TOSHIBA

TOSVERT VF-S15

Trace Tool PCT002Z-E

Instruction Manual

Notes
1. Be sure to read this manual carefully before connecting and using the trace tool for the VF-S15.   After reading the manual, be sure to store it.
2. The contents of this manual are subject to change without prior notice.

TOSHIBA

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1.Introduction

The trace tool "PCT002Z-E" for VF-S15 is software that performs the following functions when used with an inverter connected to a computer via an RS-485 communications device. Read this manual carefully along with the instruction manual for VF-S15 before using PCT002Z-E and use it correctly.

・ Exporting and Importing trace function-related parameters

・ Reading information on the inverter

・ Reading trace data

・ Displaying read trace data in graphic form

・ Storing trace data

*1 PCT002Z-E does not support any inverters other than VF-S15.

*2 To use PCT002Z-E, the USB converters unit shown in Fig. 1 below are required.

*3 PCT002Z-E use the TOSHIBA inverter protocol. Therefore, please set the TOSHIBA protocol (F829 = 0) to the protocol selection of drive.

・ USB converters unit (part Ⓐ in this figure)

・ Inverter interconnect cable (part Ⓑ in this figure)

・ Computer interconnect cable (part Ⓒ in this figure)

・ Model No. of USB converters unit: USB001Z

・ Inverter interconnect cable (optional)

Model number	Cable length
CAB0011	1.2m
CAB0013	3.6m
CAB0015	4.8m

・ USB cable (A-B connection type)
Prepare a commercially available USB cable (USB1.1/2.0-compliant).
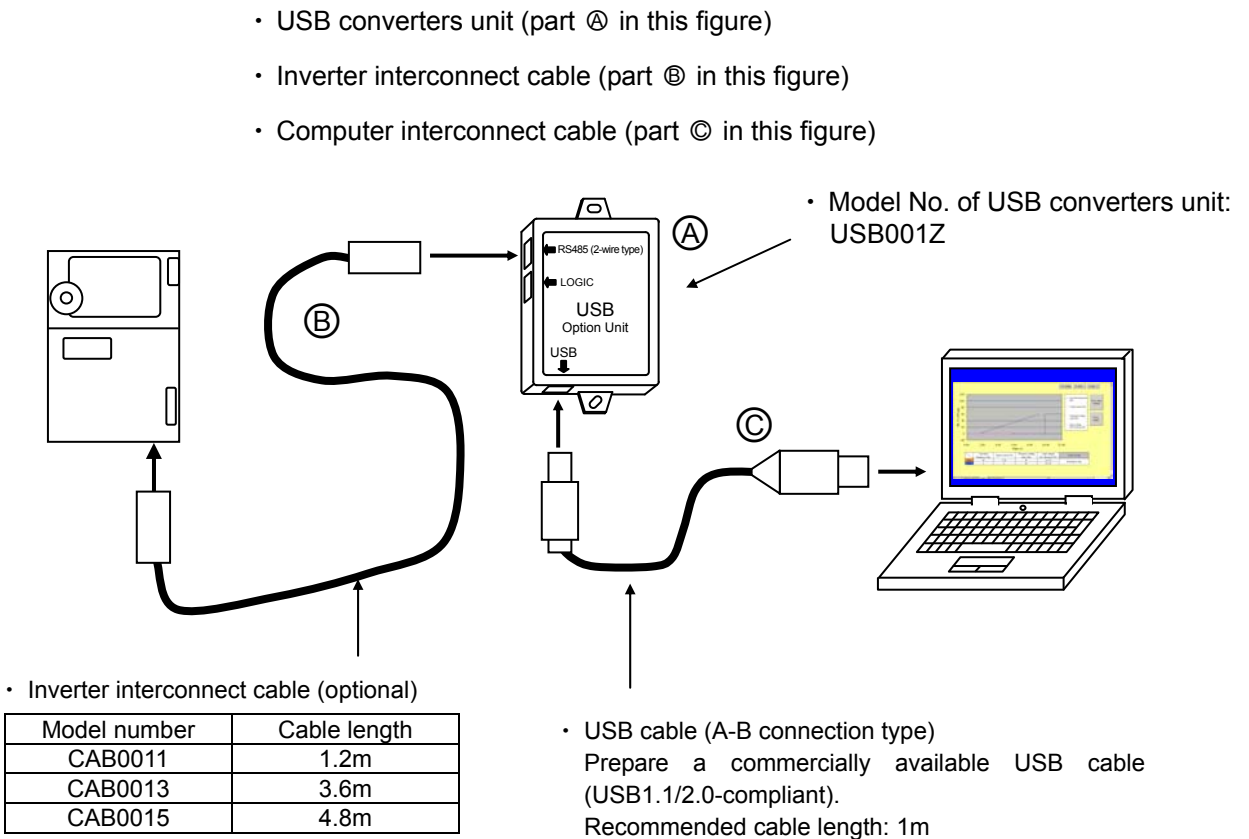Recommended cable length: 1m

Fig.1　An example of connection of USB converters unit

*4 System requirements

Personal computer with Microsoft® Excel® installed

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 PCT002Z-E may not run normally on some types of PC-98 series computers.

*6 It has been confirmed that PCT002Z-E runs normally on the software listed in the table below.

Microsoft Excel	MS-Excel 2010
English version	〇

*7 Connect the optional USB communication converter before starting PCT002Z-E. Do not plug or unplug the connector when PCT002Z-E is running.

*8 How to install PCT002Z-E

To install PCT002Z-E, just extract the zip file and move it into the desired folder.

Take the following precautions when installing PCT002Z-E.

・ Exit running application programs.

・ When updating latest PCT002Z-E, uninstall the old version of PCT002Z-E. (The version of PCT002Z-E is shown in the Opening window (section 2.3).)

*9 How to uninstall PCT002Z-E

To uninstall PCT002Z-E, just remove the folder containing PCT002Z-E 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 PCT002Z-E. They do not guarantee that all functions of PCT002Z-E 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.

☆ PC-98 series is a trademark or registered trademark of NEC Corporation.

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

[   ]: Buttons or radio buttons in windows of PCT002Z-E or Microsoft Windows

'   ': Menus items of PCT002Z-E

2.How to use PCT002Z-E

2.1.Enabling macros

When PCT002Z-E is started for the first time, the dialog box (shown in Fig. 2 or 3) may appear.

If it appears, click the [Enable Macros] or [Enable Content], because PCT002Z-E uses macros.
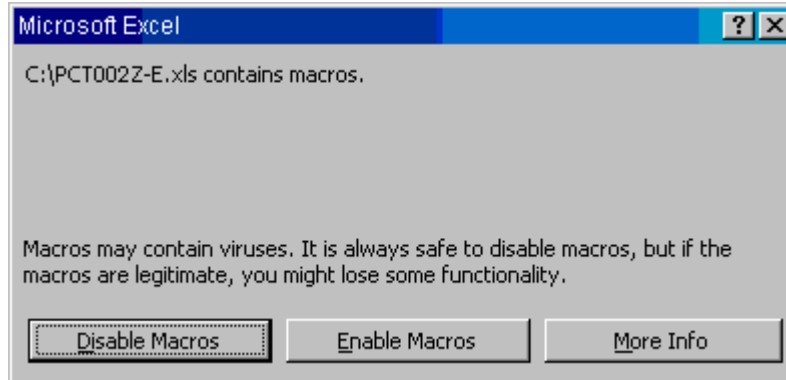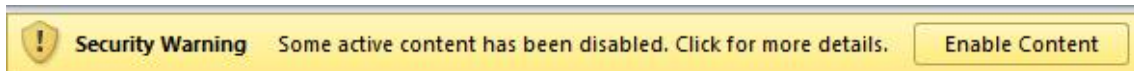

Fig. 2   Security warning 1

Fig. 3   Security warning 2

2.2.License agreement

When PCT002Z-E is started for the first time or after macros have been enabled, the PCT002Z-E license agreement window (Fig. 4) appears. Read the contents carefully and click [I Agree] if you wish to use PCT002Z-E. Clicking [I Do Not Agree] closes the Excel book.
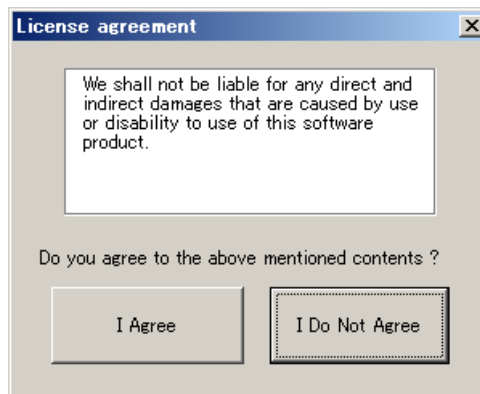

Fig.4　License agreement

2.3.Opening window

When macros are executed, the Opening sheet (Fig. 5) appears. After reading the instruction manual (this manual) carefully, click [To setting >] in the top-right of the window and make necessary settings.
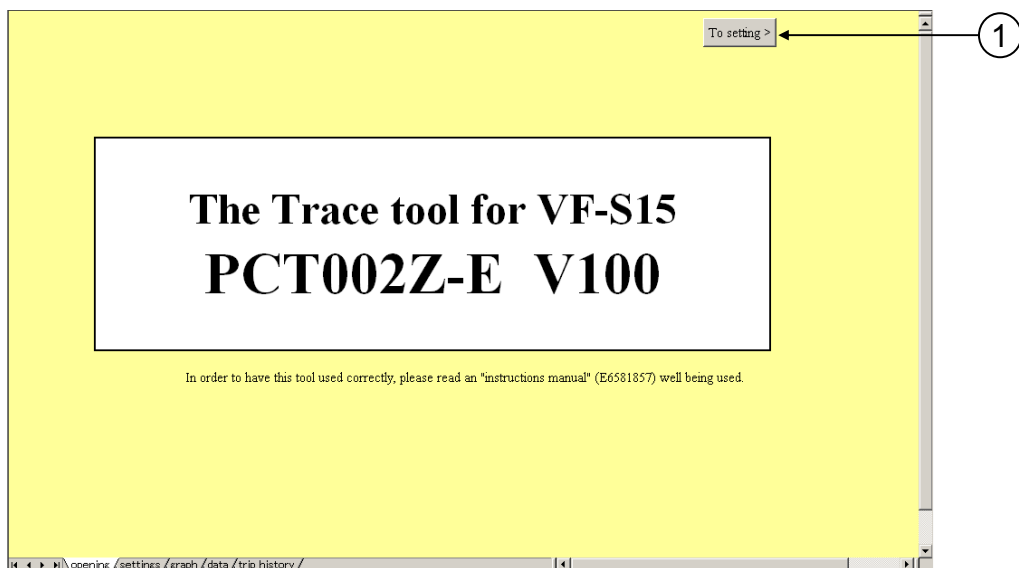

Fig. 5　Opening window

① [To setting >]

　　The Setting sheet is shown by clicking this button.

2.4.Setting sheet

The Setting sheet (Fig. 6) allows you to make settings necessary for communications between the inverter and the computer and to export and import related parameters.
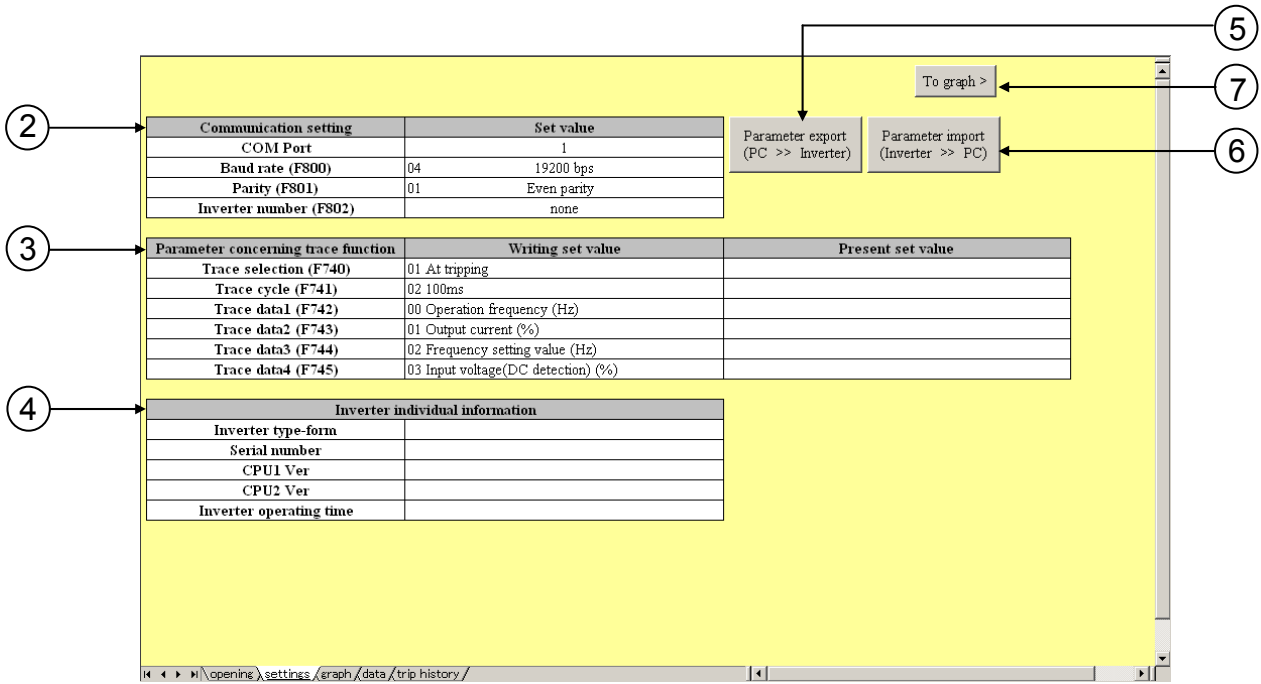
Fig. 6   Setting sheet

② Communication setting[*1]

Fig. 7   Communication setting

'COM Port': Specify the COM port number of the computer.

'Baud rate': Specify the baud rate (F800) of the inverter.

'Parity': Specify the parity (F801) of the inverter.

'Inverter number': Specify the number (F802) assigned to the inverter.

Communicate by disregarding the inverter number when setting the Inverter number of PCT002Z-E to "none".

*1 If you select a parameter other than parameters set for the inverter or the computer connected to it, an error may occur during communication.

Table 1   Table of settings for communications with inverter[2]

Title	Content	Adjustment range	Default setting
F800	Baud rate	3:9600bps 4:19200bps 5:38400bps	4
F801	Parity	0:Non parity 1:Even parity 2:Odd parity	1
F802	Inverter number	0~99 [3]	0

*2 The communication error might occur according to the setting of a communication

function parameter (F803-F808 and F829, etc.) other than the above.

For details, refer to "TOSVERT VF-S15 Detailed manual : E6581611".

*3 Since PCT002Z-E uses the Toshiba inverter protocol ASCII mode, only a number

between 0 and 99 can be assigned to an inverter.

③ Parameter concerning trace function[4]

Parameter concerning trace function	Writing set value	Present set value
Trace selection (F740)	01 At tripping	
Trace cycle (F741)	02 100ms	
Trace data1 (F742)	00 4ms / 01 20ms / 02 100ms / 03 1s / 04 10s	
Trace data2 (F743)		
Trace data3 (F744)		
Trace data4 (F745)	03 Input voltage(DC detection) (%)	

Fig. 8   Parameter concerning trace function

'Trace selection(F740)': Select the trace data acquisition timin.

'Trace cycle(F741)': Select the trace cycle.

'Trace data1 to 4(F742 to F745)': Select type of data.

 *4 Set all trace-related parameters before operating the inverter. If after the inverter did trip or

trigger that it is changed, that data cannot be read.

Table2   Parameter concerning trace functions

Title	Content	Adjustment range	Default setting
F740	Trace selection	0:Deselect 1:At tripping 2:At triggering 3:1+2	1
F741	Trace cycle	0:4ms 1:20ms 2:100ms 3:1s 4:10s	2
F742	Trace data1	0:Operation frequency (Hz) 1:Output current (%) 2:Frequency setting value (Hz) 3:Input voltage (DC detection) (%) 4:Output voltage (command value) (%) 5:Input power (kW) 6:Output power (kW) 7:Torque (%) 9:Motor cumulative load factor (%) 10:Inverter cumulative load factor (%) 11:PBR cumulative load factor (%) 12:Freq. setting value (compensated) (Hz) 13:VIA input value (%) 14:VIB input value (%) 18:Communication data FA51 (%) 20:VIC input value (%) 21:Pulse train input value (pps) 23:PID feedback value (Hz) 24:Integral input power ($1kWh \times 10^{F749}$) 25:Integral output power ($1kWh \times 10^{F749}$) 26:Motor load factor (%) 27:Drive load factor (%) 40:Input terminal status 41:Output terminal status 42:Inverter status	0
F743	Trace data2	Same as trace data1	1
F744	Trace data3	Same as trace data1	2
F745	Trace data4	Same as trace data1	3

④   Inverter individual information

Inverter individual information	
Inverter type-form	VFS15S-2007PL
Serial number	5025800148503002
CPU1 Ver	100
CPU2 Ver	1303
Inverter operating time	0 hour

Fig. 9   Inverter individual information

'Inverter type-form': Displays the type of the inverter.

'Serial number': Displays the serial number of the inverter.

'CPU1 Ver': Displays the version of the inverter's CPU1.

'CPU2 Ver': Displays the version of the inverter's CPU2.

'Inverter operating time': Displays the operating time of the inverter.

⑤ [Parameter export]

The values set for the trace-related parameters (Fig. 8) is exported into the inverter by clicking this button. After that, the values set for the trace-related parameters (Fig. 8) and information on the inverter (Fig. 9) are imported.

⑥ [Parameter import]

The values set for the trace-related parameters (Fig. 8) and information on the inverter (Fig. 9) are imported by clicking this button.

⑦ [To graph >]

The Graphic sheet is shown by clicking this button.

2.5.Graphic sheet

The Graphic sheet (Fig. 10) allows you to read trace data and display it in graphic form.
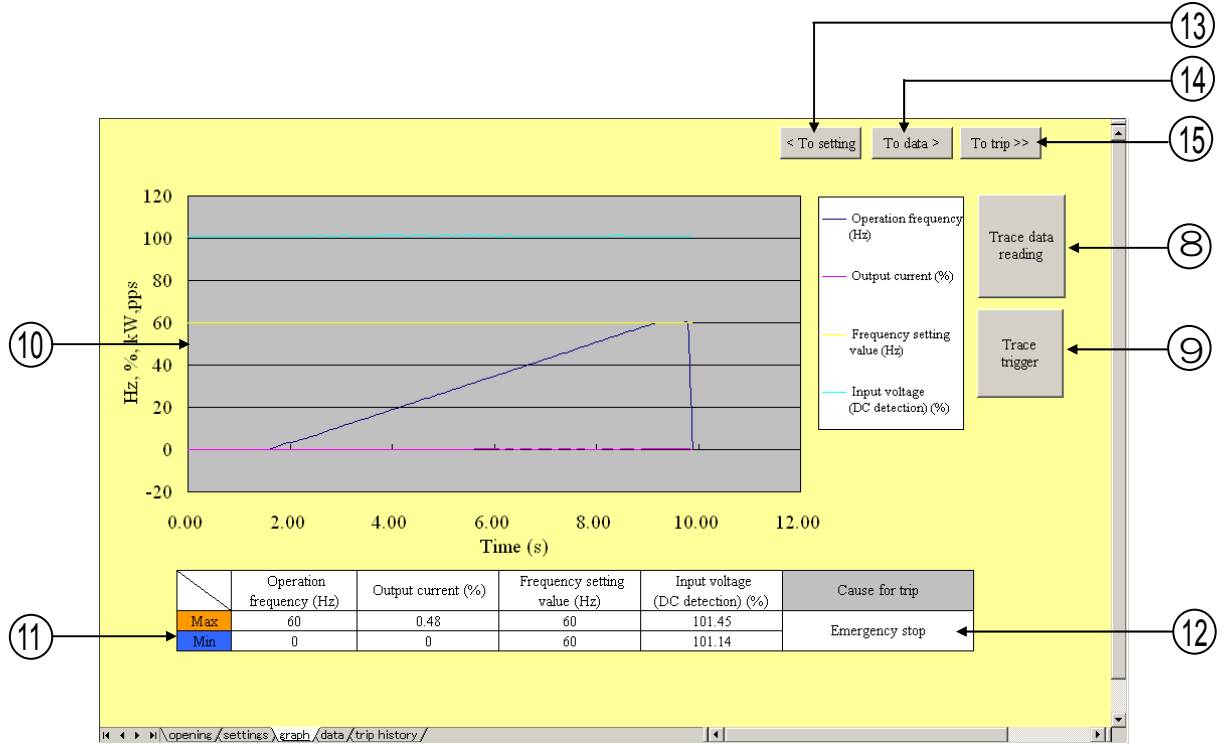

Fig. 10   Graphic sheet

⑧ [Trace data reading]

The trace data stored in the inverter is read and displayed in graphic form by clicking this button.

When 1 or 3 is set to F740 and read the data until occur the trip, please execute reading in the state of the trip to read data correctly. Alternatively, if you record the trace data with the trigger, please read the trace data before resetting the power supply.

⑨ [Trace trigger]

When setting value of F740 is 1 or 3, The trace data until that time stored in the inverter is read and displayed in graphic form by clicking this button. At that time, the trace selection on the inverter side is disabled temporarily, so if communications are interrupted halfway, the trace selection will be set to "disabled". In that case, please set the former value once again.

⑩ 'Graph'

Displays acquired data in graphic form.

⑪ 'Max' 'Min'

Display the maximum and minimum values of 4 kinds of data acquired.

⑫ 'Cause for trip'

Display the cause of tripping of the inverter.

⑬ [< To setting]

The Setting sheet is shown by clicking this button.

⑭ [To data >]

The Data sheet is shown by clicking this button.

⑮ [To trip >>]

The Trip history sheet is shown by clicking this button.

2.6.Data sheet

The data sheet (Fig. 12) lists 4 kinds of acquired numerical data (data 1 through 4) in groups of 100 each.

Fig. 12   Data sheet

⑯ [Trace data save]

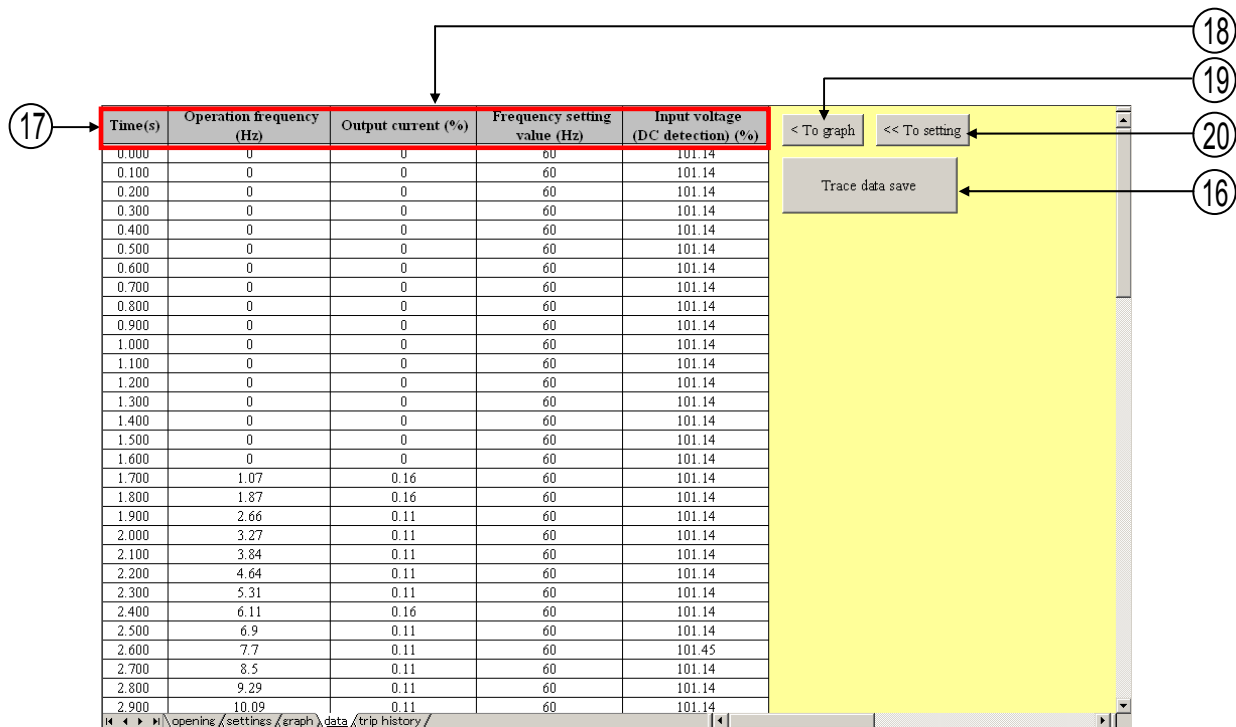　　Click this button to name and save the file automatically. The file name consists of date and time when data is saved. The file name can be changed when saving the file.

　　An example of a file name assigned automatically is shown in the table below.

　　　　・Example of file name

Current date and time	9:30 A.M. on Apr. 5, 2012
Name assigned to the file	TRACE-040520120930.xls

⑰ 'Time(s)'

Displays the time at the same intervals as the trace cycle.

⑱ "4 kinds of data acquired"

Displays 4 kinds of data acquired in groups of 100 each.

⑲ [< To graph]

The Graphic sheet is shown by clicking this button.

⑳ [<< To setting]

The Setting sheet is shown by clicking this button.

2.7.Trip history sheet

The trip sheet (Fig. 13) lists acquired details on a past trip of trips 1 to 4.

Fig.13   Trip sheet

㉑ "Past trip detailed history"

Displays acquired details on a past trip of trips 1 to 8.

㉒ [Reload]

The detailed history is read from drive by clicking this button. And then, a detailed history will

be updated on the sheet.

㉓ [<<To graph]

The Graph sheet is shown by clicking this button.

㉔ [HELP]

The Inverter Status help is shown by clicking this button.

3.Troubleshooting

This section explains problems that may occur when PCT002Z-E is used.

Q1 : Although the [Trace data reading] button is clicked, time-out occurs.
A1 : Communication between the inverter and the computer is not established. Check whether the cable is connected properly and all settings for communications are made correctly.

Q2 : Although trace data is acquired, no data is displayed or other data is displayed.
A2 : Check whether "Deselect" is selected for 'Trace selection'.

Q3 : Trace data acquired is discontinuous.
A3 : This phenomenon occurs if the inverter is tripped or triggered and the recording of trace data is interrupted before 100 pieces of trace data are collected, and therefore the previous data remains. This phenomenon may occur if the inverter is tripped or triggered immediately after Power supply turning on.

Q4 : The trace tool software has started, but it does not respond to the click of any button.
A4 : This phenomenon occurs if the Excel's macro security is set at 'High' level. To solve this problem, set the macro security at 'Medium' or lower level.

Q5 : The instruction manual for VF-MB1 states that any number of up to 248 can be assigned to an inverter (F802), but only a number of up to 99 can be assigned with PCT002Z-E.
A5 : Since PCT002Z uses the Toshiba inverter protocol ASCII mode, only a number between 0 and 99 can be assigned to an inverter.

Q6 : The communication error is occurred when use PCT002Z and PCM001Z.
A6 : Because PCM001Z occupies the communication port, PCM001Z and PCT002Z can not be used at the same time. Please use PCT002Z after PCM001Z ended. Or please use a port different for PCM001Z.

Outline of the trace tool function

Item		Content				
Trace function	Number of sampling	100 points				
	Trace cycle (F741) / Tracing time	4ms / 400ms	20ms / 2s	100ms / 10s	1s / 100s	10s / 1000s
	Number of trace data	4 data. They are set by parameter F742 to F745.				
	Trace object (F742 to F745)	They are selected from following items by parameter settings. Operation frequency, Output current, Frequency setting value, Input voltage (DC detection), Output voltage (command value), Input power, Output power, Torque, ,Motor cumulative load factor Inverter cumulative load factor, PBR cumulative load factor, Freq. setting value (compensated), VIA input value, VIB input value, Communication data FA51, VIC input value, Pulse train input value, PID feedback value, Integral input power, Integral output power, Motor load factor, Drive load factor, Input terminal status, Output terminal status, Inverter status				
Trigger setting	Trip (F740=1)	The trace data is constantly updated, and update is stopped at trip. When the inverter is doing trip or stopping, the trace data recorded by trip can be read. However, data cannot be read while the inverter is driving.				
	Input terminal (F740=2)	The acquisition of the trace data begins on the terminal input (No.76 or No.77), and after the data of 100 points is acquired, the update of the trace data is stopped.				
	1+2 (F740=3)	The trace data is constantly updated, and update is stopped at trip or when the input terminal function (No.76 or No.77(negative logic)) is enabled.				
Conservation form		'.xls' file format				
Com. settings	COM port	1 to 30				
	Baud rate	9600bps, 19200bps, 38400bps (Match it to setting on inverter side. (F800))				
	Parity	Non parity, Even parity or Odd parity (Match it to setting on inverter side. (F801))				
	Inverter number	none or 00 to 99 (Match it to setting on inverter side. (F802))				