CNC B Series Controller System Screen Programming

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Department: CNC
Date: 2020/09

B Series Controller

- Software installation & How to use
- Firmware upgrade & Screen download/upload
- Screen programming
- Security Level and Expiration
- How to transit from A series to B series

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Software installation
&
How to use?

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Software installation

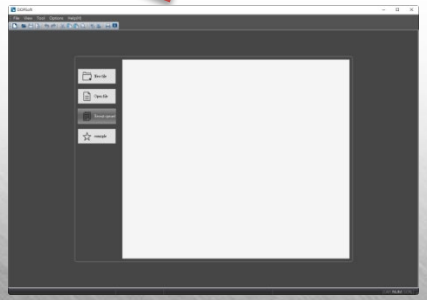
DOPSoft 4.0.0.24

- Execute CNCSoft-B.exe to install all the software for B series

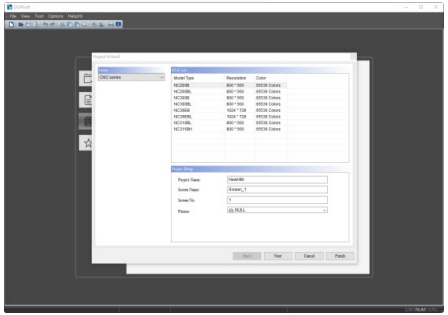
How to use DOPSoft?

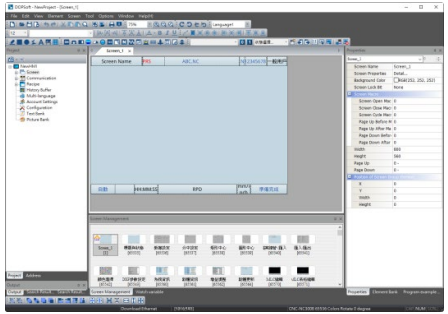
Open project

Execute DOPSoft



New file





New file will include system screens and base screen.

- 1
- 65535 (base screen)
- 65536 ~ 65572 (system screens)

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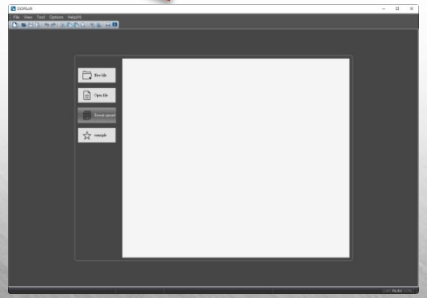
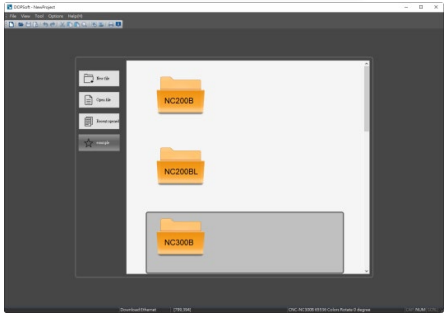
How to use DOPSoft?

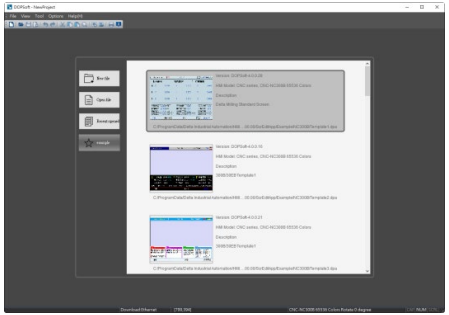
Open project

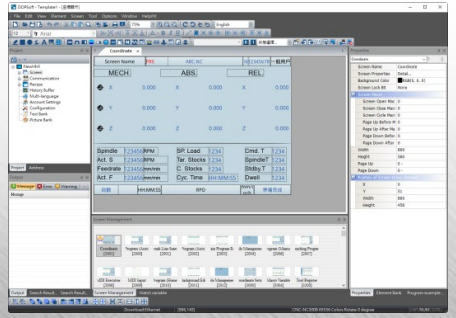
Execute DOPSoft



Select an example

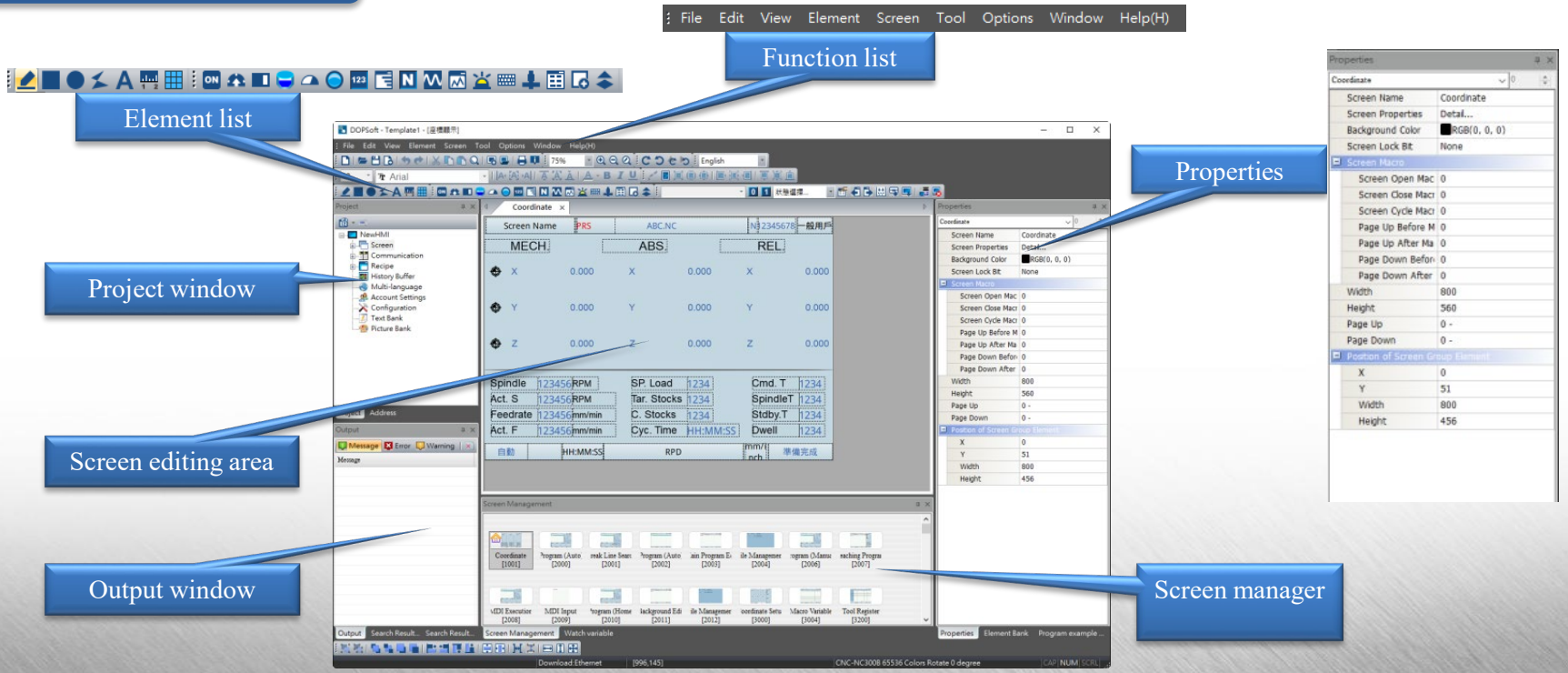






How to use DOPSoft?

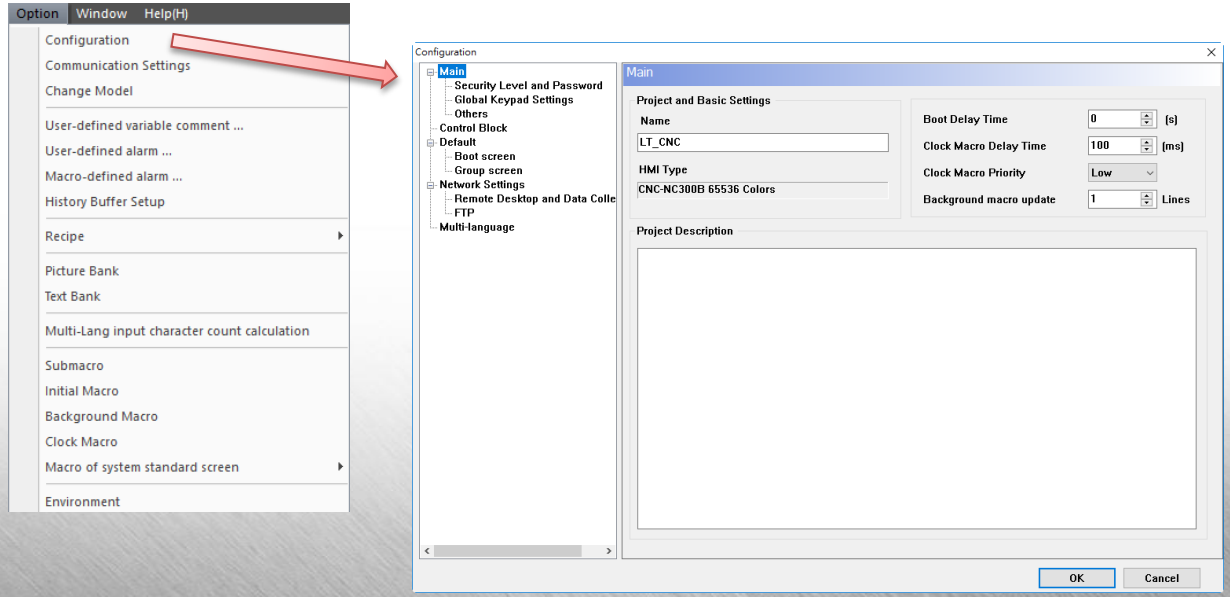
Software layout



How to use DOPSoft?

Configuration

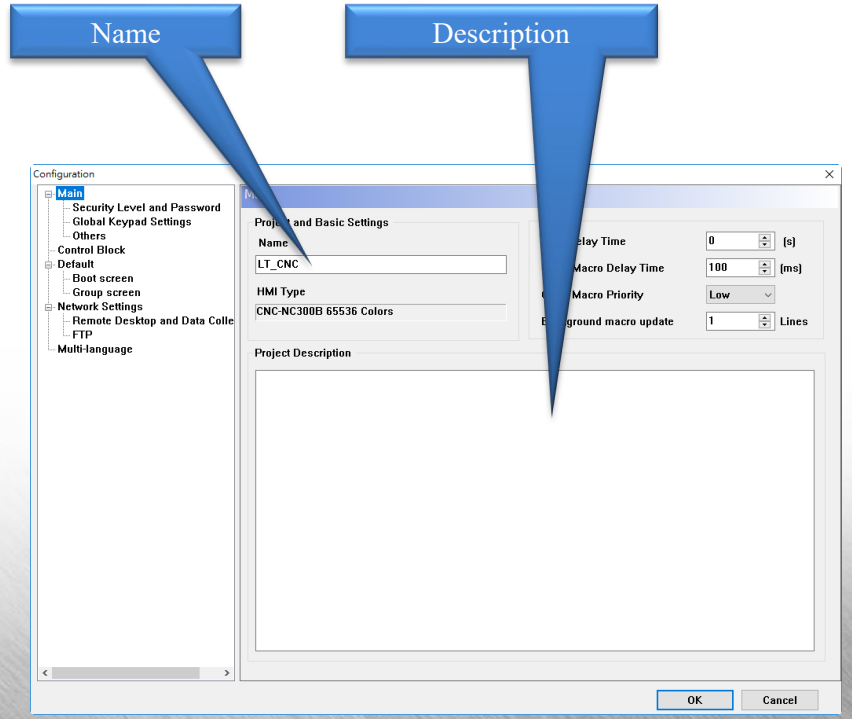
- Basic setting such as the project name, control block, boot & group screens, and aux. keys, can be set in【Configuration】.



How to use DOPSoft?

Configuration: Main

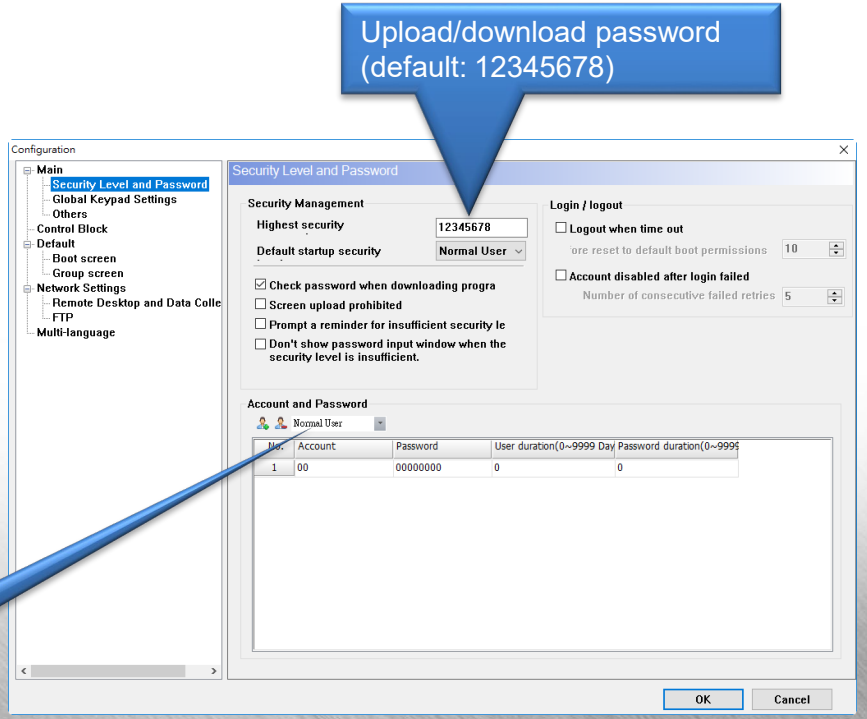
- Set the project name and its description.



How to use DOPSoft?

Configuration: Security Level and Password

- Highest security
  - Protect upload/download screens and system formatting, etc.
  - Password format is hexadecimal. (max. 8 digits)
- Security level for users
  - Normal user、User permission 1、User permission 2、Device permission
  - Account/ password
    - Account format is ASCII code. (max. 24 digits)
    - Password format is hexadecimal (max. 24 digits).

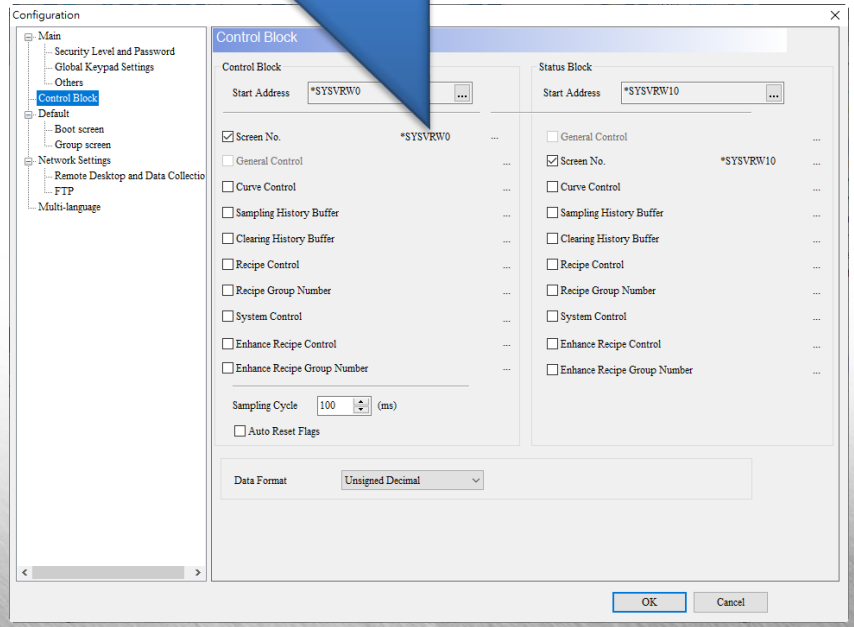


How to use DOPSoft?

Configuration: Control Block

- Switch screen

If *SYSVRW0 equals to a certain screen ID, the system switches to the corresponding screen display.



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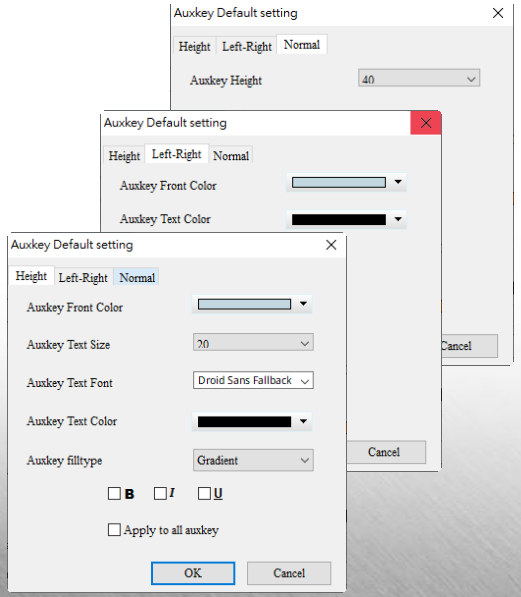
How to use DOPSoft?

Configuration: Default

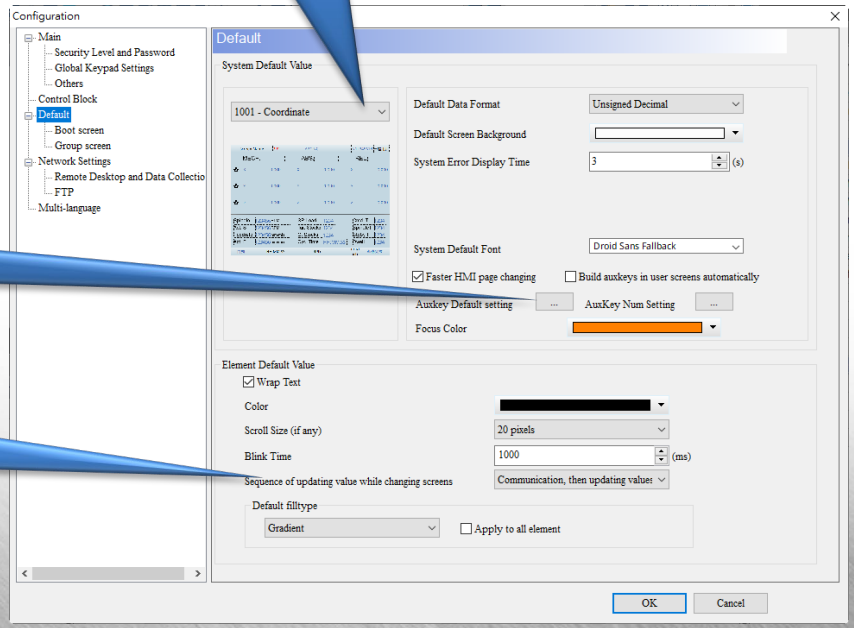
- System default screen settings
- Aux. key display setting



Default screen ID

Change text font, text color and button color of aux. keys in all screens.

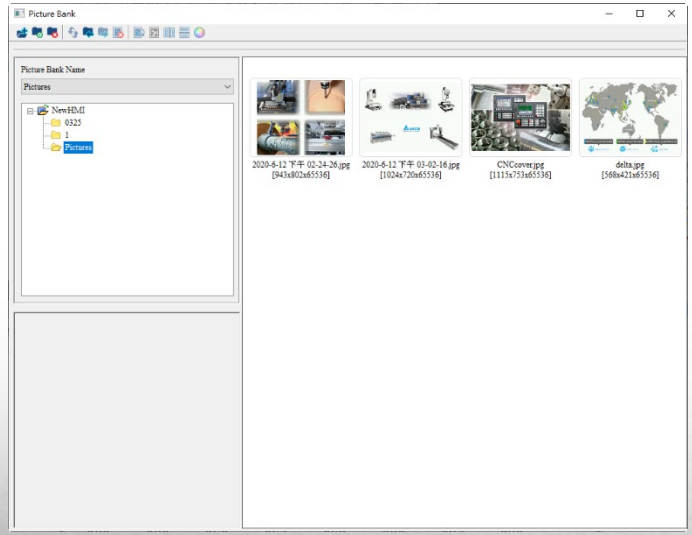
Avoid previous incorrect display while screen switching.

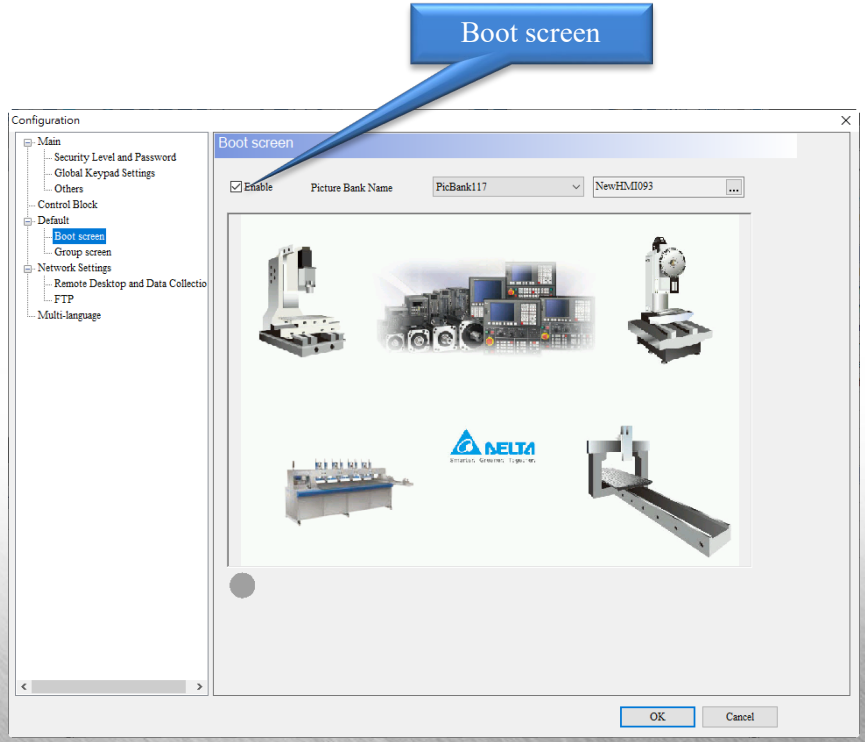


How to use DOPSoft?

Configuration: Boot screen

- Sets the screen display while booting the system





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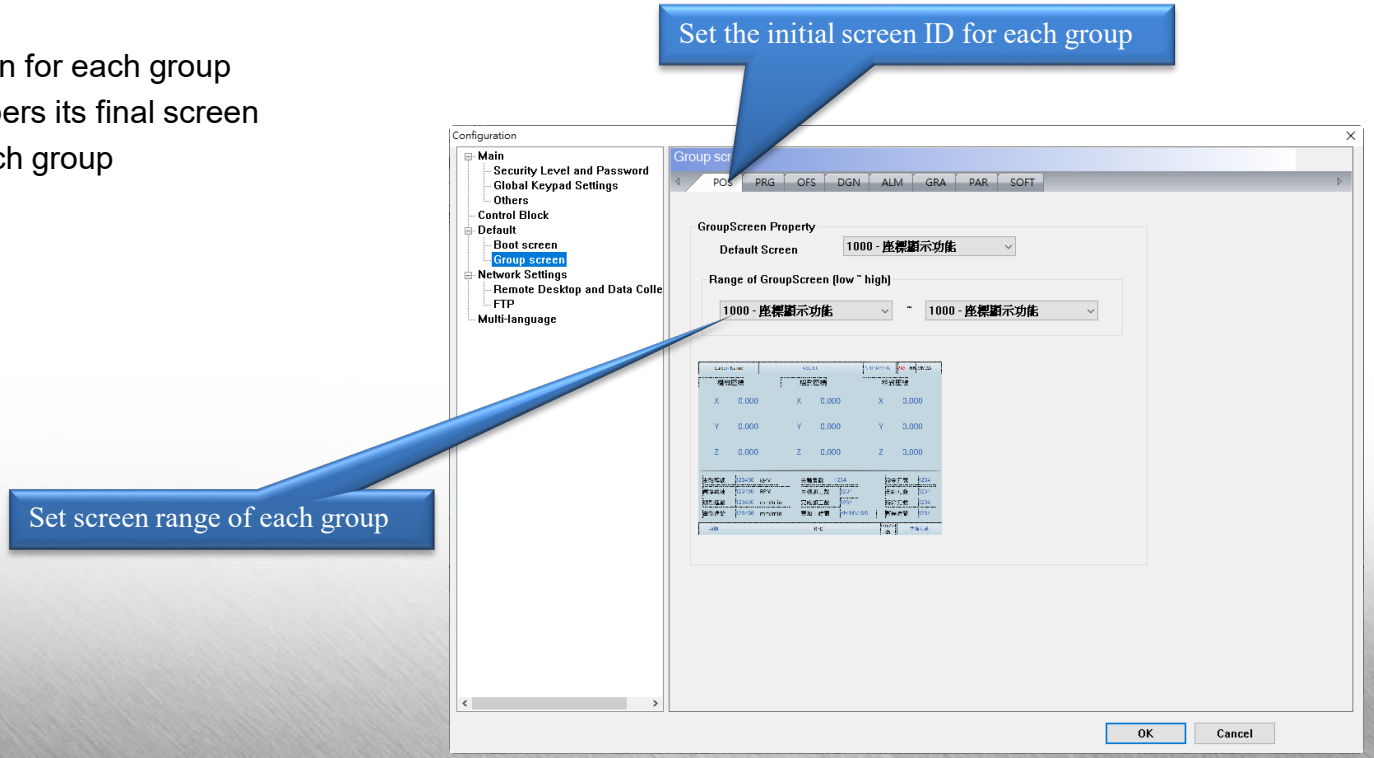
How to use DOPSoft?

Configuration: Group screen

- 8 sets of Group screen
  - Sets the initial screen for each group
  - Each group remembers its final screen
  - Range setting of each group



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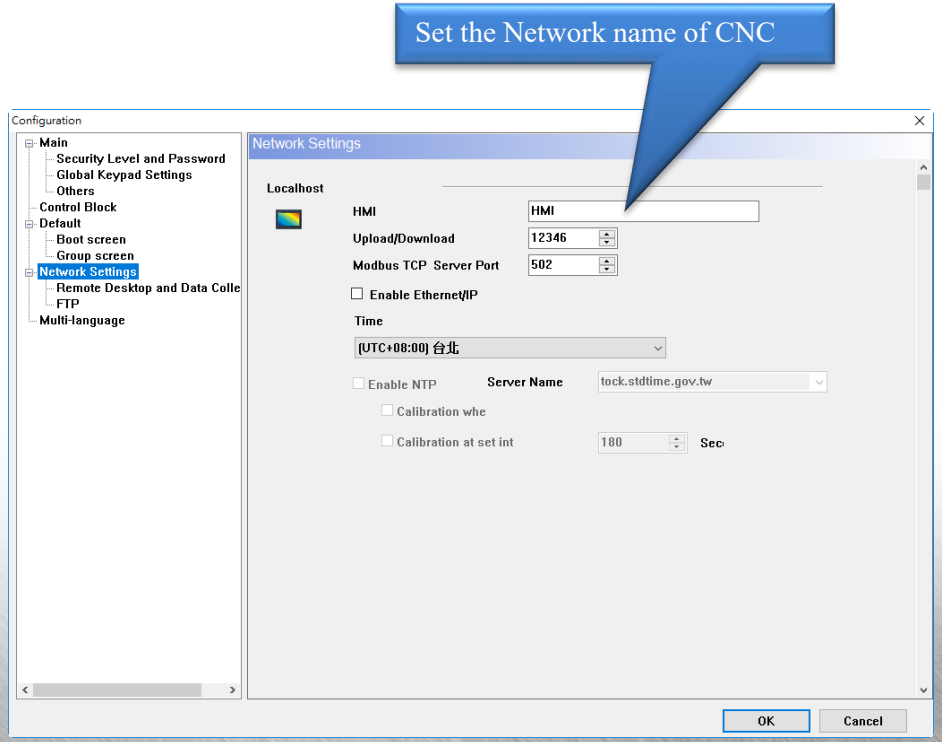
How to use DOPSoft?

Configuration: Network settings



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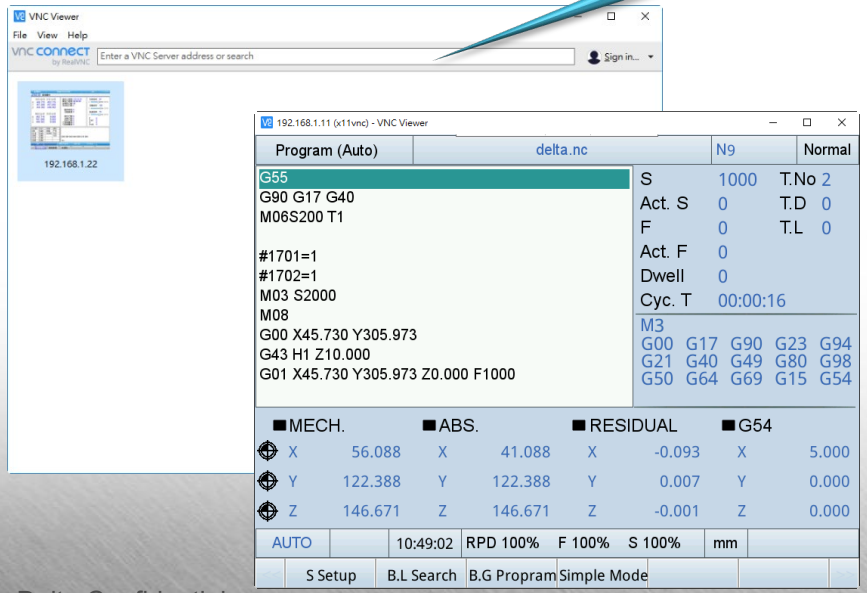
How to use DOPSoft?

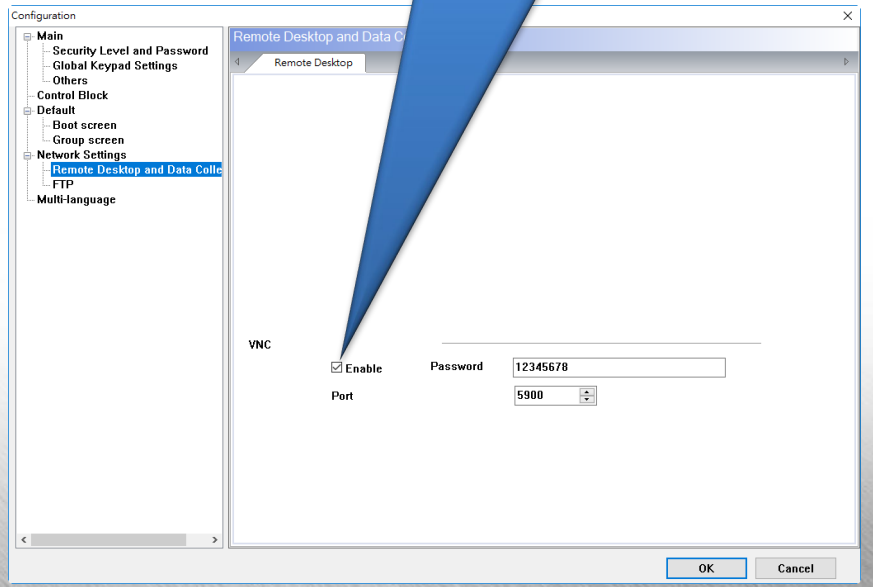
Configuration: Remote control

- Supports third-party VNC software.

Enter the CNC IP address and the password before starting the remote control.

Enable the VNC function
Default port: 5900
Password: 12345678

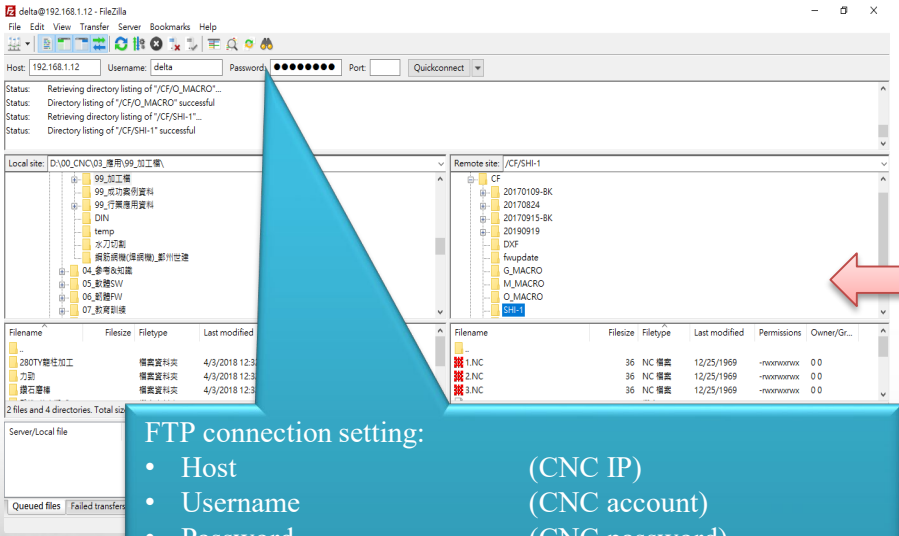




How to use DOPSoft?

Configuration: FTP

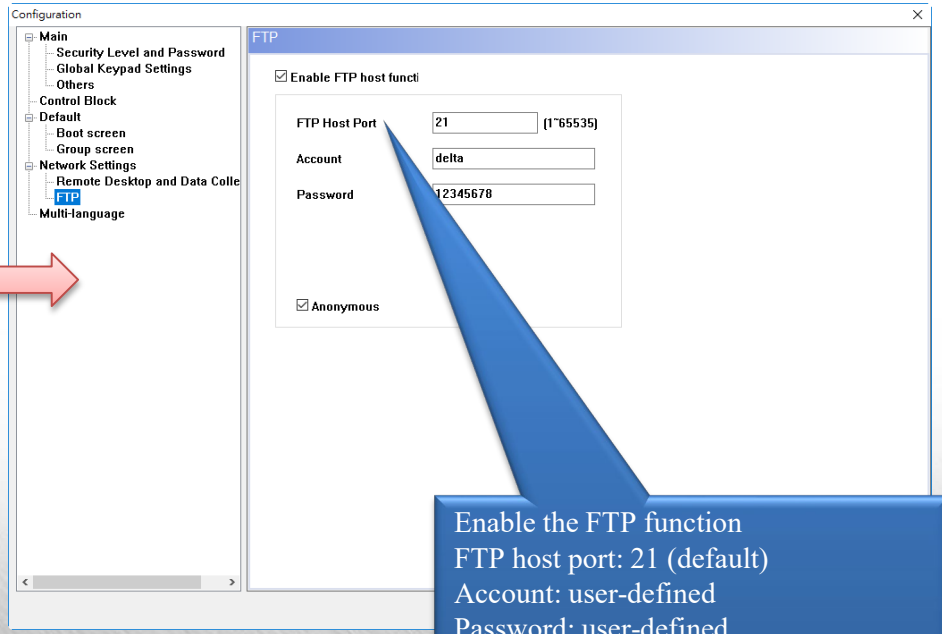
- Supports third-party FTP Client software.



FTP connection setting:

- Host (CNC IP)
- Username (CNC account)
- Password (CNC password)
- Port (CNC host port)

Click 【Quickconnect】 to start connecting, and you can upload/download files to or from PC/CNC.

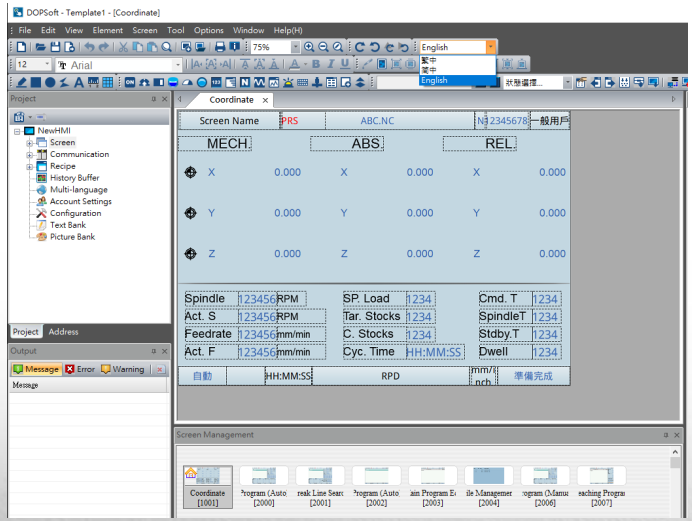


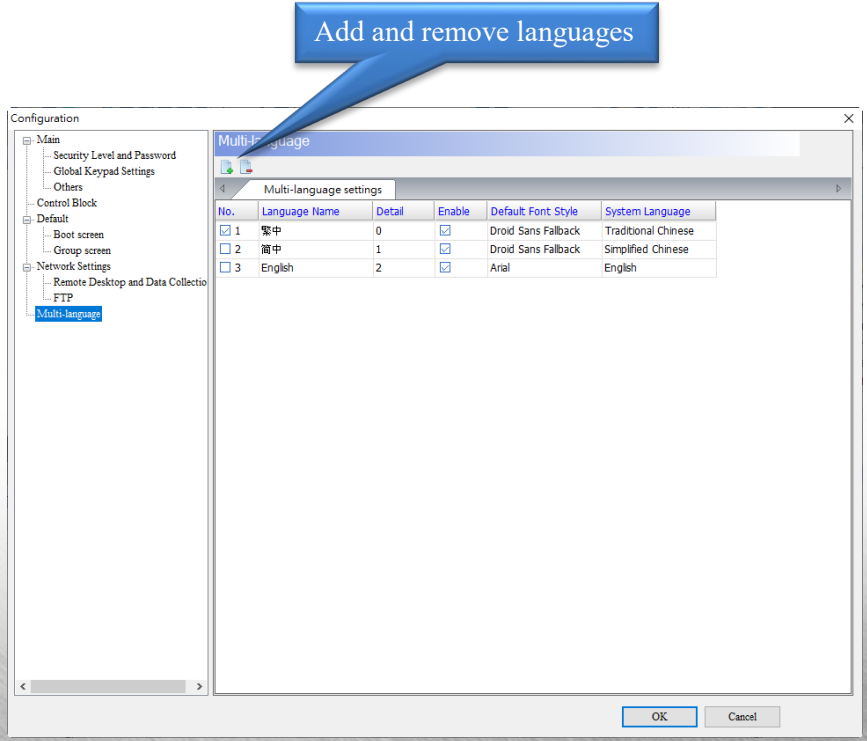
Enable the FTP function
FTP host port: 21 (default)
Account: user-defined
Password: user-defined

How to use DOPSoft?

Configuration: Multi-language

- Use Pr.10004 to switch the system language.

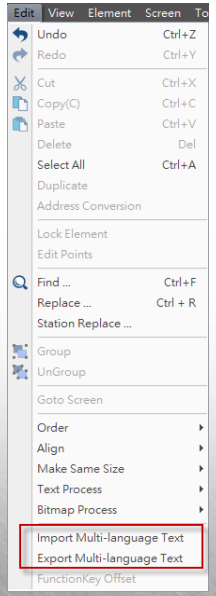




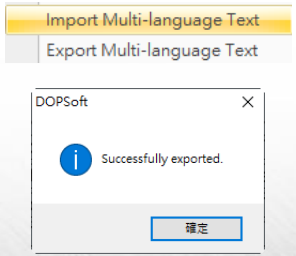
How to use DOPSoft?

Configuration: Multi-language

- Export the system descriptions as an excel file for translation.
- Import the excel file after translating the descriptions.



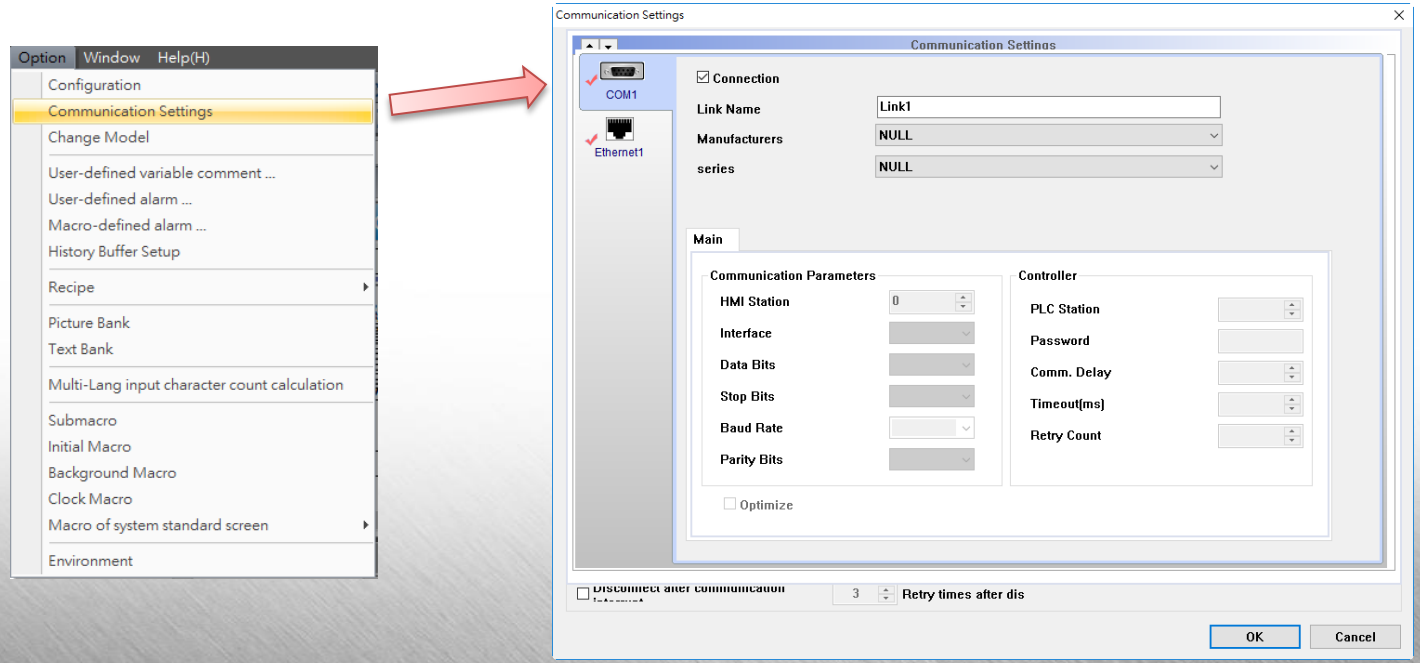
	F	G	H	I
1	繁中	简中	English	Screen ID
2	主軸轉速	主轴转速	Spindle	1001
3	實際轉速	实际转速	Act. S	1001
4	主軸刀號	主轴刀号	SpindleT	1001
5	RPM	RPM	RPM	1001
6	切削進給	切削进给	Feedrate	1001
7	實際進給	实际进给	Act. F	1001
8	mm/min	mm/min	mm/min	1001



How to use DOPSoft?

Communication Settings: Device

- In the Communication Settings, set the communication protocols for the external devices.



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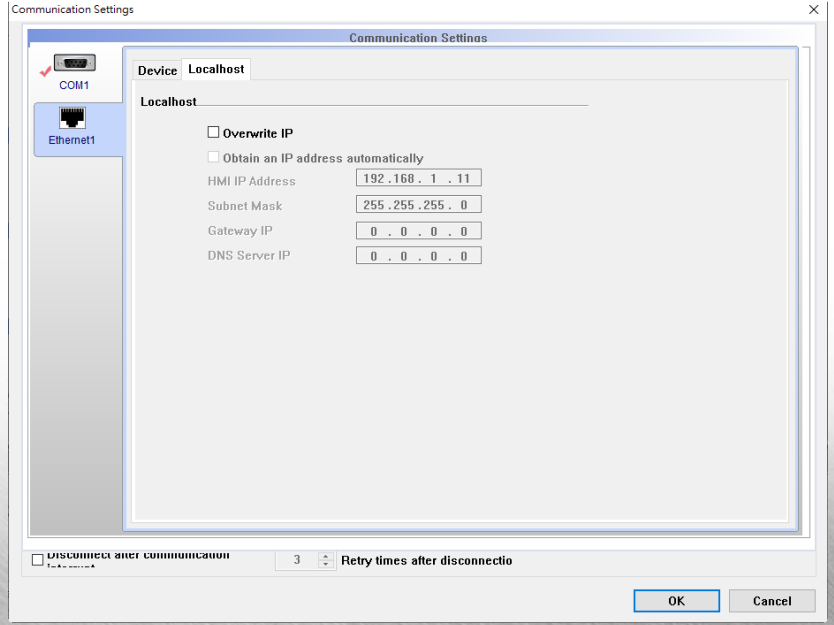
How to use DOPSoft?

Communication Settings: Localhost

- Sets whether to overwrite the Ethernet IP address when downloading screens to the controller.



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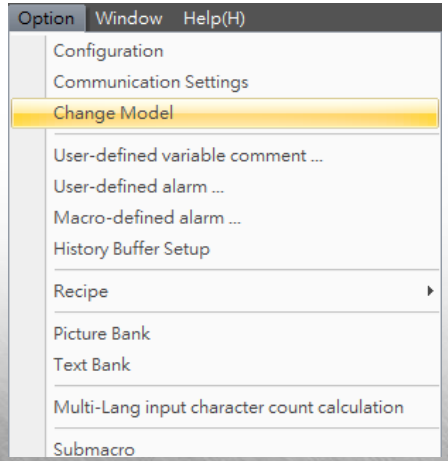
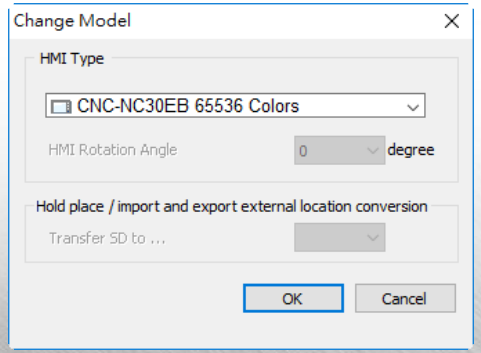
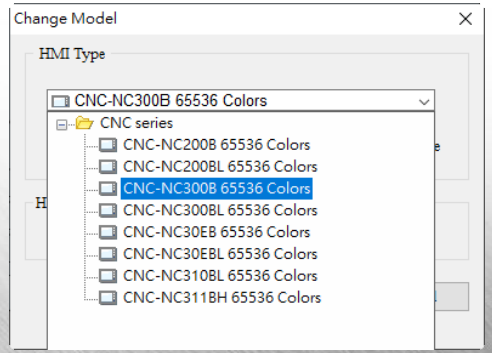
How to use DOPSoft?

Change Model

- You can change the screen project model with simple steps.
- The system checks the model type of the project before downloading screens to the CNC controller.







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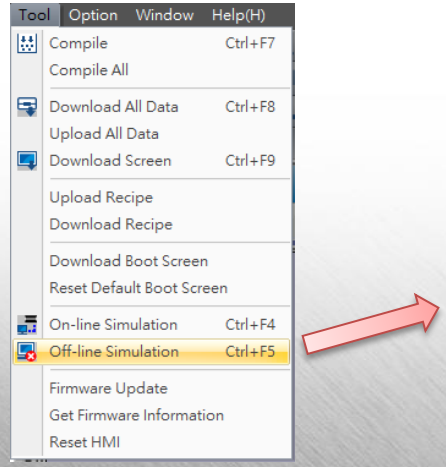
How to use DOPSoft?

Off-line simulation

- You can do off-line simulation in DOPSoft on your PC without the actual controller.
- There is no MLC logical action in off-line simulation, so you cannot read or write the MLC registers using special D and M.



Firmware Upgrade
&
Screen Download/Upload

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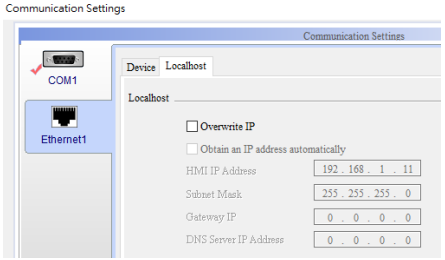
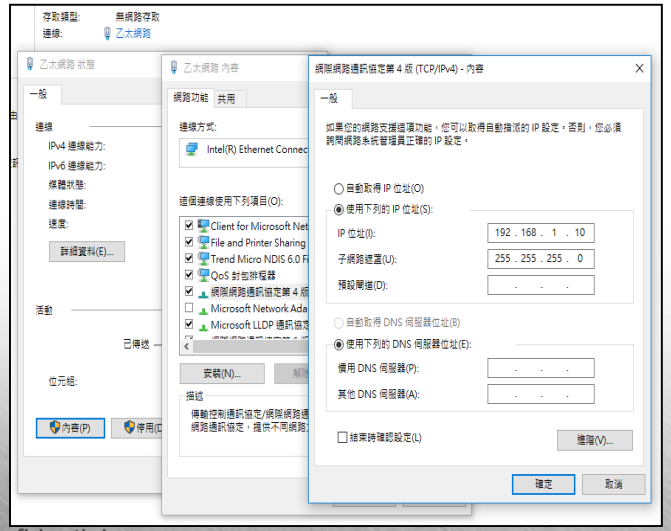
How to Connect

Connection between PC and CNC

- Before screen download/upload or FW upgrade by Ethernet, set up the correct IP address of the PC and CNC controller.



Default IP address:
DHCP (System)
192.168.1.11 (Standard screen)



Parameter	delta.nc	N9	Normal
ParID	Param Name	PRS	Param Value
10030	Host name		CNC000
10031	IP address	P	192.168. 1. 11
10032	Subnet mask	P	255.255.255. 0
10033	Default gateway	P	0. 0. 0. 0
10034	Network function	P	1
	Network function switch (0: off; 1: on)	P	1
	Disable the limits of peer IP addresses	P	0
10035	DHCP switch (0: off; 1: on)	P	0
10036	Remote PC IP address 1		192.168. 1. 10
10037	Remote PC IP address 2		0. 0. 0. 0
10038	Remote PC IP address 3		0. 0. 0. 0
10039	Remote PC IP address 4		0. 0. 0. 0
10040	Remote PC IP address 5		0. 0. 0. 0
10041	Shared remote directory IP address		1
10055	FTP setting	P	21
	FTP Enable	P	1

Range : 1~8

AUTO | 11:22:48 | RPD 100% | F 100% | S 100% | mm

<= | Default

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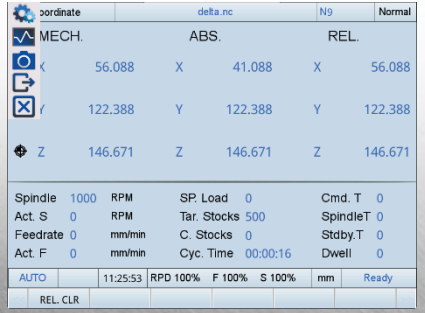
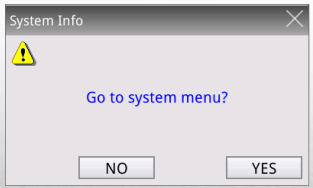
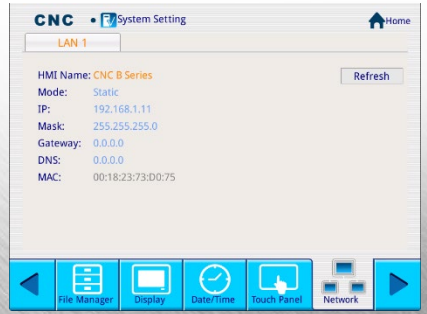
How to Confirm IP Address

System directory: Current IP address

- Connect the mouse to the controller
- Left-click the blank area in the screen and hold for 3 seconds, and the system menu displays will on the upper left corner.
- Click 【System menu】 to enter the system menu.
- Click 【System setting】 and enter the 【Network】 function page.
- You can see the current network setting and change the IP address setting.







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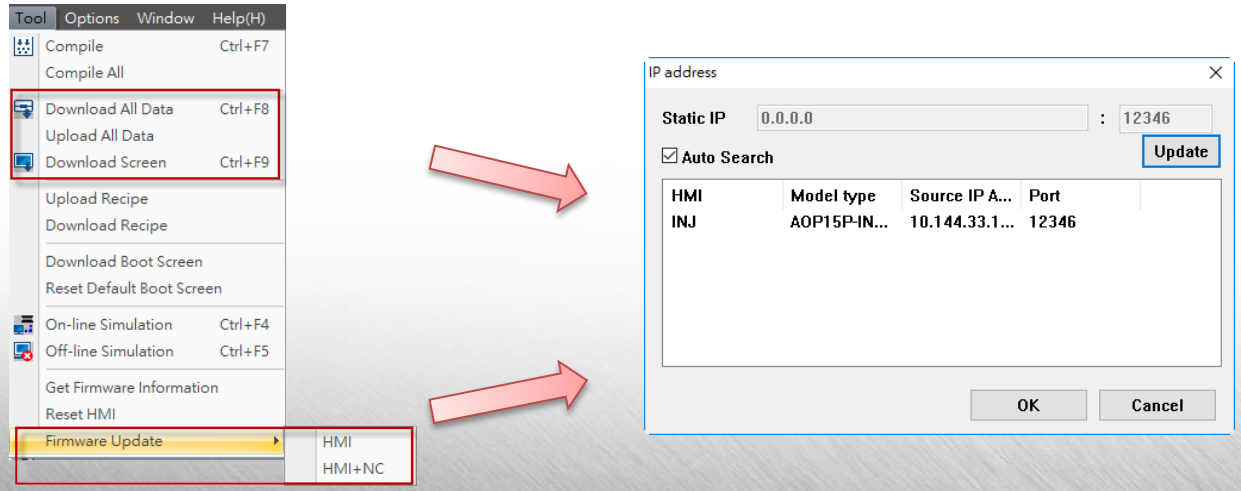
Firmware Update & Screen Download/Upload

Connecting between DOPSoft and CNC

- Before downloading/uploading screens or updating the firmware by Ethernet, set up the correct IP address of the controller and your PC.
- The system automatically searches the CNC controllers in the same network domain.



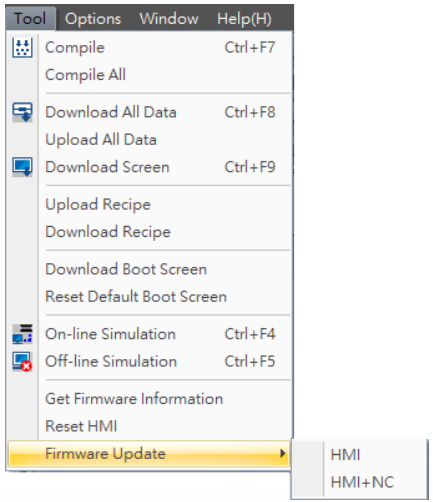
Firmware Update & Screen Download/Upload

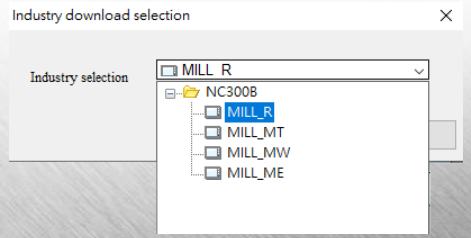
Firmware update

- Firmware update
  - HMI ➔ only update HMI firmware.
  - HMI + NC ➔ update HMI and Motion firmware. (select the application)

- Firmware file type
  - The files with .pkt extension are Motion firmware.
  - The files with .nk extension are HMI firmware.

- Your CNC controller must be equipped with a CF card to perform firmware update.





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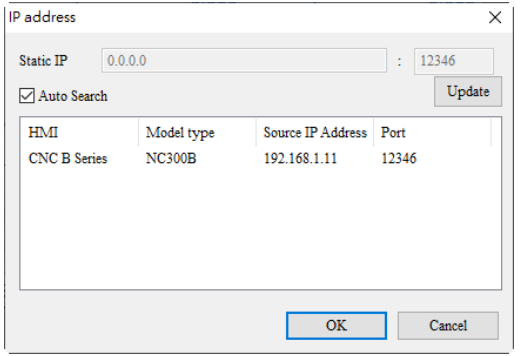
Firmware Update & Screen Download/Upload

Firmware update 1: Ethernet

- Connect the PC to the CNC controller with DOPSoft.
- Update the FW by executing 【Firmware Update】.



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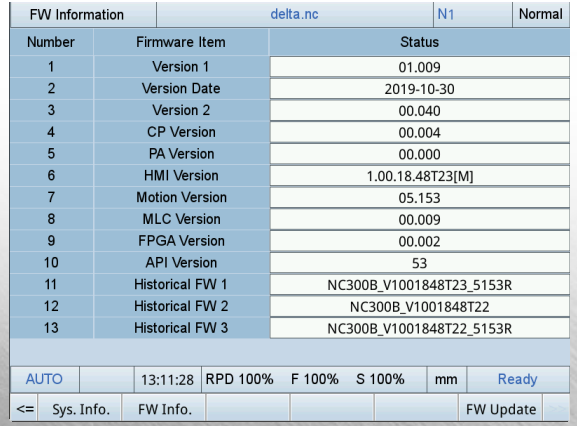
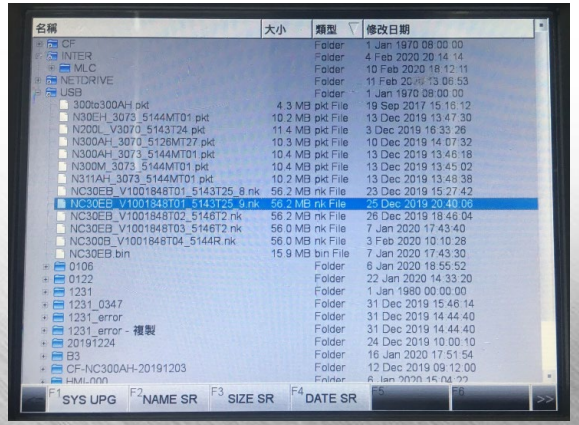
Firmware Update & Screen Download/Upload

Firmware update 2: USB drive

- Put firmware files into the USB drive and insert it to the controller.
- Press 【Burn Mode】 function key on the screen to active the burning function.
  - Function key : DGN → Sys.Info. → FW Info. → FW Update
- Restart the system and enter the Burn mode screen.
- Select the firmware file and press 【F1 SYS UPG】 key to update the firmware.



FW Information		delta.nc	N1	Normal
Number	Firmware Item	Status		
1	Version 1	01.009		
2	Version Date	2019-10-30		
3	Version 2	00.040		
4	CP Version	00.004		
5	PA Version	00.000		
6	HMI Version	1.00.18.48T23[M]		
7	Motion Version	05.153		
8	MLC Version	00.009		
9	FPGA Version	00.002		
10	API Version	53		
11	Historical FW 1	NC300B_V1001848T23_5153R		
12	Historical FW 2	NC300B_V1001848T22		
13	Historical FW 3	NC300B_V1001848T22_5153R		
AUTO		13:11:28	RPD 100% F 100% S 100% mm	Ready
<=	Sys. Info.	FW Info.		FW Update



Screen Programming

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Screen Programming

1. Device & Address
2. Function key
3. Macro
4. Screen and Element

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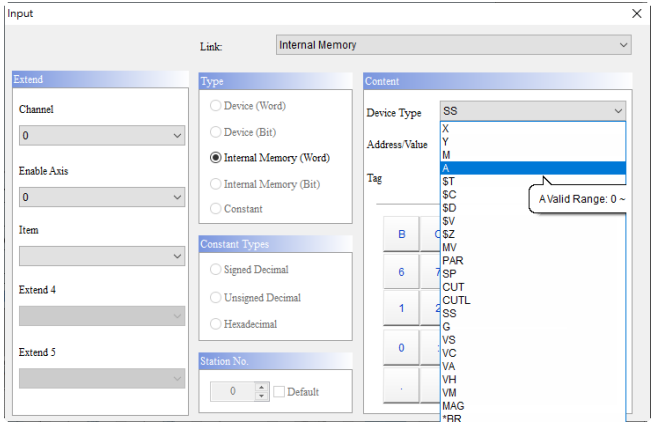
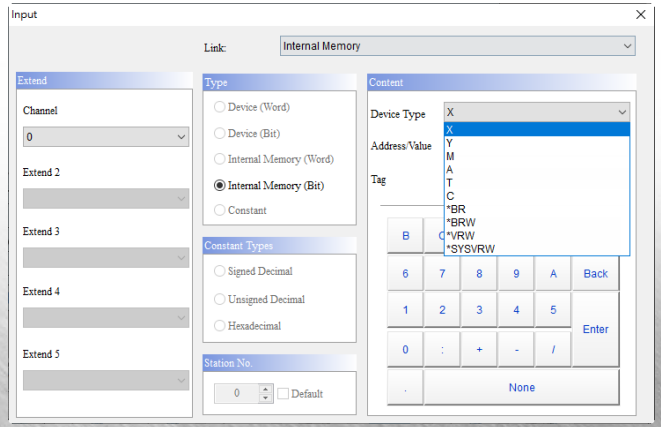
Device and Address

Internal device

- Internal memory
- Internal Status





Every device corresponds to some specific elements.

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Device and Address

Internal memory

Device	Description	Range	Related elements
X	PLC Variable (Bit)	0~511	
Y	PLC Variable (Bit)	0~511	
M	PLC Variable (Bit)	0~3071	
A	PLC Variable (Bit)	0~511	
T	PLC Variable (Bit)	0~255	
C	PLC Variable (Bit)	0~77	
$T	PLC Variable (Word)	0~255	
$C	PLC Variable (Word)	0~77	
$D	PLC Variable (Word)	0~1535	
$V	PLC Variable (Word)	0~7	
$Z	PLC Variable (Word)	0~7	
ST	System and FW status	1~15	
SS	Servo status	0~7	Parameter
SP	Servo parameter		Parameter
PAR	System parameter	0~14999	Parameter

ST (System status)		
Number	System	FW ver
1	The last O file Number	Version 1
2	The Last Line Number	Version 1 Date
3	Batty Power	Version 2
4	Check Code	Serial number 1_(CP)
5	Check Time	Serial number 1_(PA)
6	CF Card Capacity	Serial number 1_(HM)
7	CF Card Check	Serial number 1_(MO)
8	CF Block Size	Serial number 1_(ML)
9	IP address	Serial number 1_(FP)
10	Subnet mask	Serial number 1_(API)
11	Default gateway	
12	MAC Address	
13	Ethernet Status	

SS(Servo Status)
Ave. Load
Peak Load
DC Bus Volt.
Inertia Ratio
Drive Status
Motor Speed

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Device and Address

Internal memory

Device	Description	Range	Related elements
MAG	Tool magazine	0~49	Magazine and tool
CUT	Milling cutter	1~100	
CUTL	Lathe cutter	1~64	
MV	# variable	0~11000	
P	Coordinate		Axis coordinate
G	G group		
H	Graphic edit argument	1~52	Graphic edit
*BR	HMI latch R variable	0~1023	
*BRW	HMI latch R/W variable	0~1023	
*VRW	HMI volatile R/W variable	0~2047	
*SYSVRW	HMI system volatile R/W variable	0~1023	

MAG (tool magazine)
M (cutter no. in magazine)
SpindleT (spindle tool no.):actual tool no. (like change #2500)
StandbyT (standby tool no.)
CmdT (command tool no.) actual tool no. (like change #2500)
StandbyM (standby cutter no.)

CUT (milling cutter)
Length
Radius
Length Wear
Radius Wear
Life

CUTL (lathe Cutter)
Length
Length Wear
Nose Radius
Nose Radius Wear
Nose Point Type

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Device and Address

Internal memory

Device	Description	Range	Related elements
MAG	Tool magazine	0~49	Magazine and tool
CUT	Milling cutter	1~100	
CUTL	Lathe cutter	1~64	
MV	# variable	0~11000	
P	Coordinate		Axis coordinate
G	G group		
H	Graphic edit argument	1~52	Graphic edit
*BR	HMI latch R variable	0~1023	
*BRW	HMI latch R/W variable	0~1023	
*VRW	HMI volatile R/W variable	0~2047	
*SYSVRW	HMI system volatile R/W variable	0~1023	

P (Coordinate)
Offset Coordinate
G54
G55
G56
G57
G58
G59
G54P01 ~ G54P64
Mechanical Coordinate
Absolute Coordinate
Relative Coordinate
Residual Coordinate

G Group
G (G code)
M (M code)
T (tool number) : from T code
S (spindle command speed)
S-Act (spindle actual speed)
F (command feedrate)
F-Act (actual federate)
D (tool radius compensation number)
H (tool length compensation number)
T (halt time)
L (executing G command number)

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Device and Address

System variable

No.	Device Name	Device Name
60000	MPG Pulse	R:VS_0_0 1234
60003	Max. Axes	R:VS_0_3 1234
61100	Tapping Error um	R:VC_0_100 123.4567
61101	Spindle Angle	R:VC_0_101 123.4567
61102	Spindle Speed rpm	R:VC_0_102 12345.67
64008	MLC Scan Time	R:VM_0_8 1234
64009	MLC Min. Scan Time	R:VM_0_9 1234
64010	MLC Max. Scan Time	R:VM_0_10 1234

Number	System Item	Status
1	Last O Macro	R:ST_0_Sys_1 ABCDEFGHIJKLMNOPQRST
2	Last Line	R:ST_0_Sys_2 ABCDEFGHIJKLMNOPQRST
3	Battery Capacity	R:ST_0_Sys_3 ABCDEFGHIJKLMNOPQRST
4	CF Card Capacity	R:ST_0_Sys_4 ABCDEFGHIJKLMNOPQRST
5	IP Appress	R:ST_0_Sys_5 ABCDEFGHIJKLMNOPQRST
6	Subnet Mask	R:ST_0_Sys_6 ABCDEFGHIJKLMNOPQRST
7	Default Gateway	R:ST_0_Sys_7 ABCDEFGHIJKLMNOPQRST
8	MAC Address	R:ST_0_Sys_8 ABCDEFGHIJKLMNOPQRST
9	Ethernet Status	R:ST_0_Sys_9 ABCDEFGHIJKLMNOPQRST
10	System Serial Number	R:ST_0_Sys_10 ABCDEFGHIJKLMNOPQRST

1	Version 1	R:ST_0_Ver_1 ABCDEFGHIJKLMNOPQRST
2	Version Date	R:ST_0_Ver_2 ABCDEFGHIJKLMNOPQRST
3	Version 2	R:ST_0_Ver_3 ABCDEFGHIJKLMNOPQRST
4	CP Version	R:ST_0_Ver_4 ABCDEFGHIJKLMNOPQRST
5	PA Version	R:ST_0_Ver_5 ABCDEFGHIJKLMNOPQRST
6	HMI Version	R:ST_0_Ver_6 ABCDEFGHIJKLMNOPQRST
7	Motion Version	R:ST_0_Ver_7 ABCDEFGHIJKLMNOPQRST
8	MLC Version	R:ST_0_Ver_8 ABCDEFGHIJKLMNOPQRST
9	FPGA Version	R:ST_0_Ver_9 ABCDEFGHIJKLMNOPQRST
10	API Version	R:ST_0_Ver_10 ABCDEFGHIJKLMNOPQRST
11	Historical FW 1	R:ST_0_File_11 ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEF
12	Historical FW 2	R:ST_0_File_12 ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEF
13	Historical FW 3	R:ST_0_File_13 ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEF

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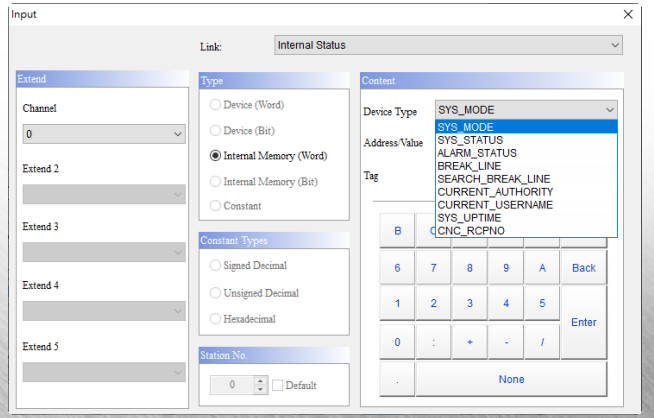
Device and Address

Internal Status

- SYS_MODE (system current mode)
  - 0:Auto, 1:Edit, 2:MDI, 3:MPG, 4:Jog, 5:Rapid, 6:Home
- SYS_STATUS (system current status)
  - 0:Ready, 1:Stop, 2:Executing, 3:Processing, 4:EMG, 5:Servo not ready, 6:MLC stop
- ALARM_STATUS (alarm status)
  - 0:No alarm, 1:Alarm occurred
- BREAK_LINE (breakpoint block no.)
- SEARCH_BREAK_LINE (search breakpoint block no.)



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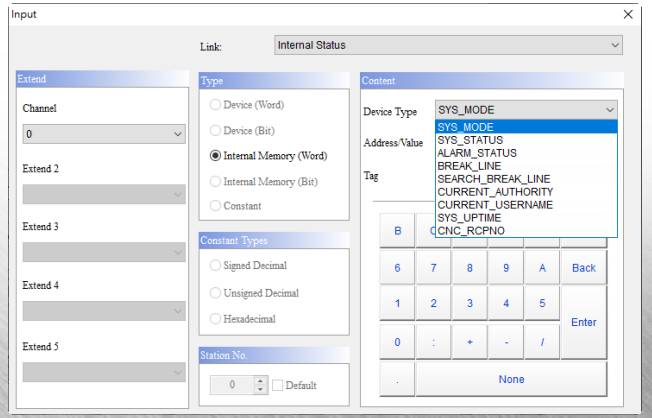
Device and Address

Internal Status

- CURRENT_AUTHORITY (current login authority)
  - 0:Normal user、1:User permission 1、2:User permission 2、3:Device permission
- CURRENT_USERNAME (current login user name)
- SYS_UPTIME (system operating time: minute)
- CNC_RCPNO (current using RCP number)



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Screen Programming

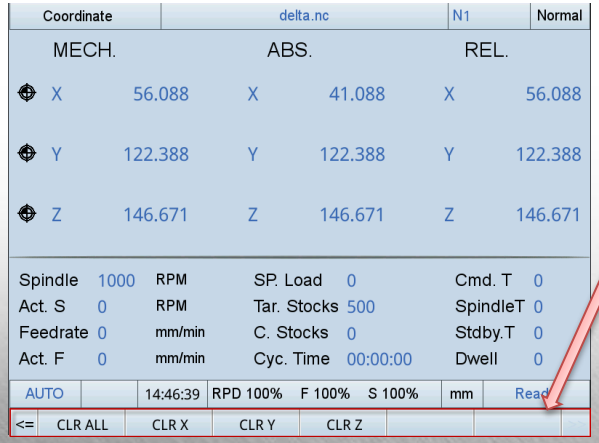
1. Device & Address
2. Function key
3. Macro
4. Screen and Element

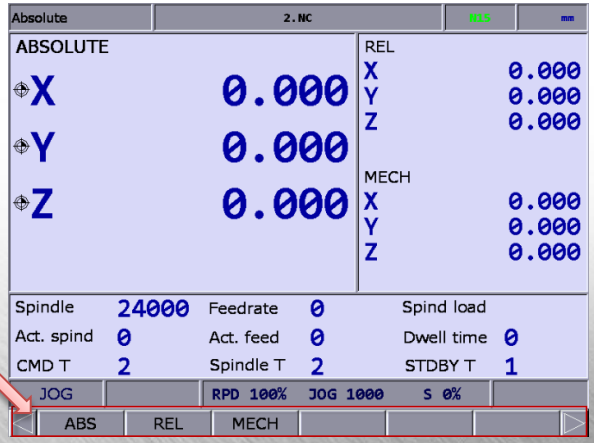
Delta Confidential

Function Key

Feature

- Function keys (F1 - F6 or F1 - F8) of the controller can correspond to user defined functions.



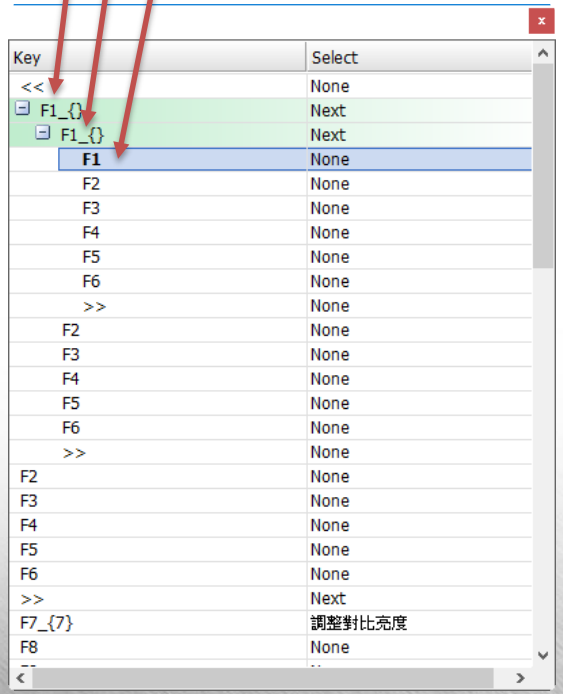


Function Key

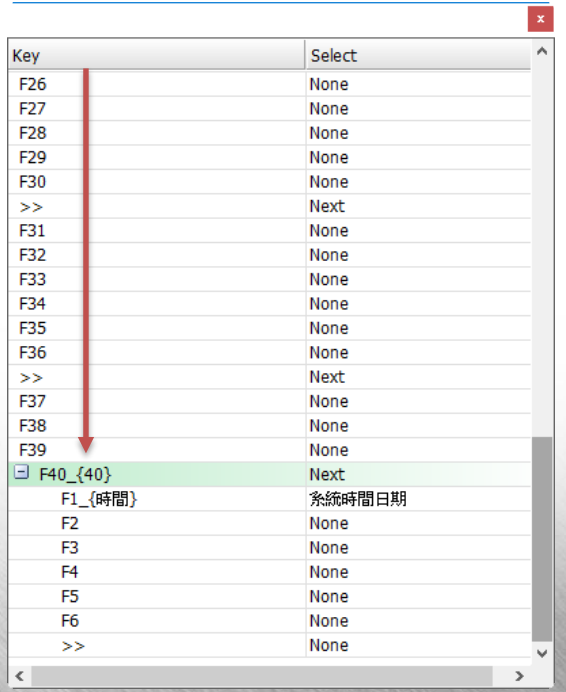
Level and group

- Maximum 3 levels
- Up to 40 keys in each level.
- Automatic grouping keys depending on the model. (one group has 8 keys or 6 keys)

3 levels



Up to 40 keys within a level



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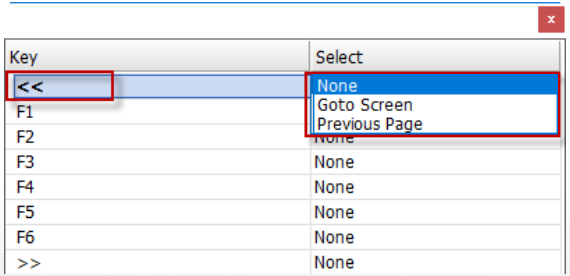
Function Key

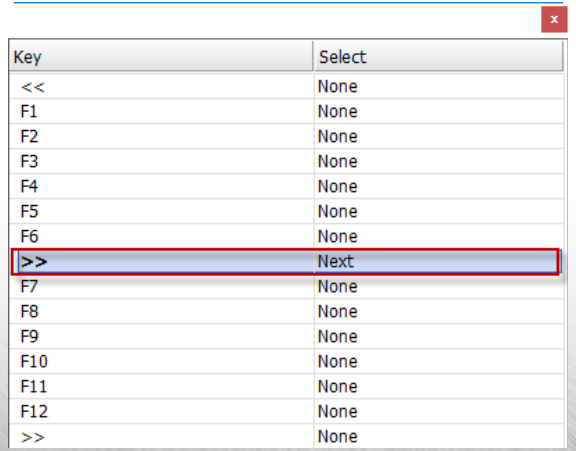
Key: <<

- None
  - Go to the previous group.
- Goto Screen
- Previous Page



Key: >>

- None
- Next
  - Group extension



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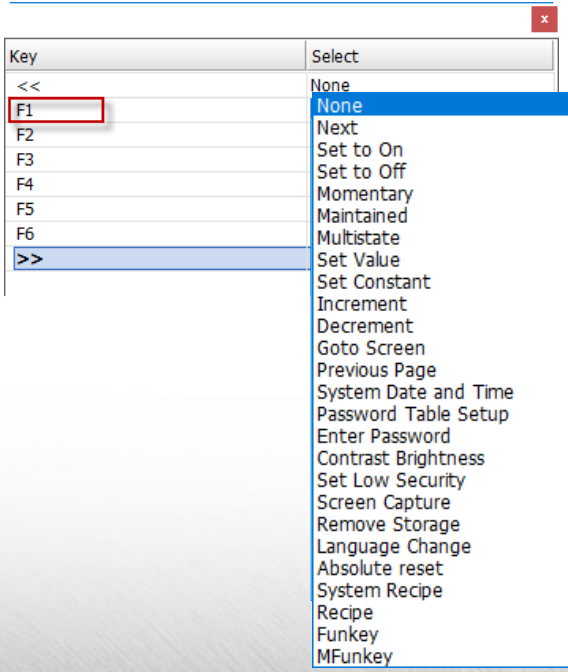
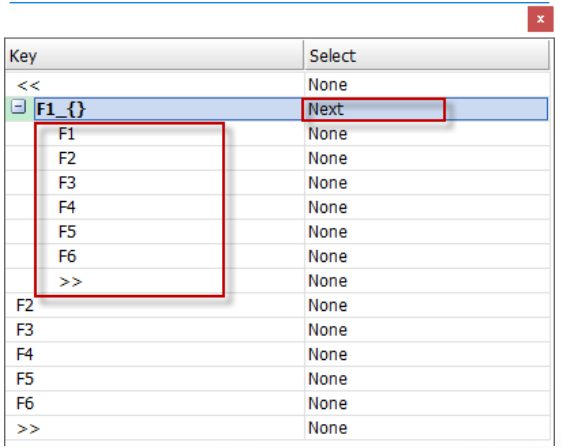
Function Key

Key: F1 - F6 (F8)

- Next
  - Activate the next level
- Set to On
- Set to Off
- …
- Set Constant
- …
- Goto Screen
- Previous Page
- …





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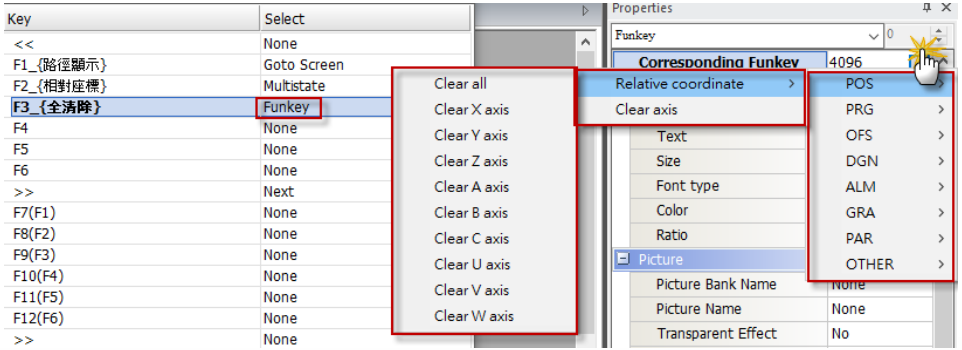
Function Key

Key: F1 - F6 (F8)

- Funkey
  - All functions works the same as that of the A series.
  - Corresponding funkey
    - Select specific function



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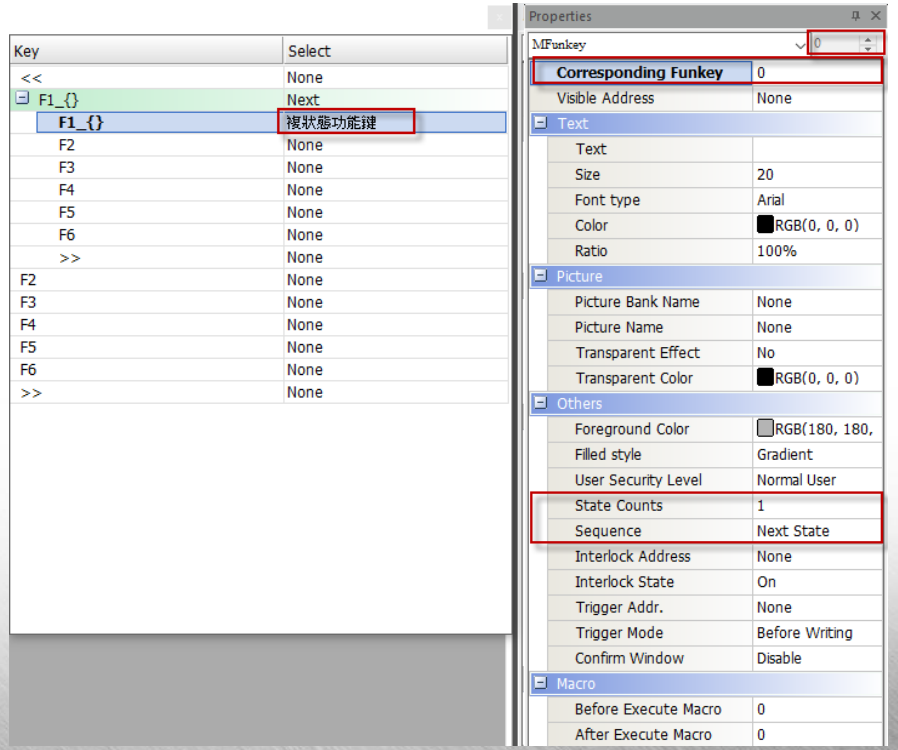
Function Key

Key: F1 - F6 (F8)

- MFunkey
  - One function key can have multiple display and function key features.
  - Status counts
  - Sequence (status switching way)
    - Next status/ Previous status
  - Corresponding funkey



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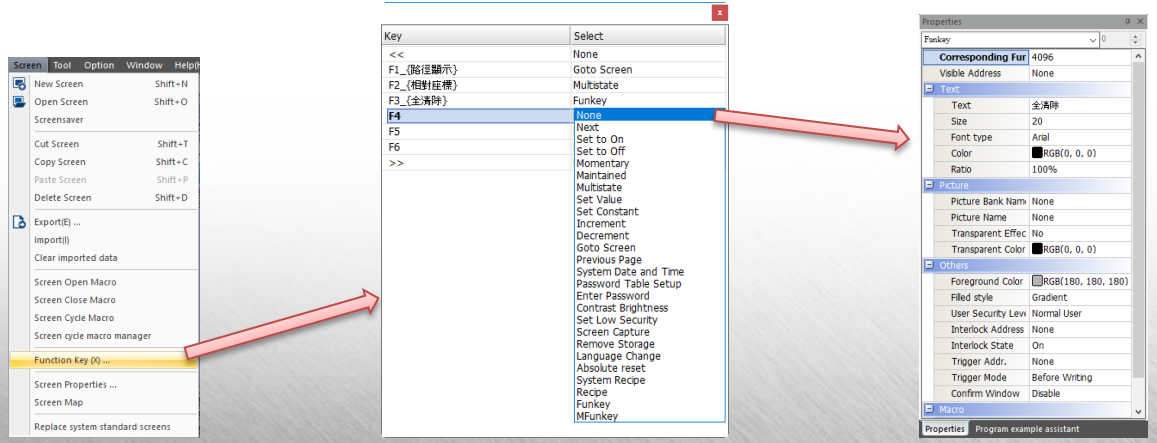
Function Key

Properties

- Each screen has independent function key settings
  - Function key priority: subscreen > base screen > screen
  - Function keys are invalid when they are on the embedded screen.
- You can set the properties such as text or color of the function key.
- You can set as various function like 【Next】,【Funkey】,【Goto screen】,【Set value】, and 【Multistate】 for the function key.

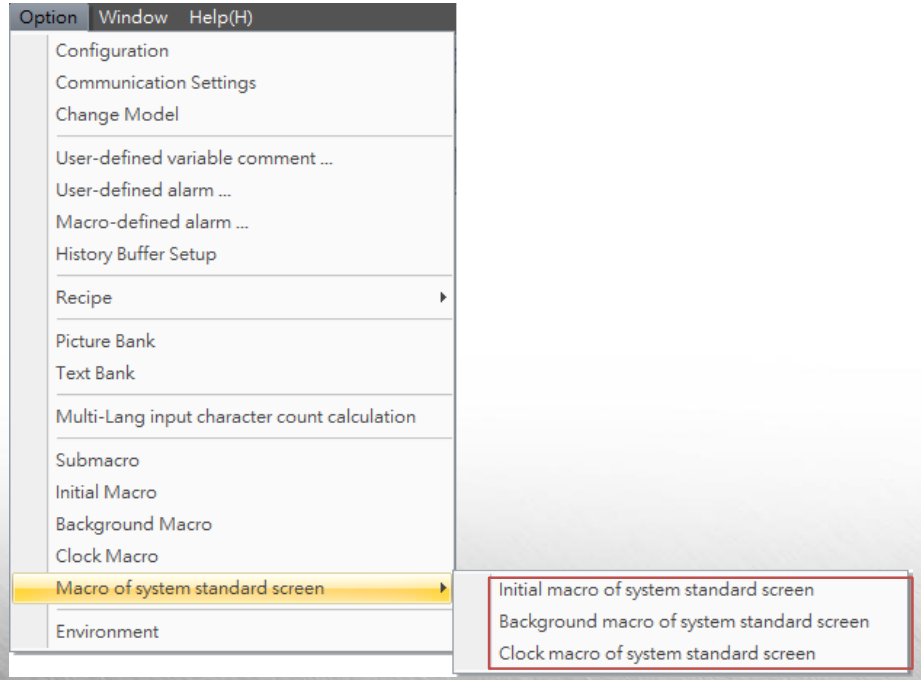


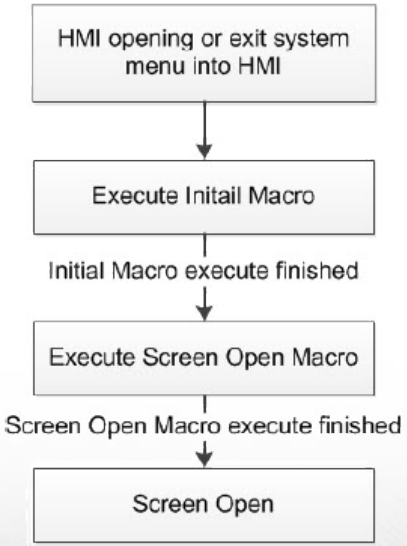
Screen Programming

1. Device & Address
2. Function key
3. Macro
4. Screen and Element

Delta Confidential

System macro: Initial





Macro of system standard screens are used for screen templates.

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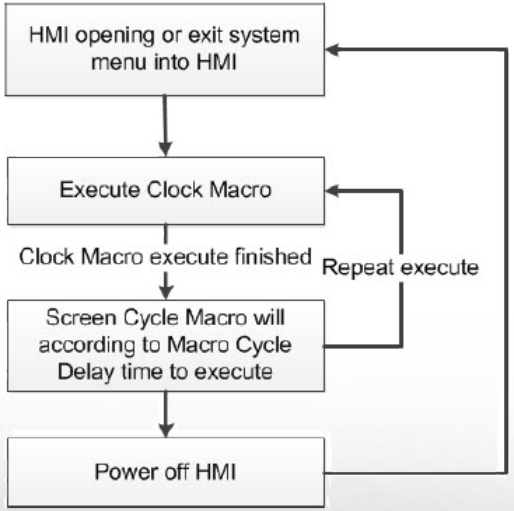
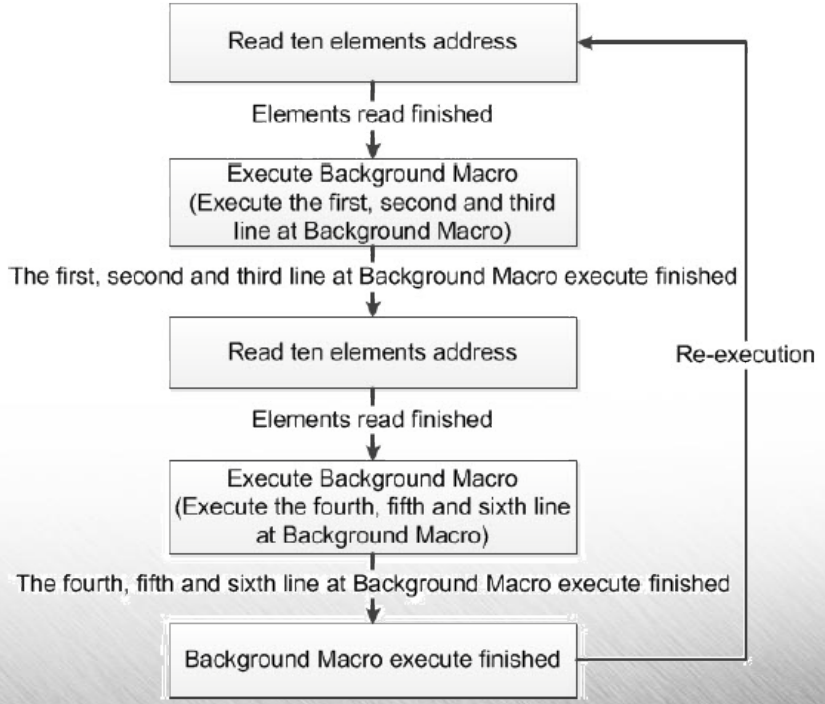
System macro: Clock / Background





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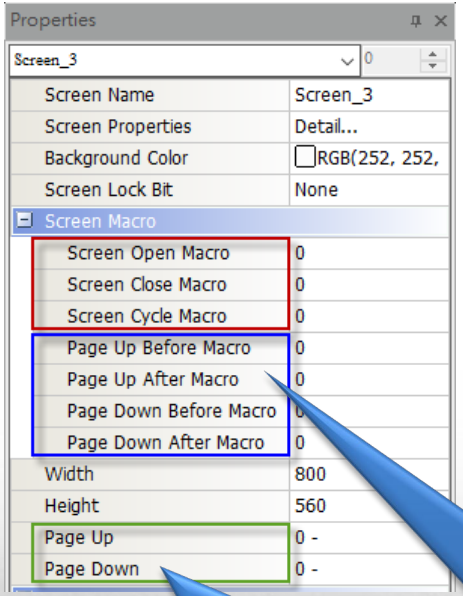
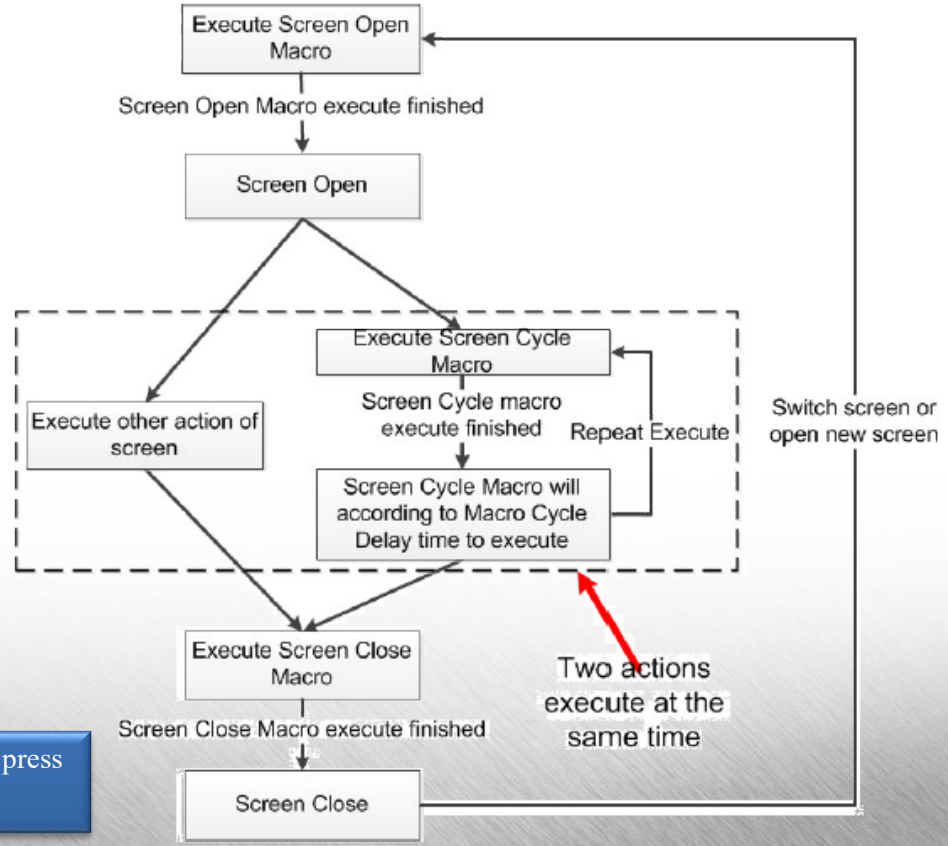
Macro

Screen macro



Go to screen when press 【Page Up】or 【Page Down】

Macro will be executed when you press 【Page Up】 or 【Page Down】



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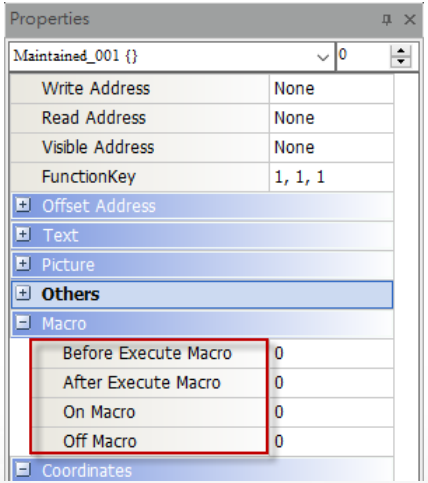
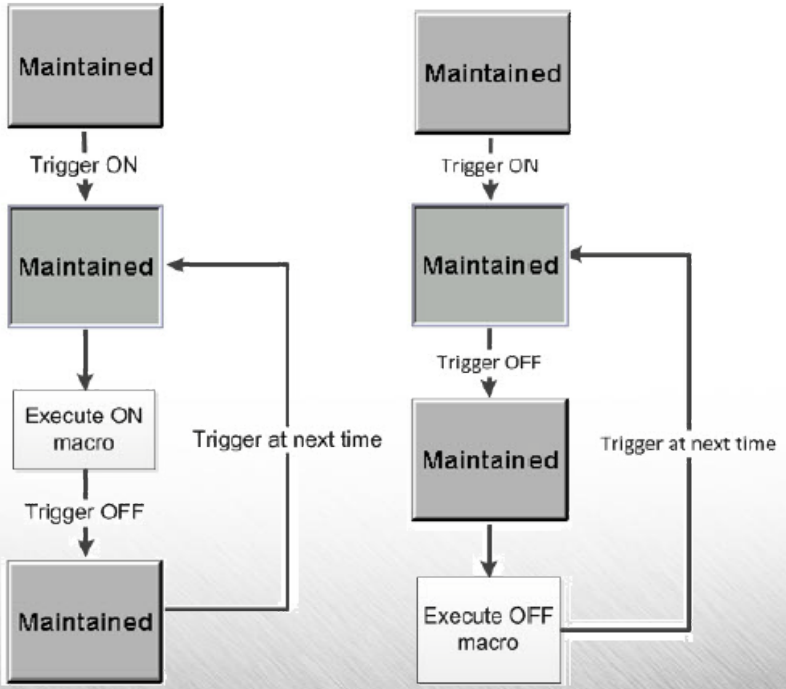
Macro

Element macro





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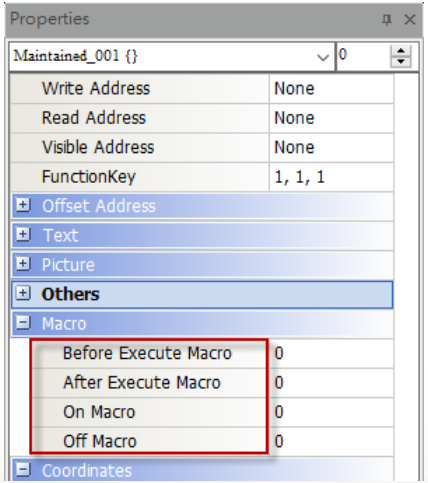
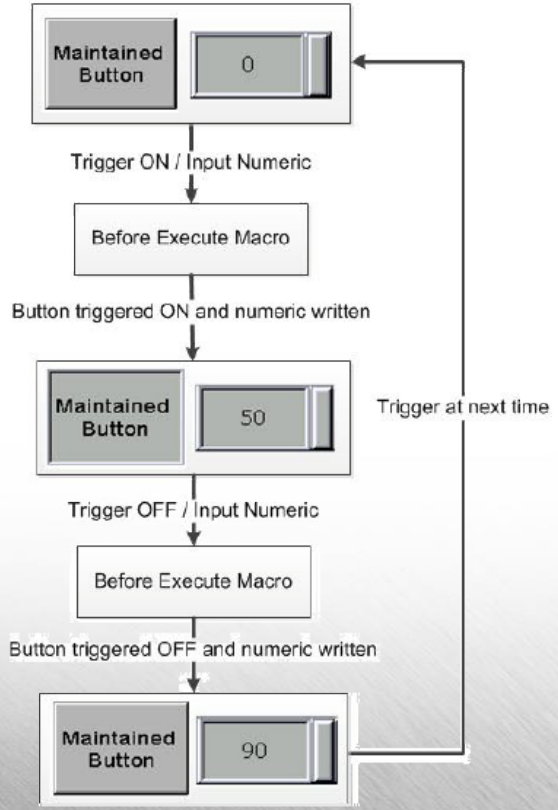
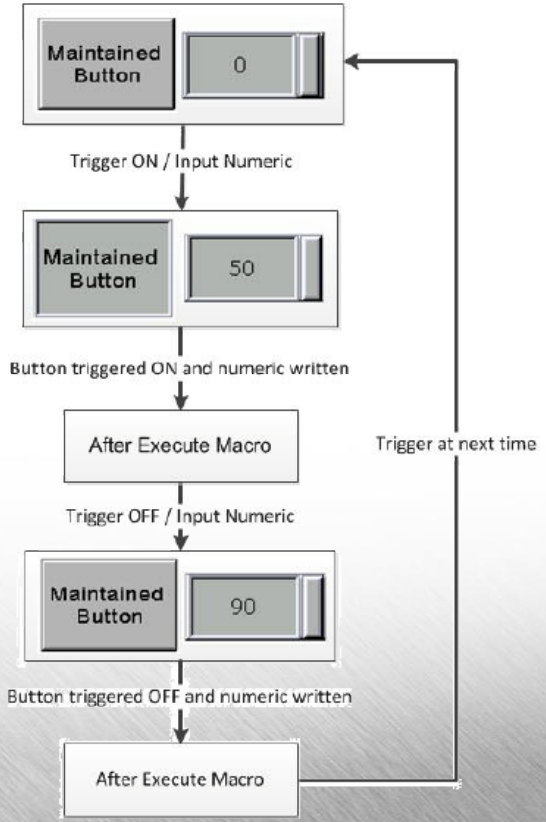
Macro

Element macro







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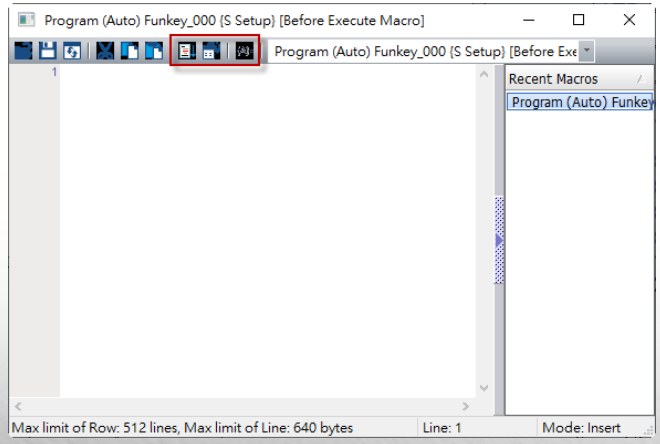
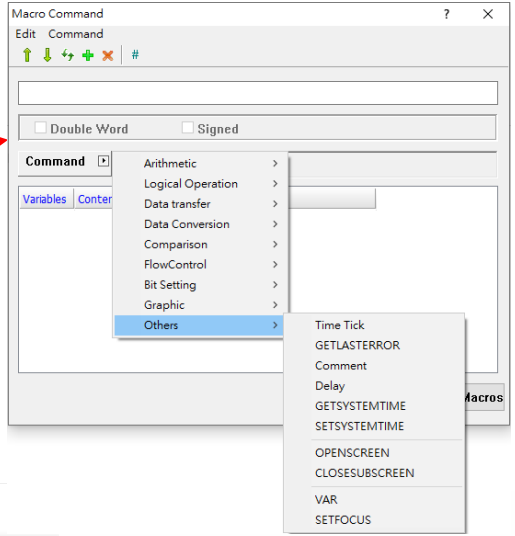
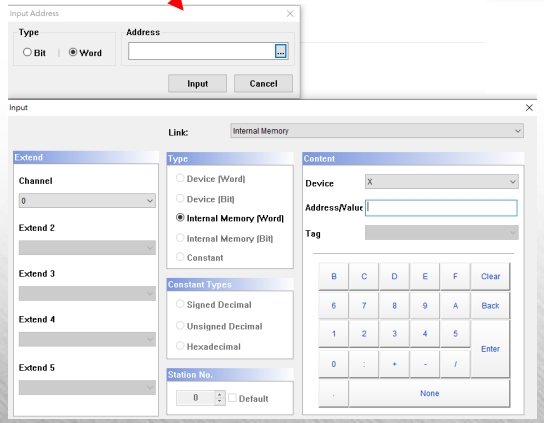
Macro

Macro edit window

- Syntax check: Check the current marco syntax correctness.
- Macro Wizard: Open the editing window and command menu.
- Input address: Open the address input window.







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Macro command

- QADD/QSUB/QMUL/QDIV/QMOD: 64 bits floating calculation

- QMOV: move the 64-bit floating point number
- QBMOV: move the 64-bit floating block
- QArrayCopy: move the 64-bit floating block and assign the starting address by offset

- FTOQ/QTOF: 64-bit floating and 32-bit floating conversion
- QCMP: compare the 64-bit floating number

Q… commands are used for double-precision floating variables (64-bit) such as MV(#).
F… commands are used for single-precision floating variables (32-bit).

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Macro command

- SSMOV: read servo status to variables
- DEVMOV: read any data such as parameter, system variable or tool value to variables
  (Each data has its own format length, so the data length of this command is not fixed)
- OPENSCREEN: open a specified main screen
- CLOSESUBSCREEN: close a specified subscreen
- SETFOCUS: directly focus on a specified element on the specified screen to operate

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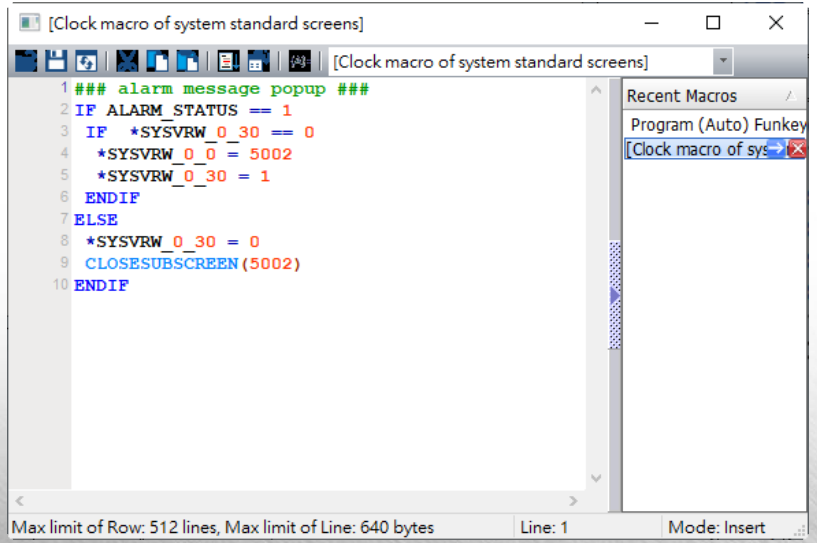
Macro example

- When system alarm occurs, the alarm message window will popup.
- When system alarm is released, the alarm message window will disappear.



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Screen Programming

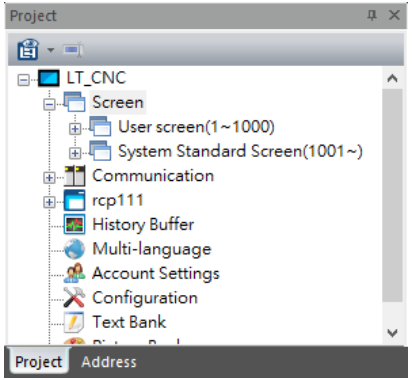
1. Device & Address
2. Function key
3. Macro
4. Screen and Element

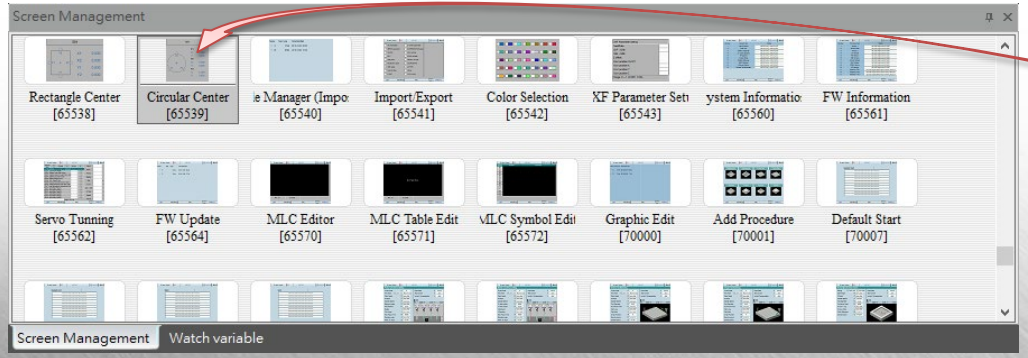
Delta Confidential

Screens

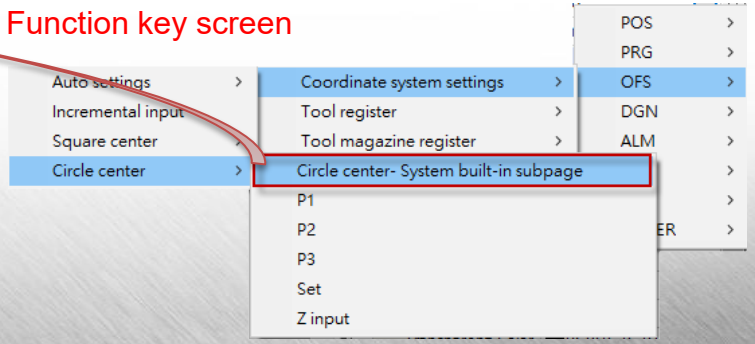
Screen ID definition

- Screen ID:
  - 1 ~ 1000 : Soft Panel (compatible with A series)
  - 1001 ~ 65534 : Standard screens
  - 65535 : Default base screen
  - 65536 ~ : System screens and function key screens (these screens are fixed)





Function key screen



Element

CNC elements

- Set to On
- Set to Off
- Momentary
- Maintained
- Multistate
- Set Value
- Set Constant
- Increment
- Decrement
- Goto Screen
- System Date and Time
- Password Table Setup
- Enter Password
- Contrast Brightness
- Set Low Security
- Screen Capture
- Remove Storage
- Language Change
- Absolute reset
- System Recipe
- Recipe
- DXF transform

- Multistate Indicator
- Range Indicator
- Simple Indicator
- Servo monitor indicator

- Numeric Display
- Alphanumeric Display
- Date Display
- Time Display
- Week Display
- General Message Display
- Moving Sign
- Window name display
- PRS status display
- Metric/Imperial system display
- Magnification display
- Axis name display
- Axis coordinate display
- Teach programming current coordinate
- Teach programming current flat
- Exe. file name
- Parameter name
- Parameter range display
- IO monitor
- Workpiece Coodinate Display
- Input display
- Axis coordinate summarydisplay

- Numeric input
- Character Entry
- Barcode Input
- Tool magazine/register input
- Axis coordinate input
- Axis coordinate input table

- Channel settings
- RIO settings
- Ladder Monitor
- MLC Device Monitor
- File management
- Text Editor
- G code runtime display
- MDI text editor
- Parameter group
- Account variable monitoring
- Machining path
- Parameter manager
- NC File List
- MLC Table (WORD)
- MLC Table (BIT)
- Servo Monitor table
- Macro Variable table
- Knife Tool table
- Variable Monitor table
- Tool Magzine table
- MLC editing
- MLC table editing
- MLC symbol editing
- Servo gain
- Teaching Setting
- Half input
- Square center
- Circle center
- Im/Export item
- Color select item
- DXF parameter

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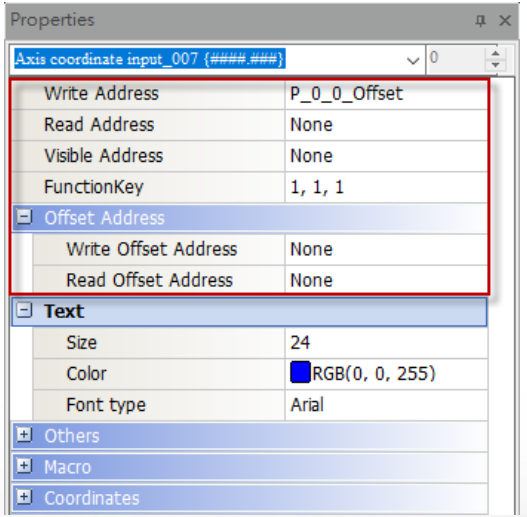
Element

Address setting

- Address properties:
  - 【Write address】:
    - Actual write address =【Write address】+【Write offset address】
  - 【Read address】:
    - Default value is “None” and it will refer to the actual write address.
    - Actual read address =【Read address】+【Read offset address】
  - 【Visible address】:
    - When this flag is ON, this element is invisible.



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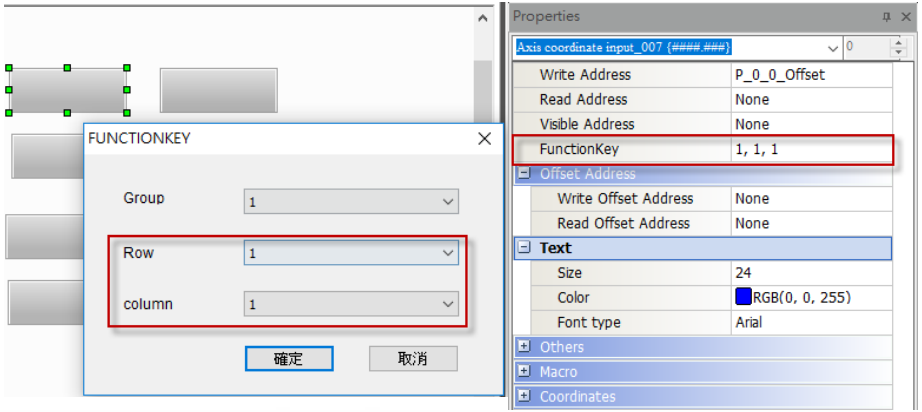
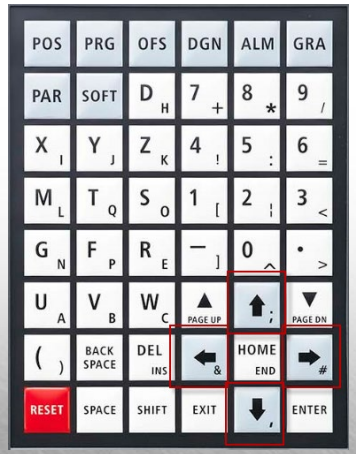
Element

Function key

- Use the Up, Down, Left, and Right keys to select an element on a screen.





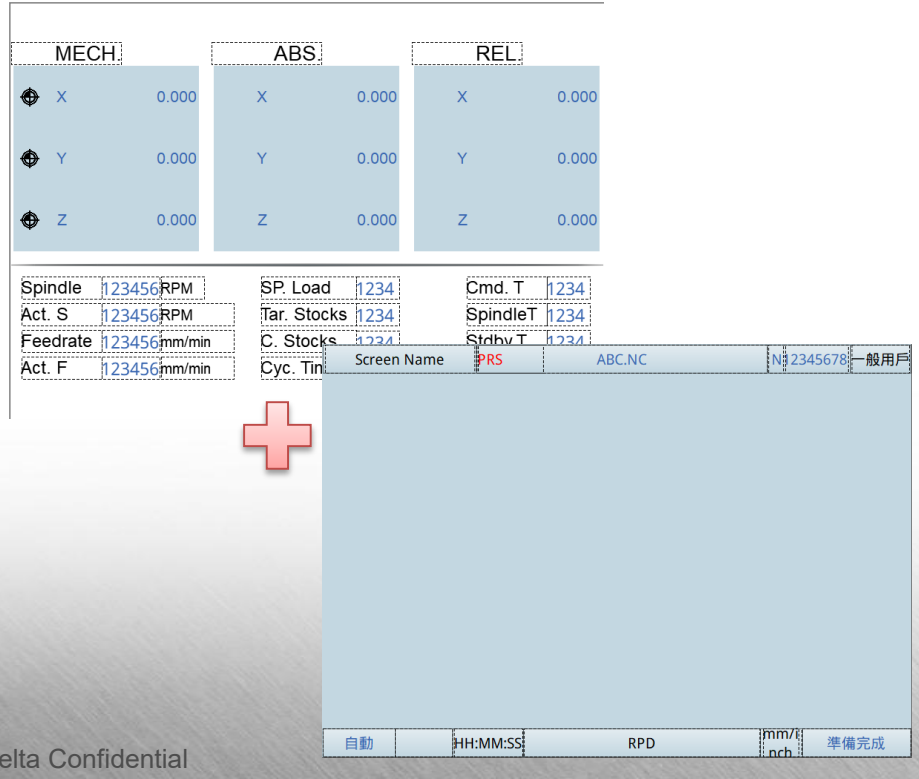
Screen and Element

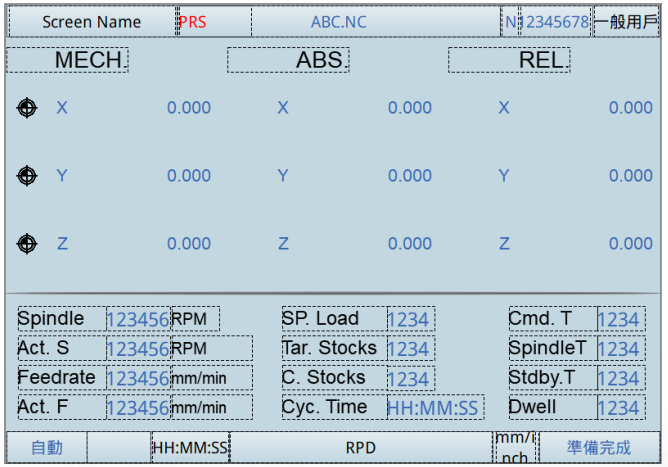
- Base screen
- POS screens
- PRG screens
- OFS screens
- DGN screens
- GRA screens
- PAR screens
- Others

Delta Confidential

Base screen

Base screen

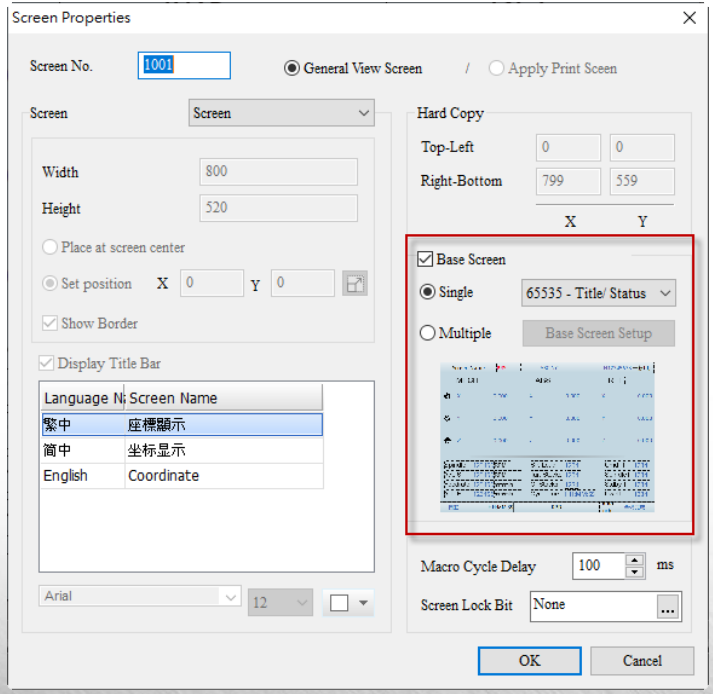




Delta Confidential

Base screen

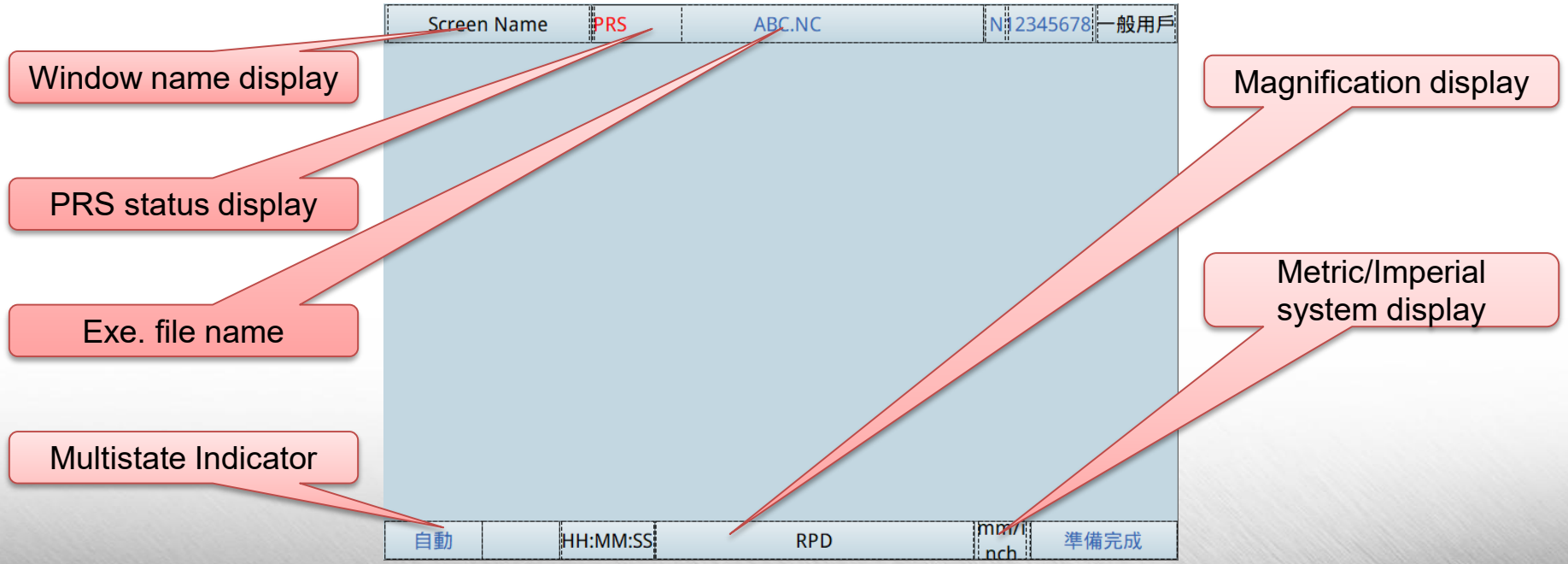
Base screen



Delta Confidential

Base screen

Base screen

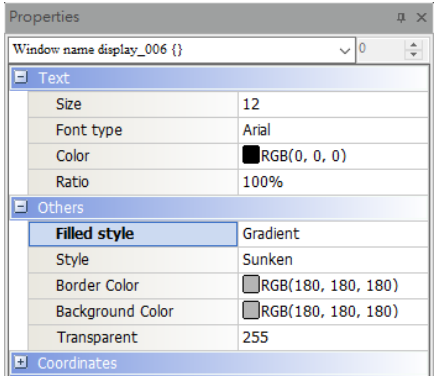


Delta Confidential

Base screen

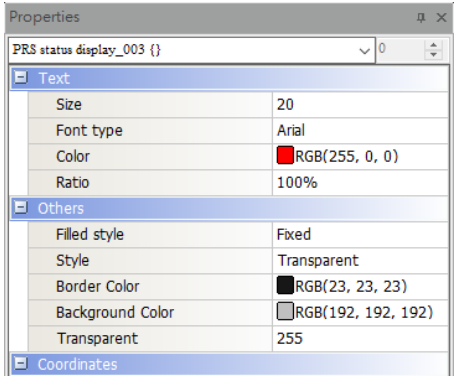
Window name display

- Display the current screen name.



PRS status display

- Reminder for validating the setting after parameter modification
  - P: Reboot controller system
  - R: Reset the controller system
  - S: Reboot the servo drive

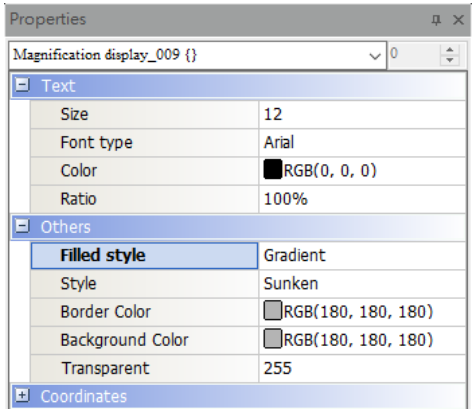


Delta Confidential

Base screen

Magnification display

- Display the relevant override or speed according to mode type
  - 【Auto/MDI】: RPD override, feedrate override and spindle speed override.
  - 【Edit】: Show blank.
  - 【Jog】: RPD override, jog speed and spindle speed override.
  - 【MPG】: MPG magnification and spindle speed override.
  - 【Home】: RPD override.

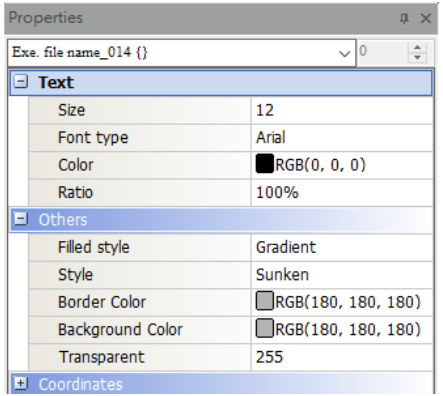


Delta Confidential

Base screen

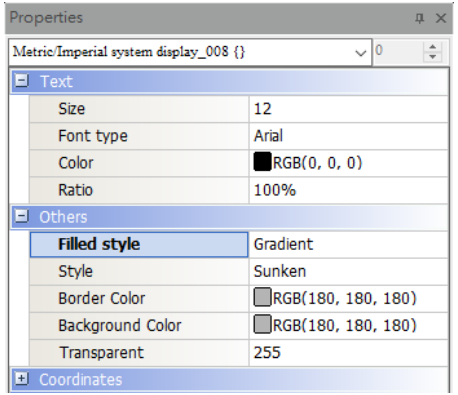
Execute file name

- Display the current program name in execution.



Metric/Imperial system display

- Display the current unit in the system
  - mm: metric system
  - inch: imperial system



Delta Confidential

Screen and Element

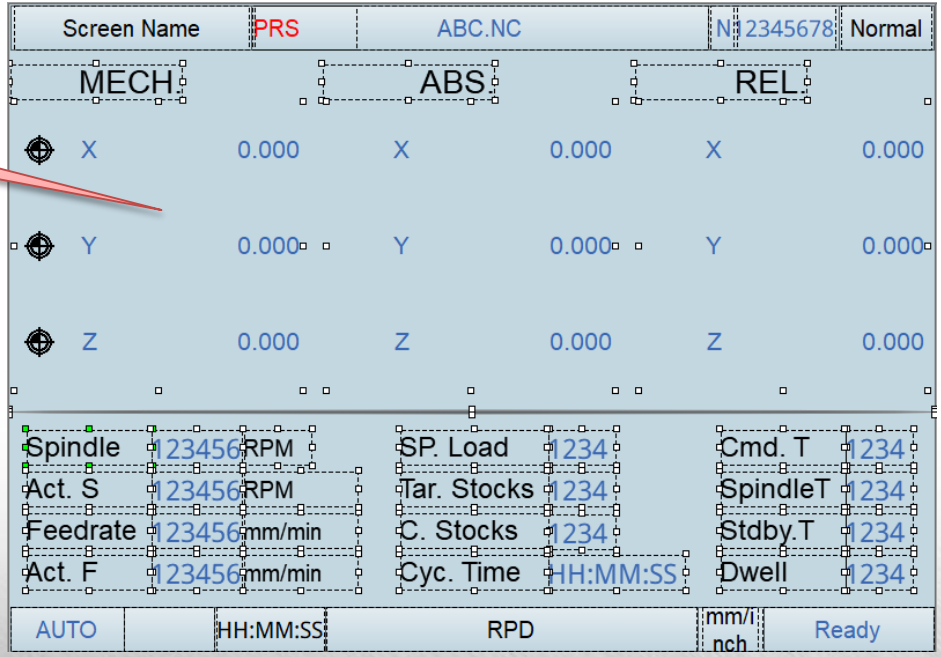
- Base screen
- POS screens
- PRG screens
- OFS screens
- DGN screens
- GRA screens
- PAR screens
- Others

Delta Confidential

POS Screens

POS screens

Axis coordinate display table

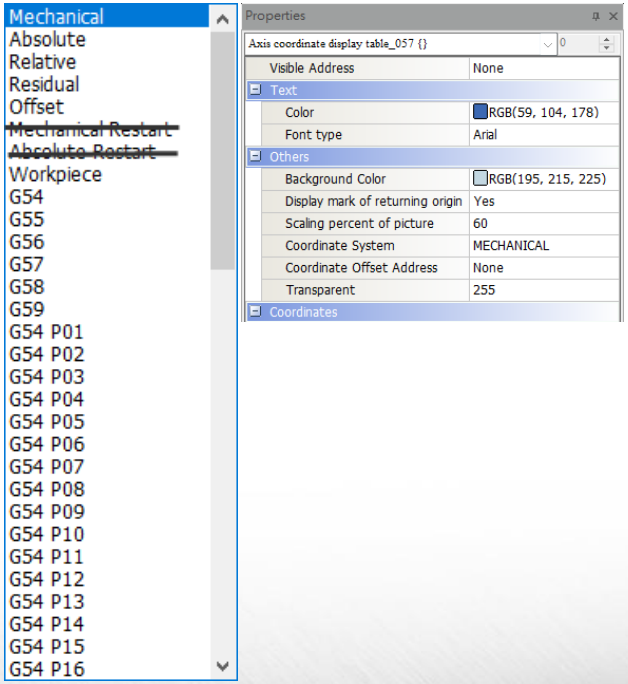


Delta Confidential

POS Screens

Axis coordinate display table

- Displays the axes names and position values of specific coordinate.
- Properties:
  - 【Display mark of returning origin】:
    - Display origin mark or not.
  - 【Scaling percent of picture】:
    - Adjust the origin mark size
  - 【Coordinate System】:
    - Display coordinate type.
    - Mechanical、Absolute、Relative、…、G54P64
  - 【Coordinate Offset Address】:
    - Display coordinate = Coordinate System + Coordinate Offset Address
- Precaution:
  - Axes information display is according to channel parameter setting.
  - Text size will change automatically by active axes number.

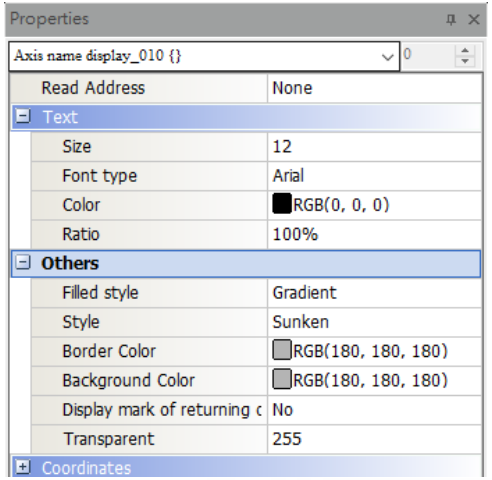


Delta Confidential

POS Screens

Axis name display

- Displays the axis name.
- Properties:
  - 【Read address】:
    - Device : 0 means X axis, 1 means Y axis and so on.
  - 【Display mark】:
    - This origin mark will show when axis homing is done.



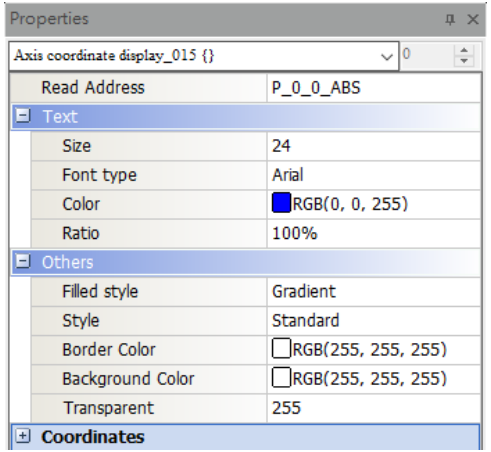
【Axis coordinate display table】 element can replace this element function!

Delta Confidential

POS Screens

Axis coordinate display

- Displays the current axis position with the specified coordinate system.
- Properties:
  - 【Read address】:
    - Device : 0 means X axis, 1 means Y axis and so on.
    - Coordinate system: select the display coordinate such as offset, G54, and so on.

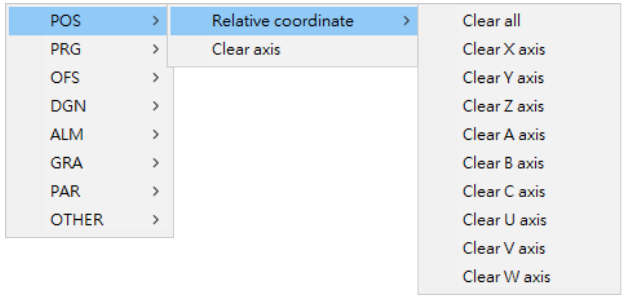


【Axis coordinate display table】 element can replace this element function!

Delta Confidential

POS Screens

POS screen function key



Function key	Description
Clear all	Clear all relative coordinate values
Clear X axis	Clear X axis relative coordinate value
Clear Y axis	Clear Y axis relative coordinate value
Clear Z axis	Clear Z axis relative coordinate value
Clear A axis	Clear A axis relative coordinate value
Clear B axis	Clear B axis relative coordinate value
Clear C axis	Clear C axis relative coordinate value
Clear U axis	Clear U axis relative coordinate value
Clear V axis	Clear V axis relative coordinate value
Clear W axis	Clear W axis relative coordinate value
Clear axis	Automatically create clear relative coordinate value key in next level for every existed axis.

Delta Confidential

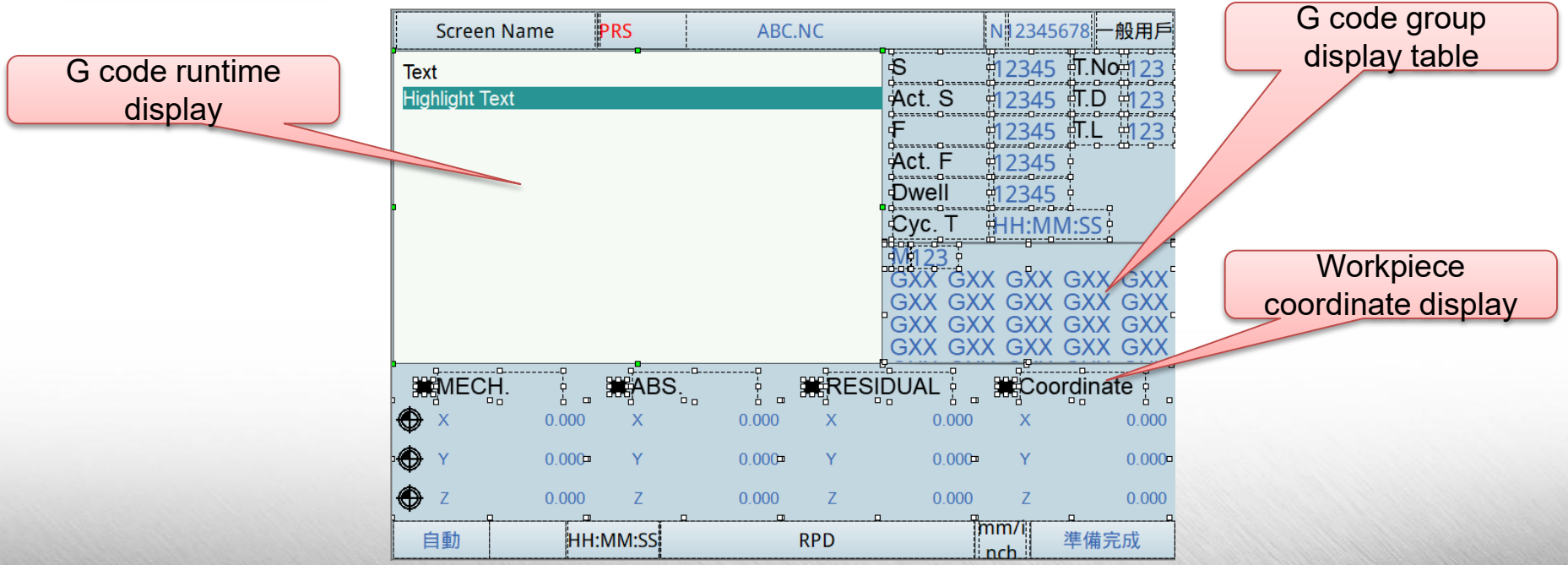
Screen and Element

- Base screen
- POS screens
- PRG screens
- OFS screens
- DGN screens
- GRA screens
- PAR screens
- Others

Delta Confidential

PRG screens

PRG screens

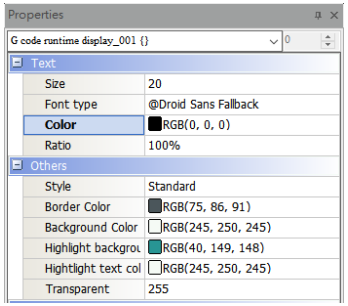


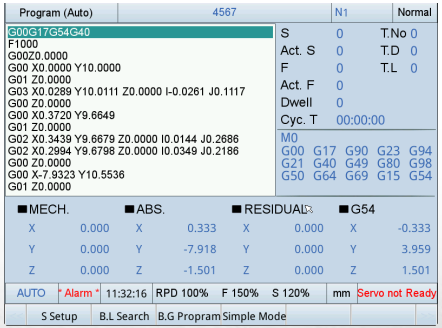
Delta Confidential

PRG screens

G code runtime display

- Displays the executing program content and highlights the executing block.
- Properties:
  - 【Highlight background color】
  - 【Highlight text color】
- Precaution:
  - When the system is in MDI mode, it shows the MDI program.
  - When the system is not in the MDI mode, it shows the main program.



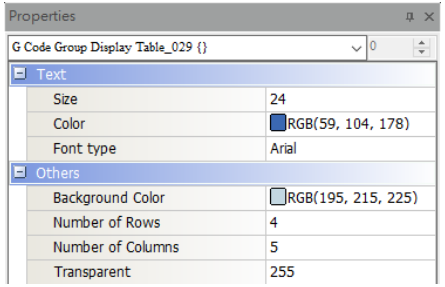


Delta Confidential

PRG screens

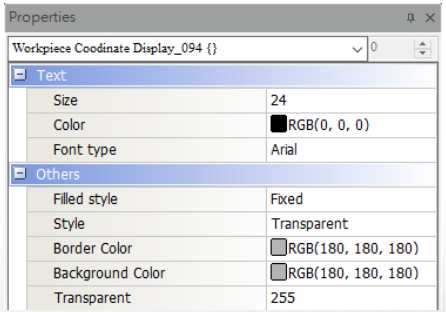
G Code Group Display Table

- Displays the G code group status.
- Properties:
  - 【Number of Rows】
  - 【Number of Columns】
- Precaution:
  - It doesn't include M code status.



Workpiece coordinate display

- Display the current workpiece coordinates, such as G54 and G55.

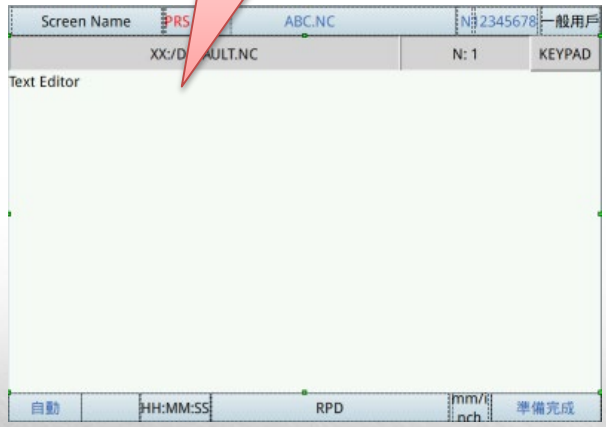


Delta Confidential

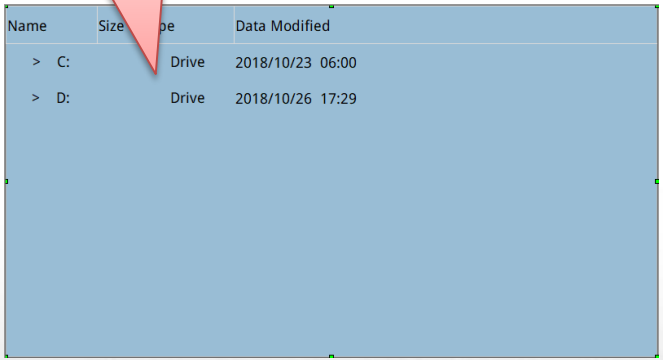
PRG screens

PRG screens (EDIT, MDI)

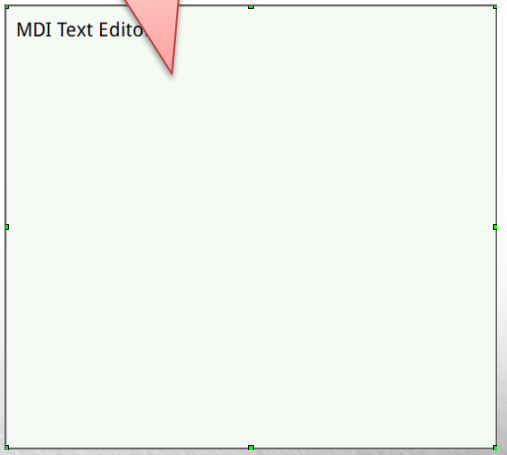
Text Editor



File management



MDI mode text editor

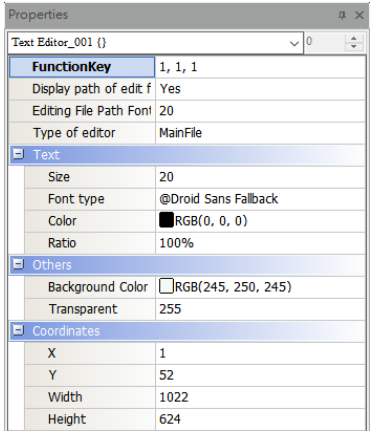


Delta Confidential

PRG screens

Text editor

- Open an NC program with the File management element, and the program content will be displayed and can be edited with this Text editor element.
- Properties:
  - 【Display path of edit file】:
    - YES/ NO
  - 【Editing File Path FrontSize】
  - 【Type of editor】:
    - Normal: loads the opened program with the file management element.
    - MainFile: loads the main program only.
- Precaution:
  - Editing is allowed in all modes.
  - When the program is running, editing the main program is not allowed.
  - When the program is running, loading another program as main program is not allowed.



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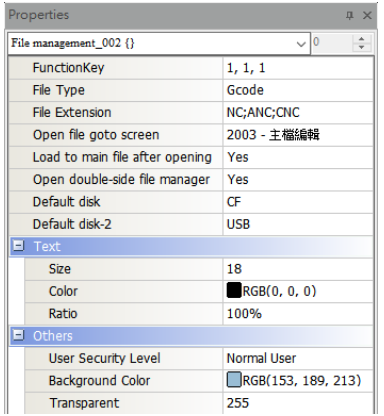
PRG screens

File management

- For file display and selection. You can use the function keys to open, delete, and copy the files in File management.
- Properties:
  - 【File type】:
    - Support: Gcode, DXF, parameter, GraphEdit
    - Reserved: MLC, XML
  - 【File Extension】:
    - Support filename extension: NC, ANC, CNC, PIM, TAP, PTP, UOO, and DEMO.
    - Empty value in it means only supporting .NC and none extension files.
  - 【Open file goto screen】:
    - Switch to the specified screen after selecting and opening a file.
  - 【Load to main file after opening】

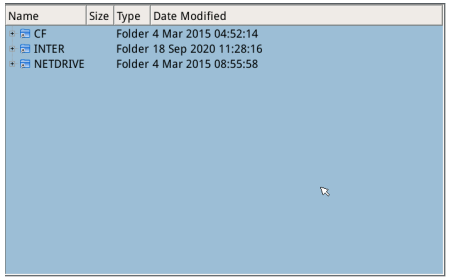


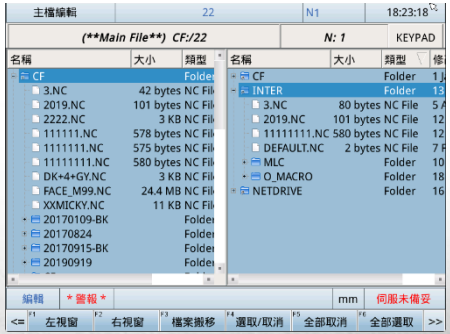
Delta Confidential

PRG screens

File management

- Properties:
  - 【Open double-side file manager】:
  - 【Default disk】:
    - NONE、CF、INTER、USB
  - 【Default disk-2】:
    - NONE、CF、INTER、USB
- Precaution:
  - 【Default disk-2】 property will active when double-side file manager is enable.



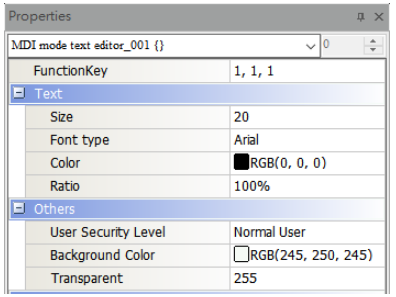


Delta Confidential

PRG screens

MDI mode text editor

- It is for editing the MDI program contents in MDI mode.
- Precaution:
  - The MDI program contents are non-volatile.
  - Editing MDI program only in MDI mode.
  - In MDI mode, “G code runtime display” element will show MDI program and MDI program can be executed.



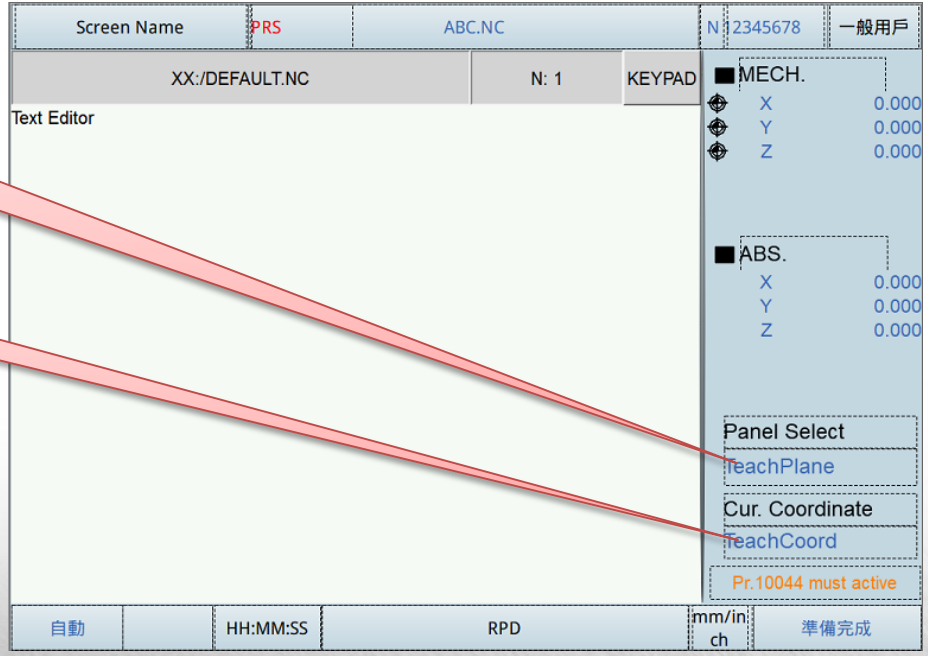
Delta Confidential

PRG screens

PRG screens

Teach programming current flat

Teach programming current coordinate



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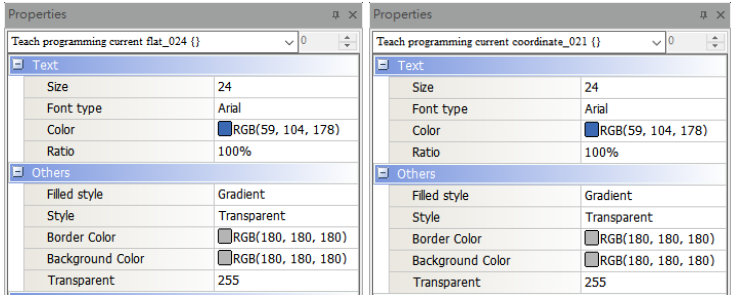
PRG screens

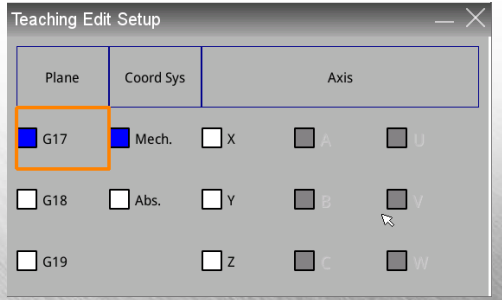
Teach programming current coordinate

- While using teaching program function, it can display the using coordinate of generating teach instructions like absolute or mechanical coordinate.



Teach programming current flat

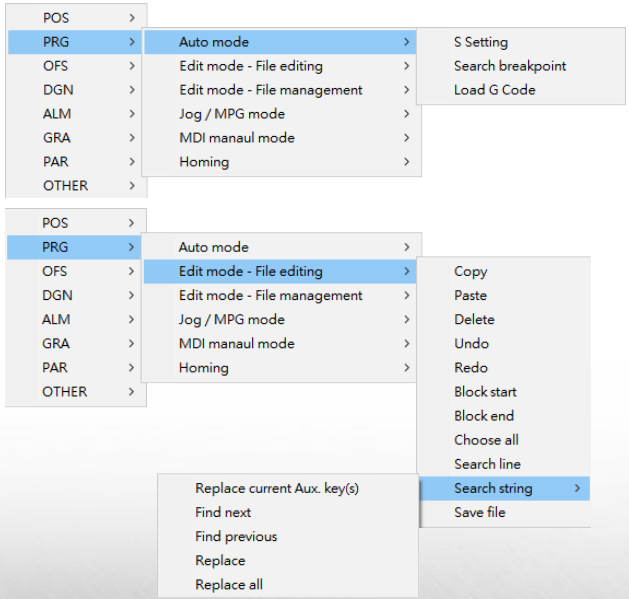
- While using teaching program, it can display the using flat of generating teach instructions like G17, G18 or G19.



Delta Confidential

PRG screens

PRG screen function key

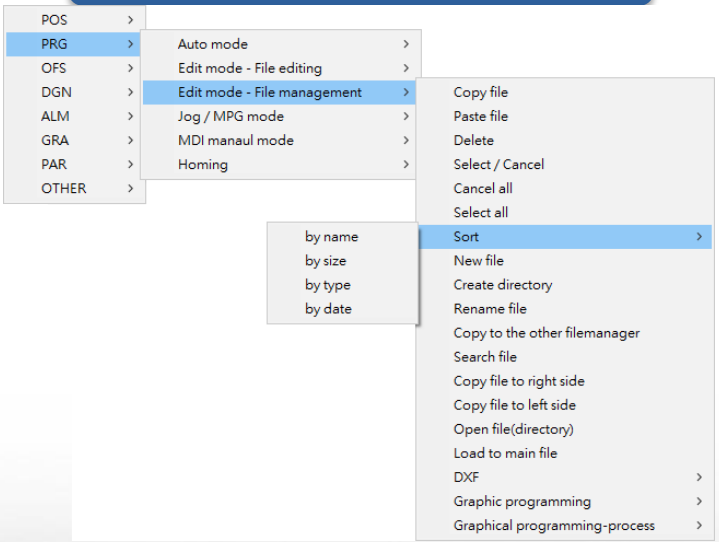


Function key	Description
S Setting	Call out system window for S setting
Search breakpoint	Execute breakpoint search according to 【SEARCH_BREAK_LINE】 number
Load G Code	Set the opened file in text editor as main program
Copy	Copy the G code block content or selected text
Paste	Paste the copied content
Delete	Delete the G code block content or selected text
Undo	Undo previous operation (20 steps)
Redo	Redo next operation (20 steps)
Block start	Select start point of text area
Block end	Select end point of text area
Choose all	Select all content
Search line	Popup “Search Line number” window and execute line jumping
Replace current Aux. key(s)	Popup “Test Search” window, and execute text finding and replacing
Find previous	Backward finding the specific text
Find next	Forward finding the specific text
Place	Replace the specific text with another one
Place all	Replace every specific text with another one
Save file	Save the current content in text editor

Delta Confidential

PRG screens

PRG screen function key

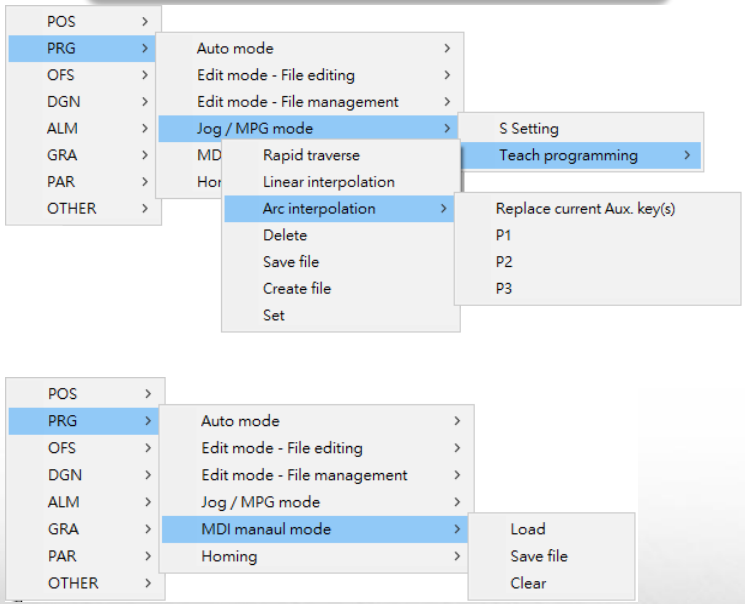


Function key	Description
Copy file	Copy files or directories
Paste file	Paste files or directories
Delete	Delete files or directories
Select/Cancel	Select/Cancel files or directories
Cancel all	Cancel all selected files or directories
Select all	Selected all files or directories
By name	Sort files or directories by name
By size	Sort files or directories by size
By type	Sort files or directories by type
By date	Sort files or directories by date
New file	Create a new file by popup window operation
Create directory	Create a new directory by popup window operation
Rename file	Rename the file or directory
Copy to the other filemanager	If there are 2 filemanager elements on a screen, it will copy and paste files or directories from one filemanager element to another one.
Search file	Popup “Search File” window and find out the file
Copy file to right side	Copy selected files or directories from left side and paste them to right side in the double side file manager element.
Copy file to left side	Copy selected files or directories from right side and paste them to left side in the double side file manager element.
Open file(directory)	Open the file or directory
Load to main file	Open the file and set it as main program

Delta Confidential

PRG screens

PRG screen function key



Function key	Description
S Setting	Popup “spindle speed setting” window
Rapid traverse	Create G00 command according current coordinates in teach programming function.
Linear interpolation	Create G01 command according current coordinates in teach programming function.
Replace current Aux. key(s)	Generate P1, P2 and P3 function keys of arc command in teach programming function.
P1	Set current position as 1st point of arc command
P2	Set current position as 2nd point of arc command
P3	Set current position as 3rd point of arc command and create G02/G03 command
Delete	Delete the current command or selected content
Save file	Save the current teaching program
Create file	Rapidly create a new file in CF device
Set	Popup “Teaching Edit Setup” window

Function key	Description
Load	Load the content of “MDI mode text editor” into “G code runtime display” (Automatic executing while “MDI mode text editor” exiting)
Save file	Save the content of “MDI mode text editor” (Automatic executing while “MDI mode text editor” exiting)
Clear	Clear the content of “MDI mode text editor”

Delta Confidential

Screen and Element

- Base screen
- POS screens
- PRG screens
- OFS screens
- DGN screens
- GRA screens
- PAR screens
- Others

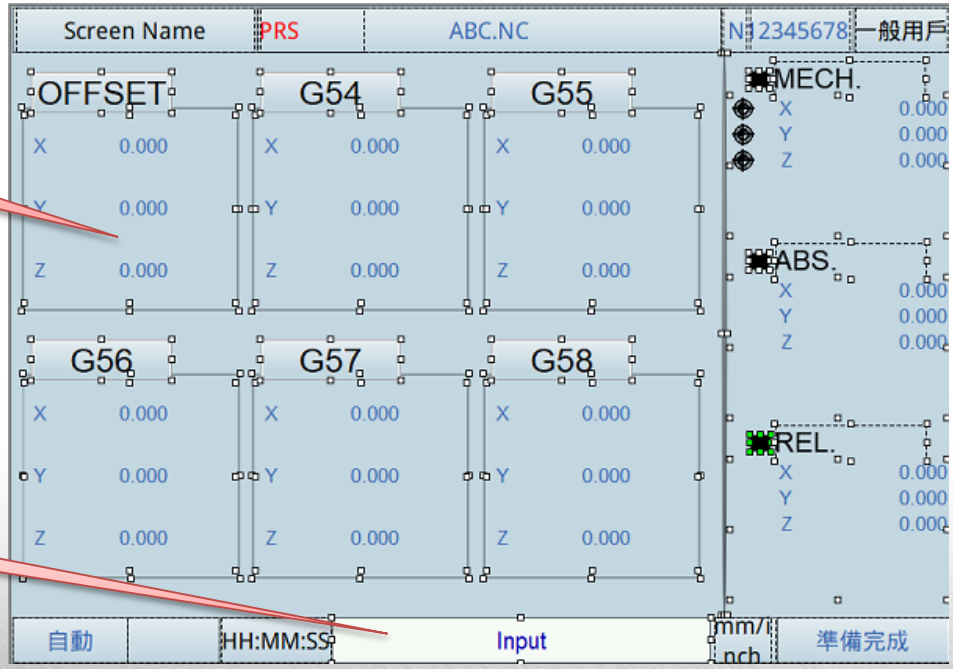
Delta Confidential

OFS screens

OFS screens

Axis coordinate input table

Input display

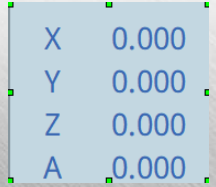


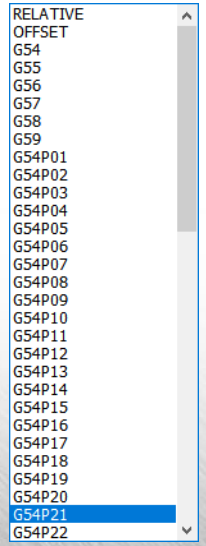
Delta Confidential

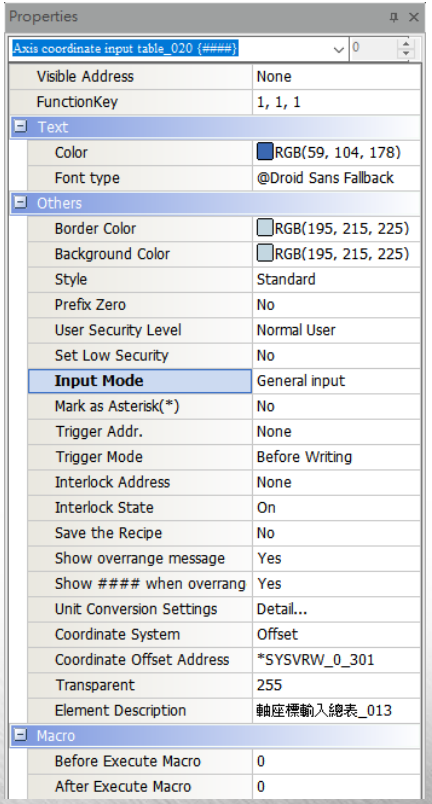
OFS screens

Axis coordinate input table

- Displays the axis name and position value of the selected coordinate system. You can also set the coordinates with relevant function keys.
- Properties:
  - 【Coordinate System】:
    - Select the coordinate system to use
    - Machine, Absolute, Relative, …, and G54P64.
  - 【Coordinate Offset Address】:
    - Displayed coordinate system =【Coordinate System】+【 Coordinate Offset Address】
- Precaution:
  - The content is displayed based on the channel configuration setup.
  - The text size will automatically adjust to fit display area.





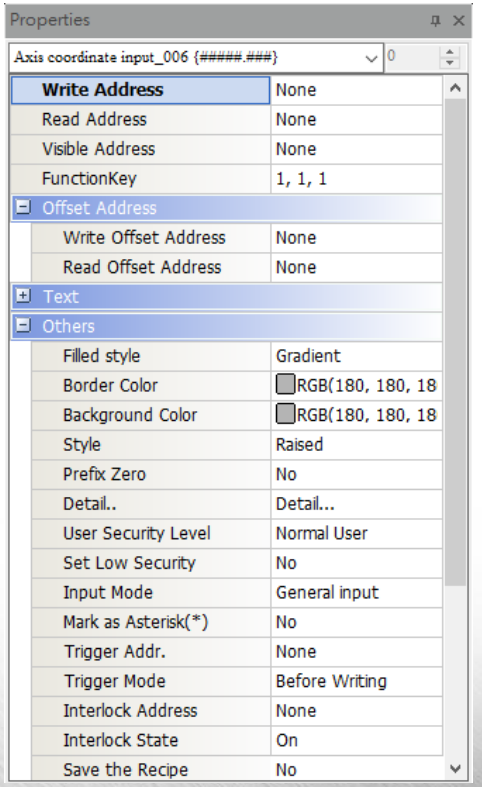


Delta Confidential

OFS screens

Axis coordinate input

- You can set the coordinates value of the selected coordinate system with this element and function keys.
- Properties:
  - 【Write address】: P
    - Axis: 0 means X axis, 1 means Y axis, and so on.
    - Coordinate: G54, G55, …



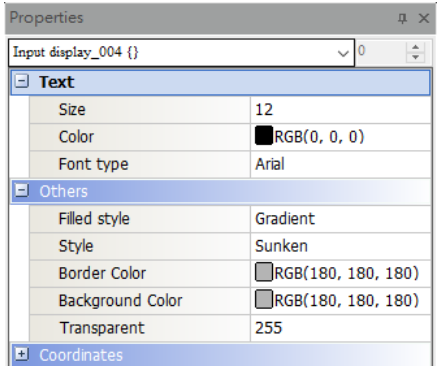
【Axis coordinate input table】 element can replace this element function!

Delta Confidential

OFS screens

Input display

- It displays the value you input. You must press ENTER to write this input value to the specified address of the selected element.



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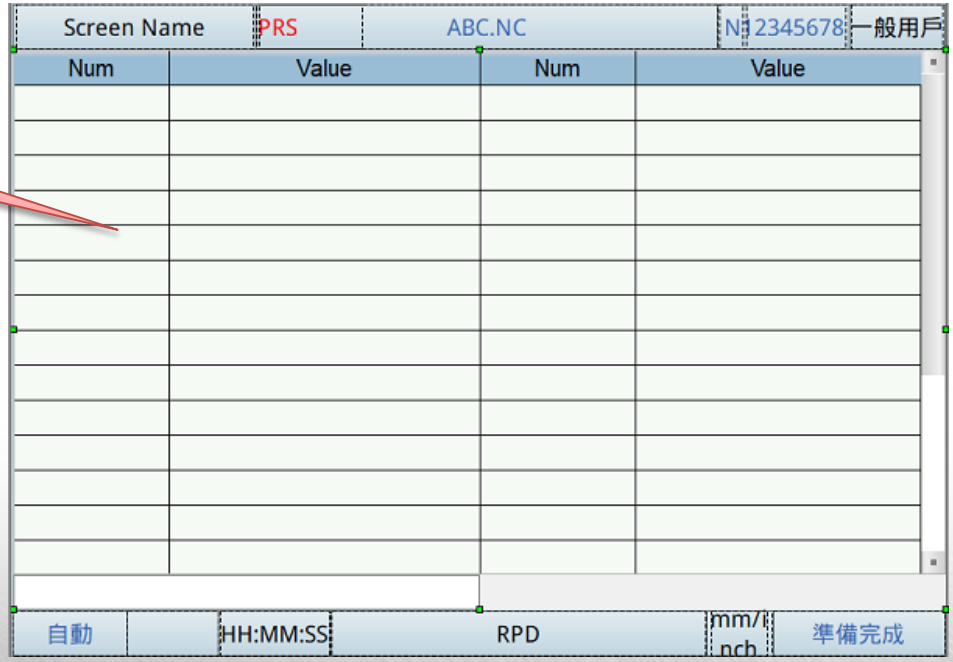
OFS screens

OFS screens

Macro Variable table



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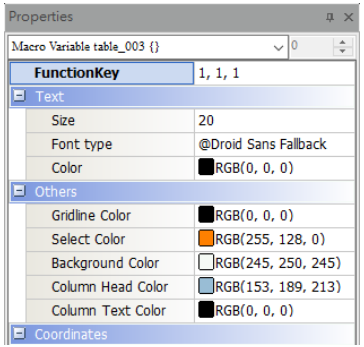
OFS screens

Macro Variable table

- It shows the macro variables and you can use function keys to switch showing different types of macro.
- You can use the function key to write a variable value as current machine coordinate or absolute coordinate.



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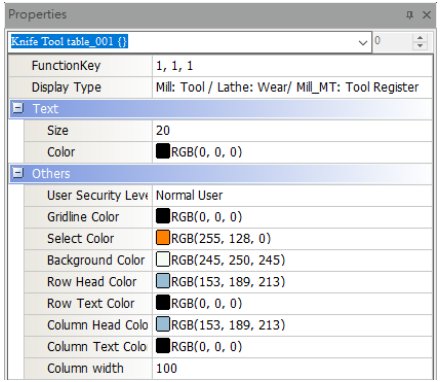
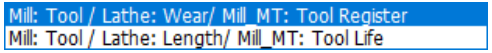
OFS screens

Knife Tool table

- It can show tool data such as length, radius, wear, and life. You can clear and set the data with function keys.
- The table displays the content according to system application type (milling, lathe or multi-tool).
- Properties:
  - 【Display Type】:

	Tool/Wear/Tool Register	Tool/Length/Tool Life
Mill	length、radius、length wear、radius wear、life	length、radius、length wear、radius wear、life
Lathe	X/Y/Z cut length、nose radius、nose type、life	X/Y/Z cut length wear、radius wear
Mill_MT	Z target、Z finish、Z tolerance	radius、X/Y/Z offset





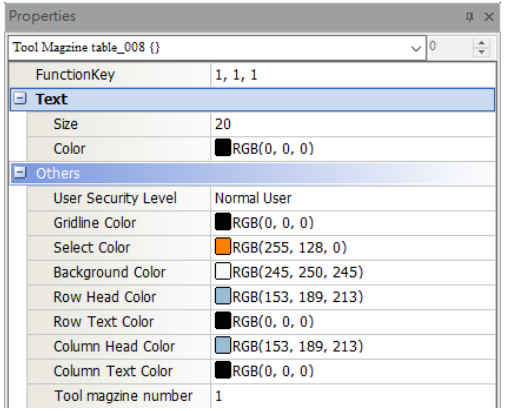
Delta Confidential

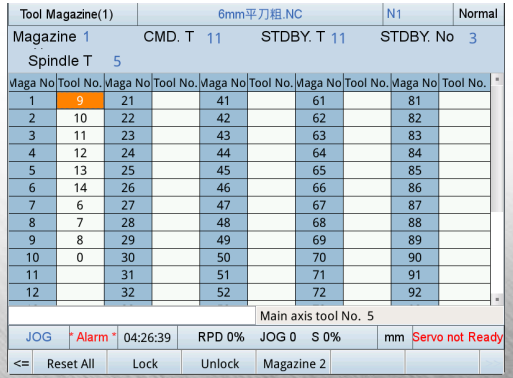
OFS screens

Tool magazine table

- Displays and manages the tools in the tool magazine.
- You can reset, lock and unlock tools with function keys.

- Properties:
  - 【Tool magazine number】: magazine 1 or magazine 2.





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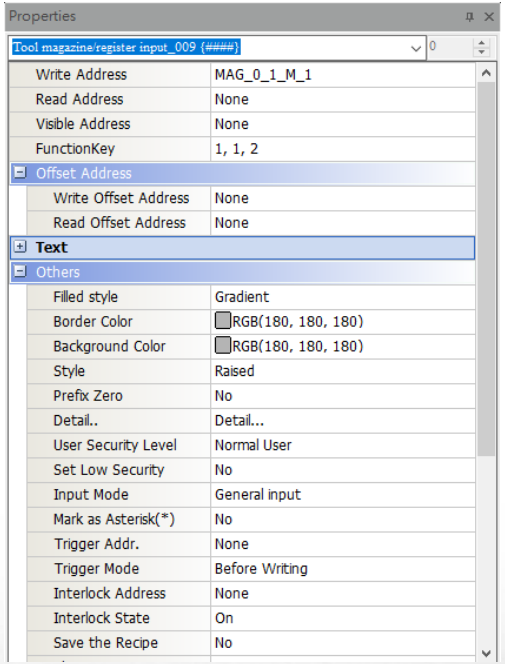
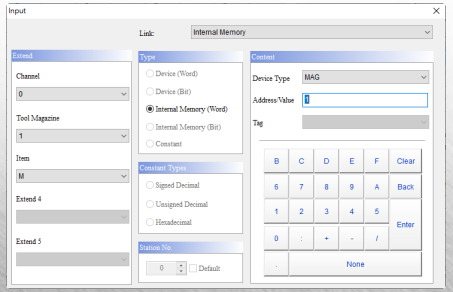
OFS screens

Tool magazine/register input

- Displays and manages the tools in the tool magazine.
- Properties:
  - 【Write/Read address】: Cutter no. of MAG device.
- Precaution:
  - Use the numeric display element to access the addresses for the following devices in the magazine.
    - Tool no. in spindle (SpindleT)
    - Standby tool no. (StandbyT)
    - Command tool no. (CmdT)
    - Standby pocket no. (StandbyM)





【Tool magazine table】 element can replace this element function!

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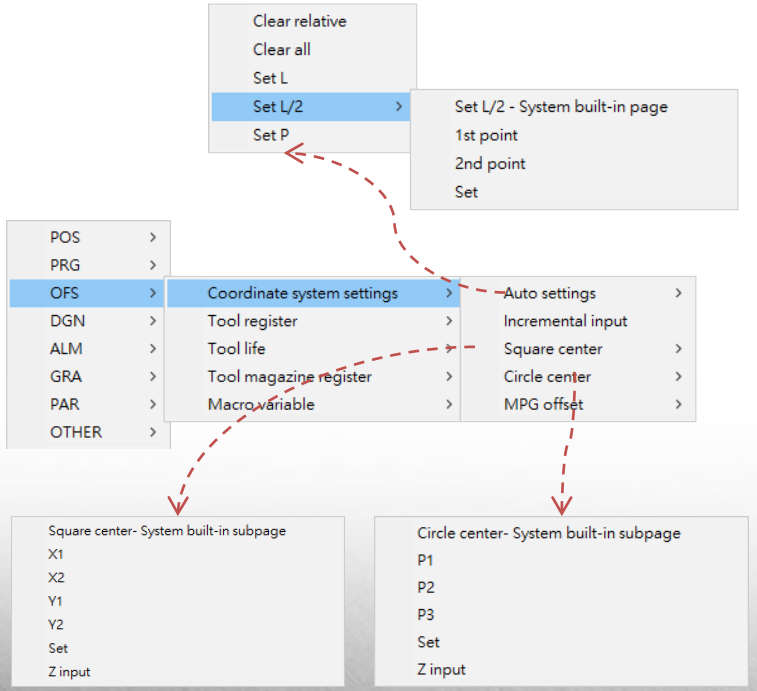
OFS screens

OFS screen function key



Function key	Description
Clear relative	Clear the relative coordinate of selected axis
Clear all	Clear all coordinates of selected coordinate system
Set L	Set the selected axis coordinate as current mechanical coordinate
Set P	Set the all axes coordinates as current mechanical coordinates
Set L/2- System built-in page	Popup “Set L/2” window to set center point (Set the center according to 2 points.)
1st point	Record 1st point
2nd point	Record 2nd point
Set	Calculate the average point of recording ones and write it into selected coordinate axis
Incremental input	Add the input value to the selected coordinate axis value, and write it into the selected coordinate axis.

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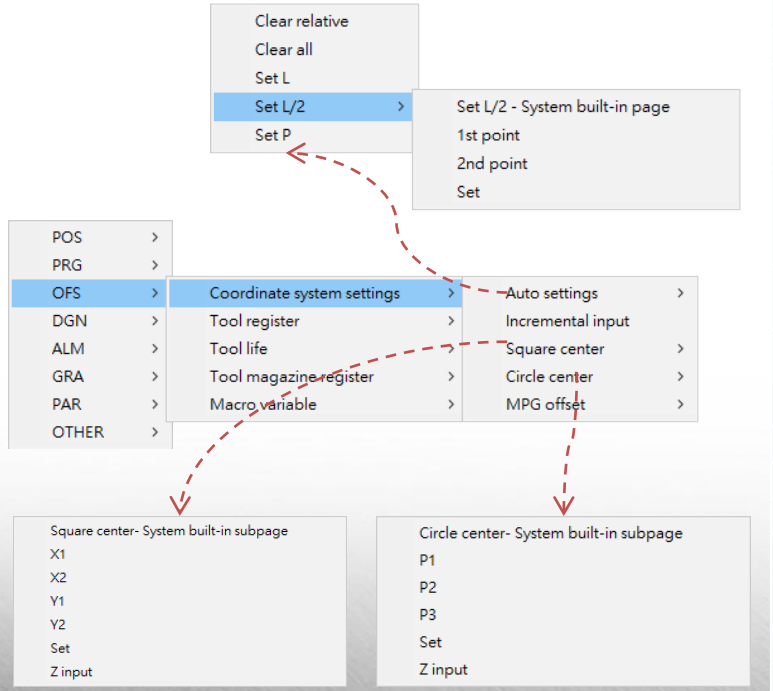
OFS screens

OFS screen function key



Function key	Description
Square center- System built-in subpage	Popup "Set Square center" window to set center point (Set the center according to points of 4 sides.)
X1	Record 1st point of X axis
X2	Record 2nd point of X axis
Y1	Record 1st point of Y axis
Y2	Record 2nd point of Y axis
Set	Calculate the average point of recording ones and write them into X axis and Y axis of the selected coordinate
Z input	Write the current mechanical Z position into the selected coordinate Z axis
Circle center-System built-in subpage	Popup "Set Circle center" window to set circle center point (Set the center according to 3 points of a circle.)
P1	Record 1st point of a circle
P2	Record 2nd point of a circle
P3	Record 3rd point of a circle
Set	Calculate the center point of recording points and write them into X axis and Y axis of the selected coordinate
Z input	Write the current mechanical Z position into the selected coordinate Z axis

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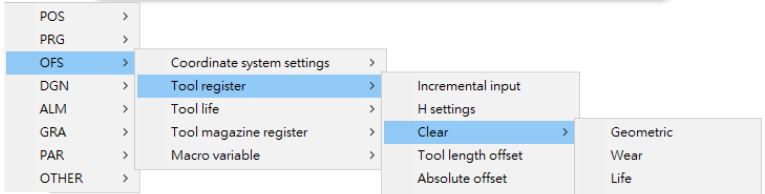
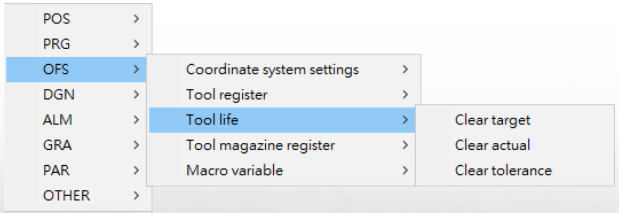
OFS screens

OFS screen function key





Function key	Description
Incremental input	After adding the input value of selected tool value, write it to the selected value
H setting	Write the current Z-axis mechanical coordinate value into the selected tool length
Geometric	Clear all tool length and radius values
Wear	Clear all tool wear values
Life	Clear all tool life values
All	Clear all tool values
Clear single axis	Clear the selected tool values
Clear offset	Clear all tool radius values
Clear offset	Clear all tool offset values
Tool length offset	After subtracting the input value from the current axis mechanical coordinate value, write it to the selected tool length
Absolute offset	Write the current axis absolute coordinate value into the selected tool length
Clear target	Clear all tool target values
Clear actual	Clear all tool actual values
Clear tolerance	Clear all tool tolerance values

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OFS screens

OFS screen function key

Tool function keys	Milling	Lathe-Wear	Lathe-Length	MT-Register	MT-Life
Incremental input	V	V	V	V	V
H setting	V	-	-	V	-
Geometric	V	-	-	-	-
Wear	V	-	-	-	-
Life	V	-	-	-	-
All	V	V	-	V	V
Clear single axis	-	V	V	-	
Clear offset	-	-	-	V	-
Clear offset	-	-	-	V	-
Tool length offset	-	-	V	-	-
Absolute offset	-	-	V	-	-
Clear target	-	-	-	-	V
Clear actual	-	-	-	-	V
Clear tolerance	-	-	-	-	V

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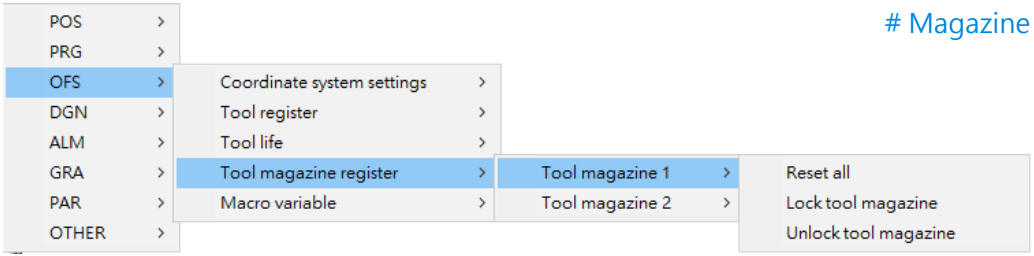
OFS screens

OFS screen function key

Function key	Description
Reset all	Reset tool magazine
Lock tool magazine	Lock selected tool and block locked tool exchange
Unlock tool magazine	Unlock selected tool

Magazine 1 and magazine 2 have similar functions



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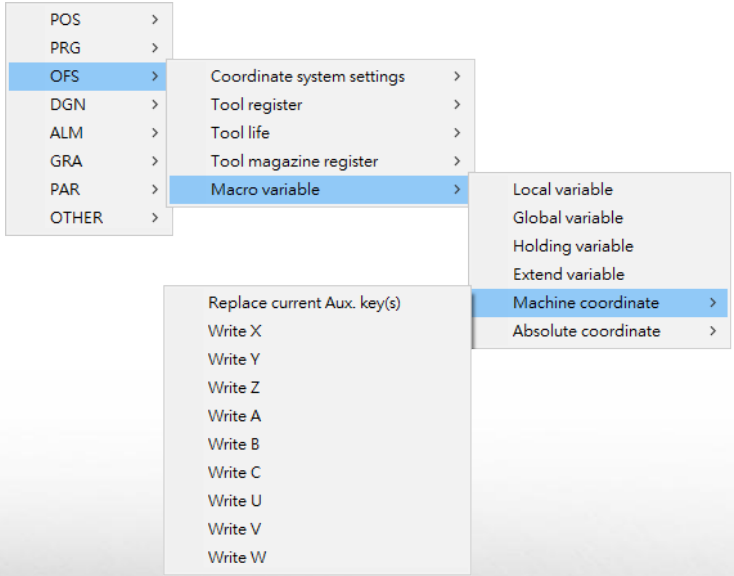
OFS screens

OFS screen function key



Function key	Description
Local variable	Display local variable on Macro variable table
Global variable	Display global variable on Macro variable table
Holding variable	Display holding variable on Macro variable table
Extend variable	Display extend variable on Macro variable table
(Machine) Replace current Aux. key(s)	According to the number of axes enabled, the function keys for writing mechanical coordinate values are dynamically created in the next function key layer
Write X	Write X axis mechanical position to the macro value
Write Y	Write Y axis mechanical position to the macro value
Write Z	Write Z axis mechanical position to the macro value
Write A	Write A axis mechanical position to the macro value
Write B	Write B axis mechanical position to the macro value
Write C	Write C axis mechanical position to the macro value
Write U	Write U axis mechanical position to the macro value
Write V	Write V axis mechanical position to the macro value
Write W	Write W axis mechanical position to the macro value

There are similar functions for machine coordinate and absolute coordinate.

Delta Confidential

Screen and Element

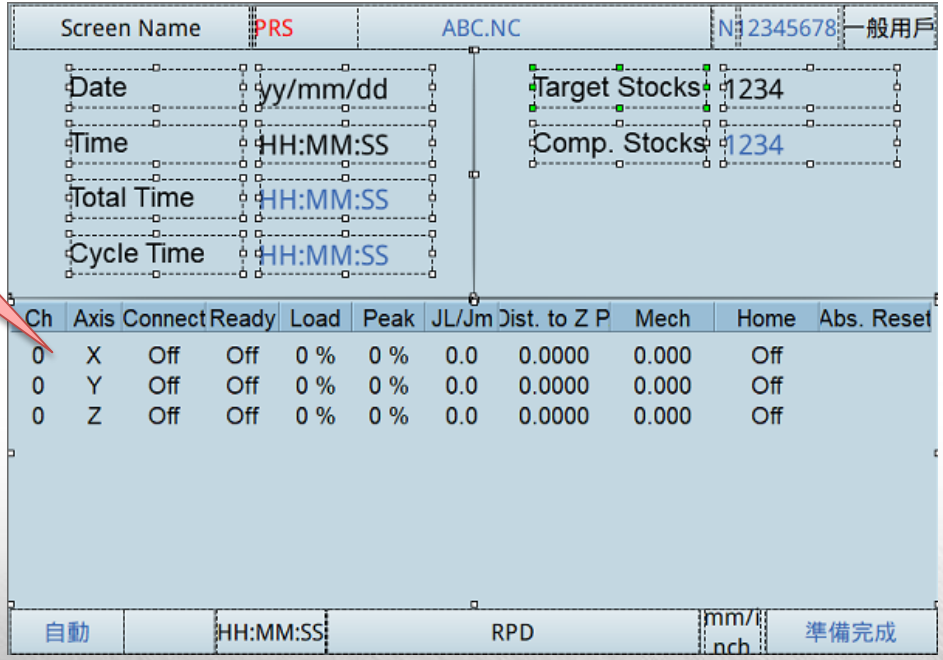
- Base screen
- POS screens
- PRG screens
- OFS screens
- DGN screens
- GRA screens
- PAR screens
- Others

Delta Confidential

DGN screens

DGN screens

Servo Monitor table



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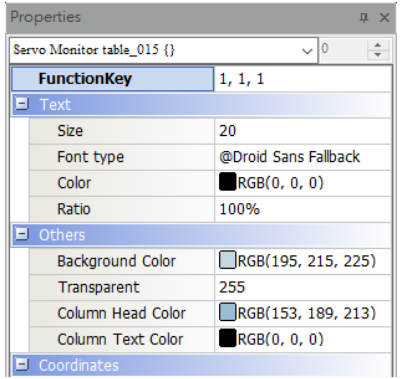
DGN screens

Servo Monitor table

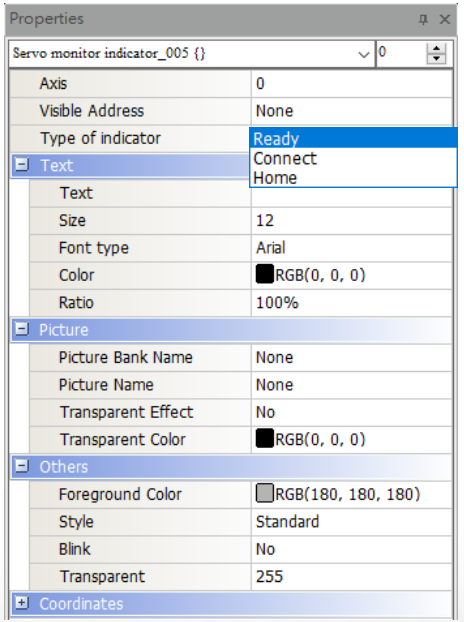
- It shows states such as connection, load, distance to Z phase, machine coordinates, and origin.
- When using the absolute motor, you can use this element to set the current position as origin.



DGN screens

Servo monitor indicator

- Displays the servo status such as ready, connect and home.
- Properties:
  - 【Axis】: 0 means X axis, 1 means Y axis, 2 means Z axis, and so on.
  - 【Type of indicator】:
    - Ready
    - Connect
    - Home



【Servo monitor table】 element can replace this element function!

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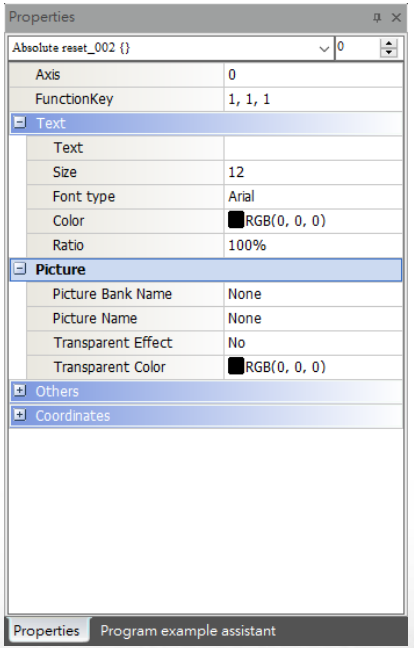
DGN screens

Absolute reset

- When using the absolute motor, you can use this element to set the current axis position as the machine origin.
- Properties:
  - 【Axis】: 0 means X axis, 1 means Y axis, 2 means Z axis and so on.
- Precaution:
  - This element is available only when you set Pr616 to 5 (set the “absolute motor” for the origin search mode of the axis), .
  - The action is active while the axis is in the Servo On status.



【Servo monitor table】 element can replace this element function!

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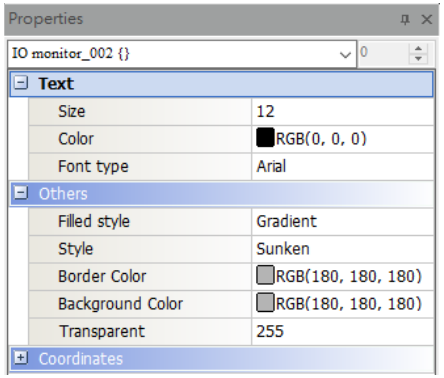
DGN screens

I/O monitor

- Shows the status of all remote I/O modules.

Port	Enable	RIO Type	RIO Status
0	V	I/O	On
1	V	I/O	On
2	V	I/O	On
3			
4			
5			
6			
7			



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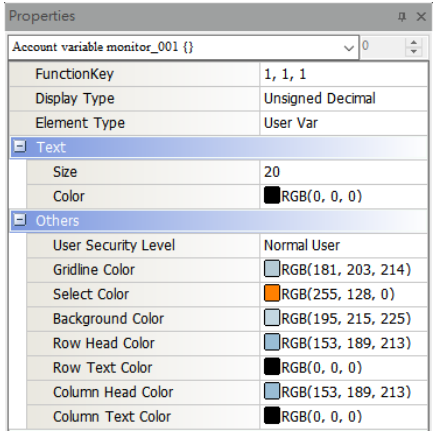
DGN screens

Account variable monitoring

- You can use this element to monitor the values of registers (D512 –D1023) you need. There are 2 monitoring types available, which are specifically for users and equipment providers.
- Properties:
  - 【Element type】:
    - User Var: for users
    - Mech Var: for equipment providers



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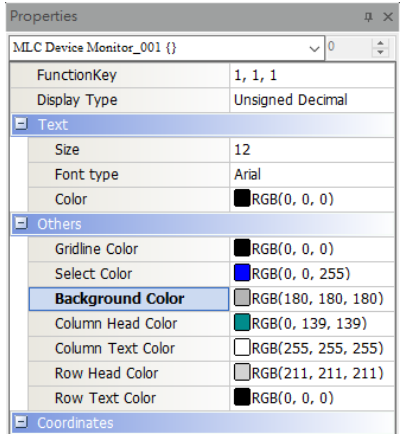
DGN screens

MLC device monitor

- You can monitor the MLC registers and relays by entering the their addresses in this element.
- Properties:
  - 【Display Type】:
    - Unsigned Decimal
    - Hexadecimal
    - Signed Decimal
    - Floating



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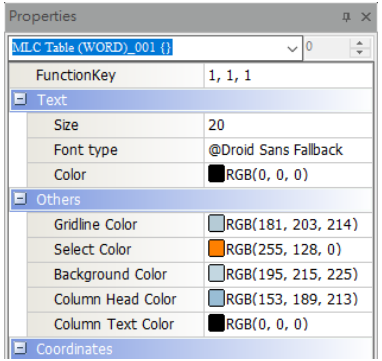
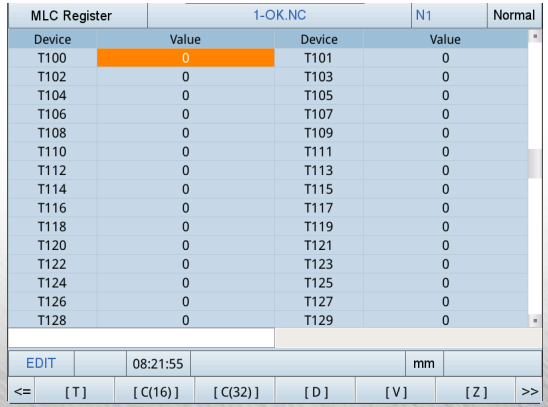
DGN screens

MLC Table (WORD)

- This table displays the MLC registers and you can switch to different device type with the function key.
- You can directly change the device value.
- You can directly find the device by entering the device name. For example, enter T100 and press **ENTER**, you are directed to the field of T100.





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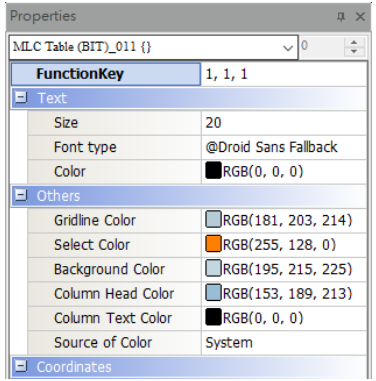
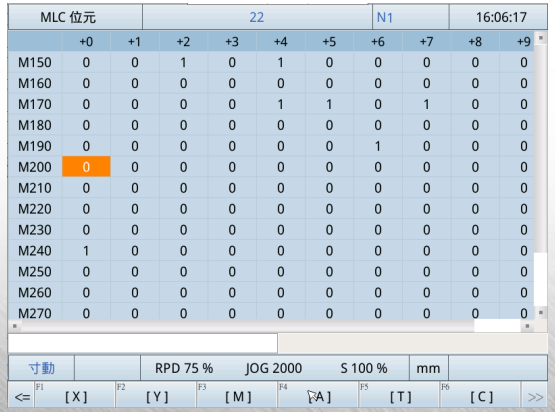
DGN screens

MLC Table (BIT)

- This table displays the MLC relays and you can switch to different device type with the function key.
- You can directly change the device value.
- You can directly find the device by entering the device name. For example, enter M200 and press **ENTER,** you are directed to the field of M200.





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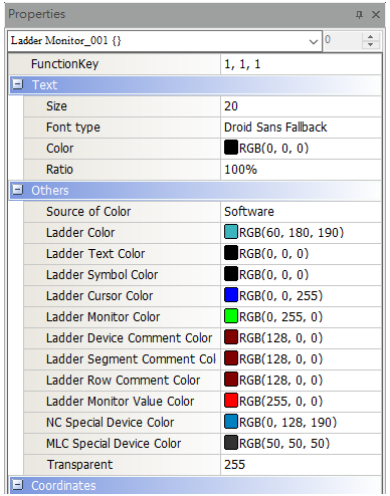
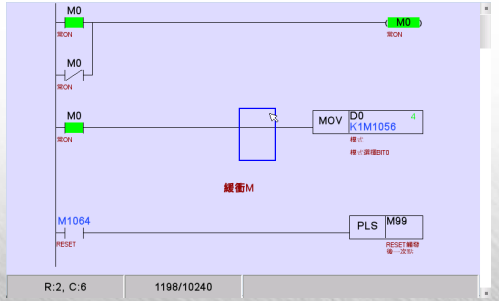
DGN screens

Ladder monitor

- MLC ladder status display.
- Properties:
  - 【Source of color】:
    - System: Display the colors based on the system parameters.
    - Software: Display the colors based on the software element setting.
- Precaution:
  - Use Par 12003 & 12004 to enable the comment display.
  - Use Par 12005 - 12015 to set the displaying colors.

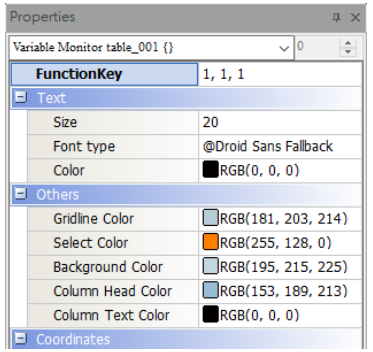


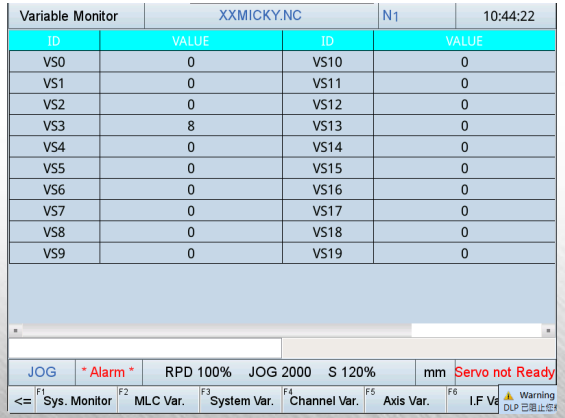


DGN screens

Variable Monitor table

- It shows the system internal variables.
- You can use function keys to switch to different types of variables and displaying format.
  - MLC variable (VM)
  - System variable (VS)
  - Channel variable (VC)
  - Axis variable (VA)
  - HMI variable (VH)





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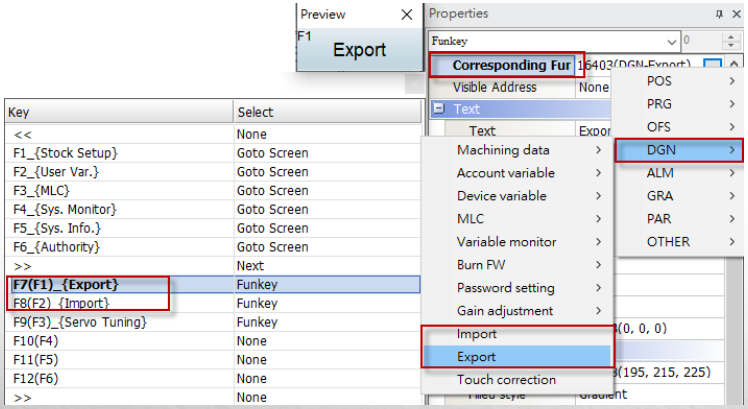
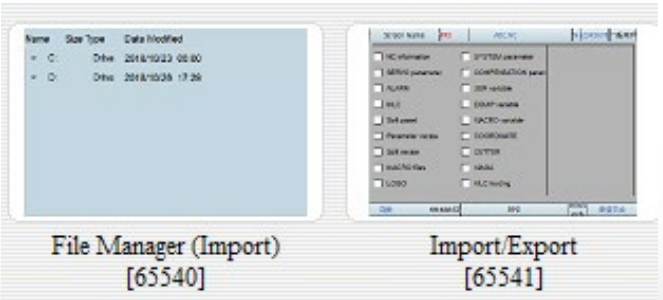
DGN screens

Export/Import

- Use function key to call related system screens, and do import and export operating.
- Precaution:
  - Operate on system screens 65540 and 65541.





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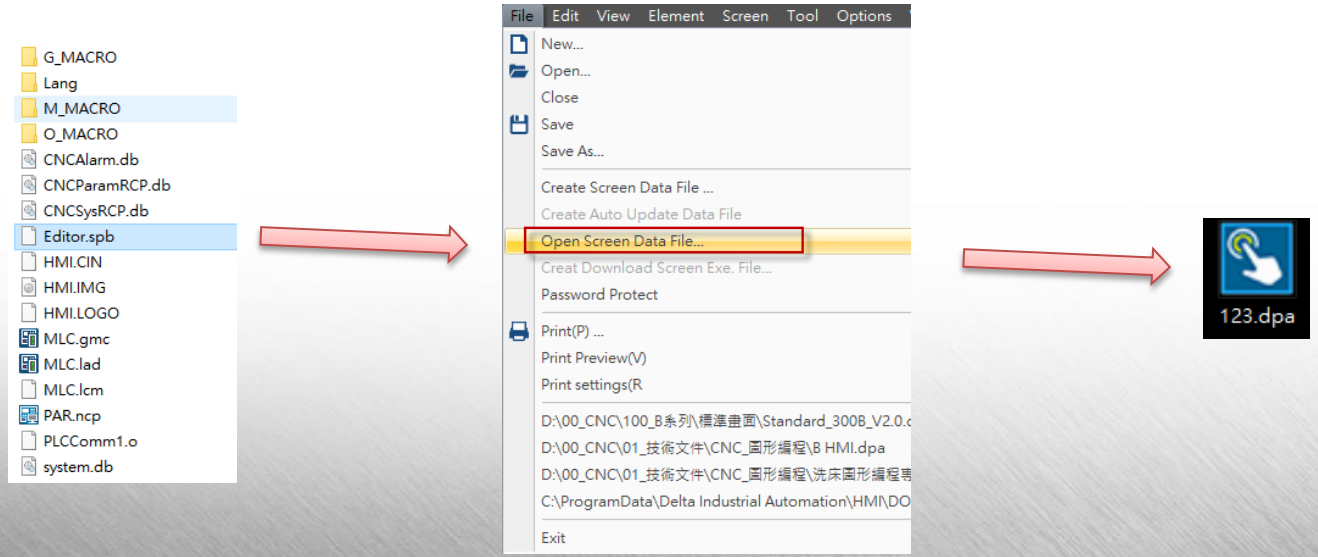
DGN screens

Export/Import

- Below files are exported from B series system.
- We can open the screen data by “Open Screen Data File” function and save it as a screen project file (.dpa) like below steps.



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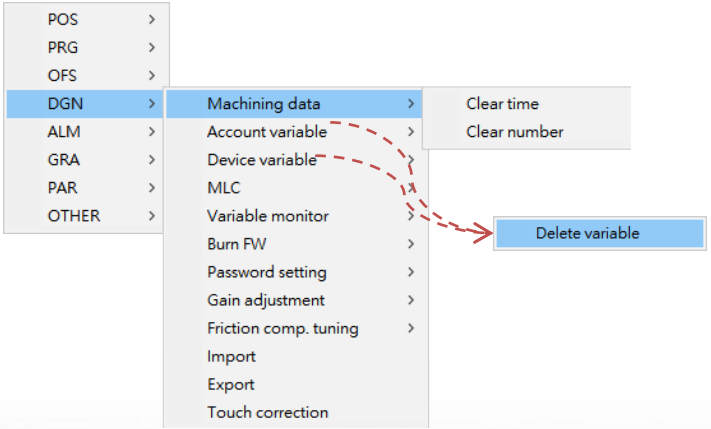
DGN screens

DGN screen function key



Function key	Description
Clear time	Clear machining total time
Clear number	Clear finishing stock number (D1022)
Delete variable	Delete the monitoring variables in “Account variable monitor”

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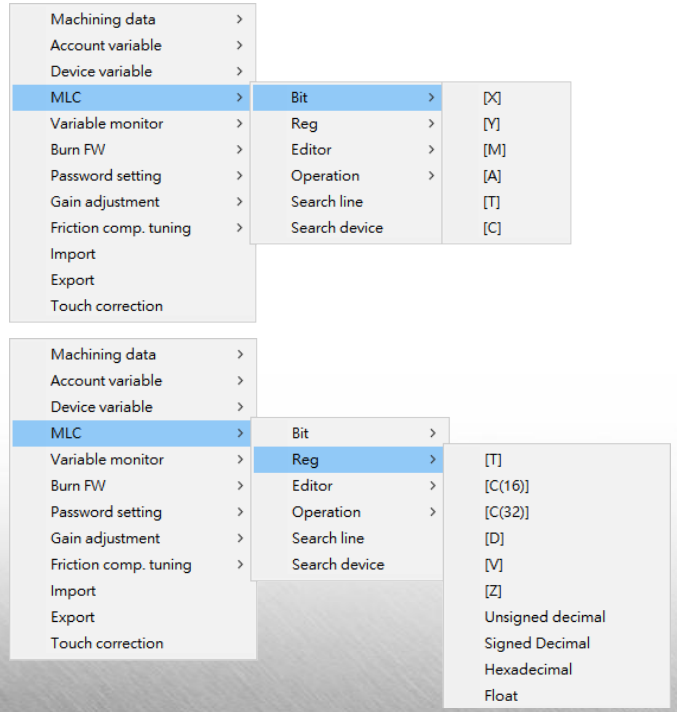
DGN screens

DGN screen function key



Function key	Description
[X]	Display X device in "MLC table (Bit)"
[Y]	Display Y device in "MLC table (Bit)"
[M]	Display M device in "MLC table (Bit)"
[A]	Display A device in "MLC table (Bit)"
[T]	Display T device in "MLC table (Bit)"
[C]	Display C device in "MLC table (Bit)"
[T]	Display T device in "MLC table (Word)"
[C(16)]	Display C(16) device in "MLC table (Word)"
[C(32)]	Display C(32) device in "MLC table (Word)"
[D]	Display D device in "MLC table (Word)"
[V]	Display V device in "MLC table (Word)"
[Z]	Display Z device in "MLC table (Word)"
Unsigned decimal	Change display format as unsigned decimal in "MLC table (Word)"
Signed decimal	Change display format as signed decimal in "MLC table (Word)"
Hexadecimal	Change display format as hexadecimal in "MLC table (Word)"
Float	Change display format as float in "MLC table (Word)"

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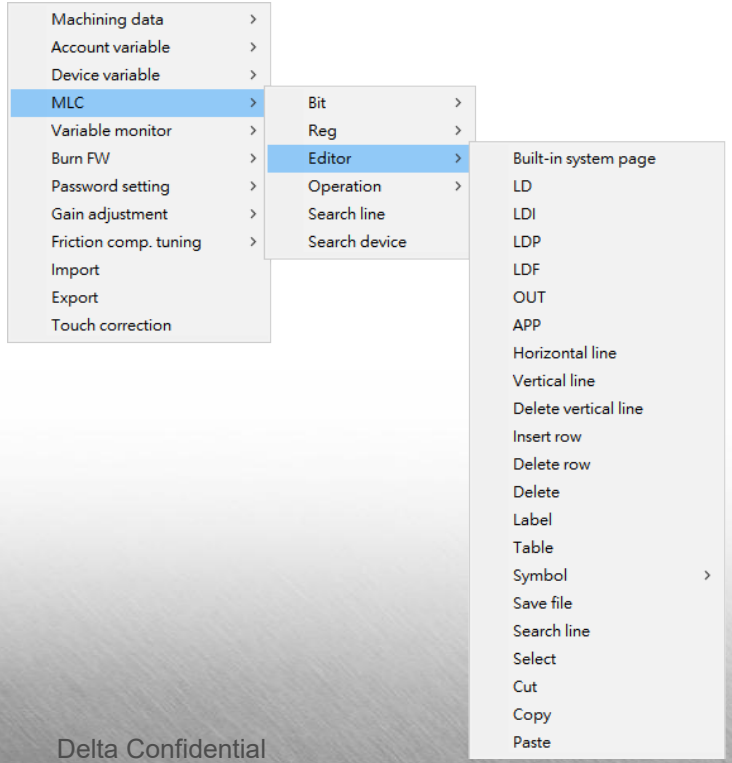
DGN screens

DGN screen function key



Function key	Description
(Editor)Built-in system page	Switch to system editor screen (ID:65570)
LD	Application instruction in MLC ladder
LDI	Application instruction in MLC ladder
LDP	Application instruction in MLC ladder
LDF	Application instruction in MLC ladder
OUT	Application instruction in MLC ladder
APP	Application instruction in MLC ladder
Horizontal line	Application instruction in MLC ladder
Vertical line	Application instruction in MLC ladder
Delete vertical line	Application instruction in MLC ladder
Insert row	Application instruction in MLC ladder
Delete row	Application instruction in MLC ladder
Delete	Application instruction in MLC ladder
Label	Application instruction in MLC ladder
Table	Application instruction in MLC ladder

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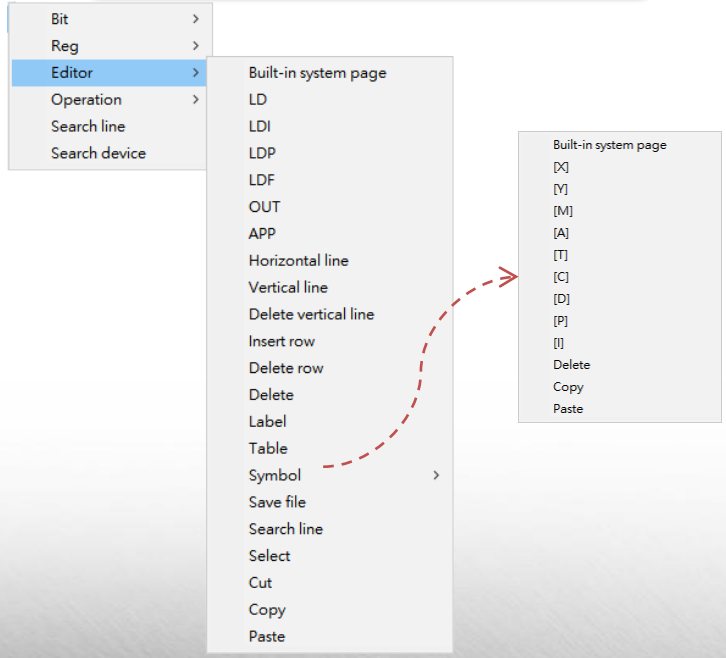
DGN screens

DGN screen function key

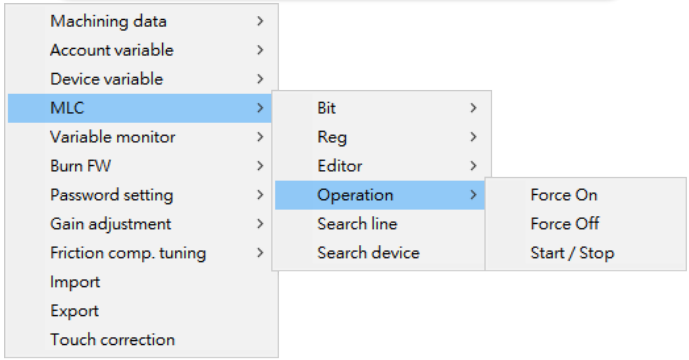


Function key	Description
(Symbol)Built-in system page	Switch to system editor screen (ID:65572)
[X]	Switch to X device in "MLC Symbol Edit"
[Y]	Switch to Y device in "MLC Symbol Edit"
[M]	Switch to M device in "MLC Symbol Edit"
[A]	Switch to A device in "MLC Symbol Edit"
[T]	Switch to T device in "MLC Symbol Edit"
[C]	Switch to C device in "MLC Symbol Edit"
[D]	Switch to D device in "MLC Symbol Edit"
[P]	Switch to P device in "MLC Symbol Edit"
[I]	Switch to IX/IC/IT/IR device in "MLC Symbol Edit"
Delete	Delete a comment in "MLC Symbol Edit"
Copy	Copy a comment in "MLC Symbol Edit"
Paste	Paste a comment in "MLC Symbol Edit"
Save file	Save the edited MLC ladder
Search line	Input the line number then pressing it to jump in specific line position in MLC ladder
Select	Start selecting MLC ladder content
Cut	Cut the selecting MLC ladder content
Copy	Copy the selecting MLC ladder content
Paste	Paste the selecting MLC ladder content

Delta Confidential

DGN screens

DGN screen function key



Function key	Description
Force ON	Set the selected relay as ON in MLC ladder
Force OFF	Set the selected relay as OFF in MLC ladder
Start/Stop	Start or stop MLC execution
Search line	Jumping to the line in MLC ladder according to input line number
Search device	Jumping to the specific device in MLC ladder according to input device

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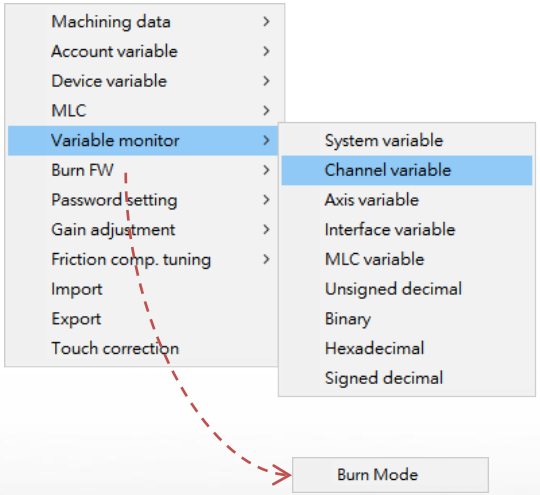
DGN screens

DGN screen function key



Function key	Description
System variable	Display VS variables in “Variable Monitor table”
Channel variable	Display VC variables in “Variable Monitor table”
Axis variable	Display VA variables in “Variable Monitor table”
Interface variable	Display VH variables in “Variable Monitor table”
MLC variable	Display VM variables in “Variable Monitor table”
Unsigned decimal	Change display format as unsigned decimal in “Variable Monitor table”
Binary	Change display format as binary in “Variable Monitor table”
Hexadecimal	Change display format as hexadecimal in “Variable Monitor table”
Signed decimal	Change display format as Signed decimal in “Variable Monitor table”
Burn Mode	Enter burn mode for FW upgrade when reboot system

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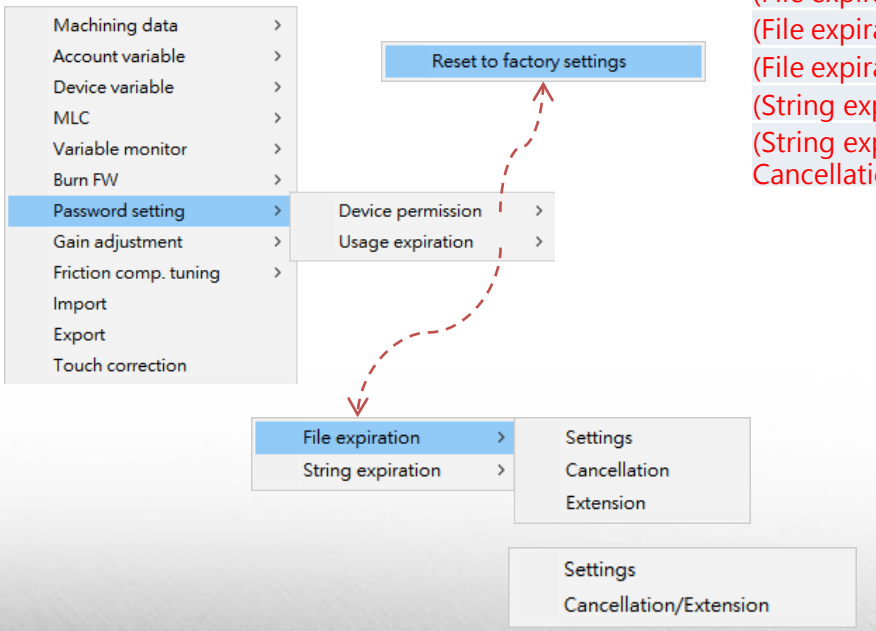
DGN screens

DGN screen function key



Function key	Description
Reset to factory setting	Switch to "reset factory setting" screen
(File expiration) Settings	Switch to "file expiration setting" screen
(File expiration) Cancellation	Switch to "file expiration cancellation" screen
(File expiration) Extension	Switch to "file expiration extension" screen
(String expiration) Settings	Switch to "string expiration setting" screen
(String expiration) Cancellation/Extension	Switch to "string expiration cancellation/extension" screen

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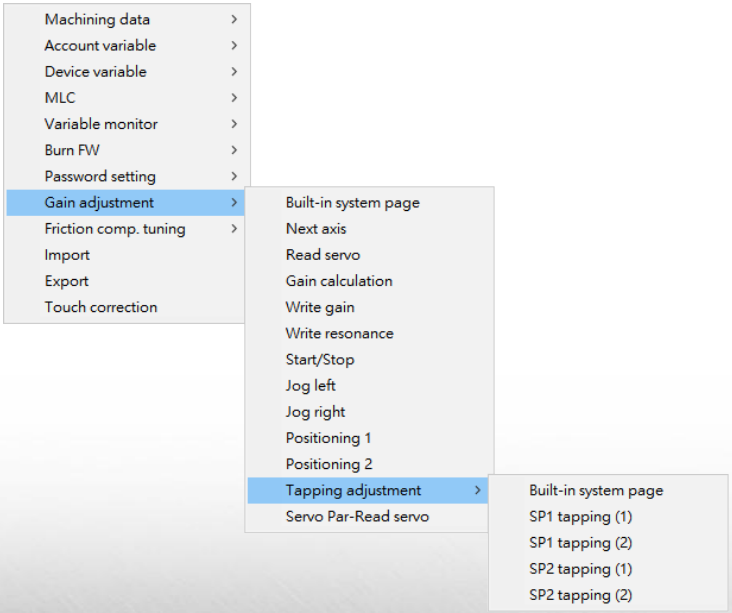
DGN screens

DGN screen function key

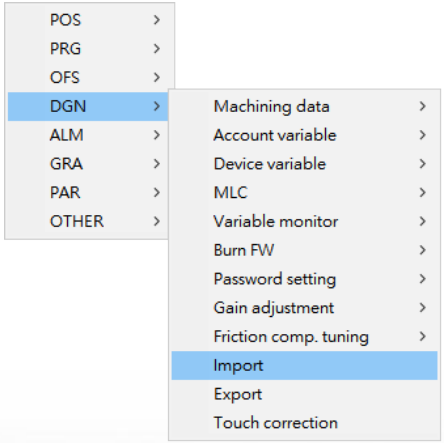


Function key	Description
(Gain adjustment) Built-in system page	Switch to system gain adjustment screen (ID:65562)
Next axis	Switch to next axis operation
Read servo	Read the gain parameters of the current axis
Gain calculation	Calculate the gain values according settings
Write gain	Write current gain values into the axis servo
Write resonance	Write current resonance values into the axis servo
Start/Stop	Start or stop the back and forth movement between point1 and point 2
Jog left	Forth jogging
Jog right	Back jogging
Positioning 1	Set the current position as point 1
Positioning 2	Set the current position as point 2
(Tapping) Built-in system page	Switch to system gain adjustment screen (ID:65563)
SP1 tapping (1)	Adjust tapping parameters about servo spindle 1
SP1 tapping (2)	Adjust tapping parameters about inverter spindle 1
SP2 tapping (1)	Adjust tapping parameters about servo spindle 2
SP2 tapping (2)	Adjust tapping parameters about inverter spindle 2
Servo Par-Read servo	Read all parameters from the current axis servo

Delta Confidential

DGN screens

DGN screen function key



Function key	Description
Import	Switch to system import screen (ID:65540 & 65541)
Export	Switch to system export screen (ID:65540 & 65541)
Touch correction	Switch to system touch correction screen

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Screen and Element

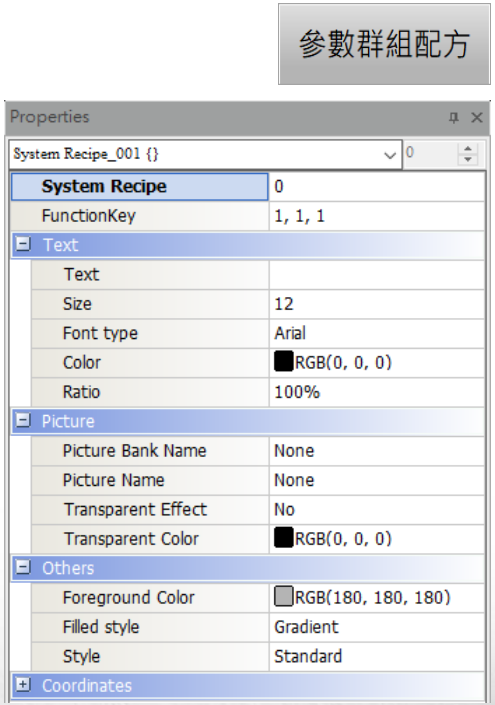
- Base screen
- POS screens
- PRG screens
- OFS screens
- DGN screens
- GRA screens
- PAR screens
- Others

Delta Confidential

Button Element

System recipe

- Use this element to switch the processing parameter group and it works with 【Parameter group】 function.
- Properties:
  - 【System recipe】: set 0 to use parameter group 1, set 1 to use parameter group 2, and so on.
- Precaution:
  - The system only has 20 parameter groups.



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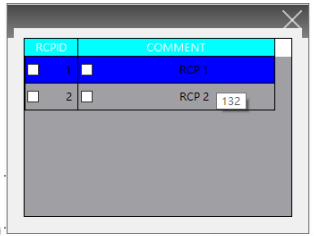
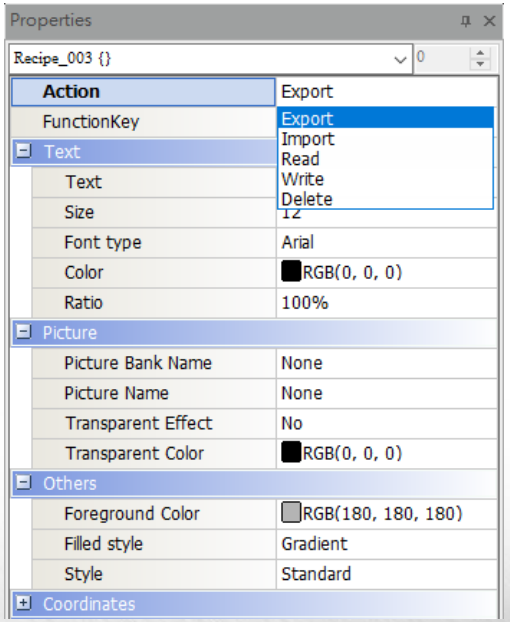
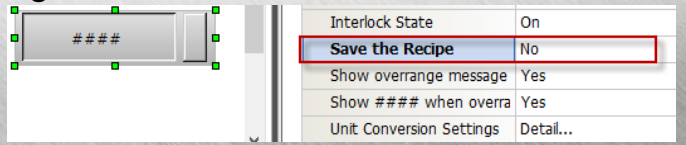
Button Element

Recipe

- You can save current values of the specific elements as a recipe with the Write function, and load the saved values to these elements with the Read function.
- Properties:
  - 【Action】:
    - Export
    - Import
    - Read (load from recipe) (double clicking)
    - Write (save to recipe)
    - Delete (double clicking)
- Precaution:
  - You must enable the **Save the Recipe** function before using the element for saving the content.



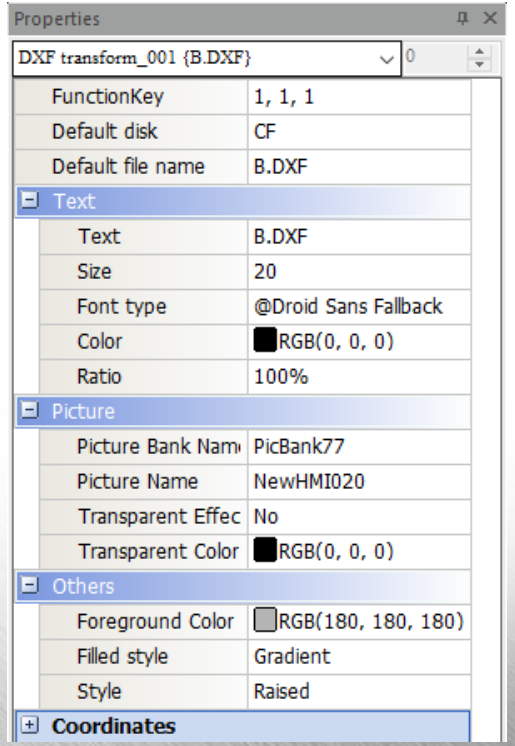




Button Element

DXF transform

- Converts the fixed CAD file to the NC file.
- Properties:
  - 【Default disk】: CF/ INTER/ USB
  - 【Default file name】: the CAD file name (.dxf) to be converted
- Precaution:
  - Process steps:
    1. Press this element to select the default DXF file and enter the【DXF parameters setup】 page.
    2. After setting the parameters, press the【Convert】function key to start the conversion.
    3. The system generates the NC program from this DXF file and automatically set it as the main machining program.



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Button Element

DXF transform

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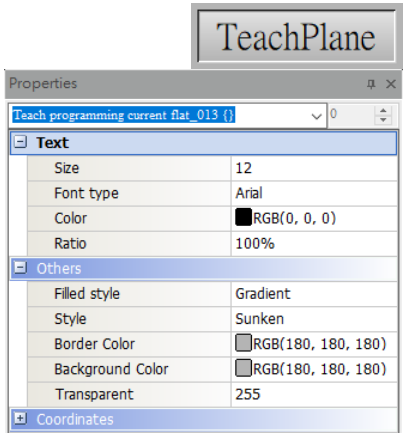
Data Display

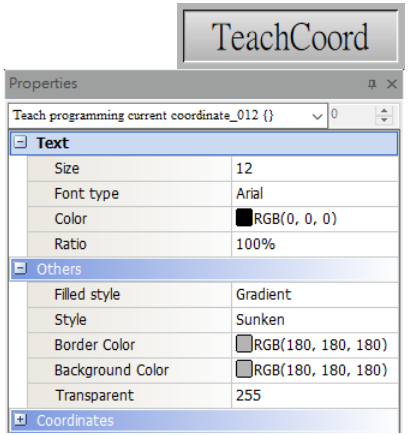
Teach programming current coordinate

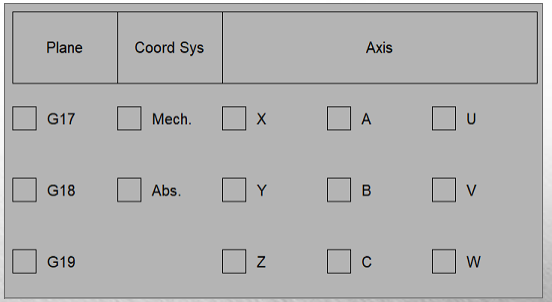
- Displays the current coordinate system such as machine or absolute for the teaching program.

Teach programming current plane

- Displays the current plane such as G17, G18, or G19 for the teaching program.







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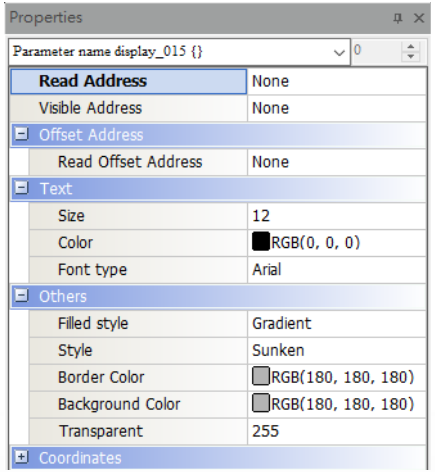
Data Display



Parameter name display

- Displays the corresponding parameter name.
- Properties:
  - 【Read address】:
    - “PAR” is the system parameter type.
    - “SP” is the servo parameter type.
    - “ST” is the system status and version.

【Parameter manager】 element can replace this element function!

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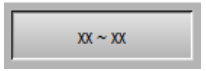
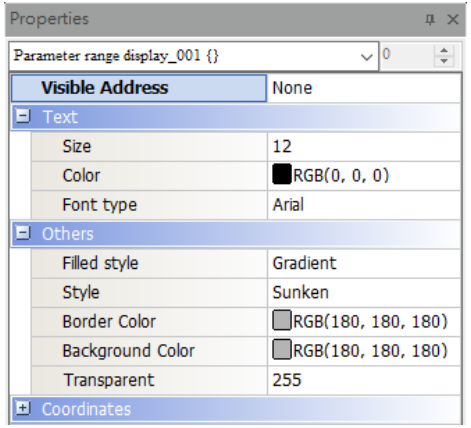
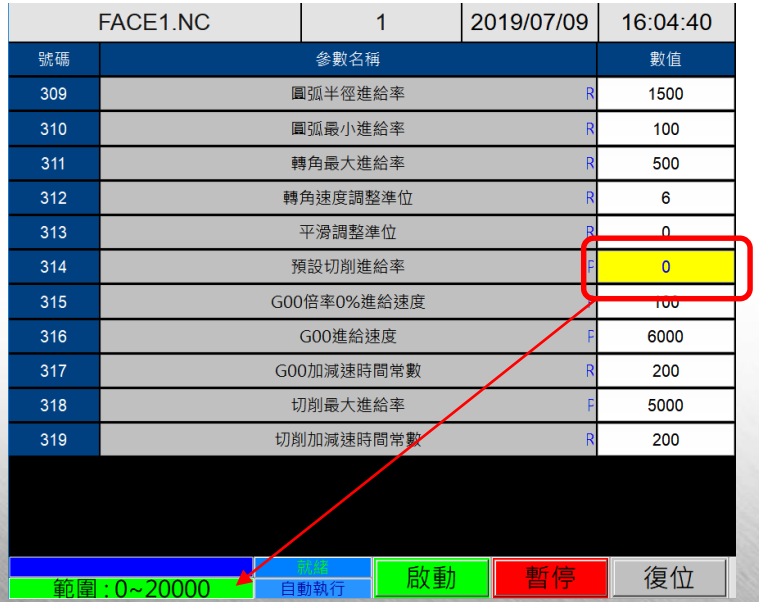
Data Display



Parameter range display

- When you select a parameter on screen, this element shows the input range of this parameter.





【Parameter manager】 element can replace this element function!

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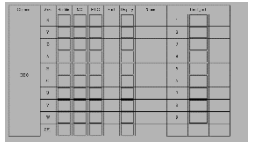
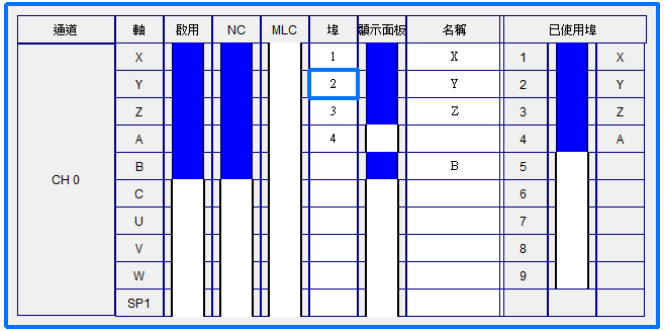
CNC Element

Channel settings

- Integrated channel configuration functions.
  - Enable/disable the axis
  - NC axis / MLC axis selection
  - DMCNET station port number setting
  - Display /not to display the axis information
  - Axis name setup
  - Display the DMCNET port in use





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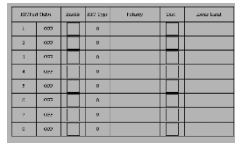
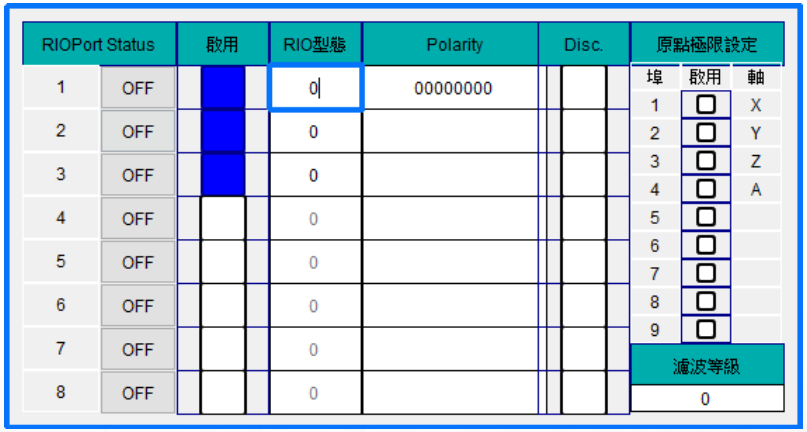
CNC Element

RIO settings

- Integrated Remote module setting function.
  - Enable/disable the module
  - RIO type setup
  - Polarity setting (NC/NO)
  - Remain the output status while disconnected
  - Home dog and limit sensor setup
  - Filter level





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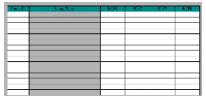
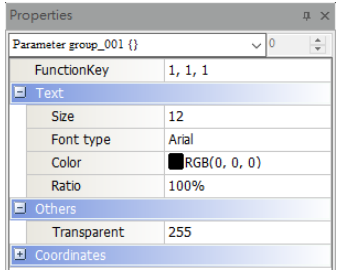
CNC Element

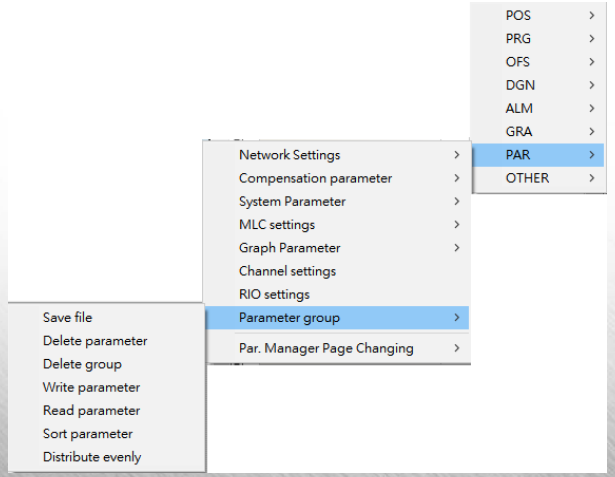
Parameter group

- You can edit machining parameters as a group to optimize various machining applications. The CNC has the function for dynamically switching the machining parameters.





參數ID	參數名稱	RCP1	RCP2	RCP3	RCP4
309	圓弧半徑進給率	1000	500	300	600
319	切削加減速時間常數	60	50	40	40
320	切削S曲線時間常數	50	40	40	30



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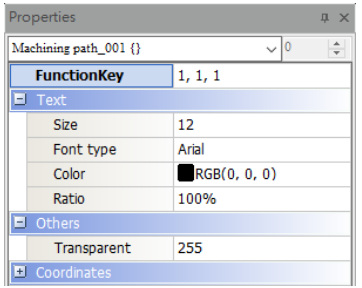
CNC Element

Machining path

- It shows the current machining contour or the complete contour preview of the current main program.
- You can set the color, drawing plane, contour line width, and other properties of this element display.



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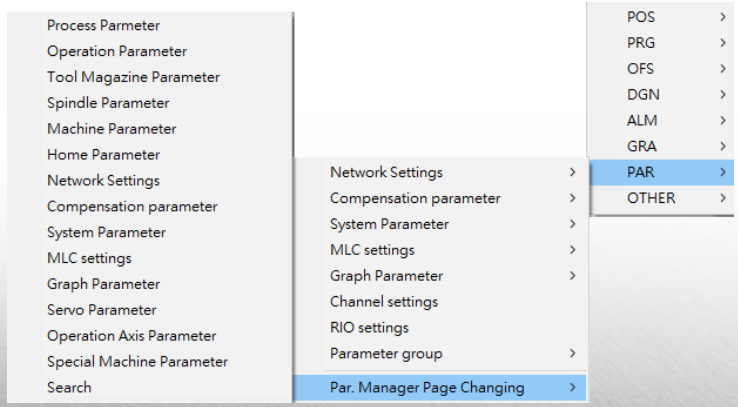
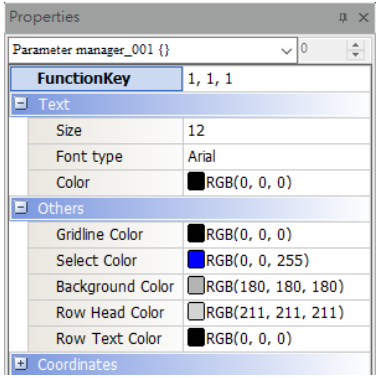
CNC Element

Parameter manager

- This is for parameter display and setting (sorted by group). You can switch between groups with the function key.
- Enter “S+ parameter number” to go to the specified parameter setting.





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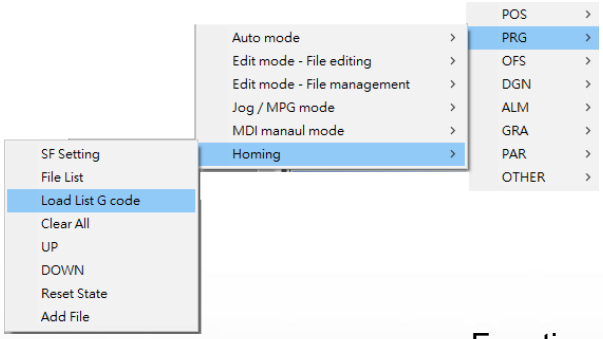
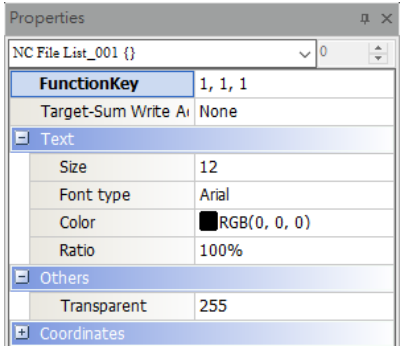
CNC Element

NC file list

- We can select multiple files and sort them, and the system will execute them in order with specific MLC control.





Function keys

File list	(Put selected files into this list in file manager)
Load list G code	(Load the selected file on this element to execute)
Clear all	(Clear all files in this element)
Up	(Move the selected file up in the file list)
Down	(Move the selected file down in the file list)
Reset state	(Reset the status and the counter of every file as default)
Add file	(Add a file into the file list)

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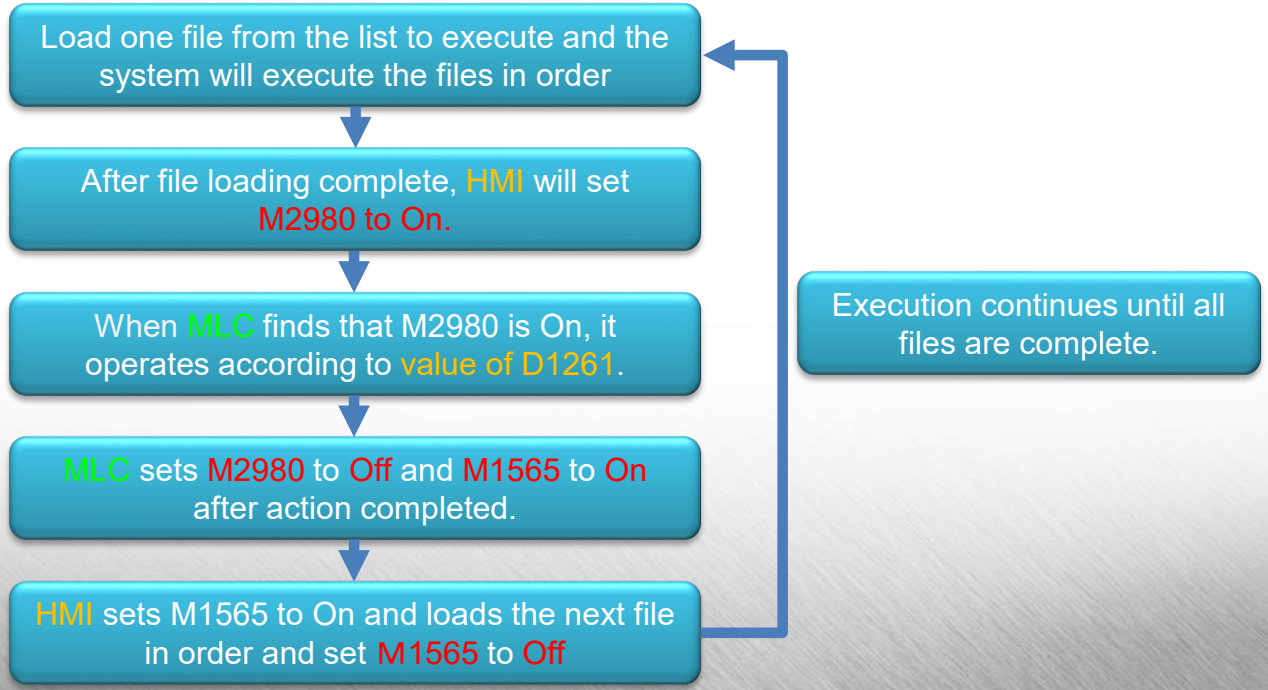
CNC Element

NC file list

- Control procedure with special M & D



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CNC Element

NC file list

- Description of special M & D:
  - D1261: HMI reads the setting status and write the corresponding value to D1261.
    0: Unprocessed; 1: Load; 2: Processing; 3: Printing; 4: Complete

  When the HMI starts to load a new NC file, the HMI first writes the status value to D1216. Next, the MLC assigns the D1261 value to change the displaying text of the current file status.
  - M2980 : After the HMI finishes loading a new file, HMI notifies the MLC with this flag.

  HMI sets M2980 to on, and then the MLC will set it to off while MLC receives this trigger flag.
  - M1565 : When MLC finishes machining, MLC will notify HMI to load the next file in order.

  MLC sets M1565 to on, and then the HMI sets it to off.
  - #9500: Using coordinate (HMI will write 54 or 55 in this macro variable)

  If there is coordinate information in the filename, HMI will write the value 54 or 55 to #9500. Then, you can use the macro function to switch the machining coordinate system with #9500.

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Security Level and Expiration

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Security Level and Expiration

Security Management

- Security level:
  - Highest security : the default password is 12345678, and it allow to do important operation such as download or upload screens.
  - Device permission: default account is 1234 and password is 1234.
  - User permission 2: default account is 2 and password is 2222.
  - User permission 1: default account is 1 and password is 1111.
  - Normal user: default account is 0 and password is 0000.
- Login:
  - Enter the account and its password to activate corresponding security level.
- Logout

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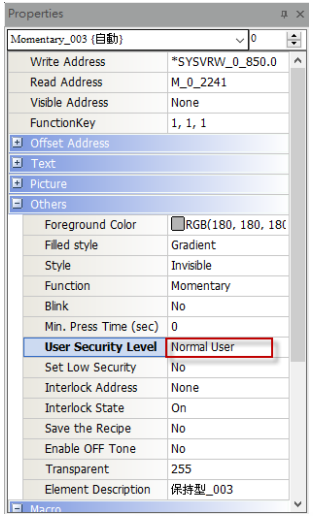
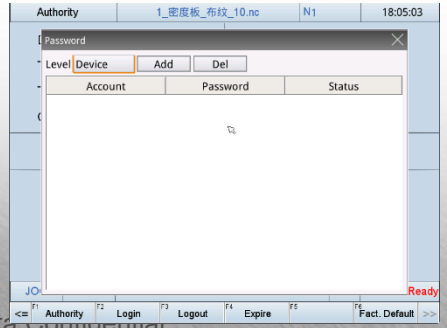
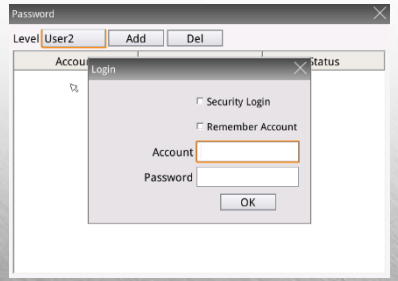
Security Level and Expiration

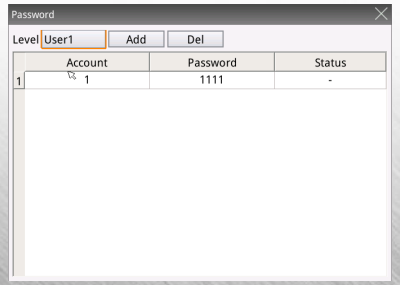
Security Management

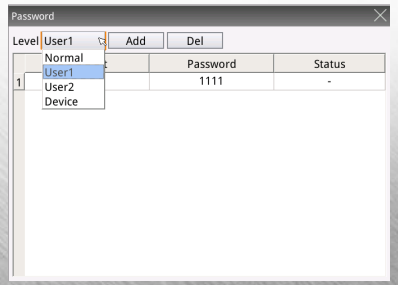
- Security setup:
  - Users can set the security level about elements like button or input element.
- Security management:
  - Select the level then key in the account and password to active authority.
  - Check all accounts and their passwords of the same or lower level.
  - Add , delete or modify the account data of lower level.











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Security Level and Expiration

Expiration

1. Click the Expire Setup, Expire Release, or Expire Extend function key to show the dialog.
2. Insert the USB drive to the controller and press “G” to create the TP.hex file in the USB drive.
3. Upload the TP.hex file to the website, https://172.29.72.7/Account/Login/?ReturnUrl=%2fHome%2fLock , and modify it on the website.
4. Save the TP.hex in the USB drive and press “R” in the dialog box.

Differences in HMI DOPSoft

Elements not available on CNC

- Button
  - System date and time
  - Screen capture
  - Remove storage
- Curve
  - Trend graph
  - X-Y chart
  - X-Y distribution
  - Curve input
- Sampling
  - Historical trend graph
  - Historical data table
  - Historical event table
  - Historical overview table
- Keypad

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Difference with HMI DOPSoft

Removed elements

- Graph display
  - Real-time image
- Sampling
  - Operation log setup
- List
  - PDF view
  - Text viewer
- Multimedia
  - Camera

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How to transit from A series to B series

Delta Confidential

Transit from A series to B series

Screen definition

- Screen ID:
  - 1 - 1000 : Soft Panel (compatible with A series)
  - 1001 - 65534 : Standard screens
  - 65535 : Default base screen
  - 65536 - : System and function key screens (Fixed)

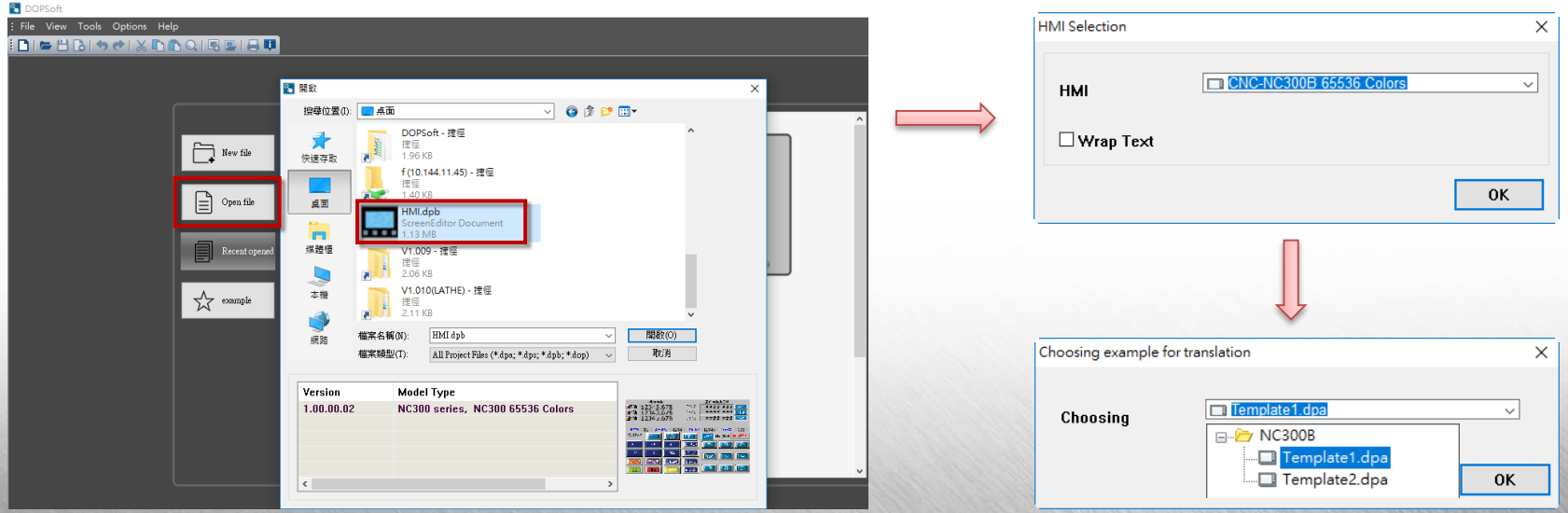
A series screen (Soft Panel)

B series screen (screen: 1 - 1000)

Transit from A series to B series

Steps

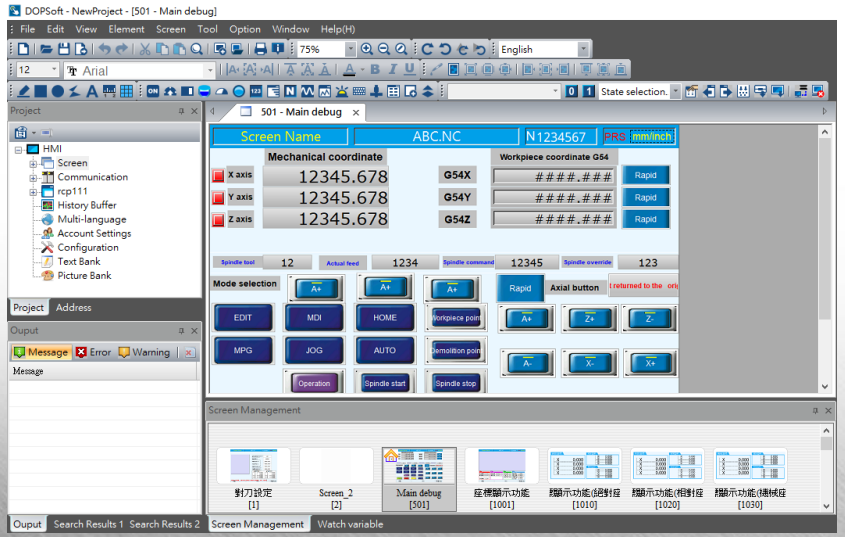
1. Open the project file (.dpb) of A series in the DOPSOFT.
2. Select the B series model to covert to.
3. Select the system project (.pda) to be combined as the template for B series.

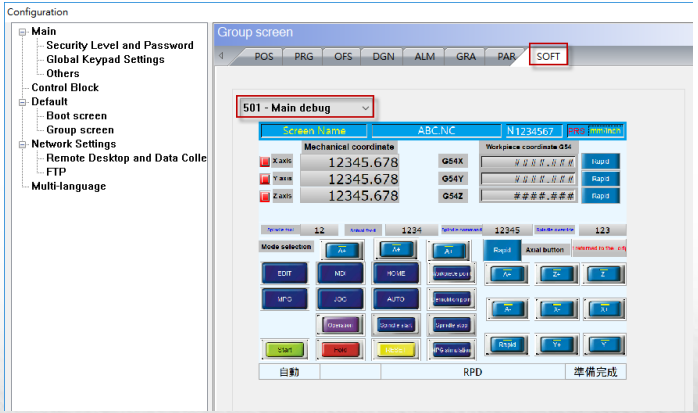


Transit from A series to B series

Steps

4. The screen ID remains the same after the transition.
5. In 【Option】→【Configuration】→【Group screen】, change the initial screen setting of group key 【SOFT】.





Smarter. Greener. Together.