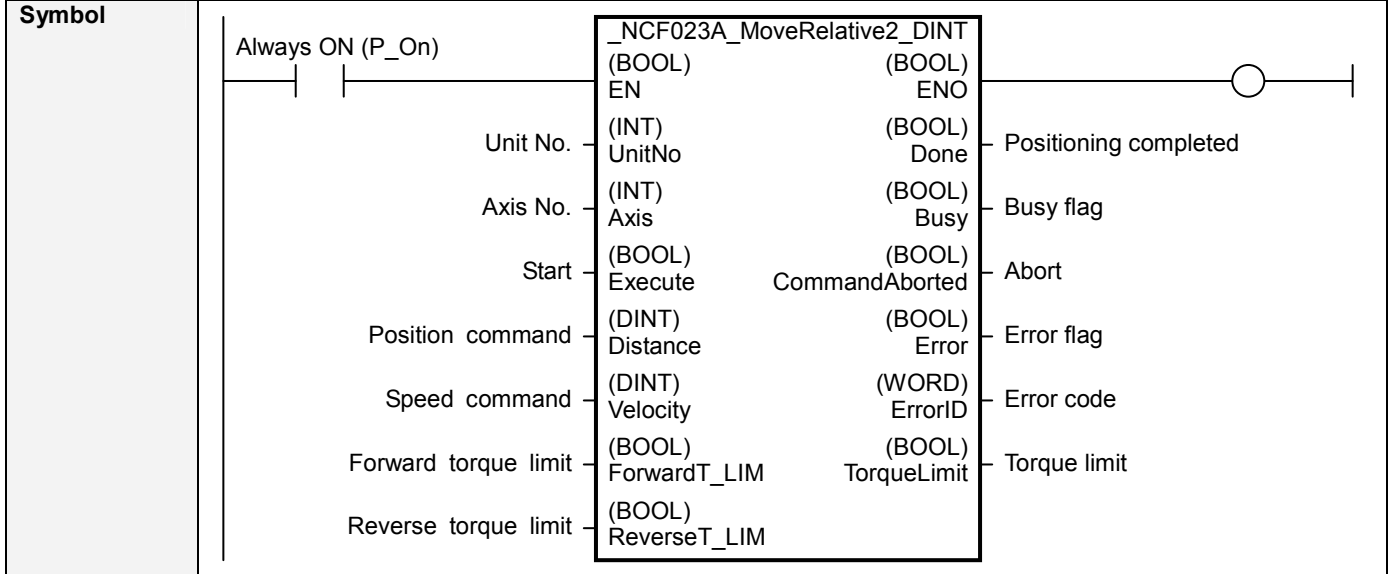


<b>NCF 023A</b>	<b>Move Relative with Torque-limit (DINT)</b> <b>_NCF023A_MoveRelative2_DINT</b>
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<b>Basic function</b>	Executes positioning with the relative movement during torque control. (Busy attachment)
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<b>File name</b>	Lib\FBL\omronlib\PositionController\NCF\_NCF023A_MoveRelative2_DINT11.cxf
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<b>Applicable models</b>	Position Control 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

<b>Languages in function block definitions</b>	Ladder programming
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<b>Conditions for usage</b>	<p>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)</p> <p>■CX-Programmer Setting</p> <p>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 <b>PLC/Function Block Memory/Function Block Memory Allocation</b> from the Menu Bar.</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid gray; padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>FB Instance Area</th> <th>Start Address</th> <th>End Address</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>No Retain</td> <td>H512</td> <td>H1407</td> <td>896</td> </tr> <tr> <td>Retain</td> <td>H1408</td> <td>H1535</td> <td>128</td> </tr> <tr> <td>Timers</td> <td>T3072</td> <td>T4095</td> <td>1024</td> </tr> <tr> <td>Counters</td> <td>C3072</td> <td>C4095</td> <td>1024</td> </tr> </tbody> </table> </div> <div style="border: 1px solid gray; padding: 5px; border-radius: 10px; background-color: #e0e0e0;"> <p>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.</p> </div> <div style="border: 1px solid gray; padding: 5px;"> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th>FB Instance Area</th> <th>Start Address</th> <th>End Address</th> <th>Size</th> </tr> </thead> <tbody> <tr> <td>No Retain</td> <td>D32020</td> <td>D32767</td> <td>748</td> </tr> <tr> <td>Retain</td> <td>H1408</td> <td>H1535</td> <td>128</td> </tr> <tr> <td>Timers</td> <td>T3072</td> <td>T4095</td> <td>1024</td> </tr> <tr> <td>Counters</td> <td>C3072</td> <td>C4095</td> <td>1024</td> </tr> </tbody> </table> </div> </div> <p style="margin-top: 10px;">For example, to use the memory area from D32020 to D32767 (748 words), specify the addresses as shown in the left.</p>		FB Instance Area	Start Address	End Address	Size	No Retain	H512	H1407	896	Retain	H1408	H1535	128	Timers	T3072	T4095	1024	Counters	C3072	C4095	1024	FB Instance Area	Start Address	End Address	Size	No Retain	D32020	D32767	748	Retain	H1408	H1535	128	Timers	T3072	T4095	1024	Counters	C3072	C4095	1024
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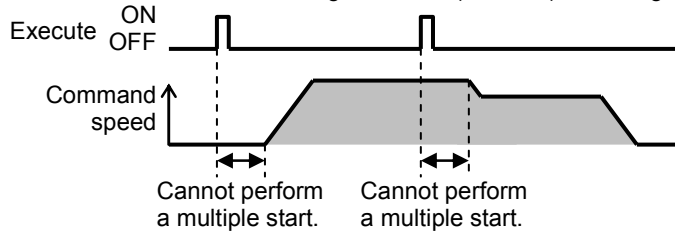
<p><b>Function description</b></p>	<p>The Busy Output is added to the _NCF023_MoveRelative2_DINT in this FB.</p> <p>When the Start (Execute) turns ON, a positioning operation for the axis of the specified Unit No. (UnitNo) and Axis No. (Axis) is started using the specified Position command (Distance) and Speed command (Velocity). Changing the Speed command (Velocity) during positioning by this FB will change the actual operation speed. If Start (Execute) is turned ON with Forward torque limit (ForwardT-LIM) or Reverse torque limit (ReverseT-LIM) set, the torque limit values set in the Servo Parameters (Refer to the <i>Restrictions Other</i>) will be enabled.</p> <p>When Start (Execute) is turned ON during axis operation, multistart can be performed.</p> <p>The Positioning completed (Done) is turned ON when the positioning operation for the FB has been completed. This flag will not be turned ON if the positioning operation is canceled because another operation has been started from a different instance, for a deceleration stop, or because an error has occurred.</p> <p>The Busy flag (Busy) will be set when the Start (Execute) is turned ON.</p> <p>The Busy flag (Busy) will be reset when any of the Positioning completed (Done), Abort (CommandAborted), or Error flag (Error) is turned ON.</p> <p>Even if an error occurs when the input variable is out of the range, etc., the Busy flag (Busy) will be set for at least one cycle.</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>Torque limit (TorqueLimit) will be turned ON while the output torque is being limited by the torque limits. 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 corresponding conditions have occurred.</p>
<p><b>Kind of FB definition</b></p>	<p>Always execution type. Connect the EN input 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>Executing this FB during the positioning operation will cause a duplicate start. Positioning operation will be performed at the distance set in Position command (Distance) from the point at which the last execution was started. Refer to the <i>Related Manuals</i> for details.</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>

**Restrictions  
Other**

• The torque command value at torque limit can be set with the following Servo Parameters. Setting of "Torque limit selections" is required to use G-Series Servo Drives. Torque limit functions do not operate if the setting is incorrect.

Drive	PRM No.	Parameter name	Size	Unit	Setting range	Set value
W-Series	Pn404	Forward rotation external current limit	2	%	0 to 800	Arbitrary value
	Pn405	Reverse rotation external current limit	2	%	0 to 800	Arbitrary value
G-Series	Pn003	Torque limit selection	2	%	1 to 5	3: Switch limit by input signals
	Pn05F	No.2 torque limit	2	%	0 to 500	Arbitrary value

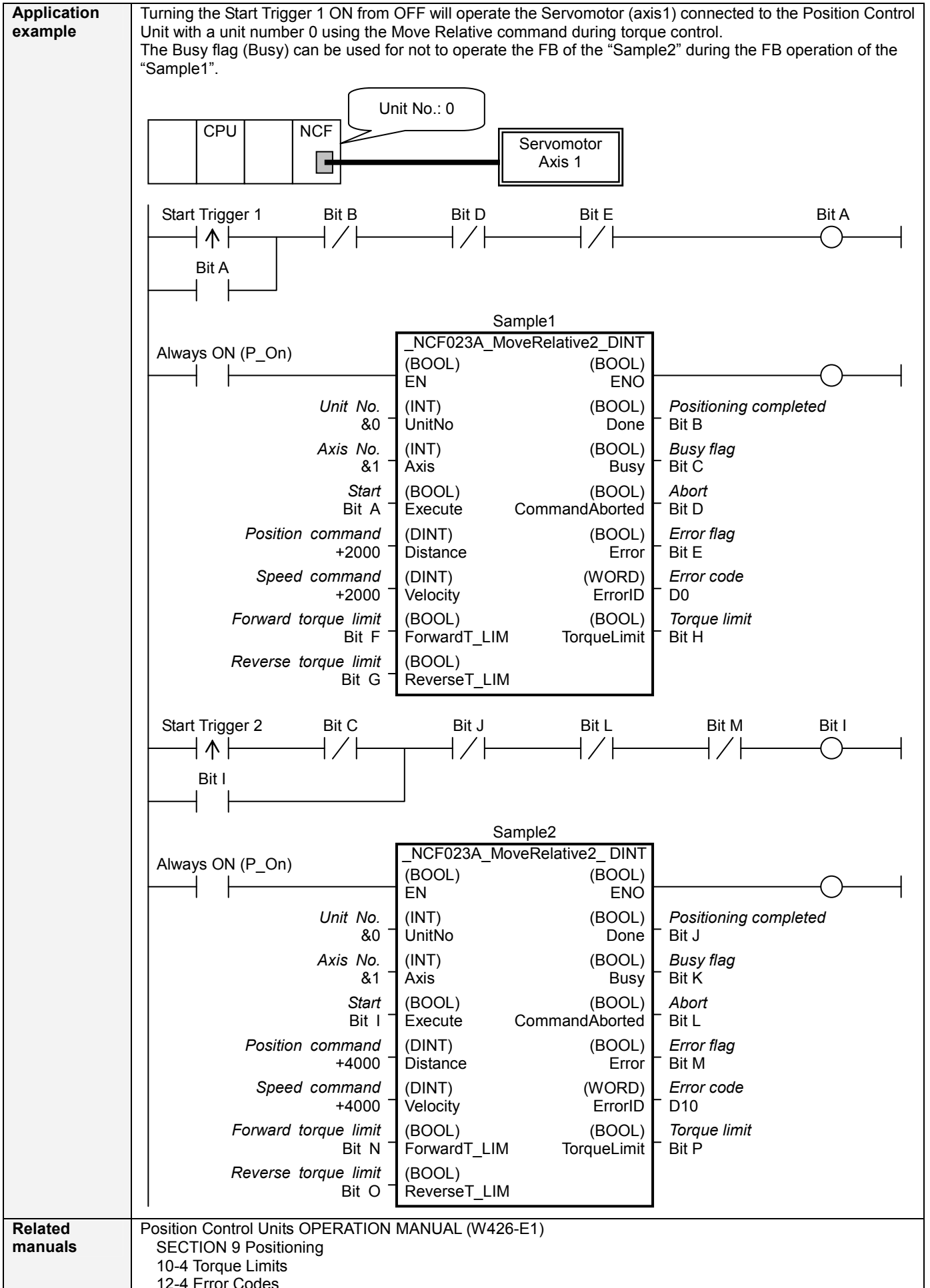
• A multiple start cannot be performed by the same instance until the Positioning command is accepted by the Position Control Unit. Turning ON "Start (Execute)" will be ignored.



- The following cannot be specified for this FB: "Acceleration/deceleration curve designation". If this function is required, specify it in advance outside the FB.
- 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).
- 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.
- This FB uses the Relative Movement 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).
- Starting this FB while the Interrupt Feeding Bit of Axis Operating Output Memory Areas is ON will cause an error.

**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)".



**Related manuals**

Position Control Units OPERATION MANUAL (W426-E1)  
 SECTION 9 Positioning  
 10-4 Torque Limits  
 12-4 Error Codes

■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 relative move.
Position command	Distance	DINT	+0	-2,147,483,648 to +2,147,483,647	Specify the distance for relative movement. Unit: Command units
Speed command	Velocity	DINT	+0	+0 to +2,147,483,647	Specify the target speed. Unit: Command units/s Changing the value while this FB is in operation will change the actual operating speed.
Forward torque limit	ForwardT_LIM	BOOL	0(OFF)		Specify the torque limit in forward direction.
Reverse torque limit	ReverseT_LIM	BOOL	0(OFF)		Specify the torque limit in reverse direction.

Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB operating normally 0 (OFF): FB not operating normally <ul style="list-style-type: none"> <li>• FB not started</li> <li>• Input variable out of the range</li> <li>• FB ended with error</li> <li>• Common Parameters could not be read</li> </ul>
Positioning completed	Done	BOOL		Turns ON when the positioning operation has been completed.
Busy flag	Busy	BOOL		1 (ON) indicates that the FB is in progress.
Abort	CommandAborted	BOOL		1 (ON): Aborted It will be aborted when any of the following conditions is met during operation <ul style="list-style-type: none"> <li>• Turns ON when the other Move command done (Duplicate Move).</li> <li>• Stopped with Declaration Stop or Emergency Stop.</li> <li>• Executed Servo Unlock, Deviation Counter Reset on an operating axis.</li> <li>• Attempted to execute FB while Servo Unlock, Deceleration Stop, Emergency Stop or Deviation Counter Reset Bit is ON.</li> <li>• Detected the Stop Execution Flag is ON.</li> <li>• The Relative Movement Bit is changed by the other FB during Relative Movement in operation.</li> </ul>
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. <ul style="list-style-type: none"> <li>• Input variable is out of range.</li> <li>• The common parameters of the Position Control Units are out of range.</li> <li>• Not established communications with a specified axis.</li> <li>• The Interrupt Feeding Bit of Axis Operating Output Memory Areas is ON before Relative Movement is executed by this FB.</li> </ul>
Torque limit	TorqueLimit	BOOL		1(ON) indicates that output torque is being limited.

■Version History

Version	Date	Contents
1.03	2006.01.	Original production
1.10	2007.11.	The restrictions on the Interrupt Feeding Designation of the Axis Operating Output Memory Areas have been removed.

■Upgrade Details

Version	Contents
1.10	In the version 1.03, the Interrupt Feeding Designation of the Axis Operating Output Memory Areas was always monitored. Therefore, an error was output by the FB regardless of an axis status when turning ON the Interrupt Feeding Designation after completing to accept the command to operate an axis. In the version 1.10, it is monitored only when starting an axis operation and not monitored after a positioning operation has started.

■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.