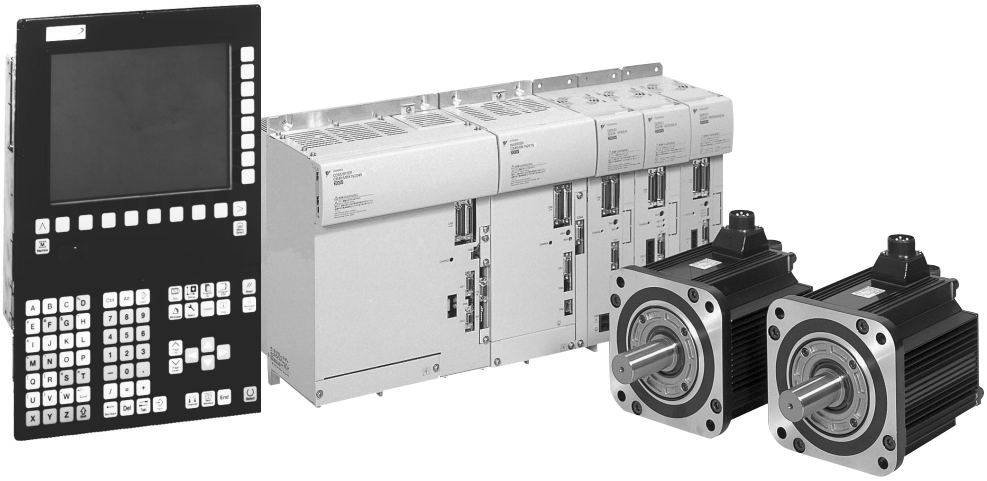
Yaskawa Siemens CNC Series

Operating Manual for Standard HMI



MANUAL No. NCSIE-SP02-24

Safety-related symbol marks

The following symbol marks are used in this manual to draw special attention to safety information.

The information next to these symbol marks is important for safety and thus must always be followed.

⚠ WARNING

Indicates activities that could result in a dangerous condition, including death and serious injury, if done wrongly.

Symbol ⚠ is used in labels attached to the product.

⚠ CAUTION

Indicates activities that could result in a dangerous condition, including major and minor injury, or in damage to objects, if done wrongly.

It is noted that those activities as indicated by the ⚠ CAUTION symbol mark could even result in death or serious injury if done wrongly in a worst-case situation.

⃠ PROHIBITED

Indicates what you must not do. For example, the mark means that you must not make or use a fire here.

❗ MANDATORY

Indicates what you must do unconditionally. For example, the ground mark means that you must always ground the object you are working with.

Outline of this Manual

This manual describes cautionary items and operation procedures on standard HMI of Yaskawa Siemens CNC series that is CNC for machine tools.

Extensions or changes made by the machine tool manufactures are documented by the machine tool manufactures.

This manual is intended for use by operators of machine control panel and operator panel of machine tools controlled by the Yaskawa Siemens CNC system.

This manual describes the functionality of Yaskawa Siemens 840DI and Yaskawa Siemens 830DI, however does not describe differences in the functions between both models.
Standard and optional functions are provided in each model.
Please read catalogue (document no.:NCKAE-PS41-01)

Trademarks

Yaskawa Siemens is a brand made by Siemens.

SINUMERIK is a brand made by Siemens AG.

Any other designations used in this publication could be brands which, if being used by third parties of their purposes, could impair the rights of the owners.

Related Manuals

Related manuals are listed below, which you should read as necessary along with this manual.

Read all related manuals to grasp the specifications.

Manual Name	Manual Number
Yaskawa Siemens CNC Series (Catalog)	NCKAE-PS41-01
Yaskawa Siemens CNC Series Operating Manual	NCSIE-SP02-04
Yaskawa Siemens CNC Series Operating Manual for J-Operation	NCSIE-SP02-23
Yaskawa Siemens CNC Series Maintenance Manual	NCSIE-SP02-10
Yaskawa Siemens CNC Series Maintenance Manual Serviceman Handbook	NCSIE-SP02-19
Yaskawa Siemens CNC Series Programming Manual for Machining Center	NCSIE-SP02-20
Yaskawa Siemens CNC Series Programming Manual for Lathe	NCSIE-SP02-21
Yaskawa Siemens CNC Series Operating Manual for Machining Center	NCSIE-SP02-25

Cautions

This manual describes some optional functions too but some of these may not be available with your Yaskawa Siemens CNC. To determine the optional functions installed in your NC, refer to the specification document or manuals published by the machine tool builders.

We has made every effort to describe individual functions and their relationships to other functions as accurately as possible. However, there are many things that cannot or must not be performed and it is not possible to describe all of these. Accordingly, readers are requested to understand that unless it is specifically stated that something can be performed, it should be assumed that it cannot be performed.

Also bear in mind that the performance and functions of an NC machine tool are not determined solely by the NC unit. The entire control system consists of the mechanical system, the machine operation panel and other machine related equipment in addition to the NC. Therefore, read the manuals published by the machine tool builder for detailed information relating to the machine.

Safety precautions

Listed below are important safety precautions that you must always follow when using the product, Read and fully understand this manual and other related manuals before attempting to install, operate, maintain, or service the product. The safety precautions and the knowledge of the product are indispensable for the safety of yourself and the product.

Operating

Warning

- Do not touch live units or terminals.
  Otherwise electric shock or malfunction could result.
- Do not touch any current-carrying parts even if you have shut off power to them, until at least 5 minutes have passed (to let any residual change go out).
  Otherwise electric shock or malfunction could result.
- Take care not to damage, pull on, or pinch the cables.
  Otherwise electric shock could result.
- Do not touch any rotating parts before you shut off power to them.
  Otherwise injury could result.
- Never attempt to modify the product.
  Otherwise electric shock, a fire, or damage could result.
- Close the upper and lower covers before switching on the input power.
  Otherwise electric shock could result.
- Provide an additional emergency stop button outside the product.
  This is a necessary safety precaution.

Caution

- Ensure that the environmental requirements are fully met.
  A fire, electric shock, or malfunction could result if the product were operated in excessively hot, humid, dusty, corrosive, vibration-,or shock-ridden conditions.
- The environmental requirements are these:
  - The atmosphere must be free of corrosive gas or vapor.
  - There must be no risk of being splashed with machining oil or organic solvent.
  - The relative humidity must be between10 and 90% with no dew.
  - The ambient temperature around the control panes must be between 5 and 30°C. The control panels must be protected from freezing, direct sunlight, heat sources, or the elements.
  - Floor vibration must not be more than $4.9 m/s^2$.
- Take care so that no wire chips or other foreign matter would enter the product.
  Otherwise a fire, damage, or malfunction could result.
- When using the programming functions, always follow the instructions given in the relevant manuals.
  Otherwise injury or malfunction could result.

Maintaining

Warning

- Do not touch the terminals of the inverters or converters, as some of them are at high voltage and very dangerous.
  Otherwise electric shock could result.
- Do not leave the upper or lower cover open when the panel is energized.
  Always turn off the circuit breaker before opening the covers.
  Otherwise electric shock could result.
- Confirm that the main power and the control power are switched off and the CHARGE lamp is not before starting maintenance work.
  Be aware that capacitors can have a high voltage charge for a while even after the circuit breaker is switched off.
- Only qualified personnel may perform maintenance or service work.
  Otherwise electric shock could result.

Caution

- When handling the control PC boards, take necessary measure to prevent their CMOS ICs from being damaged from electrostatic discharge.
  Do not touch the CMOS ICs. Otherwise they could be damaged.
- Never attempt to change wiring connections, or engage or disengage connectors while they are energized.
  Otherwise injury could result.

Others

Warning

- Never attempt to modify the product.
  Otherwise electric shock or injury could result.

General notes

Notes on the usage of this manual

- Illustrations and drawings in this manual may show parts with their cover or safety shield removed so that inside details can be seen. Regardless of the drawings, the products must always be operated according to the manual with all the covers and shields installed in place.
- Illustrations and photos in this manual represent typical configurations, and may not exactly represent the products delivered.
- This manual is subject to change to reflect modification or specification change to the product or to make it easier to read. An updated document No. means a new version of this manual.
- If you need additional copies of this manual to replace damaged or lost ones or otherwise, please order from the nearest sales office indicated on the back cover referring to the document No. printed on the front cover of this manual.
- If the nameplate on the products is defaced or damaged, order a new one from your dealer or the nearest sales office indicated on the back cover of this manual.
- Siemens would not guarantee the quality of the product modified by the customer. Siemens is not responsible for any injury or damage due to the product modified by the customer.

Warning Labels

Warning labels are attached to the product to draw special attention. Always follow the instructions. The locations and meanings of the warning labels are as follows:

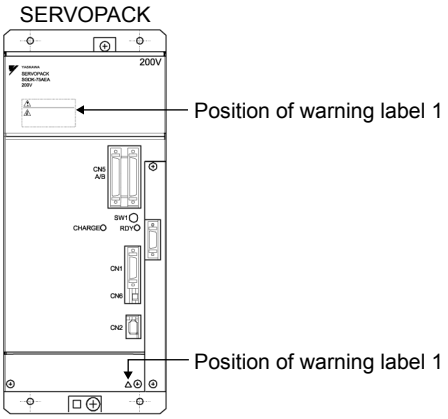
- Warning label 1

Risk of electric shock
- Read manual before installing.
- Wait 5 minutes for capacitor discharge after disconnecting power supply.

- Warning label 2

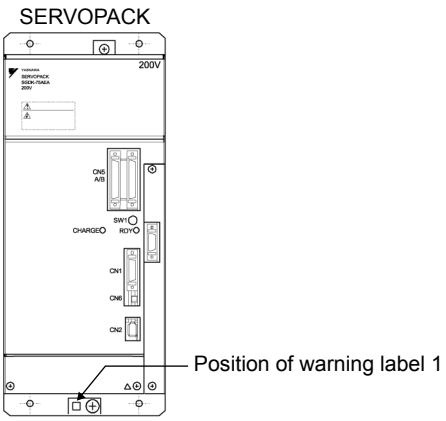
Risk of electric shock

- Do not touch the terminals while the product is switched on or for 5 minutes after the product is switched off.



- Warning marking

Ground the unit by connecting a grounding wire to this grounding terminal.



Special symbols

The following special symbols and keywords have been used in this documentation.

Machine Manufacturer

For safety reasons, some of the functions are protected from access by unauthorized persons. The machine manufacturer can influence or modify the described functions. Please follow the instructions of the machine manufacturer.

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1 Introduction

1.1 How to read this document

The standard HMI for the Yaskawa Siemens CNC Series is built up based on HMI Advanced for SINUMERIK 840D. Therefore, You can refer the following document in connection with the most of all operations on standard HMI for the Yaskawa Siemens CNC Series.

Reference : SINUMERIK 840D/840Di/810D
Operator's Guide HMI Advanced

This manual describes the characteristic operation of Yaskawa Siemens CNC Series compared with Operator's Guide HMI Advanced. When you use the Operator's Guide HMI Advanced for operating the Yaskawa Siemens CNC Series, please replace the words acording to the following table.

words	replacement
SINUMERIK 840D SINUMERIK 840Di 840D 840Di	Corresponded to Yaskawa Siemens CNC Series
software version SW □.□	Corresponded to the latest description for Yaskawa Siemens CNC Series.
SINUMERIK documentation Order No. of document References	Concerning the documents described in Operator's Guide HMI Advanced, the all most of SINUMERIK documents can be used for Yaskawa Siemens CNC Series too. For further information, please refer to Section 8.3 "Comparison for the References".
OP010 OP010S OP010C OP012 OP015	Only the OP010FS is used as operator component for Yaskawa Siemens CNC Series.

1.2 Scope of functions

The following functions and relating operations are not available for Yaskawa Siemens CNC Series.

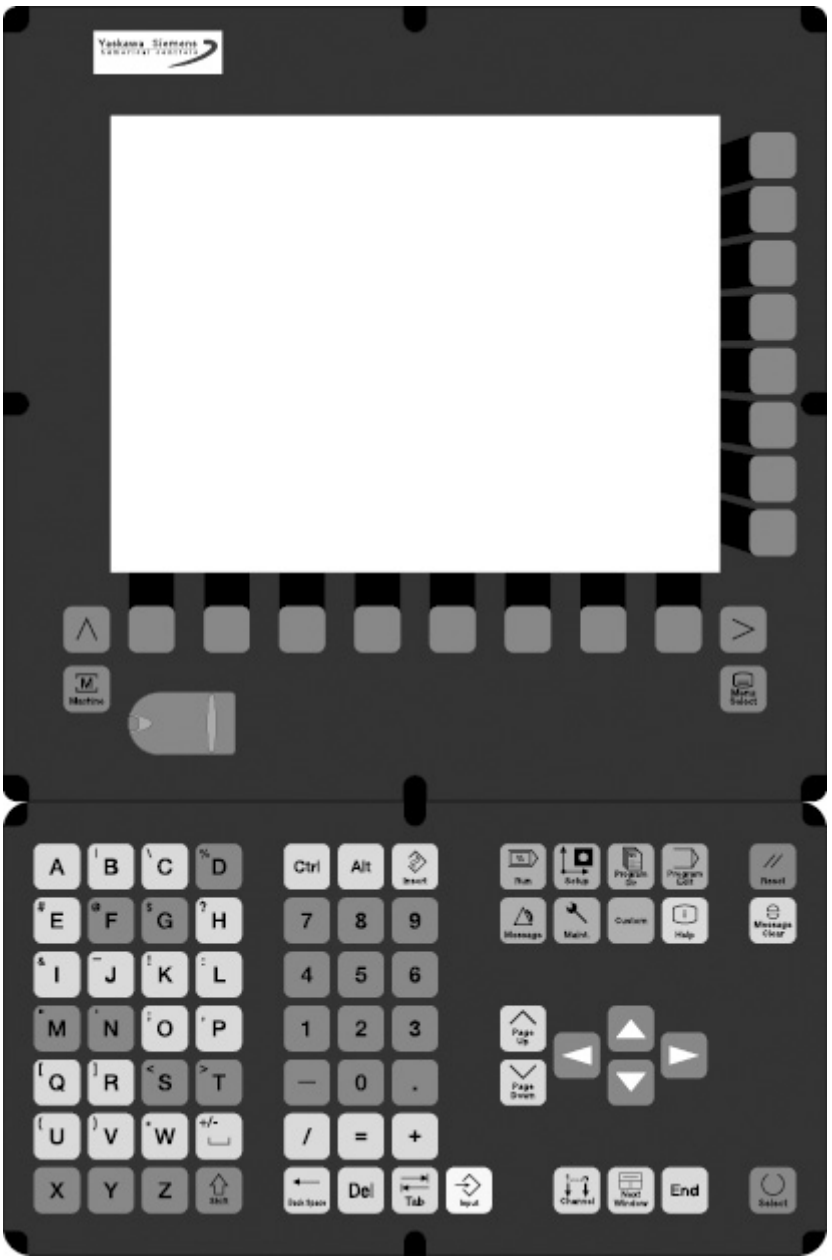
- Punching and Nibbling
- Safety Integrated
- NC card
- Upgrade
- Service drive
- Display of operating mode keys on vertical soft key bar by pressing the “Area switchover” key
- The toggle of operation area by pressing the “Area switchover” key twice
- SINUMERIK 810D
- SINUMERIK 840DE
- SINUMERIK 840DiE
- SINUMERIK 810DE

2 Operator Panel

OP010FS is used for Yaskawa Siemens CNC Series. Beside there are two type of the keyboard for OP010FS, i.e. QWERTY type and ABCD type, concerning arrangement and illustration of each key. For differences between these keyboards, please refer to Section 8.1 “Comparison table for keys”.
The view of each Operator Panel can be shown below.

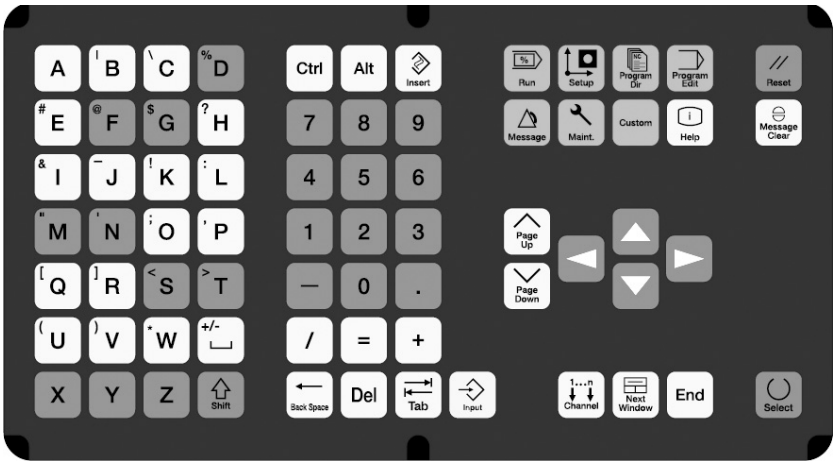
2.1 View of Operator Panel

The complete figure of OP010FS operator panel is shown below.

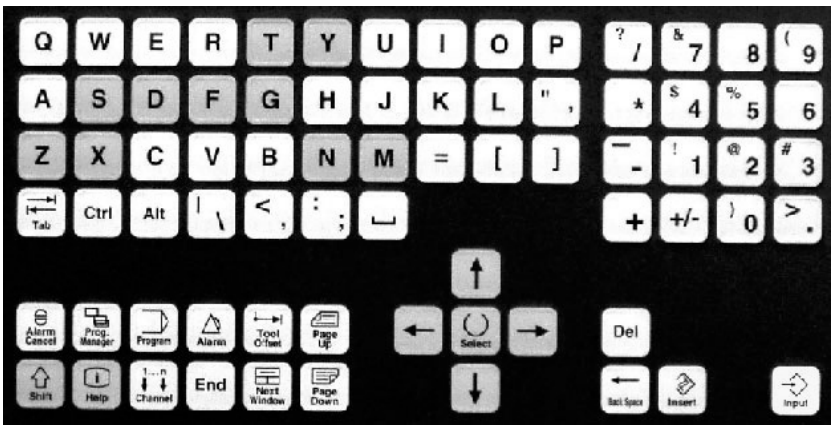


2.2 Arrangement of Operator Panel keys

2.2.1 ABCD type keyboard



2.2.2 QWERTY type keyboard



2.3 Operator Panel keys

2.3.1 Hot keys

The following Hot Keys are available for Yaskawa Siemens CNC Series.

By pressing this key, the last opened screen in Start-up Operating Area can be displayed.

By pressing this key, the last opened screen in Machine Operating Area can be displayed.

2.3.2 Reset key

This key is on ABCD type keyboard.

When you press the "Reset" key:

- processing of the current parts program is aborted,
- signals from the monitoring function are cleared (except for alarms signaling POWER ON, NC Start and Acknowledge alarm),
- the channel is switched to the "Reset" state, i.e.
  - the NC control remains synchronized with the machine,
  - the control is in the initial state and ready for another program run.
    (See also /FB/, K1, Description of Functions Mode Group, Channel, Program Operation Mode)

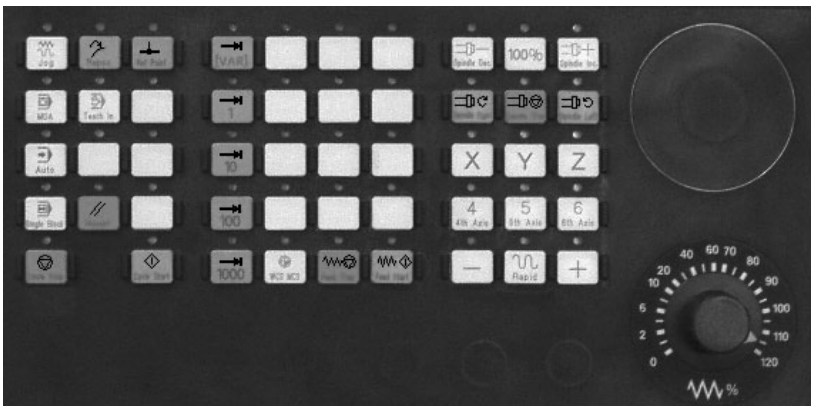
Reset key will work only, if machine manufacturer has implemented the function internally via the PLC interface.
Please read the manufacturer’s instructions.

3 Machine Control Panel OP032S

Machine Control Panel OP032S can be used for Yaskawa Siemens CNC Series.
There are some different keys between OP032S and 19" Machine Control Panel described in Operator's Guide HMI Advanced. For more detail information about these differences, please refer to Section 8.2 “Comparison table of Machine Control Panel keys”.

3.1 View of Machine Control Panel OP032S

The view of Machine Control Panel OP032S is shown below.



3.2 Keys on OP032S Machine Control Panel

The following keys are available on OP032S Machine Control Panel.

Start Spindle left turn (CCW rotation)

Start Spindle right turn (CW rotation)

The Spindle override for the program spindle speed can be increased or decreased.

The Spindle override can be set to 100%.

Machine Manufacturer

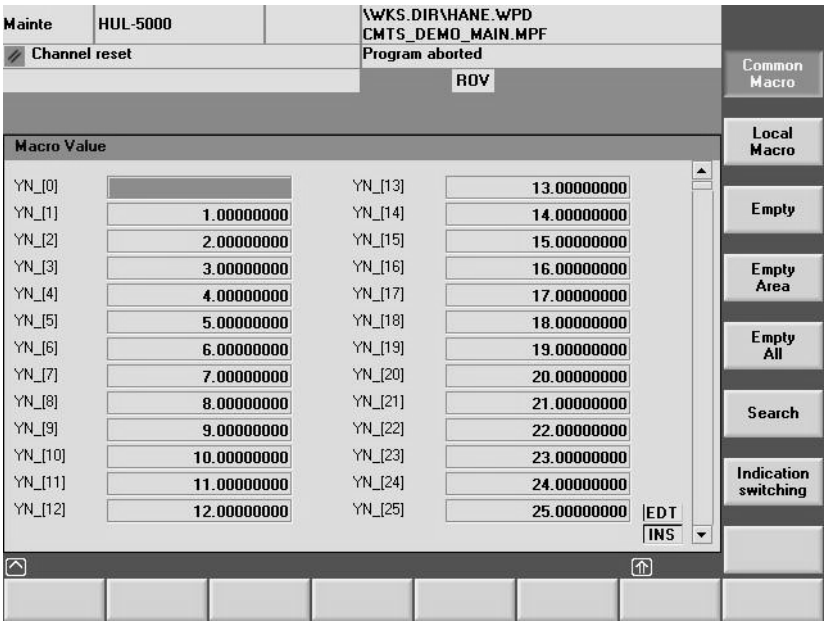
Above keys are assigned by Machine Manufacturer. Please refer to Manufacturer's documents for the functionality of these keys.

4 Macro variable data screen

Displaying simultaneously, editing and searching for macro variables can be performed in Macro variable data screen.
Macro variable screen is positioned in Parameter operating area for Turning system and in Common operating area for Machining system.

4.1 Basic display

Number of variables in Macro variable screen is 26. (as 2 column × 13 lines.)
"INS" is displayed in insert mode at the bottom right hand corner in the window.
"EDT" is displayed in entering values at the bottom right hand corner in the window.



You can specify three or eight digits for decimal fraction.
If you select 3 digits for decimal fraction and integer values become over 9 digits, display format is changed to [x.xxE+xx]

4.2 Displaying/ finding macro variables

Common or Parameter

Macro Value

Macro variables are displayed.

Common Macro | Local Macro

You can select required kinds of macro variables.

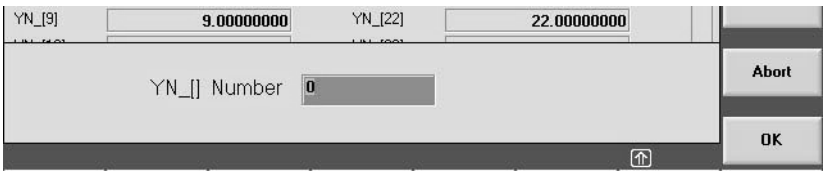
Indication Swiching

You can specify three or eight digits for decimal fraction.

Search

This soft key searches macro variable number which are displayed currently on the screen.

A dialog box is opened as indicated below.



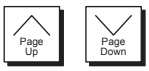
OK

If you enter a number of macro variable and press the "OK" soft key.The search run is started. and search result is displayed.

Abort

You can cancel the search run.

4.3 Modifying macro variable



The macro variables that you want to modify can be selected by cursor key "Up", "Down", "Left", "Right" and page key "PageUp", "PageDown".

You can alter either overwrite mode or insert mode with "insert" key. (default mode is overwrite mode.)

Enter the value data and confirm your data with "input" key.

Notes:

Cursor key is deactivated while inputting the data and confirming the value in the EDIT mode.
Overwrite mode is automatically switched when you press the cursor key in insert mode with the exception of EDIT mode.

4.4 Set empty

Macro variables can be set to empty. Three different soft key are provided for setting empty.

4.4.1 Empty

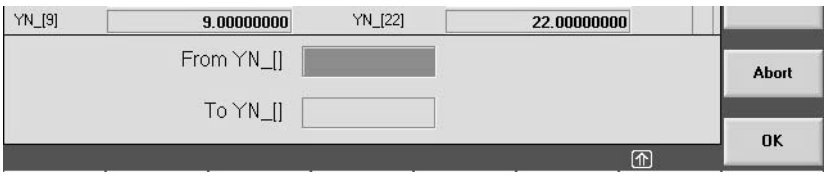
Empty

Macro variable on cursor can be set to empty. Variable data are displayed in blank.

4.4.2 Set macro variable number area for empty

Empty Area

Macro variable number in the specified area can be set to empty.
A dialog box appears as indicated below when you select this soft key.



OK

Macro variable number is set to empty when you select "OK" soft key after entering the range of macro variable number.

While the macro variable number is set to empty, message is displayed as follow.
[n-m empty treatment is done. Wait for a while please.]

Notes

If value in the "Form Y_[ ]"column is lager than value in the "To Y_[ ], i.e "Form Y_[ ]" > "To Y_[ ]", warning message is displayed in a dialog box.

Abort

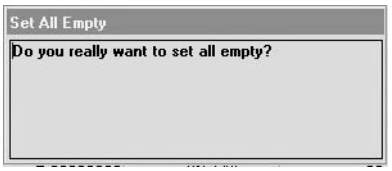
You can cancel execution of setting.

4.4.3 Set all empty

All macro variable numbers which are displayed currently on the screen can be set to empty.

Empty All

A dialog box to confirm appears as indicated below, when you select this soft key.



OK

Macro variable number is set to empty when you select "OK" soft key. While the macro variable number is set to empty, message is displayed as follow.
[All empty treatment is done. Wait for a while please.]

Abort

You can cancel execution of setting.

5 Common Operating Screen

Common

Common operating area is provided for Yaskawa Siemens CNC.
Two different screens in common operating area are as follows.

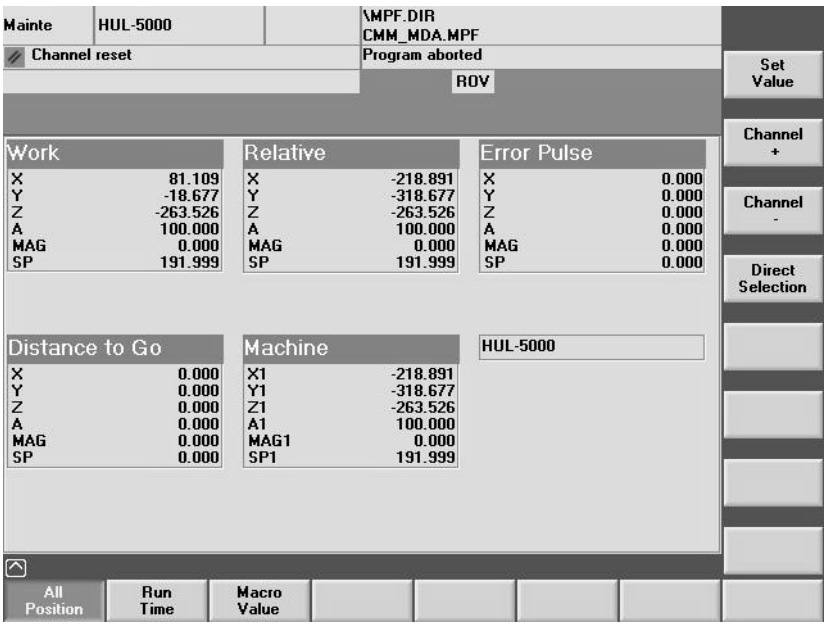
- All position screen to display the five different types of position data.
- Run time display screen to display five different types of timer relating to run operation.

5.1 All position screen

5.1.1 Basic screen

Common | All position

Select soft key "All Position" in common operating area.



Five different types of position data (work coordinate system, relative coordinate system, error pulse (positional deviation), distance to Go, machine coordinate system) are display on the screen.

The column of Channel name, “ Channel1 ” in above example, and the vertical soft keys of “ Channel + ”, “ Channel - ” and “ Direct Selection ” are displayed only when multiple channels are activated.

5.1.2 Relative coordinate system setting

The Relative coordinate system can be shifted on all position screen.

Set value

By pressing the " Set Value " softkey, the cursor is displayed on the relative position of 1st axis with setting mode.

The target axis can be selected by cursor up/down key.

INPUT

Enter a value and press the " Input " key, then the relative position is changed.

Set value

Push the “ Set Value ” softkey, then setting mode is terminated.

Notes

The offset for relative coordinate system is calculated by the formula described below.

Offset = Value entered - Setpoint on relative coordinate system before setting

5.1.3 Channel switchover

If several channels are in use, it is possible to switch to the other channel by means of the soft keys in the vertical menu.

Channel + | Channel –

Each soft key switches to next channel or previous channel.
Channel name for intended field changes to another channel name.

Direct selection

Position cursor on channel name column by pressing "Direct selection" soft key. Channel can be selected directly by using " UP" and "Down" cursor keys.

OK

Confirm with "OK".

Abort

Selection is canceled with "Abort" soft key.

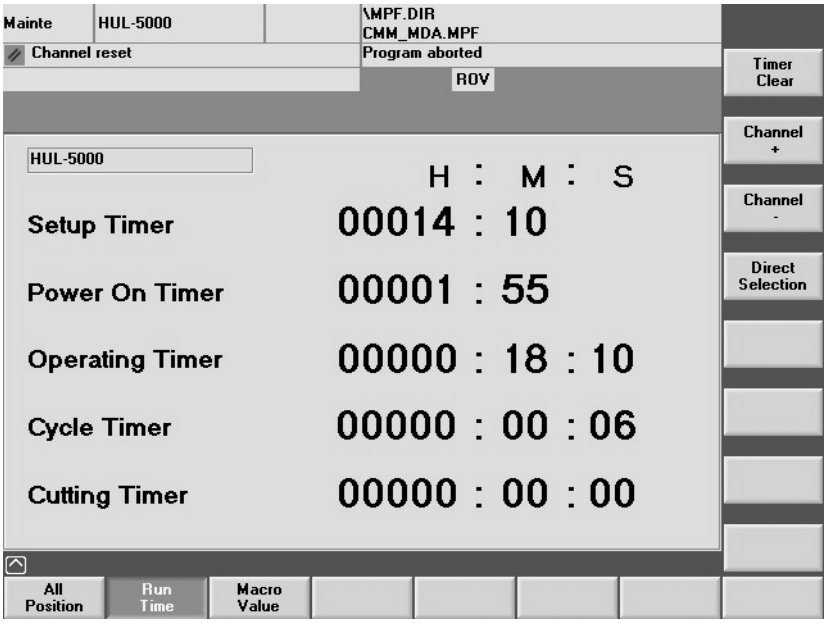
5.2 Run time display screen

5.2.1 Basic display

Basic display

Common | Run Time

Select soft key "Run Time" in common operating area.



"Channel name column", "Channel +","Channel -"and" Direct selection" display are only valid when several channels are in use.

Five different types of timer are displayed as follows.
You can set a machine data to determine whether screen display is enabled or disabled, and count conditions.

Setup Timer
Total time since the last "booting of the CNC with the default values".

Power On Timer
Time since last controller power up.
When the control system boots, the timer is automatically reset to zero.

Operating Timer
The runtimes of all programs between NC start and program end/reset are added.
The timer is set to zero with each booting of the control system.
You can set a machine data MD27860:PROCESSTIMER_MODE to determine whether screen display is enabled or disabled.
MD27860 Bit0=0: Disable Operating Timer
Bit0=1: Enable Operating Timer

Cycle timer
The runtime between NC start and program end/reset is measured in the selected NC program.
The timer is set to zero at program end.
Starting a new NC program deletes the timer after reset operation.
You can set a machine data MD27860:PROCESSTIMER_MODE to determine whether screen display is enabled or disabled.
MD27860 Bit1=0: Disable Cycle Timer
Bit1=1: Enable Cycle Timer

Cutting Timer
The runtime of the path axes is measured between NC start and program end/reset in all NC programs with the tool active.
You can set a machine data MD27860:PROCESSTIMER_MODE to determine whether screen display is enabled or disabled.
MD27860 Bit2=0: Disable Cutting Timer
Bit2=1: Enable Cutting Timer

5.2.2 Count condition setting

You can set a machine data MD27860:PPOCESSTIMER_MODE to determine whether count condition for" Operating timer" or "Cycle timer".

MD27860 Bit4=0: Disable count timer in Dryrun mode
Bit4=1: Enable count timer in Dryrun mode

MD27860 Bit5=0: Disable count timer in Program test mode
Bit5=1: Enable count timer in Program test mode

Note: MD27860 can be written by means of protection level 3 to 7.

5.2.3 Timer clear

Each timer can be set to zero by pressing "Timer Clear" soft key.

Timer Clear

"Zero clear mode" is selected by pressing "Timer Clear".
and the intended timer field display changes to active color.

The vertical soft key bar also changes. and then the intended timer can be selected by using UP and DOWN cursor keys.

Clear

After that, the selected timer data is cleared when the "Clear" soft key.

Back

Exit the "zero clear mode."

Note: "Setup timer Clear" operating can be written by means of protection level 1.

5.2.4 Channel switchover

If several channels are in use, it is possible to switch to the other channel by means of the soft keys in the vertical menu.

Channel + | Channel –

Each soft key switches to next channel or previous channel. Channel name for intended field changes to another channel name.

Direct selection

Position cursor on channel name column by pressing "Direct select" soft key. and channel can be selected directly by using "UP" and "Down" cursor keys.

OK

Confirm with "OK".

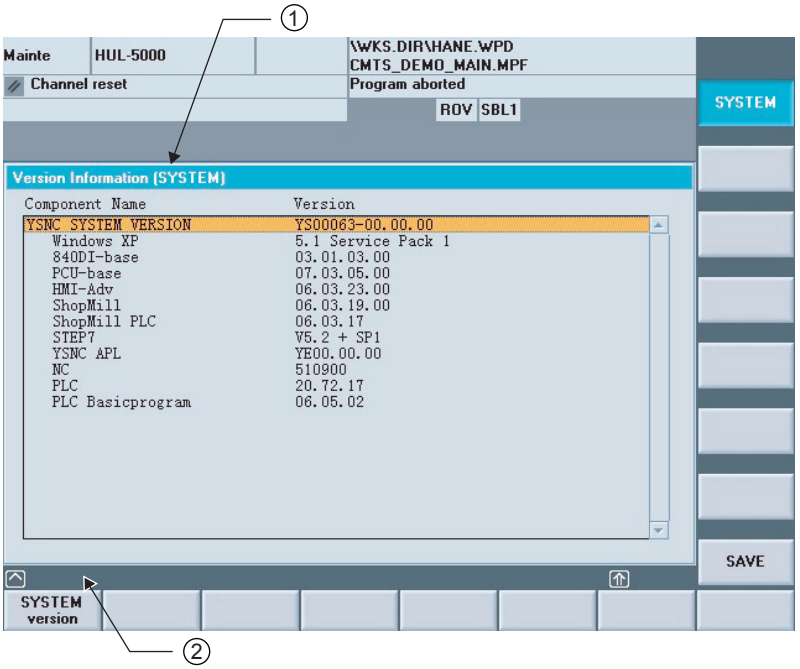
Abort

Selection is canceled with "Abort" soft key.

6 Displaying the version information screen

6.1 Basic display

Yaskawa Siemens CNC is consist of several components.
The software version data for the each component and all of the installed software can be confirmed in the version data display.
And all version data can also be stored in text file.



The contents of software version are displayed in version data display ① corresponding to the vertical soft key.
The condition of read/save about the version information is displayed in dialog line②.

6.2 Operation

Service displays

Version

The version data display is located under “Service Display” -> "Version" soft key in “Diagnostic” area.

System Version

You can display it by pressing "System Version" soft key.

You can select the contents of software version in the following vertical soft keys.

System

The version data overview of the main components for Yaskawa Siemens CNC is displayed.
The version data for all installed system software is shown as "YSNC SYSTEM VERSION".

Save

The version data overview of the GUD files stored in hard disk or CNC memory is displayed.
You can confirm file storage location whether hard disk or CNC memory with the position difference in a column that display version and date.

The file name in destination directory is F:/DH/DG.DIR/LOGFILES.DIR/ is Y_VERSION.txt.

Return to version data display.

7 Activation of STEP7

By pressing this key, STEP7 that is the software for adapting the programmable logic is activated.

References

Please see the following document for operating the STEP7.
SIMATIC Manual Programming with STEP7

8 Tables

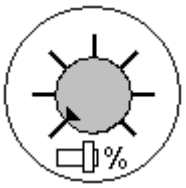
8.1 Comparison table of Operator Panel keys

Please refer to the following table for the differences between the actual Operator Panel and the mention of Operator's Guide HMI Advanced.

Operator's Guide HMI Advanced	QWERTY keyboard	ABCD keyboard
ALARM CANCEL		Message Clear
▲	↑	▲
PAGE DOWN		Page Down
␣		+/- ␣
◀	←	◀
▶	→	▶
▼	↓	▼
PAGE UP		Page Up
PROGRAM		Program Edit
OFFSET	Tool Offset	Setup
PROGRAM MANAGER	Prog. Manager	Program Dir
ALARM	Alarm	Message
CUSTOM	none	CUSTOM
none	none	Maint.
none	none	Run
none	none	// Reset

8.2 Comparison table of Machine Control Panel keys

Please refer to the following table for the differences between the actual Machine Control Panel OP032S and the mention of Operator's Guide HMI Advanced.

Operator's Guide HMI Advanced	OP032S
	none
	none (up to 6th axis)
 (Override rotary switch)	

Notes

By machine manufacturer, the switches other than above may be added and also the above switches may be modified.

8.3 Comparison for references

The most of SINUMERIK documents described in the Operator's Guide HMI Advanced can also be used for Yaskawa Siemens CNC Series. However, Only about the functionality, please refer to the following manual.

Reference name in Operator's Guide HMI Advanced	Related documents for Yaskawa Siemens CNC Series	
	Manual No.	Name
/BU/, Ordering Information Catalog NC 60	NCKAE-PS41-01	Yaskawa Siemens CNC Series (Catalog)

Yaskawa Siemens CNC Series

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.
Specifications are subject to change without notice for ongoing product modifications and improvements.

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