

**TOSVERT VF-S15**

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**My function-S setting Tool PCL001Z**

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**Instruction Manual**

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**NOTICE**

1. Read this manual before installing or operating. Keep this instruction manual on hand of the end user, and make use of this manual in maintenance and inspection.
2. All information contained in this manual will be changed without notice. Please contact your Toshiba distributor to confirm the latest information.

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## 1. Introduction

The My function-S setting tool “PCL001Z” for VF-S15 is the software that performs the following functions when used with an inverter connected to a computer via an RS-485 communications device. Please read this manual carefully along with the instruction manual for VF-S15 before using PCL001Z and use it correctly.

- Exporting and Importing parameters
- Graphical making of logic sequence
- Save and Load of setting parameters
- Real time monitor (You can monitor the terminal state and part of monitor parameter)

\*1 PCL001Z does not support any inverters other than VF-S15.

\*2 To use PCL001Z, the USB converter unit shown in Fig. 1 below are required.

\*3 PCL001Z use the TOSHIBA inverter protocol. Therefore, please set the TOSHIBA protocol (F829 = 0) to the protocol selection of drive.

- USB converter unit (part Ⓐ in this figure)
- Inverter interconnect cable (part Ⓑ in this figure)
- Computer interconnect cable (part Ⓒ in this figure)

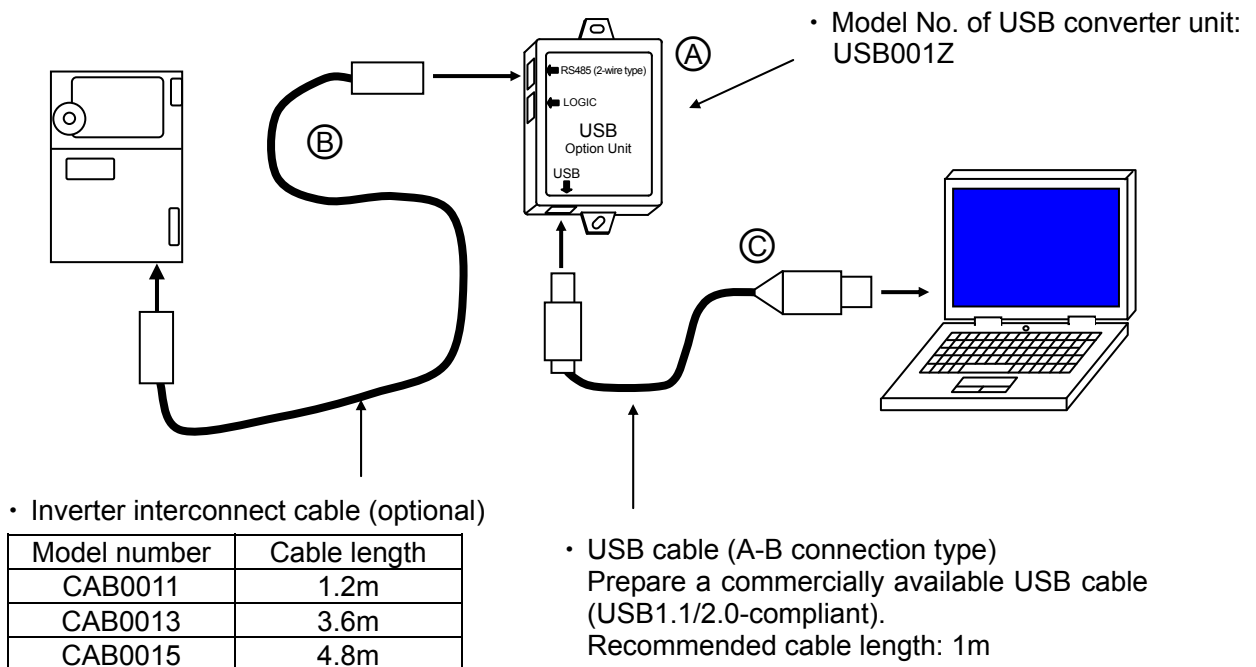


Fig. 1 An example of connection of USB converter unit

\*4 System requirements (Same as Microsoft® Excel® 2010)

CPU: 500-megahertz (MHz) processor or higher

Memory: 512 MB or higher

HDD: 3.5GB or higher

Display: 1024 × 768 or higher

Operating environment: Microsoft® Excel® 2010

Others: A USB port is required for the computer to connect to the inverter.

It is recommendable to use a mouse or a similar pointing device for operation.

\*5 Connect the optional USB communication converter before starting PCL001Z. Do not plug or unplug the connector when PCL001Z is running.

\*6 How to install PCL001Z

To install PCL001Z, just extract the zip file and move it into the desired folder.

Take the following precautions when installing PCL001Z.

- Exit running application programs.
- When updating latest PCL001Z, uninstall the old version of PCL001Z. (The version of PCL001Z is shown in the Opening window.)

\*7 How to uninstall PCL001Z

To uninstall PCL001Z, just remove the folder containing PCL001Z from the computer.

☆ The specifications of this software is subject to change without notice.

☆ Toshiba Schneider Inverter assumes no responsibility for damage caused directly or indirectly by the use or a malfunction of this software product.

☆ These system requirements are minimum conditions required for the use of PCL001Z. They do not guarantee that all functions of PCL001Z are performed normally.

☆ Windows® is listed as the abbreviation for a Microsoft® Windows® operating system. Microsoft® Windows® and Microsoft® Excel® are registered trademarks or trademarks of the US Microsoft Corporation in the USA and other countries.

☆ The symbols used in this manual have the following meanings.

[ ]: Buttons or radio buttons in windows of PCL001Z or Microsoft Windows

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## 2.How to use PCL001Z

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### 2.1.Enabling macros

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When PCL001Z is started for the first time, the dialog box (shown in Fig. 2.1-1 or 2) may appear. If it appears, click the [Enable Macros] or [Enable Content], because PCL001Z uses macros.

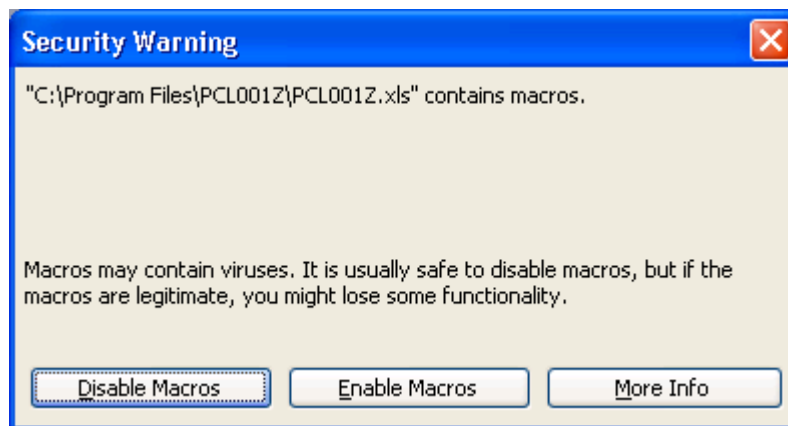


Fig. 2.1-1 Security warning 1

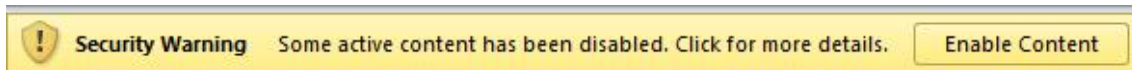


Fig. 2.1-2 Security warning 2

## 2.2. License agreement

When PCL001Z is started for the first time or after macros have been enabled, the PCL001Z license agreement window (Fig. 2.2-1) appears. Read the contents carefully and click [I Agree] if you wish to use PCL001Z. Clicking [I Do Not Agree] closes the Excel book.

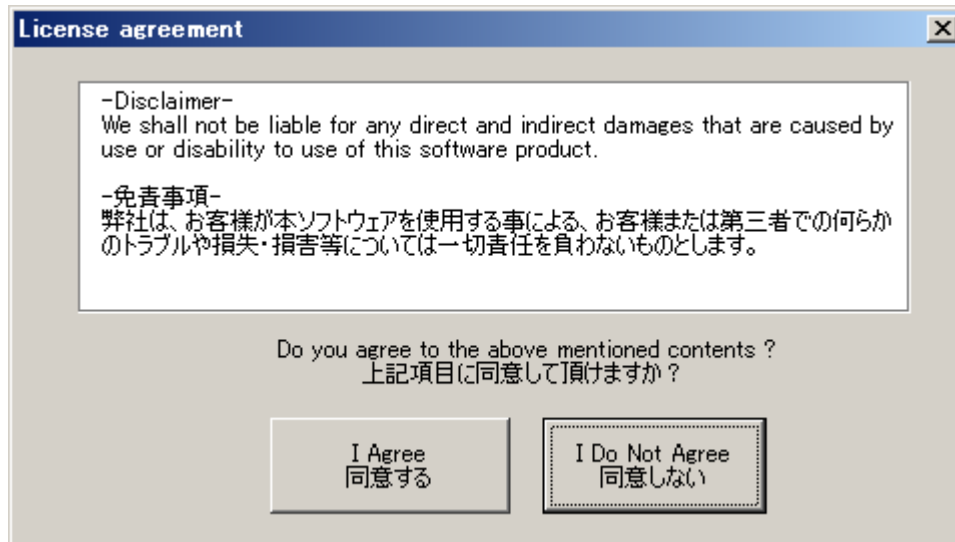


Fig. 2.2-1 License agreement

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## 2.3. Opening window

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When macros are executed, the Opening window (Fig. 2.3) appears .

The main window is shown by clicking [OK].



Fig. 2.3 Opening window

## 2.4.Main window

### 2.4.1.Outline of main window

In this window (Fig.2.4-1), you can make the logic with My function-S, Upload/Download of inverter parameters, Save/Open of setting parameters, etc.

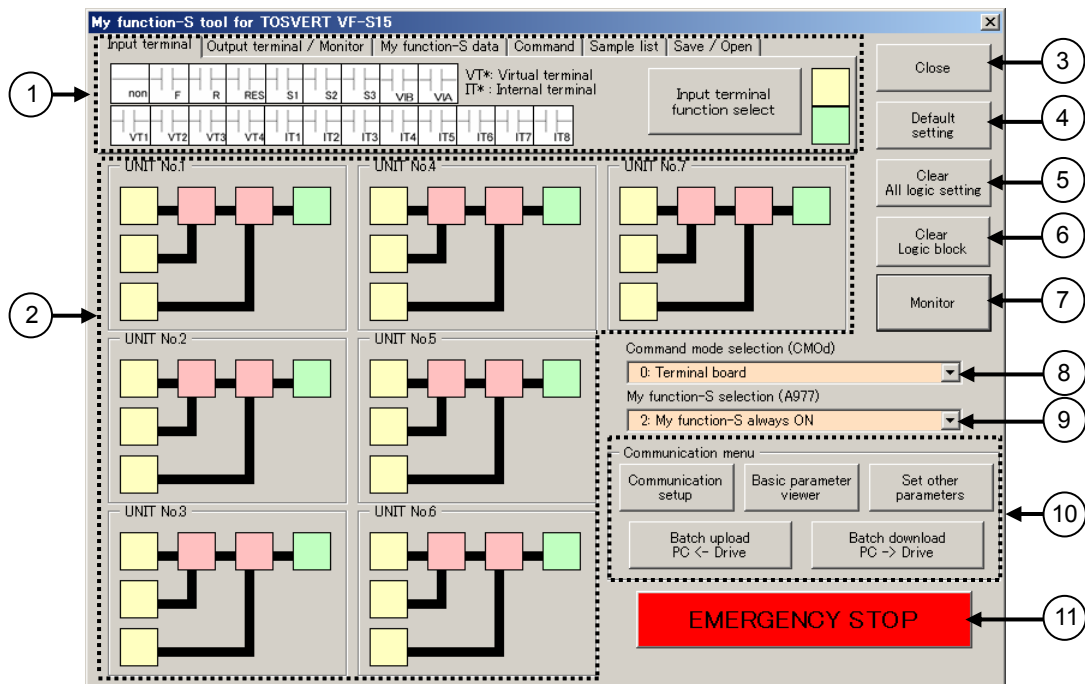


Fig. 2.4-1 Main window

#### ① Tab menu

Icons of Input terminal, Output terminal, My function-S data and Command for set to logic setting area are listed.

Setting of sample and Save/Open of setting are done by this menu.

Please refer to section 2.4.2 for information of tab menu.

#### ② Logic setting area

You can do the graphical making of logics for My function-S by setting icons to this area.

Please refer to section 2.4.3 for information of logic setting area.

#### ③ [Close]

PCL001Z is closed by clicking this button.

The setting of the parameters on PCL001Z is not preserved.

Please save the setting from the tab menu when preservation is necessary.



④ [Default setting]

The initializing command is transmitted to the inverter, and initialization (TYP3) of parameters is executed by clicking this button.

⑤ [Clear All logic setting]

Basic parameters and other parameters on PCL001Z are cleared by clicking this button.

⑥ [Clear Logic block]

Mouse pointer becomes to eraser shape, and becomes to be able to delete logic as Fig. 2.4-1 by clicking this button.

Mouse pointer becomes to normal shape, and release the delete mode as shown in Fig. 2.4-2 by one more click the this button or click the icon of tab menu.

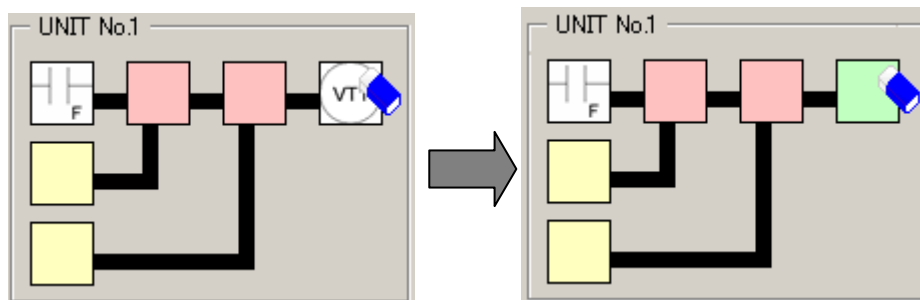


Fig. 2.4-1 Clear of the logic

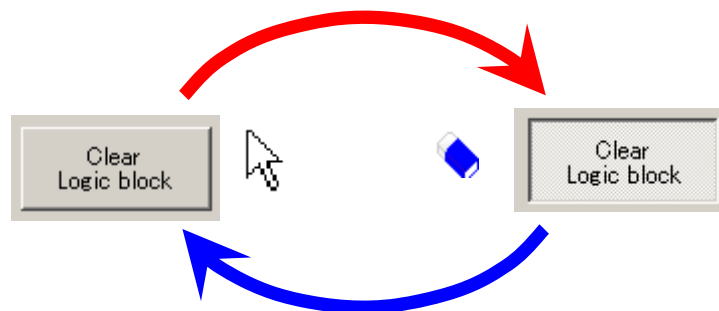


Fig. 2.4-2 Toggle the mouse pointer

⑦ [Monitor]

Real time monitor window is shown by clicking this button.

Please refer to section 2.5 for information of real time monitor window.

## ⑧ Command mode selection (CMOd)

You can choose command mode selection.

This setting is reflected to the inverter parameter when downloading all the parameters to the inverter by used [Download All parameters PC -> Drive].

Also, inverter parameter setting is reflected to this setting when uploading all the parameters from the inverter by used [Uploading All parameters PC <- Drive].

## ⑨ My function-S selection (A977)

You can choose My function-S selection.

This setting is reflected to inverter parameter when downloading all the parameters to the inverter by used [Download All parameters PC -> Drive].

Also, inverter parameter setting is reflected to this setting when uploading from the inverter by used [Uploading All parameters PC <- Drive].

## ⑩ Communication menu

Settings of communication and Upload/Download of settings are done in this menu.

Please refer to section 2.4.4 for information of communication menu.

## ⑪ [EMERGENCY STOP]

The emergency stop command is transmitted to the inverter, and emergency stop trip is occurred by clicking this button.

Please use this function, when it is difficult to stop the inverter by the terminal input due to getting into the loop logic.

## 2.4.2. Tab menu

Menu is changed by clicking tab on upper tab menu. In this section, inform the each menu.

### 1. Input terminal menu

Menu of Fig. 2.4-3 is shown by clicking “Input terminal” tab.

Selecting of input terminal for making logic can be done in this menu.

Please refer to section 2.4.3 for information of logic making.

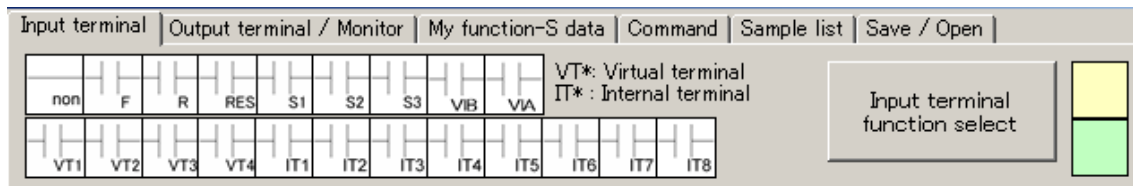


Fig. 2.4-3 Input terminal menu

Input terminal setting window of Fig. 2.4-4 is shown by clicking [Input terminal function select].

The settings of input terminal function (F104, F108 to F118) can be done in this menu.

If you use inversion, please check the “Reverse signal” check box on the right of applied terminal setting.

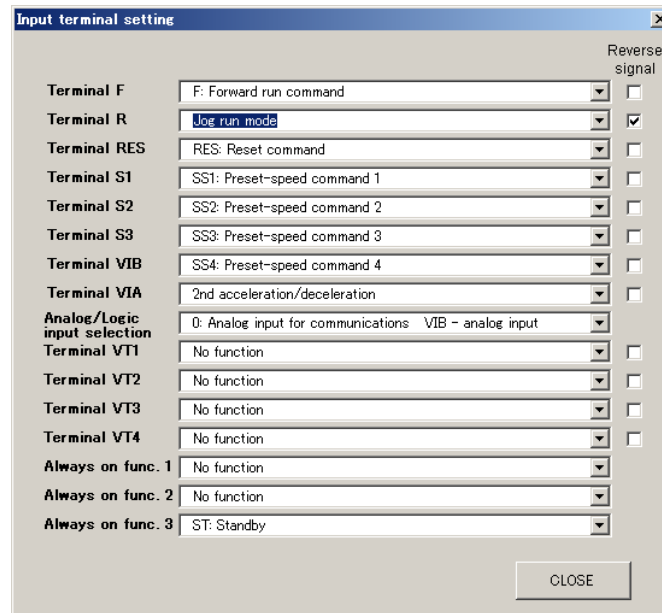


Fig. 2.4-4 Input terminal setting window

## 2. Output terminal / Monitor menu

Menu of Fig. 2.4-5 is shown by clicking “Output terminal / Monitor” tab.

Selecting of an output terminal and monitor data for making logic can be done in this menu.

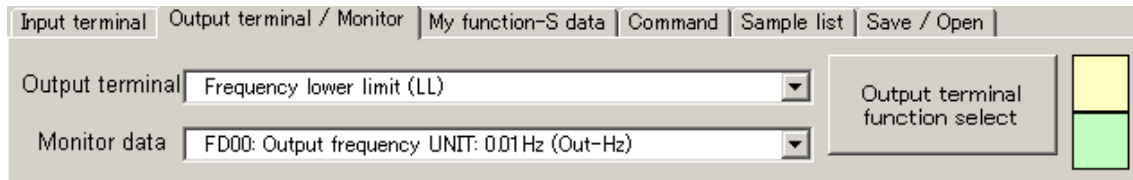


Fig. 2.4-5 Output terminal / Monitor menu

Output terminal setting window of Fig. 2.4-6 is shown by clicking [Output terminal function select].

The settings of output terminal function (F130 to F139) can be done in this menu.

If you use inversion, please check the “Reverse signal” check box on the right of applied terminal setting.

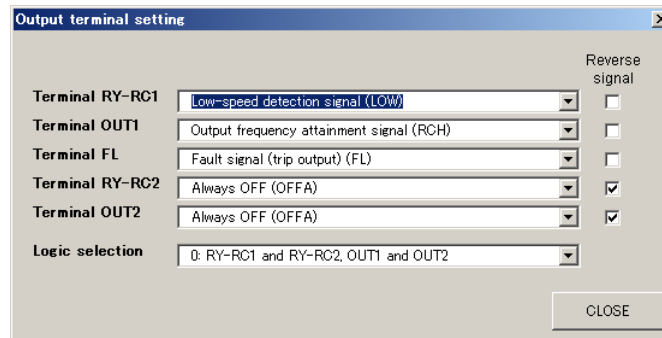


Fig. 2.4-6 Output terminal setting window

### 3. My function-S data menu

Menu of Fig. 2.4-7 is shown by clicking “My function-S data” tab.

Selecting of My function-S data for making logic can be done in this menu.

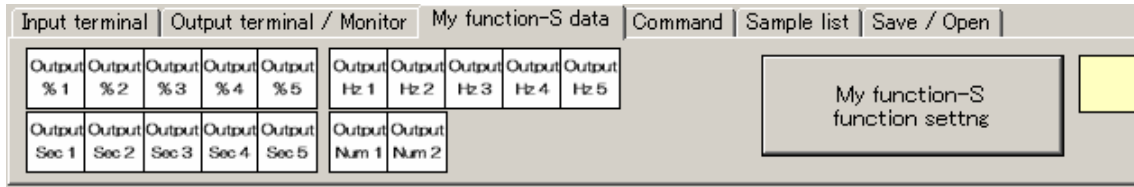


Fig. 2.4-7 My function-S data menu

Logic data setting window of Fig. 2.4-8 is shown by clicking [My function-S function setting].

The settings of input terminal function (A918 to A934) can be done in this menu.

If you use inversion, please check the “Reverse signal” check box on the right of applied terminal setting.

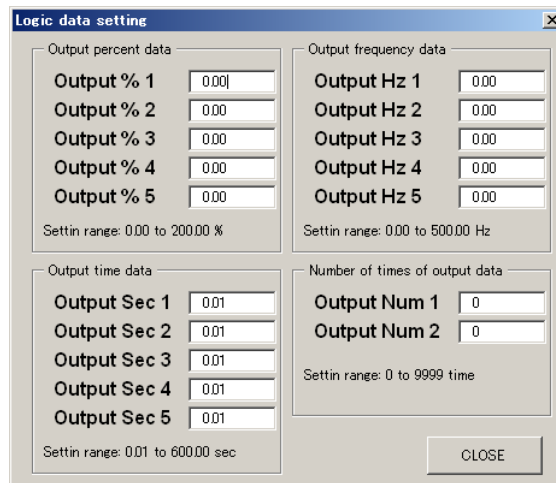


Fig. 2.4-8 Logic data setting menu

## 4. Command menu

Menu of Fig. 2.4-9 is shown by clicking “Command” tab.

Selecting of commands for making logic can be done in this menu.

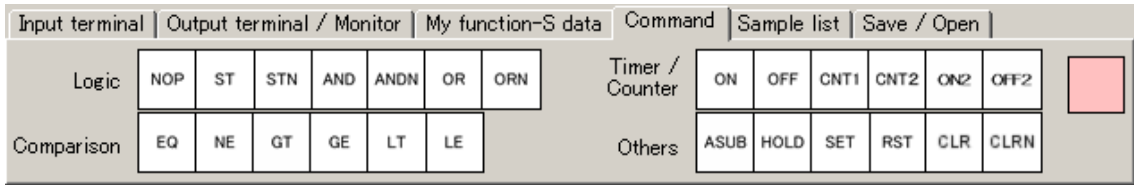


Fig. 2.4-9 Command menu

## 5. Sample list menu

Menu of Fig. 2.4-10 is shown by clicking “Sample list” tab.

Setting of some samples can be done in this menu.

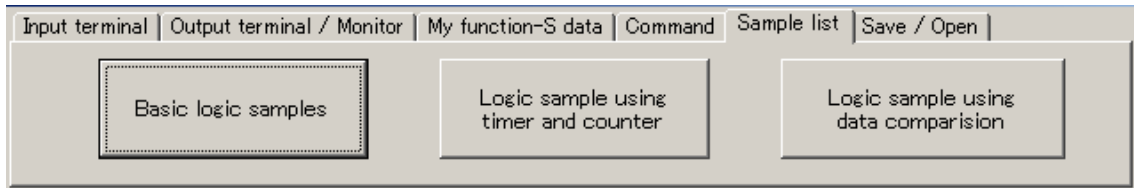


Fig. 2.4-10 Sample list menu

Sample windows are shown by clicking each button.

This section explains based on the basic logic sample window. (Fig. 2.4-11)

You can choose any sample from five samples, and set. The figure of sample logic and short information are shown by clicking any tab.

After clicking the [SET], logic sample is set to logic setting area by selecting the “Yes(Y)” in notice window for set the sample. (Fig. 2.4-12)

In this function, please note that all basic parameters and other parameters are overwritten.

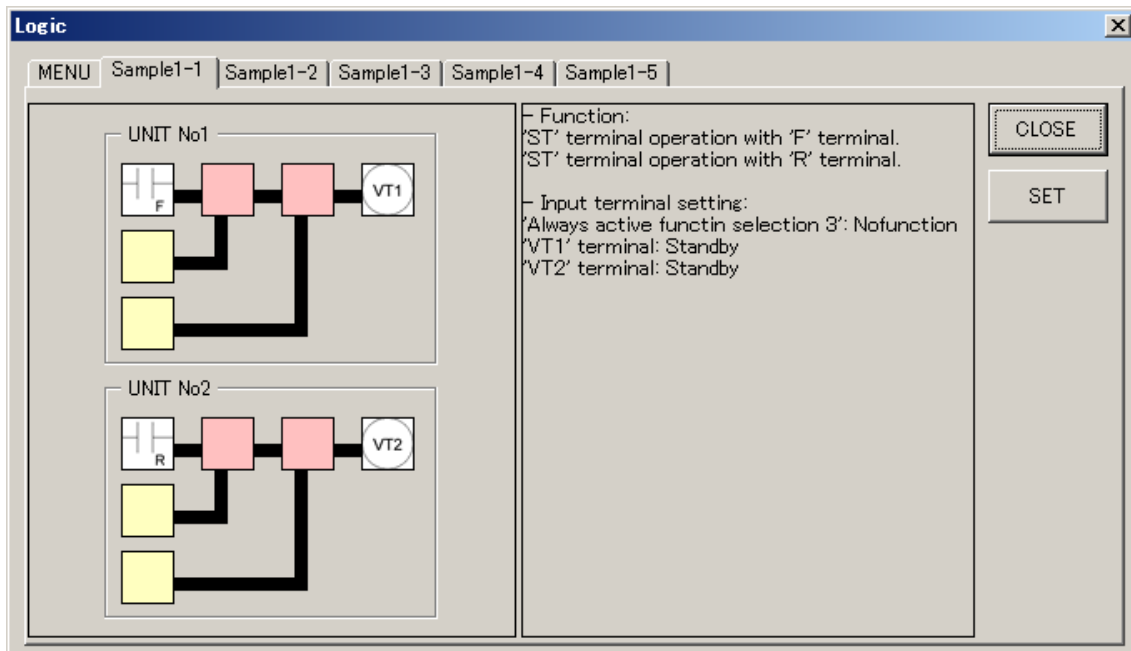


Fig. 2.4-11 Basic sample logic window

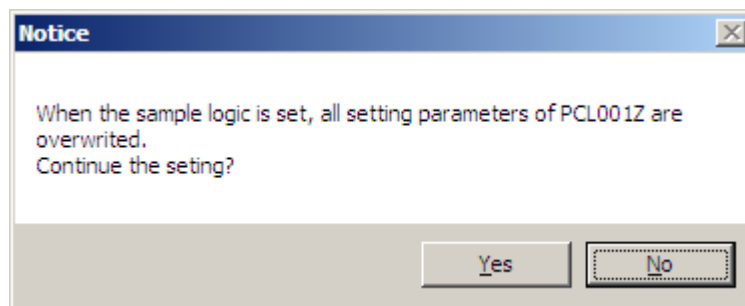


Fig. 2.4-12 Notice window for set the sample

## 6. Save / Open menu

Menu of Fig. 2.4-13 is shown by clicking “Save / Open” tab.

Save/Open of basic parameters and other parameters and making of new logic are done in this menu.

When the parameter registered in other parameters overlaps with the basic parameter of basic parameters view list, the parameter is not preserved as other parameters.

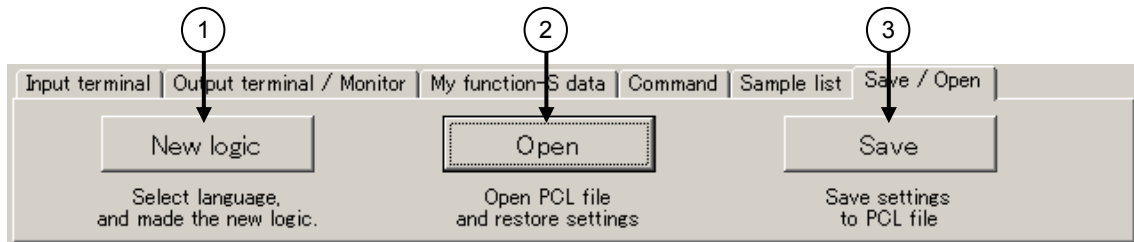


Fig. 2.4-13 Save / Open menu

### ① [New logic]

Create a new logic by clicking this button.

### ② [Open]

Load the stored settings by clicking this button.

### ③ [Save]

Save the current settings to file by clicking this button.

File name is created automatically according to the date and time (Extension is "\*.pcl"). File name can be changed.

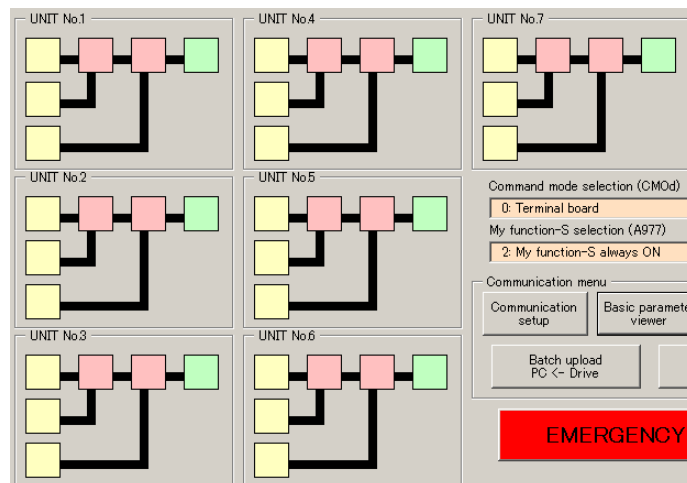


## 2.4.3.Logic setting area

### 2.4.3.1.Outline of logic setting area

You can do the graphical making of logics for My function-S by set icons to logic setting area. (Fig. 2.4-14)

Each logics of No.1 to No.7 are pairing with inverter parameters as Table1 in next page.



- ① Input function target 1
- ② Input function command 2
- ③ Input function target 2
- ④ Input function command 3
- ⑤ Input function target 3
- ⑥ Output function assigned object

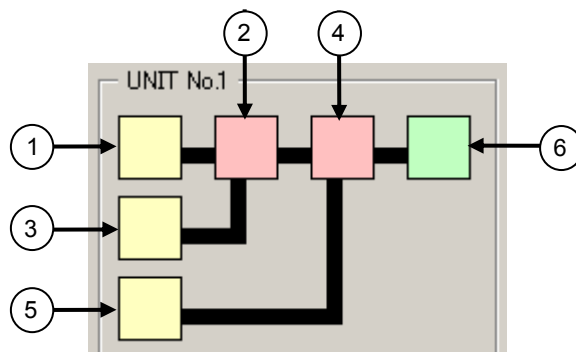


Fig. 2.4-14 Logic setting area

- Input function target 1 to 3

This area can be set the input function. Input terminal, output terminal, monitor data and My function-S data can be set.

- Input function command 2 to 3

This area can be set the command for input function.

You can use logical calculation, timer, counter and set etc.

- Output function assigned object

This area can be set that where is output result of the input function target and input function command. Input terminal and My function-S data can be set.

Table1. Logic setting area pairing

Unit No.	Logic	Inverter parameter	Function name
Unit No. 1	Input function target 1	<i>A900</i>	Input function target 11
	Input function command 2	<i>A901</i>	Input function command 12
	Input function target 2	<i>A902</i>	Input function target 12
	Input function command 3	<i>A903</i>	Input function command 13
	Input function target 3	<i>A904</i>	Input function target 13
	Output function assigned object	<i>A905</i>	Output function assigned object 1
Unit No. 2	Input function target 1	<i>A906</i>	Input function target 21
	Input function command 2	<i>A907</i>	Input function command 22
	Input function target 2	<i>A908</i>	Input function target 22
	Input function command 3	<i>A909</i>	Input function command 23
	Input function target 3	<i>A910</i>	Input function target 23
	Output function assigned object	<i>A911</i>	Output function assigned object 2
Unit No. 3	Input function target 1	<i>A912</i>	Input function target 31
	Input function command 2	<i>A913</i>	Input function command 32
	Input function target 2	<i>A914</i>	Input function target 32
	Input function command 3	<i>A915</i>	Input function command 33
	Input function target 3	<i>A916</i>	Input function target 33
	Output function assigned object	<i>A917</i>	Output function assigned object 3
Unit No. 4	Input function target 1	<i>A935</i>	Input function target 41
	Input function command 2	<i>A936</i>	Input function command 42
	Input function target 2	<i>A937</i>	Input function target 42
	Input function command 3	<i>A938</i>	Input function command 43
	Input function target 3	<i>A939</i>	Input function target 43
	Output function assigned object	<i>A940</i>	Output function assigned object 4
Unit No. 5	Input function target 1	<i>A941</i>	Input function target 51
	Input function command 2	<i>A942</i>	Input function command 52
	Input function target 2	<i>A943</i>	Input function target 52
	Input function command 3	<i>A944</i>	Input function command 53
	Input function target 3	<i>A945</i>	Input function target 53
	Output function assigned object	<i>A946</i>	Output function assigned object 5
Unit No. 6	Input function target 1	<i>A947</i>	Input function target 61
	Input function command 2	<i>A948</i>	Input function command 62
	Input function target 2	<i>A949</i>	Input function target 62
	Input function command 3	<i>A950</i>	Input function command 63
	Input function target 3	<i>A951</i>	Input function target 63
	Output function assigned object	<i>A952</i>	Output function assigned object 6
Unit No. 7	Input function target 1	<i>A953</i>	Input function target 71
	Input function command 2	<i>A954</i>	Input function command 72
	Input function target 2	<i>A955</i>	Input function target 72
	Input function command 3	<i>A956</i>	Input function command 73
	Input function target 3	<i>A957</i>	Input function target 73
	Output function assigned object	<i>A958</i>	Output function assigned object 7

## 2.4.3.2. How to set of logic

The functions for set to logic setting area can be chosen on tab menu. (2.4.2)

Regarding the input terminal selection, the function can be selected by clicking the icon as shown Fig. 2.4-15.

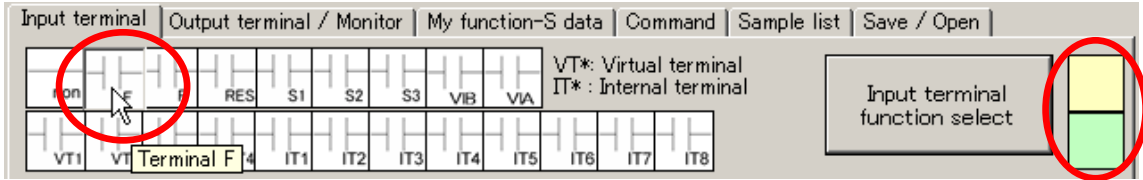


Fig. 2.4-15 Selection of use function

You can discern the settable logic setting area by color of panel on the right side of tab menu. Regarding input terminal, they can set to both input function target and output function target because the color panels show yellow and green. (Fig. 2.4-15 and Fig. 2.4-16)

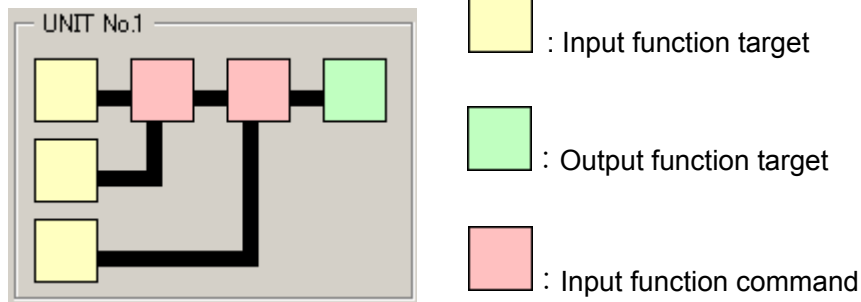


Fig. 2.4-16 Logic setting slot

When clicking a logic setting slot after selecting a function you need, the icon is displayed on the logic setting slot, and the logic function is set.

The icon is changed according to the setting slot. Regarding the Terminal F, the icon is shown as “terminal” on the input function target. On the output function target, the icon is changed and shown as “coil”. (Fig. 2.4-17)

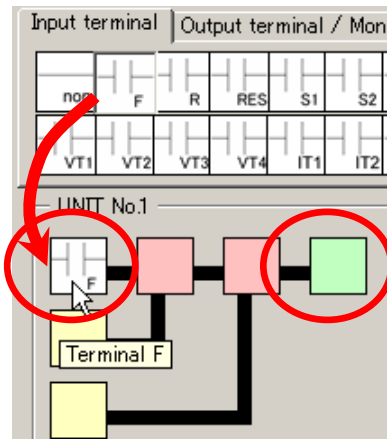


Fig. 2.4-17 Setting of terminal F

When selecting an output terminal or a monitor function, the function can be selected in the pull down menu as shown in Fig. 2.4-18.

After that, please click the logic setting slot that you need to set the function. (Fig. 2.4-19)

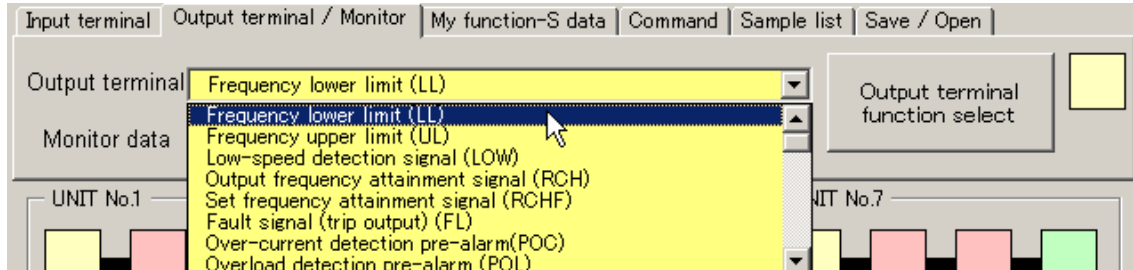


Fig. 2.4-18 Select of Output terminal / monitor function

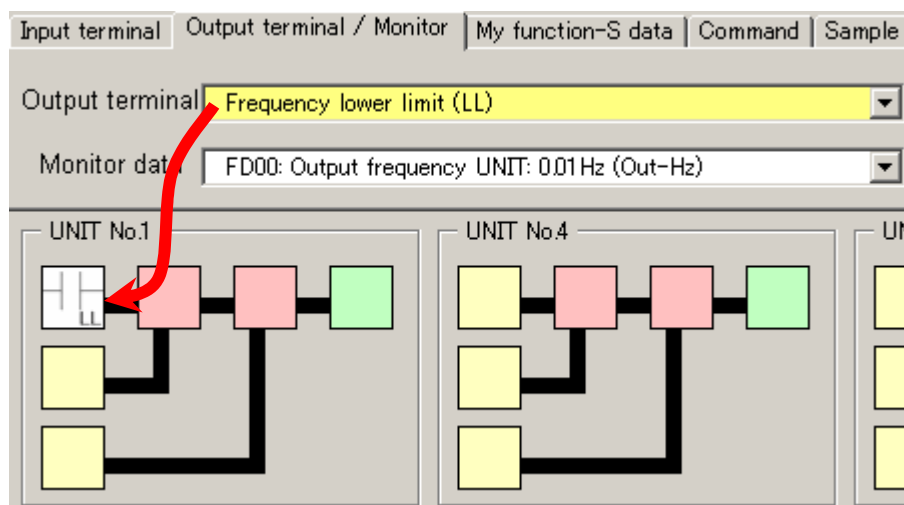


Fig. 2.4-19 Setting of frequency lower limit

My function-S output 1 to 16 of output terminal functions can be set to the logic setting slot. (Fig. 2.4-20)

The icon is changed according to the setting slot. (Fig. 2.4-20)

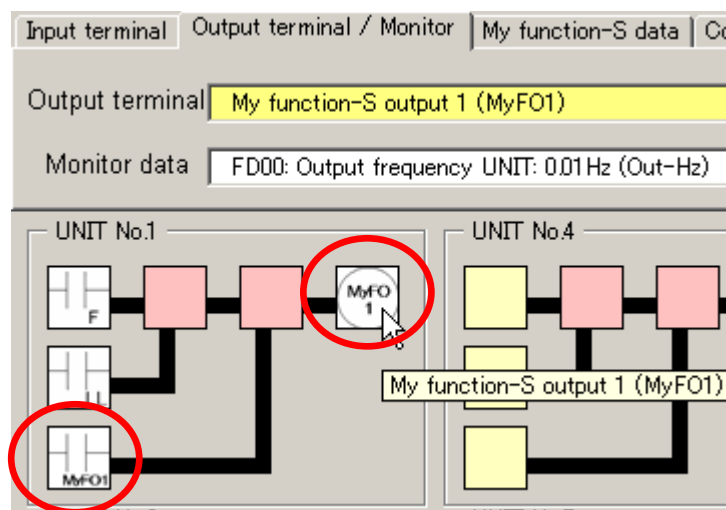


Fig. 2.4-20 Setting of My function-S output 1

## 2.4.4. Communication menu

Settings of communication and Upload/Download of setting values can be done in this menu. (Fig. 2.4-21)

And, the Basic parameter viewer window and the Set other parameters window can be opened.

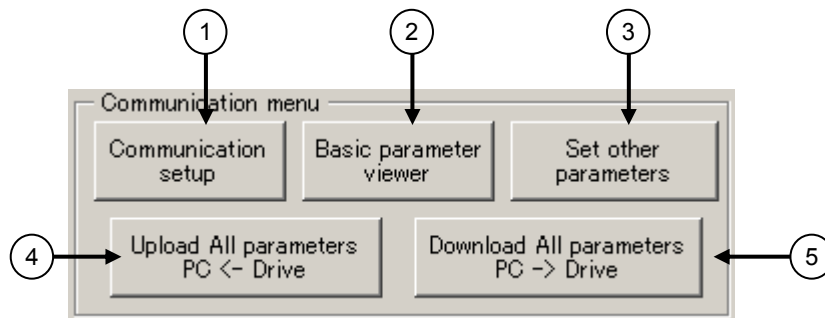


Fig. 2.4-21 Communication menu

① [Communication setup]

Communication setting window (refer to section 2.4.4.1.) is shown by clicking this button.

② [Basic parameter viewer]

Basic parameters view list window (refer to section 2.4.4.2.) is shown by clicking this button.

③ [Set other parameters]

Other parameters view list window (refer to section 2.4.4.3.) is shown by clicking this button.

④ [Upload All parameters PC <- Drive]

Setting values of all parameters on the basic parameter viewer and on the other parameter viewer can be read from the inverter by clicking this button. At that time, please note that all basic parameters and other parameters of PCL001Z are overwritten.

⑤ [Download All parameters -> Drive]

Setting values of all parameters on the basic parameter viewer and on the other parameter viewer can be written to the inverter by clicking this button. At that time, please note that all parameters of PCL001Z are written to the inverter.

## 2.4.4.1. Communication setting window

In this window, settings of a port number, baud rate, parity and time out can be done as shown in Fig. 2.4-22. Please set the communication port of PC to correspond with the parameter settings of the inverter in order to communicate normally.

Default setting of inverter as following.  
Baud rate (*F800*): 19200bps  
Parity(*F801*): EVEN

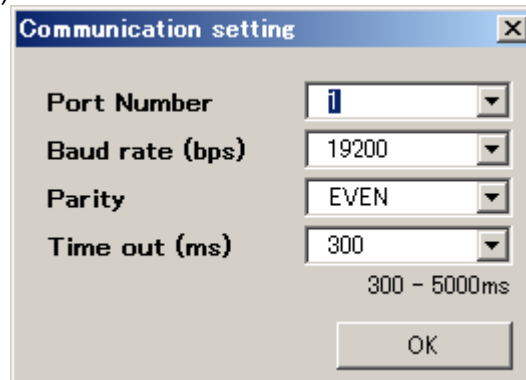


Fig. 2.4-22 Communication setting window

Please confirm the communication port number from the device manager of Windows if you do not know the communication port number of using PC.

According to the example of Fig. 2.4-23, '3' should be set to the pull down menu of port number because the COM port of USB001Z Serial Port is COM3.

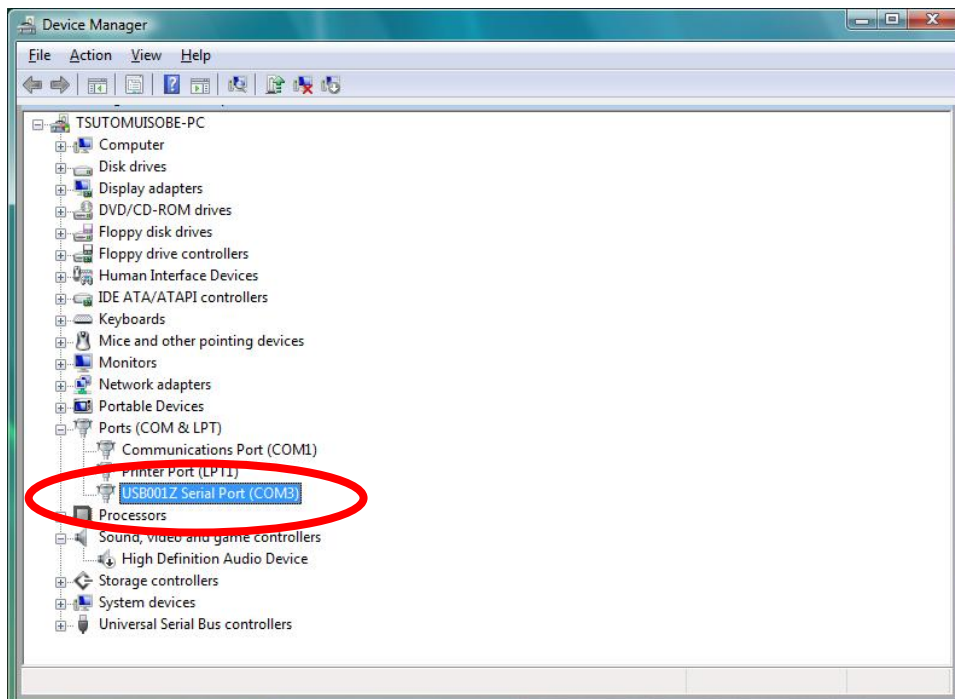


Fig. 2.4-23 Confirmation of COM port from the device manager

## 2.4.4.2. Basic parameter view list window

The list of basic parameters is shown in this window (Fig. 2.4-24). With regard to the setting values that are different from the factory defaults, the “Changed” is displayed at the right side of the tables.

The basic parameters of PCL001Z are as follows.

Parameter title	Function
<i>CMod</i>	Command mode selection
<i>F 104, F 108 to F 139</i>	Terminal settings
<i>A900~A977</i>	My function-S settings

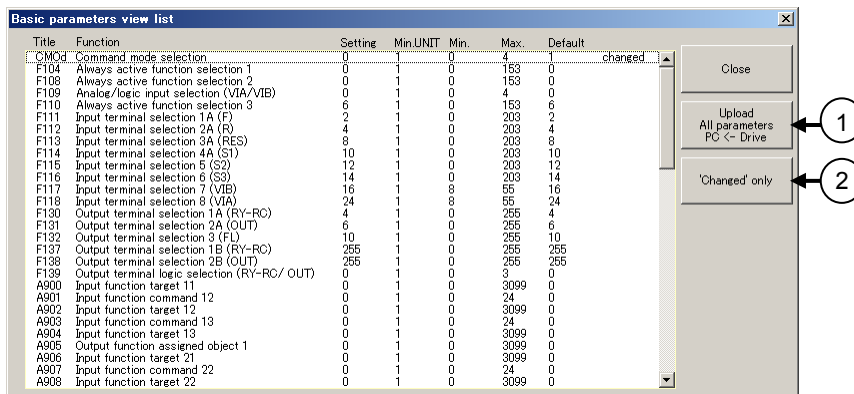


Fig. 2.4-24 Basic parameter view list window

### ① [Upload All parameters PC <- Drive]

Setting values of all parameters on the basic parameter viewer and the other parameter viewer are read from the inverter by clicking this button. At that time, please note that all basic parameter and other parameter of PCL001Z are overwritten.

### ② ['Changed' only]

Only the parameters different from the factory default are displayed in the list as Fig. 2.4-25 by clicking this button.

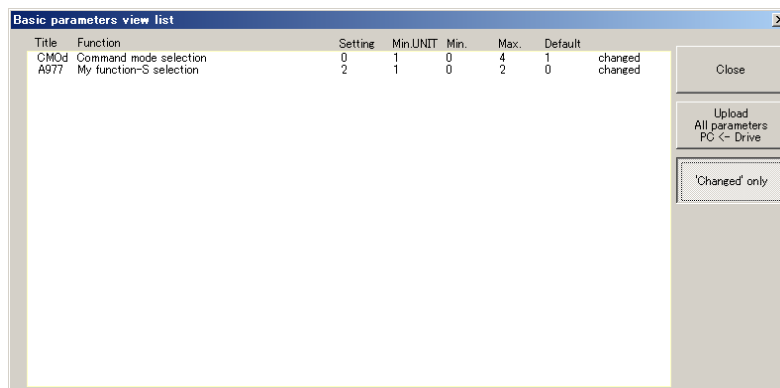


Fig. 2.4-25 Only 'Changed' parameters are shown

## 2.4.4.3. Other parameter view list window

In this window, a setting value of parameters with communication number from "0000" to "0984" can be individually read and written as shown in Fig. 2.4-26.

Reading and writing of all parameters on log are done when operate the upload all parameters or the download all parameters in communication menu.

All parameters on the log are also read and written when using a button ([Upload All parameters PC <- Drive] or [Download All parameters PC -> Drive]) in the Communication menu or a [Upload All parameters PC <- Drive] button in the Basic parameters view list.

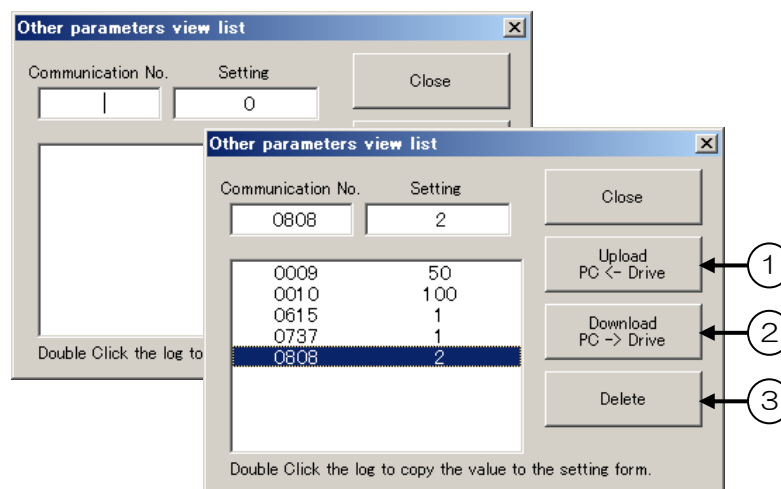


Fig. 2.4-26 Other parameter view list window

① [Upload PC <- Drive]

After setting a communication number, the setting value of parameter can be read by clicking this button. The read setting value remains in the log.

② [Download PC -> Drive]

After setting a communication number and setting value, the parameter setting value can be written to the inverter by clicking this button. The written setting value remains in the log.

③ [Delete]

The selected log (reversed display) can be deleted. In the example of 2.4-26, the log of communication number "0808" is deleted.

The parameter read and written once is recorded in the log.

The listed parameters in the log can be copied to the setting form by double-clicking the any log.



Please note that the unit system of PCL001Z and the unit system of inverter are different when you set the parameter from the other parameter view list window.

For example,

When setting the 10.0 seconds to the acceleration time ( $R\checkmark\checkmark$ ), inputting the following values is necessary to the setting form because the minimum unit from the communication is 0.1.

$$10.0 \text{ (sec)} / 0.1 \text{ (minimum unit)} = 100 \text{ (set value)}$$

And then, because the communication number of  $R\checkmark\checkmark$  is "0009", please set the value and communication number as shown in Fig.2.4-27.

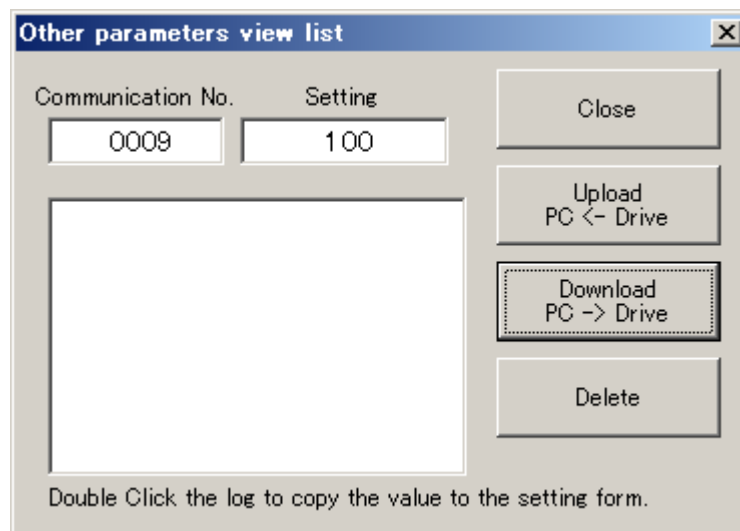


Fig. 2.4-27 Write the setting value to  $R\checkmark\checkmark$

Please refer to "TOSVERT VF-S15 Instruction manual <Detailed manual>: E6581610" for communication numbers and minimum units with communication of each inverter parameters.

## 2.5.Real time monitor window

### 2.5.1.Real time monitor

ON/OFF state of each terminal, count number of COUNT1/COUNT2 and each monitor items can be monitored in real time by this window. (Fig. 2.5-1)

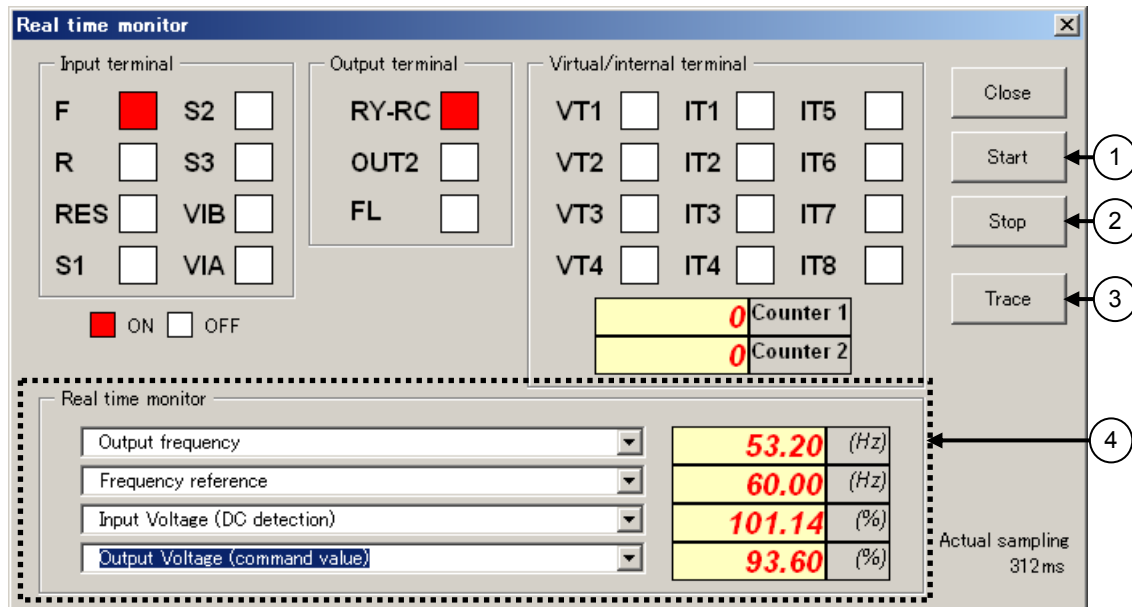


Fig. 2.5-1 Real time monitor window

- ① [Start]  
Start the monitoring by clicking this button.
- ② [Stop]  
Stop the monitoring by clicking this button.
- ③ [Trace]  
The trace sheet is shown by clicking this button.  
State of input terminal and each monitor are shown on the trace sheet in real time.
- ④ Real time monitor menu  
You can choose monitoring items in this menu. Refer to the Table2 on the following page.

Table2. Real time monitor selection items

Communication number	Monitoring items	Unit
FD00	Output frequency	(Hz)
FD03	Output current	(%)
FD02	Frequency reference	(Hz)
FD04	Input Voltage (DC detection)	(%)
FD05	Output Voltage (command value)	(%)
FD29	Input power	(kW)
FD30	Output power	(kW)
FD18	Torque	(%)
FD23	Motor cumulative load factor	(%)
FD24	Inverter cumulative load factor	(%)
FD25	Braking resistance cumulative load factor	(%)
FD15	Frequency setting value (after compensation)	(Hz)
FE35	VIA input value	(%)
FE36	VIB input value	(%)
FE37	VIC input value	(%)
FD22	PID feedback value	(Hz)
FE76	Integral input power	(1kWh × 10 <sup>F749</sup> )
FE77	Integral output power	(1kWh × 10 <sup>F749</sup> )

## 2.5.2. Trace sheet

In this sheet, input / output terminals and values of each monitoring items can be displayed graphically as shown in Fig.2.5-2.

Please select the monitoring items beforehand in the Real time monitor window, and call the tracing sheet by the [Trace].

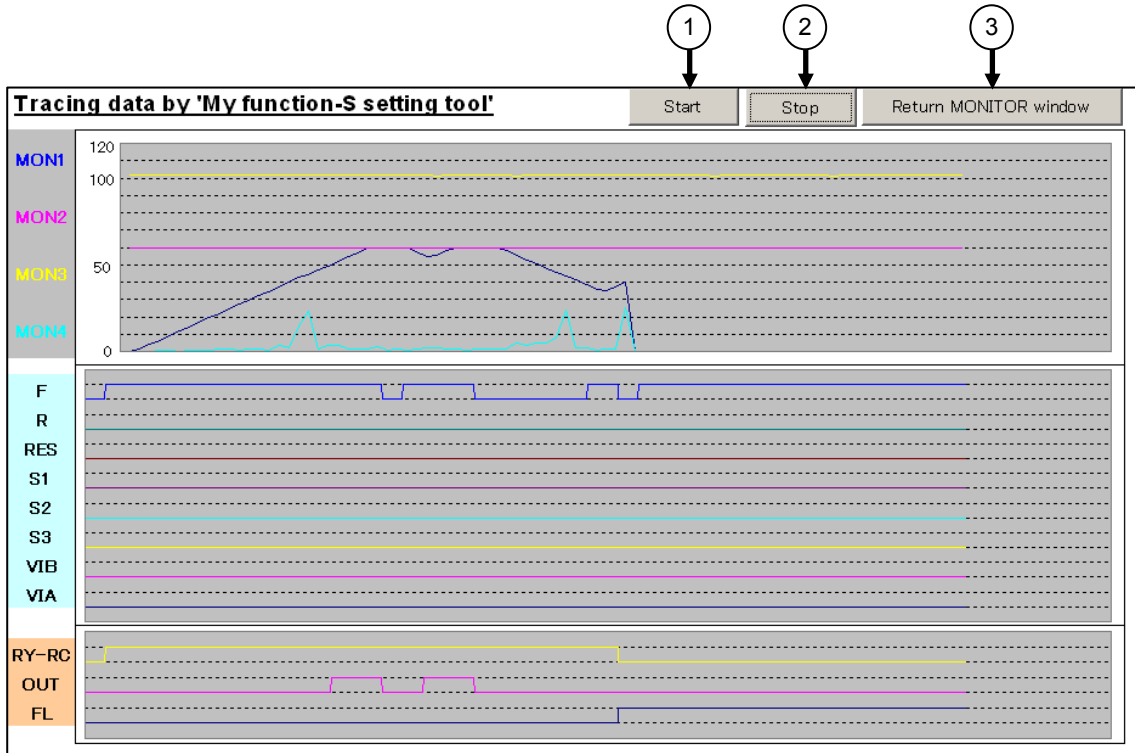


Fig. 2.5-2 Tracing sheet

① [Start]

Start the tracing by clicking this button.

② [Stop]

Stop the tracing by clicking this button.

③ [Return MONITOR window]

Real time monitor window is shown by clicking this button.

## 3. Appendix

### 3.1. Input terminal list

Input terminal icons on PCL001Z and setting values of logic are listed in Table 3.

Table3. Input terminal list

Terminal	Icon		Setting value of logic
	Input function target	Output function assigned object	
Terminal F			1
Terminal R			2
Terminal RES			3
Terminal S1			4
Terminal S2			5
Terminal S3			6
Terminal VIB			7
Terminal VIA			8
Virtual input terminal 1			21
Virtual input terminal 2			22
Virtual input terminal 3			23
Virtual input terminal 4			24
Internal terminal 1			25
Internal terminal 2			26
Internal terminal 3			27
Internal terminal 4			28
Internal terminal 5			29
Internal terminal 6			30
Internal terminal 7			31
Internal terminal 8			32

## 3.2. My function-S data list

My function-S data icons on PCL001Z and setting values of logic are listed in Table 4.

Table4. My function-S data list

Data	Icon	Setting value of logic
Output percent data 1	Output % 1	918
Output percent data 2	Output % 2	919
Output percent data 3	Output % 3	920
Output percent data 4	Output % 4	921
Output percent data 5	Output % 5	922
Output frequency data 1	Output Hz 1	923
Output frequency data 2	Output Hz 2	924
Output frequency data 3	Output Hz 3	925
Output frequency data 4	Output Hz 4	926
Output frequency data 5	Output Hz 5	927
Output time data 1	Output Sec 1	928
Output time data 2	Output Sec 2	929
Output time data 3	Output Sec 3	930
Output time data 4	Output Sec 4	931
Output time data 5	Output Sec 5	932
Number of times of output data 1	Output Num 1	933
Number of times of output data 2	Output Num 2	934

## 3.3.Command list

Command icons on PCL001Z and setting values of logic are listed in Table 5.

Table5. Command data list

Command	Icon	Setting value of logic
Transfer	ST	1
Transfer (inversion)	STN	2
Logical product (A and B)	AND	3
Logical product (inversion of right side) (A and NB)	ANDN	4
Logical sum (A or B)	OR	5
Logical sum (inversion of right side) (A or NB)	ORN	6
Comparison of data for matching	EQ	7
Comparison of data for mismatch	NE	8
Comparison of sizes (A > B)	GT	9
Comparison of sizes (A => B)	GE	10
Comparison of sizes (A < B)	LT	11
Comparison of sizes (A =< B)	LE	12
Absolute value of difference	ASUB	13
ON delay	ON	14
OFF delay	OFF	15
Counter	CNT1	16
Counter	CNT2	17
Peak hold	HOLD	18
Set	SET	19
Reset	RST	20
Clear	CLR	21
Clear (Inversion)	CLRN	22
ON delay 2	ON2	23
OFF delay 2	OFF2	24