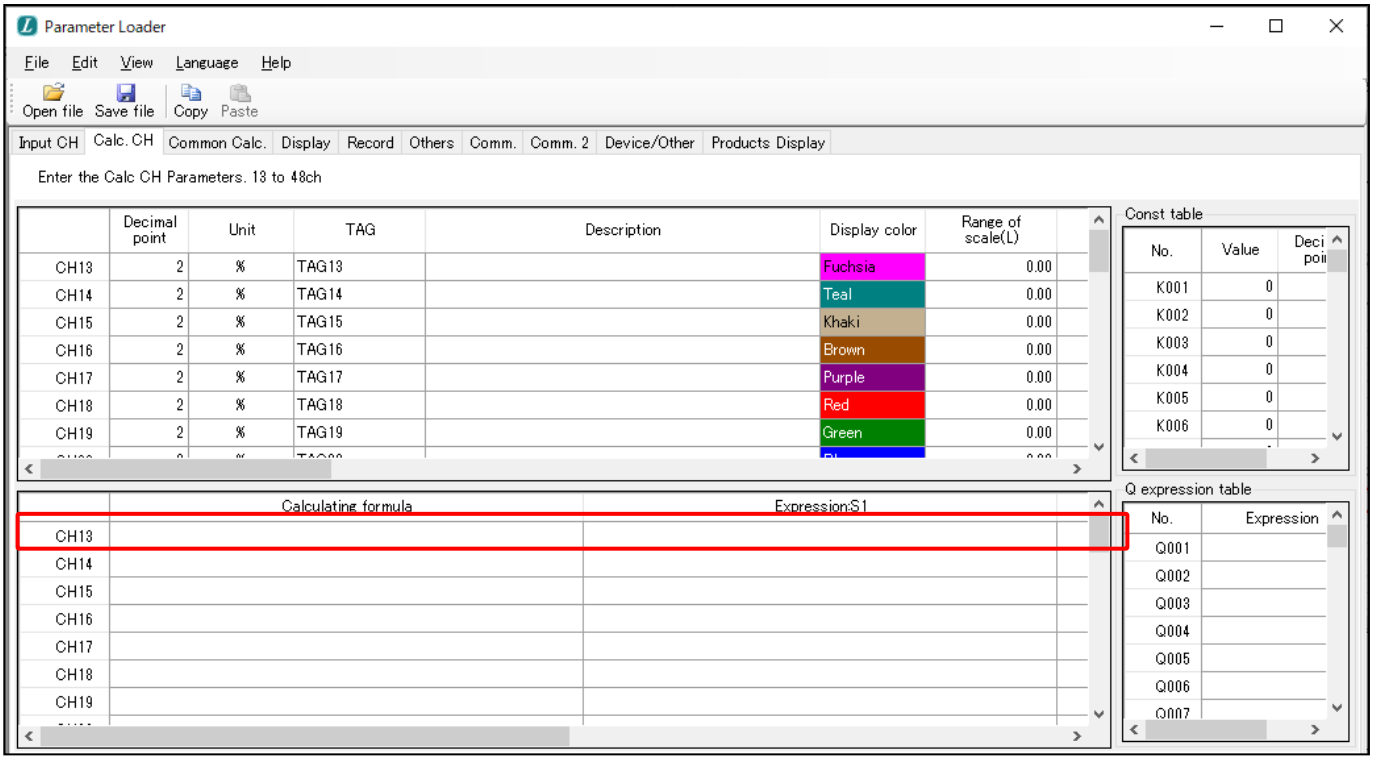
Ex）The input value of CH02 is divided by 10, the value is added every 100ms, and the result is output to CH41. (SUMsec function)

4） F value can be calculated. (F value operation)

Ex） The value input to CH03 and the value set by “F value” are used and calculated, and the result is output to CH48. (FCAL funcion)

5） Two kinds of values can be outputted by the result of a logical operation table (Q exp. table).

Ex) When the result of the logical operation table Q001 is True(1), the value of CH01 is outputted to CH48. When the result is False(0), the value of CH02 is outputted to CH48. (Conditional branch)

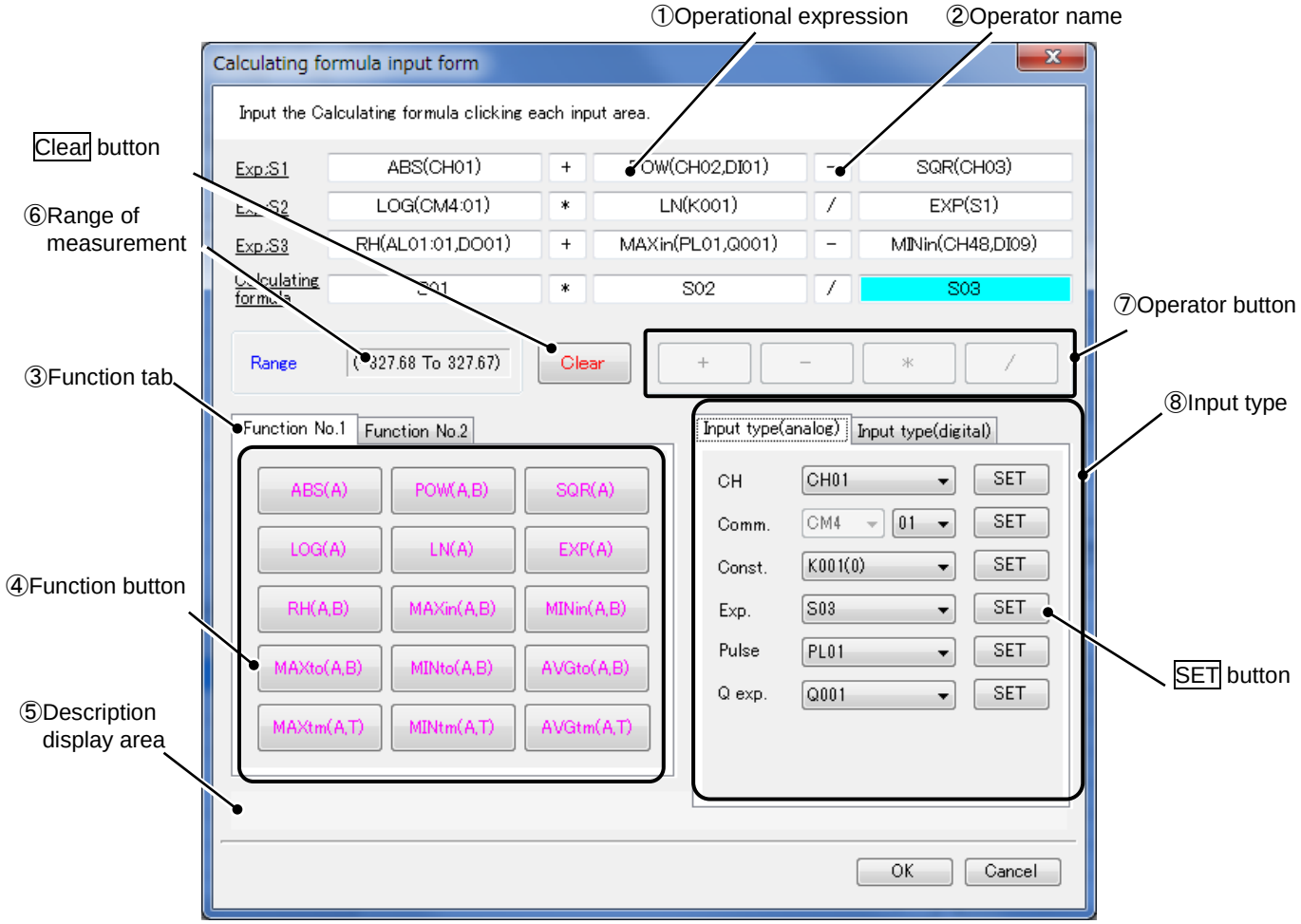


In this case, when the “Calculating formula” is selected, the operational expression setting display is displayed. (Refer item next page for details.)

●Setting the calculation expression

The expression can be set up to 3 items in each expression of S1 ～ S3.

Being reflected in the setting as a final operation result is Operation result of “Operational expression”.



① Operational expression

Display the operational expression is set.

② Operator name

Display the setting operator.

③ Function tab

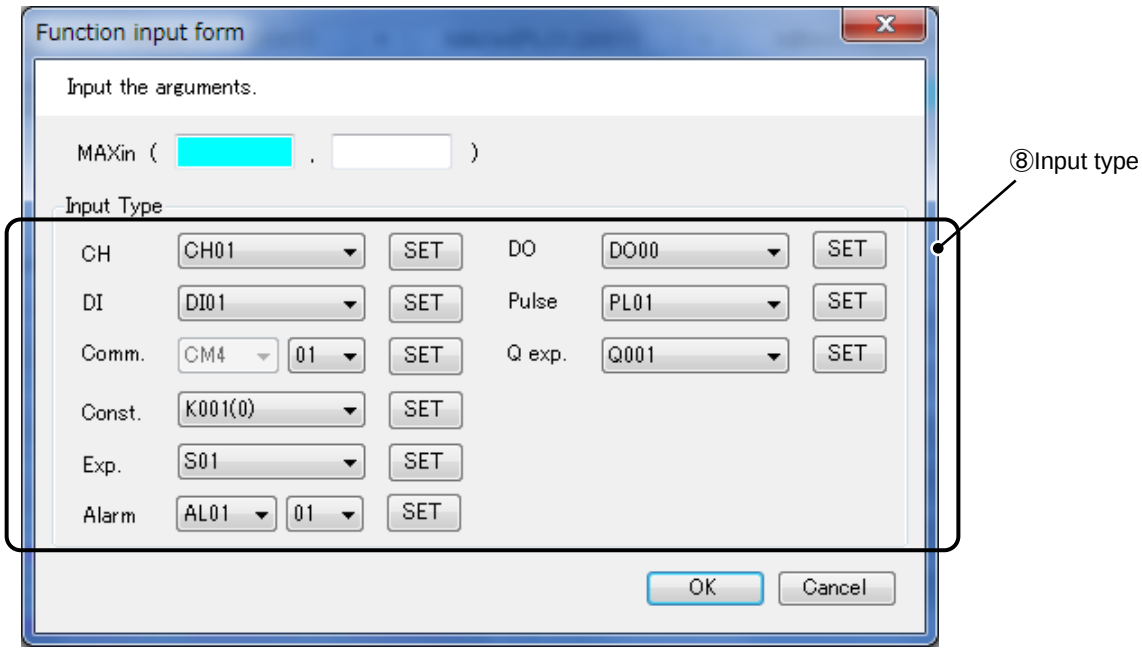
The display of “④Function button” can be changed by selecting “③Function tab”.

④ Function button

Select the "④Function button" to display the argument select display. The argument can be inputted by selecting item and push the SET button.

After set, please register by OK button.

It can be set that selected only "①Operational expression". As for the item under the selection, the background becomes light blue.



⑤ Description display area

When the cursor is matched to "④Function button", the explanation of the function is displayed in "⑤Description display area".

⑥ Range of measurement

Display the range of measurement.

⑦ Operator button

The arbitrarily operator name can be set by selecting the "⑦Operator button".

It can be set that selected only "②Operator name". As for the item under the selection, the background becomes light blue.

⑧ Input type

The input type can be set by selecting arbitrarily it from "⑧Input type", and push the SET button.

It can be set that selected only "①Operational expression".

CH : Channel No. is specified, and input the value.

DI : ON/OFF of the DI input is used for the operation as 1 and 0 of the numerical values. ※1、※3

Comm. : When the input is taken by the communication, the address is input.※1

Const. : The numerical value set to the const table beforehand is input.

Exp. : The operation result of the expression S1 ～ S3 is input as a numerical value.

ALM CH : ON/OFF of the alarm state is used for the operation as 1 and 0 of the numerical values. ※1

DO : Output state of DO is used for the operation as 1 and 0 of the numerical values. ※1

Pulse : "1" is outputted when DI is set to ON from OFF. (Pulse width is 200ms.) ※1
To execute a pulse count, it is necessary to use a SUM function.
[PL01~PL09] corresponds to [DI01~DI09].
(Refer page 2-10 for SUM function.)

Q exp. : Result of logical operation table is used for the operation as 1 and 0 of the numerical values. ※1

Cond. : The result of the logical operation table 1-100 is judged true(1) or false(0). When the result is true(1), the argument A is outputted. And when the result is false(0), the argument B is outputted. ※1

Timer : The timer of "T01~T06, U1, U2" is input on the condition in the table below as reset time of the operation result. ※2

※ Only the function for which "T" is specified can set the timer.（MAXtm、SUMhour function etc）

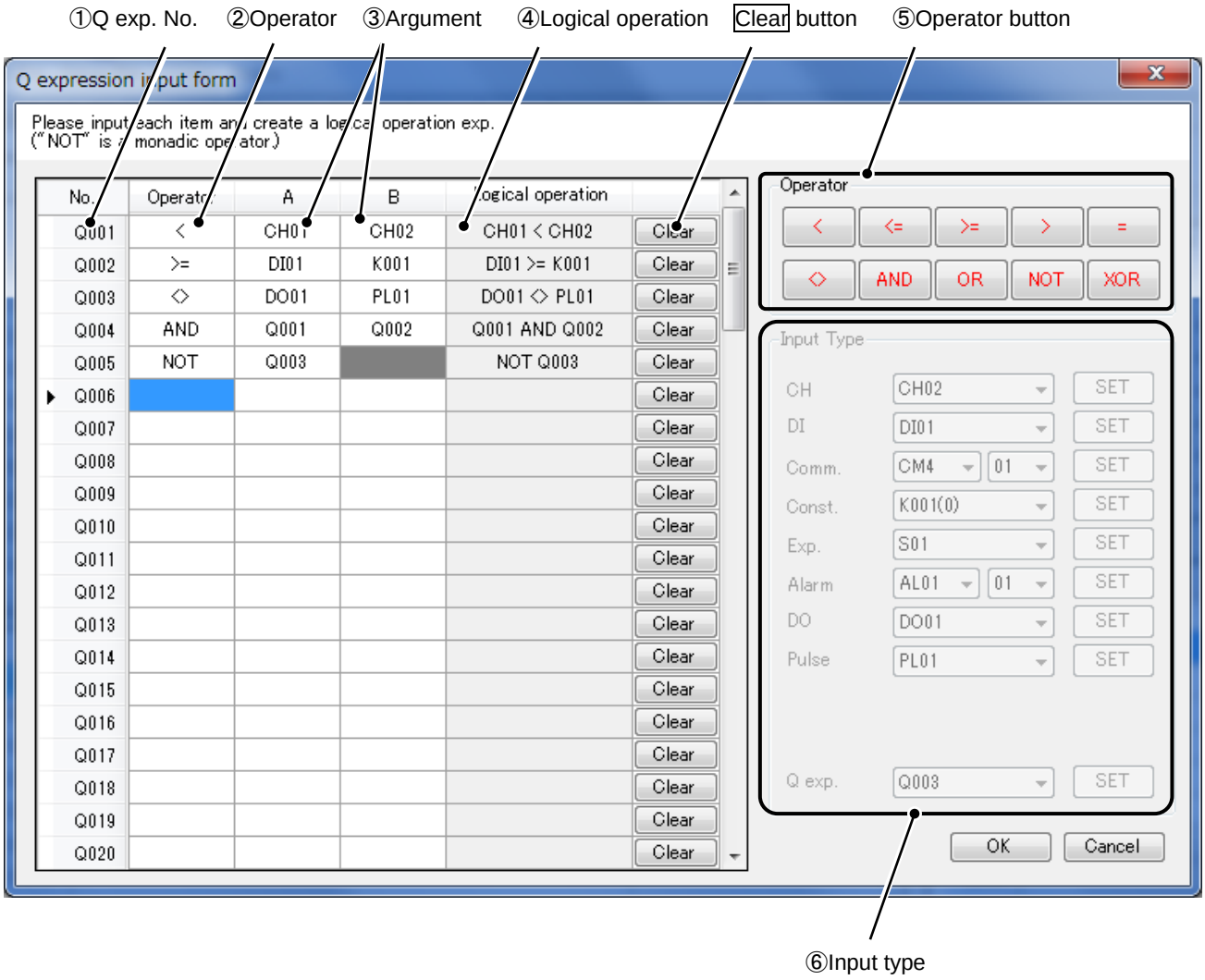
※1 It supports since software version 1.30.

※2 About T6 and U2, it supports since software version 1.30.

●Setting the logical operation table

Selection of [Q expression table] of [Calc. CH] will display Q expression input form (the following figure).

The result of a logical operation expression can be used as a numerical value, or conclusion conditions for the conditional branch "IF" by setting Arguments A, B and operator. (1 is outputted when the result of a logical operation expression is right. 0 is outputted when not right.)



① Q expression No.

Table number of the logical operation expression Q is displayed. [①Q expression No.] corresponds with number of the conditional branch "IF".

(Example: Conditional branch IF100 uses the result of Q expression No.100)

② Operator

Display the setting operator. Only [⑤Operator button] can be chosen.

When AND, OR, NOT, and XOR are chosen, only Q expression can be used for [③Argument].

Moreover, when NOT are chosen, only “Argument A” can be set.

③ Argument

Display the setting argument. Only [⑥Input type] can be chosen.

④ Logical operation

The logical operation expression of each Q expression table is displayed.

⑤ Operator button

Arbitrary operators can be set if [⑤Operator button] is chosen.

It can be set that selected only [②Operator]. As for the item under the selection, the background becomes light blue.

⑥ Input type

If arbitrary input types are chosen from the item of [⑧Input type] and the SET button is pushed, an input type can be set.

(It can be set that selected only [③Argument]. As for the item under the selection, the background becomes light blue.)

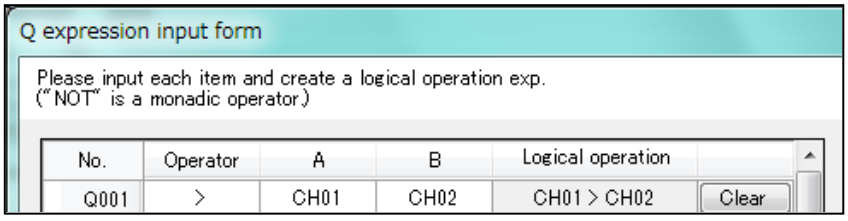
※ Refer "●Setting the calculation expression" of page 2-6 for each input types.

●The example of a logical operation table setting

Ex) The input value of CH01 and CH02 is compared. When input value of CH01 is larger than CH02, the value which increased the input value of CH01 10 times is outputted to CH13. Moreover, when input value of CH02 is larger than CH01, the value which decreased the input value of CH02 10 times is outputted to CH13.

・In "Q expression input form", it sets as follows.

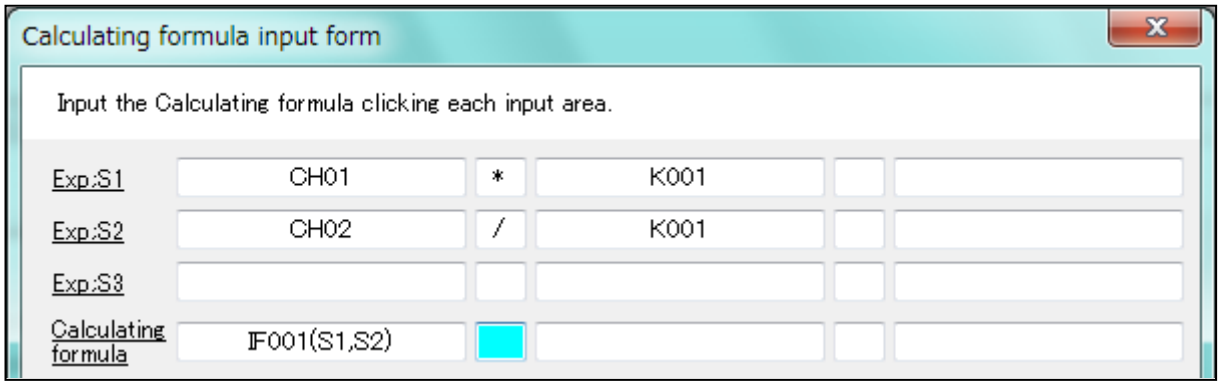
Q100 : "Operator : >", "Argument A : CH01", "Argument B : CH02".



・In "Calculating formula input form", it sets as follows.

"S1 : CH01 * K001(10)", "S2 : CH02/K001(10)", "Calculating formula : IF001(S1, S2)".

(A setting of a constant value K001 can be set up on the "Const. table" of a "Calc. CH".)



If set up as mentioned above. When the value of CH01 is larger than the value of CH02, the argument A of conditional branch IF001 (Exp; S1) is outputted to CH13. Moreover, when the value of CH01 is equal or smaller than the value of CH02, the argument B of conditional branch IF001 (Exp; S2) is outputted to CH13.

●Kind and explanation of timer

Item	Range	Content
T01	1～9999(sec)	Reset is executed at the cycle set by [Timer] of [Common Calc.]
T02	1～9999(min)	Reset is executed at the cycle set by [Timer] of [Common Calc.]
T03	None	Reset is executed at twelve o'clock (midnight) every day.
T04	None	Reset is executed at twelve o'clock (midnight) of Sunday every week.
T05	None	Reset is executed at twelve o'clock (midnight) of the first every month.
T06	None	Reset is executed at every o'clock.（※1）
U1	None	Reset by DI. To set it, [U1] is selected by [DI] of [Others].
U2	None	Reset by DI. To set it, [U2] is selected by [DI] of [Others].（※1）

※1 It supports since software version 1.30.

●Kind and explanation of function

Function name	Argu-ment (※1)	Name	Content
ABS	(A)	Absolute value	The absolute value of the input value is output.
POW	(A,B)	Involution	It calculates, "B power of A".
SQR	(A)	Square root	It calculates, square root of "A".
LOG	(A)	Common logarithm	It calculates, common logarithm of "A" (The bottom is a logarithm of 10.)
LN	(A)	Naturalized logarithm	It calculates, naturalized logarithm of "A". (The bottom is a logarithm of "e".)
EXP	(A)	Index	It calculates, index of "e".
RH	(A,B)	Relative humidity	When dry bulb temperature is "A" and wet bulb temperature is "B", relative humidity is calculated. At this time, relative humidity uses the following conditions and computes them in a formula of Sprung. Conditions: Wind speeds of 2.5 m/s or more. The temperature of a dry bulb and a wet-bulb is 0-100 degrees Celsius.
MAXin	(A,B)	Maximum value (Between two input)	The maximum value of "A" and "B" is output.
MINin	(A,B)	Minimum value (Between two input)	The minimum value of "A" and "B" is output.
MAXto	(A,B)	Maximum value (For continuous input)	The maximum value from A to B is output.
MINto	(A,B)	Minimum value (For continuous input)	The minimum value from A to B is output.
AVGto	(A,B)	Mean value (For continuous input)	The mean value from A to B is output.
MAXtm	(A,T)	Maximum value (Time series)	The maximum value is output at the interval time specified by "T" when "A" is input.
MINtm	(A,T)	Minimum value (Time series)	The minimum value is output at the interval time specified by "T" when "A" is input.
AVGtm	(A,T)	Mean value (Time series)	The mean value is output at the interval time specified by "T" when "A" is input.
SUM	(A,T)	Integrated value	The integrated value reset at the interval time specified by "T" is output, when "A" is input. The function is selected and used from the unit of input A.(※2)
SUMsec	(A,T)	Integrated value (Unit：sec)	
SUMmin	(A,T)	Integrated value (Unit：min)	
SUMhour	(A,T)	Integrated value (Unit：hour)	
FCAL	(A)	F value operation	The heat time (minute) needed to annihilate the microorganism in the input of A is outputted.
RATE	(A,T)	Change volume	The change volume of "A" is outputted with the time interval of "T". ※3
PASSsec	-	Progress time (sec)	The count value of progress time is outputted. (sec) ※3 ※4
PASSmin	-	Progress time (min)	The count value of progress time is outputted. (min) ※3 ※4
PASShour	-	Progress time(hour)	The count value of progress time is outputted. (hour) ※3 ※4
PASSday	-	Progress time (day)	The count value of progress time is outputted. (day) ※3 ※4
DEW	(A,B)	Dew point	When dry bulb temperature is "A" and wet bulb temperature is "B", relative dew point temperature is calculated. ※3

※1 A, B = All the input can be specified. T=Timer input(user reset is contained)

※2 The main body is measured with internal 100ms. Therefore, when you multiply the input value, it is not calculated correctly by the difference of the unit of the input source. Therefore, it is necessary to change the function by the unit of the input value.

As follows, table where “Timer unit” was compared with “Function name”, and example.

Timer unit	Function name	Calculation content	Ex) When input the 20L/min, SUM value of 1 minute.
None	SUM	Σ(Measure value)	12000
/s	SUMsec	Σ(Measure value / 10)	1200
/min	SUMmin	Σ(Measure value / 600)	20
/h	SUMhour	Σ(Measure value / 36000)	0.333

※3 It supports since software version 1.30.

※4 Refer item 7.25 of Paperless Recorder Manual（WXPVM70mnAR001E） for progress time.

If the result of an operation of each function exceeds -32000 or 32000, a value becomes L / H over.

2.4 Folder composition of SD card

When the SD card is inserted in the main body of the recorder, the “Recorder” folder is automatically made. “Recorder” folder contents are as follows.

［SD card folder composition］

[Recorder]-+-[Cap]
+-[Data]
+-[Etc]
+-[Prm]

1) Cap

The image taken by capture is preserved by bmp. The max preservation number is 100.

2) Data

The trend file measured with the main body is preserved. When the record begins, one new folder is made, and a new folder is made while recording whenever 50 dm files are created.

※ Naming rule of folder name

Folder name：YYMMDDHHmmss

※ Naming rule

YY：year 2 digit (00～99)
MM：month 2 digit (01～12)
DD：day 2 digit (01～31)
HH：hour 2 digit (00～23)
mm：minute 2 digit (00～59)
xxxx：Record management file numbering 4 digit (0000～0999)

Moreover, the content and the naming rule of the preserved file of each folder are as follows.

・Main record management file

It is a file that records “Trend data (main) record start time”, “Stop time”, and “Link information”.
By one "dm file", a "dmt file" manages to 50 file.
(If 50 or more "dmt files" are created, "dm file" is created newly.)
File name：xxxx_YYMMDDHHmm.dm
Extension：dm

・Main record trend file

It is a measurement data file divided at the file record cycle (main).
File name：xxxx_YYMMDDHHmm.dmt
Extension：dmt

・Main record event file

They are the history files of warning and the message, etc.
File name：xxxx_YYMMDDHHmm.dmt
Extension：dme

・Main record comment file

Data file of comment function. (It supports since recorder version 1.20.)
File name：xxxx_YYMMDDHHmm.dmt
Extension：dmc

・Sub record management file

It is a file that records “Trend data (sub) record start time”, “Stop time”, and “Link information”.
File name：xxxx_YYMMDDHHmm.ds
Extension：ds

・Sub record trend file

It is a measurement data file divided at the file record cycle (sub).
File name：xxxx_YYMMDDHHmm.dst
Extension：dst

3) Etc

The data of the character string table is preserved. (.txt)
The character string table can be used with the list key to the character input screen.
（Refer item 7.4 of Paperless Recorder Manual（WXPVM70mnAR001E）for Character Entry screen.）

4) Prm

Parameter configuration file (.dps) set with the main body of the recorder is preserved.
The “dps” file preserved in this folder can be read and written with the main body of the recorder.
Please put the file generated with the parameter loader in this folder.

2.5 The setting method of Modbus TCP connection

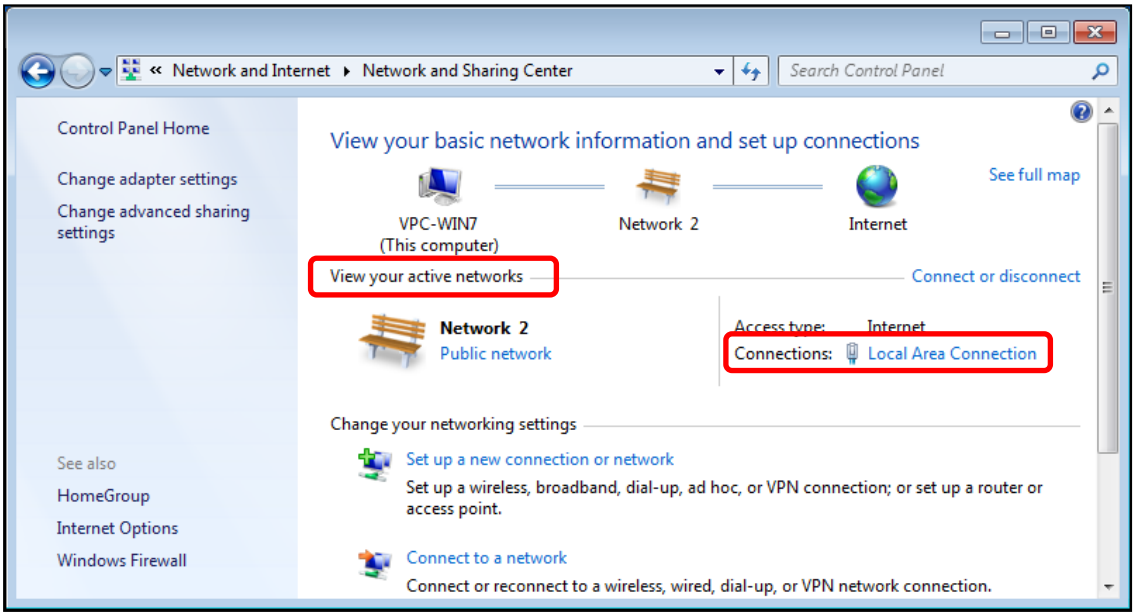
Writing and reading of a parameter can be performed with Modbus TCP connection.
(It supports since software version 1.20.)

Note） Only when the SD card is inserted in the recorder, reading and the writing of a parameter are performed.

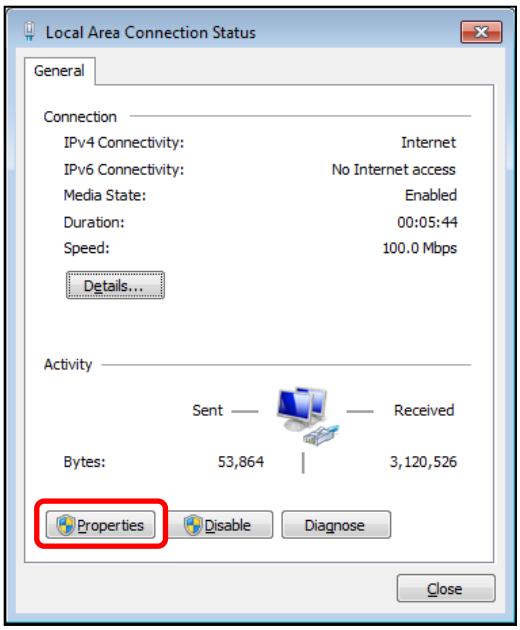
Select “File” ⇒ “Read parameters from the recorder” or “Write parameters to the recorder” from the menu bar.
Then, connection with a paperless recorder is started.

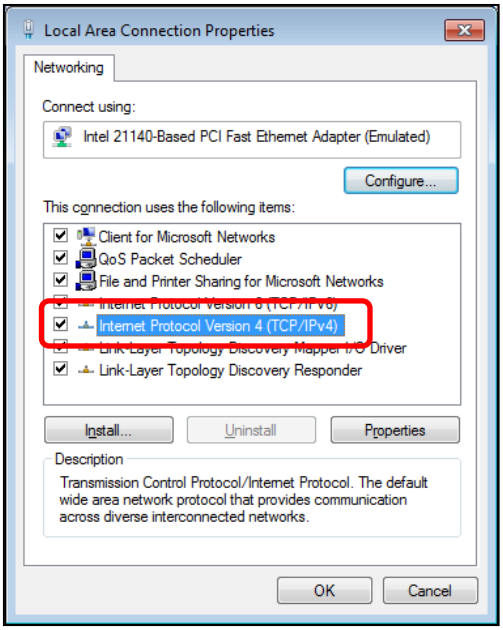
※ Please match “IP Address” of Data Viewer and “IP Address” of Paperless recorder from “Option” ⇒ “Communication” of the menu bar before it connects.
（IP Address of a Paperless recorder can be set from “System” ⇒ “Comm.” ⇒ “Ethernet1”.
Refer the following “● Example of setting IP Address” and “● Example of setting telecommunication facility” for the details.)

● Example of setting the IP address on a PC
- open [Control Panel] and select [Network and Sharing Center].

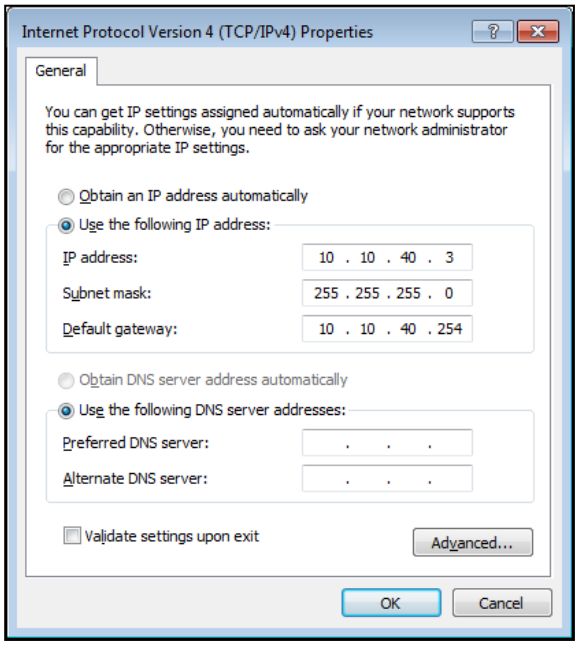


- When you select [Connections] under [View your active networks] , [Local Area Connection Status] window appears.





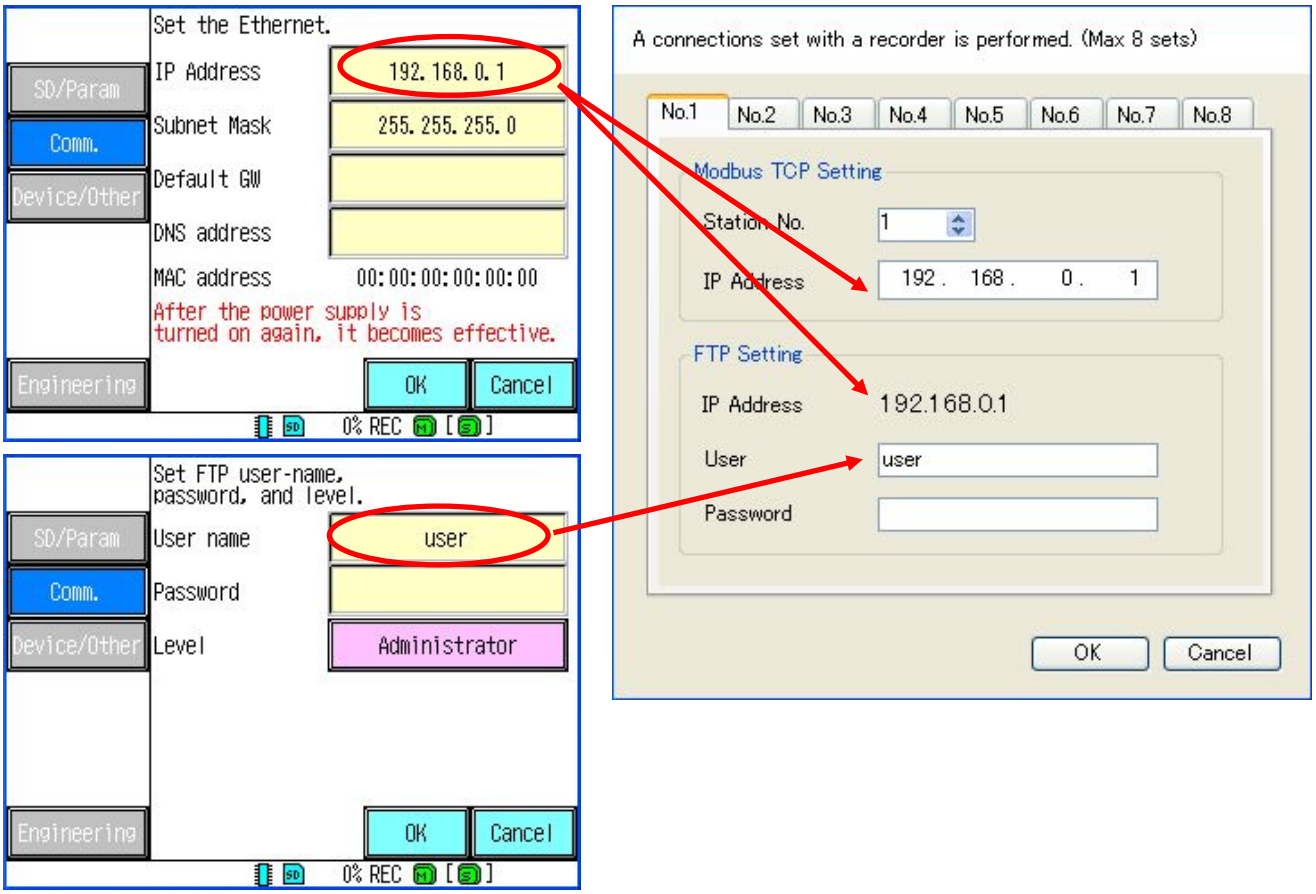
- Click the Properties button to open the Connection Properties window as shown.
- From the list, select [Internet Protocol Version 4 (TCP/IPv4)] to open the Internet Protocol Version 4 (TCP/IPv4) Properties window appears.



- Specify the pertinent IP address and subnet mask. This example assumes that the IP address is "10.10.40.3" and the subnet mask is "255.255.255.0."

※ When you set a DNS server address , an IP address, a subnet mask, and a default gateway, Ask a network administrator and set up carefully. When a setup is not right, the danger that an obstacle will occur is in a network.

● Example of setting telecommunication facility
When you select “View” ⇒ “Option” of the menu bar of the Parameter Loader.



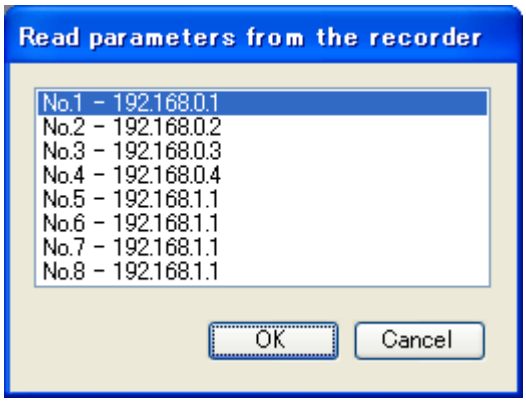
The “IP Address” of “Modbus TCP Setting” and “FTP Setting” is set to become it as well as “Paperless recorder (※Ethernet1)”. (In this case, “IP Address” is set as “192.168.0.1”.)
The “User” and “Password (It is omissible.)” of “FTP Setting” is set to become it as well as “Paperless recorder (※FTP)”. (In this case, “User” is set as “user”.)
OK is selected and the setting is preserved.

※ Refer item 8.6 and 8.10 of “Paperless Recorder manual” for the “Ethernet1” and “FTP”.

Moreover, a maximum of 8 sets of communication setting of a recorder can be performed by switching a tab.

Completion of network connection will display the window (following figure).

※ The error occurs if the SD card has not been inserted in the recorder. Please try again after inserting the SD card in the recorder.



In this case, if "No.1" is chosen and OK is pushed, the parameter set by the recorder will be read into a Parameter Loader.

Moreover, the parameter set with the Parameter Loader can be written to a recorder by choosing “File” ⇒ “Write parameters to the recorder” of a menu bar.

3. SETTING PARAMETERS

3.1 Input CH

［Input CH］

Item	Setting contents
Input type	Set the input type.
Burnout	Set the burnout function. (※1)
RJC	Select the RJC function. (※2)
RJC channel	Select the RJC channel. (1～48) (※3)
Scaling	Set the scaling and square rooter. (※4)
Meas. range(L)	Input the value of Meas. range (L). (※5)
Meas. range(H)	Input the value of Meas. range (H). (※5)
Scale range(L)	Input the value of scale range (L). (-32000～32000) (※5) (※7)
Scale range(H)	Input the value of scale range (H). (-32000～32000) (※5) (※7)
Decimal point	Set the decimal point. (0～4) (※5)
Unit	Set the unit. (※5)
TAG	Input the TAG.
Description	Set the comment for input channel.
Display color	Select the display color.
Range of scale(L)	Input the range of scale (L). (-32000～32000) (※7)
Range of scale(H)	Input the range of scale (H). (-32000～32000) (※7)
Scale No.	Specify which of up to three stages should be assigned to the scale. (1～3)
Partitions	Input the value of partitions. (0～20)
Input filter	Input the value of input filter (A time constant of the first order lag filter). (0～99)
Record type	Select the record type.
Offset	Input the value of offset. (-32000～32000) (※7)
Gain (%)	Input the value of gain. (-320.00～320.00)
Alarm Action	Select the action type.
DO No.	Select the DO No.
Alarm value	Input the alarm value. (-32000～32000) (※6) (※7)
Hysteresis(%)	Input the value of hysteresis. (0.0～100.00)
Alarm delay(sec)	Input the value of alarm delay. (0～3600)

※1 Burnout function can only be set when the input type is “DC Voltage (mV)” or “TC”.

※2 RJC function can only be set when the input type is “TC”.

※3 RJC channel can only be set when the “RJC” is “Assignment channel”.

※4 Scaling can only be set when the input type is “DC voltage” or “DC current”.
(Scaling is not set when the input type is “TC” or “RTD”.)

※5 This item can only be set when the “Scaling” is “ON” or “Square root ON”.

※6 Alarm value cannot be set when the “Alarm Action” is “Fault”.

※7 The decimal point position is set by another item.

3.2 Calc. CH

［Calc. CH］

Item	Setting contents
Decimal point	Set the decimal point. (0～4)
Unit	Set the unit.
TAG	Input the TAG.
Description	Set the comment for input channel.
Display color	Select the display color.
Range of scale(L)	Input the range of scale (L). (-32000～32000) (※1)
Range of scale(H)	Input the range of scale (H). (-32000～32000) (※1)
Scale No.	Specify which of up to three stages should be assigned to the scale. (1～3)
Partitions	Input the value of partitions. (0～20)
Input filter	Input the value of input filter. (0～99)
Record type	Select the record type.
Offset	Input the value of offset. (-32000～32000) (※1)
Gain (%)	Input the value of gain. (-320.00～320.00)
Alarm Action	Select the action type.
DO No.	Select the DO No.
Alarm value	Input the alarm value. (-32000～32000) (※1) (※2)
Hysteresis(%)	Input the value of Hysteresis. (0.0～100.00)
Alarm delay(sec)	Input the value of Alarm delay. (0～3600)

※1 The decimal point position is set by another item.

※2 Alarm value cannot be set when the “Alarm Action” is “Fault”.

[Const table]

Item	Setting contents
No.	Display the const table No.
Value	Set the value of const table. (-32768～32767) (※1)
Decimal point	Set the decimal point of const table. (0～4)

※1 The decimal point position is set by another item.

3.3 Common Calc.

［F value］

Item	Setting contents
Reference temp.(℃)	Input the value of reference temp. (-3200.0～3200.0)
Z value(℃)	Input the Z value. (-3200.0～3200.0)
Start temp.(℃)	Input the value of start temp. (-3200.0～3200.0)

［Timer］

Item	Setting contents
T1 timer(sec)	Input the value of T1 timer. (1～9999)
T2 timer(min)	Input the value of T2 timer. (1～9999)

3.4 Display

［Display］

Even each group 12CH can select it.

Item	Setting contents
Display	Select the display “ON”, “OFF”. (※)
Display name	Set the display name.
TAG disp set	Select the TAG display set.
Horizontal trend	The Horizontal trend display is “ON” and “OFF” is selected.
Vertical trend	The Vertical trend display is “ON” and “OFF” is selected.
Bar graph	The Bar graph display is “ON” and “OFF” is selected.
Digital display	The Digital display is “ON” and “OFF” is selected.

※ Display cannot be set when the “Group” is “Group1” or “Sub Group”.

［All ON/OFF］

Item	Setting contents
Group	Select the group No.
Action	Operation to selected group No. is selected.
OK	Start the operation.

［Auto change］（It supports since software version 1.30.）

Item	Setting contents
Auto disp change	ON/OFF of a auto display function is chosen.
Change cycle	The cycle which switches a group is chosen from "5 sec", "10 sec", "15 sec", "30 sec", and "60 sec".

3.5 Record

［Action (Main)］

Item	Setting contents
Record cycle	Select the record cycle.
File rec cycle	Select the file rec cycle. (※1)
File overwrite	Select the file overwrite function, when SD card memory full. (※2)

※1 The range that can be selected by the item at the record cycle changes.
"100 ms" cannot be selected by the main record.

※2 Old data is deleted and operation is set when select the "ON".
The record operation is stopped when the amount of the memory remainder is lost when select the "OFF".

Record cycle	File rec cycle
1sec ～ 5sec	1hour
10sec ～ 1min	1hour, 1day
2min ～ 3min	1hour, 1day, 1week
5min ～ 30 min	1hour, 1day, 1week, 1month
60min	1hour, 1day, 1week, 1month, 1year

［Action (Sub)］

Item	Setting contents
Sub rec cycle	Select the Sub record cycle.
Sub pre rec	Select the Sub pre record.
Sub rec timing	Select the Sub record timing.
DI No.	Select the DI No. (※1)

※1 "DI No." can only be displayed when the "Sub rec timing" is "DI".

［Schedule Record］

Item	Setting contents
Schedule	Select the schedule.
Start Time	Input the value of start time.
End Time	Input the value of end time.
Day of the week	Select the week. (Plurals can be selected.)

3.6 Others

［Edit of Unit］

Item	Setting contents
Unit	Input the unit.

［Message］

Item	Setting contents
Message	Input the message.
Timing	Select the timing of message is displayed.
DI No./CH No.	Select the DI number and CH number. (DI NO.：1～9, CH NO.：1～48) (※1)
Alarm No.	Select the alarm No. (1～4) (※2)

※1 These items can only be set when the “Timing” is “DI ON”, “DI OFF” or “ALM occurred”, “ALM recovered”.

※2 “Alarm No.” can only be displayed when the “Timing” is “ALM occurred” or “ALM recovered”.

［DI］

Item	Setting contents
DI	Select the DI function.

［Progress time］（It supports since software version 1.30.）

Item	Setting contents
Progress time	ON/OFF of a progress time display is chosen.
Condition	The conditions which start or stop the count of progress time are chosen.
DI No. / CH No.	Select the DI number and CH number. (※1)
Alarm No.	Select the alarm number. (※2)

※1 This item can only be displayed when the “Condition” is “DI” and “Alarm”.

※2 “DI No.” can only be displayed when the “Condition” is “Alarm”.

[Int. SP DO] (It supports since software version 2.10.)

Item	Setting contents
Output relay	Set the output destination of the Int. SP DO.

Int. SP DO list

Relay No.	Exposition	Operating Conditions	Operates the relay
201	Always ON	The relay output will be “ON” during turned on the power.	The relay output is on.
202	Always OFF	The relay output will be “OFF” during turned on the power.	The relay output is off.
203	ON for 5s at startup	After turning on the power and shifting to the trend screen, the relay will be "ON" for 5 seconds.	The relay turns "ON" for 5 seconds and "OFF" after 5 seconds.
204	(*)Reserve		
205	SD 10% or less	・SD mount : When the memory remaining capacity indication is 10% or less ・SD unmount : When the memory remaining capacity indication is 50% or less	The relay output is on.
206～209	(*)Reserve		
210	Operates recording main record	During operates recording main record / During stops recording main record	The relay output is on./ The relay output is off.
211	Operates recording sub record	During operates recording sub record / During stops recording sub record	The relay output is on./ The relay output is off.
212	Stops recording main record	During stops recording main record / During operates recording main record	The relay output is on./ The relay output is off.
213	Stops recording sub record	During stops recording sub record / During operates recording sub record	The relay output is on./ The relay output is off.
214～220	(*)Reserve		

(*) System area. It can not be set arbitrarily.

3.7 Comm.

[Ethernet1]

Item	Setting contents
IP Address	Input the IP address.
Subnet Mask	Input the subnet mask.
Default GW	Input the default GW.
DNS address	Input the DNS address.

[Ethernet2]

Item	Setting contents
Keep alive	Select the keep alive function.
Keep alive cycle(min)	Input the value of keep alive cycle. (1～240)

[SNTP]

Item	Setting contents
SNTP Func	Select the SNTP function.
SNTP address	Input the SNTP address.
Cal cycle time (hour)	Input the value of Cal cycle time. (1～200)
Get the time, when power ON	The function to acquire time when the power supply is turned on is “ON” and “OFF” is selected.
Time zone (UTC)	Select the time zone.

［FTP］

Item	Setting contents
User name	Input the user name.
Password	Set the password. (Can only use capital letter alphabet.)
Level	Select the level.

3.8 Comm. 2

［Modbus］

Item	Setting contents
Operation	Select the operation of Modbus TCP(Ethernet) or Modbus RTU.(RS-485)
Station No.	Input the value of station No. (0～247)
Parity	Select the parity function.(none, odd, even)
Stop bit	Select the stop bit from 1 bit and 2 bit
Transmission rate (bps)	Select the Transmission rate. (9600, 19200, 38400)
Modbus TCP Receive timeout (min)	Input the time until timeout. (1～240)
Send timeout	Set the timeout time from 1 second, 5 seconds, 10 seconds. (※1)
Auto Retry	Set the reconnection cycle when the connection with the slave device is disconnected. (※1)
Interval	Set the cycle for communicating with the slave device from 1 second, 2 seconds, 5 seconds, 10 seconds. (※1)

※1 This can be set when “Master / Slave” is selected as “Master (General)”.

3.9 Comm. 3

* This item can be set with software version 2.20 or later.

［Modbus Master Write Param］

Item	Setting contents
Write ID	It is possible to write data to up to 24 slave devices. Select the ID to be set. (1 - 24)
Slave ID	Sets the Modbus RTU slave ID. (0-247) If it is 0, it is recognized as unconnected and no data writing operation is performed.
Rel. address	Set the communication address of the slave device. (0-9999) * The function code is fixed at "0x10".
Send Data Type	Select the type of data to be sent from "Channel" and "Constant". Set together with the transmission data No. setting in ⑤. Channel: The measured value of the selected channel No. is used as the send data. Constant: The value in the constant table is used as the send data. (The constant table can be set up in the "Constant table" section in section 3.2.)
Send Data No.(CH)	Select any channel No.. (1-48)
Send Data No. (Constant)	Select any constant No.. (1 to 100)
Length	Sets the number of data to be sent to the slave device.

［Modbus Master Write (Cyclic)］

Item	Setting contents
Comm. ID	Select the communication ID to be set. (51-62) It is possible to periodically set data to up to 12 different slaves with communication IDs 51 to 62.
Write (Cyclic)	Set ON / OFF for the cyclic write operation of each communication ID.
Write ID	Select the write ID set in [Modbus Master Write Param]. (1-24) Refer to the set ID and decide the destination and the content of the data to be sent.

［Modbus Master Write (Display)］

Item	Setting contents
Button No.	Select the button No. to set. (1-8) It is possible to set up to 8 buttons.
Write (Display)	Set ON / OFF of each write button.
Button Name	Set the button name. (Up to 8 characters can be registered.)
Write ID	Select the write ID set in [Modbus Master Write Param]. (1-24) Refer to the set ID and decide the destination and the content of the data to be sent.

［Modbus Master Write (Event)］

Item	Setting contents
Event No.	Select the event No. to set. (1-24) It is possible to set for up to 24 events.
Timing	Select when the event should occur. OFF : Event writing is not performed. FUNC key : Writes an event triggered by the FUNC key. (* When set to FUNC key, set the function setting of FUNC key in Section 3.10 to "Msg.&EventWrt.".) Alarm occurred : Writing is performed at the timing when the alarm of the set channel number and alarm number occurs. Alarm cleared : Writing is performed at the timing when the alarm of the set channel number and alarm number cleared. DI ON : Writing is performed when the set DI No. turns from OFF to ON. DI OFF : Writing is performed when the set DI No. turns from ON to OFF.
DI No./CH No.	Select the channel No. or DI No. (CH01-48) (DI1-9) (※1)
Alarm No.	Select the alarm No. (1-4) (※2)
Write ID	Select the write ID set in [Modbus Master Write Param]. (1-24) Refer to the set ID and decide the destination and the content of the data to be sent.

※1 These items can only be set when the “Timing” is “DI ON”, “DI OFF” or “ALM occurred”, “ALM cleared”.

※2 “Alarm No.” can only be displayed when the “Timing” is “ALM occurred” or “ALM cleared”.

3.10 Device/Other

［LCD］

Item	Setting contents
Sleep time (min)	Input the value of sleep time. (0～60)
Action brightness	Input the value of LCD active brightness. (2～5)
Sleep brightness	Input the value of LCD sleep brightness. (0～4)
LCD alarm Recovery	At the time of LCD OFF, if an alarm occurs, LCD is turned ON. (※)

※ It supports since software version 1.20.

［Jump menu］

Item	Setting contents
JUMP Menu	The item added to the menu display is selected.

［Device］

Item	Setting contents
Operation mode	Select the operation mode.
FUNC key	Set the function key. (※1)
File format	Select the file format.
Language	Select the language of recorder. (※2)
Date format	Select the date format. (※2)

※1 “Addition reset” of this item supports since software version 1.20.
"Product Regist." of this item supports since software version 2.10.

※2 This item cannot be set by a version that is newer than recorder version 1.10 or this. Please set it with the recorder.

3.11 Products Display

※ This item can be set in software version 2.10 or later.

［Products Display］

Item	Setting contents
Products Display	Select ON or OFF whether to record production information.
Title	Enter the title of the production information to be registered.
Display	Set ON / OFF of the production information to be registered.

4. SETTING MENUS

4.1 File

［File］

Item	Setting contents
New	Make the new file.
Open	Open the recording data.
Save	Save the current display status. (※1)
Save As	A present display is saved specifying the name and the preservation place. (※1)
Read parameters from the recorder	Load the setting of the recorder by Modbus TCP. (※2)
Write parameters to the recorder	Write the setting of the Parameter Loader to recorder by Modbus TCP. (※2)
Exit	End the Parameter Loader.

※1 When you insert the SD card in the main body of the recorder, the folder of the name called "Recorder" is automatically made.
When you read and write the setting data with the main body of the recorder, please preserve the setting in the folder of "Prm" that exists under the folder of the name called "Recorder".
(Refer item 2.4 for details.)

※2 It supports since software version 1.20.

4.2 Edit

［Edit］

Item	Setting contents
Copy	The selected part is copied.
Paste	The copied part is put.

4.3 View

［View］

Item	Setting contents
Option	Set the setting that need to "Modbus TCP". (Max 8) (※)
ToolBar	Select the "Display/non-display" of tool bar.

※ It supports since software version 1.20.

4.4 Language

［Language］(※1)

Item	Setting contents
Japanese	Change the Japanese.
English	Change the English.
Czech	Change the Czech. (※2)
Chinese	Change the Chinese. (※2)
Korean	Change the Korean. (※3)

※1 It is necessary to reactivate the Parameter Loader to apply the change.

※2 It supports since software version 1.10.

※3 It supports since software version 1.11.

4.5 Help

［Help］

Item	Setting contents
About	Display the version of Parameter Loader.