

**NCF 050**      **Origin Search (REAL) \_NCF050\_Home\_REAL**

**Basic function**      Executes an Origin search operation to establish the origin.

**Symbol**

Always ON (P\_On)

Unit No.      (INT) UnitNo

Axis No.      (INT) Axis      (BOOL) CommandAborted

Start      (BOOL) Execute      (BOOL) Error

Position command      (REAL) Position      (WORD) ErrorID

Speed command      (REAL) Velocity

(BOOL) EN      (BOOL) ENO

(BOOL) Done

(BOOL) CommandAborted

(BOOL) Error

(WORD) ErrorID

Origin Search Completed

Abort

Error flag

Error code

**File name**      Lib\FBL\omronlib\PositionController\NCF\\_NCF050\_Home\_REAL12.cxf

**Applicable models**

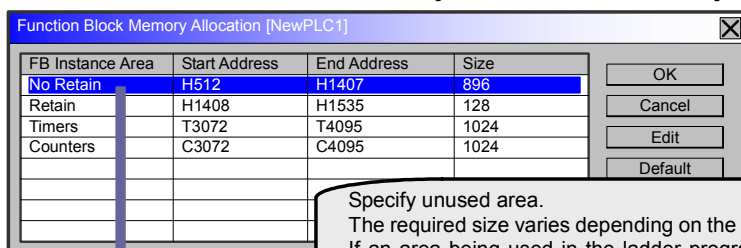
Position Unit	CJ1W-NCF71, CS1W-NCF71
CPU Unit	CS1*-CPU**H Unit Version 3.0 or later CJ1*-CPU**H Unit Version 3.0 or later CJ1M-CPU** Unit Version 3.0 or later CP1H
CX-Programmer	Version 5.0 or later

**Languages in function block definitions**      Ladder programming

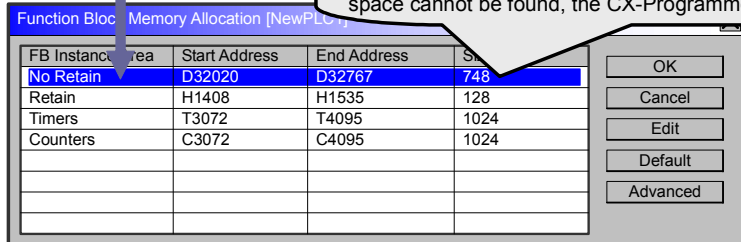
**Conditions for usage**      The following conditions for usage should be the Position Control Unit version 1.2 or earlier. (It will not be required in the Position Control Unit version 1.3 or later)

■CX-Programmer Setting

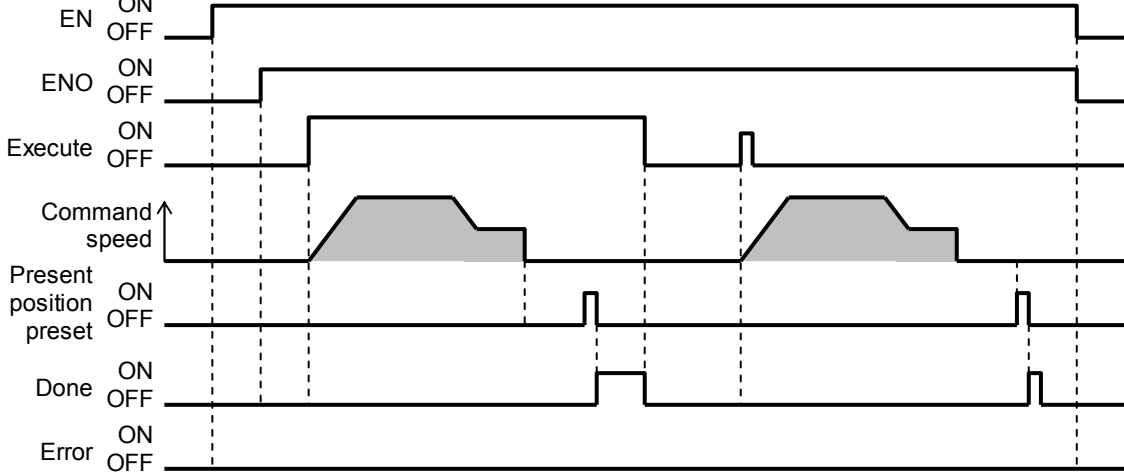
The function blocks related to the Position Control Units will not operate if the area H512 or higher (default setting) is specified as the Non Retain Area through the Function block memory allocation. Make sure to change the memory area to unused area (DM or EM, for example) from the CX-Programmer. To change this value, click **PLC/Function Block Memory/Function Block Memory Allocation** from the Menu Bar.



Specify unused area.  
The required size varies depending on the used FB and the number of FBs. If an area being used in the ladder program is specified or sufficient free space cannot be found, the CX-Programmer will display a compile error.



For example, to use the memory area from D32020 to D32767 (748 words), specify the addresses as shown in the left.

<p><b>Function description</b></p>	<p>When the Start (Execute) turns ON, the Origin Search operation for the axis of the specified Unit No. (UnitNo) and Axis No. (Axis) is started using the value specified in Speed command (Velocity) as the initial origin search speed.</p> <p>When the search operation is completed, the Present Position Preset operation is executed and the present position is set to the value specified in the Position command (Position). The Present Position Preset operation is performed even if the Position command (Position) is set to 0.</p> <p>The Origin Search Completed (Done) is turned ON when the present position preset operation for the FB has been completed. This flag will not be turned ON if operation is canceled for a deceleration stop or because an error has occurred.</p> <p>The Error flag (Error) will be turned ON and the Error code (ErrorID) will be output if an error occurs for the FB. This will not occur for error in other FBs or other instances of the FB.</p> <p>These statuses (Done/CommandAborted/Error/ErrorID) will be reset when the Start (Execute) turns OFF. If the Start (Execute) turns OFF before the positioning operation has been completed, the status will be set for at least one cycle when supporting conditions have occurred.</p>  <p>Note: The Origin Search and the Present Position Preset of the Position Control Units are used in this FB. Refer to the manual in Related manuals for details.</p>
<p><b>Kind of FB definition</b></p>	<p>Always execution type. Connect the EN to the Always ON Flag (P_On). The same instance cannot be used in two or more places.</p>
<p><b>FB precautions</b></p>	<ul style="list-style-type: none"> <li>• The Preset When Origin Search has been added to the Origin Search function in the Version 2.0 or later of the Position Control Units. This is for the Origin Search function and different from the Present Position Preset executed by this FBL after the Origin Search. Setting "Position command(Position)" of this FBL does not enable the Preset When Origin Search function.</li> <li>• When using the absolute encoder, set "Reverse mode 1" to the Operation mode of Axis Parameters in the Position Control Units and select Enable(1: Set) for "Origin search preset". Without setting, the origin position offset setting of the absolute encoder is not executed when executing the origin search. In this case, when the absolute data is read again, it returns to a coordinate system based on the absolute data saved in the absolute encoder, not to the origin established by the Origin search operation.</li> </ul>
<p><b>EN input condition</b></p>	<ul style="list-style-type: none"> <li>• Connect the EN input to the Always ON Flag (P_On). If another bit is connected to EN, the FB outputs will be held when the connected bit turns OFF.</li> </ul>
<p><b>Restrictions Other</b></p>	<ul style="list-style-type: none"> <li>• The following cannot be specified for this FB: "Acceleration/deceleration curves", "Forward rotation current limit designation" and "Reverse rotation current limit designation". If any of these functions is required, specify them in advance outside the FB.</li> <li>• If the software limits are enabled, do not set the origin (0) at software upper or lower limit. The FB may not end in some specifications of Servo Drive.</li> <li>• The Present Position Preset is executed after executing the Axis Error Reset if a software limit error is detected when the Origin Search has been completed (by the Position Control Units).</li> <li>• This FB uses Unit Error Reset, Write Data, Read Data and Save Data Bits of the Position Control Unit (see Note). Therefore, do not turn these bits ON or OFF between the period from the rising edge of EN to the rising edge of ENO. For the same reason, do not use these bits for coil outputs (OUT commands).</li> <li>• The output variable of FB may not change even if EN is turned ON. In that case, check if any of Unit Error Reset, Write Data, Read Data and Save Data Bit is left ON.</li> <li>• This FB uses the Origin Search/ Present Position Preset Bit in the Axis Operating Output Memory Areas. Therefore, do not turn these bits ON or OFF until the operation is completed. For the same reason, do not use these bits for coil outputs (OUT commands).</li> </ul> <p>Note: For calculation of bit addresses, these bits are referenced in this FB in the first execution of each instance, and when changing "Unit No. (UnitNo)", "Axis No. (Axis)" of the input variable and set "Start (Execute)".</p>

<p><b>Application example</b></p>	<p>Turning the Start Trigger ON from OFF will operate the Servomotor (axis1) connected to the Position Control Unit with a unit number 0 using the Present Position Preset command.</p> <p>The diagram illustrates the hardware and logic for operating a servomotor. It shows a CPU connected to an NCF (NCF050) which is connected to Servomotor Axis 1. A callout indicates 'Unit No.: 0'. The logic circuit consists of a Start Trigger (normally open contact) and Bit A (normally closed contact) in parallel, leading to Bit B (normally open contact), Bit C (normally open contact), and Bit D (normally open contact) in series. Bit A is also shown as a coil. An 'Always ON (P_On)' contact is connected to the EN input of the NCF. The parameter table below defines the NCF's inputs and outputs.</p> <table border="1" data-bbox="359 582 1117 996"> <thead> <tr> <th colspan="2">Sample</th> <th colspan="2">_NCF050_Home_REAL</th> </tr> </thead> <tbody> <tr> <td>(BOOL)</td> <td>EN</td> <td>(BOOL)</td> <td>ENO</td> </tr> <tr> <td>(INT)</td> <td>UnitNo</td> <td>(BOOL)</td> <td>Done</td> </tr> <tr> <td>(INT)</td> <td>Axis</td> <td>(BOOL)</td> <td>CommandAborted</td> </tr> <tr> <td>(BOOL)</td> <td>Execute</td> <td>(BOOL)</td> <td>Error</td> </tr> <tr> <td>(REAL)</td> <td>Position</td> <td>(WORD)</td> <td>ErrorID</td> </tr> <tr> <td>(REAL)</td> <td>Velocity</td> <td></td> <td></td> </tr> </tbody> </table> <p>Additional parameters shown in the diagram:</p> <ul style="list-style-type: none"> <li>Unit No. &amp;0</li> <li>Axis No. &amp;1</li> <li>Start Bit A</li> <li>Position command +200.0</li> <li>Speed command +2000.0</li> <li>Origin Search Completed (Bit B)</li> <li>Abort (Bit C)</li> <li>Error flag (Bit D)</li> <li>Error code D0</li> </ul>	Sample		_NCF050_Home_REAL		(BOOL)	EN	(BOOL)	ENO	(INT)	UnitNo	(BOOL)	Done	(INT)	Axis	(BOOL)	CommandAborted	(BOOL)	Execute	(BOOL)	Error	(REAL)	Position	(WORD)	ErrorID	(REAL)	Velocity		
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<p><b>Related manuals</b></p>	<p>Position Control Units OPERATION MANUAL (W426-E1)              8-2 Origin Search              8-3 Present Position Preset              12-4 Error Codes</p>																												

## ■Variable Tables

### Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): FB started 0 (OFF): FB not started.
Unit No.	UnitNo	INT	&0	&0 to &15	Specify the unit number.
Axis No.	Axis	INT	&1	&1 to &16	Specify the axis number.
Start	Execute	BOOL	0(OFF)		↕ : Starts the origin search.
Position command	Position	REAL	+0.0	-2.147483e+009 to +2.147483e+009	Specify the numeric value of to set for the present position. Unit: Command units
Speed command	Velocity	REAL	+0.0	+1.0 to +2.147483e+009	Specify the target speed. Unit: Command units/s

### Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB operating normally 0 (OFF): FB not operating normally •FB not started •Input variable out of the range •FB ended with error •Common Parameters could not be read
Origin Search Completed	Done	BOOL		Turns ON when the origin search operation has been completed.
Abort	CommandAborted	BOOL		1 (ON): Aborted It will be aborted when any of the following conditions is met during operation •Stopped with Declaration Stop or Emergency Stop. •Executed Servo Unlock, Deviation Counter Reset on an operating axis. •Attempted to execute FB while Servo Unlock, Deceleration Stop, Emergency Stop or Deviation Counter Reset Bit is ON. •Detected the Stop Execution Flag is ON. •The Origin Search Bit is changed by the other FB during Origin Search in operation. •During the judgment of the Software Limit error, the axis's Busy Flag in the Axis Operating Output Memory Areas turns ON by other FB.
Error flag	Error	BOOL		Turns ON when an error has occurred in the FB.
Error code	ErrorID	WORD		Returns the error code when an error has occurred in the FB. Refer to the <i>Related Manuals</i> for details on errors. A code of #0000 will be returned if any of the following conditions is satisfied. •Input variable is out of range. •The common parameters of the Position Control Units are out of range. •Not established communications with a specified axis.

### ■Version History

Version	Date	Contents
1.00	2004.06.	Original production
1.10	2005.01.	Limitation about the setting timing with " Unit No. " and " Axis No. " was removed.
1.20	2006.12.	The Position Control Unit version 2.0 or later has been supported.

### ■Upgrade Details

Version	Contents
1.10	In version 1.00, " Unit No. " and " Axis No. " must be set when EN was ON and " Start (Execute) " was OFF. This means not sometimes working normally when " Unit No. " and " Axis No. " are changed simultaneously with ON of " Start (Execute) ". In version 1.10, this limitation was removed.
1.20	In the version 2.0, the Preset When Origin Search has been added to the Origin Search function. In the version 1.20 or earlier of this FB, this FB did not operate normally when using the above function. This restriction has been removed in the FBL version 1.20.

### ■Note

This document explains the function of the function block.

It does not provide information of restrictions on the use of Units and Components or combination of them. For actual applications, make sure to read the operation manuals of the applicable products.