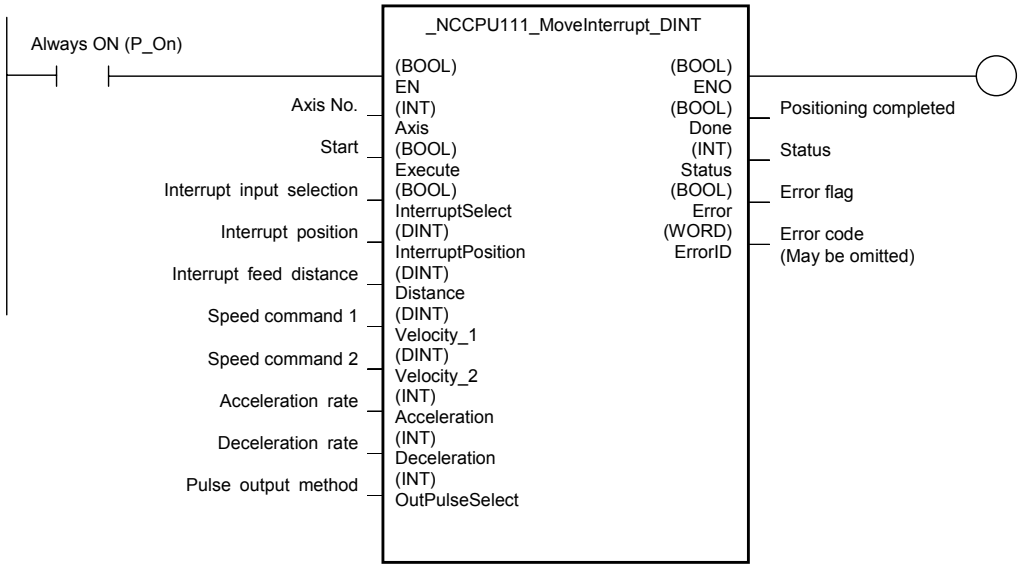
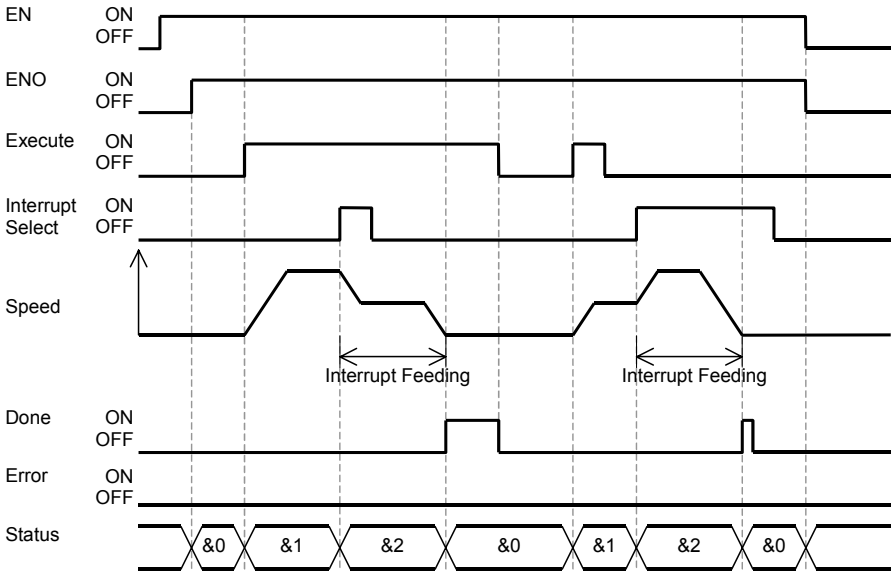
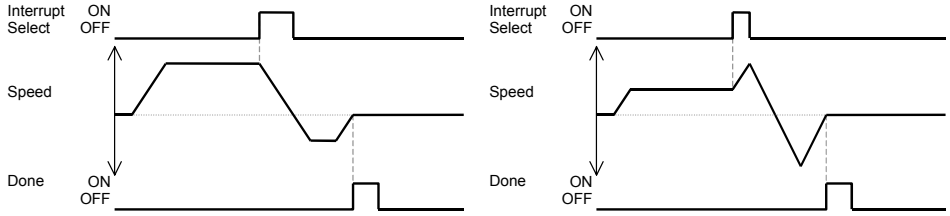
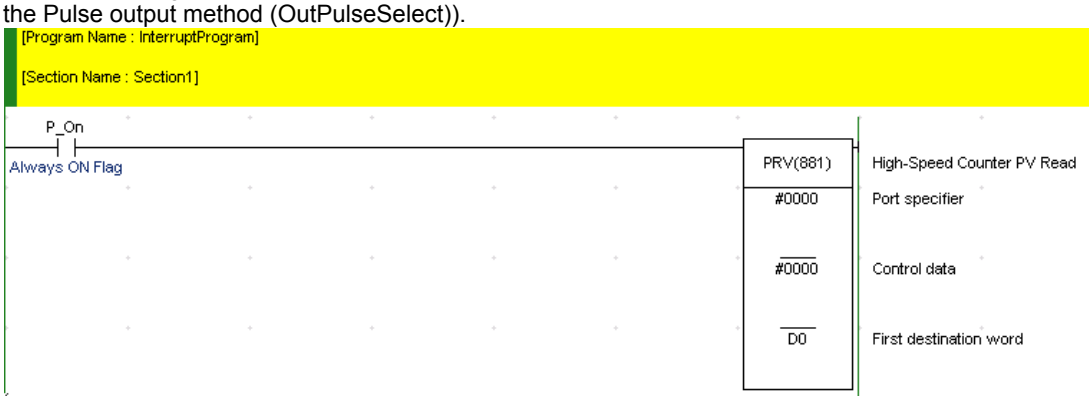
NCCPU 111	Interrupt Feeding(DINT): _NCCPU111_MoveInterrupt_DINT

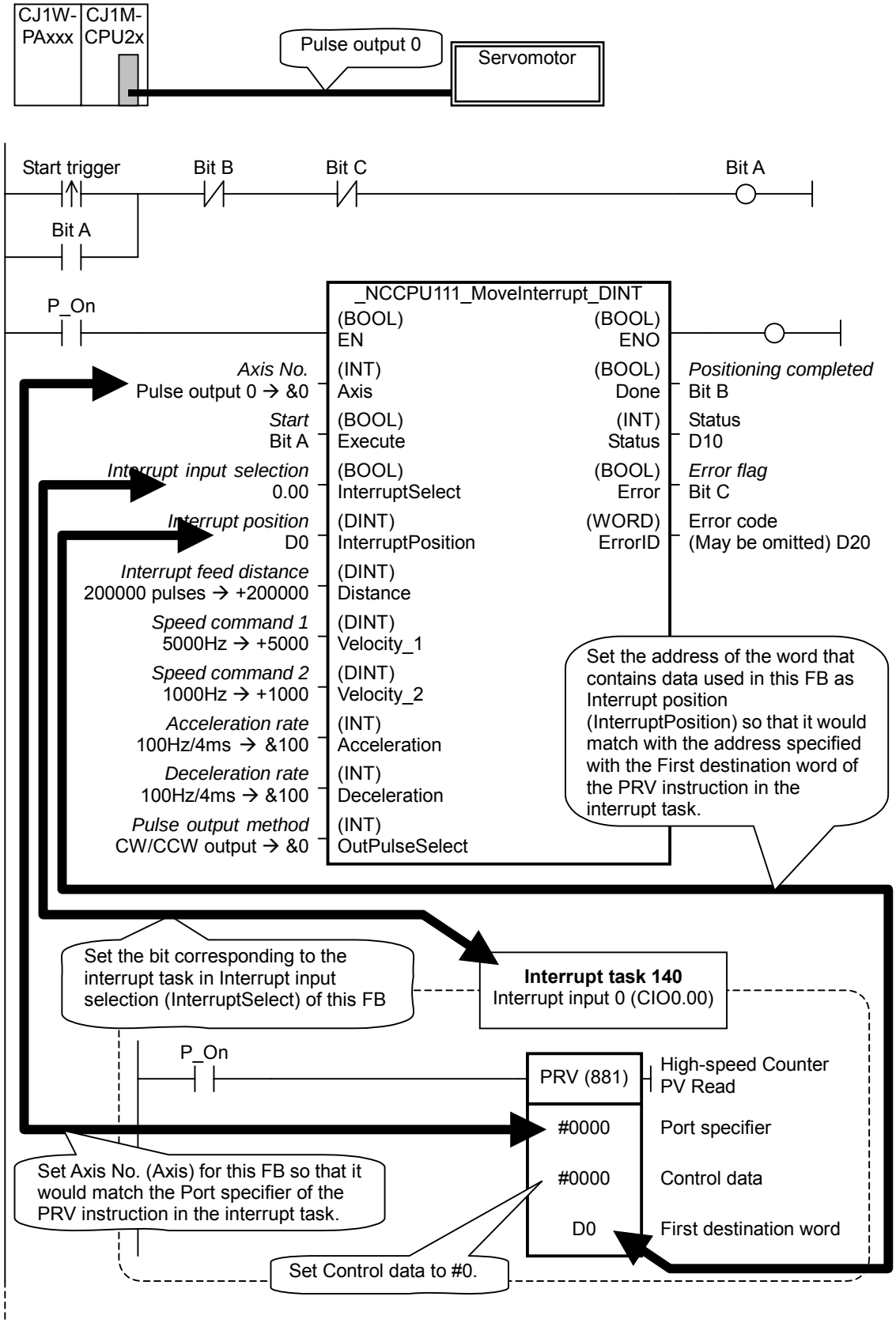
Basic function	Moves the axis for a specified distance after an interrupt input turns ON.	
Symbol		
File name	Lib\FBL\omronlib\PositionController\NC-CPU(CJ1MCPU2x)_NCCPU111_MoveInterrupt_DINT_10.cxf	
Applicable models	CPU Unit	CJ1M-CPU21/22/23 Unit version 3.0 or higher CP1L-***DT-* CP1L-***DT1-*
	CX-Programmer	Version 5.0 or higher
Conditions for usage	None	
Function description	Starts operating on the axis of the specified Axis No. (Axis) with the specified Speed command_1 (Velocity_1) and Acceleration rate (Acceleration) when the Start (Execute) is turned ON. When the Interrupt input selection (InterruptSelect) turns on during the positioning operation, an interrupt feeding will be performed (the axis is moved from the Interrupt position (InterruptPosition) for the Interrupt feed distance (Distance) with the specified Speed command (Velocity_2), Acceleration rate (Acceleration), and Deceleration rate (Deceleration) using the selected Pulse output method). The Positioning completed (Done) is turned ON when the interrupt feeding operation for this FB is completed (i.e., when the axis finishes traveling for the Interrupt feed distance). The Error flag (Error) will be turned ON and Error code (ErrorID) will be output when an error related to this FB occurs. These statuses, Positioning completed (Done)/ Error flag (Error)/ Error code (ErrorID), will be reset when Start (Execute) is turned OFF. If Start (Execute) was turned OFF before positioning is completed, the status will be set for at least one cycle when a corresponding condition occurs. 	

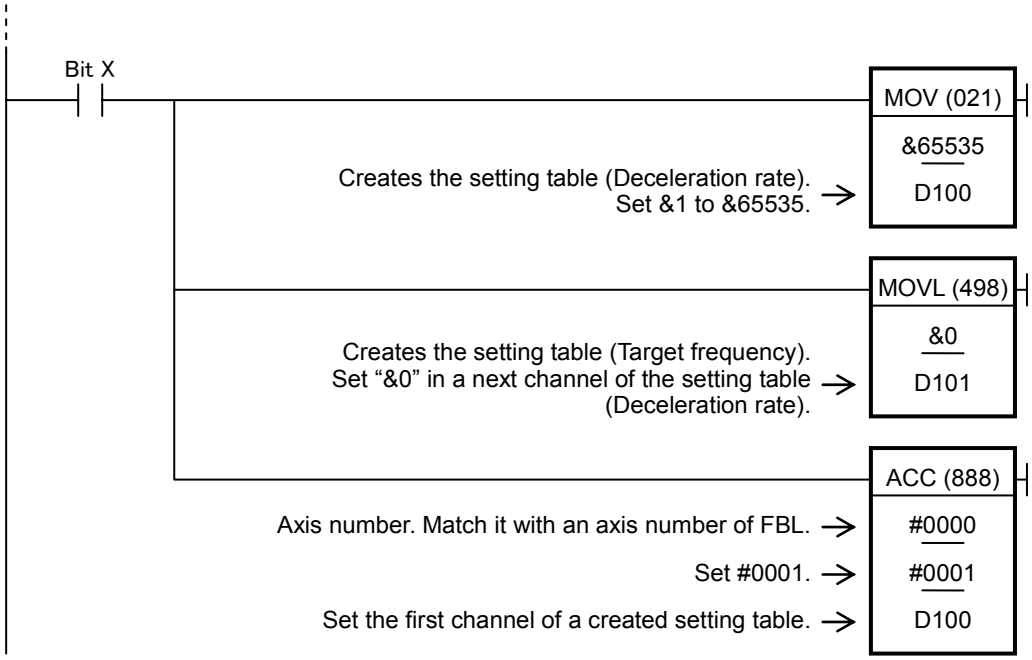
FB precautions	• When using the Pulse output 0 and 1 simultaneously, use the same Pulse output method for them. • To cancel this FB's processing, use INI(880) instruction or ACC(888) instruction (discrete). Using Deceleration stop FB of FBL (_NCCPU061_Stop_REAL/_NCCPU062_Stop_DINT) may not stop an axis as the deceleration stop command is multiply-started due to this FB. When using ACC(888) instruction (discrete) to stop an axis, execute ACC(888) instruction (discrete) until an axis stops completely. Refer to 'Application example'. • Even when a sufficient deceleration interval cannot be secured, the axis will decelerate with the specified deceleration rate, which will cause the axis to pass the target position. In this case, the axis will reverse the direction to return to the target position. (See the following left diagram.) • When the Speed command 2 (Velocity_2) is greater than the Speed command 1 (Velocity_1) and a sufficient deceleration interval cannot be secured, the axis accelerating to reach the Speed command 2 (Velocity_2) will pass the target position. In this case, the axis will reverse the direction to return to the target position. (See the following right diagram.) 
EN input condition	• Connect the EN input to the Always On Flag (P_On). • If a different type of bit is connected to EN, the FB outputs will be maintained when the connected bit is turned OFF.
Restrictions Other	• If the calculation result for an interrupt feeding operation exceeds the valid command range (-2,147,483,648 to +2,147,483,647), the operation will not be executed and the axis will decelerate to a stop. • An error will occur when an axis is stopped by other operations or a deceleration stop due to a command out of the valid command range. • All the input variables will be read when the Start (Execute) turns ON and they cannot be changed until he process is completed. • **Interrupt tasks must be set when using this FB.** • Use the ladder program shown below for interrupt tasks (example for when [&0: Pulse output 0] is specified for the Pulse output method (OutPulseSelect)).  • The Axis No. (Axis) of this FB and the Port specifier of the PRV instruction must match with each other. • The address of the word that contains data used as Interrupt position (InterruptPosition) for this FB and the address specified by the First destination word for the PRV instruction in the interrupt task must match with each other. • Set #0000 (hexadecimal) in the Control data of the PRV instruction in the interrupt task. • Set the bit corresponding to the interrupt task set for the Interrupt input selection (InterruptSelect) of this FB (on CJ1M CPU Units, the built-in input (bit 00 of CIO 2960) controls the interrupt task No. 140. For details, refer to the manual listed in the Related manuals below). • Connect the PRV instruction in the interrupt task to the Always ON Flag (P_On). • Specify the Port specifier and Control data for the PRV instruction with constants. They cannot be specified with variables. • Specify the First destination word for the PRV instruction with a word address. It cannot be specified with constants. • Specify the Interrupt position (InterruptPosition) for this FB with a word address. Do not specify it with constants. • Make sure to hold the interrupt input signal at least for one cycle until the FB recognizes it. • When this FB is used , an origin will be determined and the Pulse output PV will be cleared.

Application example

Note This FB can be used also for the CJ1W-INT01 Interrupt Input Units, instead of CJ1M CPU Units. Note that, however, settings vary depending on the Unit in use. See the next page for details.

When the Start trigger turns from OFF to ON, The Servomotor connected to the Pulse output 0 on the CJ1M CPU Unit will start rotating. When the Interrupt input 0 turns ON, the interrupt feeding operation will be performed.
When an operation is to be stopped intentionally with an Emergency stop switch, Bit X is turned ON.





*Combinations of Interrupt input signals and Interrupt tasks on the CJ1M CPU Units are shown below:

Input signal	Address	Interrupt task No.
Interrupt input signal 00	CIO2960.00	140
Interrupt input signal 01	CIO2960.01	141
Interrupt input signal 02	CIO2960.02	142
Interrupt input signal 03	CIO2960.03	143

Combinations of Interrupt input signals and Interrupt tasks on the CP1L-L10DT- / L10DT1-* CPU Units are shown below:

Input signal	Address	Interrupt task No.
Interrupt input signal 00	CIO0.04	140
Interrupt input signal 01	CIO0.05	141

Combinations of Interrupt input signals and Interrupt tasks on the CP1L-L14DT- / L14DT1-* CPU Units are shown below:

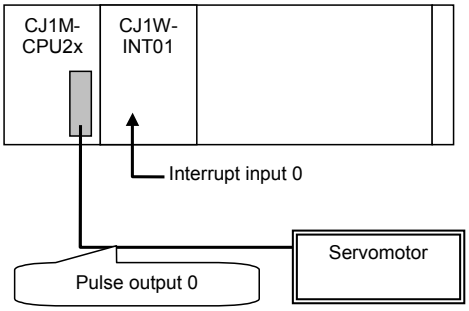
Input signal	Address	Interrupt task No.
Interrupt input signal 00	CIO0.04	140
Interrupt input signal 01	CIO0.05	141
Interrupt input signal 02	CIO0.06	142
Interrupt input signal 03	CIO0.07	143

Combinations of Interrupt input signals and Interrupt tasks on the CP1L-L20DT- / L20DT1-* / M**DT-* / M**DT1-* CPU Units are shown below:

Input signal	Address	Interrupt task No.
Interrupt input signal 00	CIO0.04	140
Interrupt input signal 01	CIO0.05	141
Interrupt input signal 02	CIO0.06	142
Interrupt input signal 03	CIO0.07	143
Interrupt input signal 04	CIO0.08	144
Interrupt input signal 05	CIO0.09	145

■ Using Interrupt Function of the CJ1W-INT01 Interrupt Input Units

When the Start trigger turns from OFF to ON, The Servomotor connected to the Pulse output 0 on the CJ1M CPU Unit will start rotating. When the Interrupt input 0 of the CJ1W-INT01 Interrupt Input Unit turns ON, an Interrupt feeding operation will be performed.

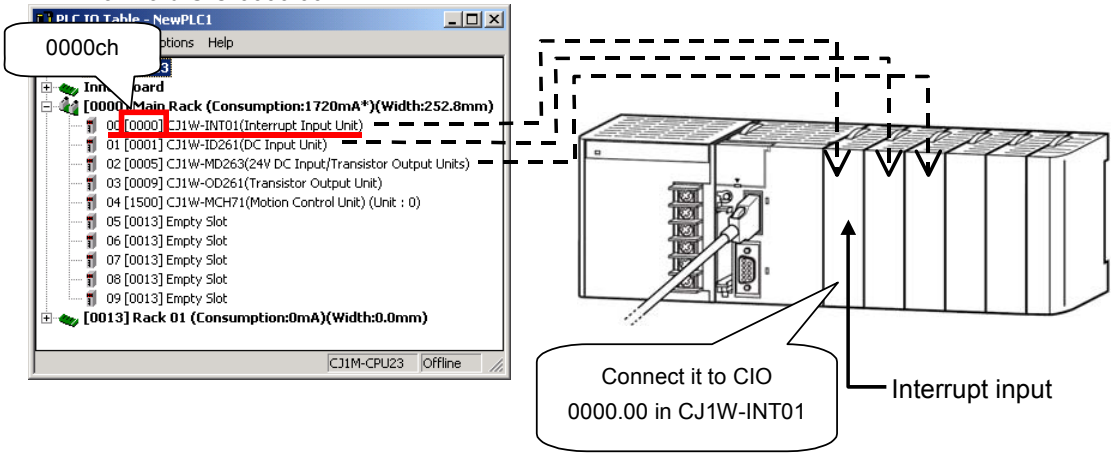


■ Checking Interrupt Input Bit

(1) Read the I/O Table.
Open the I/O Table Window. → Select ***Options – Transfer from the PLC***

(2) Check the word allocated for the Interrupt Input Unit on the I/O Table Window. The allocated word and used bit should tell the Interrupt input bit.

Ex: For word CIO 0000.00



Note The Interrupt Input Unit must be mounted to the CPU Rack. For CJ1M CPU Units, the unit must be connected as one of the three Units next to the CPU Unit (slots 0 to 2). Interrupt Input Units mounted elsewhere cannot be used to request execution of I/O interrupt tasks.

*Combinations of Interrupt input signals and Interrupt tasks on the CJ1W-INT01 Interrupt Input Units are shown below:

Slot No.	Input signal	Address	Interrupt task No
0	Interrupt input signal 00	CIO0000.00	100
	:	:	:
	Interrupt input signal 15	CIO0000.15	115
1	Interrupt input signal 00	CIO0001.00	116
	:	:	:
	Interrupt input signal 15	CIO0001.15	131

■ Enabling Interrupt Function

I/O interrupt tasks are disabled by default when cyclic task execution is started. To enable I/O interrupts, execute the MSKS (SET INTERRUPT MASK) instruction in a cyclic task for the interrupt number for Interrupt Input Unit.

For details, refer to *4-3 Interrupt Tasks* in the *CS/CJ-Series Programmable Controllers Programming Manual* (W394).

Related manuals

- CJ1M CPU Units Operation Manual (W395)
  5-7 PULSE OUTPUT: PLS2(887)
  6-3-3 Origin Search Error Processing (Pulse Output Stop Error Codes)
- CS/CJ-Series Programmable Controllers Programming Manual (W394)
  4-3 Interrupt Tasks
- SYSMAC CP Series CP1L CPU Unit Operation Manual (W462)
- SYSMAC CP Series CP1H/CP1L CPU Unit Programming Manual (W451)

■ **Variable Tables**

Input Variables

Name	Variable name	Data type	Default	Range	Description
EN	EN	BOOL			1 (ON): Starts FB 0 (OFF): Does not start FB
Axis No	Axis	INT	&0	&0 to &1	&0: Pulse output 0 &1: Pulse output 1
Start	Execute	BOOL	0(OFF)		↑: Starts interrupt feeding operation
Interrupt input selection	InterruptSelect	BOOL	0(OFF)		Specify a bit corresponding to the interrupt task to be used.
Interrupt position	InterruptPosition	DINT	+0		Specify the same address as the first destination address set for the PRV instruction in the interrupt task.
Interrupt feed distance	Relative	DINT	+0	-2.147483647 to +2.147483648	Specify a distance that the axis travels after an interrupt input. Unit: pulse The sign indicates the direction of an operation. (+: CW, -: CCW)
Speed command 1	Velocity_1	DINT	+1	-100000 to –1, +1 to +100000	Specify the target speed before an interrupt feeding operation starts. Unit: Hz The sign indicates the direction of the operation. (+: CW, -: CCW)
Speed command 2	Velocity_2	DINT	+1	+1 to +100000	Specify the speed for an interrupt feeding operation. Unit: Hz
Acceleration rate	Acceleration	INT	&1	&1 to &65535	Specify the acceleration rate. Unit: Hz/4ms (Increase (Hz) in frequency per Pulse control period (4ms))
Deceleration rate	Deceleration	INT	&1	&1 to &65535	Specify the deceleration rate. Unit: Hz/4ms (Decrease (Hz) in frequency per Pulse control period (4ms))
Pulse output method	OutPulseSelect	INT	&0	&0 to &1	&0: CW/CCW output &1: Pulse + direction output

Output Variables

Name	Variable name	Data type	Range	Description
ENO	ENO	BOOL		1 (ON): FB operating normally 0 (OFF): FB not operating normally
Positioning completed	Done	BOOL		1 (ON) indicates that positioning has been completed.
Status	Status	INT		0: Start (Execute) = OFF or Positioning completed (Done) = 1 1: Waiting for interrupt input 2: Interrupt feeding operation in progress
Error flag	Error	BOOL		1 (ON) indicates that an error has occurred in the FB.
Error code (May be omitted)	ErrorID	WORD		The error code of the error occurred in the FB will be output. For details of the errors, refer to the sections of the manual listed in the Related manuals above. When the specified Axis No. is out of the range, #0000 will be output.

Revision History

Version	Date	Contents
1.00	2005.2.	Original production

Note

This manual is a reference that explains the function block functions.
It does not explain the operational limitations of Units, components, or combinations of Units and components. Always read and understand the Operation Manuals for the system's Units and other components before using them.