TOYO INTELLIGENT INVERTER

VF66 Series

Programming & Maintenance Tool

VF66PCTool

Operating Manual

TOYO DENKI

[Contents]

Chapter_1 Setup

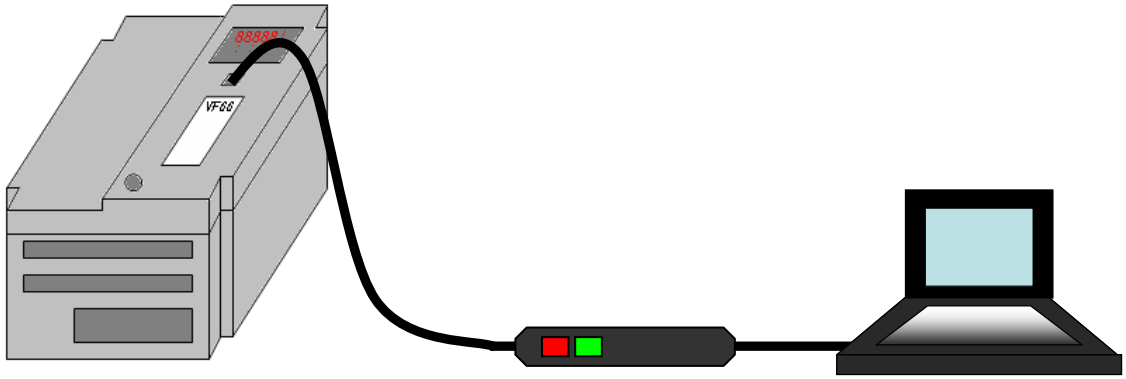
VF66PCTool is a PC tool that has functions for customizing and maintaining inverters, converters, chopper products, etc. including the VF66 series.

It is necessary to connect USBIF66 cable because it connects between users PC and the our products.

【Note】There are descriptions regarding the inverter in the menus that appear from Chapter 2 onwards. When using converters and chopper products, please read and use them separately. (Example: Write to inverter, change inverter)

1-1. Connection

As an example, the connection between the VF66B inverter and the user PC is as follows.



VF66 Series Inverter　　USBIF66　　User PC

※ USBIF66 is the recommended cable. We cannot insure proper performance when using another cable and will assume responsibility if damage incurs.

[System requirements]

Correspondence language: Japanese / English

Correspondence OS: Windows® 2000 / Windows® XP / Windows Vista® / Windows® 7 (32bit/64bit) / Windows® 8 (32bit/64bit) / Windows® 8.1 (32bit/64bit) / Windows® 10 (32bit/64bit) / Windows® 11

(*Windows,Windows Vista are registered trademarks of Microsoft.)

Monitor: XGA (1024×768) up

※The window might be largely displayed according to PC (monitor) or OS.

1-2. Install VF66PCTool

Install VF66PCTool by the following procedure

[1] Download the *VF66PCTool* and open the folder. ⇒http://www.toyodenki.co.jp/en/index.html

[2] Open the *"setup.exe"*.

[3] Set up according to the instruction.

1-3. Install USBIF66 Device Drivers

Refer to the installation manual of USBIF66 Device Driver.

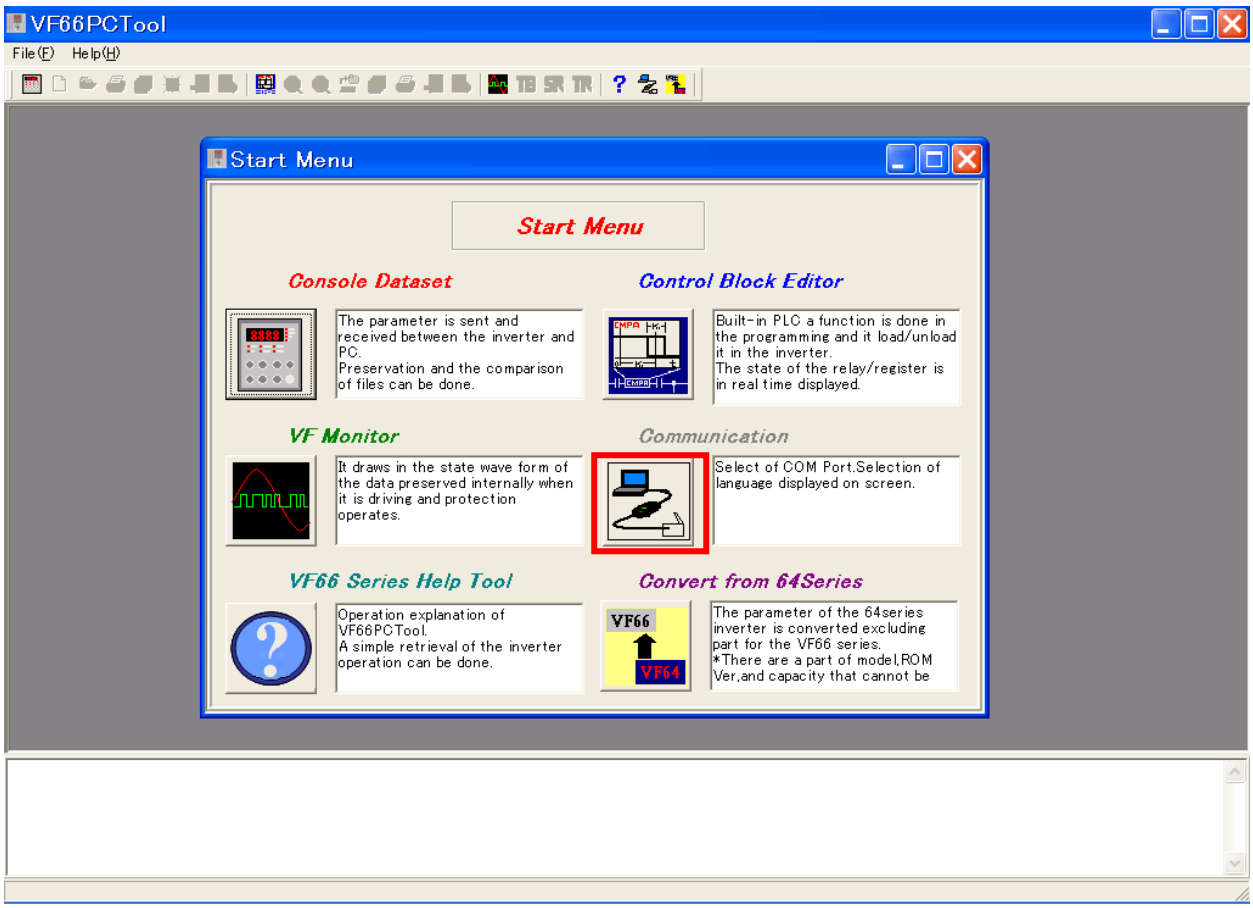
1-4. Start VF66PCTool

Set the communication port and the display language as follows.

[1] Start VF66PCTool

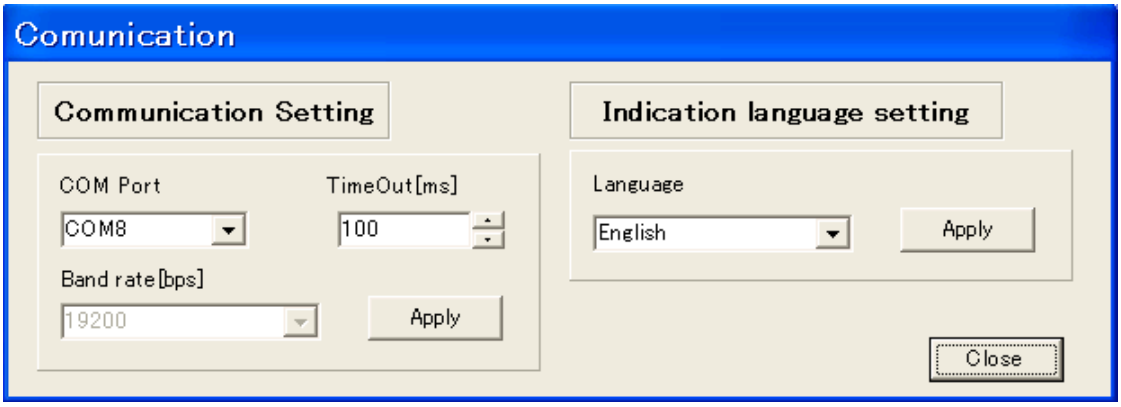
When VF66PCTool is started, the start menu window is displayed.

【Note】Please avoid starting VF66PCTool twice.



[2] Set communication port and display language

[Communication] is selected from the start menu, after that the communication and the display language are set.



a) Communication Setting

COM Port:

Set the COM port where USBIF66 is assigned.

(The COM port of USBIF66 can be confirmed from the device manager of the control panel)

Time-out [ms]:

Even though the COM port settings are correct and the cable is properly connected to our product and the computer, if "Communication fault: ○○○○" is displayed as shown in the figure below, There may be a problem with the serial port.

The default is set to 20ms. However, the error might occur according to the personal computer when set time is short. Set the Time-out longer when the error goes out.

Band rate [bps]:

Because the Band rate is fixation by 19200bps, this item doesn't need set.

【Note】 Click [Apply] when the network transmission setting is changed.

b) Indication language setting

The display language of this software is set. Select either Japanese or English.

【Note】 When the setting of the display language is changed, click [Apply] and reboot [PC Tool].

Chapter_2 Console Dataset

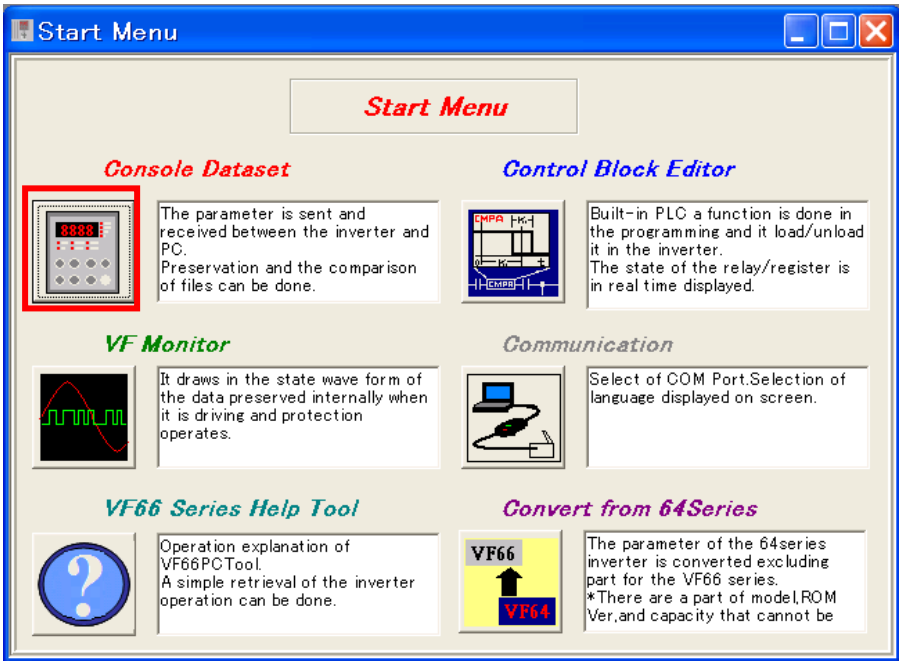
Console Dataset, the sending and receiving of the parameter (set value) from our products, the edit and preservation on PC can be done. Please note that in order to send and receive parameters, this product and the user PC must be connected via USBIF66.

2-1. Start Console Dataset

Console Dataset starts by the following procedure

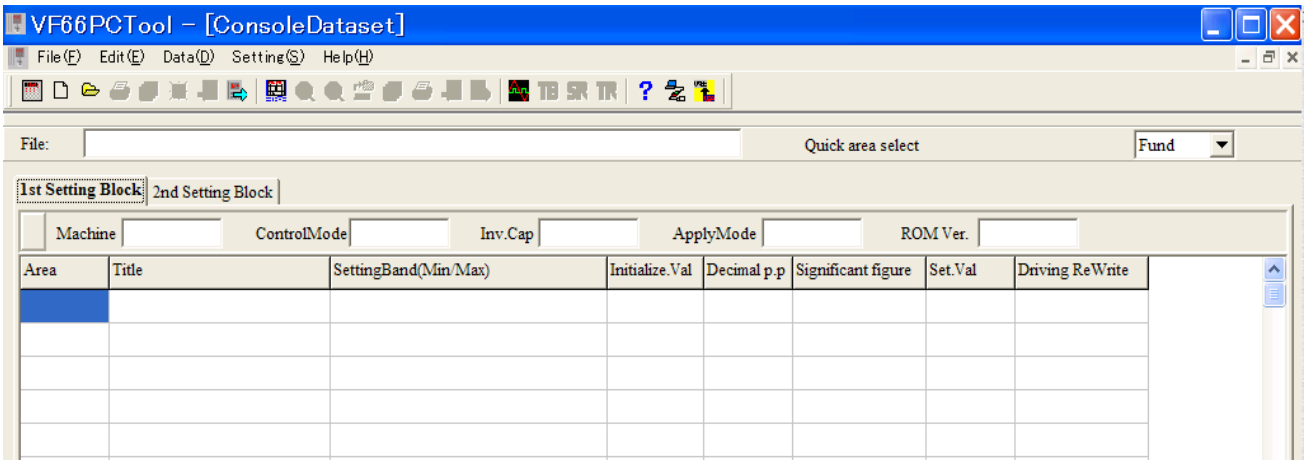
[1] Start Console Dataset

[Console Dataset] is selected from the start menu, and it is started.



[2] Main window of Console Dataset

After started, the main window is displayed as shown in the figure below.



Here easily explains each menu in the main window of Console Dataset.

File

- **File New**
  The data file of the parameter is newly made. (Refer to 2-2-1.)
- **File Open**
  Opening the preserved data file. (Refer to 2-2-3.)
- **Save**
  Overwrite an existing file. (Refer to 2-2-4.)
- **Save As**
  It preserves it giving the data file the name. (Refer to 2-2-4.)
- **Close**
  The data file that is opening now is shut.
- **File Compare**
  The preservation data file can be compared up to four. (Refer to 2-2-8.)
- **Save As CSV**
  The following file compare displayed data is preserved by CSV form. (Refer to 2-2-8.)
- **Print**
  The displayed each item is printed. (Refer to 2-2-9.)
- **Console Dataset Exit**
  Exit the Console Dataset and the window is shut.

Edit

- **Change Inverter**
  An inverter specification of the data file can be changed.

Data

- **Data Write To INV.**
  The edited parameter is written in an inverter. (Refer to 2-2-6.)
- **One-shot Write**
  Start the One-shot write mode. (Refer to 2-2-7.)
- **One-shot Write cancel**
  Release the One-shot write mode. (Refer to 2-2-7.)
- **Data Load From INV.**
  The parameter is read from an inverter. (Refer to 2-2-5.)

Setting

Communication and language setting

Select the communication port, and the language displayed on the window. (Refer to **1-4.**)

Help

VF66 Series Help

Explain operation of VF66PCTool and a simple retrieval about operation of VF66B inverter.

The help only explains the functions of VF66PCTool and VF66B in Japanese.

Version Info

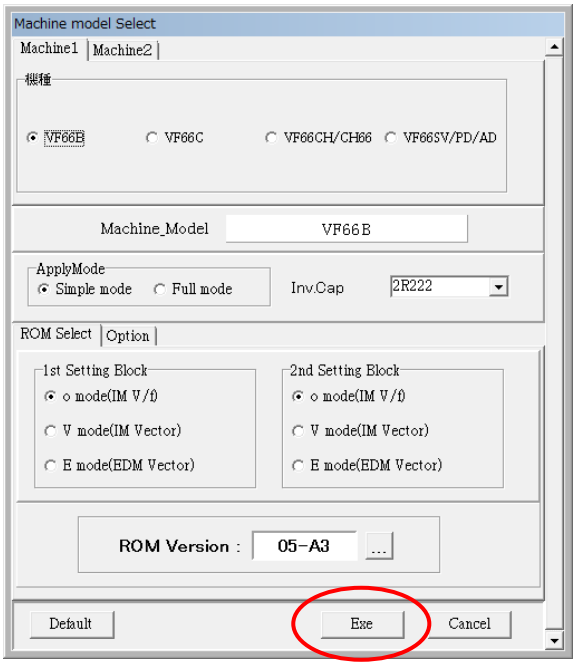
Version information is displayed.

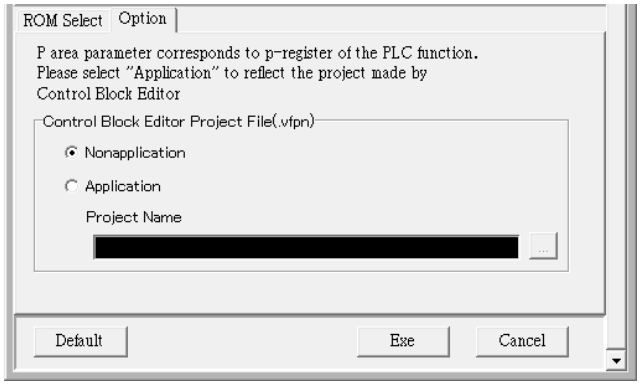
2-2. Description of functions

2-2-1. File New

Make new data file. However, only one data file can be opened. Therefore before making the new file, the present file must be shut.

When you click [File]-[File New] in the main menu, the window is displayed as shown in the figure below. Do the setting matched to the use of products for each item on Machine model Select window.





Machine

Select the use model.

ApplyMode

Select the operation mode from the following two.

・Simple mode (To b-area)

・Full mode

Inv.Cap

Select the capacity of the inverter.

Option

The decimal point position of P area parameter can be updated by reflecting the project file made by *Control Block Editor*. The old project file (.vfp) can be converted to a new project file (.vfpn) by opening it with *Control Block Editor* and then saving it.

1st/2nd setting block

Select the control mode of the 1st and 2nd setting block from the following three.

・o mode (Induction motor V/f mode)

・V mode (Induction motor vector mode)

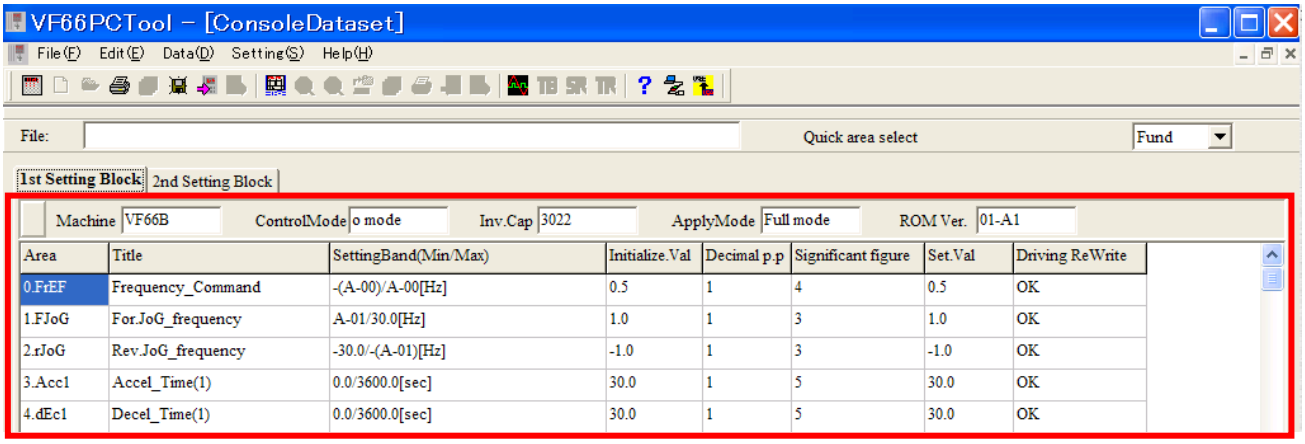
・E mode (ED motor vector mode)

ROM Version

Select inverter ROM version. (*Seal of VFC66-Z circuit board:○○-○○)

【Note】 Match each setting to the our products that uses it without fail. Refer to the main of product manual for details. Moreover, the parameter is not written when not agreeing about the use of product to the setting inverter.

Click [Exe] when the setting ends. The model selection screen will be closed and the parameters will be displayed on the main screen.



2-2-2. Parameter Edit

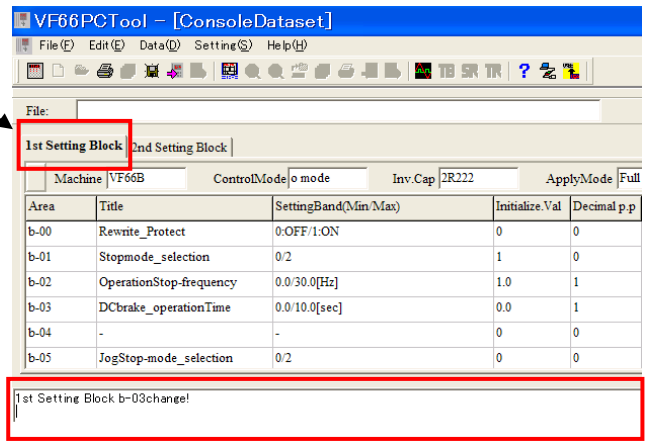
◆The main window explanation

It explains each item of the main window that displays the parameter.

Refer to the instruction manual for the product used for details of each parameter.

The display of setting block is changed by this tab.

The operation history is displayed here. **Save(.txt)/Clear** of the history can be executed when right-clicking in the history column.



SettingBand:

It is a range where the parameter can be set.

【Note】 In that case, it doesn't write it in the our products while editing the parameter in the value that exceeds the setting range though it is possible to edit.

Initialize.Val:

It is data when our products is initialized. Refer to the manual of inverter for the initialization method.

Decimal p.p.:

It is the decimal point position of the parameter. The change in the parameter is not done when there is no decimal point in the proper place.

Significant figure

It is a number of significant figures of the parameter.

【Note】In that case, it doesn't write it in the our products in the value that exceeds the number of significant figures by editing the parameter though it is possible to edit.

Set.Val:

It is a value of the parameter set now. The value of this column is changed and the parameter is edited.

Driving Rewrite:

Whether it is possible to rewrite parameter while our products driving is shown.

OK: Rewritable while driving. NG: Don't rewrite while driving.

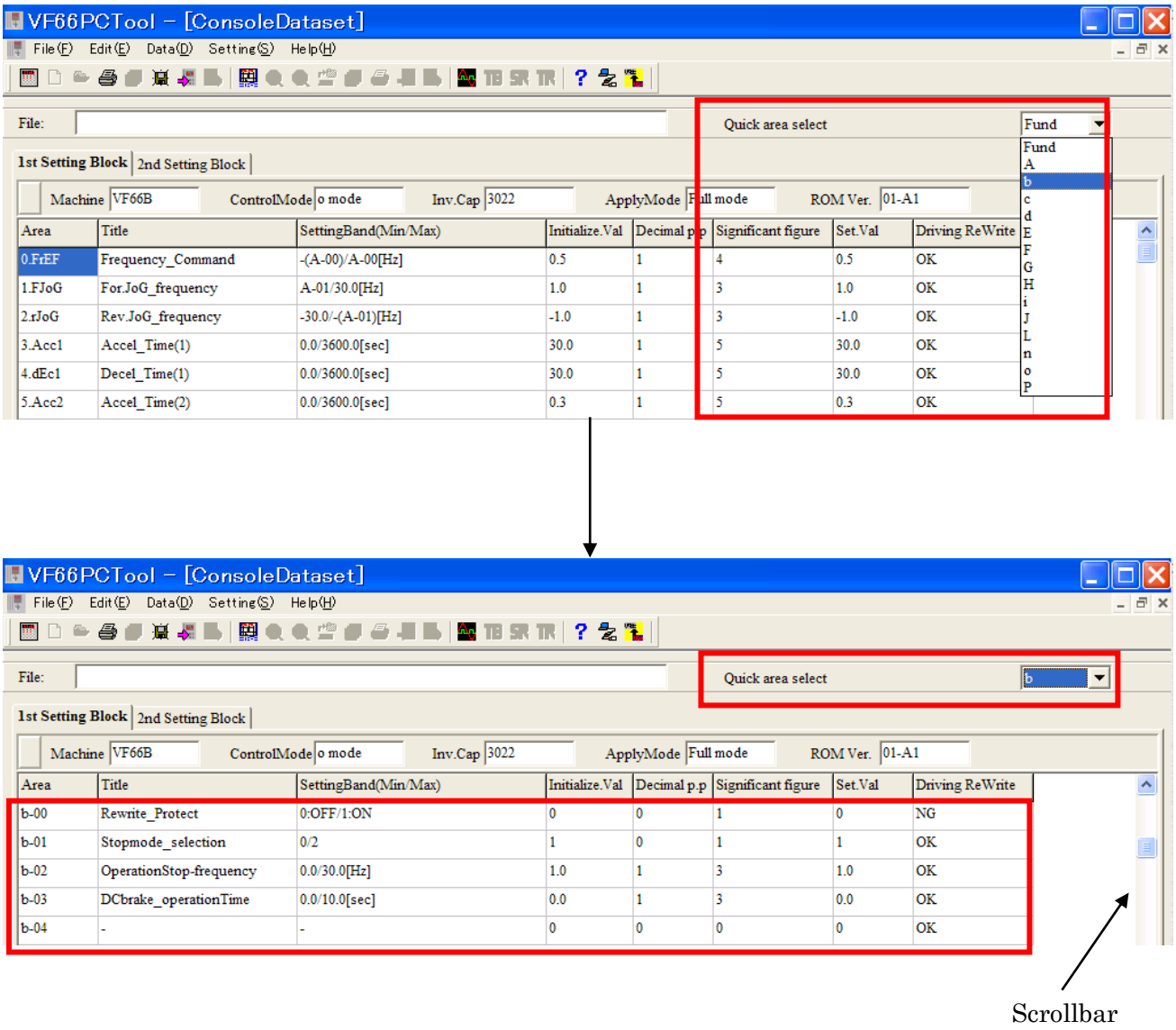
Quick area select:

The head of the selected area is displayed on top of the table.

◆**Edit procedure of parameter**

The parameter is edited as follows.

[1] Select the area of the parameter to be displayed on the window by the **Quick area select**.

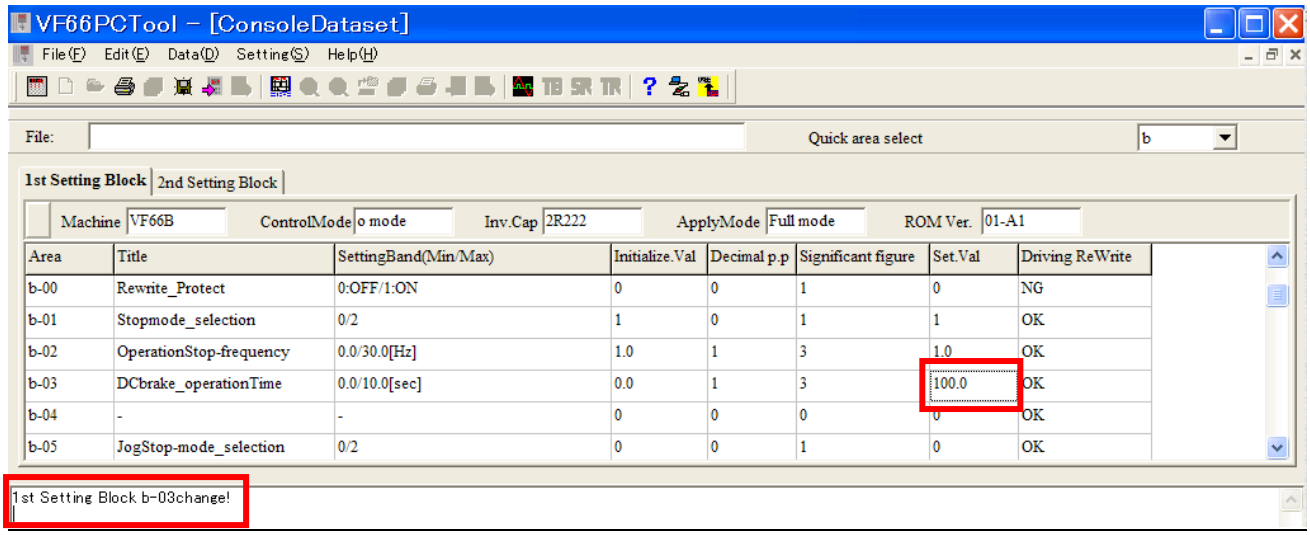


In the **Quick area select**, the parameter is displayed from the top in the selected area. Move the cursor of the scrollbar on the window side up and down and display it when the parameter that changes is not displayed.

[2] Set the cursor to the column of a set value of the parameter that changes, input the value, and fix it with 'Enter'.

When the change of a set value is fixed, the input operation is displayed under the window as a history.

【Note】 Input a set value noting the setting range, the decimal point position, and the number of significant figures. The details are displayed in the history column when there is a problem in the input.



【Note】 c,G,J,L,P area is common area of **No.1,2 Setting block**. One setting blocks edit parameter of common area and automatically edit other setting block.

【Note】 Since the IP address and subnet mask settings for the J area are entered in 2-byte delimiters, the decimal notation of the IP address or subnet mask is converted to hexadecimal, and the value is converted to decimal in 2-byte units.

Setting Example

192. 168. 255. 117 Converts decimal design values to hexadecimal numbers.

C0 . A8 . FF . 75 Collect in 2 bytes.

C0A8 . FF75 Convert to decimal

49320 . 65397 Enter the converted value to the setting value on the screen.

2-2-3. File Open

Click [File]-[Open] in the main menu and saved data file (CDS file) is opened.

If when the parameters are displayed, close a file already opened before you open a file.

2-2-4. File Save

Click [File]-[Save as] or [Save] in the main menu and the data is saved to file as *CDS*.

If you click [Save as], the data file is saved and a CSV file is created at the same time.

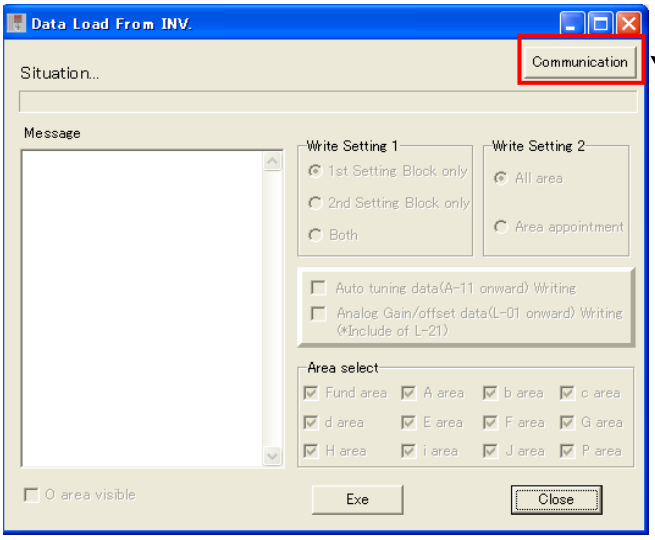
If you click [Overwrite save], the data file and the CSV file is overwritten.

【Note】 When you save the display result of a file compare, click [File]-[Save as CSV] and it is saved as CSV format.

2-2-5. Data Load From INV.

The parameter value read from our products is displayed on the main window. Close the current data before a read. And make sure whether our products connected to PC by USBIF66.

Click [Data]-[Read] in the main menu and a read execution window is displayed in the figure below.



Communication:

You may set the communication port. (Refer to <u>1-4.</u>)

【Note】

You cannot change display language on the read execution window.

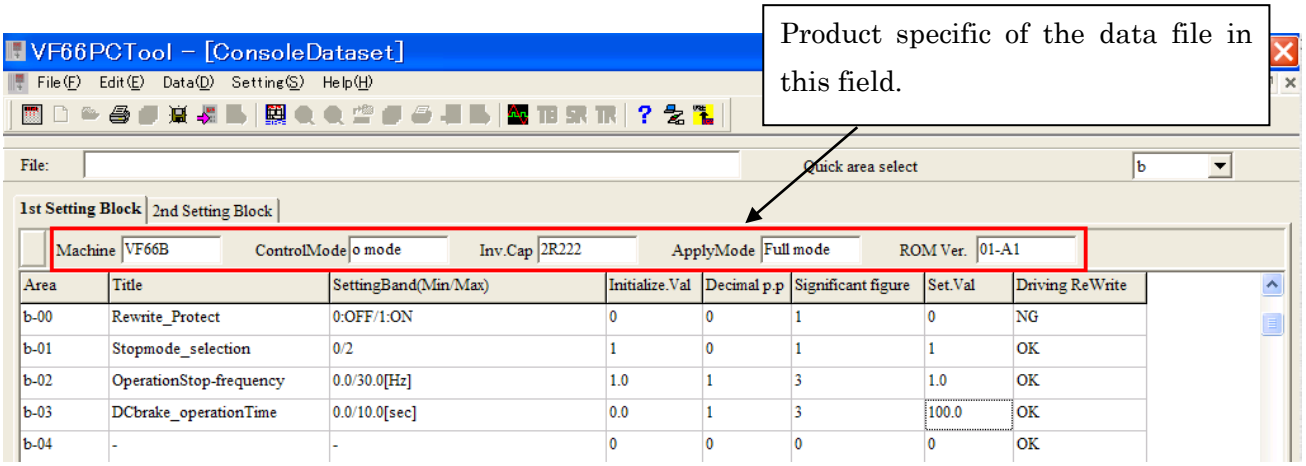
Click [Exe] and the parameter values to read and progress of read is displayed in the message field. When reading error occurs, an error message is displayed in the message field. If a reading error occurs, the read is stopped. Solve the error based on the error message and try again.

When the message “Read finished” is displayed, the read has finished. Click [Close] and the parameter values read from our products is displayed on the main window.

2-2-6. Data Write To INV.

You may write the parameter values of the data on our products. Before a write, make sure whether our products is connected to user's PC by *USBIF66*.

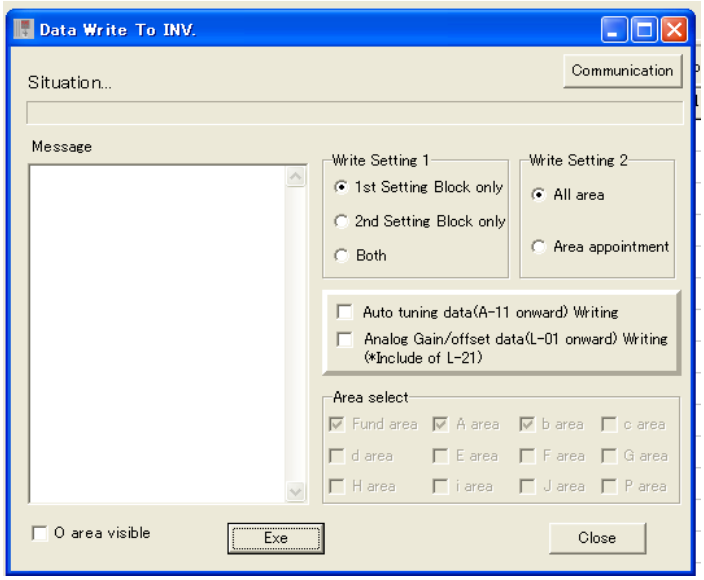
As a condition for writing, you need to conform the product specific of the data file to the product specific you use.



Area	Title	SettingBand(Min/Max)	Initialize.Val	Decimal p.p	Significant figure	Set.Val	Driving ReWrite
b-00	Rewrite_Protect	0:OFF/1:ON	0	0	1	0	NG
b-01	Stopmode_selection	0/2	1	0	1	1	OK
b-02	OperationStop-frequency	0.0/30.0[Hz]	1.0	1	3	1.0	OK
b-03	DCbrake_operationTime	0.0/10.0[sec]	0.0	1	3	100.0	OK
b-04	-	-	0	0	0	0	OK

If you cannot write on the file because of the discrepancy of the product specific, change the inverter specific of the data at [Edit] in the main menu. (Refer to **2-2-10.**)

When you click [Data]-[Data Write To INV.] in the main menu, a write execution window is displayed. And then set each item.



Write setting1:

Select the setting block you want write.

Write setting2:

Select the writing method either of all or the area specification.

Write Auto tuning data, Analog gain and offset data:

If you check the box, you can write items below to an inverter.

- Auto tuning date(A-11 onward)
- Analog gain/offset data(L-01 to 20)

Normally, there is not check. You check the box, when you wish to write the data.

【Note】 You cannot change display language from this window.

Area select: ("Area appointment" only)

Select parameter area to write.

O area visible:

O area is for our engineer. If you check there, you can get on error message.

(Except O area, you always get error message.)

Communication:

Set communication port.

(Refer to **1-4.**)

Click [Exe] after setting. As starting to write on our products, you get information of progress condition at message column. As errors occur, you get information at the message column.

If errors occur, writing on the inverter stop, at that time, check message column, and then solve the issues. Write on again.

When the "Writing completed" message is displayed, writing to the product is complete.

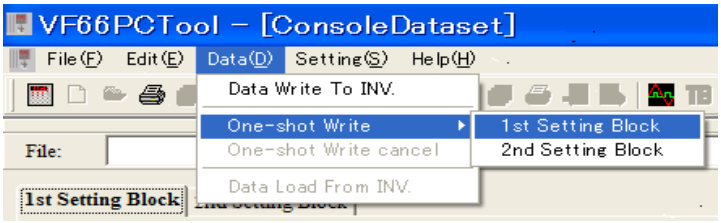
2-2-7. One-shot write mode

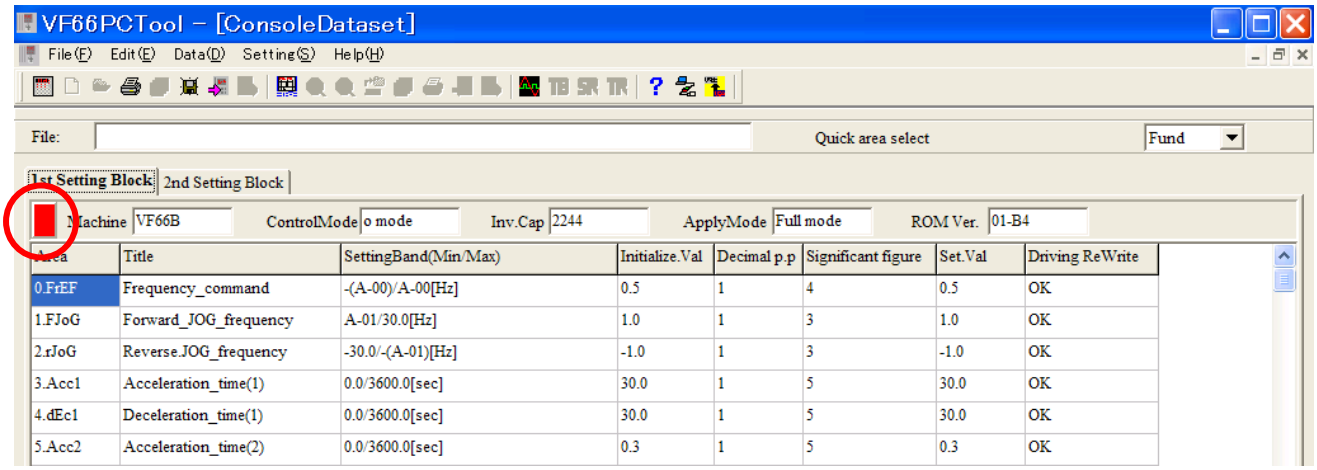
Using this mode, it can be done to write in our products at the same time as only the edited item. Before starting this mode, confirm the *USBIF66* connection between PC and the product.

On condition to write on, the specification of displayed data should be the same as the product specification in use. The details are referred to **2-2-6. Write on inverter.**

To start this mode: Click [Date]-[One-shot Write] in the main menu, then select the setting block. A lump of selected the Setting Block is turned on red color.

(In the figure below, Example when 1st Setting Block is selected by One-shot Write)





Area	Title	SettingBand(Min/Max)	Initialize.Val	Decimal p.p	Significant figure	Set.Val	Driving ReWrite
0.FrEF	Frequency_command	-(A-00)/A-00[Hz]	0.5	1	4	0.5	OK
1.FJoG	Forward_JOG_frequency	A-01/30.0[Hz]	1.0	1	3	1.0	OK
2.rJoG	Reverse.JOG_frequency	-30.0/-(A-01)[Hz]	-1.0	1	3	-1.0	OK
3.Acc1	Acceleration_time(1)	0.0/3600.0[sec]	30.0	1	5	30.0	OK
4.dEc1	Deceleration_time(1)	0.0/3600.0[sec]	30.0	1	5	30.0	OK
5.Acc2	Acceleration_time(2)	0.0/3600.0[sec]	0.3	1	5	0.3	OK

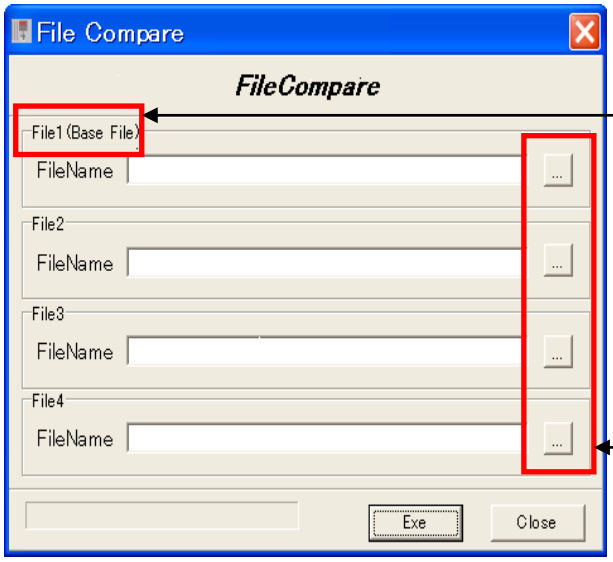
If you edit parameter at the condition of starting the mode, input and writing on the product start at the same time. When “Driving ReWrite” column is “NG”, this mode does not work while the product is driving. This mode only works for the selected set block when the mode starts. If you take the mode for other set block, you should select the other set block again.

When you cancel this mode, click [Data]-[One-shot Write cancel] in the main menu.

2-2-8. File Compare

FileCompare is used to select some data files at preserved data file, and then to compare with parameters of selected file. Close the current data before starting FileCompare.

When you click [File]-[FileCompare] in the main menu, a file select window is displayed as shown in the figure below.



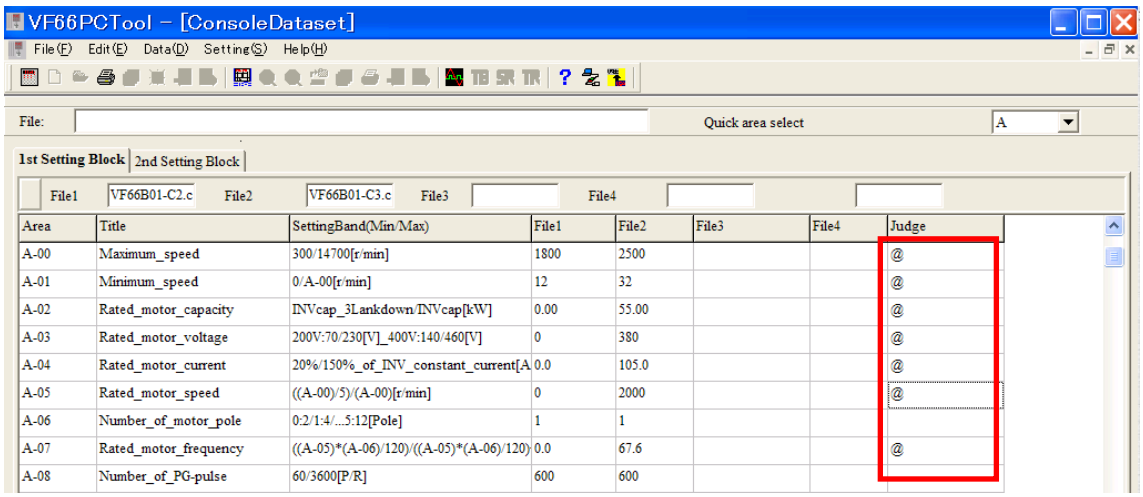
File1(Base File):

It is a standard in "File1" that the parameter of the selected file compares with the parameter of other files.

Also if File1 is not selected, FileCompare does not work.

Files to be compared with this button are selected.

The comparison is executed when clicking on a button after the file is selected. When comparing is finished, you get the message "Complete", and then get the result of each file's parameter.



Area	Title	SettingBand(Min/Max)	File1	File2	File3	File4	Judge
A-00	Maximum_speed	300/14700[r/min]	1800	2500			@
A-01	Minimum_speed	0/A-00[r/min]	12	32			@
A-02	Rated_motor_capacity	INVcap_3Lankdown/INVcap[kW]	0.00	55.00			@
A-03	Rated_motor_voltage	200V:70/230[V]_400V:140/460[V]	0	380			@
A-04	Rated_motor_current	20%/150%_of_INV_constant_current[A	0.0	105.0			@
A-05	Rated_motor_speed	((A-00)/5)/(A-00)[r/min]	0	2000			@
A-06	Number_of_motor_pole	0:2/1:4/...5:12[Pole]	1	1			
A-07	Rated_motor_frequency	((A-05)*(A-06)/120)/((A-05)*(A-06)/120)	0.0	67.6			@
A-08	Number_of_PG-pulse	60/3600[P/R]	600	600			

・Area's name, Title, and SettingBand are data of Standard File(File1).

・If set values of other files(File2～4) is difference with File1, '@' is displayed "Judge" at the column.

・If you wish to save result data, click [File]-[Save As CSV] in the main menu.

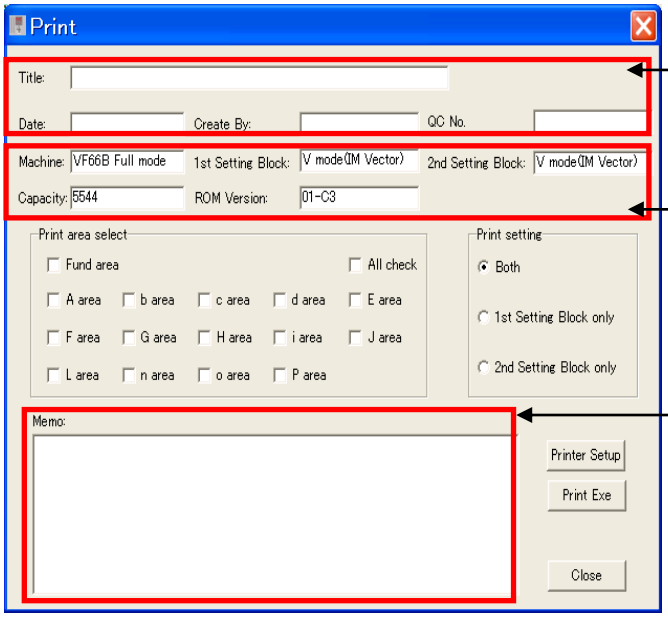
【Note】 About copy, refer to 2-2-9. Print ◆ FileCompare window.

2-2-9. Print

It is possible to print parameter displayed at main window, and date operated FileCompare.

When you click [File]-[Print] in the main menu, a print execution window is displayed. And then set the each item.

◆ Normally window



Input it to each item. If you do not input, blank is printed.

Inverter specification is displayed at the area.

Memo column

Print area select:

Select the printed area. Check “All check” when you wish to print all areas.

Print setting:

Select the printed setting block.

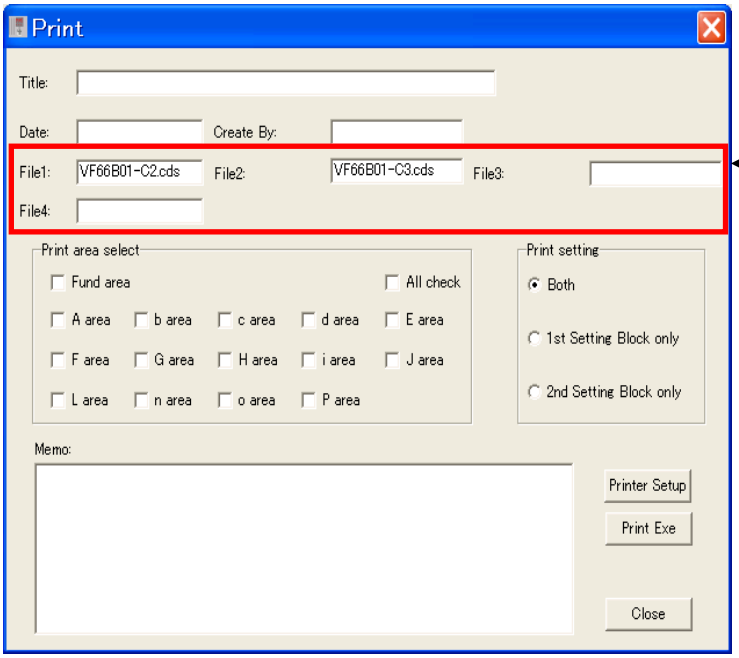
Printer Setup:

It is a setup button of the printer.

【Note】 The number of items printed by the printer orientation changes. Part is omitted and it is printed at the length print.

Click [Print Exe] when the setting ends.

◆ FileCompare window



←Compared the file names are displayed.

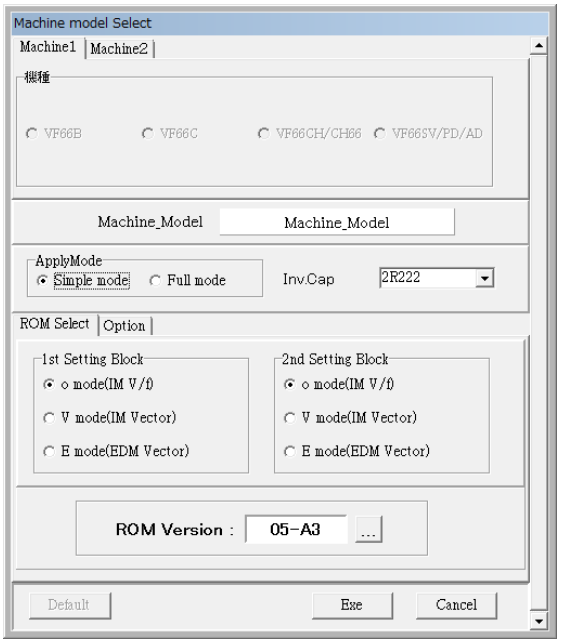
Print area select is same as **Normally window**.

2-2-10. Change Inverter

It is used to change the Operation mode, product capacity, ROM version of data in use. (It does not shift from Full mode to Simple mode.)

When you click [Edit]-[Change Inverter] in the main menu, [Machine model Select] window is displayed.

Do the setting matched to the use of products for each item on the Machine model Select.



ApplyMode:

Select operation mode.

【Note】

Full mode does not shift to Simple mode.

Inv. Cap:

Select capacity of our products.

ROM Version:

Select inverter ROM version.

(*Seal of VFC66-Z circuit board:○○-○○)

【Note】

Machine and Control mode do not change.

Click [Exe] when the setting ends.

Chapter_3 VF Monitor

VF Monitor has functions which are trend monitor function, trace-back function, and multi monitor tool. The trend monitor function can, in real time monitor the internal operation data (Ex. torque reference, output current, output voltage, and internal PLC function output) and each signal wave form (Ex. analog data, multi function I/O data). The trace-back function is a function used to display the graph as for the data when the inverter does the protection operation or it breaks down. Moreover, the storage function is equipped with the trigger function.

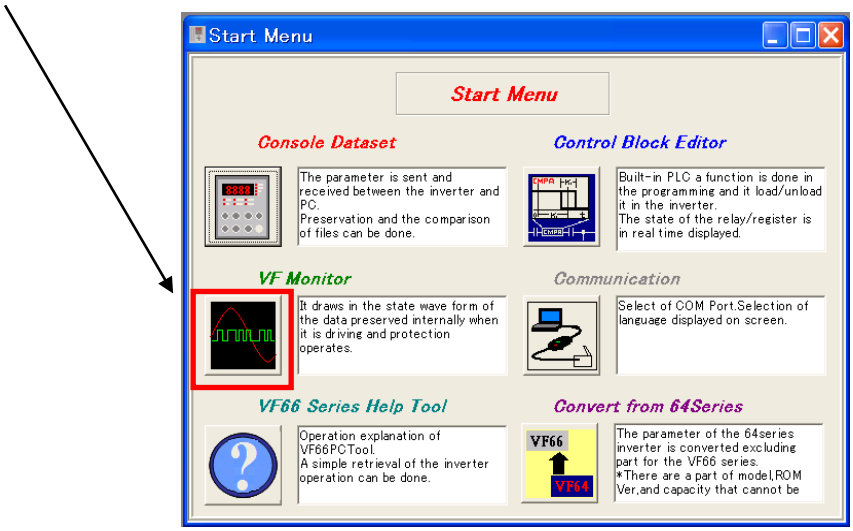
Notes : Because VF66B (EMS) is for our adjustment, the model name is displayed on the screen, but it cannot be used.

3-1. Start VF Monitor

VF Monitor starts by the following procedure.

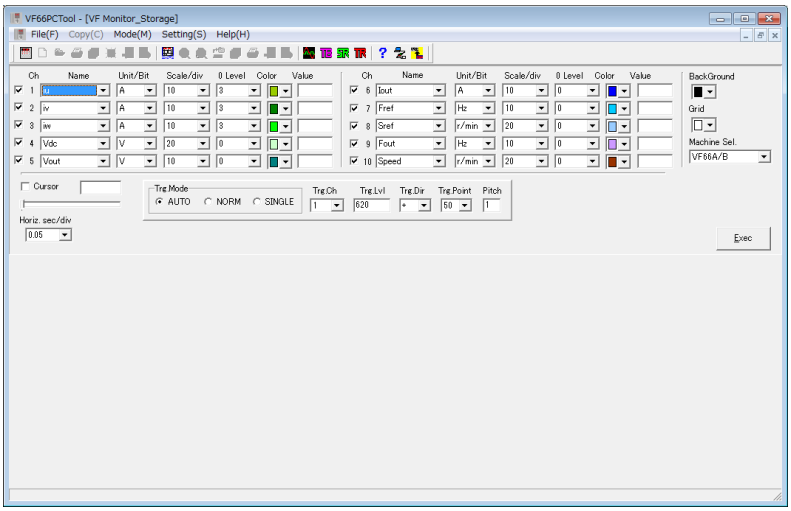
[1] Start VF Monitor

[VF Monitor] is selected from the start menu, and it is started.



[2] Display VF Monitor at main menu

After started the main window (as *Storage Mode*) below is displayed.



Here easily explains each menu in the main window of VF Monitor.

File

- **Open Log File**
  Opening the preserved data log file.
- **Save Log File**
  The displayed data is preserved.*
- **Save CSV file (unit)**
  The displayed data is preserved by the CSV form.
- **Save CSV file (digit unit)**
  The displayed data is preserved by the CSV form.
- **Screen Print**
  The window is printed. It is possible to preserve it as a BMP file.
- **VF monitor Exit**
  Exit the VF monitor.

*File expansion (*Trace-back Mode*: .trc, *Storage Mode:* .str, *Trend Mode:* .trd)

Copy

- Stopping of description as selecting a range, and then to copy the range at clip board. (⇒Refer to **3-6.**)

Mode

- **TraceBck**
  Display the graph as for the data when an inverter does the protection operation or it breaks down. (⇒Refer to **3-2.**)
- **Data Load from INV.**
  Trace-back data is read from a product. If there are many data, select a block to describe. (⇒Refer to **3-2-1.**)
- **Storage**
  The graph display that accumulated data in a product by the set cycle. (⇒Refer to **3-3.**)
- **Trend**
  The real-time data is displayed in the graph. (⇒Refer to **3-4.**)

Setting

- **Communication and language setting**
  Select the communication port, and the language displayed on the window. (Refer to **1-4.**)

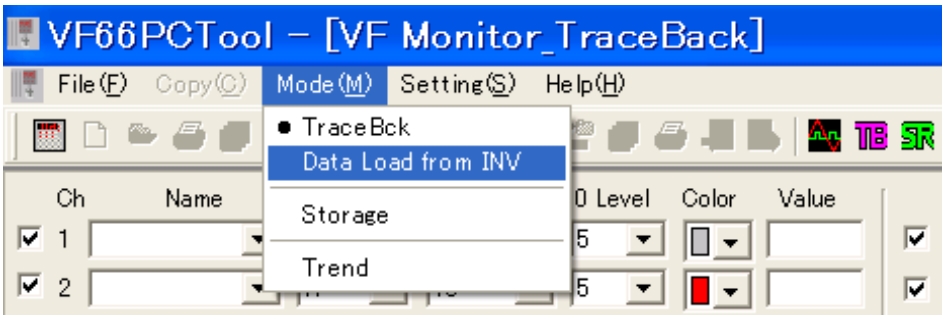
Help

- **VF66 Series Help**
  Explain operation of VF66PCTool and a simple retrieval about operation of VF66B inverter.
  The help only explains the functions of VF66PCTool and VF66B.
- **Version Info**
  Version information is displayed.

3-2. Trace-Back Mode

3-2-1. Get data of Trace-back

When you click [Mode]-[TraceBck] in the main menu. Select *Trace-back Mode* and then select [Date Load from INV] for reading in trace-back data.

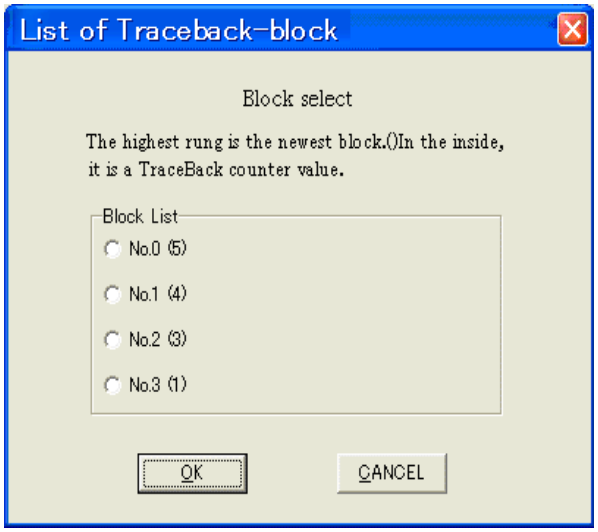


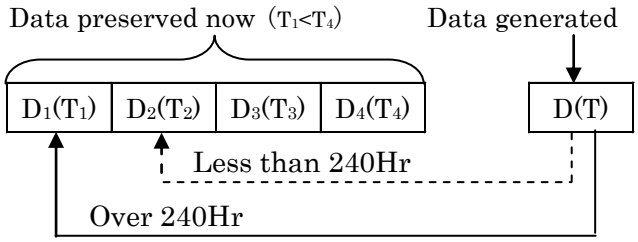
【Note】

● Is displayed at left side of selected mode.

3-2-2. Select Trace-back Data.

When [Date Load from INV] is selected, the figure below is displayed. To select data block which you would like to display from trace-back data.





【Note】

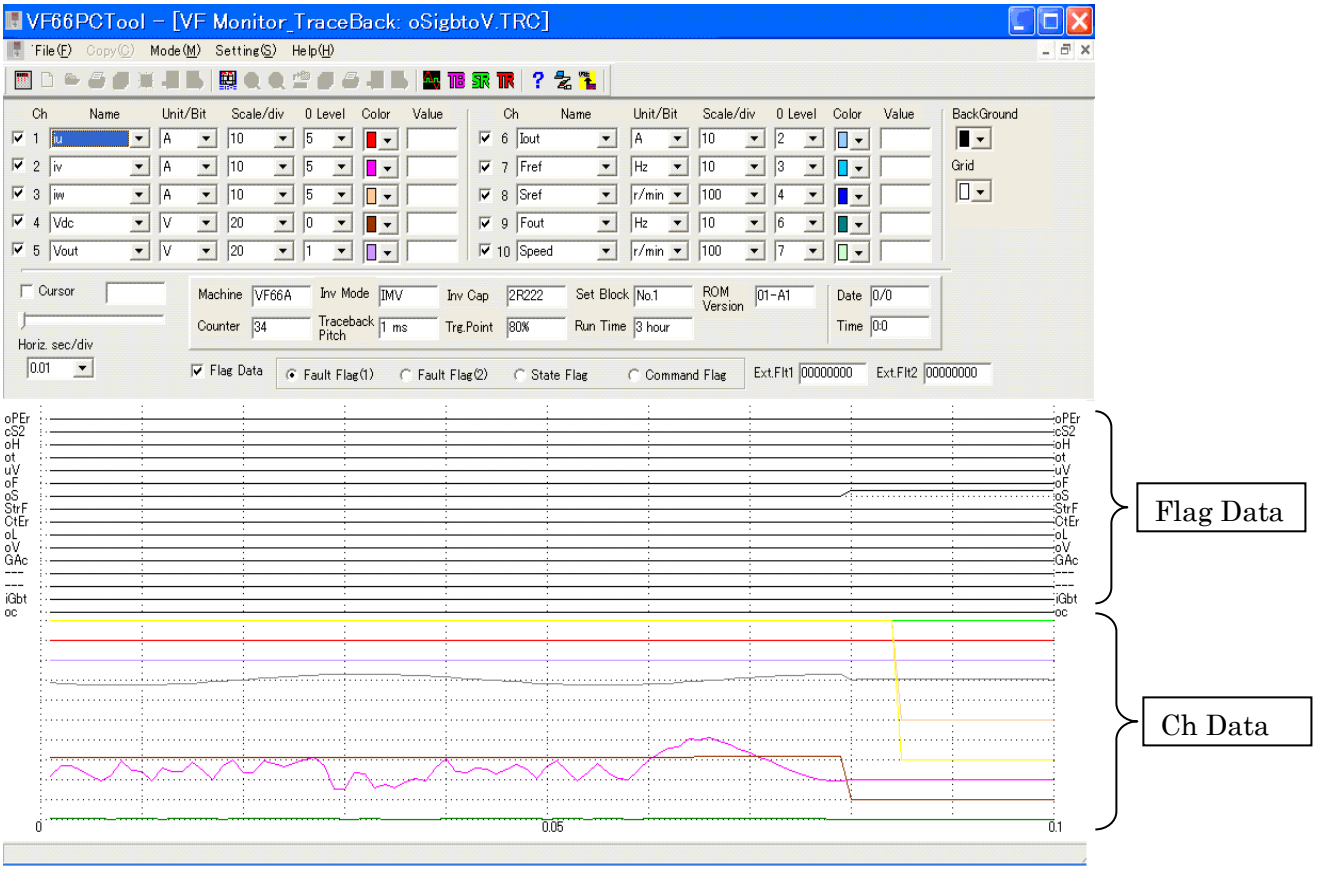
About the data superscription since the fifth times.

When the difference with the accumulation driving time (T) when trace-back function operates and the preserved latest data (T4) is over 240 hours, data 'D' is overwrite to 'D_1'. However, overwrite to 'D_2' when less than 240 hours.

Also, if reset operation and deleting of protected record start, all data clear.

3-2-3. Display Trace-back Data

At the end of reading data from the product graph is displayed.



Flag Data:

The graph is displayed upper side. Refer to <u>3-2-4. Operation of Trace-back Data</u> for a detailed explanation of each item.

(As “Flag Data” has a check mark, it is displayed)

Ch Data:

The data by the channel is displayed. (The graph is displayed bigger, if a check of “Flag Data” is un check.)

Flag Data can be selected also with the channel.

3-2-4. Operation of Trace-back Mode

The followings are explanation of each item.

<table>
<tr><th>Items</th><th colspan="2">Description</th></tr>
<tr><td>Ch</td><td colspan="2">Number of Channel</td></tr>
<tr><td>Name</td><td colspan="2">Measuring item</td></tr>
<tr><td>Unit/Bit</td><td>Unit of measuring items</td><td>Flag: Bit data
Data: Unit</td></tr>
<tr><td>Scale/div</td><td colspan="2">Vertical line(per a grid) (⇒Refer to <u>3-5. Scale・0Level</u>)</td></tr>
<tr><td>0 Level</td><td colspan="2">Off-set (⇒Refer to <u>3-5. Scale・0Level</u>)</td></tr>
<tr><td>Color</td><td colspan="2">Graph color</td></tr>
<tr><td>Value</td><td colspan="2">Cursor measurement value</td></tr>
<tr><td>BackGround</td><td colspan="2">Background color</td></tr>
<tr><td>Grid</td><td colspan="2">Grid color</td></tr>
<tr><td>Cursor</td><td colspan="2">If there is a check, cursor line is displayed, and value of cross point between the cursor line and graph is displayed at each channel [Value] column.</td></tr>
<tr><td>Horiz. Sec/div</td><td colspan="2">Horizontal line (Time per a grid)</td></tr>
<tr><td>Horiz. Point/div</td><td colspan="2">Horizontal line(Number of point per a grid)</td></tr>
<tr><td>Machine</td><td colspan="2">Machine Type of protected driving</td></tr>
<tr><td rowspan="6">Inv Mode</td><td colspan="2">Control mode at protected driving.</td></tr>
<tr><td>machine :
VF66B,VF66B(EMS),VF66SV,VF66SDS,
VF66B(Tex),VF67A,VF66C,VF66CAT,
VF100,N100</td><td>machine : VF66CH</td></tr>
<tr><td>o mode : Induction Motor V/f mode
V mode : Induction Motor vector mode
E mode : ED Motor vector mode</td><td>66CH mode : Buck
66CHb mode: Buck(BTS)
CH66 mode : Buck-boost</td></tr>
<tr><td>machine : VF66B（DCM Drive）</td><td>machine : VF66G
（Utility Interactive Inverter）</td></tr>
<tr><td>DCM Mode : DC Motor Drive mode</td><td>Govener : Governor control
Interconnection
: Utility Connected Operation /
Isolated Operation
self-sustained operation</td></tr>
<tr><td>machine : VF66R,N100R
(PWM Sinusoidal Wave Converter)</td><td>machine:DCP66</td></tr>
<tr><td></td><td>PWMmode:PWM Sinusoidal Wave Converter
120mode: 120 degree conduction</td><td>DC-DC CNV: DC-DC converter</td></tr>
<tr><td rowspan="2"></td><td>machine : N100CHD,N100CHU</td><td rowspan="2"></td></tr>
<tr><td>CHd mode : Buck
btS mode: Buck(BTS)
Chu mode : Buck-boost</td></tr>
<tr><td>Inv Cap</td><td colspan="2">Inverter capacity at protected driving</td></tr>
<tr><td>Set Block</td><td>Setting block at protected driving</td><td>No.1: 1st setting block
No.2: 2nd setting block</td></tr>
<tr><td>ROM Version</td><td colspan="2">ROM Version(*Seal of VFC66-Z circuit board:○○-○○)</td></tr>
<tr><td>Counter</td><td colspan="2">Value of Trace-back counter</td></tr>
</table>

Traceback Pitch	Trace-back pitch	F-13 (INV.set value)	
Trg. Point	Trigger point	F-14 (INV.set value)	
Run time	Accumulation driving time when protected		
Date	Send date from communication option when protected		*J-14: Valid only when ON *Binary data
Time	Send time from communication option when protected		
Flag Data	Flag Data display switch. (chack:Visible/uncheck:Invisible) (If flag data does not display, The data of channel is displayed bigger.)		
Fault Flag(1)	Protection/Trouble Flag(1)*1		
Fault Flag(2)	Protection/Trouble Flag(2) *1		
State Flag	Inverter state flag*1		
Command Flag	Inverter command flag*1		
Ext. Flt1	GAc/FLt error bit information No.1 (⇒Refer to flag explanation)		
Ext. Flt2	GAc/FLt error bit information No.2 (⇒Refer to flag explanation)		

【Note】 To switch Flag data, select the Flag name you want to display.

3-2-5. Explanation of Channel/Flag

[Channel]

[machine : VF66B,VF66B (EMS) ,VF66SV,VF66SDS,VF66B(Tex),VF66C,VF66CAT,VF67A,VF100]

Name of Channel	Unit	Description
iu	[A]	Output current of T1/U phase(instantaneous value)
iv	[A]	Output current of T2/V phase(instantaneous value)
iw	[A]	Output current of T3/W phase(instantaneous value)
Vdc	[V]	DC voltage
Vout	[V]	Output voltage(Effective value)
---/Speed/Speed*1	[-]/[r/min]/[r/min]※1	Not set/Rotation speed/Rotation speed*1
Fref/Sref/Sref*1	[Hz[/[r/min]/[r/min]※1	Frequency command/Rotation Speed command /Rotation Speed command*1
Trq	[%]	Torque
Fout	[Hz]	Output Frequency
---/Slip/id*1	[-]/[Hz]/[%]※1	Not set / Slip Frequency / d axis current*1
---/Flx/iq*1	[-]/[Hz]/[%]※1	Not set / Magnetic Flux / q axis current*1
Temp/Temp/daxis*1	[degC]/[degC]/[deg]※1	Temperature / Temperature / d axis position*1
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*2
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*2
State Flag	[Bit]	Inverter state flag*2
Command Flag	[Bit]	Inverter command flag*2

*1: It depends on control mode, from left.

o mode: Induction V/f mode

V mode: Induction Vector mode

E mode: ED motor Vector

*2: Refer to **Flag**.

[machine : VF66CH]

Name of Channel	Unit	Description
iu	[A]	Output current of T1/U phase(instantaneous value)
iv	[A]	Output current of T2/V phase(instantaneous value)
iw	[A]	Output current of T3/W phase(instantaneous value)
Vdc	[V]	DC voltage
Vout	[V]	Output voltage(Effective value)
AVR	[A]	AVR Current command with filter
Vref	[V]	Voltage command
Iref	[A]	Current command
DutyU	[%]	T1/U phase Duty
DutyV / Iout / Iout*1	[%]/[A]/[A]※1	T2/V phase Duty / Current of controlled object / Current of controlled object*1
DutyW	[%]	T3/W phase Duty
Temp	[degC]	Reactor Temperature
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*2
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*2
State Flag	[Bit]	State flag*2
Command Flag	[Bit]	Command flag*2

*1: It depends on control mode, from left.

66CH / 66CHb / CH66

*2: Refer to **Flag**.

[machine : VF66B (DCM Drive)]

Name of Channel	Unit	Description
–	[-]	[Special Adjustment]
ia+	[A]	Armature current (+ side DCCT detection)
ia-	[A]	Armature current (- side DCCT detection)
Vdc	[V]	Input DC voltage
Vout	[V]	Output DC voltage
Speed	[r/min]	Rotation speed*1
Sref	[r/min]	Rotation speed command*1
iaref	[%]	Armature current command
–	[-]	[Special Adjustment]
ia	[%]	Armature current
–	[-]	[Special Adjustment]
Temp	[deg]	Temperature*1
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*2
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*2
State Flag	[Bit]	State flag*2
Command Flag	[Bit]	Command flag*2

*1: Control mode is the one.

*2: Refer to **Flag**.

[machine : VF66G（Utility Connected Operation）]

Interconnection			Govener		
Name of Channel	Unit	Description	Name of Channel	Unit	Description
iu	[A]	T1/U phase current	iu	[A]	T1/U phase current
iv	[A]	T2/V phase current	iv	[A]	T2/V phase current
iw	[A]	T3/W phase current	iw	[A]	T3/W phase current
vdc	[V]	DC voltage	vdc	[V]	DC voltage
L_Vu	[V]	T1/U phase output voltage	Vout	[V]	Output voltage
L_Vv	[V]	T2/V phase output voltage	L_V	[V]	Bus-bar voltage
L_Vw	[V]	T3/W phase output voltage	L_Vr	[V]	T1/U phase voltage
Vu_ref	[V]	T1/U phase output voltage command	i_crs	[A]	–
Vv_ref	[V]	T2/V phase output voltage command	fgav	[Hz]	Governor frequency
Vw_ref	[V]	T3/W phase output voltage command	fout	[Hz]	Output frequency
vdc_ref	[V]	DC voltage command	id	[%]	Active current
id_ref	[A]	Active current command	iq	[%]	Reactive current
Fault Flag(1)	[Bit]	Protection/Trouble flag(1) *2	Fault Flag(1)	[Bit]	Protection/Trouble flag(1) *2
Fault Flag(2)	[Bit]	Protection/Trouble flag(2) *2	Fault Flag(2)	[Bit]	Protection/Trouble flag(2) *2
State Flag	[Bit]	State flag*2	State Flag	[Bit]	State flag*2
Command Flag	[Bit]	Command Flag*2	Command Flag	[Bit]	Command Flag*2

*1: Control mode is the two.

*2: Refer to **Flag**.

[machine : VF66R (PWM Sinusoidal wave converter)]

Name of Channel	Unit	Description
iu	[A]	L1/R phase current
iv	[A]	L2/S phase current
iw	[A]	L3/T phase current
vdc	[V]	DC voltage
L_Vu	[V]	L1/R phase output voltage
L_Vv	[V]	L2/S phase output voltage
L_Vw	[V]	L3/T phase output voltage
Vu_ref	[V]	L1/R phase output voltage command
Vv_ref	[V]	L2/S phase output voltage command
Vw_ref	[V]	L3/T phase output voltage command
vdc_ref	[V]	DC voltage command
id_ref	[A]	Active current command
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*1
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*1
State Flag	[Bit]	State flag*1
Command Flag	[Bit]	Command Flag*1

*1: Refer to **Flag**.

[machine : DCP66]

Name of Channel	Unit	Description
II1	[A]	Primary current
IT1	[A]	Primary transformer current
II2	[A]	Secondary current
IT2	[A]	Secondary transformer current
Vdc1	[V]	Primary voltage
Vdc2	[V]	Secondary voltage
Vref	[V]	Voltage command value
Vfbk	[V]	Voltage feedback
Iref	[-]	[Special Adjustment]
Ifbk	[-]	[Special Adjustment]
Phase	[-]	Phase command
UserDef	[-]	[Special Adjustment]
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*1
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*1
State Flag	[Bit]	State flag*1
Command Flag	[Bit]	Command flag*1

*1: Refer to **Flag**.

[machine : N100CHD]

Name of Channel	Unit	Description
i21	[A]	T1/U phase current
i22	[A]	T2/V phase current
i2	[A]	Total current (T1/U phase＋T2/V phase)
V1	[V]	Primary voltage
V2	[V]	Secondary voltage
AVR	[A]	Current command filter value
Vref	[V]	Voltage command
Iref	[A]	Current command for current control
DutyU	[%]	T1/U phase Duty
DutyV	[%]	T2/V phase Duty
User1	[-]	[Special Adjustment]
User2	[-]	[Special Adjustment]
Fault Flag(1)	[Bit]	Protection flag(1)*1
Fault Flag(2)	[Bit]	Protection flag(2)*1
State Flag	[Bit]	State flag*1
Command Flag	[Bit]	Command flag*1

*1: Refer to **Flag**.

[machine : N100CHU]

Name of Channel	Unit	Description
i11	[A]	T1/U phase current
i12	[A]	T2/V phase current
i1	[A]	Total current (T1/U phase+T2/V phase)
V1	[V]	Primary voltage
V2	[V]	Secondary voltage
AVR	[A]	Current command filter value
Vref	[V]	Voltage command
Iref	[A]	Current command for current control
DutyU	[%]	T1/U phase Duty
DutyV	[%]	T2/V phase Duty
User1	[-]	[Special Adjustment]
User2	[-]	[Special Adjustment]
Fault Flag(1)	[Bit]	Protection flag(1)*1
Fault Flag(2)	[Bit]	Protection flag(2)*1
State Flag	[Bit]	State flag*1
Command Flag	[Bit]	Command flag*1

*1: Refer to **Flag**.

[machine : N100]

Name of Channel	Unit	Description
iu	[A]	Output current of T1/U phase
iv	[A]	Output current of T2/V phase
iw	[A]	Output current of T3/W phase
Vdc	[V]	DC voltage
Vout	[V]	Output voltage(Effective value)
---/Speed/Speed*1	[-]/[r/min]/[r/min]※1	Not set/Rotation speed/Rotation speed*1
Fref/Sref/Sref*1	[Hz]/[r/min]/[r/min]※1	Frequency command/Rotation Speed command /Rotation Speed command*1
Trq	[%]	Torque
Fout	[Hz]	Output Frequency
---/Slip/id*1	[-]/[Hz]/[%]※1	Not set / Slip Frequency / d axis current*1
---/Flx/iq*1	[-]/[Hz]/[%]※1	Not set / Magnetic Flux / q axis current*1
Temp/Temp/daxis*1	[degC]/[degC]/[deg]※1	Temperature / Temperature / d axis position*1
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*2
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*2
State Flag	[Bit]	Inverter state flag*2
Command Flag	[Bit]	Inverter command flag*2

*1: It depends on control mode, from left.

o mode: Induction V/f mode

V mode: Induction Vector mode

E mode: ED motor Vector

*2: Refer to **Flag**.

[machine : N100R]

PWMmode / 120mode		
Name of Channel	Unit	Description
iu	[A]	L1/R phase current
iv	[A]	L2/S phase current
iw	[A]	L3/T phase current
vdc	[V]	DC voltage
L_Vu	[V]	L1/R phase output voltage
L_Vv	[V]	L2/S phase output voltage
L_Vw	[V]	L3/T phase output voltage
Vu_ref	[V]	L1/R phase output voltage command
Vv_ref	[V]	L2/S phase output voltage command
Vw_ref	[V]	L3/T phase output voltage command
vdc_ref	[V]	DC voltage command
id_ref	[A]	Active current command
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*1
Fault Flag(2)	[Bit]	Protection/Trouble flag(2)*1
State Flag	[Bit]	State flag*1
Command Flag	[Bit]	Command Flag*1

*1: Refer to **Flag**.

[Flag]

Contents of each Flag are as follows. Details refer product manual.

[machine : VF66B,VF66B(EMS) ,VF66B(Tex),VF67A]

Fault Flag(1)	
Display	Description
oc	Over Current protect
iGbt	IGBT protect operation
–	–
–	–
GAc	Gate amp board error (⇒See page 45)
oV	Over Voltage of DC input voltage
oL	Over Load protect
CtEr	Abnormal current sensor
StrF	Start jam
oS	Over Speed protect
oF	Over Frequency protect
uV	Under Voltage(Power Failure)
ot	Over Toque protect
oH	Over heat unit(IGBT)
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
SLSE	Sensor less starting error
tS	Communication time out error
SPdE	Speed control error
inoH	Over heat motor
roH	Charging resistance overheat
FcL	FCL operation
SE---	Setting error
Cut	Lacking phase
PSL	CPU processing glitches
FnF	Fan failure
PEr	PG error
SnE	Sensor error
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal operation command
run	Normal operation
jog	Jog operation
rev	Reverse command
DC	DC Excite
powdw	Power Failure
Mes	Automatic Measurement
Gate	IGBT drive
Excit	Excite
DcB	DC Brake
FlxUp	Flux intensify when start
PgEnd	End of program operation
–	–
revic	Reverse order last operation
–	–
fcl	High speed current limited(FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
jog	Jog operation command
rev	Reverse command
Excit	Excite command
DcB	DC Brake command
Rst	Reset command
Excia	First Excite command
Emg	Emergency Stop command
DcExc	DC Excite command
0SpdH	0rpm speed keeping command
Mes	Automatic measurement command
EmgB	Emergency Contact-B command
–	–
–	–
–	–
Cnv	Constant re-calculation requirement

[machine : VF66CH_2]

Fault Flag(1)	
Display	Description
oc	Over Current protect
iGbt	IGBT protect operation
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
GAc	Gate amp board error (⇒See page 45)
oV	Over Voltage of DC input voltage
oL	Over Load protect
–	–
StrF	Start jam
–	–
–	–
uV	Under Voltage(Power Failure)
–	–
oH	Over heat unit(IGBT)
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
LoH	Reactor overheat protect
tS	Communication time out error
AVrE	Voltage control error
bLnc	Abnormality Current balance
roH	Charging resistance overheat
FcL	FCL operation
SE--	Setting error
–	–
PSL	CPU processing glitches
FnF	Fan failure
–	–
SnE	Sensor error
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal operation command
run	Normal operation
–	–
–	–
–	–
powdw	Power Failure
–	–
Gate	IGBT drive
–	–
–	–
–	–
–	–
–	–
–	–
–	–
fcl	High speed current limited(FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
–	–
–	–
–	–
–	–
Rst	Reset command
–	–
Emg	Emergency Stop command
–	–
0vltH	0[V] keeping command
–	–
EmgB	Emergency Contact-B command
–	–
–	–
–	–
Cnv	Constant re-calculation requirement

[machine : VF66SV、VF66SDS、VF66C、VF66CAT]

Fault Flag(1)	
Display	Description
oc	Over Current protect
iGbt	IGBT protect operation
–	–
–	–
GAc	Gate amp board error (⇒See page 45)
oV	Over Voltage of DC input voltage
oL	Over Load protect
CtEr	Abnormal current sensor
StrF	Start jam
oS	Over Speed protect
oF	Over Frequency protect
uV	Under Voltage(Power Failure)
ot	Over Toque protect
oH	Over heat unit(IGBT)
cS2	Abnormal stored memory
CPu2	Second CPU error

Fault Flag(2)	
Display	Description
SLSE	Sensor less starting error
tS	Communication time out error
SPdE	Speed control error
inoH	Over heat motor
roH	Charging resistance overheat
FcL	FCL operation
SE---	Setting error
Cut	Lacking phase
PSL	CPU processing glitches
FnF	Fan failure
PEr	PG error
SnE	Sensor error
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal operation command
run	Normal operation
jog	Jog operation
rev	Reverse command
DC	DC Excite
powdw	Power Failure
Mes	Automatic Measurement
Gate	IGBT drive
Excit	Excite
DcB	DC Brake
FlxUp	Flux intensify when start
PgEnd	End of program operation
–	–
revic	Reverse order last operation
–	–
fcl	High speed current limited(FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
jog	Jog operation command
rev	Reverse command
Excit	Excite command
DcB	DC Brake command
Rst	Reset command
Excia	First Excite command
Emg	Emergency Stop command
DcExc	DC Excite command
0SpdH	0rpm speed keeping command
Mes	Automatic measurement command
EmgB	Emergency Contact-B command
–	–
–	–
–	–
Cnv	Constant re-calculation requirement

[machine : VF66B (DCM Drive)]

Fault Flag(1)	
Display	Description
oc	Over Current protect
iGbt	IGBT protect operation
-	-
-	-
GAc	Gate amp board error (⇒See page 45)
oV_i	Over Voltage of DC input voltage
oL	Over Load protect
iFoc	Field over current
StrF	Start jam
oS	Over Speed protect
oV_o	Over Voltage of DC output voltage
uV	Under Voltage(Power Failure)
iFEr	Field loss
oH	Over heat unit(IGBT)
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
-	-
tS	Communication time out error
SPdE	Speed control error
inoH	Over heat motor
roH	Charging resistance overheat
-	-
SE---	Setting error
-	-
PSL	CPU processing glitches
FnF	Fan failure
PEr	PG error
-	-
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal operation command
run	Normal operation
jog	Jog operation
rev	Reverse command
-	-
powdw	Power Failure
Mes	Automatic Measurement
Gate	IGBT drive
-	-
-	-
-	-
PgEnd	End of program operation
-	-
revic	Reverse order last operation
-	-
fcl	High speed current limited(FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
jog	Jog operation command
rev	Reverse command
-	-
-	-
Rst	Reset command
-	-
Emg	Emergency Stop command
DcExc	DC Excite command
0SpdH	0rpm speed keeping command
Mes	Automatic measurement command
EmgB	Emergency Contact-B command
-	-
-	-
-	-
Cnv	Constant re-calculation requirement

[machine : VF66G (Governor control)]

Fault Flag(1)_V	
Display	Description
oc	Over Current protect
iGbt	IGBT protect operation
-	-
-	-
GAc	Gate amp board error (⇒See page 45)
oV	DC voltage overvoltage protection
oL	Over Load protect
CtEr	Abnormal current sensor
StrF	Start jam
-	-
FcL	FCL operation
uV	Under Voltage
oH	Over heat unit
-	-
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2) _V	
Display	Description
-	-
tS	Communication time out error
-	-
-	-
-	-
-	-
SE	Setting error
-	-
PSL	CPU processing glitches
FnF	Fan failure
-	-
-	-
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag_V	
Display	Description
start	Normal operation command
run	Normal operation
-	-
-	-
-	-
powdw	Power Failure
-	-
Gate	IGBT drive
-	-
-	-
-	-
-	-
-	-
-	-
-	-
fcl	High speed current limited(FCL) driving

Command Flag_V	
Display	Description
start	Normal Operation command
-	-
-	-
-	-
-	-
Rst	Reset command
-	-
Emg	Emergency Stop command
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-

[machine : VF66G (Utility Connected Operation / Isolated Operation)]

Fault Flag(1) _C	
Display	Description
oc	Over Current protect
iGbt	IGBT protect operation
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
GAc	Gate amp board error (⇒See page 45)
oV	Over Voltage of DC voltage
oL	Overload protection
CtEr	Current sensor abnormality
StrF	Start jam
FuA	Blown AC Fuse
FcL	FCL operation
uV	Under Voltage
oH	Over heat unit
-	-
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2) _C	
Display	Description
oVGr	Ground fault over voltage protection
tS	Communication time out error
oVr	Utility Voltage Rise protection
uVr	Utility under voltage protection
Acti	Utility power failure detection (active)
PASi	Utility power failure detection (passive)
SE	Setting error
ocG	Overcurrent protection
PSL	CPU processing glitches
FnF	Fan failure
oFr	Utility Frequency rise protection
uFr	Utility Frequency drop protection
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag _C	
Display	Description
MC	Magnetic Contactor state
RK	Utility connected switch state
LD	Isolated operation switch state
AC	AC power supply
DC_DROP	Under Voltage(DC)
AC_FAIL	Utility interactive protection
SYS_Hz	60Hz: 1,50Hz: 0
-	-
RUN	Normal operation
PLL	Phase synchronization loop state
BLOCK	Gate block
FLT	Fault state
-	-
-	-
-	-
fcl	High speed current limited(FCL) driving

Command Flag _C	
Display	Description
start	Normal Operation command
BJK_CMD	isolated operation command
-	-
-	-
-	-
Rst	Reset command
-	-
Emg	Emergency Stop command
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-

[machine： VF66R（PWM sine wave converter/120-degree conduction）]

Fault Flag(1)	
Display	Description
oc	overcurrent
iGbt	IGBT abnormal
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
GAc	Gate amp board error (⇒See page 45)
oV	DC voltage overvoltage protection
oL	Overload protection
CtEr	Current sensor abnormality
StrF	Start-up congestion
FuA	AC Fuse
FcL	FCL operation
uV	Under Voltage
oH	Over heat unit
cFr	For expansion
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
oVGr	[Special Adjustment]
tS	Communication time out error
oVr	[Special Adjustment]
uVr	[Special Adjustment]
Acti	[Special Adjustment]
PASi	[Special Adjustment]
SE	Setting error
ocG	Overcurrent protection
PSL	CPU processing glitches
FnF	Fan failure
oFr	Utility Frequency rise protection
uFr	Utility Frequency drop protection
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
MC	Magnetic Contactor state
-	-
-	-
AC	AC power supply
DC_DROP	Under Voltage(DC)
-	-
SYS_Hz	60Hz: 1,50Hz: 0
-	-
RUN	Normal operation
PLL	Phase synchronization loop state
BLOCK	Gate block
FLT	Fault state
-	-
-	-
-	-
-	-

Command Flag	
Display	Description
start	Normal Operation command
-	-
-	-
-	-
-	-
Rst	Reset command
-	-
Emg	Emergency Stop command
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-

[machine : DCP66]

Fault Flag(1)	
Display	Description
-	-
iGbt	IGBT abnormal
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
GAc	Gate amp board error (⇒See page 45)
oV1	DC voltage overvoltage protection (Primary side)
oL	Overload protection
CtEr	Current sensor abnormality
StrF	Start-up congestion
oV2	DC voltage overvoltage protection (Secondary side)
-	-
uV	Undervoltage
-	-
oH	Over heat unit
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
-	-
tS	Communication time out error
VcEr	Voltage control error
-	-
-	-
-	-
SE	Setting error
-	-
PSL	CPU processing glitches
FnF	Fan failure
-	-
-	-
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal Operation command
run	Normal Operation
-	-
-	-
-	-
powdw	power down
-	-
Gate	power distribution
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-

Command Flag	
Display	Description
start	Normal Operation command
-	-
-	-
-	-
-	-
Rst	Reset command
-	-
Emg	Emergency Stop command
-	-
-	-
-	-
EmgB	Emergency Contact-B command
-	-
-	-
-	-
Cnv	Constant re-calculation requirement

[machine : VF100]

Fault Flag(1)	
Display	Description
oc	Overcurrent
iGbt	IGBT protect operation
-	-
-	-
GAc	[Special Adjustment]
oV	Over Voltage of DC input voltage
oL	Over Load protect
CtEr	Abnormal current sensor
StrF	Start jam
oS	Over Speed protect
oF	Over Frequency protect
uV	Under Voltage(Power Failure)
ot	Over Toque protect
oH	Over heat unit (IGBT)
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
SLSE	Sensor less starting error
tS	Communication time out error
SPdE	Speed control error
inoH	Over heat motor
roH	Charging resistance overheat
FcL	FCL operation
SE--	Setting error
Cut	Lacking phase
PSL	CPU processing glitches
thEr	Unit temperature detection error
PEr	PG error
SnE	Sensor error
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal operation command
run	Normal operation
jog	Jog operation
rev	Reverse command
DC	DC Excite
powdw	Power Failure
Mes	Automatic Measurement
Gate	IGBT drive
Excit	Excite
DcB	DC Brake
FlxUp	Flux intensify when start
PgEnd	End of program operation
-	-
revic	Reverse order last operation
-	-
fcl	High speed current limited (FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
jog	Jog operation command
rev	Reverse command
Excit	Excite command
DcB	DC Brake command
Rst	Reset command
Excia	First Excite command
Emg	Emergency Stop command
DcExc	DC Excite command
0SpdH	0rpm speed keeping command
Mes	Automatic measurement command
EmgB	Emergency Contact-B command
-	-
-	-
-	-
Cnv	Constant re-calculation requirement

[machine : N100CHD,N100CHU]

Fault Flag(1)	
Display	Description
oc	Overcurrent
-	-
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
FLt	Control power board abnormality (⇒See page 45)
oV	Overvoltage protection
oL	Over Load protect
-	-
StrF	Start jam
-	-
-	-
uV	Undervoltage protection
-	-
-	-
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
-	-
tS	Communication time out error
AVrE	Voltage control error
bLnc	Abnormality Current balance
-	-
-	-
SE--	Setting error
-	-
PSL-	CPU processing glitches
-	-
-	-
SnE	Sensor error
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Operation command ON
run	Driving
-	-
-	-
-	-
powdw	During power outage
-	-
Gate	IGBT drive
-	-
-	-
-	-
-	-
-	-
-	-
-	-
-	-

Command Flag	
Display	Description
start	Normal Operation command
-	-
-	-
-	-
-	-
Rst	Fault reset
-	-
Emg	Emergency Stop
-	-
0vltH	0[V] keeping command
-	-
EmgB	Emergency Contact-B command
-	-
-	-
-	-
Cnv	Start constant calculation

[machine : N100]

Fault Flag(1)	
Display	Description
oc	Overcurrent
-	-
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
FLt	Control power board abnormality
oV	Over Voltage of DC input voltage
oL	Over Load protect
CtEr	Abnormal current sensor
StrF	Start jam
oS	Over Speed protect
oF	Over Frequency protect
uV	Under Voltage(Power Failure)
ot	Over Toque protect
-	-
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
SLSE	Sensor less starting error
tS	Communication time out error
SPdE	Speed control error
inoH	Over heat motor
-	-
FcL	FCL operation
SE--	Setting error
Cut	Lacking phase
PSL	CPU processing glitches
-	-
PEr	PG error
SnE	Sensor error
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
start	Normal operation command
run	Normal operation
jog	Jog operation
rev	Reverse command
DC	DC Excite
powdw	Power Failure
Mes	Automatic Measurement
Gate	IGBT drive
Excit	Excite
DcB	DC Brake
FlxUp	Flux intensify when start
PgEnd	End of program operation
-	-
revic	Reverse order last operation
-	-
fcl	High speed current limited (FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
jog	Jog operation command
rev	Reverse command
Excit	Excite command
DcB	DC Brake command
Rst	Reset command
Excia	First Excite command
Emg	Emergency Stop command
DcExc	DC Excite command
0SpdH	0rpm speed keeping command
Mes	Automatic measurement command
EmgB	Emergency Contact-B command
-	-
-	-
-	-
Cnv	Constant re-calculation requirement

[machine : N100R (PWM sine wave converter/120-degree conduction)]

Fault Flag(1)	
Display	Description
oc	Overcurrent
-	-
EnGA	Emergency stop (A contact)
EnGb	Emergency stop (B contact)
FLt	Control power board abnormality
oV	Over Voltage of DC input voltage
oL	Over Load protect
CtEr	Abnormal current sensor
StrF	Start jam
FuA	AC Fuse
FcL	FCL operation
uV	Under Voltage(Power Failure)
-	-
-	-
cS2	Abnormal stored memory
oPEr	Option error

Fault Flag(2)	
Display	Description
-	-
tS	Communication time out error
-	-
-	-
-	-
-	-
SE--	Setting error
-	-
PSL	CPU processing glitches
-	-
-	-
-	-
EF1	External failure1
EF2	External failure2
EF3	External failure3
EF4	External failure4

State Flag	
Display	Description
MC	Magnetic Contactor state
-	-
-	-
AC	AC power supply
DC_DROP	Under Voltage(DC)
-	-
SYS_Hz	60Hz: 1,50Hz: 0
-	-
RUN	Normal operation
PLL	Phase synchronization loop state
BLOCK	Gate block
FLT_DTCT	Fault state
-	-
-	-
-	-
fcl	High speed current limited (FCL) driving

Command Flag	
Display	Description
start	Normal Operation command
-	-
-	-
-	-
-	-
Rst	Reset command
-	-
Emg	Emergency Stop command
-	-
-	-
-	-
EmgB	Emergency Contact-B command
-	-
-	-
-	-
Cnv	Constant re-calculation requirement

If "GAc/FLt" of FaultFlag(1) is indicated 1(0:unprotection, 1:protection) at over 30kW machines, Ext.Flt1, ExtFlt2, ExtFlt3, and ExtFlt4 are flag data for judging details of the abnormal contents, and displayed by eight figures. If not abnormality, "0000 0000" is displayed.

If multiple GAc/FLt anomalies are detected, the sum of the values displayed for each GAc/FLt anomaly is displayed in hexadecimal.

Ex.) If detects the "IGBT over current of U phase in master unit" and "IGBT over current of V phase in master unit"

Display of Ext.Flt1: "0000 0004" + "0000 0008" → "0000 000C"

About details, refer to product manual.

[machine : VF66B,VF66C,VF66CH(CH66),VF66SV,VF66AD,VF66PD,VF66G, VF66SDS,VF66CAT,VF67A]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Communication error with master GAC (No response for three times)	0001 0000	DC over voltage in sleeve unit-1
0000 0002	Gate power abnormal in master unit	0002 0000	Output fin overheat of T1/U phase in sleeve unit-1
0000 0004	IGBT over current of T1/U phase in master unit	0004 0000	Melted fuse of DC main circuit in sleeve unit-1
0000 0008	IGBT over current of T2/V phase in master unit	0008 0000	FM trouble of sleeve unit-1
0000 0010	IGBT over current of T3/W phase in master unit	0010 0000	15V control power down of sleeve unit-1
0000 0020	Output fin overheat of T1/U phase in master unit	0020 0000	Communication error with sleeve unit-2 (No response for three times)
0000 0040	Melted fuse of DC main circuit in master unit	0040 0000	Gate power abnormal in sleeve unit-2
0000 0080	More than 290% current to all unit for more than 2 seconds	0080 0000	IGBT over current of T1/U phase in sleeve unit-2
0000 0100	Power error PRIM66-Z, PRIS66-Z board(parallel type)	0100 0000	IGBT over current of T2/V phase in sleeve unit-2
0000 0200	Master unit FM trouble	0200 0000	IGBT over current of T3/W phase in sleeve unit-2
0000 0400	-	0400 0000	DC over voltage in sleeve unit-2
0000 0800	Communication error with sleeve unit-1 (No response for three times)	0800 0000	Output fin overheat of T1/U phase in sleeve unit-2
0000 1000	Gate power abnormal in sleeve unit-1	1000 0000	Melted fuse of DC main circuit in sleeve unit-2
0000 2000	IGBT over current of T1/U phase in sleeve unit-1	2000 0000	Sleeve unit-2 FM trouble
0000 4000	IGBT over current of T2/V phase in sleeve unit-1	4000 0000	15V control power down in sleeve unit-2
0000 8000	IGBT over current of T3/W phase in sleeve unit-1	8000 0000	Communication error with sleeve unit-3 (No response for three times)

Ext.Flt2			
Display	Description	Display	Description
0000 0001	Gate power abnormal in sleeve unit-3	0001 0000	Converter of sleeve unit-3 overheat
0000 0002	IGBT over current of T1/U phase in sleeve unit-3	0002 0000	Outside DB1 protect or communication error
0000 0004	IGBT over current of T2/V phase in sleeve unit-3	0004 0000	Outside DB2 protect or communication error
0000 0008	IGBT over current of T3/W phase in sleeve unit-3	0008 0000	Outside DB3 protect or communication error
0000 0010	DC over voltage in sleeve unit-3	0010 0000	Outside DB4 protect or communication error
0000 0020	Output fin overheat of T1/U phase in sleeve unit-3	0020 0000	Outside DB5 protect or communication error
0000 0040	Melted fuse of DC main circuit in sleeve unit-3	0040 0000	Outside DB6 protect or communication error
0000 0080	Sleeve unit-3 FM trouble	0080 0000	Output fin of T2/V phase in master unit overheat
0000 0100	15V control power down in sleeve unit-3	0100 0000	Output fin of T3/W phase in master unit overheat
0000 0200	MC of master unit doesn't turn on	0200 0000	Output fin of T2/V phase in sleeve unit-1 overheat
0000 0400	MC of sleeve unit-1 doesn't turn on	0400 0000	Output fin of T3/W phase in sleeve unit-1 overheat
0000 0800	MC of sleeve unit-2 doesn't turn on	0800 0000	Output fin of T2/V phase in sleeve unit-2 overheat
0000 1000	MC of sleeve unit-3 doesn't turn on	1000 0000	Output fin of T3/W phase in sleeve unit-2 overheat
0000 2000	Converter of master unit overheat	2000 0000	Output fin of T2/V phase in sleeve unit-3 overheat
0000 4000	Converter of sleeve unit-1 overheat	4000 0000	Output fin of T3/W phase in sleeve unit-3 overheat
0000 8000	Converter of sleeve unit-2 overheat	8000 0000	-

[machine : VF66R]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Communication error with master GAC (No response for three times)	0001 0000	DC over voltage in sleeve unit-1
0000 0002	Gate power abnormal in master unit	0002 0000	Output fin overheat of L1/R phase in sleeve unit-1
0000 0004	IGBT over current of L1/R phase in master unit	0004 0000	Melted fuse of DC main circuit in sleeve unit-1
0000 0008	IGBT over current of L2/S phase in master unit	0008 0000	FM trouble of sleeve unit-1
0000 0010	IGBT over current of L3/T phase in master unit	0010 0000	15V control power down of sleeve unit-1
0000 0020	Output fin overheat of L1/R phase in master unit	0020 0000	Communication error with sleeve unit-2 (No response for three times)
0000 0040	Melted fuse of DC main circuit in master unit	0040 0000	Gate power abnormal in sleeve unit-2
0000 0080	More than 290% current to all unit for more than 2 seconds	0080 0000	IGBT over current of L1/R phase in sleeve unit-2
0000 0100	Power error PRIM66-Z, PRIS66-Z board(parallel type)	0100 0000	IGBT over current of L2/S phase in sleeve unit-2
0000 0200	Master unit FM trouble	0200 0000	IGBT over current of L3/T phase in sleeve unit-2
0000 0400	-	0400 0000	DC over voltage in sleeve unit-2
0000 0800	Communication error with sleeve unit-1 (No response for three times)	0800 0000	Output fin overheat of L1/R phase in sleeve unit-2
0000 1000	Gate power abnormal in sleeve unit-1	1000 0000	Melted fuse of DC main circuit in sleeve unit-2
0000 2000	IGBT over current of L1/R phase in sleeve unit-1	2000 0000	Sleeve unit-2 FM trouble
0000 4000	IGBT over current of L2/S phase in sleeve unit-1	4000 0000	15V control power down in sleeve unit-2
0000 8000	IGBT over current of L3/T phase in sleeve unit-1	8000 0000	Communication error with sleeve unit-3 (No response for three times)

Ext.Flt2			
Display	Description	Display	Description
0000 0001	Gate power abnormal in sleeve unit-3	0001 0000	Converter of sleeve unit-3 overheat
0000 0002	IGBT over current of L1/R phase in sleeve unit-3	0002 0000	Outside DB1 protect or communication error
0000 0004	IGBT over current of L2/S phase in sleeve unit-3	0004 0000	Outside DB2 protect or communication error
0000 0008	IGBT over current of L3/T phase in sleeve unit-3	0008 0000	Outside DB3 protect or communication error
0000 0010	DC over voltage in sleeve unit-3	0010 0000	Outside DB4 protect or communication error
0000 0020	Output fin overheat of L1/R phase in sleeve unit-3	0020 0000	Outside DB5 protect or communication error
0000 0040	Melted fuse of DC main circuit in sleeve unit-3	0040 0000	Outside DB6 protect or communication error
0000 0080	Sleeve unit-3 FM trouble	0080 0000	Output fin of L2/S phase in master unit overheat
0000 0100	15V control power down in sleeve unit-3	0100 0000	Output fin of L3/T phase in master unit overheat
0000 0200	MC of master unit doesn't turn on	0200 0000	Output fin of L2/S phase in sleeve unit-1 overheat
0000 0400	MC of sleeve unit-1 doesn't turn on	0400 0000	Output fin of L3/T phase in sleeve unit-1 overheat
0000 0800	MC of sleeve unit-2 doesn't turn on	0800 0000	Output fin of L2/S phase in sleeve unit-2 overheat
0000 1000	MC of sleeve unit-3 doesn't turn on	1000 0000	Output fin of L3/T phase in sleeve unit-2 overheat
0000 2000	Converter of master unit overheat	2000 0000	Output fin of L2/S phase in sleeve unit-3 overheat
0000 4000	Converter of sleeve unit-1 overheat	4000 0000	Output fin of L3/T phase in sleeve unit-3 overheat
0000 8000	Converter of sleeve unit-2 overheat	8000 0000	-

[machine : DCP66]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Gate board communication error	0001 0000	IGBT abnormal (Secondary side 2nd bridge)
0000 0002	-	0002 0000	-
0000 0004	IGBT abnormal (Primary side 1st bridge)	0004 0000	Heat sink overheating (Secondary side)
0000 0008	IGBT abnormal (Primary side 2nd bridge)	0008 0000	Fuse blown (Secondary side)
0000 0010	-	0010 0000	Overcurrent protection (Secondary output current)
0000 0020	Heat sink overheating (primary side)	0020 0000	Overcurrent protection (Secondary transformer current)
0000 0040	Fuse blown (primary side)	0040 0000	-
0000 0080	Overcurrent protection (Primary side input current)	0080 0000	-
0000 0100	Overcurrent protection (Primary transformer current)	0100 0000	-
0000 0200	Fan failure	0200 0000	-
0000 0400	Charging resistor overheating protection	0400 0000	-
0000 0800	MC defective protection	0800 0000	-
0000 1000	24V power supply abnormality	1000 0000	-
0000 2000	Control power supply phase loss	2000 0000	-
0000 4000	Earth fault protection	4000 0000	-
0000 8000	IGBT abnormal (Secondary side 1st bridge)	8000 0000	-

Ext.Flt2			
Display	Description	Display	Description
0000 0001	-	0001 0000	-
0000 0002	-	0002 0000	-
0000 0004	-	0004 0000	-
0000 0008	-	0008 0000	-
0000 0010	-	0010 0000	-
0000 0020	-	0020 0000	-
0000 0040	-	0040 0000	-
0000 0080	-	0080 0000	-
0000 0100	-	0100 0000	-
0000 0200	-	0200 0000	-
0000 0400	-	0400 0000	-
0000 0800	-	0800 0000	-
0000 1000	-	1000 0000	-
0000 2000	-	2000 0000	-
0000 4000	-	4000 0000	-
0000 8000	-	8000 0000	-

[machine : N100CHD]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Main board communication error (Master stack)	0001 0000	Step-down chopper circuit output voltage abnormality (Master stack)
0000 0002	IGBT protection (T1/U phase) (Master stack)	0002 0000	-
0000 0004	IGBT protection (T2/V phase) (Master stack)	0004 0000	-
0000 0008	-	0008 0000	-
0000 0010	Overcurrent protection (T1/U phase) (Master stack)	0010 0000	-
0000 0020	Overcurrent protection (T2/V phase) (Master stack)	0020 0000	Primary fuse blown
0000 0040	-	0040 0000	Parallel power supply error (Master stack)
0000 0080	-	0080 0000	-
0000 0100	Heat sink overheating (T1/U phase) (Master stack)	0100 0000	Cooling fan unit 1 failure
0000 0200	Heat sink overheating (T2/V phase) (Master stack)	0200 0000	Cooling fan unit 2 failure
0000 0400	-	0400 0000	-
0000 0800	-	0800 0000	-
0000 1000	-	1000 0000	Main board communication error (Slave stack)
0000 2000	-	2000 0000	IGBT protection (T1/U phase) (Slave stack)
0000 4000	Blown starting fuse (Master stack)	4000 0000	IGBT protection (T2/V phase) (Slave stack)
0000 8000	Control power supply error (Master stack)	8000 0000	-

Ext.Flt2			
Display	Description	Display	Description
0000 0001	Overcurrent protection (T1/U phase) (Slave stack)	0001 0000	-
0000 0002	Overcurrent protection (T2/V phase) (Slave stack)	0002 0000	Secondary fuse blown
0000 0004	-	0004 0000	Parallel power supply error (Slave stack)
0000 0008	-	0008 0000	-
0000 0010	Heat sink overheating (T1/U phase) (Slave stack)	0010 0000	-
0000 0020	Heat sink overheating (T2/V phase) (Slave stack)	0020 0000	-
0000 0040	-	0040 0000	-
0000 0080	-	0080 0000	-
0000 0100	-	0100 0000	Primary side overvoltage protection
0000 0200	-	0200 0000	-
0000 0400	Blown starting fuse (Slave stack)	0400 0000	-
0000 0800	Control power supply error (Slave stack)	0800 0000	-
0000 1000	Step-down chopper circuit output voltage abnormality (Slave stack)	1000 0000	-
0000 2000	-	2000 0000	-
0000 4000	-	4000 0000	-
0000 8000	-	8000 0000	-

[machine : N100CHU]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Main board communication error	0001 0000	Step-down chopper circuit output voltage abnormality
0000 0002	IGBT protection (T1/U phase)	0002 0000	-
0000 0004	IGBT protection (T2/V phase)	0004 0000	-
0000 0008	-	0008 0000	-
0000 0010	Overcurrent protection (T1/U phase)	0010 0000	-
0000 0020	Overcurrent protection (T2/V phase)	0020 0000	Main circuit fuse blown
0000 0040	-	0040 0000	Parallel power supply error (Master stack)
0000 0080	-	0080 0000	-
0000 0100	Heat sink overheating (T1/U phase)	0100 0000	Cooling fan unit failure
0000 0200	Heat sink overheating (T2/V phase)	0200 0000	-
0000 0400	-	0400 0000	-
0000 0800	-	0800 0000	-
0000 1000	-	1000 0000	-
0000 2000	-	2000 0000	-
0000 4000	Blown starting fuse	4000 0000	-
0000 8000	Control power supply error	8000 0000	-

Ext.Flt2			
Display	Description	Display	Description
0000 0001	-	0001 0000	-
0000 0002	-	0002 0000	-
0000 0004	-	0004 0000	-
0000 0008	-	0008 0000	-
0000 0010	-	0010 0000	-
0000 0020	-	0020 0000	-
0000 0040	-	0040 0000	-
0000 0080	-	0080 0000	-
0000 0100	-	0100 0000	-
0000 0200	-	0200 0000	-
0000 0400	-	0400 0000	-
0000 0800	-	0800 0000	-
0000 1000	-	1000 0000	-
0000 2000	-	2000 0000	-
0000 4000	-	4000 0000	-
0000 8000	-	8000 0000	-

[machine : N100]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Communication error with PS board (Master unit) (No response for three times)	0001 0000	Step-down chopper circuit output voltage abnormality (Master unit)
0000 0002	IGBT protection (T1/U phase) (Master unit)	0002 0000	Unable to monitor STO properly (Master unit)
0000 0004	IGBT protection (T2/V phase) (Master unit)	0004 0000	MC doesn't turn on (Master unit)
0000 0008	IGBT protection (T3/W phase) (Master unit)	0008 0000	Charging resistance overheat (Master unit)
0000 0010	Overcurrent protection (T1/U phase) (Master unit)	0010 0000	Converter overheats (Master unit)
0000 0020	Overcurrent protection (T2/V phase) (Master unit)	0020 0000	Blown fuse of AC circuit (Master unit)
0000 0040	Overcurrent protection (T3/W phase) (Master unit)	0040 0000	Power error PRI2017-Z board (Master unit)
0000 0080	More than 286% current for more than 2 seconds (Master unit)	0080 0000	-
0000 0100	Heat sink overheating (T1/U phase) (Master unit)	0100 0000	Cooling fan failure (T1/U phase) (Master unit)
0000 0200	Heat sink overheating (T2/V phase) (Master unit)	0200 0000	Cooling fan failure (T2/V phase) (Master unit)
0000 0400	Heat sink overheating (T3/W phase) (Master unit)	0400 0000	Cooling fan failure (T3/W phase) (Master unit)
0000 0800	Blown fuse of DC main circuit (T1/U phase) (Master unit)	0800 0000	FM trouble (Master unit)
0000 1000	Blown fuse of DC main circuit (T2/V phase) (Master unit)	1000 0000	Communication error with PS board (Slave unit-1) (No response for three times)
0000 2000	Blown fuse of DC main circuit (T3/W phase) (Master unit)	2000 0000	IGBT protection (T1/U phase) (Slave unit-1)
0000 4000	Blown starting fuse (Master unit)	4000 0000	IGBT protection (T2/V phase) (Slave unit-1)
0000 8000	Control power supply error (Master unit)	8000 0000	IGBT protection (T3/W phase) (Slave unit-1)

Ext.Flt2			
Display	Description	Display	Description
0000 0001	Overcurrent protection (T1/U phase) (Slave unit-1)	0001 0000	Converter overheats (Slave unit-1)
0000 0002	Overcurrent protection (T2/V phase) (Slave unit-1)	0002 0000	Blown fuse of AC circuit (Slave unit-1)
0000 0004	Overcurrent protection (T3/W phase) (Slave unit-1)	0004 0000	Power error PRI2017-Z board (Slave unit-1)
0000 0008	-	0008 0000	-
0000 0010	Heat sink overheating (T1/U phase) (Slave unit-1)	0010 0000	Cooling fan failure (T1/U phase) (Slave unit-1)
0000 0020	Heat sink overheating (T2/V phase) (Slave unit-1)	0020 0000	Cooling fan failure (T2/V phase) (Slave unit-1)
0000 0040	Heat sink overheating (T3/W phase) (Slave unit-1)	0040 0000	Cooling fan failure (T3/W phase) (Slave unit-1)
0000 0080	Blown fuse of DC main circuit (T1/U phase) (Slave unit-1)	0080 0000	FM trouble (Slave unit-1)
0000 0100	Blown fuse of DC main circuit (T2/V phase) (Slave unit-1)	0100 0000	DC over voltage protection (Slave unit-1)
0000 0200	Blown fuse of DC main circuit (T3/W phase) (Slave unit-1)	0200 0000	Communication error with PS board (Slave unit-2) (No response for three times)
0000 0400	Blown starting fuse (Slave unit-1)	0400 0000	IGBT protection (T1/U phase) (Slave unit-2)
0000 0800	Control power supply error (Slave unit-1)	0800 0000	IGBT protection (T2/V phase) (Slave unit-2)
0000 1000	Step-down chopper circuit output voltage abnormality (Slave unit-1)	1000 0000	IGBT protection (T3/W phase) (Slave unit-2)
0000 2000	Unable to monitor STO properly (Slave unit-1)	2000 0000	Overcurrent protection (T1/U phase) (Slave unit-2)
0000 4000	MC doesn't turn on (Slave unit-1)	4000 0000	Overcurrent protection (T2/V phase) (Slave unit-2)
0000 8000	Charging resistance overheat (Slave unit-1)	8000 0000	Overcurrent protection (T3/W phase) (Slave unit-2)

Ext.Flt3			
Display	Description	Display	Description
0000 0001	-	0001 0000	-
0000 0002	Heat sink overheating (T1/U phase) (Slave unit-2)	0002 0000	Cooling fan failure (T1/U phase) (Slave unit-2)
0000 0004	Heat sink overheating (T2/V phase) (Slave unit-2)	0004 0000	Cooling fan failure (T2/V phase) (Slave unit-2)
0000 0008	Heat sink overheating (T3/W phase) (Slave unit-2)	0008 0000	Cooling fan failure (T3/W phase) (Slave unit-2)
0000 0010	Blown fuse of DC main circuit (T1/U phase) (Slave unit-2)	0010 0000	FM trouble (Slave unit-2)
0000 0020	Blown fuse of DC main circuit (T2/V phase) (Slave unit-2)	0020 0000	DC over voltage protection (Slave unit-2)
0000 0040	Blown fuse of DC main circuit (T3/W phase) (Slave unit-2)	0040 0000	Communication error with PS board (Slave unit-3) (No response for three times)
0000 0080	Blown starting fuse (Slave unit-2)	0080 0000	IGBT protection (T1/U phase) (Slave unit-3)
0000 0100	Control power supply error (Slave unit-2)	0100 0000	IGBT protection (T2/V phase) (Slave unit-3)
0000 0200	Step-down chopper circuit output voltage abnormality (Slave unit-2)	0200 0000	IGBT protection (T3/W phase) (Slave unit-3)
0000 0400	Unable to monitor STO properly (Slave unit-2)	0400 0000	Overcurrent protection (T1/U phase) (Slave unit-3)
0000 0800	MC doesn't turn on (Slave unit-2)	0800 0000	Overcurrent protection (T2/V phase) (Slave unit-3)
0000 1000	Charging resistance overheat (Slave unit-2)	1000 0000	Overcurrent protection (T3/W phase) (Slave unit-3)
0000 2000	Converter overheats (Slave unit-2)	2000 0000	-
0000 4000	Blown fuse of AC circuit (Slave unit-2)	4000 0000	Heat sink overheating (T1/U phase) (Slave unit-3)
0000 8000	Power error PRI2017-Z board (Slave unit-2)	8000 0000	Heat sink overheating (T2/V phase) (Slave unit-3)

Ext.Flt4			
Display	Description	Display	Description
0000 0001	Heat sink overheating (T3/W phase) (Slave unit-3)	0001 0000	Cooling fan failure (T3/W phase) (Slave unit-3)
0000 0002	Blown fuse of DC main circuit (T1/U phase) (Slave unit-3)	0002 0000	FM trouble (Slave unit-3)
0000 0004	Blown fuse of DC main circuit (T2/V phase) (Slave unit-3)	0004 0000	DC over voltage protection (Slave unit-3)
0000 0008	Blown fuse of DC main circuit (T3/W phase) (Slave unit-3)	0008 0000	-
0000 0010	Blown starting fuse (Slave unit-3)	0010 0000	-
0000 0020	Control power supply error (Slave unit-3)	0020 0000	-
0000 0040	Step-down chopper circuit output voltage abnormality (Slave unit-3)	0040 0000	-
0000 0080	Unable to monitor STO properly (Slave unit-3)	0080 0000	-
0000 0100	MC doesn't turn on (Slave unit-3)	0100 0000	-
0000 0200	Charging resistance overheat (Slave unit-3)	0200 0000	-
0000 0400	Converter overheats (Slave unit-3)	0400 0000	-
0000 0800	Blown fuse of AC circuit (Slave unit-3)	0800 0000	-
0000 1000	Power error PRI2017-Z board (Slave unit-3)	1000 0000	-
0000 2000	-	2000 0000	-
0000 4000	Cooling fan failure (T1/U phase) (Slave unit-3)	4000 0000	-
0000 8000	Cooling fan failure (T2/V phase) (Slave unit-3)	8000 0000	-

[machine : N100R]

Ext.Flt1			
Display	Description	Display	Description
0000 0001	Communication error with PS board (Master unit) (No response for three times)	0001 0000	Step-down chopper circuit output voltage abnormality (Master unit)
0000 0002	IGBT protection (L1/R phase) (Master unit)	0002 0000	Unable to monitor STO properly (Master unit)
0000 0004	IGBT protection (L2/S phase) (Master unit)	0004 0000	MC doesn't turn on (Master unit)
0000 0008	IGBT protection (L3/T phase) (Master unit)	0008 0000	Charging resistance overheat (Master unit)
0000 0010	Overcurrent protection (L1/R phase) (Master unit)	0010 0000	Converter overheats (Master unit)
0000 0020	Overcurrent protection (L2/S phase) (Master unit)	0020 0000	Blown fuse of AC circuit (Master unit)
0000 0040	Overcurrent protection (L3/T phase) (Master unit)	0040 0000	Power error PRI2017-Z board (Master unit)
0000 0080	More than 286% current for more than 2 seconds (Master unit)	0080 0000	-
0000 0100	Heat sink overheating (L1/R phase) (Master unit)	0100 0000	Cooling fan failure (L1/R phase) (Master unit)
0000 0200	Heat sink overheating (L2/S phase) (Master unit)	0200 0000	Cooling fan failure (L2/S phase) (Master unit)
0000 0400	Heat sink overheating (L3/T phase) (Master unit)	0400 0000	Cooling fan failure (L3/T phase) (Master unit)
0000 0800	Blown fuse of DC main circuit (L1/R phase) (Master unit)	0800 0000	FM trouble (Master unit)
0000 1000	Blown fuse of DC main circuit (L2/S phase) (Master unit)	1000 0000	Communication error with PS board (Slave unit-1) (No response for three times)
0000 2000	Blown fuse of DC main circuit (L3/T phase) (Master unit)	2000 0000	IGBT protection (L1/R phase) (Slave unit-1)
0000 4000	Blown starting fuse (Master unit)	4000 0000	IGBT protection (L2/S phase) (Slave unit-1)
0000 8000	Control power supply error (Master unit)	8000 0000	IGBT protection (L3/T phase) (Slave unit-1)

Ext.Flt2			
Display	Description	Display	Description
0000 0001	Overcurrent protection (L1/R phase) (Slave unit-1)	0001 0000	Converter overheats (Slave unit-1)
0000 0002	Overcurrent protection (L2/S phase) (Slave unit-1)	0002 0000	Blown fuse of AC circuit (Slave unit-1)
0000 0004	Overcurrent protection (L3/T phase) (Slave unit-1)	0004 0000	Power error PRI2017-Z board (Slave unit-1)
0000 0008	-	0008 0000	-
0000 0010	Heat sink overheating (L1/R phase) (Slave unit-1)	0010 0000	Cooling fan failure (L1/R phase) (Slave unit-1)
0000 0020	Heat sink overheating (L2/S phase) (Slave unit-1)	0020 0000	Cooling fan failure (L2/S phase) (Slave unit-1)
0000 0040	Heat sink overheating (L3/T phase) (Slave unit-1)	0040 0000	Cooling fan failure (L3/T phase) (Slave unit-1)
0000 0080	Blown fuse of DC main circuit (L1/R phase) (Slave unit-1)	0080 0000	FM trouble (Slave unit-1)
0000 0100	Blown fuse of DC main circuit (L2/S phase) (Slave unit-1)	0100 0000	DC over voltage protection (Slave unit-1)
0000 0200	Blown fuse of DC main circuit (L3/T phase) (Slave unit-1)	0200 0000	Communication error with PS board (Slave unit-2) (No response for three times)
0000 0400	Blown starting fuse (Slave unit-1)	0400 0000	IGBT protection (L1/R phase) (Slave unit-2)
0000 0800	Control power supply error (Slave unit-1)	0800 0000	IGBT protection (L2/S phase) (Slave unit-2)
0000 1000	Step-down chopper circuit output voltage abnormality (Slave unit-1)	1000 0000	IGBT protection (L3/T phase) (Slave unit-2)
0000 2000	Unable to monitor STO properly (Slave unit-1)	2000 0000	Overcurrent protection (L1/R phase) (Slave unit-2)
0000 4000	MC doesn't turn on (Slave unit-1)	4000 0000	Overcurrent protection (L2/S phase) (Slave unit-2)
0000 8000	Charging resistance overheat (Slave unit-1)	8000 0000	Overcurrent protection (L3/T phase) (Slave unit-2)

Ext.Flt3			
Display	Description	Display	Description
0000 0001	-	0001 0000	-
0000 0002	Heat sink overheating (L1/R phase) (Slave unit-2)	0002 0000	Cooling fan failure (L1/R phase) (Slave unit-2)
0000 0004	Heat sink overheating (L2/S phase) (Slave unit-2)	0004 0000	Cooling fan failure (L2/S phase) (Slave unit-2)
0000 0008	Heat sink overheating (L3/T phase) (Slave unit-2)	0008 0000	Cooling fan failure (L3/T phase) (Slave unit-2)
0000 0010	Blown fuse of DC main circuit (L1/R phase) (Slave unit-2)	0010 0000	FM trouble (Slave unit-2)
0000 0020	Blown fuse of DC main circuit (L2/S phase) (Slave unit-2)	0020 0000	DC over voltage protection (Slave unit-2)
0000 0040	Blown fuse of DC main circuit (L3/T phase) (Slave unit-2)	0040 0000	Communication error with PS board (Slave unit-3) (No response for three times)
0000 0080	Blown starting fuse (Slave unit-2)	0080 0000	IGBT protection (L1/R phase) (Slave unit-3)
0000 0100	Control power supply error (Slave unit-2)	0100 0000	IGBT protection (L2/S phase) (Slave unit-3)
0000 0200	Step-down chopper circuit output voltage abnormality (Slave unit-2)	0200 0000	IGBT protection (L3/T phase) (Slave unit-3)
0000 0400	Unable to monitor STO properly (Slave unit-2)	0400 0000	Overcurrent protection (L1/R phase) (Slave unit-3)
0000 0800	MC doesn't turn on (Slave unit-2)	0800 0000	Overcurrent protection (L2/S phase) (Slave unit-3)
0000 1000	Charging resistance overheat (Slave unit-2)	1000 0000	Overcurrent protection (L3/T phase) (Slave unit-3)
0000 2000	Converter overheats (Slave unit-2)	2000 0000	-
0000 4000	Blown fuse of AC circuit (Slave unit-2)	4000 0000	Heat sink overheating (L1/R phase) (Slave unit-3)
0000 8000	Power error PRI2017-Z board (Slave unit-2)	8000 0000	Heat sink overheating (L2/S phase) (Slave unit-3)

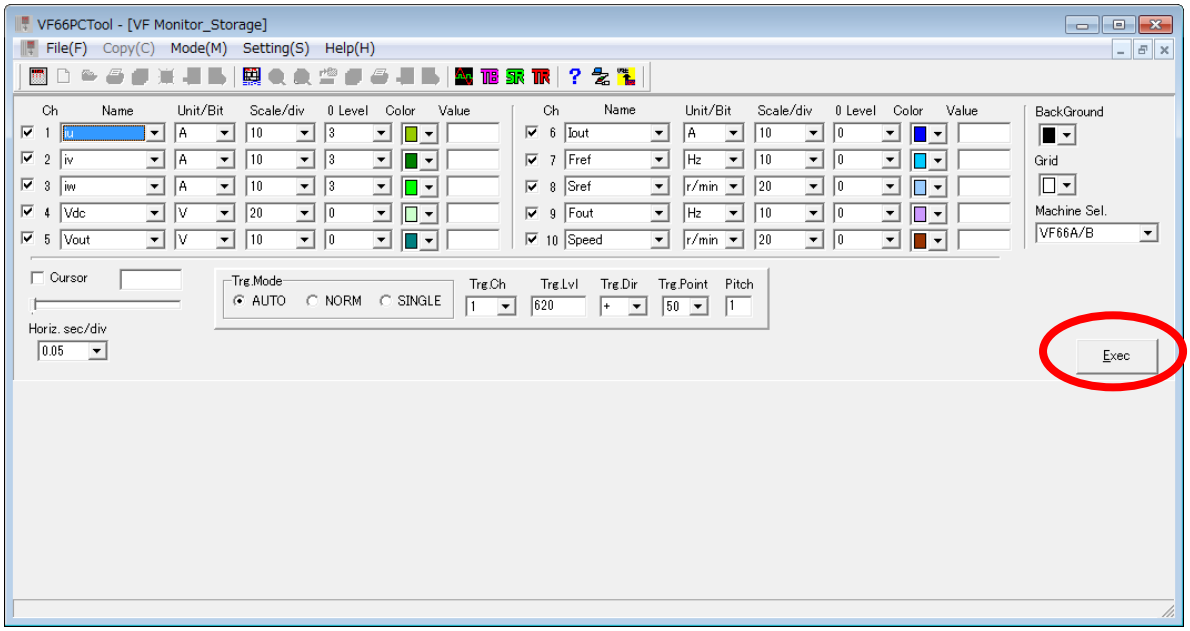
Ext.Flt4			
Display	Description	Display	Description
0000 0001	Heat sink overheating (L3/T phase) (Slave unit-3)	0001 0000	Cooling fan failure (L3/T phase) (Slave unit-3)
0000 0002	Blown fuse of DC main circuit (L1/R phase) (Slave unit-3)	0002 0000	FM trouble (Slave unit-3)
0000 0004	Blown fuse of DC main circuit (L2/S phase) (Slave unit-3)	0004 0000	DC over voltage protection (Slave unit-3)
0000 0008	Blown fuse of DC main circuit (L3/T phase) (Slave unit-3)	0008 0000	-
0000 0010	Blown starting fuse (Slave unit-3)	0010 0000	-
0000 0020	Control power supply error (Slave unit-3)	0020 0000	-
0000 0040	Step-down chopper circuit output voltage abnormality (Slave unit-3)	0040 0000	-
0000 0080	Unable to monitor STO properly (Slave unit-3)	0080 0000	-
0000 0100	MC doesn't turn on (Slave unit-3)	0100 0000	-
0000 0200	Charging resistance overheat (Slave unit-3)	0200 0000	-
0000 0400	Converter overheats (Slave unit-3)	0400 0000	-
0000 0800	Blown fuse of AC circuit (Slave unit-3)	0800 0000	-
0000 1000	Power error PRI2017-Z board (Slave unit-3)	1000 0000	-
0000 2000	-	2000 0000	-
0000 4000	Cooling fan failure (L1/R phase) (Slave unit-3)	4000 0000	-
0000 8000	Cooling fan failure (L2/S phase) (Slave unit-3)	8000 0000	-

3-3. Storage Mode

3-3-1. Operation of storage mode

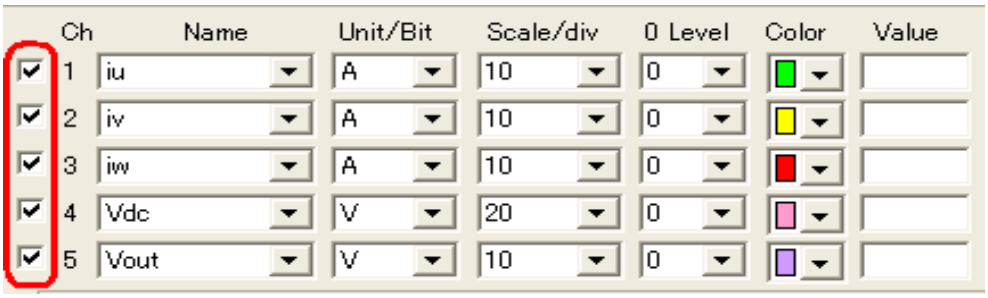
When you click [Mode]-[Storage] in the main menu. The figure below is displayed.

Click [Exec], after you set trigger mode and channel that you would like to measure, and then the measurement starts.



If you check the points, left side of channel, you can select display or not display. According to measuring condition, waveform of difference channels is overlapped. At that time, if you delete a check mark of channel, the waveform of the channel isn't displayed.

Moreover, sampling interval would be longer when you have a lot of measuring channels. (The saving is same as CSV file). If you would like to save short interval as CSV file, it is able to sample short interval when you set "End" at column of channel name, because it doesn't measure below the item set to "End".



The followings are explanation of each item.

Items		Description	
Ch		Channel number	
Name		Measuring item	
Unit/Bit		Measuring item unit	Data: unit Flag: selecting bit data Filter: time constant
Scale/div		Vertical line(per a grid) (⇒Refer to **3.5. Scale 0Level**)	
0 Level		Off-set (⇒Refer to **3.5. Scale 0Level**)	
Color		Graph color	
Value		Cursor measurement color	
BackGround		Background color	
Grid		Grid color	
Cursor		If there is a check, cursor line is displayed, and value of cross point between the cursor line and graph is displayed at each channel [Value] column.	
Horiz. Sec/div		Horizontal line(Time per a grid)	
Horiz. Point/div		Horizontal line(Number of point per a grid)	
Trg. Mode	AUTO	Data is collected continuously and displayed regardless of the trigger setting.	
	NORM	Data is collected and displayed only while it is suitable for the setting condition of the trigger.	
	SINGLE	Data is collected and displayed only once of suitable for the setting condition of the trigger.	
Trg.Ch		Trigger detected channel	
Trg.Lvl		Trigger detected level	
Trg.Dir		Trigger detected direction	＋:more than level －:less than level
Trg.Point		Trigger point[%]	
Pitch		Sampling interval [msec] (To be torque control cycle, if select zero.*1)	
Button	Exec	The data collection and the graphical representation are executed.	
	Stop-1	Immediately stop	
	Stop	After the data under the collection is displayed, it stops.	
	Next	The displayed data is deleted.	

*1 Torque control cycle is changed by career frequency. (⇒Refer to **3.3.2. Point number and graph in torque control cycle**.)

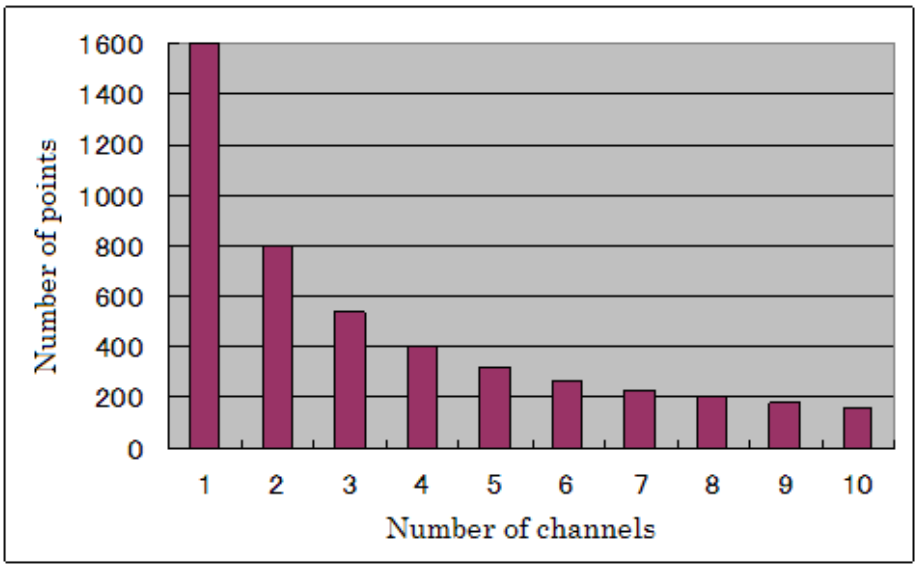
Refer to our products manual.

3-3-2. Number of sampling points and Torque control cycle

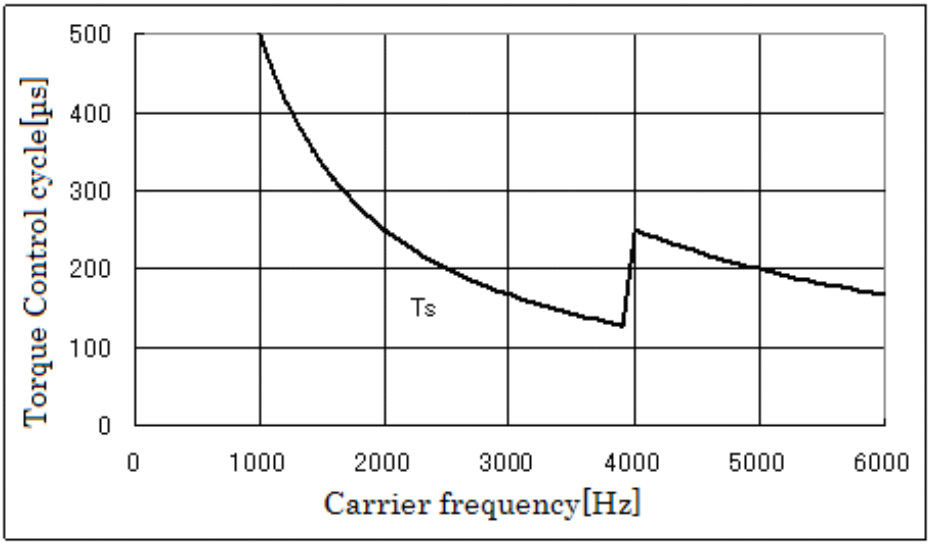
Storage Mode is a function to accumulate data in the memory built into our products at sampling intervals set by "Pitch". It transfers to your computer when the memory is filled and the graph is displayed.

The data of 1600 points can be accumulated in this built-in memory. Therefore, the number of points that can be the measured per channel depends on the measured number of channels it changes.

Set it referring to the graph below.



Also, when "Pitch" is set to zero, it samples it by Torque control cycle. Torque control cycle is changed by set career frequency (Refer to the graph below for VF66B example.).

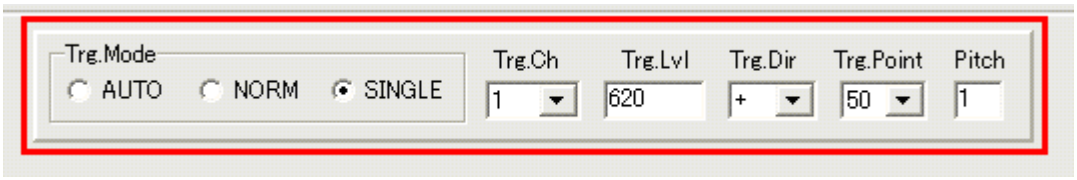


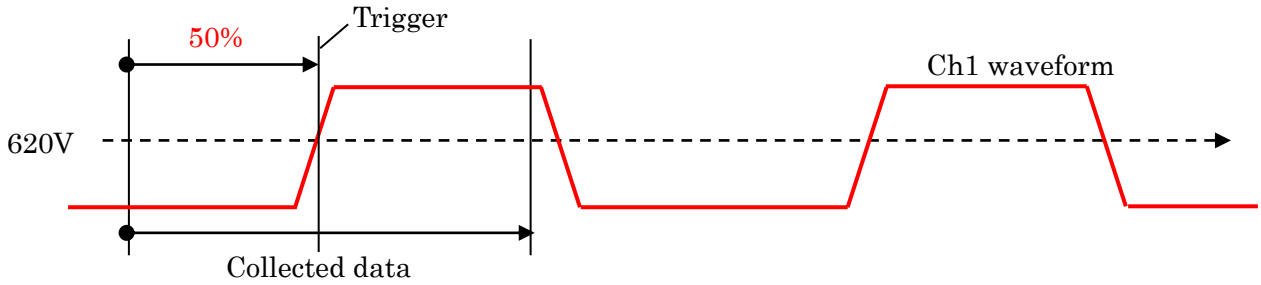
3-3-3. Trigger mode operation

Trigger function can be used by *Storage Mode*. Refer to the following usage example.

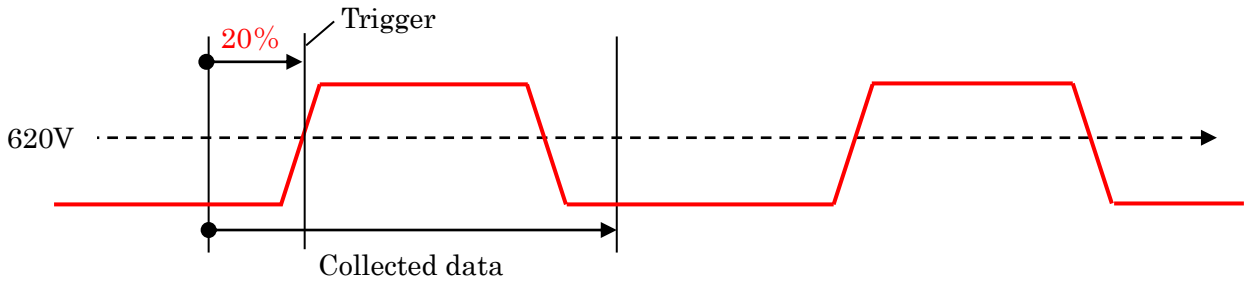
The figure below is an example at the condition of the following.

[Trigger channel: CH1, TrgLvl: 620, Trg.Dir:+, Trg.Point:50%, SINGLE mode]

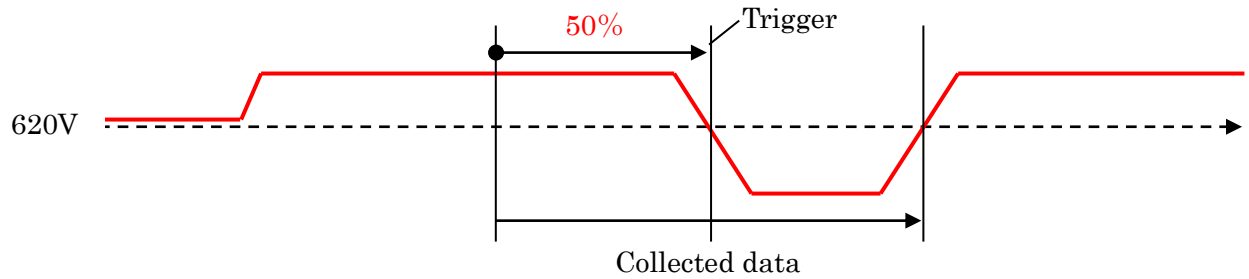




● The figure below is an example when setting it to "Trg. Point: 20%".



● The figure below is an example when setting it to "Trg. Dir:—".



3-3-4. Explanation of Channel/Flag

[Channel]

[machine : VF66B,VF66B(EMS),VF66SV,VF66SDS,VF66B(Tex),VF66C,VF66CAT,VF67A , VF100]

Ch name	Unit	Description	
END	[-]	Don't measure below the item set to “End”	
iu	[A]	Output current of T1/U phase (instant value)	
iv	[A]	Output current of T2/V phase (instant value)	
iw	[A]	Output current of T3/W phase (instant value)	
Vdc	[V]	DC voltage	
Vout	[V]	Output voltage actual value	
Iout	[A]	Output current actual value	
Fref	[Hz]	Frequency command	
Sref	[r/min]	Rotation speed command	
Fout	[Hz]	Output frequency	
Speed	[r/min]	Output rotation speed	
FlxRate	[%]	Magnetic flux command	
MotTemp	[degC]	Motor temperature	
AIN1	[%]	Analog input1	
AIN2	[%]	Analog input2	
AIN3	[%]	Analog input3	
AIN4	[%]	Analog input4	
AIN5	[%]	Analog input5	
AIN6	[%]	Analog input6	
Ain1SpdC	[%]	Analog input1 speed command	Digit display: i00006*1
Ain2SpdC	[%]	Analog input2 speed command	Digit display: i00007*1
Ain3SpdC	[%]	Analog input3 speed command	Digit display: i00008*1
Ain1TrqC	[%]	Analog input1 torque command	Digit display: i0000A*2
Ain2TrqC	[%]	Analog input2 torque command	Digit display: i0000B*2
PlcHSpdC	[%]	Internal PLC control period speed	Digit display: o00001*1
PlcHTrqC	[%]	Internal PLC control period torque	Digit display: o00000*2
Trq	[%]	Operation torque	
OLcount	[%]	Over load counter	
BcdSpdC	[%]	BCD speed command	
BcdIn	[%]	BCD input	
PlcOut1	[%]	Internal PLC output1	Digit display: o00008*3
PlcOut2	[%]	Internal PLC output2	Digit display: o00009*3
PlcOut3	[%]	Internal PLC output3	Digit display: o0000A*3
PlcOut4	[%]	Internal PLC output4	Digit display: o0000B*3
PlcOut5	[%]	Internal PLC output5	Digit display: o0000C*3

*1: The indicated value is a value when A-00 is converted into 20000.
*2: The indicated value is a value when 150%(-10V) is converted into 7500.
*3: The indicated value is a value when internal PLC output 5V is converted into 20000.

Ch name	Unit	Description
Fault Flag(1)	[digit]	Protection/Trouble flag(1)*4 *5
Fault Flag(2)	[digit]	Protection/Trouble flag(2)*4 *5
State Flag	[digit]	Inverter state flag*4 *5
Command Flag	[digit]	Inverter command flag*4 *5
M1Out1	[digit]	Multi function output1 (52MA,86A,MO1,MO2)*5
M1Out2	[digit]	Multi function output2 (MO3～MO6)*5
M1IN1	[digit]	Multi function input1 (ST-F～MI5)*5
M1IN2	[digit]	Multi function input2 (MI6～MI17)*5
IO****	[digit]	Input relay*5
O0****	[digit]	Output relay*5
LS****	[digit]	Latch relay set coil*5
LR****	[digit]	Latch relay re-set coil*5
LC****	[digit]	Latch relay contact*5
US****	[digit]	On differential relay coil*5
UC****	[digit]	On differential relay contact*5
DS****	[digit]	Off differential relay coil*5
DC****	[digit]	Off differential relay contact*5
TS****	[digit]	On timer relay coil / instantaneous point*5
TD****	[digit]	On timer relay time-limit contact*5
TR****	[digit]	Off timer relay coil / instantaneous contact*5
TC****	[digit]	Off timer relay time-limit contact*5
i0****	[digit]	Input register
o0****	[digit]	Output register
t0****	[digit]	Trace-back register
Vout_Filter	[Filter]*6	Output voltage with filter function
Iout_Filter	[Filter]*6	Output current with filter function
Trq-Filter	[Filter]*6	Operation torque with filter function
Sref_Filter	[Filter]*6	Rotation speed reference with filter function
Fout_Filter	[Filter]*6	Output frequency with filter function
Speed_Filter	[Filter]*6	Output rotation speed with filter function
UserDef	[-]	[Special Adjustment]

*4: Refer to **3.2.5. Explanation of Channel Flag.**

*5: Please select data you want to measure in "Unit/BIT" column. Selected data is displayed as bit data. When "Unit/BIT" column left blank, it will be displayed as word data (2 Byte).

*6: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : VF66CH_2]

Ch name	Unit	Description	
END	[-]	Don't measure below the item set to “End”	
iu	[A]	Output current of T1/U phase(instant value)	
iv	[A]	Output current of T2/V phase(instant value)	
iw	[A]	Output current of T3/W phase(instant value)	
Vdc	[V]	DC voltage	
Vref	[V]	Output voltage command	
Vout	[A]	Output voltage actual value	
Iref	[A]	Output current command	
Iout	[A]	Current of controlled object	
OLcount	[%]	Overload counter	
DcLTemp	[degC]	Reactor temperature	
AIN1	[%]	Analog input1	
AIN2	[%]	Analog input2	
AIN3	[%]	Analog input3	
AIN4	[%]	Analog input4	
AIN5	[%]	Analog input5	
AIN6	[%]	Analog input6	
Ain1VoC	[%]	Analog input1 voltage command	Digit display: i00006*1
Ain2VoC	[%]	Analog input2 voltage command	Digit display: i00007*1
Ain3VoC	[%]	Analog input3 voltage command	Digit display: i00008*1
Ain1IoC	[%]	Analog input1 current command	Digit display: i0000A*2
Ain2IoC	[%]	Analog input2 current command	Digit display: i0000B*2
PlcHVoC	[%]	Internal PLC control period voltage command	Digit display: o00001*1
PlcHIoC	[%]	Internal PLC control period torque command	Digit display: o00000*2
BcdVoC	[%]	BCD voltage command	
BcdIn	[%]	BCD input	
PlcOut1	[%]	Internal PLC output1	Digit display: o00008*3
PlcOut2	[%]	Internal PLC output2	Digit display: o00009*3
PlcOut3	[%]	Internal PLC output3	Digit display: o0000A*3
PlcOut4	[%]	Internal PLC output4	Digit display: o0000B*3
PlcOut5	[%]	Internal PLC output5	Digit display: o0000C*3

*1: The indicated value is a value when A-00 is converted into 20000.

*2: The indicated value is a value when 150%(-10V) is converted into 7500.

*3: The indicated value is a value when internal PLC output 5V is converted into 20000.

Ch name	Unit	Description
Fault Flag(1)	[digit]	Protection/Trouble flag(1)*4 *5
Fault Flag(2)	[digit]	Protection/Trouble flag(2)*4 *5
State Flag	[digit]	Inverter state flag*4 *5
Command Flag	[digit]	Inverter command flag*4 *5
M1Out1	[digit]	Multi function output1 (52MA,86A,MO1,MO2)*5
M1Out2	[digit]	Multi function output2 (MO3～MO6)*5
M1IN1	[digit]	Multi function input1 (ST-F～MI5)*5
M1IN2	[digit]	Multi function input2 (MI6～MI17)*5
IO****	[digit]	Input relay*5
O0****	[digit]	Output relay*5
LS****	[digit]	Latch relay set coil*5
LR****	[digit]	Latch relay re-set coil*5
LC****	[digit]	Latch relay contact*5
US****	[digit]	On differential relay coil*5
UC****	[digit]	On differential relay contact*5
DS****	[digit]	Off differential relay coil*5
DC****	[digit]	Off differential relay contact*5
TS****	[digit]	On timer relay coil / instantaneous point*5
TD****	[digit]	On timer relay time-limit contact*5
TR****	[digit]	Off timer relay coil / instantaneous contact*5
TC****	[digit]	Off timer relay time-limit contact*5
i0****	[digit]	Input register
o0****	[digit]	Output register
t0****	[digit]	Trace-back register
Iout_Filter	[Filter]*6	Current of controlled object with filter function
Iref_Filter	[Filter]*6	Output current command with filter function
Vref_Filter	[Filter]*6	Output voltage command with filter function
Vout_Filter	[Filter]*6	Output voltage with filter function
UserDef	[-]	[Special Adjustment]

*4: Refer to 3.2.5. Explanation of Channel Flag.

*5: Please select data you want to measure in "Unit/BIT" column. Selected data is displayed as bit data. When "Unit/BIT" column left blank, it will be displayed as word data (2 Byte).

*6: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : VF66B (DCM Drive)]

Ch name	Unit	Description	
End	[-]	Don't measure below the item set to “End”	
if	[-]	[Special Adjustment]	
ia+	[A]	Armature current (+ side DCCT detection)	
ia-	[A]	Armature current (- side DCCT detection)	
Vdc	[V]	Input DC voltage	
Vout	[V]	Output DC voltage	
ia	[A]	Armature current	
Vref	[V]	Armature voltage command	
Sref	[r/min]	Rotation speed command	
iaP	[%]	Armature current	
Speed	[r/min]	Output rotation speed	
-	-	-	
MotTemp	[degC]	Motor temperature	
AIN1	[%]	Analog input1	
AIN2	[%]	Analog input2	
AIN3	[%]	Analog input3	
AIN4	[%]	Analog input4	
AIN5	[%]	Analog input5	
AIN6	[%]	Analog input6	
Ain1SpdC	[%]	Analog input1 speed command	Digit display: i00006*1
Ain2SpdC	[%]	Analog input2 speed command	Digit display: i00007*1
Ain3SpdC	[%]	Analog input3 speed command	Digit display: i00008*1
Ain1TrqC	[%]	Analog input1 torque command	Digit display: i0000A*
Ain2TrqC	[%]	Analog input2 torque command	Digit display: 0000B*2
PlcHSpdC	[%]	Internal PLC control period speed	Digit display: 00001*1
PlcHTrqC	[%]	Internal PLC control period torque	Digit display: 00000*2
iaref	[%]	Armature current command	
OLcount	[%]	Over load counter	
BcdSpdC	[%]	BCD speed command	
BcdIn	[%]	BCD input	
PlcOut1	[%]	Internal PLC output1	Digit display: 00008*3
PlcOut2	[%]	Internal PLC output2	Digit display: 00009*3
PlcOut3	[%]	Internal PLC output3	Digit display: 0000A*3
PlcOut4	[%]	Internal PLC output4	Digit display: 0000B*3
PlcOut5	[%]	Internal PLC output5	Digit display: 0000C*3

*1: The indicated value is a value when A-00 is converted into 20000.

*2: The indicated value is a value when 150%(-10V) is converted into 7500.

*3: The indicated value is a value when internal PLC output 5V is converted into 20000.

Ch name	Unit	Description
Fault Flag(1)	[digit]	Protection/Trouble flag(1)*4 *5
Fault Flag(2)	[digit]	Protection/Trouble flag(2)*4 *5
State Flag	[digit]	State flag*4 *5
Command Flag	[digit]	Command flag*4 *5
M1Out1	[digit]	Multi function output1 (52MA,86A,MO1,MO2)*5
M1Out2	[digit]	Multi function output2 (MO3～MO6)*5
M1IN1	[digit]	Multi function input1 (ST-F～MI5)*5
M1IN2	[digit]	Multi function input2 (MI6～MI17)*5
IO****	[digit]	Input relay*5
O0****	[digit]	Output relay*5
LS****	[digit]	Latch relay set coil*5
LR****	[digit]	Latch relay re-set coil*5
LC****	[digit]	Latch relay contact*5
US****	[digit]	On differential relay coil*5
UC****	[digit]	On differential relay contact*5
DS****	[digit]	Off differential relay coil*5
DC****	[digit]	Off differential relay contact*5
TS****	[digit]	On timer relay coil / instantaneous point*5
TD****	[digit]	On timer relay time-limit contact*5
TR****	[digit]	Off timer relay coil / instantaneous contact*5
TC****	[digit]	Off timer relay time-limit contact*5
i0****	[digit]	Input register
o0****	[digit]	Output register
t0****	[digit]	Trace-back register
Vout_Filter	[Filter]*6	Output voltage with filter function
Iout_Filter	[Filter]*6	Output current with filter function
Trq-Filter	[Filter]*6	Operation torque with filter function
Sref_Filter	[Filter]*6	Rotation speed reference with filter function
Fout_Filter	[Filter]*6	Output frequency with filter function
Speed_Filter	[Filter]*6	Output rotation speed with filter function
UserDef	[-]	[Special Adjustment]

*4: Refer to **3.2.5. Explanation of Channel Flag.**

*5: Please select data you want to measure in "Unit/BIT" column. Selected data is displayed as bit data. When "Unit/BIT" column left blank, it will be displayed as word data (2 Byte).

*6: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : VF66G]

Ch name	Unit	Description	
END	[-]	Don't measure below the item set to “End”	
iu	[A]	T1/U phase current	
iv	[A]	T2/V phase current	
iw	[A]	T3/W phase current	
vdc	[V]	DC voltage	
L_Vu	[V]	T1/U phase output voltage	
L_Vv	[V]	T2/V phase output voltage	
L_Vw	[V]	T3/W phase output voltage	
Vu_ref	[V]	T1/U phase output voltage	
Vv_ref	[V]	T2/V phase output voltage	
Vw_ref	[V]	T3/W phase output voltage	
vdc_ref	[V]	DC voltage command	
id_ref	[A]	Active current command	
Fault Flag(1)_C	[Bit]	Protection/Trouble flag(1)*1 *2	
Fault Flag(2)_C	[Bit]	Protection/Trouble flag(2)*1 *2	
State Flag_C	[Bit]	State flag*1 *2	
Command Flag_C	[Bit]	Command Flag*1 *2	
iu	[I]	T1/U phase current	
iv	[I]	T2/V phase current	
iw	[I]	T3/W phase current	
vdc	[V]	DC voltage	
Vout	[V]	Output voltage	
L_V	[V]	Bus-bar voltage	
L_Vr	[V]	T1/U phase system voltage	
i_crs	[I]	[Special Adjustment]	
fgav	[Hz]	Governor frequency	
Fout	[Hz]	Output frequency	
id	[I]	Active current	
iq	[I]	Reactive current	
Fault Flag(1)_V	[Bit]	Protection/Trouble flag(1)*1 *3	
Fault Flag(2)_V	[Bit]	Protection/Trouble flag(2)*1 *3	
State Flag_V	[Bit]	State flag*1 *3	
Command Flag_V	[Bit]	Command Flag*1 *3	
AIN1	[%]	[Special Adjustment]	
AIN2	[%]	[Special Adjustment]	
AIN3	[%]	[Special Adjustment]	
AIN4	[%]	[Special Adjustment]	
AIN5	[%]	[Special Adjustment]	
AIN6	[%]	[Special Adjustment]	
Ain1SpdC	[%]	[Special Adjustment]	
Ain2SpdC	[%]	[Special Adjustment]	
Ain3SpdC	[%]	[Special Adjustment]	Digit display: i00008

Ch name	Unit	Description	
Ain1TrqC	[%]	[Special Adjustment]	Digit display: i0000A
Ain2TrqC	[%]	[Special Adjustment]	Digit display: i0000B
PlcHIqC	[%]	[Special Adjustment]	Digit display: o00001
PlcHIdC	[%]	[Special Adjustment]	Digit display: o00000
L_Vo	[%]	[Special Adjustment]	
OLcount	[%]	[Special Adjustment]	
BcdSpdC	[%]	[Special Adjustment]	
BcdIn	[%]	[Special Adjustment]	
PlcOut1	[%]	[Special Adjustment]	Digit display: o00008
PlcOut2	[%]	[Special Adjustment]	Digit display: o00009
PlcOut3	[%]	[Special Adjustment]	Digit display: o0000A
PlcOut4	[%]	[Special Adjustment]	Digit display: o0000B
PlcOut5	[%]	[Special Adjustment]	Digit display: o0000C
MlOut1	[digit]	[Special Adjustment]	
MlOut2	[digit]	[Special Adjustment]	
MlIN1	[digit]	[Special Adjustment]	
MlIN2	[digit]	[Special Adjustment]	
I0****	[digit]	[Special Adjustment]	
O0****	[digit]	[Special Adjustment]	
LS****	[digit]	[Special Adjustment]	
LR****	[digit]	[Special Adjustment]	
LC****	[digit]	[Special Adjustment]	
US****	[digit]	[Special Adjustment]	
UC****	[digit]	[Special Adjustment]	
DS****	[digit]	[Special Adjustment]	
DC****	[digit]	[Special Adjustment]	
TS****	[digit]	[Special Adjustment]	
TD****	[digit]	[Special Adjustment]	
TR****	[digit]	[Special Adjustment]	
TC****	[digit]	[Special Adjustment]	
i0****	[digit]	[Special Adjustment]	
o0****	[digit]	[Special Adjustment]	
t0****	[digit]	[Special Adjustment]	
Vout_Filter	[Filter]*4	[Special Adjustment]	
Iout_Filter	[Filter]*4	[Special Adjustment]	
Trq_Filter	[Filter]*4	[Special Adjustment]	
Sref_Filter	[Filter]*4	[Special Adjustment]	
Fout_Filter	[Filter]*4	[Special Adjustment]	
Speed_Filter	[Filter]*4	[Special Adjustment]	
UserDef.	[-]	[Special Adjustment]	

*1: Refer to **3.2.5. Explanation of Channel Flag.**

*2: Please use when the control mode is "Interconnection: Grid connection/standalone operation".

*3: Please use when the control mode is "Governer control".

*4: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : VF66R_2]

Ch name	Unit	Description
END	[-]	Don't measure below the item set to “End”
iu	[A]	L1/R phase current
iv	[A]	L2/S phase current
iw	[A]	L3/T phase current
vdc	[V]	DC voltage
L_Vu	[V]	L1/R phase output voltage
L_Vv	[V]	L2/S phase output voltage
L_Vw	[V]	L3/T phase output voltage
Vu_ref	[V]	L1/R phase output voltage command
Vv_ref	[V]	L2/S phase output voltage command
Vw_ref	[V]	L3/T phase output voltage command
vdc_ref	[V]	DC voltage command
id_ref	[A]	Active current command
Fault Flag(1)_C	[Bit]	Protection/Trouble flag(1)*1
Fault Flag(2)_C	[Bit]	Protection/Trouble flag(2)*1
State Flag_C	[Bit]	State flag*1
Command Flag_C	[Bit]	Command Flag*1
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
-	[-]	[Special Adjustment]
AIN1	[%]	[Special Adjustment]
AIN2	[%]	[Special Adjustment]
AIN3	[%]	[Special Adjustment]
AIN4	[%]	[Special Adjustment]
AIN5	[%]	[Special Adjustment]
AIN6	[%]	[Special Adjustment]
Ain1SpdC	[%]	[Special Adjustment]
Ain2SpdC	[%]	[Special Adjustment]
Ain3SpdC	%	[Special Adjustment]

Ch name	Unit	Description
Ain1TrqC	[%]	[Special Adjustment]
Ain2TrqC	[%]	[Special Adjustment]
PlcHIqC	[%]	[Special Adjustment]
PlcHIdC	[%]	[Special Adjustment]
L_Vo	[%]	[Special Adjustment]
OLcount	[%]	[Special Adjustment]
BcdSpdC	[%]	[Special Adjustment]
BcdIn	[%]	[Special Adjustment]
PlcOut1	[%]	[Special Adjustment]
PlcOut2	[%]	[Special Adjustment]
PlcOut3	[%]	[Special Adjustment]
PlcOut4	[%]	[Special Adjustment]
PlcOut5	[%]	[Special Adjustment]
MlOut1	[digit]	[Special Adjustment]
MlOut2	[digit]	[Special Adjustment]
MlIN1	[digit]	[Special Adjustment]
MlIN2	[digit]	[Special Adjustment]
I0****	[digit]	[Special Adjustment]
O0****	[digit]	[Special Adjustment]
LS****	[digit]	[Special Adjustment]
LR****	[digit]	[Special Adjustment]
LC****	[digit]	[Special Adjustment]
US****	[digit]	[Special Adjustment]
UC****	[digit]	[Special Adjustment]
DS****	[digit]	[Special Adjustment]
DC****	[digit]	[Special Adjustment]
TS****	[digit]	[Special Adjustment]
TD****	[digit]	[Special Adjustment]
TR****	[digit]	[Special Adjustment]
TC****	[digit]	[Special Adjustment]
i0****	[digit]	[Special Adjustment]
o0****	[digit]	[Special Adjustment]
t0****	[digit]	[Special Adjustment]
Vout_Filter	[Filter]*2	[Special Adjustment]
Iout_Filter	[Filter]*2	[Special Adjustment]
Trq_Filter	[Filter]*2	[Special Adjustment]
Sref_Filter	[Filter]*2	[Special Adjustment]
Fout_Filter	[Filter]*2	[Special Adjustment]
Speed_Filter	[Filter]*2	[Special Adjustment]
UserDef.	[-]	[Special Adjustment]

*1: Refer to **3.2.5. Explanation of Channel Flag.**

*2: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : DCP66]

Ch name	Unit	Description	
END	[-]	Don't measure below the item set to “End”	
II1	[A]	Primary current	
IT1	[A]	Primary transformer current	
II2	[A]	Secondary current	
IT2	[A]	Secondary transformer current	
Vdc1	[V]	Primary voltage	
Vdc2	[V]	Secondary voltage	
Vred	[V]	Voltage command value	
Vfbk	[V]	Voltage feedback	
OLcount	[%]	Over load counter	
Phase	[digit]	Phase command value	
-	[-]	-	
-	[-]	-	
-	[-]	-	
AIN2	[%]	Analog input2	
AIN3	[%]	Analog input3	
AIN4	[%]	Analog input4	
AIN5	[%]	Analog input5	
AIN6	[%]	Analog input6	
-	[-]	-	
Ain2VoC	[%]	Analog input2 voltage command	Digit display: i00007
Ain3VoC	[%]	Analog input3 voltage command	Digit display: i00008
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	
-	-	-	

Ch name	Unit	Description
Fault Flag(1)	[digit]	Protection/Trouble Flag(1)*1
Fault Flag(2)	[digit]	Protection/Trouble Flag(2)*1
State Flag	[digit]	State flag*1
Command Flag	[digit]	Command Flag*1
MlOut1	[digit]	Multi-function output 1 (52MA,86A,MO1,MO2)
MlOut2	[digit]	Multi-function output 2 (MO3～MO6)
MlIN1	[digit]	Multi-function input 1 (ST-F～MI5)
MlIN2	[digit]	Multi-function input 2 (MI6～MI17)
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
Iref_Filter	[Filter]*2	[Special Adjustment]
Vref_Filter	[Filter]*2	Output voltage command with filter function
-	-	-
Vout_Filter	[Filter]*2	Output voltage with filter function
UserDef.	[-]	[Special Adjustment]

*1: Refer to **3.2.5. Explanation of Channel Flag.**

*2: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : N100CHD]

Ch name	Unit	Description	
End	[-]	Don't measure below the item set to “End”	
i21	[A]	T1/U phase current	
i22	[A]	T2/V phase current	
V1	[A]	Primary current	
Vref	[A]	Voltage command	
V2	[V]	Secondary voltage	
Iref	[A]	Current command	
i2	[V]	Total current (T1/U phase + T2/V phase)	
OLcount	[%]	Over load counter	
AIN1	[%]	Analog input1	
AIN2	[%]	Analog input2	
AIN3	[%]	Analog input3	
Ain1VoC	[%]	Analog input1 voltage command	Digit display: i00006
Ain2VoC	[%]	Analog input2 voltage command	Digit display: i00007
Ain3VoC	[%]	Analog input3 voltage command	Digit display: i00008
Ain1IoC	[%]	Analog input1 current command	Digit display: i0000A
Ain2IoC	[%]	Analog input2 current command	Digit display: i0000B
PlcHVoC	[%]	Internal PLC control period voltage	Digit display: o00001
PlcHIoC	[%]	Internal PLC control period torque	Digit display: o00000
BcdVoC	[%]	BCD voltage command	Digit display: i00009
BcdIn	[%]	BCD input	
PlcOut1	[%]	Internal PLC output1	
PlcOut2	[%]	Internal PLC output2	
PlcOut3	[%]	Internal PLC output3	
PlcOut4	[%]	Internal PLC output4	
PlcOut5	[%]	Internal PLC output5	
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*1	
Fault Flag(2)	[Bit]	Protection/Trouble flag(1)*1	
State Flag	[Bit]	State flag*1	
Command Flag	[Bit]	Command Flag*1	
MlOut1	[Bit]	Multi function output1 (52MA,86A,MO1,MO2)	
MlOut2	[Bit]	Multi function output2 (MO3～MO6)	
MlIn1	[Bit]	Multi function input1　(ST-F～MI5)	
MlIn2	[Bit]	Multi function input2　(MI6～MI17)	

Ch name	Unit	Description
I0****	[digit]	Input relay
O0****	[digit]	Output relay
LS****	[digit]	Latch relay set coil
LR****	[digit]	Latch relay re-set coil
LC****	[digit]	Latch relay contact
US****	[digit]	On differential relay coil
UC****	[digit]	On differential relay contact
DS****	[digit]	Off differential relay coil
DC****	[digit]	Off differential relay contact
TS****	[digit]	On timer relay coil / instantaneous point
TD****	[digit]	On timer relay time-limit contact
TR****	[digit]	Off timer relay coil / instantaneous contact
TC****	[digit]	Off timer relay time-limit contact
i0****	[digit]	Input register
o0****	[digit]	Output register
t0****	[digit]	Trace-back register
Iout_Filter	[Filter]*2	Current of controlled object with filter function [A]
Iref_Filter	[Filter]*2	Output current command with filter function [A]
Vref_Filter	[Filter]*2	Output voltage command with filter function [V]
Vout_Filter	[Filter]*2	Output voltage with filter function [V]
UserDef.	[Filter]*2	[Special Adjustment]

*1: Refer to **3.2.5. Explanation of Channel Flag.**

*2: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : N100CHU]

Ch name	Unit	Description	
End	[-]	Don't measure below the item set to “End”	
i11	[A]	T1/U phase current	
i12	[A]	T2/V phase current	
V1	[A]	Primary current	
Vref	[A]	Voltage command	
V2	[V]	Secondary voltage	
Iref	[A]	Current command	
i1	[V]	Total current (T1/U phase + T2/V phase)	
OLcount	[%]	Over load counter	
AIN1	[%]	Analog input1	
AIN2	[%]	Analog input2	
AIN3	[%]	Analog input3	
Ain1VoC	[%]	Analog input1 voltage command	Digit display: i00006
Ain2VoC	[%]	Analog input2 voltage command	Digit display: i00007
Ain3VoC	[%]	Analog input3 voltage command	Digit display: i00008
Ain1IoC	[%]	Analog input1 current command	Digit display: i0000A
Ain2IoC	[%]	Analog input2 current command	Digit display: i0000B
PlcHVoC	[%]	Internal PLC control period voltage	Digit display: o00001
PlcHIoC	[%]	Internal PLC control period torque	Digit display: o00000
BcdVoC	[%]	BCD voltage command	Digit display: i00009
BcdIn	[%]	BCD input	
PlcOut1	[%]	Internal PLC output1	
PlcOut2	[%]	Internal PLC output2	
PlcOut3	[%]	Internal PLC output3	
PlcOut4	[%]	Internal PLC output4	
PlcOut5	[%]	Internal PLC output5	
Fault Flag(1)	[Bit]	Protection/Trouble flag(1)*1	
Fault Flag(2)	[Bit]	Protection/Trouble flag(1)*1	
State Flag	[Bit]	State flag*1	
Command Flag	[Bit]	Command Flag*1	
MlOut1	[Bit]	Multi function output1 (52MA,86A,MO1,MO2)	
MlOut2	[Bit]	Multi function output2 (MO3～MO6)	
MlIn1	[Bit]	Multi function input1　(ST-F～MI5)	
MlIn2	[Bit]	Multi function input2　(MI6～MI17)	

Ch name	Unit	Description
I0****	[digit]	Input relay
O0****	[digit]	Output relay
LS****	[digit]	Latch relay set coil
LR****	[digit]	Latch relay re-set coil
LC****	[digit]	Latch relay contact
US****	[digit]	On differential relay coil
UC****	[digit]	On differential relay contact
DS****	[digit]	Off differential relay coil
DC****	[digit]	Off differential relay contact
TS****	[digit]	On timer relay coil / instantaneous point
TD****	[digit]	On timer relay time-limit contact
TR****	[digit]	Off timer relay coil / instantaneous contact
TC****	[digit]	Off timer relay time-limit contact
i0****	[digit]	Input register
o0****	[digit]	Output register
t0****	[digit]	Trace-back register
Iout_Filter	[Filter]*2	Current of controlled object with filter function [A]
Iref_Filter	[Filter]*2	Output current command with filter function [A]
Vref_Filter	[Filter]*2	Output voltage command with filter function [V]
Vout_Filter	[Filter]*2	Output voltage with filter function [V]
UserDef.	[Filter]*2	[Special Adjustment]

*1: Refer to **3.2.5. Explanation of Channel Flag.**

*2: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : N100]

Ch name	Unit	Description	
END	-	Don't measure below the item set to “End”	
iu	A	Output current of T1/U phase	
iv	A	Output current of T2/V phase	
iw	A	Output current of T3/W phase	
Vdc	V	DC voltage	
Vout	V	Output voltage actual value	
Iout	A	Output current actual value	
Fref	Hz	Frequency command	
Sref	r/min	Rotation speed command	
Fout	Hz	Output frequency	
Speed	r/min	Output rotation speed	
FlxRate	%	Magnetic flux command	
MotTemp	degC	Motor temperature	
AIN1	%	Analog input1	
AIN2	%	Analog input2	
AIN3	%	Analog input3	
AIN4	%	Analog input4	
AIN5	%	Analog input5	
AIN6	%	Analog input6	
Ain1SpdC	%	Analog input1 speed command	Digit display: i00006*1
Ain2SpdC	%	Analog input2 speed command	Digit display: i00007*1
Ain3SpdC	%	Analog input3 speed command	Digit display: i00008*1
Ain1TrqC	%	Analog input1 torque command	Digit display: i0000A*2
Ain2TrqC	%	Analog input2 torque command	Digit display: i0000B*2
PlcHSpdC	%	Internal PLC control period speed	Digit display: o00001*1
PlcHTrqC	%	Internal PLC control period torque	Digit display: o00000*2
Trq	%	Operation torque	
OLcount	%	Over load counter	
BcdSpdC	%	BCD speed command	
BcdIn	%	BCD input	
PlcOut1	%	Internal PLC output1	Digit display: o00008*3
PlcOut2	%	Internal PLC output2	Digit display: o00009*3
PlcOut3	%	Internal PLC output3	Digit display: o0000A*3
PlcOut4	%	Internal PLC output4	Digit display: o0000B*3
PlcOut5	%	Internal PLC output5	Digit display: o0000C*3

*1: The indicated value is a value when A-00 is converted into 20000.
*2: The indicated value is a value when 150%(-10V) is converted into 7500.
*3: The indicated value is a value when internal PLC output 5V is converted into 20000.

Ch name	Unit	Description
Fault Flag(1)	digit	Protection/Trouble flag(1)*4 *5
Fault Flag(2)	digit	Protection/Trouble flag(2)*4 *5
State Flag	digit	Inverter state flag*4 *5
Command Flag	digit	Inverter command flag*4 *5
M1Out1	digit	Multi function output1 (52MA,86A,MO1,MO2)*5
M1Out2	digit	Multi function output2 (MO3～MO6)*5
M1IN1	digit	Multi function input1 (ST-F～MI5)*5
M1IN2	digit	Multi function input2 (MI6～MI17)*5
IO****	digit	Input relay*5
O0****	digit	Output relay*5
LS****	digit	Latch relay set coil*5
LR****	digit	Latch relay re-set coil*5
LC****	digit	Latch relay contact*5
US****	digit	On differential relay coil*5
UC****	digit	On differential relay contact*5
DS****	digit	Off differential relay coil*5
DC****	digit	Off differential relay contact*5
TS****	digit	On timer relay coil / instantaneous point*5
TD****	digit	On timer relay time-limit contact*5
TR****	digit	Off timer relay coil / instantaneous contact*5
TC****	digit	Off timer relay time-limit contact*5
i0****	digit	Input register
o0****	digit	Output register
t0****	digit	Trace-back register
Vout_Filter	Filter*6	Output voltage with filter function
Iout_Filter	Filter*6	Output current with filter function
Trq-Filter	Filter*6	Operation torque with filter function
Sref_Filter	Filter*6	Rotation speed reference with filter function
Fout_Filter	Filter*6	Output frequency with filter function
Speed_Filter	Filter*6	Output rotation speed with filter function
UserDef	-	[Special Adjustment]

*4: Refer to 3.2.5. Explanation of Channel Flag.

*5: Please select data you want to measure in "Unit/BIT" column. Selected data is displayed as bit data. When "Unit/BIT" column left blank, it will be displayed as word data (2 Byte).

*6: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

[machine : N100R]

Ch name	Unit	Description
END	-	Don't measure below the item set to “End”
iu	A	L1/R phase current
iv	A	L2/S phase current
iw	A	L3/W phase current
vdc	V	DC voltage
L_Vu	V	L1/ R phase output voltage
L_Vv	V	L2/S phase output voltage
L_Vw	V	L3/T phase output voltage
Vu_ref	V	L1/R phase output voltage command
Vv_ref	V	L2/S phase output voltage command
Vw_ref	V	L3/T phase output voltage command
vdc_ref	V	DC voltage command
id_ref	A	Active current command
Fault Flag(1)_C	Bit	Protection/Trouble flag(1)*1
Fault Flag(2)_C	Bit	Protection/Trouble flag(2)*1
State Flag_C	Bit	State flag*1
Command Flag_C	Bit	Command Flag*1
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
-	-	[Special Adjustment]
AIN1	%	[Special Adjustment]
AIN2	%	[Special Adjustment]
AIN3	%	[Special Adjustment]
AIN4	%	[Special Adjustment]
AIN5	%	[Special Adjustment]
AIN6	%	[Special Adjustment]
Ain1SpdC	%	[Special Adjustment]
Ain2SpdC	%	[Special Adjustment]
Ain3SpdC	%	[Special Adjustment]

Ch name	Unit	Description
Ain1TrqC	%	[Special Adjustment]
Ain2TrqC	%	[Special Adjustment]
PlcHIqC	%	[Special Adjustment]
PlcHIdC	%	[Special Adjustment]
L_Vo	%	[Special Adjustment]
OLcount	%	[Special Adjustment]
BcdSpdC	%	[Special Adjustment]
BcdIn	%	[Special Adjustment]
PlcOut1	%	[Special Adjustment]
PlcOut2	%	[Special Adjustment]
PlcOut3	%	[Special Adjustment]
PlcOut4	%	[Special Adjustment]
PlcOut5	%	[Special Adjustment]
MlOut1	digit	[Special Adjustment]
MlOut2	digit	[Special Adjustment]
MlIN1	digit	[Special Adjustment]
MlIN2	digit	[Special Adjustment]
I0****	digit	[Special Adjustment]
O0****	digit	[Special Adjustment]
LS****	digit	[Special Adjustment]
LR****	digit	[Special Adjustment]
LC****	digit	[Special Adjustment]
US****	digit	[Special Adjustment]
UC****	digit	[Special Adjustment]
DS****	digit	[Special Adjustment]
DC****	digit	[Special Adjustment]
TS****	digit	[Special Adjustment]
TD****	digit	[Special Adjustment]
TR****	digit	[Special Adjustment]
TC****	digit	[Special Adjustment]
i0****	digit	[Special Adjustment]
o0****	digit	[Special Adjustment]
t0****	digit	[Special Adjustment]
Vout_Filter	Filter*2	[Special Adjustment]
Iout_Filter	Filter*2	[Special Adjustment]
L_Vo_Filter	Filter*2	[Special Adjustment]
-	-	[Special Adjustment]
Fout_Filter	Filter*2	[Special Adjustment]
-	-	[Special Adjustment]
UserDef.	-	[Special Adjustment]

*1: Refer to **3.2.5. Explanation of Channel Flag.**

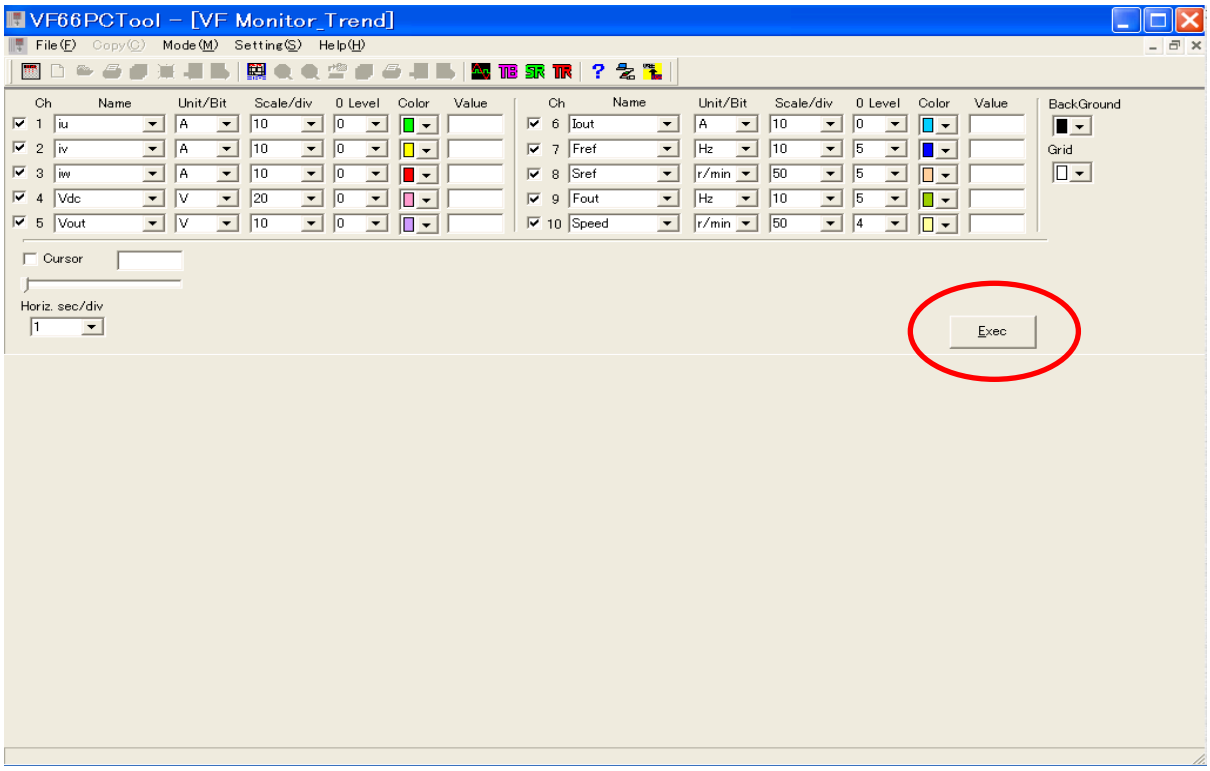
*2: For Ch items whose unit is "Filter", you can select the filter time constant from the "Unit/Bit" drop-down list.

3-4. Trend Mode

3-4-1. Operation of Trend Mode

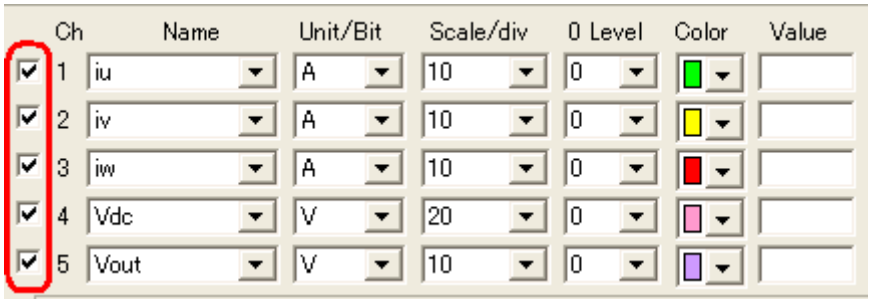
When you click [Mode]-[Trend] in the main menu. The figure below is displayed.

Click [Exec], after you set trigger mode and channel that you would like to measure, and then the measurement starts.



If you check the points, left side of channel, you can select display or not display. According to the measuring condition, waveform of difference channels is overlapped. At that time, if you delete a check mark of channel, the waveform of the channel isn't displayed.

Moreover, sampling interval would be longer when you have a lot of measuring channels. (The saving is same as CSV file). If you would like to save short interval as CSV file, it is able to sample short interval when you set "End" at column of channel name, because it doesn't measure below the item set to "End".



The followings are explanation of each item.

Items		Description	
Ch		Channel number	
Name		Measuring item	
Unit/Bit		Measuring item unit	Data: unit Flag: selecting bit data Filter: time constant
Scale/div		Vertical line(per a grid) (⇒Refer to **3.5. Scale 0Level**)	
0 Level		Offset (⇒Refer to **3.5. Scale 0Level**)	
Color		Graph color	
Value		Cursor measurement color	
BackGround		Background color	
Grid		Grid color	
Cursor		If there is a check, cursor line is displayed, and value of cross point between the cursor line and graph is displayed at each channel [Value] column.	
Horiz. Sec/div		Horizontal line(Time per a grid) *1	
Button	Exec	The data collection and the graphical representation are executed	
	Stop	After the data under the collection is displayed, it stops.	
	Next	The displayed data is deleted	

*1 The set might be long, because of load condition of your PC

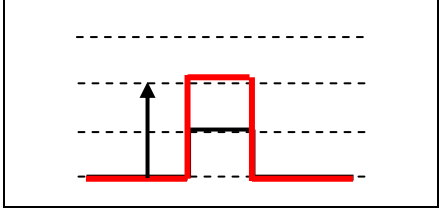
3-4-2. Explanation of Channel/Flag

Follow *Storage Mode* (Refer to **3-3-4. Explanation of Channel Flag**) about kinds of channel of possible set.

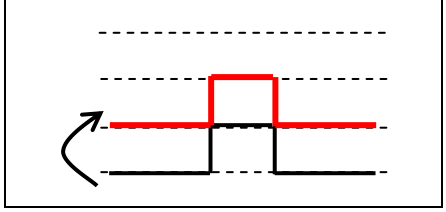
3-5. Scale・0 Level

Scale/div is changed by vertical line size per a grid of graph, and you can arrange zero level about amount of offset from zero point.

	Scale/div
Before change	20
After change	10



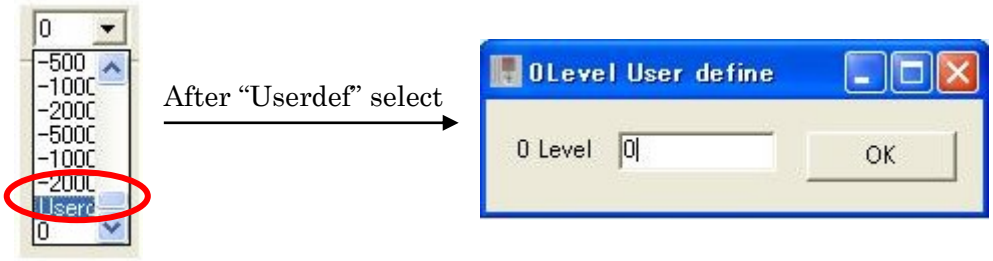
	Scale/div
Before change	20
After change	10



If you select “Userdef” in the 0Level list, show the dialog below. It multiplies by the value set up here and a scale value. The value redraws a graph as an amount of offset.

Ex.) Speed:15000[r/min] draw on the 5th grid by 100[r/min/div]

⇒500-15000=-14500[r/min] -14500/100=-145　∴0Level User define set to -145



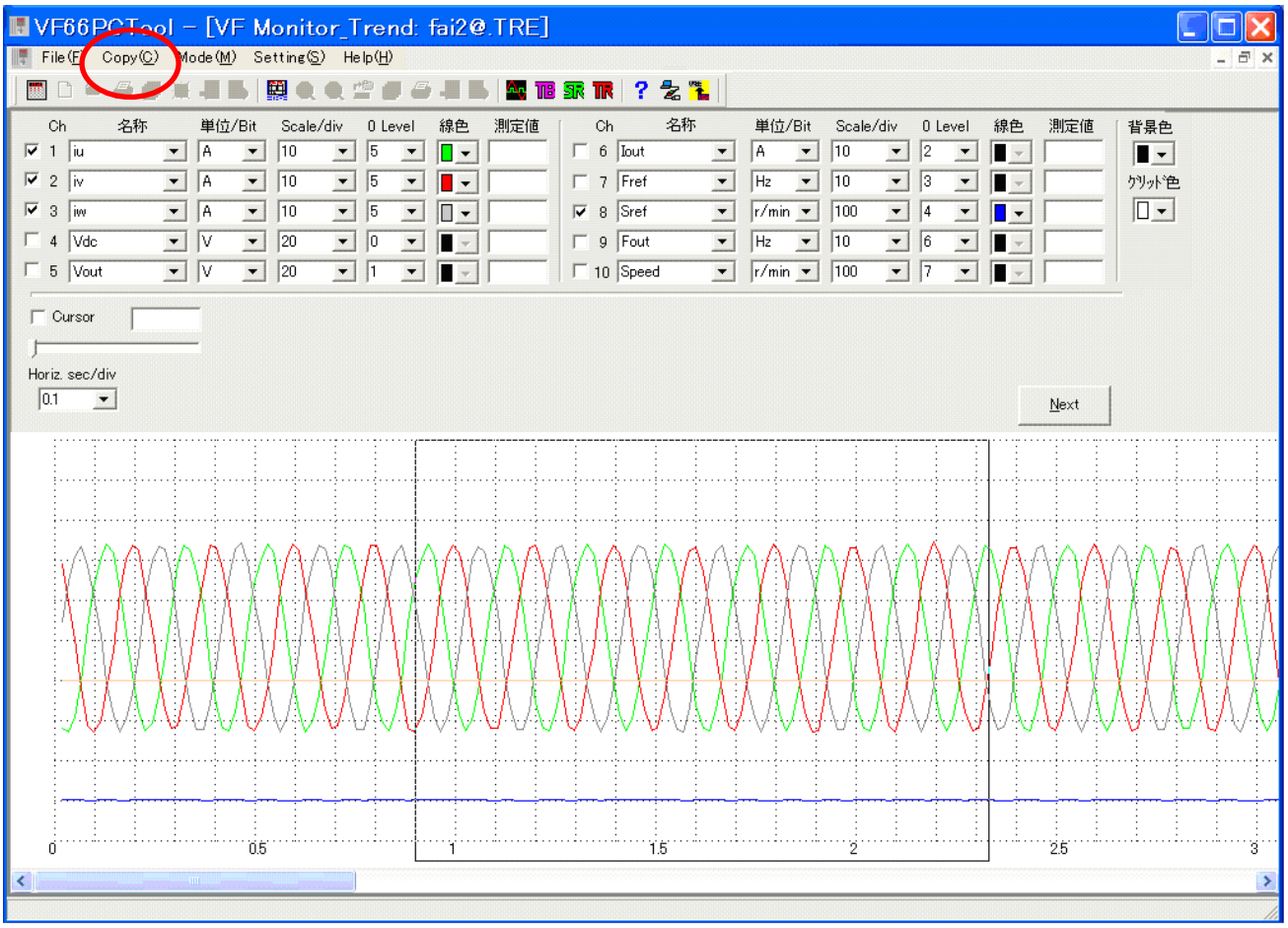
3-6. Copy

You can use hard-copy function while drawing is stopping (The figure below is *Trend Mode*).

The range copied by dragging (left-click) in the area of display the graph can be specified.

Click [Copy] in the main menu in the state, the data is saved in clip board.

Also you can edit the data by print and so on.



Chapter_4 Control Block Editor

Control Block Editor is a programming soft to customize our products control and sequence function for a variety of uses. Built-in a product control and sequence function are displayed as a symbol.

Construct the control system of inverter by connecting with those symbols.

The list below shows the programming specification.

Programming Specification

Machine		VF66B,VF66CH,VF66G,VF66R,N100CHU,N100CHD,VF100
Programming capacity		Maximum approx. 16 kByte (16,171 Byte)*1
Programming table		・High speed processing table*2 (and below 'PLCH') ・Low speed processing table*3 (and below 'PLCL')
Control-block		18 kinds (PI control, filter, field forward control, and etc.)
Ladder-block		8 kinds (Contact A, Contact B, Timer relay, and etc.)
Dataflow-block		35 kinds (Addition, Multiplication, Compare high/low/equal, and etc.)
Number of page		Maximum to 7 page of each tables*4
Number of divide	PLCH	Four divide*5
	PLCL	None
Divide method	PLCH	Automatic divide as compile (⇒Refer to **4-4-7.**)
	PLCL	Automatic measure as compile and automatic set for 5ms or 10ms.

*1: Changing by amount of comment in circuit.

*2: Control cycle is *1ms*.

*3: Control cycle is *5ms or 10ms*.

*4: Changing by amount of programming.

*5: Maximum control cycle is *4ms*.

【Note】

* Use PLCH, you should set up *i-01=1 or 2*.
  ⇒Refer to next page flowchart of **PLCH and PLCL**.
* Use PLCL, you should set up *i-00=ON*. But the items below become invalid.
  ⇒Refer to next page **PLCH and PLCL**.
* If inverter output frequency over 800[Hz], limited to amount of the total of program.
  ⇒Refer to **Inverter output frequency and Internal PLC function control cycle**.

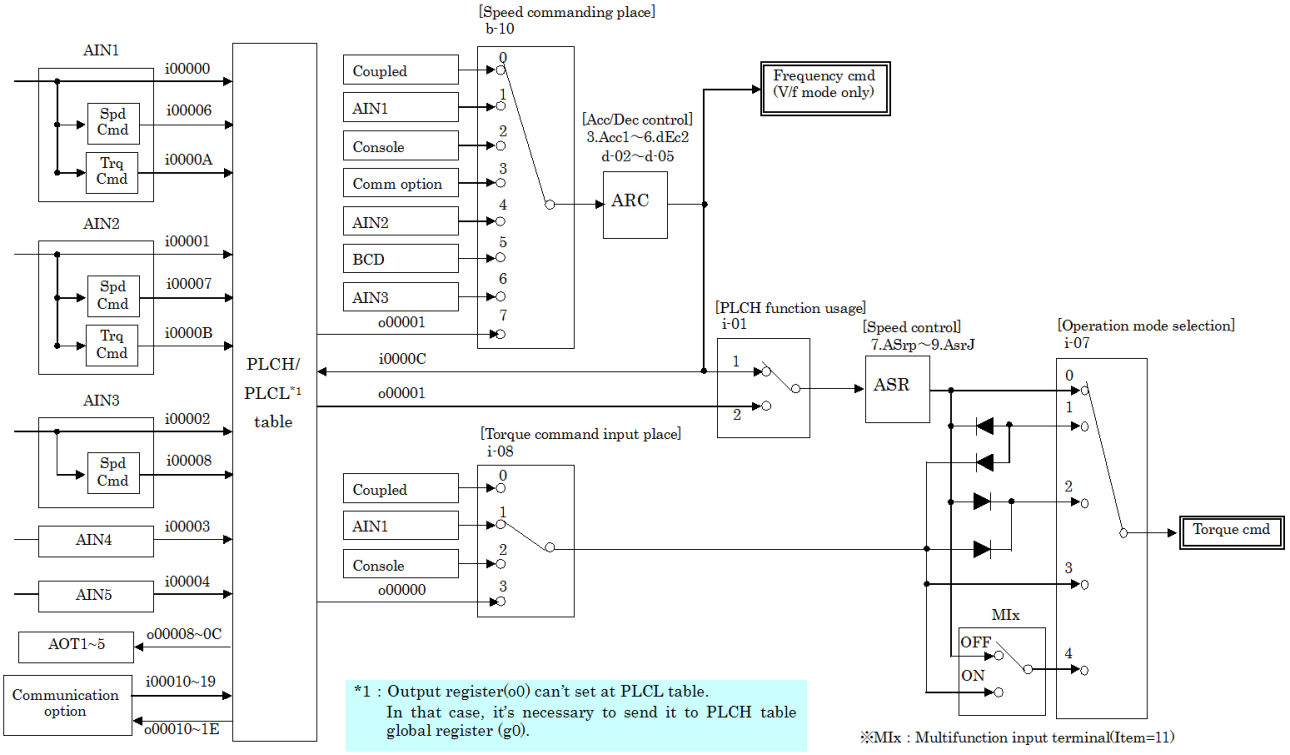
◆ PLCH and PLCL

	PLCH	PLCL
Set data	i-01=1 or i-01=2	i-00=ON
Control cycle	1ms to 4ms (Changing by amount of total program)	5ms or 10ms (Changing by amount of total program)
	Control cycle is displayed at window, after compile.	
Inhibition	Output relay (O0) coil set.	Output register (o0) set.
Regulation	When i-01=2, speed reference (ASR input) becomes o00001*. When i-00=OFF, MI4 becomes emergency stop (Contact A) and master control*1 of PLCH regardless of c-04 setting.	The items below become invalid. ・b-11, b-12, c area, and H-00～H-05. MI4 becomes master control*1 of both PLCH and PLCL. MI5 becomes protect reset. Necessary to operate of 52MA and 86A on PLCL circuit.
	MI4:Multifunction input terminal(4)	MI5:Multifunction input terminal(5)

*1: If master control is turned on, operation program is stopped. And output register is cleared to zero. Also all of relay-coil (include operation command etc.) are off.

*2: Either first setting block or second setting block if it's *i-00=ON*, only [24: Selection second set block] can be set. At both *i-00=ON,* The operation of *O00026* (2nd set-up block selection) coil become effective.

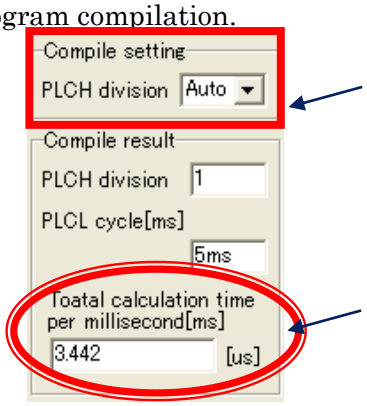
【Internal PLC function. input and output flowchart】



◆ Inverter output frequency and division of Internal PLC function program

The control cycle shortens as the frequency rises. It is necessary to shorten the internal PLC function program more than the control cycle according to the condition.

Set the approach to the manner of division according to the following procedure and do the program compilation.

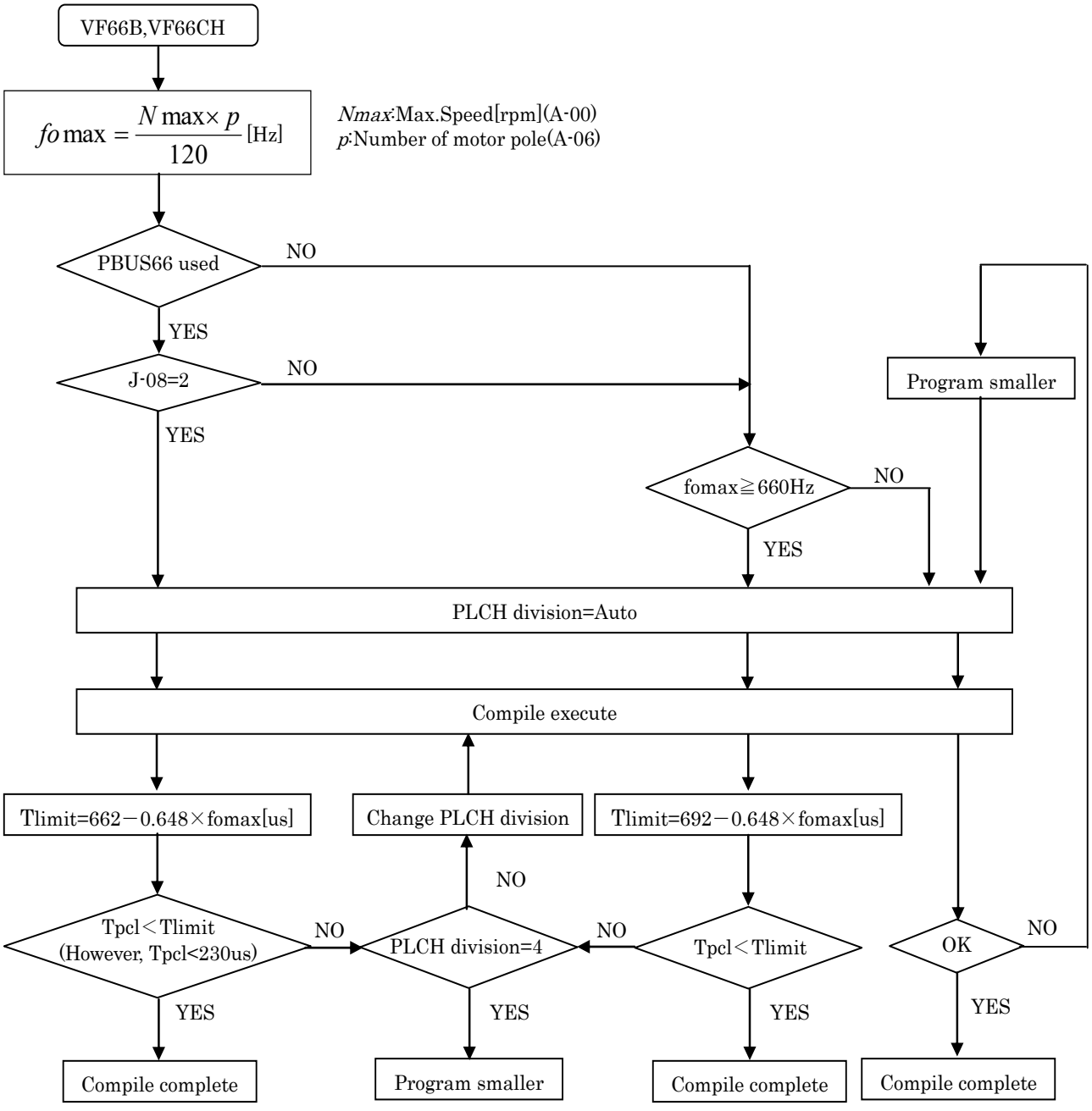


See the figure (Compile procedure) to check which condition the machine applies to.
Tpcl is smaller than the limited value of following table then it's complete.

If *Tpcl* is bigger than limited value by PLCH division "4", make the program smaller.

* The limited value is depending on the machine condition.
The machine control may be affected, when the following procedure disregarded and into the program.

【 Compile procedure 】

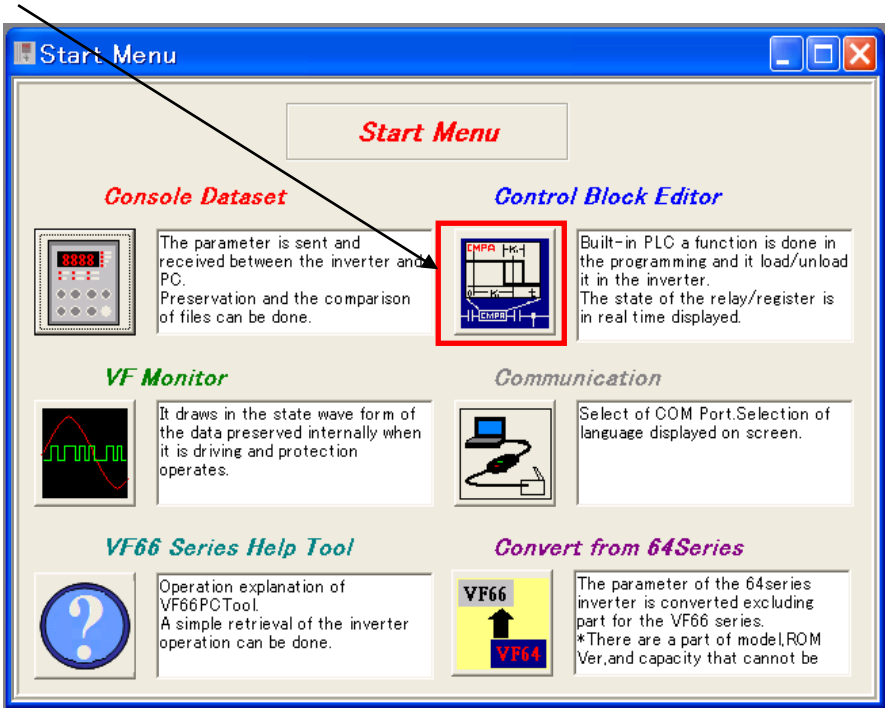


4-1. Start Control Block Editor

Control Block Editor starts by the following procedure.

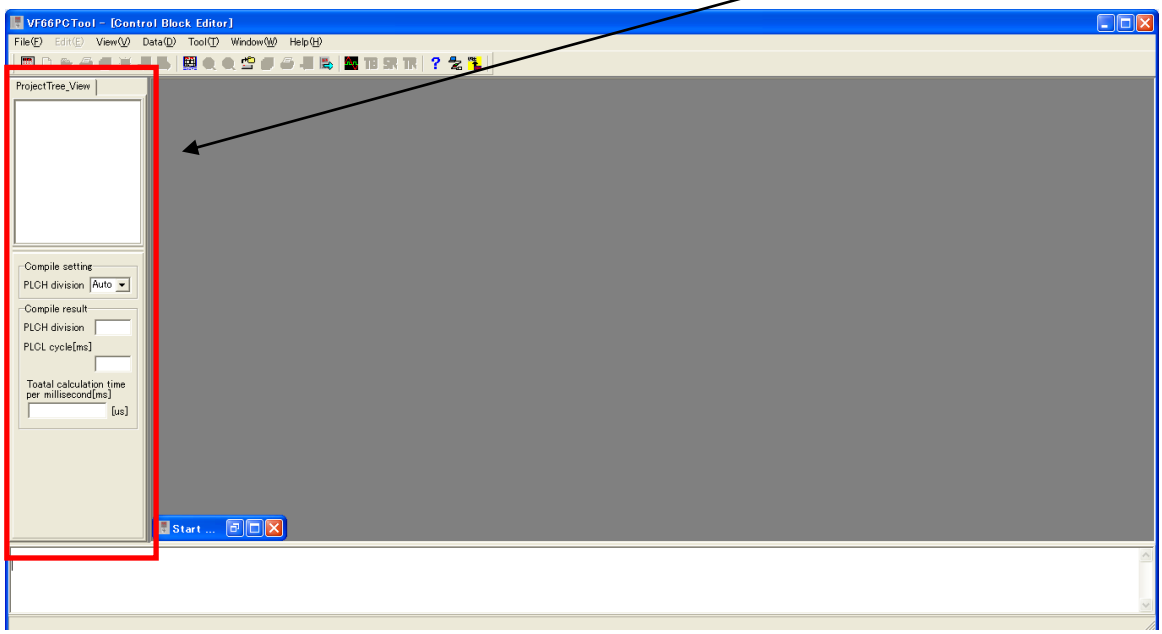
[1] Control Block Editor start

[Control Block Editor] is selected from the start menu, and it is started.



[2] Display Control Block Editor window

After started, the main window is displayed as shown in the figure below. Also "ProjectTree　View" is displayed in the left of the window.



Here easily explains each menu in the main window of **Control Block Editor**.

The menu (1) below is displayed when the project circuit is not opened. The menu (2) below is displayed when editing circuit.

【menu (1)】

File

- **New Project**
  Make new project. (Refer to **4-2-1.**)
- **Project Open**
  Opening the preserved project file.
- **Add PLCH Circuit**
  The circuit is made for PLCH table. (Refer to **4-2-4.**)
- **Add PLCL Circuit**
  The circuit is made for PLCL table. (Refer to **4-2-4.**)
- **Project Save**
  Overwrite an existing project. (Refer to **4-2-2.**)
- **Project Save As**
  It names expanded projects and then saves the projects. (Refer to **4-2-2.**)
- **Print**
  Parameters and circuit in a project are printed. (Refer to **4-2-3.**)
- **Close**
  It closes expanded projects at present.
- **Control Block Editor Exit**
  Exit the Control Block Editor.
- **VF66PCTool Exit**
  Exit the VF66PCTool.

Edit

*Not use.

View

ProjectTree_View

"ProjectTree_View" display(check)/not display(no check) on the left side of window.

All program cross reference

The block used by the project is retrieved and the list is displayed. (Refer to **4-3.**)

Tool bar

It can select display (check)/not display (no check) of dividing toolbar for kinds of each block.

Input-output set list

It displays lists which are each relay/register and used *p-register* of a project of Inverter or Chopper. (Refer to **4-3.**)

Data

Project data write to INV.

It writes MOT files, that are drew by compiling, in inverters.

Project data read from INV.

Programs, which are written in present an inverter, are read and then displayed.

Tool

Circuit Window Color Setup

It sets displayed colors of background, font, and line.

Window

Arranges Up and Down

It displays windows arranging ups and downs.

Arranges On Either Side

It displays windows arranging right and left.

It displays again

It displays windows lapping from left side.

Help

VF66 series help

Explain operation of VF66PCTool and a simple retrieval about operation of VF66B inverter.

The help only explains the functions of VF66PCTool and VF66B.

Version information

Version information is displayed.

【menu (2)】

File

- **View mode**

  Circuits of project indicate. And can check circuit and setting data of Control-block.

  If editing, click [Edit mode] button. (Refer to **4-3.**)

- **Edit mode**

  The circuit is edited. (Refer to **4-4.**)

- **Monitor mode**

  Data calculated by an inverter indicate under the block on circuit.

  Ladder-block indicates by red, if ON condition. (Refer to **4-5.**)

- **Circuit Close**

  After current edit circuit compile, circuit is closed.

Edit

- **Select**

  Select some of symbol on circuit.

- **Cut Off**

  Cutting off selected part.

- **Copy**

  Copying selected part.

- **Paste**

  Pasting the part of “Cut” or “Copy”.

- **Cancel**

  Selected cancel.

- **Line Insert**

  Empty one-line insertion.

- **Line Clear**

  The line with the symbol is cleared.

- **Line Delete**

  The line with the cursor is deleted. And less space.

- **Reference**

  Searches the specified symbol label is in the circuit.

- **Substitution**

  The specified symbol label is replaced with the new symbol label.

View

Page change

The displayed page is changed.

Display magnification

Select the volume of zoom/zoom out.

CrossReference

Symbol specification search from circuit edited now.*1 (Refer to **4-3.**)

All Program CrossReference

Symbol specification search from project.*1 (Refer to **4-3.**)

Input-Output_Setting

It displays lists which are each relay/register and used *p-register* of a project of Inverter or Chopper. (Refer to **4-3.**)

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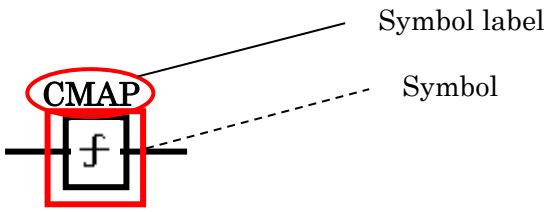
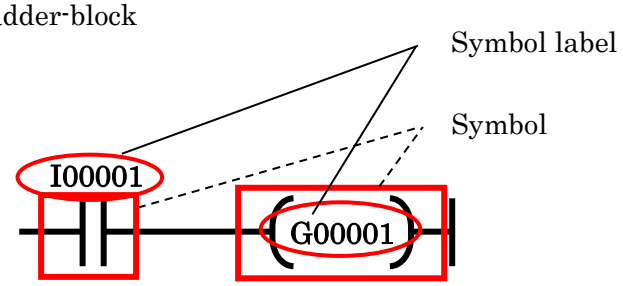
*1 Symbol label is to distinguish displayed symbol on the top side. The details are as follows.

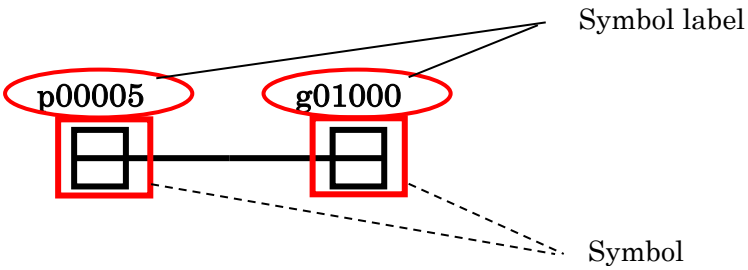
・Control-block



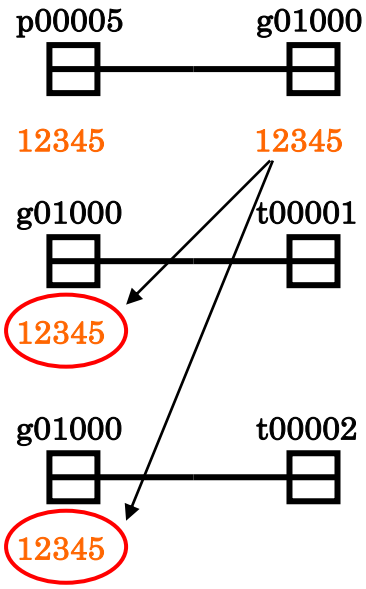
・Ladder-block



・Dataflow-block



It is able to set same label for some symbols, but all of set same label symbol are the same referring ahead. The figure below shows the example.

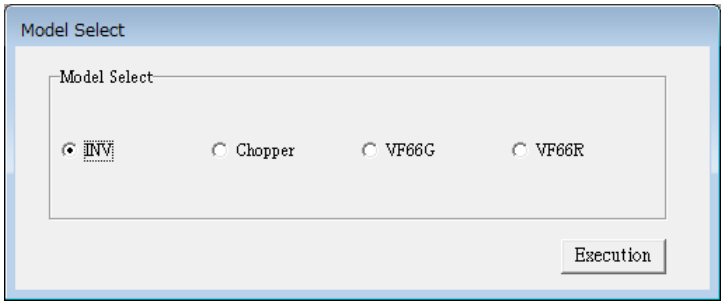


4-2. Project

4-2-1. New Project

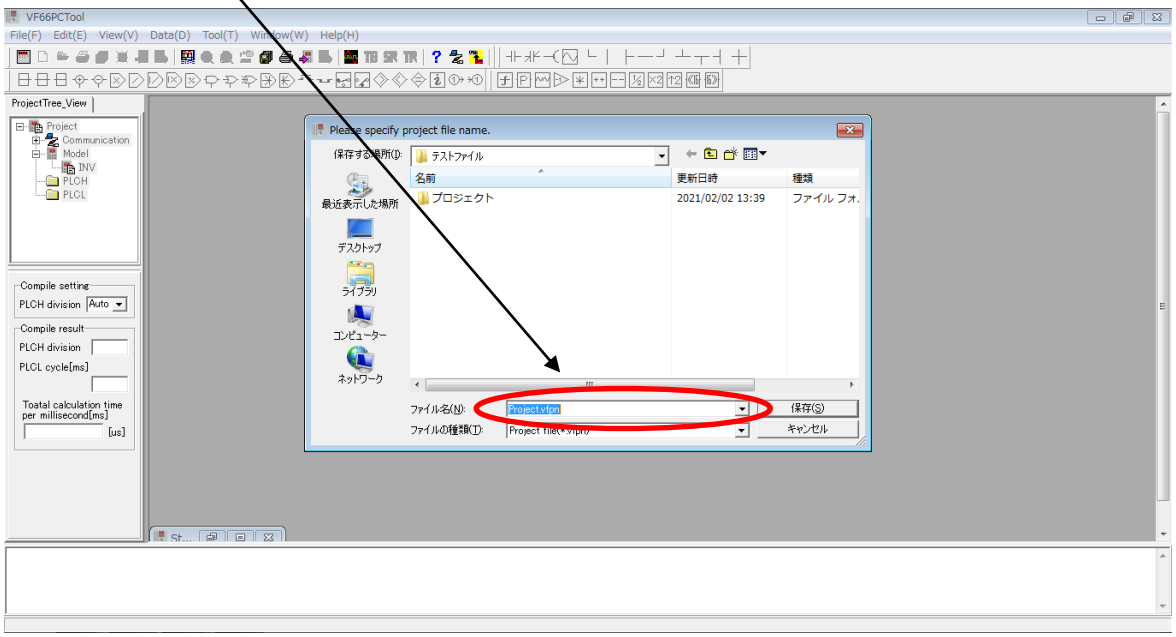
Making a new project. If project file opened, close the project by [File]-[Close].

Click [File]-[New Project] to display the model select window. Select the model of the project to be created and click "Execution". You cannot change the model after selecting the model.



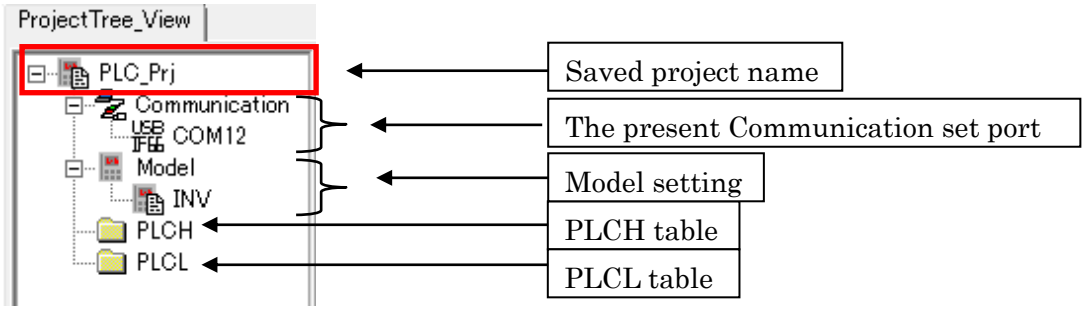
When you click "Execution", save dialog is displayed.

Input the project name and the preservation place is specified.



When you click [Save] after input the project name, project name (in “ProjectTree_View”) on the top of left side window is changed to the input project name.

(Ex. Project name : “PLC_Prj”)



4-2-2. Project Save

If the compilation is not completed, the preservation of the project cannot be normalized.

・Overwrite save

[File]- [Project Save] in the main menu

・The project name change and save

[File]- [Project Save As] in the main menu

Save dialog is displayed, input the project name and the preservation place are specified.

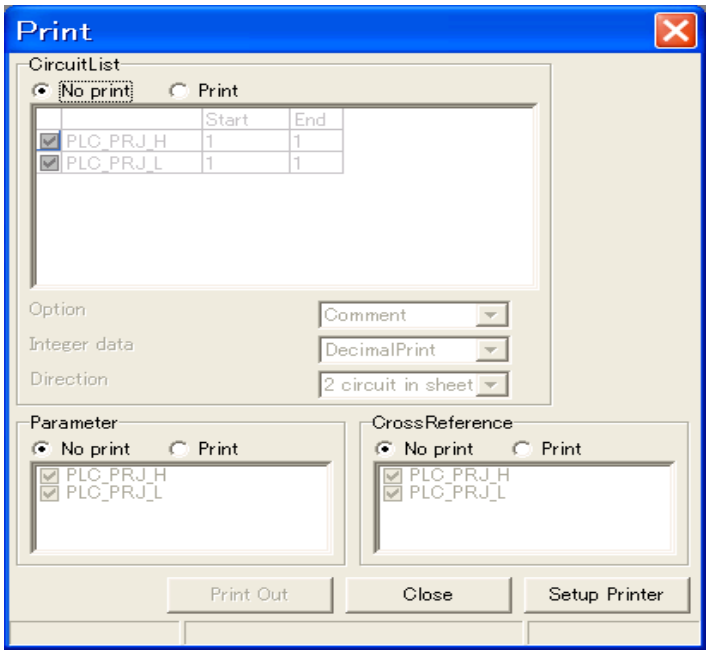
4-2-3. Print

It is possible to print project data: circuit figure, parameter, cross-references.

When you click [File]-[Print] in the main menu, print set up window is displayed. Default is set in "No print". Therefore, "Print" is selected when printed.

When you click [Print Out], print out is started. It is finished, click [Close] back to main window.

If change the setting of the printer, click [Setup Printer].



・**CircuitList**

Circuits are printed.

・**Parameter**

Set time of timer relay is printed.

・**CrossReference**

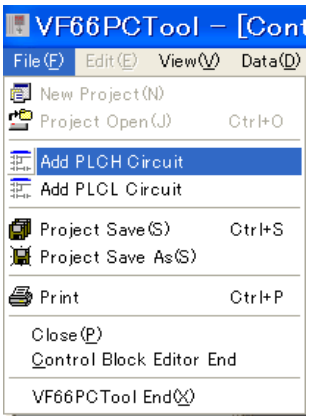
The position and the number of blocks used are printed.

4-2-4. Make circuit

The circuit is newly made for the table of the project.

・The circuit is made for PLCH table

[File]-[Add PLCH Circuit] in the main menu

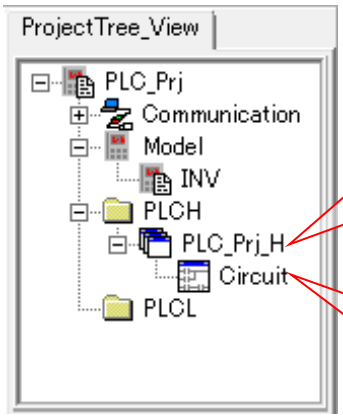


・The circuit is made for PLCL table

[File]-[Add PLCL Circuit] in the main menu

The circuit is made by name "*project name* + *_H* (or *_L*)".

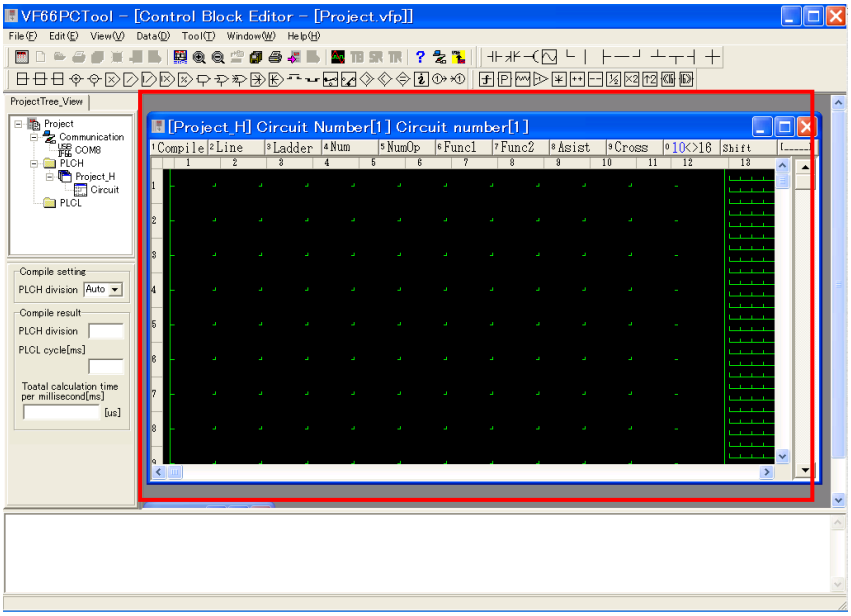
Figure below is an example that the circuit is made for PLCH table.



The initial name of the created circuit is
"project name + _H (or _L)"
*"Space" cannot be used in the circuit name.

Double-click "Circuit" of the created project to display the circuit editing window.
Now you are ready to create the program.

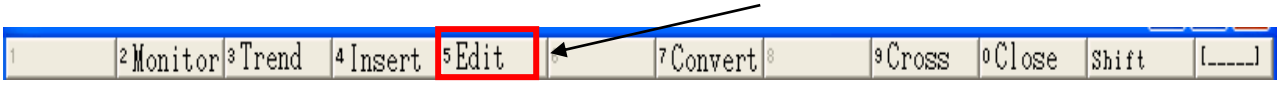
Circuit editing window



4-3. View Mode

This mode has a function, which is written as follows, and list of relay and register are displayed.

This mode cannot edit. If the circuit is edited, change to *Edit mode*.



- **Monitor**

  Refer to **4-5. Monitor mode**

- **Trend**

  Refer to **4-6. Trend mode**

- **Insert**

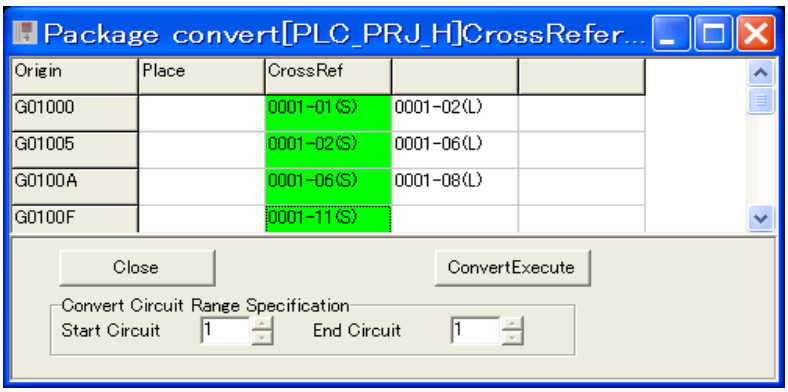
  It adds circuit pages. The maximum page is 7, and it only operates at view mode.

  If you add them, number of page at the top of window is increasing.

- **Convert**

  When you click [Convert], the message “Is package convert former data searched?” is displayed.

  If you click [Yes], the figure below is displayed.



When you click [Convert Execute] after input in *CrossRef* column, reference convert is started.

Details are as follows.

Green color: symbol of end of row

Gray color: symbol in the Control-block

White color: General symbol

0001 – 12 (S)

Page No., Row No., (S): Coil

(L): Contact

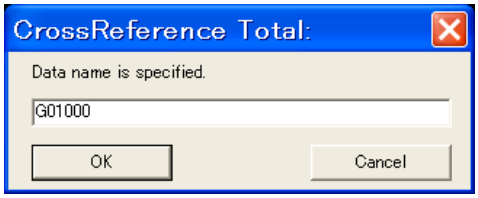
(I): Data value

Ex) Background color green and 0001-12(S) is displayed.

⇒Coil is set at twelfth row, first page.

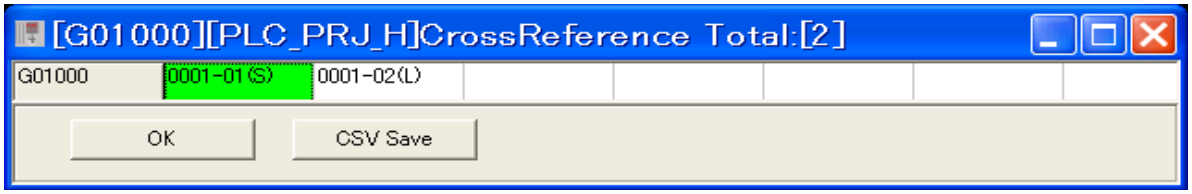
・**Cross**

When you click [Cross], the window below is displayed.



Click [OK] after input the symbol label. If it exists, the symbols positions are displayed.

Interpretation of the figure below is referring to **4-3. View mode-Convert**.



【Available relay and register block list】

The block name that can be set is display a list.

Click [View] - [Input-Output_Setting] - [Relay List] or [Register List] in the main menu.

The contents of the list differ depending on the model selected in the menu [File]-[New Project]-"Model Selection Window".

[Used p-register List] is a list of *p-register* used in the project.

(The figure below is an example of a project)

・**Used p-register List**

A list of *p-register* in use at the project is displayed.

You can edit a column of "Function". If you edit, click [Apply].

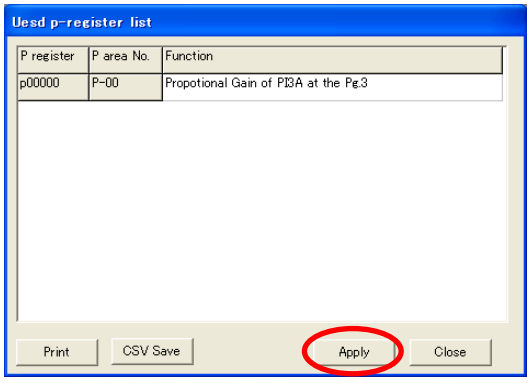
If you click [Print], print the displayed list.

If you click [CSV Save], the displayed list is saved CSV file format.

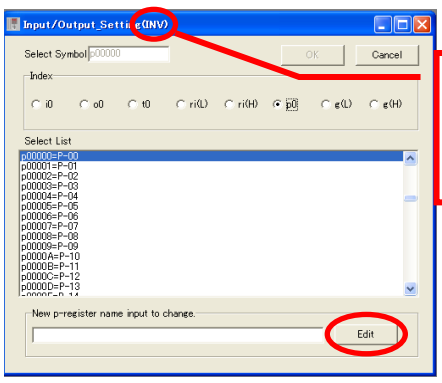
・**Input-Output_Setting**

A list of register and relay are displayed. If you select "p0", you can edit "New p-register name input to change". When input comments and [Edit] is clicked, the content of p-register selected by the list is changed to it.

*[Used p-register List] together with [Input-Output_Setting]. If one is changed, the other is changed, too.



Used p-register List Window



Input-Output_Setting Window

When model is selected, the model name is displayed.

4-4. Edit mode

4-4-1. Circuit Edit

Double click [Circuit] in the "*Project_Tree*", the window to edit the circuit is displayed.

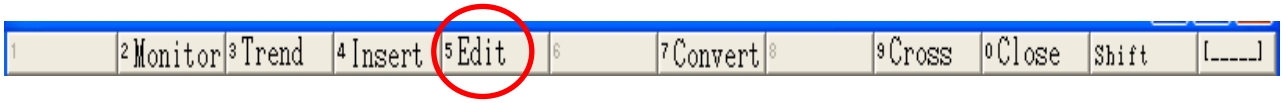
But, the manner of operation to *Edit mode* is different for case of [Project open] and [New project].

・[Project open]

You can edit as follows. Firstly to double click [Circuit] in the "*Project_Tree*", the window to edit the circuit is displayed.

[Edit] of the section button that is below is clicked, change to *Edit Mode*.

Also you can operate [File] - [Edit Mode] in the main menu.



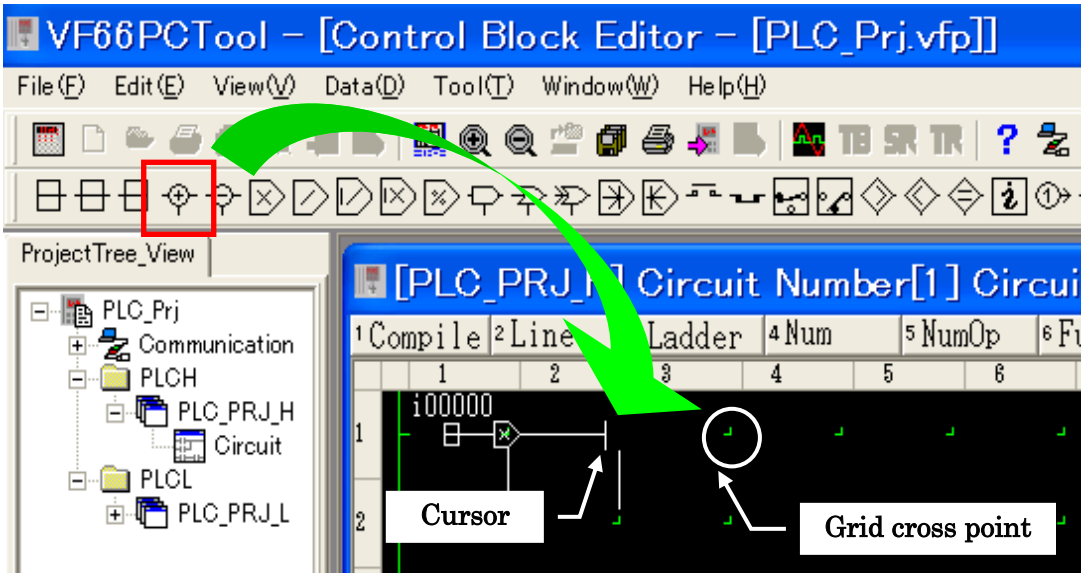
・[New project]

The circuit displayed by [New project] is already *Edit Mode*.

It edits it by selecting, arranging, and connecting the symbol. When the button of the symbol is clicked, the symbol is arranged in the place with the **cursor**.

There are three kinds of symbols: Control-block, Ladder-block, and Dataflow-block.

Control-block, contact of Ladder-block and load/store of Dataflow-block are a lot of data can be shown by the same symbol.



There is a place that cannot be arranged according to the symbol.

Generally, the symbol is arranged in **Grid cross point** and '**+**' as shown in the above figure. But among Dataflow-block, it is necessary to arrange the symbol with the input from the under on '**+**'.

4-4-2. Selection/Setting method of Control-block

Kinds of Control-block and operation time are as follows.

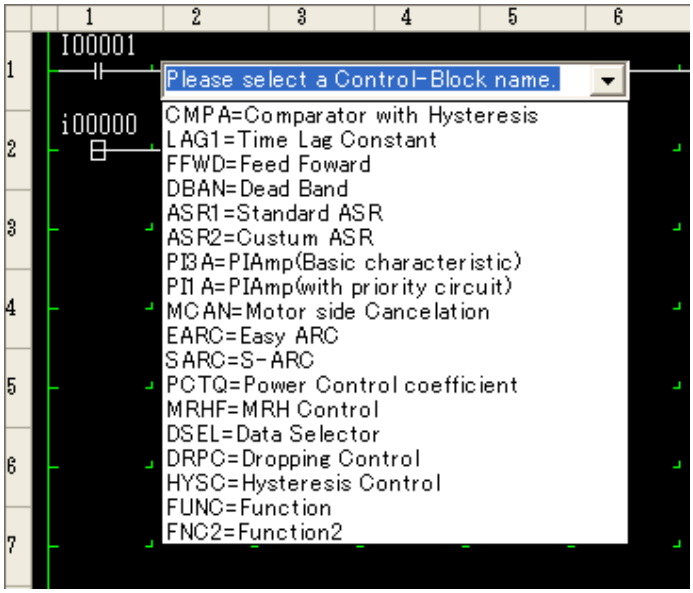
・Control-block (*Inputs name of four words on symbol)

Name	Symbol	Operation time	Name	Symbol	Operation time
CMPA	C M P A	0.5μs	EARC	E A R C	0.7μs
LAG1	L A G 1	0.8μs	SARC	S A R C	9.2μs
FFWD	F F W D	1.9μs	PCTQ	P C T Q	2.1μs
DBAN	D B A N	0.9μs	MRHF	M R H F	1.2μs
ASR1	A S R 1	3.5μs	DSEL	D S E L	0.4μs
ASR2	A S R 2	4.8μs	DRPC	D R P C	1.7μs
PI3A	P I 3 A	2.1μs	HYSC	H Y S C	1.2μs
PI1A	P I 1 A	2.7μs	FUNC	F U N C	1.1μs
MCAN	M C A N	2.7μs	FNC2	F N C 2	1.0μs

Control-block is set to input four words symbol label like the above symbol.

Generally, select it from the list because the list is displayed when Control-block is arranged.

Input four characters by mistake though it is possible to input from the keyboard.



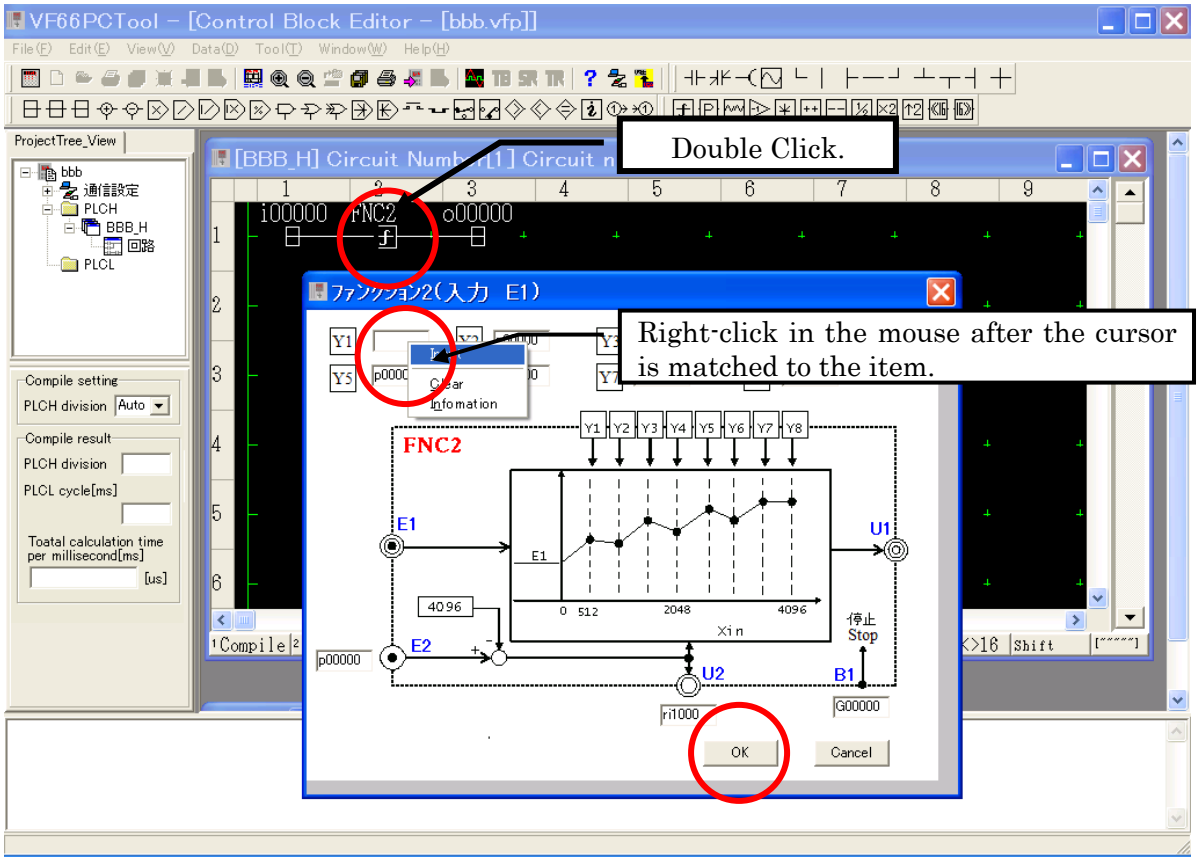
Double click the symbol; window of the Control-block is displayed. (The figure below an example “FNC2”)

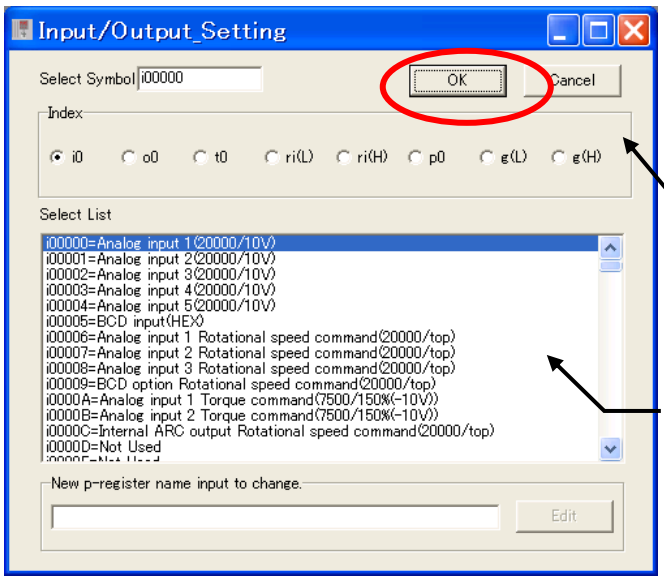
The setting method to the item is as follows.

1. The cursor is matched to the set item.
2. Right-click with the mouse.
3. Select “Insert” of the popup menu.
4. “Input-Output_Setting” window is displayed.
5. It selects from the list and [OK] is clicked.

Also Input six characters by mistake though it is possible to input from the keyboard.

When the setting of all items is completed, [OK] of Control-block window is clicked.





The head of the selected register is displayed.
※(H) : PLCH (L) : PLCL

List of the setting data.

4-4-3. Selection/Setting method of Ladder-block

Kinds of Ladder-block and operation time are as follows.

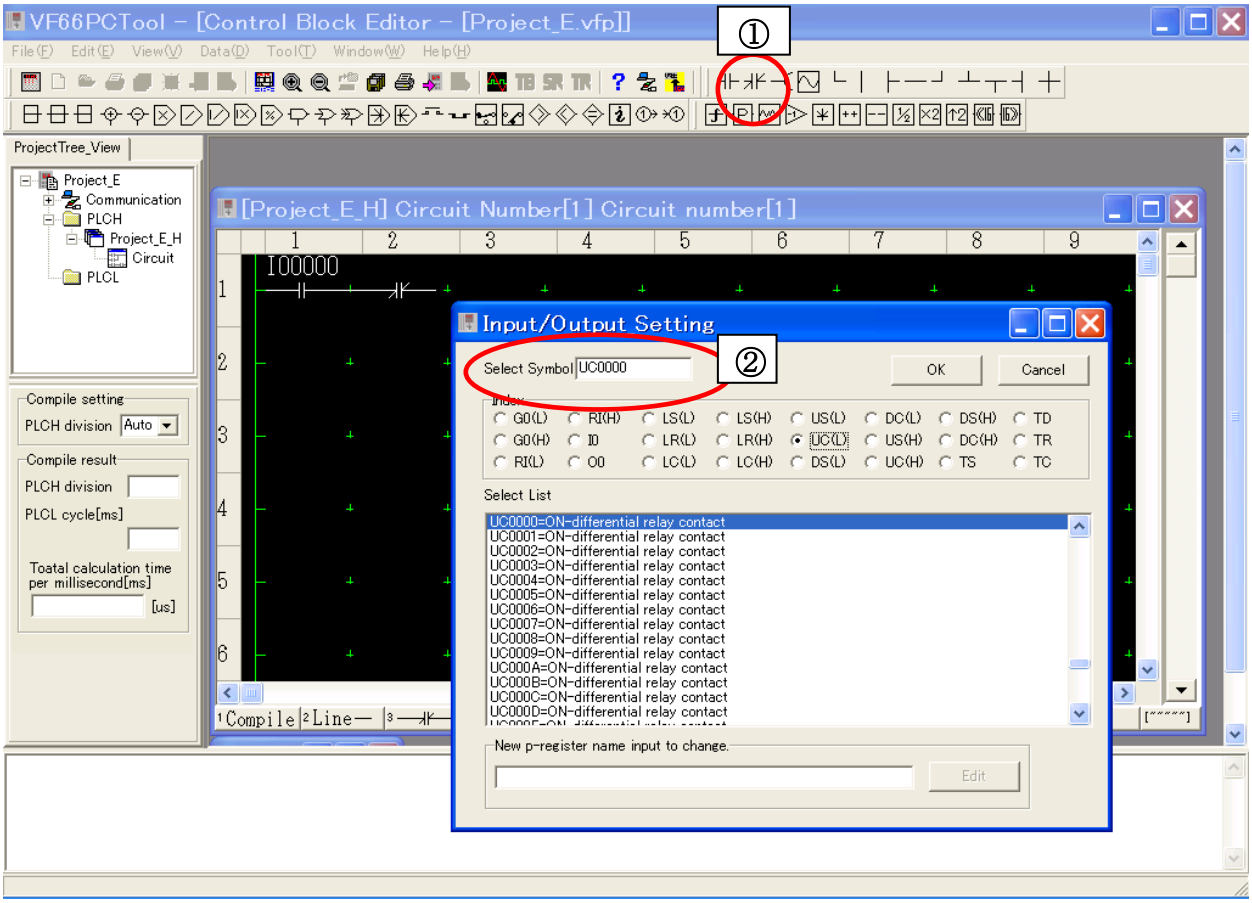
・Ladder-block

Name	Symbol	Operation time
Contact A	RELAY	0.150μs
Contact B	RELAY	0.163μs
Coil	RELAY	0.225μs
PLCBRK	—	0.313μs
Logic inversion		0.088μs

PLCBRK is a block inserted by the automatic operation when the program is divided. (PLCH only) The max dividing is four. (Refer to **4-4-7.Compile**)

The figure below is the window when Contact B of Ladder-block is arranged.

1. Select Contact B (①), "Input-Output_Setting" is displayed.
2. Select data from a list, the data is displayed at [Select symbol](②).
3. Click [OK] and so the symbol of the selected data is displayed in the circuit.



Details of Contact A, Contact B and Coil are as follows.

[Mean of Symbols]

◎:Operated by both PLCL and PLCH　　○:Operated by PLCL only

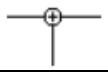
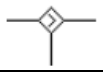
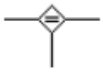
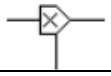
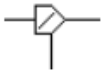
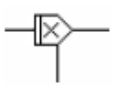
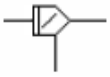
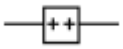
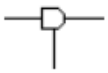
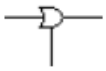
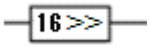
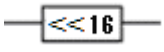
●:Operated by PLCH only　　×: Inoperable

Name		Coil	Contact	Name of Relay	Remarks
Global relay(PLCL operation)		○	◎	G00000～G0003F	64 points
Global relay(PLCH operation)		●	◎	G01000～G0103F	64 points
Holding relay(PLCL operation)		○	◎	RI0000～RI000F	16 points
Holding relay(PLCH operation)		●	◎	RI1000～RI100F	16 points
Input relay		×	◎	I00000～I00072	
Output relay(PLCL operation)		○	◎	O00000～O0004F	
Latch relay (PLCL operation)	Set coil	○	◎	LS0000～LS000F	Operate Coil only PLCL.
	Reset coil	○	◎	LR0000～LR000F	
	Contact	×	◎	LC0000～LC000F	
Latch relay (PLCH operation)	Set coil	●	◎	LS1000～LS1007	Operate Coil only PLCH.
	Reset coil	●	◎	LR1000～LR1007	
	Contact	×	◎	LC1000～LC1007	
On differential Relay (PLCL operation)	Coil	○	◎	US0000～US000F	Operate Coil only PLCL.
	Contact	×	◎	UC0000～UC000F	
OFF differential relay (PLCL operation)	Coil	○	◎	DS0000～DS000F	
	Contact	×	◎	DC0000～DC000F	
ON differential relay (PLCH operation)	Coil	●	◎	US1000～US1007	Operate Coil only PLCH.
	Contact	×	◎	UC1000～UC1007	
OFF differential relay (PLCH operation)	Coil	●	◎	DS1000～DS1007	
	Contact	×	◎	DC1000～DC1007	
ON-timer relay (PLCL operation)	Coil	○	◎	TS0000～TS000F	Operate Coil only PLCL Set time : 00.01S(10ms)～ 10M55S
	Contact	×	◎	TD0000～TD000F	
OFF-timer relay (PLCL operation)	Coil	○	◎	TR0000～TR000F	
	Contact	×	◎	TC0000～TC000F	

4-4-4. Selection/Setting method of Dataflow-block

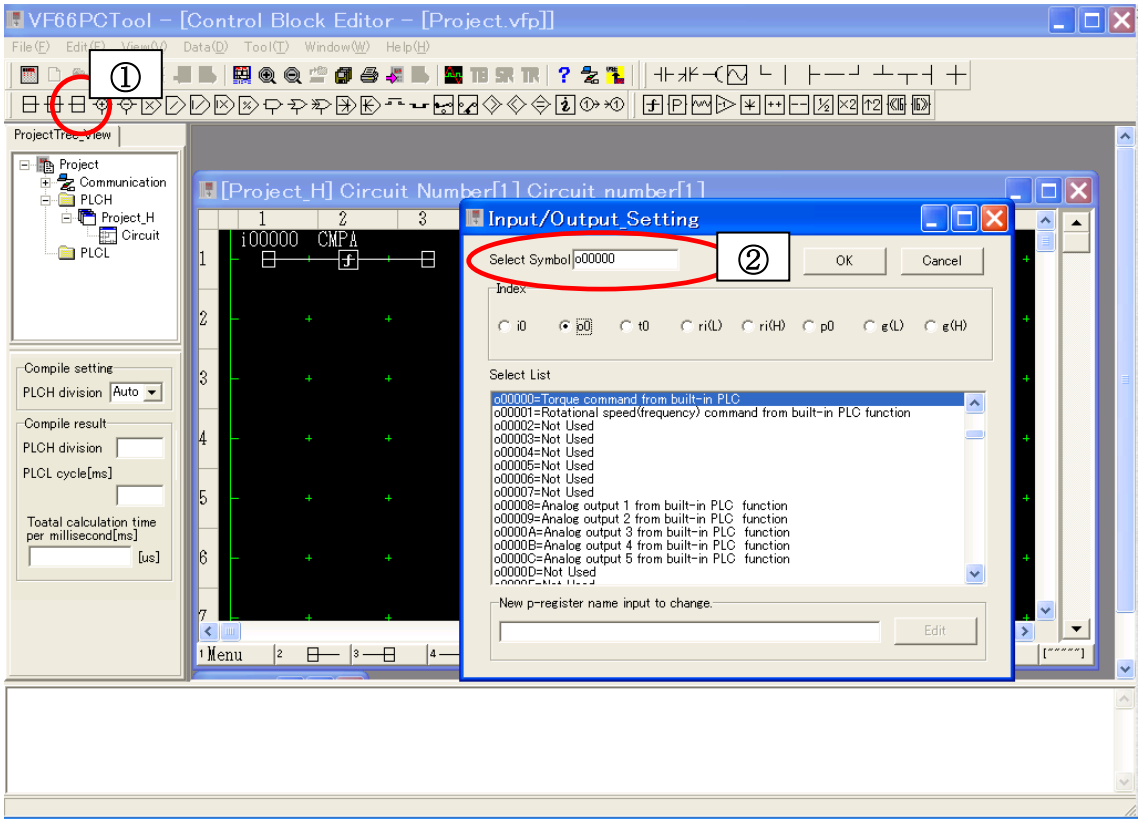
Kinds of Dataflow-block and operation time are as follows.

・Dataflow-block

Name	Symbol	Operation time	Name	Symbol	Operation time
Load		0.113μs	Contact c (1)		0.175μs
Store		0.225μs	Contact c (2)		0.175μs
Load and Store			Compare high		0.100μs
Addition		0.088μs	Compare low		0.100μs
Subtraction		0.100μs	Compare equal		0.113μs
Multiplication		0.150μs	Sign Conversion		0.088μs
Division		1.300μs	Local constant integer		0.113μs
Remainder		1.150μs	Absolute value Conversion		0.125μs
Multiplication (Base 20000)		1.325μs	Complement of 1		0.088μs
Division (Base 20000)		1.425μs	Increment		0.088μs
AND		0.088μs	Decrement		0.088μs
OR		0.088μs	One half		0.088μs
EXOR		0.088μs	Double		0.088μs
High-level priority		1.400μs	Spuare		1.200μs
Low-level priority		0.138μs	P-area parameter Coefficient		0.175μs
Contact a		0.175μs	Right shift		0.100μs
Contact b		0.175μs	Left shift		0.088μs
Connector load		0.100μs	Connector store		0.088μs

In the figure below, when store of Dataflow-block is arranged.

1. Select store (①), “Input-Output_Setting” is displayed.
2. Select data from a list, the data is displayed at [Select symbol](②).
3. Click [OK] and so the symbol of the selected data is displayed in the circuit.



Details of store and load are as follows.

[Mean of Symbols]

◎:Operated by both PLCL and PLCH　　○:Operated by PLCL only

●:Operated by PLCH only　　×: Inoperable

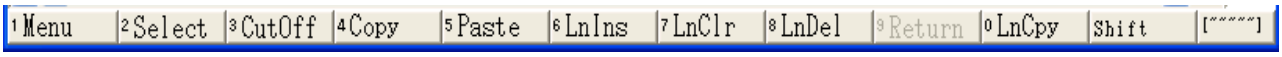
Name	Store	Load	Register Name	Remarks
Trace-back register	◎	◎	t00000～t0000B	12 points
Global register(for PLCL)	○	◎	g00000～g0007F	Max 128 points*1
Global register (for PLCH)	●	◎	g01000～g0107F	Max 128 points*1
Preservation register(for PLCL)	○	◎	ri0000～ri000F	Max 16 points*1
Preservation register (PLCH operation)	●	◎	ri1000～ri100F	Max 16 points*1
p-register (Synchronizes with console *P area.*)	×	◎	p00000～p00063	P-00～P-99*1 (Max 100 points)
Input register	×	◎	i00000～i00031	50 points
Output register	●	◎	o00000～o0001E	31 points

*1: The maximum number is changed by construction of program.

4-4-5. Input auxiliary function

When the [Asist] section button is clicked, change to input auxiliary function as follows.

This function can paste the circuit with the copy and package deleting.



[1. Menu]

Back to circuit edit from input auxiliary function.

[2. Select]

The head of the copied part is specified.

[3. CutOff]

Cut off selected parts.

[4. Copy]

Copy selected parts.

[5. Paste]

The data that is copied or cut is pasted in the place that the cursor shows.

[6. LnIns]

One line is inserted in the line that the cursor shows.

[7. LnClr]

All symbols of the line that the cursor shows are deleted.

[8. LnDel]

One line is deleted in the line that the cursor shows, and close up.

[9. Return]

Reverse the last action, when you execute **LnClr** or **LnDel**.

[10. LnCpy]

One line is copied in the line that the cursor shows, and paste to the following line.

[Shift]

※not in use

[" " " " "] or [_ _ _ _ _]

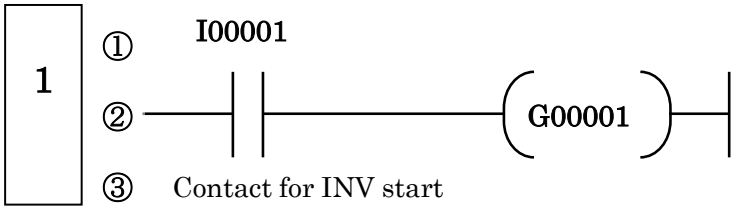
The buttons indicate at upper side or bottom side in the window.

4-4-6. Comment

You can write comments of twelve words in thirteenth row of circuit.

Also, for only Ladder-block, comments are written in the bottom of block as follows.

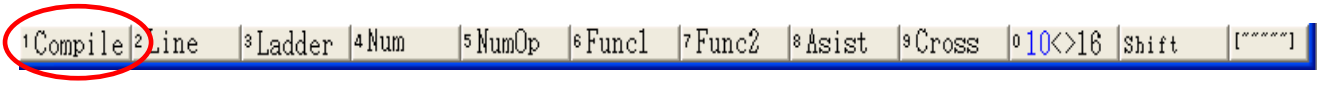
When not set block, comments are written in the third row. (Input to the part in figure below ③).

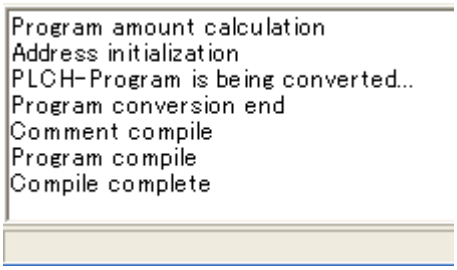


4-4-7. Compile

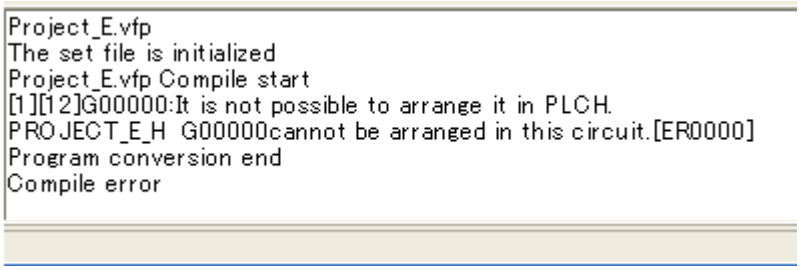
When the edit ends, click [Compile] of the section button. The code conversion processing to build it in an inverter is executed; “Compile Complete!” is displayed at a log of lower window, if without errors.

When the mistake is found in the edit, “Compile Error” is displayed. At the same time, substances of the error are displayed. Edit again referring to the error.



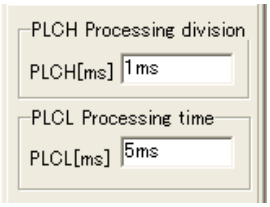


Compile completed

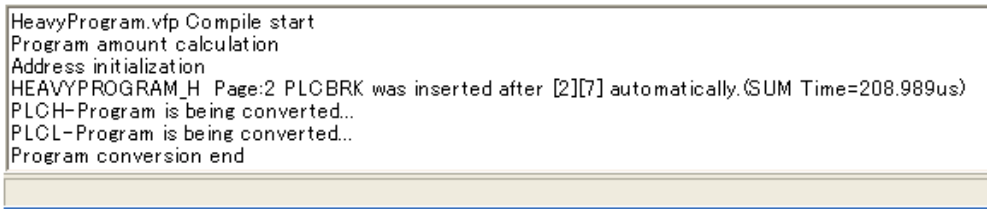


Compile Error

PLCH division time and PLCL processing time are depending on compile. The time is displayed at items under “ProjectTree_View”. Also when PLCBRK is automatically inserted, the position is displayed at log column.



Processing division/time



PLCBRK inserted automatically

If the error occurred, the following are confirmed.

- Ladder-block and Dataflow-block are connected.
- Unconnected part somewhere
- A block is set in the table that cannot be set.
- The input symbol is connected as an output symbol.
- It connects to input symbol at as output, or the contrary case.

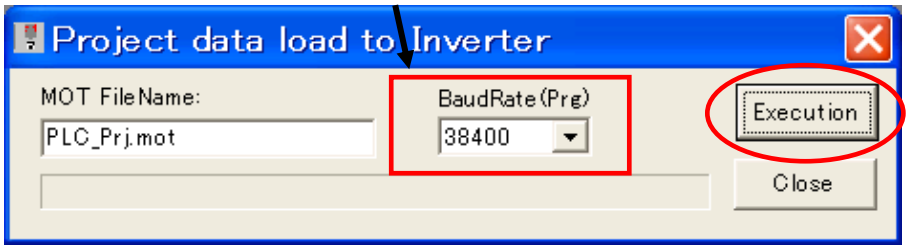
※Refer to **4-7. Error message**

4-4-8. Write in inverter

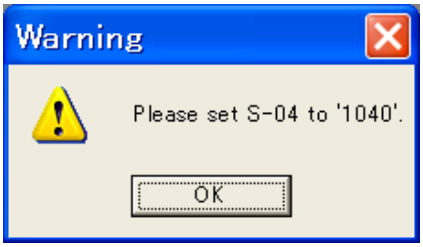
After finishing compile, generated code (MOT file) is written in an inverter. The dialog below is displayed after you click [Data] - [Project data write to INV] in the main menu.

Make sure whether the inverter is connected to user's PC by USBIF66, and then click [Execution].

When the error occurs while writing it, BaudRate is set small.



After click, the messages below are displayed. Set *S-04* to "*1040*" by consol panel (SET66-Z) and then push "SET" button on consol panel.

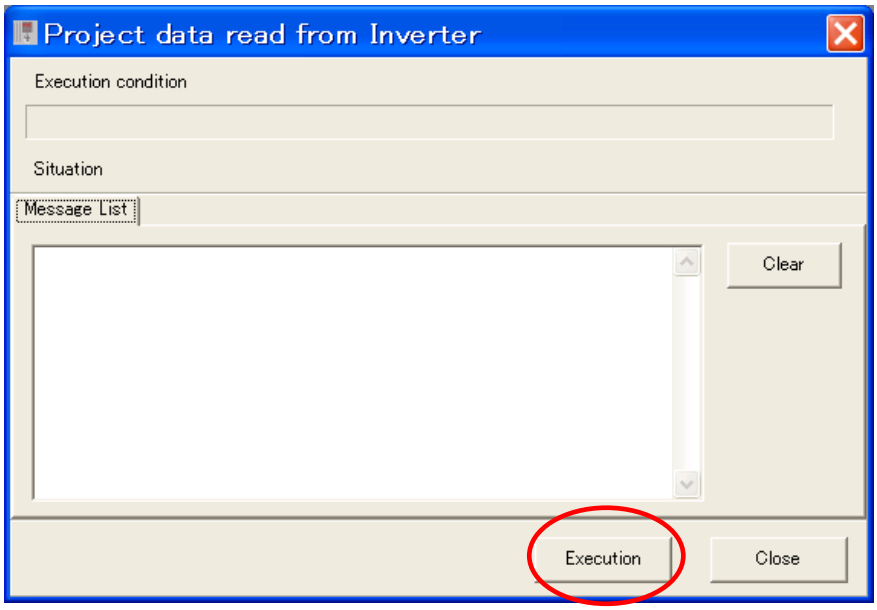


When you click [OK], writing starts.

4-4-9. Reading from inverter

The data read from an inverter is displayed in user's PC. The figure below is displayed after you click [Data] - [Project data read from INV] in the main menu.

When you click [Execution], save dialog is displayed. And then the project name and the preservation place are specified. If you finish completely reading all data without trouble, "All changing completed" message is displayed at message list.

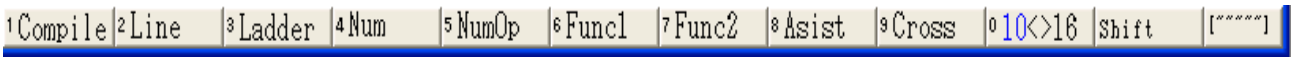


4-4-10. Other edit methods

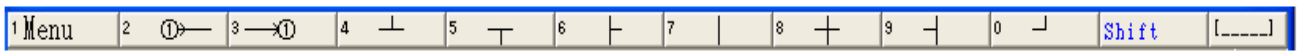
As other edit methods, as follows.

① Section button when circuit is edited.

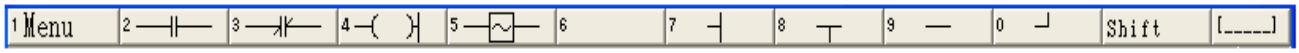
When [2. Line]～[7. Func2] buttons clicked, function of button is change as follows.

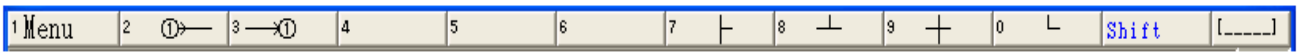


[2. Line]

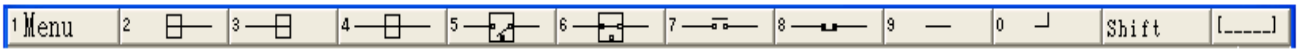


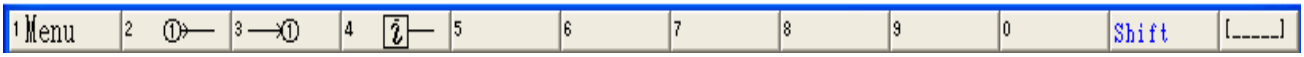
[3. Ladder]



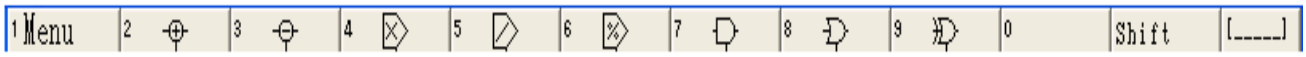


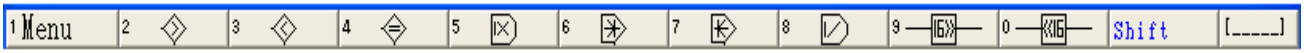
[4. Num]



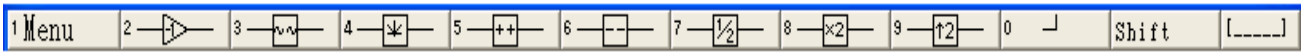


[5. NumOp]

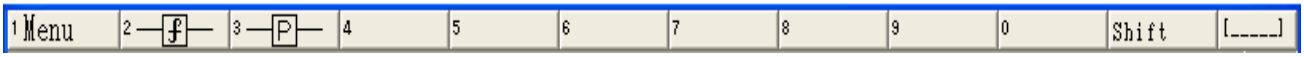




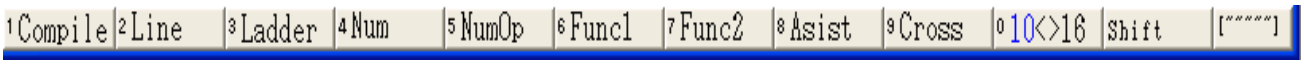
[6. Func1]



[7. Func2]



[8. Asist]



[9. Cross]

Cross-reference function executes. (Refer to **4-3.**)

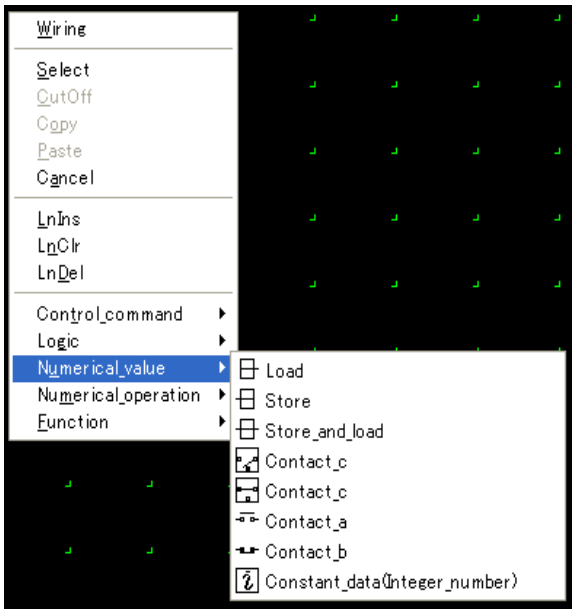
[“ “ “ “ “] or [_ _ _ _ _]

The display of the button is changed the upper side or lower of the window.

② Popup menu button of circuit edit window

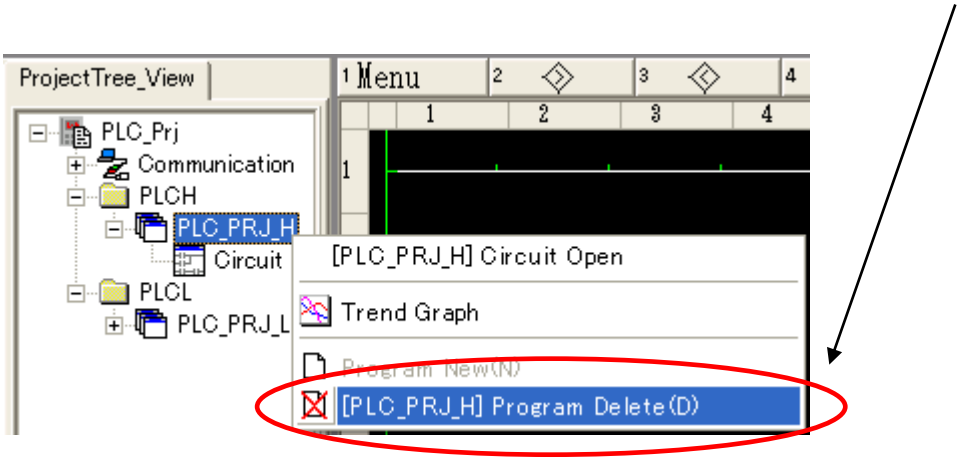
Right click with the mouse in circuit edit window; the popup menu below is displayed.

Each menu is same as the previous contents.



4-4-11. Circuit deletion

When you wish to delete the circuit, It right-clicks in the circuit to be deleted in “ProjectTree_View”, then the popup menu is displayed and select [Program Delete].



4-5. Monitor mode

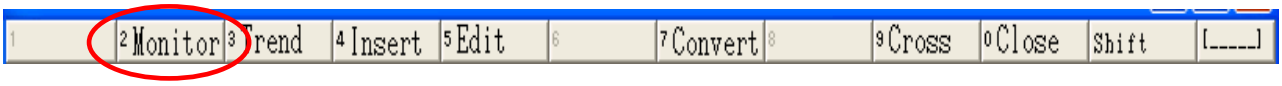
4-5-1. Monitor mode

The state of Ladder-block and the value of Dataflow-block written in an inverter are in real time displayed in the circuit edit window.

(*Cannot use **Trend mode** together.)

4-5-2. Operation proceed of monitor mode

1. Confirm whether the inverter is connected to user's PC by USBIF66.
2. Click [Data] - [Project data read from inverter] in the main menu.
   (*When written in an inverter after compile, go to 5.)
3. The project file name and the preservation place are specified.
4. Open the project file.
5. Open the circuit edit window to be monitored.
6. Click [Monitor] of the section button in the circuit edit window, also click [File]-[Monitor mode] in the main menu.

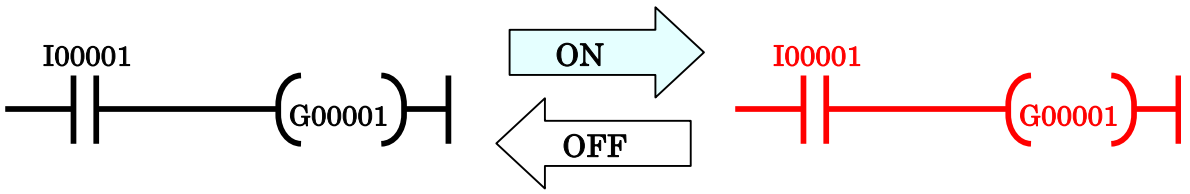


4-5-3. Status display

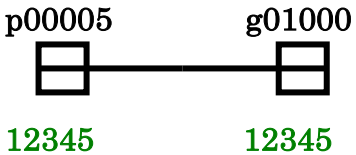
It becomes red when becoming turning on at the relay (OFF: Hold).

The value is displayed under each block for the register.

[Relay]



[Register]



4-6. Trend mode

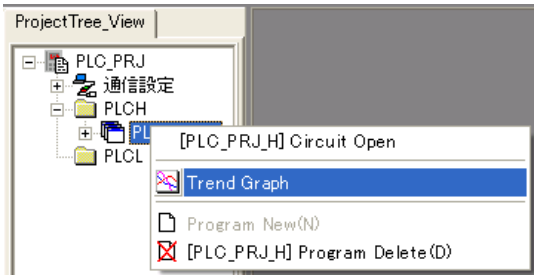
4-6-1. Trend mode

The state of Ladder-block and the value of Dataflow-block written in an inverter are in real time displayed in the graph.

(*Cannot use **Monitor mode** together.)

4-6-2. Operation proceed of trend mode

1. Confirm whether the inverter is connected to user's PC by USBIF66.
2. Click [Data] - [Project data read from inverter] in the main menu.
   (※When written in an inverter after compile, go to 5.)
3. The project file name and the preservation place are specified.
4. Open the project file.
5. Open the circuit edit window to be monitored.
6. Click [Trend] of the section button in the circuit edit window, also right-clicks in the circuit to be monitored, then select [Trend Graph] in the popup menu.
7. Display the graph window.
8. Set up channel and describe graph.



4-6-3. Describe graph

When right-click with mouse on graph window, popup menu is displayed.

[Stop / ReStart]

Drawing stop and re-drawing by restart.

[Ruled line display]

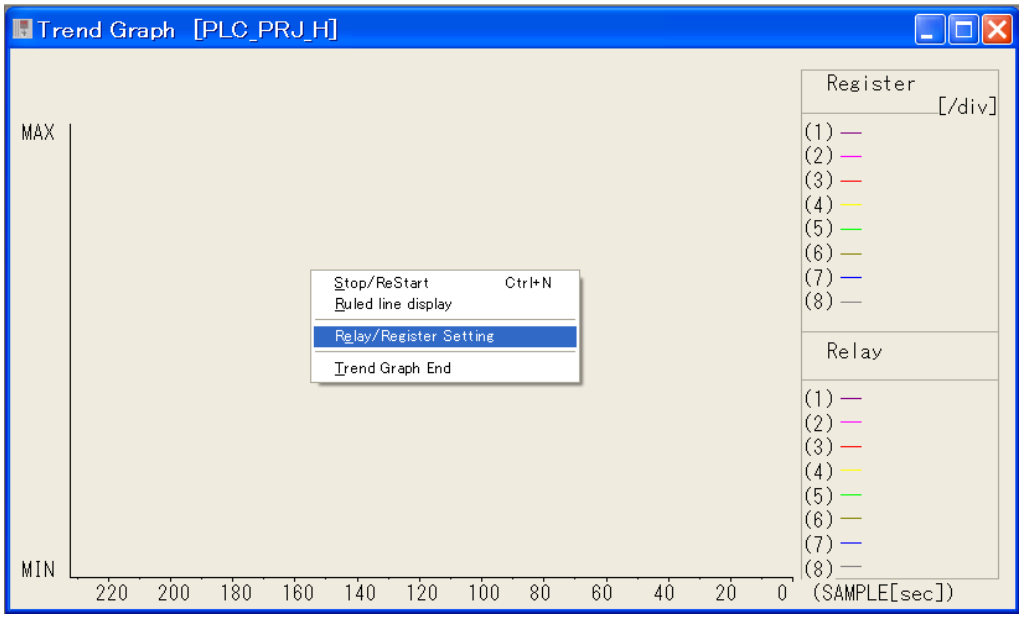
Grid is display or no display.

[Relay/Register setting]

The window to set relay and register is displayed.

[Trend Graph End]

Trend Graph Mode is canceled.

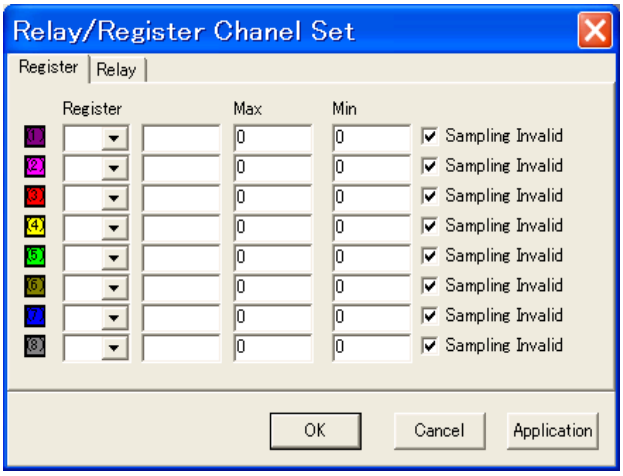


4-6-4. Set description

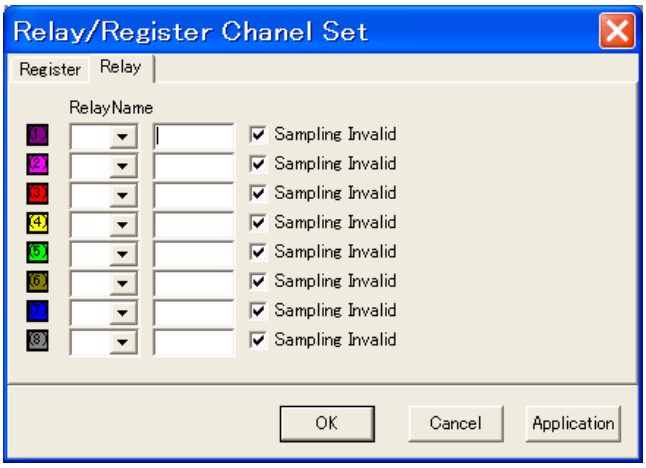
The set window below is displayed when you operate [Relay/Register Setting] at menu.

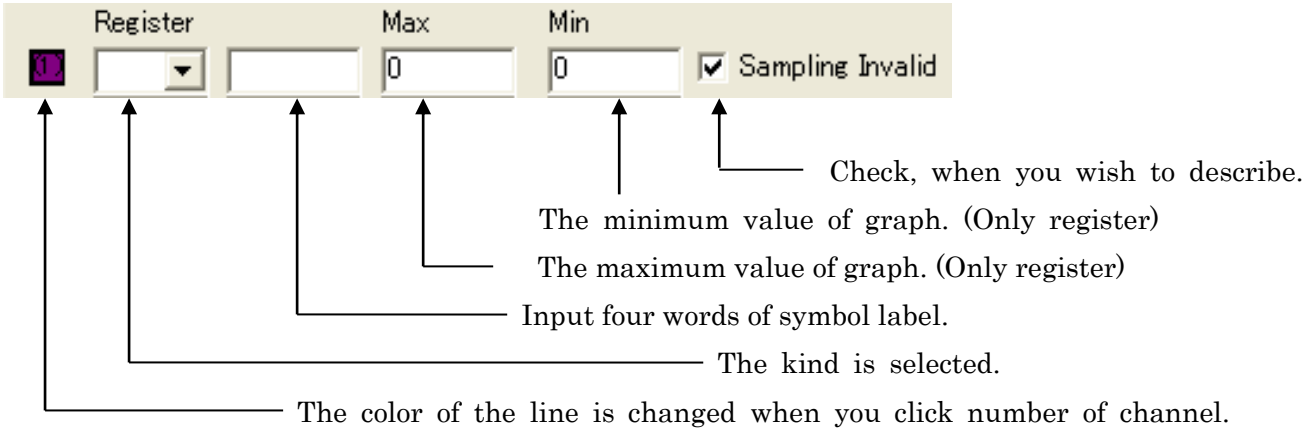
[OK] is clicked after each items set.

・Register



・Relay





4-7. Error message

The explanation of each error and the method of settlement are shown in the following.

Error code	Method of settlement
ER0000	The arrangement of the symbol is a mistake. Confirm connection at block. Whether the block of a different character is connected is confirmed.
ER0001	The symbol not defined is used. The symbol that has not been described to this manual cannot be used.
ER0002	The system file is not found, so software cannot be normally executed. Uninstall the software, and then re-install. (※We recommend you take backups just in case.)
ER0003	The error is whether you take input relay and contact instead of coil, or whether you take *i0-register* or *p-register* instead of store. It is not possible to use it as a coil/store for loading data alone.
ER0004	The label of the set symbol exceeded the setting range. It is corrected that the setting range is not exceeded.
ER0005	The amount of the program of PLCH exceeded capacity. It is necessary to decrease the amount of the program of PLCH.
ER0006	The amount of a total program including the comment exceeded capacity. It is necessary to decrease the comment or the program.
ER0007	The capacity of a temporary memory was exceeded because there were a lot of numbers of *OR circuits*. It is necessary to decrease the number of *OR circuits*.
ER0008	The capacity of a temporary memory was exceeded because there were a lot of numbers of branch. It is necessary to decrease the number of branch of the Dataflow-block.
ER0009	The number of total use of *g0-register* and *p-register* exceeded the upper bound. It is necessary to decrease the number of use.
ER0010	The number of total use of *ri-register* exceeded the upper bound. It is necessary to decrease the number of use.
ER0011	The label of not being possible to use it by register or relay is set. It corrects it to an appropriate label.
ER0012	There is an item not set in Control-block. After it sets it, re-compile.
ER0013	The store and other blocks are arranged without data loading. Arrange various blocks after arranging loading (Dataflow-block).
ER0014	When the bit data is used, the contact is necessary for the row.

ER0015	It is necessary to arrange the contact before logic inversion.
ER0016	It confirms it because there is a possibility that the block of a different attribute is connected.
ER0017	The label only for the coil is used for the contact. The label of the contact is confirmed and corrected.
ER0018	The symbol only for the input is used as an output. The symbol is confirmed and corrected.
ER0019	There is a circuit with which the output is not connected. The terminal of the circuit should connect the terminal symbol.
ER0020	Capacity in which the operation result of Control-block is preserved is insufficient. Control-block preserves the operation result in the same area as *g0-register* (include *p0-register*). Therefore, when there are a lot of numbers of use of register, the preserved area cannot be secured and it becomes an error. To solve this problem; 1. The number of use of registers is decreased. 2. The number of use of Control-block is decreased. However, possession amount of save area is different by Control-block.
ER0021	*i0-register* or *p-register are* set to a set item of Control-block. Set output registers.

※ We do not guarantee, when you write with ignoring error messages.

Chapter_5 Convert from 64 series

Convert from 64Series automatically converts parameter of 64Series inverter into VF66 series inverter. (Not possible to convert it according to the condition.).

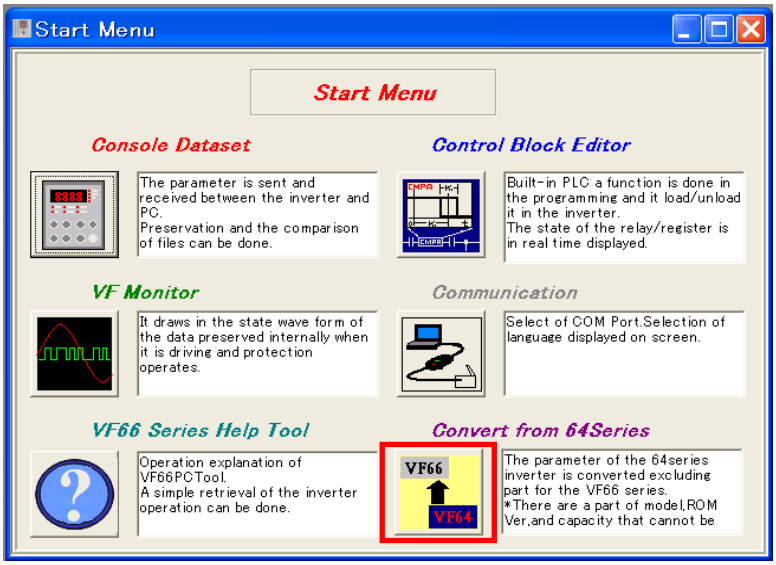
After the converting, CDS files are made. And it is possible to use it by *Console Dataset*.

5-1. Start Convert from 64Series

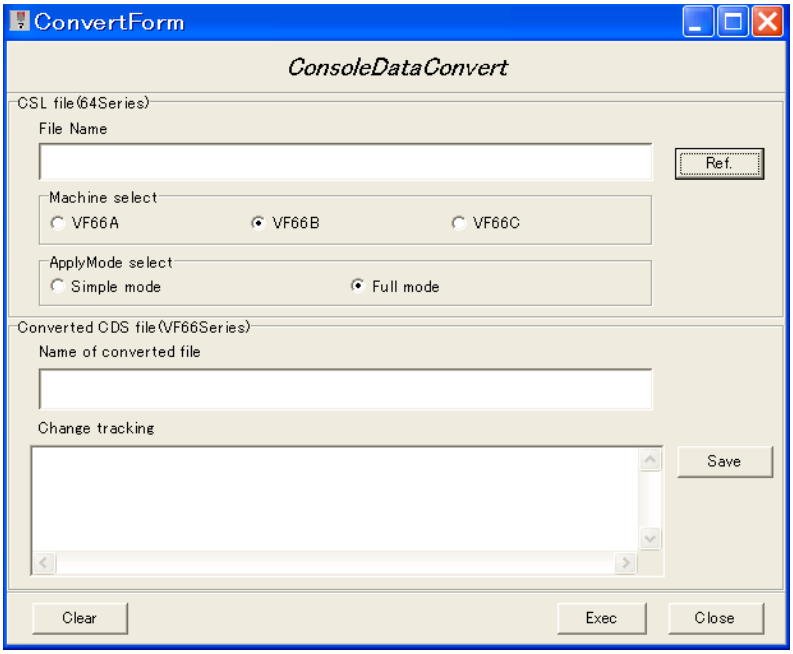
Start **Convert from 64Series** by the following procedure.

[1] Start Convert from VF64Series

[Convert from 64Series] is selected from the start menu, Convert from 64Series is started.



[2] Convert from 64Series window is displayed



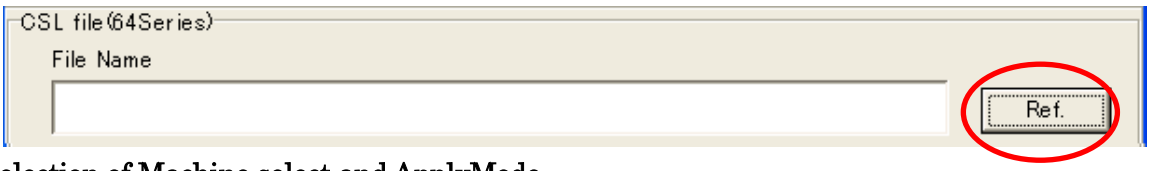
5-2. Convert a parameter file

To convert the parameter file, follow these steps.

[1] Selection of 64Series parameter file

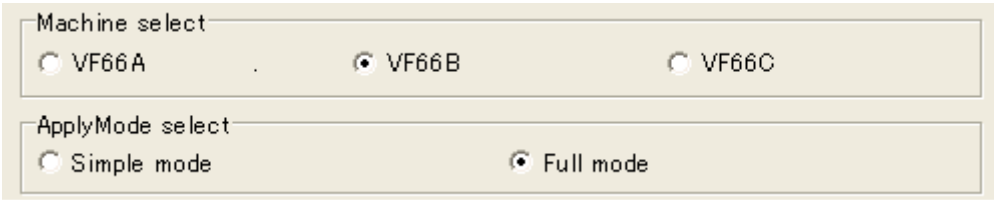
The parameter file of *64Series inverter (.csl)* is selected by click [Ref.] button.

Full pass of selected file is displayed at **File Name**.



[2] Selection of Machine select and ApplyMode

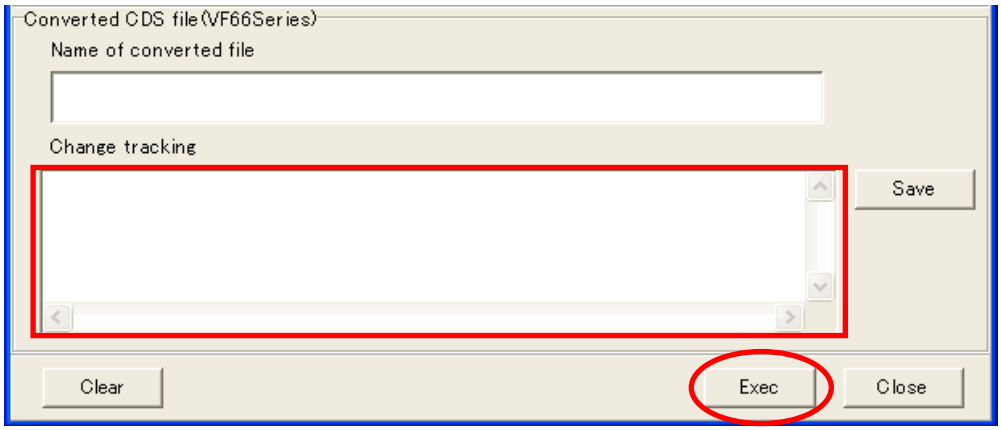
Machine select and **ApplyMode select** of applied an inverter are selected.



[3] Execution

[Exec] is clicked; the conversion of parameter is executed. When a set value is changed by the specification while converting it, the changed contents is displayed at **Change tracking**.

If you wish to save the change tracking, click [Save]. Also all columns are deleted by [Clear].



[4] End of conversion

When end the conversion, CDS file is generated. Full pass name of the file is displayed at **Name of converted file**.

The list below is convertible ROM version of 64Series VFC control board.

Model	Convertible 64Series ROM version
VF64	02-A1,02-A2,02-A4～-A7,21-A1,21-B1～-B9
VF64A	A1-A2,A1-B1～-B9
ED64sp	02-A2,02-A4～-A9,02-B1-～B8,21-A1～-A3,21-B1,21-B2,21-B9,21-C1～-C9
ED64A	A1-A1,A1-B1,A1-B2,A1-C1～-C9

5-3. Convert items of parameter

At converting 64Series parameter into 66Series parameter, the data is copied. But, apply the data to equation of conversion, set to initial value by each item.

The list below is shows the changed content of each item of each control mode.

【Note】

* Multi input terminal function is different with 64Series. Confirm set value of terminals and wiring.
* i-22～32(only Vector mode) are used for special mode of ASYC66-Z(Communication option).
* Dead time (A-11~-16): If control mode is vector, necessary to execute auto tuning.

【1】VF66B induction motor V/f mode(IM-V/f)

VF66B Series V/f mode (File converted)		VF64,VF64A Series O mode(Old file)	
Item	Item contents	Item	Changed contents
Standard area	Standard set items for driving	Standard area	Data is copied
A-00~-07	Motor specification	A-00~-07	Data is copied
A-09	PWM career frequency	A-10	Upper Limit 6.0[kHz]
A-11~-16	Dead time compensation amount	A-11~-16	Our dead time of each capacity is set
A-17	Motor primary resistance	A-17	Conversion is applied
b-00	Setting data rewrite protection	-	Set default value
b-01	Stop mode selection	b-03	Data is copied
b-02	Stop frequency	b-04	Data is copied
b-03	DC brake operation time	b-05	Data is copied
b-05	JOG stop mode selection	b-07	Data is copied
b-06	JOG stop frequency	b-08	Data is copied
b-07	Instantaneous power interruption restart	b-11	Data is copied
b-08	Reverse prohibition mode selection	b-12	Data is copied
b-09	Command place when coupled	b-15	Data is copied
b-10	Frequency commanding place selection	b-16	Data is copied
b-11	Operation commanding place selection	b-17	Data is copied
b-12	JOG commanding place selection	b-18	Data is copied
b-13	Powering torque limit	E-00	Data is copied
b-14	Regenerative torque limit	E-01	Data is copied
b-15	Powering torque limit usage selection	E-02	Data is copied
b-16	Regenerative torque limit usage selection	E-03	Data is copied
b-17	Analog frequency command characteristic selection	G-02	If used Pulse train by G-00(Analog speed command) of 64Series, set 1. Besides above case, data is copied.

VF66B Series V/f mode (File converted)		VF64,VF64A Series O mode(Old file)	
Item	Item contents	Item	Changed contents
b-18	Analog frequency command upper limit frequency	G-03	Data is copied
b-19	Analog frequency command upper limit frequency	G-04	Data is copied
b-20	Analog input Zero limit voltage	G-05	Data is copied
b-21	Analog output (1) characteristics selection	G-06	Data is copied
c-00	Selection of multifunction input position	c-00	Data is copied
c-01~-05	Multi-function input terminal (1) ~ (5) function selection	-	Set default value
c-06	Multi-function input terminal (6) function selection	c-01	Data is copied
c-07	Multi-function input terminal (7) function selection	c-02	Data is copied
c-08	Multi-function input terminal (8) function selection	c-03	Data is copied
c-09	Multi-function input terminal (9) function selection	c-04	Data is copied
c-10	Multi-function input terminal (10) function selection	c-05	Data is copied
c-11	Multi-function input terminal (11) function selection	c-06	Data is copied
c-12~-17	Multifunction input terminal (12)～(17) function selection	-	Set default value
d-00~-14	Accel / decal time and S pattern accel / decal selection	d-00~-14	Data is copied
d-15	Preset frequency (1)	H-00	Data is copied
d-16	Preset frequency (2)	H-01	Data is copied
d-17	Preset frequency (3)	H-02	Data is copied
d-18	Preset frequency (4)	H-03	Data is copied
d-19	Preset frequency (5)	H-04	Data is copied
d-20	Preset frequency (6)	H-05	Data is copied
d-21	Preset frequency (7)	H-06	Data is copied
d-22	Jump frequency (1)	d-18	Data is copied
d-23	Jump frequency (2)	d-19	Data is copied
d-24	Jump frequency (3)	d-20	Data is copied
d-25	Jump frequency (4)	d-21	Data is copied
d-26	Jump frequency width	d-22	Data is copied
d-27	MRH function usage selection	d-23	Data is copied
d-28	MRH upper limit frequency	d-24	Data is copied
d-29	MRH lower limit frequency	d-25	Data is copied
E-00	Regeneration stall prevention function usage selection	b-13	Data is copied

VF66B Series V/f mode (File converted)		VF64,VF64A Series O mode(Old file)	
Item	Item contents	Item	Changed contents
E-01	Regeneration stall prevention Voltage	F-00	Decimal point position of set value is changed
E-02	Start mode selection	b-02	Data is copied
E-03	Forward direction change	-	Set default value
E-04	Simulation mode	-	Set default value
E-05	Autoboost mode	b-09	Data is copied
E-06	Restart delay time	b-06	Data is copied
E-07	V/f pattern selection	E-04	Data is copied
E-08	Voltage at turnoff point	E-05	Data is copied
E-09	Frequency at turnoff point	E-06	Data is copied
F-00	Built-in DB (dynamic brake) operation level	F-00	Data is copied
F-01	Forward over frequency setting	F-01	Conversion is applied
F-02	Reverse over frequency setting	F-02	Conversion is applied
F-03	Overload protection setting	F-03	Data is copied
F-04	Cumulative operation timer (1-Capasitor)	-	Set default value
F-05	Cumulative operation timer (2-Fan)	-	Set default value
F-06	Motor overheat protection operation selection	F-12	Data is copied
F-07	Protection relay (86A) operation selection upon power failure	F-13	Data is copied
F-08	Protection retry count setting	F-14	Data is copied
F-09	External failure (1) detection delay Time	-	Set default value
F-10	External failure (2) detection delay Time	-	Set default value
F-11	External failure (3) detection delay Time	-	Set default value
F-12	External failure (4) detection delay Time	-	Set default value
F-13	Traceback pitch	F-15	Data is copied
F-14	Traceback trigger point	F-16	Data is copied
F-15~-26	Traceback CH selection	F-17~-28	Set default value
G-00	Temperature detection selection	-	If used by F-12=1 of 64Series, set 2. Except the above case, 0 is set.
G-01	Temperature detection offset adjustment	G-19	Data is copied
G-02	Temperature detection gain adjustment	G-20	Data is copied
G-03	Analog input (2) characteristics selection	G-11	Set value of 64 series+1
G-04	Analog input (2) upper limit frequency	G-12	Data is copied

VF66B Series V/f mode (File converted)		VF64,VF64A Series O mode(Old file)	
Item	Item contents	Item	Changed contents
G-05	Analog input (2) lower limit frequency	G-13	Data is copied
G-06	Analog input (3) characteristics selection	-	If used Pulse train by G-00(Analog speed command) of 64Series, set 3. Besides above case, set 1.
G-07	Analog input (3) upper limit frequency	-	Set default value
G-08	Analog input (3) lower limit frequency	-	Set default value
G-09	Analog output (2) characteristics Selection	G-16	If set value of 64 series is 8 or more: Set value of 64 series-8 0~7: Data is copied
G-10	Analog output (3) characteristics selection	G-16	Data is copied
G-11	Analog input (4) characteristics selection	-	Set default value
G-12	Analog input (5) characteristics selection	-	Set default value
G-13	Analog output (4) characteristics selection	-	Set default value
G-14	Analog output (5) characteristics selection	-	Set default value
G-15	Line speed monitor adjustment	n-00	Data is copied
G-16	Analog input monitor display selection	-	Set default value
H-00	Multifunction output terminal (1) function selection	c-07	Data is copied
H-01	Multifunction output terminal (2) function selection	c-08	Data is copied
H-02	Multifunction output terminal (3) function selection	c-09	Data is copied
H-03	Multifunction output terminal (4) function selection	c-10	Data is copied
H-04	Multifunction output terminal (5) function selection	-	Set default value
H-05	Multifunction output terminal (6) function selection	-	Set default value
H-06	Frequency detection (1)	c-11	Data is copied
H-07	Frequency detection (2)	c-12	Data is copied
H-08	Frequency detection width	c-13	Data is copied
H-09	Torque detection (with polarity)	c-14	Data is copied
H-10	Torque detection (absolute value)	c-15	Data is copied
H-11	Overload pre-alarm operation level setting	c-16	Data is copied
H-12	Maximum frequency reduction rate	c-17	Data is copied
i-00	PLCL function usage selection	b-14	Set default value
i-01	PLCH function usage selection	b-00	Set default value

VF66B Series V/f mode (File converted)		VF64,VF64A Series O mode(Old file)	
Item	Item contents	Item	Changed contents
i-02	Droop control usage selection	i-00	Data is copied
i-03	Droop start frequency	i-01	Data is copied
i-04	Droop rate changeover frequency	i-02	Data is copied
i-05	Droop rate	i-03	Data is copied
i-06	Droop start torque	i-04	Data is copied
J-00	Digital communication option selection	J-00	Set default value
J-01~-08	Communication option selection	J-01~-08	Data is copied
J-09	DNET66-Z output instance number setting	J-17	Data is copied
J-10	DNET66-Z input instance number setting	J-18	Data is copied
J-11	DNET66-Z speed scale setting	J-19	Data is copied
J-12	DNET66-Z monitor data number setting	J-20	Data is copied
J-13	Highspeed response input selection	-	Set default value
J-14	Date/Time data selection from communication	-	Set default value
J-15	Connected number of outside DB (Dynamic Brake) units with communication	-	Set default value
L area	Analog input/output setting	-	Set default value
n-00	Inverter control mode	S-01	Data is copied
n-01	Capacity / voltage class	S-02	Data is copied
P area	P register constant setting	-	Set default value

【2】VF66B Induction motor Vector mode(IM-V)

VF66B Series IM Vector mode (File converted)		VF64,VF64A Series S/V mode(Old file)	
Item	Item contents	Item	Changed contents
Standard area	Standard set items for driving	Standard area	Data is copied
A-00~-07	Motor specification	A-00~-07	Data is copied
A-08	Number of PG-pulse	A-09	Data is copied
A-09	PWM career frequency	A-10	Upper Limit 6.0[kHz]
A-10	PG selection	-	Control mode of 64Series is S mode: Set 0 V mode: Set 1
A-11~-16	Dead Time compensation amount	A-11~-16	Our dead time of each capacity is set
A-17	Motor primary resistance	A-17	Conversion is applied
A-18	Motor secondary resistance	A-18	Conversion is applied
A-19	Motor leakage inductance	A-19	Conversion is applied
A-20	Motor mutual inductance	A-20	Conversion is applied
A-21	Motor inductance saturation coefficient (1)	A-21	Data is copied
A-22	Motor inductance saturation coefficient (2)	A-22	Data is copied
A-23	Motor core loss torque compensation	-	Conversion is applied
A-24	Motor loss coefficient (1)	A-24	Data is copied
A-25	Motor loss coefficient (2)	A-25	Data is copied
b-00	Setting data rewrite protection	-	Set default value
b-01	Stop mode selection	b-03	Data is copied
b-02	Stop speed	b-04	If 64Series sensor less mode, Conversion is applied. Besides above case, data is copied.
b-03	DC brake operation time	b-05	Data is copied
b-04	DC brake gain	b-06	Data is copied Lower limit 20.0[%]
b-05	JOG stop mode selection	b-07	Data is copied
b-06	JOG stop speed	b-08	Conversion is applied
b-07	Instantaneous power interruption restart	b-11	Data is copied
b-08	Reverse prohibition mode selection	b-12	Data is copied
b-09	Command place when coupled	b-15	Data is copied
b-10	Speed commanding place selection	b-16	Data is copied
b-11	Operation commanding place selection	b-17	Data is copied
b-12	JOG commanding place selection	b-18	Data is copied
b-13	Forward powering torque limit	E-00	Data is copied
b-14	Forward regenerative torque limit	E-01	Data is copied

VF66B Series IM Vector mode (File converted)		VF64,VF64A Series S/V mode(Old file)	
Item	Item contents	Item	Changed contents
b-15	Reverse powering torque limit	E-02	Data is copied
b-16	Reverse regenerative torque limit	E-03	Data is copied
b-17	Analog speed command characteristic selection	G-02	If used Pulse train by G-00(Analog speed command) of 64Series, set 1. Besides above case, data is copied.
b-18	Analog speed command upper limit speed	G-03	Data is copied
b-19	Analog speed command lower limit speed	G-04	Data is copied
b-20	Analog input Zero limit voltage	G-05	Data is copied
b-21	Analog output (1) characteristics selection	G-06	Data is copied
c-00	Multifunction input place selection	c-00	Data is copied
c-01~-05	Multi-function input terminal (1) ~ (5) function selection	-	Set default value
c-06	Multi-function input terminal (6) function selection	c-01	Data is copied
c-07	Multi-function input terminal (7) function selection	c-02	Data is copied
c-08	Multi-function input terminal (8) function selection	c-03	Data is copied
c-09	Multi-function input terminal (9) function selection	c-04	Data is copied
c-10	Multi-function input terminal (10) function selection	c-05	Data is copied
c-11	Multi-function input terminal (11) function selection	c-06	Data is copied
c-12~-17	Multi-function input terminal (12) ~ (17) function selection	-	Set default value
d-00~-14	Accel / decal time and S pattern accel / decal selection	d-00~-14	Data is copied
d-15	Preset speed (1)	H-00	Data is copied
d-16	Preset speed (2)	H-01	Data is copied
d-17	Preset speed (3)	H-02	Data is copied
d-18	Preset speed (4)	H-03	Data is copied
d-19	Preset speed (5)	H-04	Data is copied
d-20	Preset speed (6)	H-05	Data is copied
d-21	Preset speed (7)	H-06	Data is copied
d-22	Jump speed (1)	d-18	Data is copied
d-23	Jump speed (2)	d-19	Data is copied
d-24	Jump speed (3)	d-20	Data is copied
d-25	Jump speed (4)	d-21	Data is copied
d-26	Jump speed width	d-22	Data is copied

VF66B Series IM Vector mode (File converted)		VF64,VF64A Series S/V mode(Old file)	
Item	Item contents	Item	Changed contents
d-27	MRH function usage selection	d-23	Data is copied
d-28	MRH upper limit speed	d-24	Data is copied
d-29	MRH lower limit speed	d-25	Data is copied
d-30	Speed deviation limiting command selection	d-15	Data is copied
d-31	Maximum deviation (positive)	d-16	Data is copied
d-32	Maximum deviation (negative)	d-17	Data is copied
E-00	Regeneration stall prevention function usage selection	b-13	Data is copied
E-01	Regeneration stall prevention voltage	F-00	Decimal point position of set value is changed
E-02	High-efficient mode usage selection	b-02	Data is copied
E-03	Forward direction change	-	Set default value
E-04	Simulation mode	-	Set default value
E-05	Torque command mode selection	E-05	Data is copied
E-06	Flux reinforcing rate at start	E-11	Data is copied
E-07	Current control proportion gain	E-12	Set default value
E-08	Current control integral gain (1)	E-13	Set default value
E-09	Current control integral gain (2)	E-13	Set default value
E-10	Motor temperature compensation	E-15	Data is copied
E-11	Flux-command	E-10	Data is copied
E-12	Motor cooling fan (Sensor-less drive)	A-08	Data is copied
F-00	Built-in DB (Dynamic Brake) operation level	F-00	Data is copied
F-01	Forward over speed setting	F-01	Conversion is applied
F-02	Reverse over speed setting	F-02	Conversion is applied
F-03	Over load protection setting	F-03	Data is copied
F-04	Cumulative operation timer (1-Capacitor)	-	Set default value
F-05	Cumulative operation timer (2-Fan)	-	Set default value
F-06	Motor overheat protection operation selection	F-12	Data is copied
F-07	Protection relay (86A) operation selection upon power failure	F-13	Data is copied
F-08	Protection retry count setting	F-14	Data is copied
F-09	External failure (1) detection delay time	-	Set default value
F-10	External failure (2) detection delay time	-	Set default value
F-11	External failure (3) detection delay time	-	Set default value

VF66B Series IM Vector mode (File converted)		VF64,VF64A Series S/V mode(Old file)	
Item	Item contents	Item	Changed contents
F-12	External failure (4) detection delay time	-	Set default value
F-13	Trace back pitch	F-15	Data is copied
F-14	Trace back trigger point	F-16	Data is copied
F-15~-26	Trace back CH selection	F-17~-28	Set default value
F-27	Over torque protection function selection	F-05	Data is copied
F-28	Over torque protect level setting	F-06	Data is copied
F-29	Over torque protection operation standard torque	F-07	Data is copied
F-30	Speed control error function usage selection	F-08	Data is copied
F-31	Speed control error detection speed width (positive)	F-09	Conversion is applied
F-32	Speed control error detection speed width (negative)	F-10	Conversion is applied
G-00	Temperature detection selection	-	If used by E-15=1 or F-12=1 of 64Series, set 2. Except the above case, 0 is set.
G-01	Temperature detection offset adjustment	G-19	Data is copied
G-02	Temperature detection gain adjustment	G-20	Data is copied
G-03	Analog input (2) characteristics selection	G-11	Set value of 64 series+1
G-04	Analog input (2) upper limit speed	G-12	Data is copied
G-05	Analog input (2) lower limit speed	G-13	Data is copied
G-06	Analog input (3) characteristics selection	-	If used Pulse train by G-00(Analog speed command) of 64Series, set 3. Besides above case, set 1.
G-07	Analog input (3) upper limit speed	-	Set default value
G-08	Analog input (3) lower limit speed	-	Set default value
G-09	Analog output (2) characteristics selection	G-16	If set value of 64 series is 8 or more: Set value of 64 series-8 0~7: Data is copied
G-10	Analog output (3) characteristics selection	G-16	Data is copied
G-11	Analog input (4) characteristics selection	-	Set default value
G-12	Analog input (5) characteristics selection	-	Set default value
G-13	Analog output (4) characteristics selection	-	Set default value
G-14	Analog output (5) characteristics selection	-	Set default value
G-15	Line speed monitor arrangement	n-00	Data is copied

VF66B Series IM Vector mode (File converted)		VF64,VF64A Series S/V mode(Old file)	
Item	Item contents	Item	Changed contents
G-16	Analog input monitor display selection	-	Set default value
H-00	Multifunction output terminal (1) function selection	c-07	Data is copied
H-01	Multifunction output terminal (2) function selection	c-08	Data is copied
H-02	Multifunction output terminal (3) function selection	c-09	Data is copied
H-03	Multifunction output terminal (4) function selection	c-10	Data is copied
H-04	Multifunction output terminal (5) function selection	-	Set default value
H-05	Multifunction output terminal (6) function selection	-	Set default value
H-06	Detected speed (1)	c-11	Data is copied
H-07	Detected speed (2)	c-12	Data is copied
H-08	Speed detection width	c-13	Data is copied
H-09	Torque detection (with polarity)	c-14	Data is copied
H-10	Torque detection (absolute value)	c-15	Data is copied
H-11	Overload pre-alarm operation level setting	c-16	Data is copied
H-12	Maximum speed reduction rate	c-17	Data is copied
i-00	PLCL function usage selection	b-14	Set default value Data is copied
i-01	PLCH function usage selection	b-00	Set default value Data is copied
i-02	Droop control usage selection	i-00	Data is copied
i-03	Droop start speed	i-01	Data is copied
i-04	Droop rate changeover speed	i-02	Data is copied
i-05	Droop rate	i-03	Data is copied
i-06	Droop start torque	i-04	Data is copied
i-07	Operation mode selection	b-01	Data is copied
i-08	Torque command input place selection	b-19	Data is copied
i-09	Analog torque command gain	G-14	Data is copied
i-10	Speed control proportion gain (2)	b-09	Data is copied
i-11	Speed control integral time constant (2)	L-19	Set default value
i-12	Speed control system moment of inertia (2)	-	Set default value
i-13	JOG proportion gain selection	b-10	Data is copied
i-14	ASR cancellation usage selection	E-06	Data is copied
i-15	ASR feed-forward usage selection	E-07	Data is copied
i-16	Variable structure proportion gain start speed	E-08	Data is copied

VF66B Series IM Vector mode (File converted)		VF64,VF64A Series S/V mode(Old file)	
Item	Item contents	Item	Changed contents
i-17	Variable structure proportion gain minimum gain percentage	E-09	Data is copied
i-18	Initial excitation selection	b-20	Data is copied
i-19	Mechanical loss compensation usage selection	i-05	Data is copied
i-20	Mechanical loss offset amount	i-06	Data is copied
i-21	Gradient of mechanical loss	i-07	Data is copied
i-22	Positing speed (0)	J-09	Data is copied
i-23	Positing speed (1)	J-10	Data is copied
i-24	Positing acceleration time	J-11	Data is copied
i-25	Positing deceleration time	J-12	Data is copied
i-26	Creep speed	J-13	Data is copied
i-27	Number of moving pulse within a creep period	J-14	Data is copied
i-28	Number of stop pulse	J-15	Data is copied
i-29	Positioning emergency stop selection	J-16	Data is copied
i-30	Proportion gain for positioning	L-18	Data is copied
i-31	Integral time constant for positioning	L-19	Data is copied
i-32	System moment of inertia for positioning	L-20	Data is copied
J-00	Digital communication option selection	J-00	Set default value
J-01~-08	ASYC66-Z/CC66-Z option baud rate	J-01~-08	Data is copied
J-09	DNET66-Z output instance number setting	J-17	Data is copied
J-10	DNET66-Z input instance number setting	J-18	Data is copied
J-11	DNET66-Z speed scale setting	J-19	Data is copied
J-12	DNET66-Z monitor data number setting	J-20	Data is copied
J-13	HighSpeed response input selection	-	Set default value
J-14	Date/Time data selection from communication	-	Set default value
J-15	Connected number of outside DB (Dynamic brake) units with communication	-	Set default value
L area	Analog input/output setting	-	Set default value
n-00	Inverter control mode	S-01	Data is copied
n-01	Capacity / voltage class	S-02	Data is copied
P area	P register constant setting	-	Set default value

【3】VF66B ED(IPMSM) motor Vector mode(ED-V)

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
Standard area	Standard set items for driving	Standard area	Data is copied
A-00~-06	Motor specification	A-00~-06	Data is copied
A-07	q-axis pulse pole	A-09	Data is copied
A-08	Number of PG-pulse determination current	A-07	Data is copied
A-09	PWM career frequency	A-08	Upper Limit 6.0[kHz]
A-10	PG selection	-	Control mode of 64Series is S mode: Set 0 V mode: Set 1 P mode: Set 2
A-11~-16	Dead time compensation amount	A-11~-16	Our dead time of each capacity is set
A-17	Motor primary resistance	A-17	Conversion is applied
A-18	Motor d-axis inductance	A-18	Conversion is applied
A-19	Motor q-axis inductance	A-19	Conversion is applied
A-20	Motor magnetic flux	A-20	Data is copied
A-21	Motor core loss torque compensation	-	Conversion is applied
A-22~-29	Lq-change rate at 30% q-axis current	A-22~-29	Data is copied
A-30	d-axis position (Magnetic Pole position)	A-30	Data is copied
A-31	Pole determination selection	A-31	Data is copied
A-32	d-axis measurement pulse width	A-32	Data is copied
A-33	d-axis measurement pulse voltage amplitude	A-33	Data is copied
b-00	Setting data rewrite protection	-	Set default value
b-01	Stop mode selection	b-03	Data is copied
b-02	Stop speed	b-04	Data is copied
b-03	DC brake operation time	b-05	Data is copied
b-04	DC brake gain	b-06	Data is copied
b-05	JOG stop mode selection	b-07	Data is copied
b-06	JOG stop speed	b-08	Data is copied
b-07	Instantaneous power interruption restart	b-11	Data is copied
b-08	Reserve prohibition mode selection	b-12	Data is copied
b-09	Command place when coupled	b-15	Data is copied
b-10	Speed commanding place selection	b-16	Data is copied
b-11	Operation commanding place selection	b-17	Data is copied

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
b-12	JOG commanding place selection	b-18	Data is copied
b-13	Forward powering torque limit	E-00	Data is copied
b-14	Forward regenerative torque limit	E-01	Data is copied
b-15	Reverse powering torque limit	E-02	Data is copied
b-16	Reverse regenerative torque limit	E-03	Data is copied
b-17	Analog speed command characteristic selection	G-02	If used Pulse train by G-00(Analog speed command) of 64Series, set 1. Besides above case, data is copied.
b-18	Analog input speed command upper limit speed	G-03	Data is copied
b-19	Analog input speed command lower limit speed	G-04	Data is copied
b-20	Analog input Zero limit voltage	G-05	Data is copied
b-21	Analog output (1) characteristic selection	G-06	Data is copied
c-00	Multifunction input place selection	c-00	Data is copied
c-01~-05	Multi-function input terminal (1) ~ (5) function selection	-	Set default value
c-06	Multifunction input terminal(6) function selection	c-01	Data is copied
c-07	Multifunction input terminal (7) function selection	c-02	Data is copied
c-08	Multi-function input terminal (8) function selection	c-03	Data is copied
c-09	Multi-function input terminal (9) function selection	c-04	Data is copied
c-10	Multi-function input terminal (10) function selection	c-05	Data is copied
c-11	Multi-function input terminal (11) function selection	c-06	Data is copied
c-12~-17	Multi-function input terminal (12) ~ (17) function selection	-	Set default value
d-00~-14	Accel / decal time and S pattern accel / decal selection	d-00~-14	Data is copied
d-15	Preset speed (1)	H-00	Data is copied
d-16	Preset speed (2)	H-01	Data is copied
d-17	Preset speed (3)	H-02	Data is copied
d-18	Preset speed (4)	H-03	Data is copied
d-19	Preset speed (5)	H-04	Data is copied
d-20	Preset speed (6)	H-05	Data is copied
d-21	Preset speed (7)	H-06	Data is copied
d-22	Jump speed (1)	d-18	Data is copied
d-23	Jump speed (2)	d-19	Data is copied

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
d-24	Jump speed (3)	d-20	Data is copied
d-25	Jump speed (4)	d-21	Data is copied
d-26	Jump speed width	d-22	Data is copied
d-27	MRH function selection	d-23	Data is copied
d-28	MRH upper limit speed	d-24	Data is copied
d-29	MRH lower limit speed	d-25	Data is copied
d-30	Speed deviation limiting command selection	d-15	Data is copied
d-31	Maximum Deviation (positive)	d-16	Data is copied
d-32	Maximum deviation (negative)	d-17	Data is copied
E-00	Regeneration stall prevention function usage selection	b-13	Data is copied
E-01	Regeneration stall prevention voltage	F-00	Decimal point position of set value is changed
E-02	High-efficient mode usage selection	b-02	Data is copied
E-03	Forward direction change	-	Set default value
E-04	Simulation mode	-	Set default value
E-05	Torque command mode selection	E-05	Data is copied
E-06	Restart prohibition time	E-14	Data is copied
E-07	Current control proportion gain	E-12	Set default value
E-08	Current control integral gain (1)	E-13	Set default value
E-09	Current control integral gain (2)	E-13	Set default value
E-10	Motor temperature compensation	E-15	Data is copied
E-11	Free start maximum	b-20	Data is copied
E-12	Inverter output maximum voltage	b-21	Data is copied
F-00	Built-in DB (Dynamic Brake) operation level	F-00	Data is copied
F-01	Forward overspeed setting	F-01	Conversion is applied
F-02	Reverse overspeed setting	F-02	Conversion is applied
F-03	Over load protection setting	F-03	Data is copied
F-04	Cumulative operation timer (1-Capacitor)	-	Set default value
F-05	Cumulative operation timer (2-Fan)	-	Set default value
F-06	Motor overheat protection operation selection	F-12	Data is copied
F-07	Protection relay (86A) operation selection upon power failure	F-13	Data is copied
F-08	Protection retry count setting	F-14	Data is copied

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
F-09	External failure (1) detection delay time	-	Set default value
F-10	External failure (2) detection delay time	-	Set default value
F-11	External failure (3) detection delay time	-	Set default value
F-12	External failure (4) detection delay time	-	Set default value
F-13	Trace-back pitch	F-15	Data is copied
F-14	Trace back trigger point	F-16	Data is copied
F-15~-26	Trace back CH selection	F-17~-28	Set default value
F-27	Overtorque protection function selection	F-05	Data is copied
F-28	Overtorque protect level setting	F-06	Data is copied
F-29	Overtorque protection operation standard torque	F-07	Data is copied
F-30	Speed control error function usage selection	F-08	Data is copied
F-31	Speed control error detection speed width (positive)	F-09	Conversion is applied
F-32	Speed control error detection speed width (negative)	F-10	Conversion is applied
G-00	Temperature detection selection	-	If used by E-15=1 or F-12=1 of 64Series, set 2. Except the above case, 0 is set.
G-01	Temperature detection offset adjustment	G-19	Data is copied
G-02	Temperature detection gain adjustment	G-20	Data is copied
G-03	Analog input (2) characteristics selection	G-11	Set value of 64 series+1
G-04	Analog input (2) upper limit speed	G-12	Data is copied
G-05	Analog input (2) lower limit speed	G-13	Data is copied
G-06	Analog input (3) characteristics selection	-	If used Pulse train by G-00(Analog speed command) of 64Series, set 3. Besides above case, set 1.
G-07	Analog input(3)upper limit speed	-	Set default value
G-08	Analog input(3)lower limit speed	-	Set default value
G-09	Analog input (2) characteristics selection	G-16	If set value of 64 series is 8 or more: Set value of 64 series-8 0~7: Data is copied
G-10	Analog output (3) characteristics selection	G-16	Data is copied
G-11	Analog input (4) characteristic selection	-	Set default value
G-12	Analog input (5) characteristics selection	-	Set default value

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
G-13	Analog output (4) characteristics selection	-	Set default value
G-14	Analog output (5) characteristics selection	-	Set default value
G-15	Line speed monitor adjustment	n-00	Data is copied
G-16	Analog input monitor display selection	-	Set default value
H-00	Multifunction output terminal (1) function selection	c-07	Data is copied
H-01	Multifunction output terminal (2) function selection	c-08	Data is copied
H-02	Multifunction output terminal (3) function selection	c-09	Data is copied
H-03	Multifunction output terminal (4) function selection	c-10	Data is copied
H-04	Multifunction output terminal (5) function selection	-	Set default value
H-05	Multifunction output terminal (6) function selection	-	Set default value
H-06	Speed detection (1)	c-11	Data is copied
H-07	Speed detection (2)	c-12	Data is copied
H-08	Speed detection width	c-13	Data is copied
H-09	Torque detection (with polarity)	c-14	Data is copied
H-10	Torque detection(absolute value)	c-15	Data is copied
H-11	Overload pre-alarm operation level setting	c-16	Data is copied
H-12	Maximum speed reduction rate	c-17	Data is copied
i-00	PLCL function usage selection	b-14	Set default value
i-01	PLCH function usage selection	b-00	Set default value
i-02	Droop control usage selection	i-00	Data is copied
i-03	Droop start speed	i-01	Data is copied
i-04	Droop rate changeover speed	i-02	Data is copied
i-05	Droop rate	i-03	Data is copied
i-06	Droop start torque	i-04	Data is copied
i-07	Operation mode selection	b-01	Data is copied
i-08	Torque command input place selection	b-19	Data is copied
i-09	Analog torque command gain	G-14	Data is copied
i-10	Speed control proportion gain (2)	b-09	Data is copied
i-11	Speed control integral time constant (2)	L-19	Set default value
i-12	Speed control system moment of inertia (2)	-	Set default value

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
i-13	JOG proportion gain selection	b-10	Data is copied
i-14	ASR cancellation usage selection	E-06	Data is copied
i-15	ASR feed-forward usage selection	E-07	Data is copied
i-16	Variable structure proportion gain start speed	E-08	Data is copied
i-17	Variable structure proportion gain minimum gain percentage	E-09	Data is copied
i-19	Mechanical loss compensation usage selection	i-05	Data is copied
i-20	Mechanical loss offset amount	i-06	Data is copied
i-21	Gradient of mechanical loss	i-07	Data is copied
i-22	Positioning speed (0)	J-09	Data is copied
i-23	Positioning speed (1)	J-10	Data is copied
i-24	Positioning acceleration time	J-11	Data is copied
i-25	Positioning deceleration time	J-12	Data is copied
i-26	Creep speed	J-13	Data is copied
i-27	Number of moving pulse within a creep period	J-14	Data is copied
i-28	Number of stop pulse	J-15	Data is copied
i-29	Positioning emergency stop Selection	J-16	Data is copied
i-30	Proportion gain for positioning	L-25	Data is copied
i-31	Integral time constant for positioning	L-26	Data is copied
i-32	System moment of inertia for positioning	L-27	Data is copied
J-00	Digital communication option selection	J-00	Set default value
J-01~-08	Communication option selection	J-01~-08	Data is copied
J-09	DNET66-Z output instance number setting	J-17	Data is copied
J-10	DNET66-Z input instance number setting	J-18	Data is copied
J-11	DNET66-Z speed scale setting	J-19	Data is copied
J-12	DNET66-Z monitor data number setting	J-20	Data is copied
J-13	High speed response input selection	-	Set default value
J-14	Date/Time data selection from communication	-	Set default value
J-15	Connected number of outside DB (Dynamic Brake) units with communication	-	Set default value
L area	Analog input/output setting	-	Set default value

VF66B Series ED Vector mode (File converted)		ED64A, ED64sp Series all mode(Old File)	
Item	Item contents	Item	Changed contents
n-00	Inverter control mode	S-01	Data is copied
n-01	Capacity / voltage class	S-02	Data is copied
P area	P resister constant setting	-	Set default value

TOYODENKI SEIZO K.K.

https://www.toyodenki.co.jp/en/

HEAD OFFICE:Tokyo Tatemono Yaesu Bldg, 1-4-16 Yaesu, Chuo-ku,
Tokyo, Japan ZIP CODE 103-0028
TEL : +81-3-5202-8132
FAX : +81-3-5202-8150

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TIM047[H]_20250430