NCF 031A	Speed Control (DINT) _NCF031A_MoveVelocity_DINT
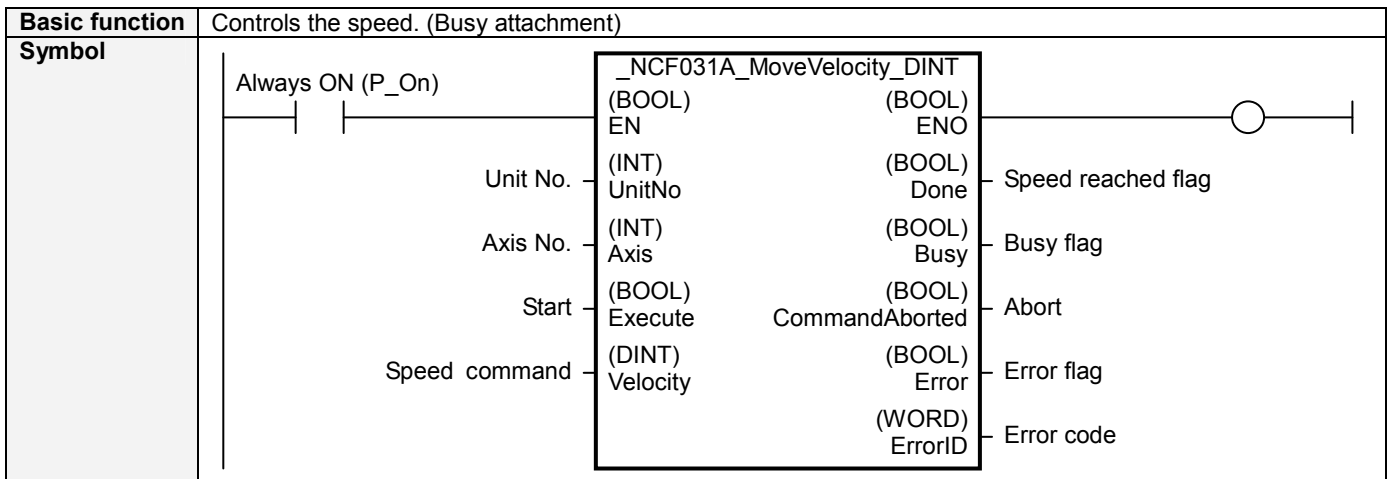
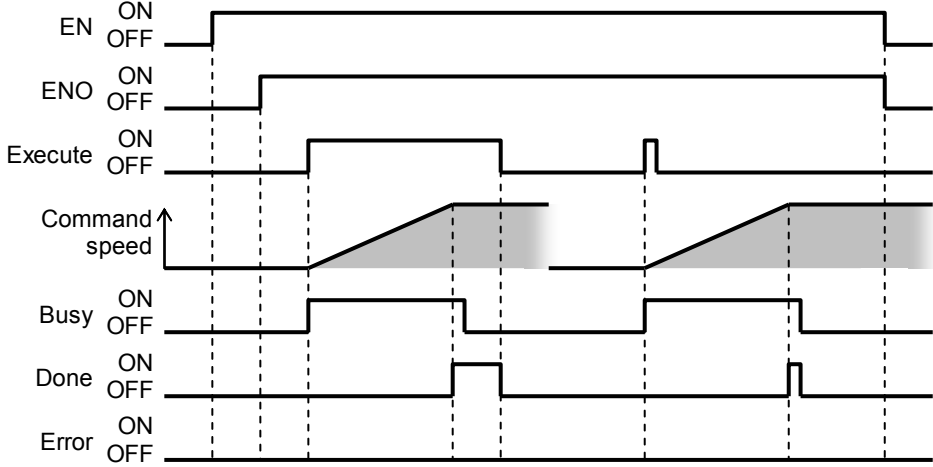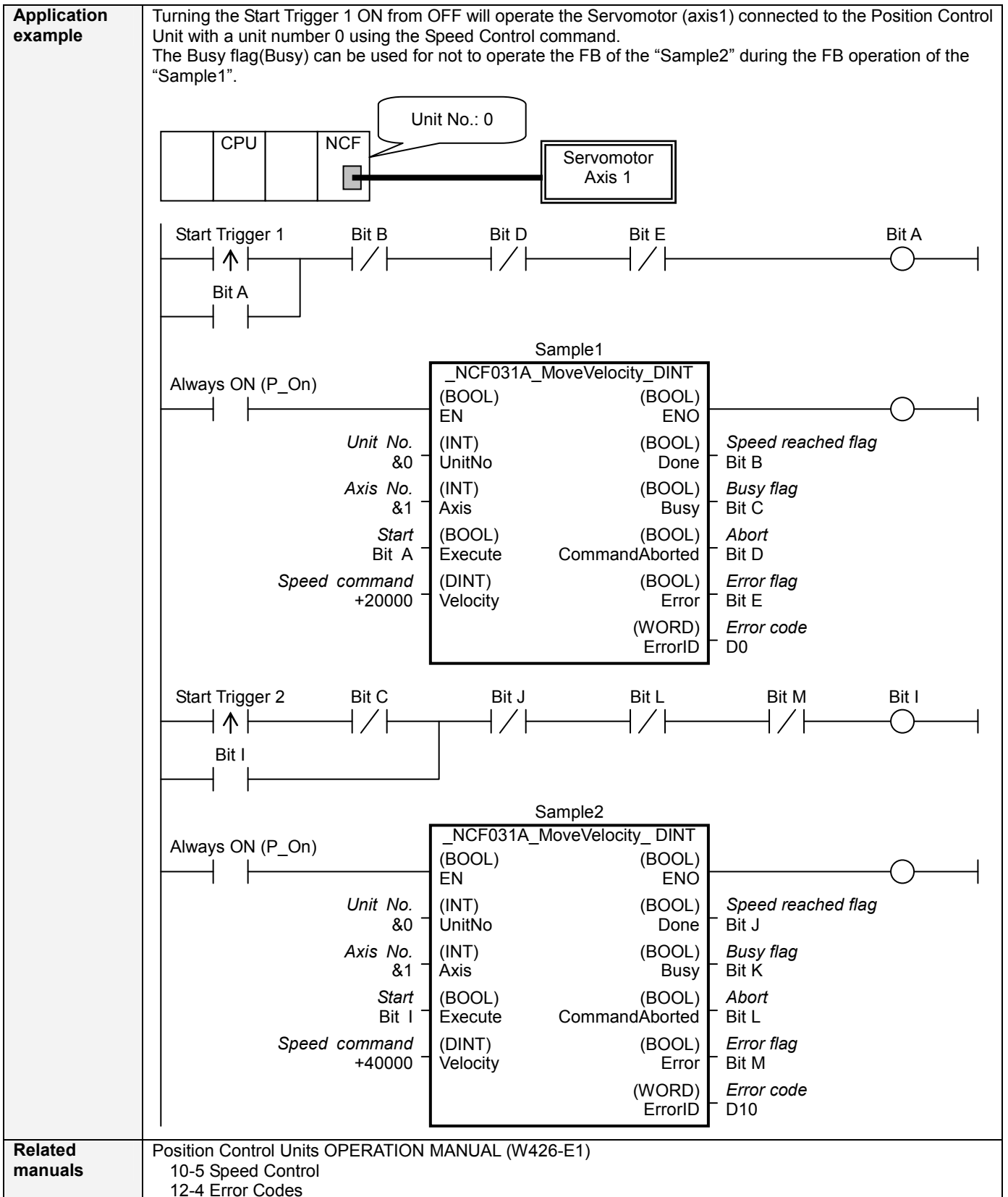| **Basic function**	Controls the speed. (Busy attachment)		
Symbol			
File name	Lib\FBL\omronlib\PositionController\NCF_NCF031A_MoveVelocity_DINT11.cxf		
Applicable models	Position Unit	CJ1W-NCF71, CS1W-NCF71	
	CPU Unit	CS1*-CPU**H Unit Version 3.0 or later CJ1*-CPU**H Unit Version 3.0 or later CJ1M-CPU** 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.		

Symbol detail:

Always ON (P_On)

_NCF031A_MoveVelocity_DINT

(BOOL) EN	(BOOL) ENO
(INT) Unit No. — UnitNo	(BOOL) Done — Speed reached flag
(INT) Axis No. — Axis	(BOOL) Busy — Busy flag
(BOOL) Start — Execute	(BOOL) CommandAborted — Abort
(DINT) Speed command — Velocity	(BOOL) Error — Error flag
	(WORD) ErrorID — Error code

Function Block Memory Allocation [NewPLC1]

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

OK / Cancel / Edit / Default

Function Block Memory Allocation [NewPLC1]

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

OK / Cancel / Edit / Default / Advanced

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.

Function description	The Busy Output is added to the _NCF031_MoveVelocity_DINT in this FB.
	When the Start (Execute) turns ON, the Speed Control for the axis of the specified Unit No. (UnitNo) and Axis No. (Axis) is started using the specified Speed command (Velocity).
	Changing the value of Speed command (Velocity) during the speed control by this FB will change the actual operation speed.
	The value of Speed command (Velocity) can be reflected while the Start (Execute) is turned ON even after the speed has been reached.
	The Speed reached flag (Done) is turned ON when the target speed specified in the FB has been reached.
	The Busy flag (Busy) will be set when the Start (Execute) is turned ON.
	The Busy flag (Busy) will be reset when the Speed reached flag (Done), Abort (CommandAborted), or Error flag (Error) is turned ON.
	If the error is occurred when the input variables is out of the range etc., the Busy flag (Busy) will be set for at least one cycle.
	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.
	These statuses (Done/CommandAborted/Error/ErrorID) will be reset then 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.
Kind of FB definition	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.
FB precautions	・Turning ON the Start (Execute) again after the speed has been reached will cause a multiple start and the speed will be changed to the value set in Speed command (Velocity) then. Refer to the Related Manuals for details.
EN input condition	・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.
Restrictions Other	・The value of Speed command (Velocity) can be reflected while the Start (Execute) is turned ON even after the speed has been reached. At that time, if more than one instance is executed, they will be operated with the command value of instance located in the bottom. ・The following cannot be specified for this FB: "Torque limit/torque feed forward", "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. (The Option command value error, Error code #3064 and #3065, will occur if "Torque limit/torque feed forward" is out of range.) ・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 Speed Control 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). 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) ".

Application example	Turning the Start Trigger 1 ON from OFF will operate the Servomotor (axis1) connected to the Position Control Unit with a unit number 0 using the Speed Control command. The Busy flag(Busy) can be used for not to operate the FB of the "Sample2" during the FB operation of the "Sample1".

Unit No.: 0

```
┌──────────────────────┐                          ┌──────────────┐
│  CPU    │   NCF       │                          │ Servomotor   │
│         │   ▓         │━━━━━━━━━━━━━━━━━━━━━━━━━━━│ Axis 1       │
└──────────────────────┘                          └──────────────┘
```

Start Trigger 1   Bit B   Bit D   Bit E   Bit A
───┤↑├──────┬──────────┤/├──────────┤/├──────────┤/├──────────────────────( )──
   Bit A   │
────┤├──────┘

Sample1

```
                        ┌─────────────────────────────────────┐
Always ON (P_On)        │      _NCF031A_MoveVelocity_DINT       │
────────┤├──────────────┤(BOOL)                         (BOOL) ├──────────( )──
                        │ EN                              ENO  │
        Unit No.        │(INT)                          (BOOL) │   Speed reached flag
            &0 ─────────┤ UnitNo                         Done  ├── Bit B
        Axis No.        │(INT)                          (BOOL) │   Busy flag
            &1 ─────────┤ Axis                           Busy  ├── Bit C
           Start        │(BOOL)                         (BOOL) │   Abort
          Bit A ────────┤ Execute              CommandAborted  ├── Bit D
  Speed command         │(DINT)                         (BOOL) │   Error flag
         +20000 ────────┤ Velocity                      Error  ├── Bit E
                        │                               (WORD) │   Error code
                        │                              ErrorID ├── D0
                        └─────────────────────────────────────┘
```

Start Trigger 2   Bit C   Bit J   Bit L   Bit M   Bit I
───┤↑├──────┬──────────┤/├──────┬───┤/├──────────┤/├──────────┤/├────────( )──
   Bit I   │   │
────┤├──────┘

Sample2

```
                        ┌─────────────────────────────────────┐
Always ON (P_On)        │      _NCF031A_MoveVelocity_ DINT      │
────────┤├──────────────┤(BOOL)                         (BOOL) ├──────────( )──
                        │ EN                              ENO  │
        Unit No.        │(INT)                          (BOOL) │   Speed reached flag
            &0 ─────────┤ UnitNo                         Done  ├── Bit J
        Axis No.        │(INT)                          (BOOL) │   Busy flag
            &1 ─────────┤ Axis                           Busy  ├── Bit K
           Start        │(BOOL)                         (BOOL) │   Abort
          Bit I ────────┤ Execute              CommandAborted  ├── Bit L
  Speed command         │(DINT)                         (BOOL) │   Error flag
         +40000 ────────┤ Velocity                      Error  ├── Bit M
                        │                               (WORD) │   Error code
                        │                              ErrorID ├── D10
                        └─────────────────────────────────────┘
```

Related manuals	Position Control Units OPERATION MANUAL (W426-E1)
	   10-5 Speed Control
	   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 speed control.
Speed command	Velocity	DINT	+0	-199,999 to +199,999	Specify the target speed. The unit is 0.001% of the maximum speed of the motor being used. Changing the value while this FB is in operation will change the actual operating speed.

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
Speed reached flag	Done	BOOL		Turns ON when the target speed has been reached.
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 ・Turns ON when the other Move command done (Duplicate Move). ・Stopped with Deceleration 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 Speed Control Bit is changed by the other FB during Speed Control in operation.
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 *Related Manuals* 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
1.13	2006.01.	Original production

■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.