CNC Screen Display Function

Bitmap Server Function

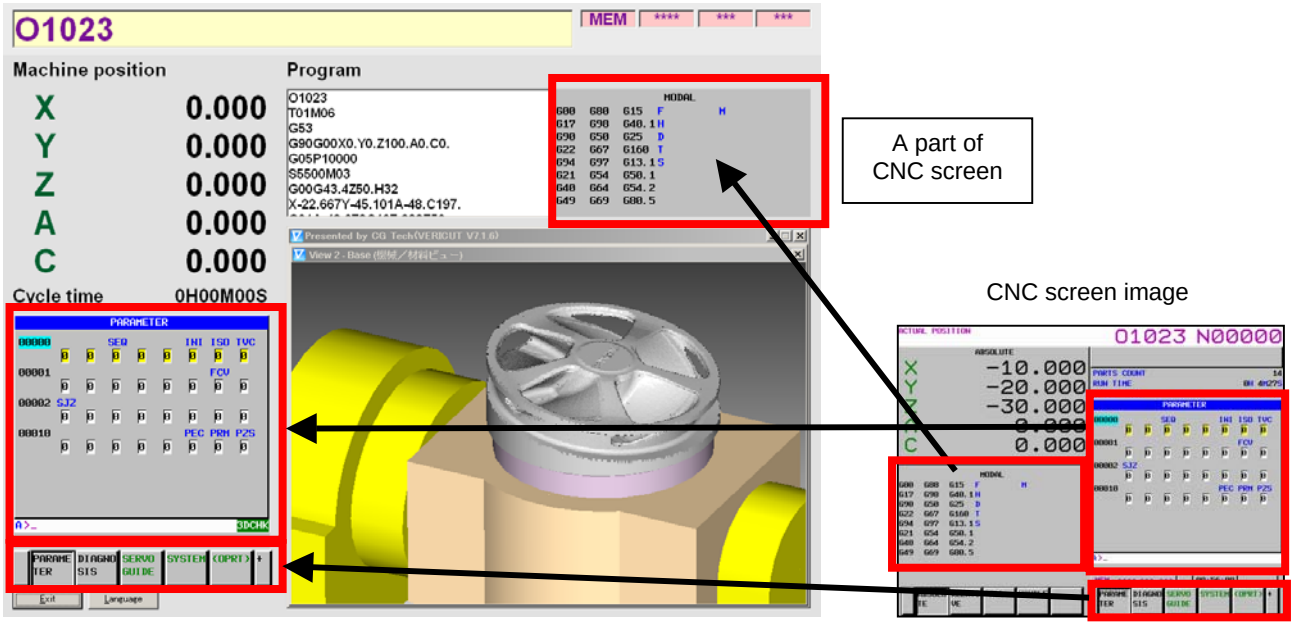
Specifications

1 OVERVIEW

The bitmap server function in the CNC screen display function allows displaying a part or all of CNC screen (included C-language executor, Macro executor, PMC C language screen) in the user application.
The bitmap server function provides two functions: one is a function to control the keyboard, mouse and the touch panel and the other is a function to display some CNC screen in one user application at the same time.

NOTE
1 The bitmap screen function is available on the CNC screen display function (HSSB connection and Ethernet connection) for the personal computer with Windows XP.
2 The bitmap screen function supports Series 30i/31i/32i/35i, Series 0i-D and Power Motion i-A. Another CNC does not support it.
3 The original CNC screen display function cannot be executed while executing the bitmap server function. Execute the original CNC screen display function after terminating the bitmap server function.

An example to display a part of CNC screen in the user application.



The bitmap server function is available by the following edition of the CNC screen display function.

System name	Drawing number	Edition
CNC screen display function disk	A02B-0207-K775	Edition 4.6 or later
CNC screen display function disk (FOCAS2/Ethernet)	A02B-0207-K776	Edition 4.5 or later

1.1 Start

To use the bitmap server function, specify the following argument at the starting of the CNC screen display function.
The argument is not case-sensitive.

For HSSB connection:

```
CNCSCRN  /SERVER
```

The /NODE argument can be specified at the same time.

For Ethernet connection:

```
CNCSCRNE  /SERVER
```

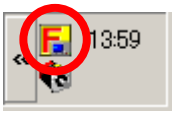
The /H and /T arguments can be specified at the same time.

NOTE

1 The bitmap server function of the following numbers can be executed at the same time.
   - For HSSB connection : 8 CNCs (Node0-7)
   - For Ethernet connection : 8 CNCs

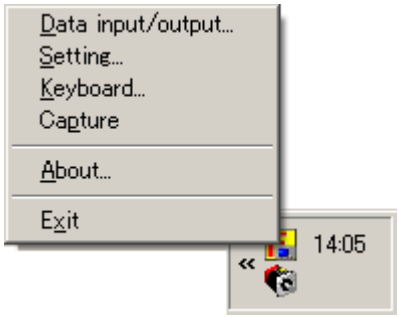
2 Refer to the “2.1 START AND TERMINATION (HSSB VERSION)” and “2.2 START AND TERMINATION (ETHERNET VERSION)” of the “CNC Screen Display Function Operator’s Manual (B-63164EN)” as for the “/NODE”, “/H” and “/T“ arguments.

After you start the CNC screen display function by specifying the above-mentioned argument, the CNC screen display function resides in the system tray without displaying the screen.



1.2 System tray

The following pop-up menu will be displayed by the right-click of the icon in the system tray.



Menu item	Brief description
Data input/output…	Settings of the data input/output folder for various data of the CNC.
Setting…	Settings of various items of the CNC screen display function. The "Switching between locations to save the settings" and the "Setting screen resolutions" are effective only.
Keyboard	Settings of the keyboard assignment. This item becomes effective after the update of the CNC screen is started.
About…	Display of the version information of the CNC screen display function.
Exit	Termination of the CNC screen display function.

The functions of each menu item are the same as the original CNC screen display function. Refer to the “2. OPERATION” and “3. SETTING” of the “CNC Screen Display Function Operator’s Manual (B-63164EN)” as for details.

1.3 CNC screen control library

To use the bitmap server function in the user application, the following CNC screen control library (32/64 bit version) is provided.

- cncscrn_ctrl.dll (CNC screen control library)
- cncscrn_ctrl.lib (Import library)
- cncscrn_ctrl.h (Header file)

The CNC screen control library is stored in the "cncscrn_ctrl¥win32" (32bit version) and "cncscrn_ctrl¥x64" (64bit version) folder of the CD-ROM (A02B-0207-K775 (HSSB version) and A02B-0207-K776 (Ethernet version)).

Function list of the CNC screen control library

No.	Function Name	Brief description
1	sdf_start_hssb	Starts the update of the CNC screen (For HSSB connection)
2	sdf_start_ether	Starts the update of the CNC screen (For Ethernet connection)
3	sdf_stop	Ends the update of the CNC screen
4	sdf_register	Registers the screen update message
5	sdf_keyinput	Notifies the key code
6	sdf_mousepos	Notifies the mouse position

1.3.1 Specifications of CNC screen control library

（1） Starts the update of the CNC screen (For HSSB connection)

Declaration

short sdf_start_hssb(long node_num, unsigned short *Hndl, DIB **pdib);

Description

The update of the CNC screen is started. It takes the several seconds to execute this function.

Arguments

node_num [in]

Specify the node number. (0,..,7)

Hndl [out]

Specify the pointer to the variable in which the CNC screen control handle is stored.

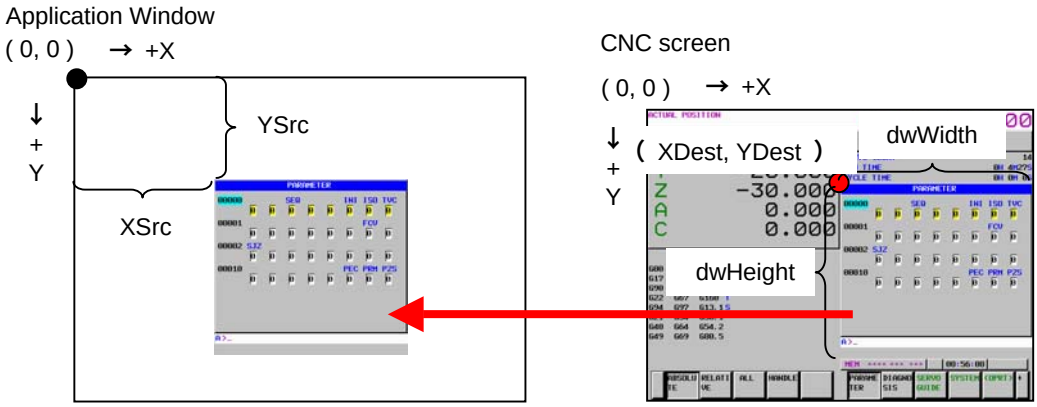
*pdib [out]

Specify the pointer in which the start address of the bitmap data (DIB data) of the CNC screen is stored. This data format is the DIB (Device Independent Bitmap).

The CNC screen can be displayed to the optional position in the user application Window by using this DIB data and the SetDIBitsToDevice() function of Windows API. Moreover, the BITMAPFILEHEADER is added to the DIB data and then the bitmap file can be made. Refer to the Web site of the Microsoft or the MSDN etc. as for the DIB data.

Example

An example to display a part of CNC screen to the graphic device contest (dc) in the user application Window:




```
long    node_num = 0;
unsigned short    Hndl;
DIB    *pdib;

ret = sdf_start_hssb( node_num, &Hndl, &pdib );
ret = SetDIBitsToDevice( (HDC)dc, XSrc, YSrc, dwWidth, dwHeight, XDest,
                         -pdib->bmi.biHeight – (dwHeight + YDest),
                         0, -pdib->bmi.biHeight, (CONST VOID *)pdib->image,
                         (LPBITMAPINFO)&pdib->bmi, DIB_RGB_COLORS );
```

Return

復帰コード	Meaning/Error 取り扱い
0	No error.
1	The bitmap server function is not started.
2	The update of the CNC screen has been already started.
4	The node number is wrong.
8	The bitmap server function cannot be executed. (Because the CNC screen display function is already executed, etc.)
9	The creating of the DIB data failed.

（2） Starts the update of the CNC screen (For Ethernet connection)

Declaration

short sdf_start_ether(const char *ipaddr, unsigned short port, unsigned short *Hndl, DIB **pdib);

Description

The update of the CNC screen is started. It takes the several seconds to execute this function.

Arguments

ipaddr [in]

Specify the character string that presents a CNC's IP address or a host name to be connected. (Ex. "192.168.0.1" or "CNC-1.FACTORY")

port [in]

Specify the port number of the FOCAS2/Ethernet (TCP) function.

Hndl [out]

Specify the pointer to the variable in which the CNC screen control handle is stored.

*pdib [out]

Specify the pointer in which the start address of the bitmap data (DIB data) of the CNC screen is stored. Refer to the sdf_start_hssb() for details.

Return

Return code	Meaning/Error handling
0	No error.
1	The bitmap server function is not started.
2	The update of the CNC screen has been already started.
5	The IP address or the host name is wrong.
7	The number of connected Ethernet exceeded the limitation. (Up to 8 CNCs)
8	The bitmap server function cannot be executed. (Because the CNC screen display function is already executed, etc.)
9	The creating of the DIB data failed.
10	Socket error. Check your network connection (Ethernet cable etc.)

（3） Ends the update of the CNC screen

Declaration

short sdf_stop(unsigned short Hndl);

Description

The update of the CNC screen is terminated.

Arguments

Hndl [in]

Specify the CNC screen control handle.

Return

Return code	Meaning/Error handling
0	No error.
3	The update of the CNC screen is not started. Start the update of the CNC screen by sdf_start_hssb() or sdf_start_ether().
6	The CNC screen control handle is wrong.

（4） Registers the screen update message

Declaration

short sdf_register(unsigned short Hndl, HWND hWnd, UINT nUpdateMsg);

Description

The Window handle of user application and the Window message number to receive the screen update message are registered.

Arguments

Hndl [in]

Specify the CNC screen control handle.

hWnd [in]

Specify the Windows handle that receives the screen update message.

When you specify the NULL, the receiving of the Window message will be stopped.

nUpdateMsg [in]

Specify the Window message number that is notified every time the CNC screen display function updates the screen.

Explanation

When the Window handle and Window message number are registered by this function, the specified Window message will be sent to the user application every time the screen of CNC is updated.

The update area is notified by WPARAM and LPARAM of the Window message.

By updating the notified area of the screen only, the processing time can be saved.

x = LOWORD(wparam);	X coordinate value of the update area
y = HIWORD(wparam);	Y coordinate value of the update area
w = LOWORD(lparam);	Width of the update area
h = HIWORD(lparam);	Height of the update area

Return

Return code	Meaning/Error handling
0	No error.
3	The update of the CNC screen is not started. Start the update of the CNC screen by sdf_start_hssb() or sdf_start_ether().
6	The CNC screen control handle is wrong.

(5) Notifies the key code

Declaration

short sdf_keyinput(unsigned short Hndl, WORD flag, WORD code);

Description

The key code is notified to the CNC.

Arguments

Hndl [in]

Specify the CNC screen control handle.

flag [in]

Specify "0" that means the key-up, and "1" that means the key-down.

code [in]

Specify the key code of the CNC. (It is valid when flag=1.)

The available key code is shown as follows:

	0	1	2	3	4	5	6	7
0			SP	0	@	P	`	p
1			!	1	A	Q	a	q
2			"	2	B	R	b	r
3			#	3	C	S	c	s
4			$	4	D	T	d	t
5			%	5	E	U	e	u
6			&	6	F	V	f	v
7			'	7	G	W	g	w
8			(	8	H	X	h	x
9	TAB		)	9	I	Y	i	y
A	EOB		*	:	J	Z	j	z
B			+	;	K	[	k	
C			,	<	L	¥	l	
D			-	=	M	]	m	
E			.	>	N	^	n	~
F			/	?	O	_	o	

	8	9	A	B	C	D	E	F
0		RESET	[SVF9]					[SHF1]
1			[SVF8]					[SHF2]
2			[SVF7]					[SHF3]
3			[SVF6]					[SHF4]
4	SHIFT	INSERT	[SVF5]				AUX	[SHF5]
5		DELETE	[SVF4]					[SHF6]
6	CAN	ALTER	[SVF3]					[SHF7]
7		ALT	[SVF2]					[SHF8]
8	→	INPUT	[SVF1]				POS	[SHF9]
9	←	CALC					PROG	[SHF10]
A	↓	HELP					OFFSET/ SETTING	
B	↑	CTRL					SYSTEM	
C		ABC/abc					MESSAGE	
D							GRAPH	
E	Page↓						CUSTOM	[FR]
F	Page↑						CUSTOM2	[FL]

Return

Return code	Meaning/Error handling
0	No error.
3	The update of the CNC screen is not started. Start the update of the CNC screen by sdf_start_hssb() or sdf_start_ether().
6	The CNC screen control handle is wrong.

(6) Notifies the mouse position

Declaration

short sdf_mousepos(unsigned short Hndl, WORD flag, short px, short py);

Description

The mouse position is notified to the CNC.

Arguments

Hndl [in]

Specify the CNC screen control handle.

flag [in]

Specify "0" that means the mouse-up, and "1" that means the mouse-down.

px [in]

Specify the X coordinate value (pixel unit) of the mouse position.

py [in]

Specify the Y coordinate value (pixel unit) of the mouse position.

Explanation

The mouse position specifies the value based on the upper-left of the CNC screen instead of the position in the user application Window.

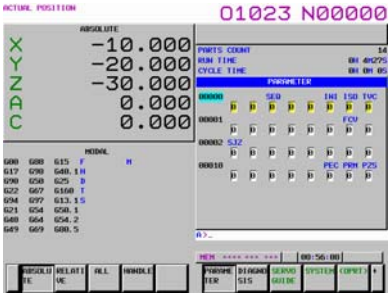
CNC screen

(0, 0) → +X

↓

+

Y



(xpixel - 1, ypixel – 1)

Return

Return code	Meaning/Error handling
0	No error.
3	The update of the CNC screen is not started. Start the update of the CNC screen by sdf_start_hssb() or sdf_start_ether().
6	The CNC screen control handle is wrong.