

PISO-MN200 Function Reference

(Version 1.2)



ICP DAS CO., LTD.

泓格科技股份有限公司

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Introduction

1.1 Outline

This software package is dedicated to PISO-MN200 pulse-based motion controller. It includes the WDM (Windows Driver Model) driver, ANSI-C Library for Windows XP and Windows 7 and related sample program.

A single PISO-MN200 controller provides two Motionnet serial communication lines. If more than one card is installed in a system, the sequence of the line numbers will be allocated based on the Card ID that was configured using the onboard DIP Switch. The line number referred to by each function in the Library will be unique, which can be used to help identify individual cards when multiple PISO-MN200 cards are installed in a system. The communication line number can be defined by adjusting the Card ID, meaning that the order in which the Operating System scans the installed PISO-MN200 cards no longer needs to be considered.

ICP DAS provides numerous demonstration programs that include code samples designed for Microsoft® Visual Studio 6.0 C++, Visual Studio 2005 .NET C#, and Borland® BCB 6.0 to illustrate the functions of the PISO-MN200 Library.

This reference document provides detailed information related to the PISO-MN200 APIs, including the description of the function and its usage, and definitions of both the parameters and the return codes. The various APIs are categorized and described in the following:

- CHAPTER 2 – System Initialization
- CHAPTER 3 – Automatic Home Search
- CHAPTER 4 – Independent Moving Functions
- CHAPTER 5 – Interpolation Moving Functions
- CHAPTER 6 – Other Motion Functions
- CHAPTER 7 – Advanced Motion Configurations
- CHAPTER 8 – Miscellaneous Functions
- CHAPTER 9 – Status
- CHAPTER 10 – I/O extension
- CHAPTER 11 – Advanced I/O Functions
- CHAPTER 12 – Analog I/O extension

1.2 Operating Procedures

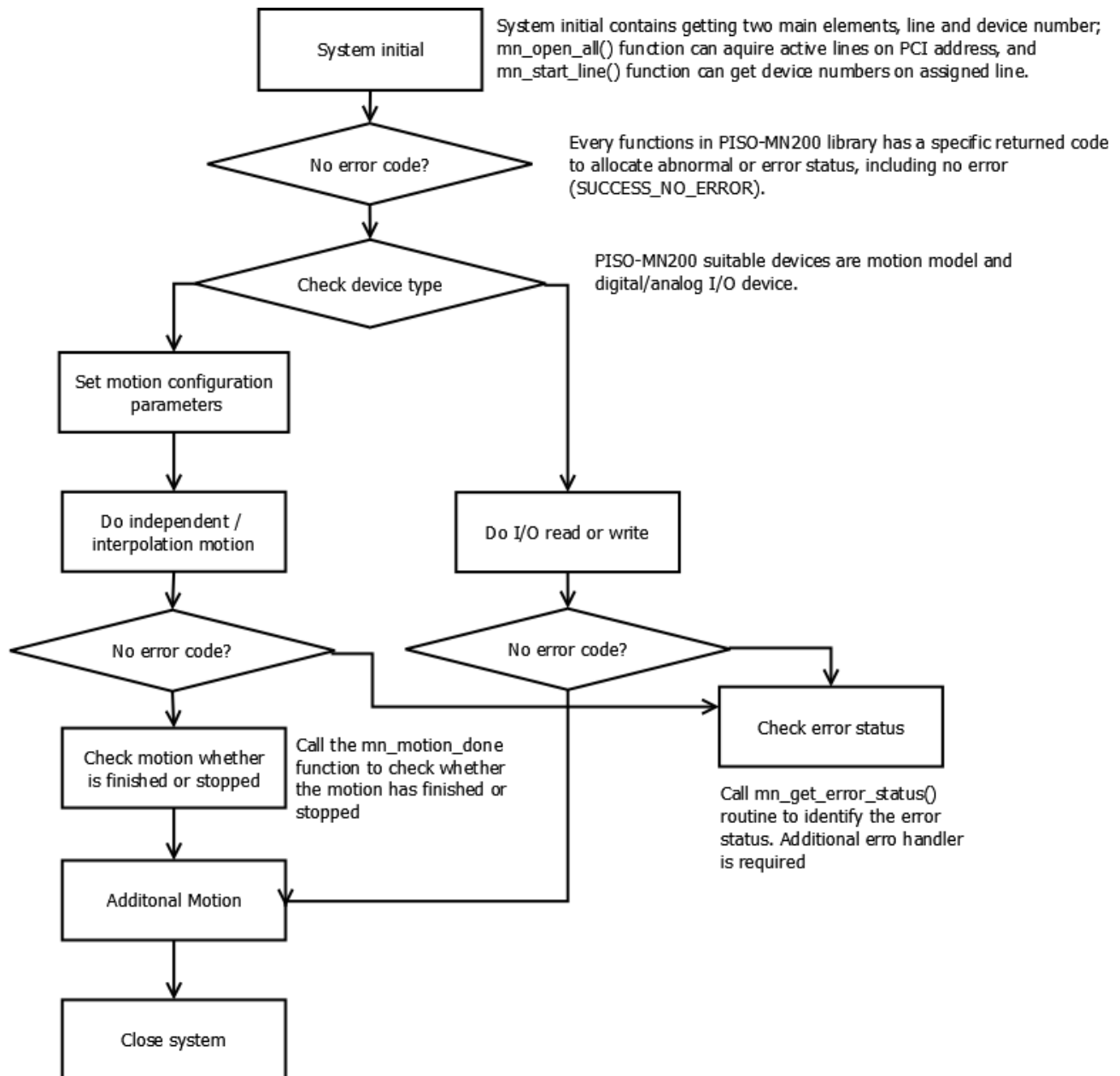


Fig1. Typical programming flow chart

System Initialization

2.1 Operating-System Configuration

The functions described in this chapter are used to provide the interface to the Operating System. By calling these functions, an application can be instructed to scan all the Motionnet communication lines that are available in your system and retrieve the relevant line numbers. The system will then define communication line numbers for however many PISO-MN200 devices are installed based on the sequence of the specific Card ID numbers that have been configured using the onboard DIP Switch. (The system will allocate the communication line number based on the sequence of the Card ID, and two continuous communication line numbers can be used in a single PISO-MN200 card.) The communication line number is used in other functions to control the specified Motionnet communication line on the board.

2.1.1 mn_open_all

VC6 / BCB6

```
short mn_open_all( BYTE* pNumLine )
```

C#

```
Int16 mn_open_all( ref Byte pNumLine )
```

Description:

This function is used to scan all Motionnet cards that can be accessed by the operating system. The pNumLine parameter is used to store the total number of active Motionnet communication lines which can be used in the system.

Parameters:

pNumLine: A pointer to the memory address where the number of active communication lines is stored.

Return Code:

SUCCESS:	The function was executed successfully.
ERROR_CARD_ID_DUPLICATED:	The same Card ID has been assigned to multiple cards. Check the onboard DIP Switch settings and try again.
ERROR_NO_CARD_FOUND:	No active cards were found in the system.

Schematic Diagram:

Fig2. When you install a PISO-MN200 board and parameter **pNumLine** will be 2.

2.1.2 mn200_get_lineinfo

VC6 / BCB6

short mn200_get_lineinfo(BYTE bScannedIndex, BYTE* pLineNo)

C#

Int16 mn200_get_lineinfo(Byte ScannedIndex, ref Byte pLineNo)

Description:

This function is used to read the line number for the device based on the scanned Card ID index. The "pLineNo" parameter is used to store the first of two line numbers on the specified card (note that the PISO-MN200 card provides two lines, and the second line number is "pLineNo + 1")

Parameters:

bScannedIndex: The index value of the PISO-MN200 Card ID that was scanned by the operating system. The first index value is 0 and the maximum value should be the number of cards installed in the system minus 1.

pLineNo: A pointer to the memory address where the first of two communication line numbers for the PISO-MN200 is stored.

Return Code:

SUCCESS:	The function was executed successfully.
ERROR_NO_CARD_FOUND:	No active cards were found in the system.
ERROR_SET_SCAN_INDEX_OUT_RANGE:	The value for the bScannedIndex parameter is greater than the number of active PISO-MN200 cards installed in the system.

Schematic diagram:

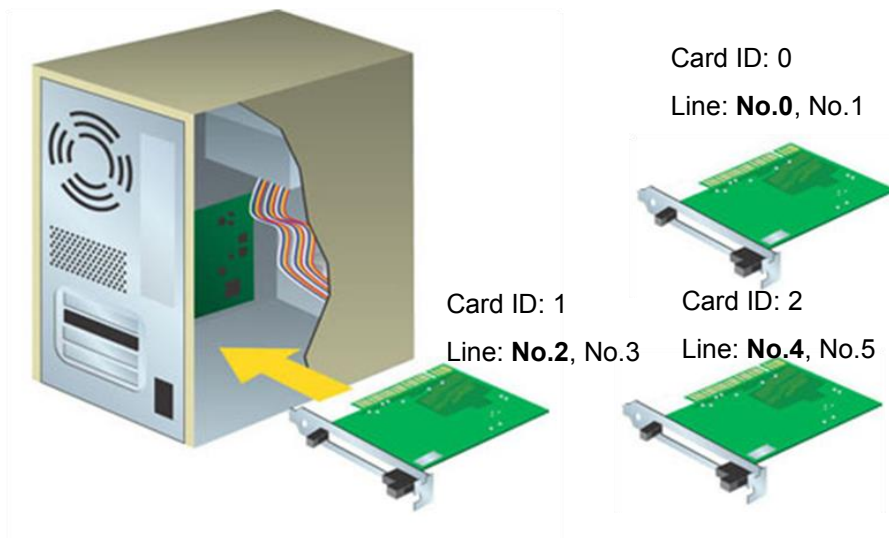


Fig3. If there are three PISO-MN200 cards installed in the system, and the value of the bScannedIndex parameter is 0, it means that the card with the lowest Card ID (0) is selected, and the value of the pLineNo parameter will be read as 0. Similarly, if the value of the bScannedIndex parameter is 2, it means that the card with the third Card ID (2) is selected,

2.1.3 mn200_get_cardinfo

VC6 / BCB6

```
short mn200_get_cardinfo( BYTE bScannedIndex, BYTE* pCardID )
```

C#

```
Int16 mn200_get_cardinfo( Byte ScannedIndex, ref Byte pCardID )
```

Description:

This function is used to read the Card ID number based on the scanned Card ID index, and will get the Card ID value by argument that was configured via the onboard DIP Switch.

Parameters:

bScannedIndex: The index value of the PISO-MN200 Card ID that was scanned by the operating system. The first index value is 0 and the maximum value should be the number of cards installed in the system minus 1.

pCardID: A pointer to the memory address where the specific Card ID is stored.

Return Code:

SUCCESS:	The function was executed successfully.
ERROR_NO_CARD_FOUND:	No active cards were found in the system.
ERROR_SET_SCAN_INDEX_OUT_RANGE:	The value for the bScannedIndex parameter is greater than the number of active PISO-MN200 cards installed in the system.

Schematic diagram:

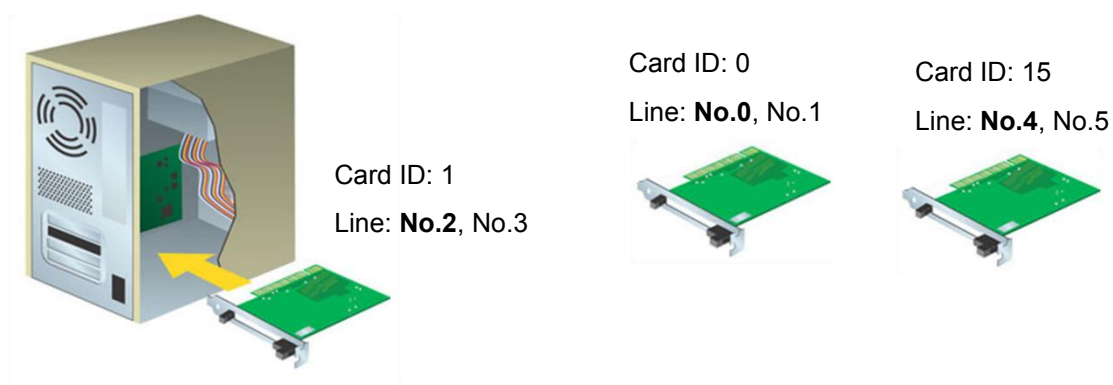


Fig4. If there are three PISO-MN200 cards installed in the system, and the value of the bScannedIndex parameter is 0, it means that the card with the lowest Card ID (0) is selected, and the value of the pCardID parameter will be read as 0. Similarly, if the value of the bScannedIndex parameter is 2, it means that the card with the third Card ID (15) is selected, and the value of the pCardID parameter will be read as 15.

2.1.4 mn_close_all

VC6 / BCB6

short mn_close_all()

C#

Int16 mn_close_all()

Description:

This function is used to close any currently open process handles for all Motionnet cards. After calling this function, the resources for the Motionnet cards will be released so that other process can access them.

Parameters:

This function requires no parameters.

Return Code:

SUCCESS:	The function was executed successfully.
ERROR_NO_CARD_FOUND:	No active cards were found in the system.

2.1.5 mn_reset

VC6 / BCB6

short mn_reset(BYTE bLineNo)

C#

Int16 mn_reset(Byte bLineNo)

Description:

This function is used to reset the internal Motionnet ASIC and re-configure the basic registers using default values. After calling this function, all previous configurations that have been set will be ignored.

Parameters:

bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.

Return Code:

SUCCESS:	The function was executed successfully.
ERROR_NO_CARD_FOUND:	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.

2.1.6 mn_set_comm_speed

VC6 / BCB6

short mn_set_comm_speed(BYTE bLineNo, BYTE bCommSpeed)

C#

Int16 mn_set_comm_speed(Byte bLineNo, Byte bCommSpeed)

Description:

This function is used to configure the communication speed for the Motionnet device.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bCommSpeed : The communication speed, which can be set to either COMMSPEED_2_5M, COMMSPEED_5M, COMMSPEED_10M or COMMSPEED_20M.

Return Code:

- | | |
|----------------------------|--|
| SUCCESS: | The function was executed successfully. |
| ERROR_NO_CARD_FOUND: | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_INVALID_COMM_SPEED : | The value of the communication speed parameter, bCommSpeed is invalid. |

2.1.7 mn_start_line

VC6 / BCB6

short mn_start_line(BYTE bLineNo, BYTE* pNumDev)

C#

Int16 mn_start_line(Byte bLineNo, ref Byte pNumDev)

Description:

This function is used to initiate system communication with the Motionnet devices, and returns the number of devices that are active on the communication line.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- pNumDev : A pointer to the memory address where the number of devices that are active on the communication line is stored.

Return Code:

- | | |
|-------------------------|--|
| SUCCESS: | The function was executed successfully. |
| ERROR_NO_CARD_FOUND: | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |

2.1.7 mn_stop_line

VC6 / BCB6

short mn_stop_line(BYTE bLineNo)

C#

Int16 mn_stop_line(Byte bLineNo)

Description:

This function is used to terminate system communication with the Motionnet devices.

Parameters:

bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.

Return Code:

SUCCESS:	The function was executed successfully.
ERROR_NO_CARD_FOUND:	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	ERROR_COMM_DISCONNECT: The connection with the Motionnet device has been lost.
ERROR_COMM_NOT_STOP :	I/O Communication with the Motionnet device has not been stopped.

2.2 Hardware Configuration

Once the driver has been loaded, the PISO-MN200 is able to connect to any available MN-SERVO series motor controllers and initiate Motionnet communication. The functions described in this chapter relate to hardware configuration, including motion-related settings, such as the polarity of the output pulse and the input encoder, as well as the hardware-limit sensors, which can be adjusted using these functions.

2.2.1 mn_set_motion_cfg

VC6 / BCB6

```
short mn_set_motion_cfg( BYTE bLineNo, BYTE bDevNo, MotionConfig CfgItem, DWORD  
dwData )
```

C#

```
Int16 mn_set_motion_cfg( Byte bLineNo, Byte bDevNo, MotionConfig CfgItem, UInt32  
dwData )
```

Description:

This function is used to configure the parameter of MN-SERVO series device.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- CfgItem : The MotionConfig enumerated type is used to select parameter setting.

Label	Value	Describe
OUTPLS_MODE	0	Specify output pulse mode.
EL_PROC	3	Specify the process to occur when the EL input is turned ON.
SD_ENA	31	Enable/Disable the function of SD input.
SD_PROC	4	Specify the process to occur when the SD input is turned ON.
SDLTC_ENA	5	Enable/Disable the latch function of SD input.

SD_LOGIC	6	Specify the SD signal input logic.
ORG_LOGIC	7	Specify the ORG signal input logic.
ALM_PROC	8	Specify the process to occur when the ALM input is turned ON.
ALM_LOGIC	9	Specify the ALM signal input logic.
ERC_ERR_PROC	10	When an error occurs, enable / disable ERC signal output automatically.
ERC_ORG_PROC	11	When the axis completes an origin return, enable / disable the ERC signal output automatically.
ERC_LEN	12	Specify the pulse width of the ERC output signal.
ERC_LOGIC	15	Specify the ERC signal output logic.
MANUAL_SD_ENA	16	Enable/Disable the manual ramping down point for high speed operation.
TRIANGLE_DRV_ELIMINATE_ENA	17	Enable/Disable the function of manual triangle prevention driving.
INP_ENA	18	Enable/Disable the function of INP signal input.
INP_LOGIC	19	Specify the INP signal input logic.
RESET_OUTPLS _AFTER_ORG_ENA	20	Enable/Disable the function that reset pulse counter after origin signal was triggered.
RESET_ENC_AFTER_ORG_ENA	21	Enable/Disable the function that reset encoder counter after origin signal was triggered.
RESET_CNT3_AFTER_ORG_ENA	22	Enable/Disable the function that reset counter 3 after origin signal was triggered.
ENC_MODE	23	Specify the EA/EB input mode.
ENC_REV_ENA	25	Enable/Disable reverse encoder input value.
ENC_Z_LOGIC	26	Specify the EZ signal input logic.
OUTPLS_REV_ENA	27	Enable/Disable reverse pulse output value.
CNT3_MODE	28	Set counter 3 mode.
ALL_DATA	32	Set all parameters.

dwData: According to parameter **CfgItem** selection, and gives the corresponding configuration data.

CfgItem = OUTPLS_TYPE				
Label		Value	Describe	
PULSE_MODE_PULSE_LOGIC_LO W_DIR_FORWARD_HIGH		0	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div>High</div><div>Low</div></div>	
PULSE_MODE_PULSE_LOGIC_HIG H_DIR_FORWARD_HIGH		1	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div>High</div><div>Low</div></div>	
PULSE_MODE_PULSE_LOGIC_LO W_DIR_FORWARD_LOW		2	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div>Low</div><div>High</div></div>	
PULSE_MODE_PULSE_LOGIC_HIG H_DIR_FORWARD_LOW		3	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div>Low</div><div>High</div></div>	
PULSE_MODE_CW_LOGIC_LOW		4	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div>High</div><div></div></div>	
PULSE_MODE_CW_LOGIC_HIGH		7	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div>Low</div><div></div></div>	
PULSE_MODE_A_LEAD_B		5	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div></div><div></div></div>	
PULSE_MODE_A_LAG_B		6	<div><div>+direction</div><div>-direction</div></div> <div><div>OUT</div><div>DIR</div></div> <div><div></div><div></div></div>	

CfgItem = EL_PROC / ALM_PROC

Label	Value	Describe
SUDDEN_STOP	0	Immediately stop(default).
SLOWDOWN_STOP	1	Decelerates to start speed and stop.

CfgItem = SD_ENA / SDLTC_ENA / ERC_ERR_ENA / ERC_ORG_ENA /
MANUAL_SD_ENA / MANUAL_TRI_DRV_ELIMINATE_ENA / INP_ENA /
RESET_OUTPLS_AFTER_ORG_ENA / RESET_ENC_AFTER_ORG_ENA /
RESET_CNT3_AFTER_ORG_ENA / ENC_REV_ENA OUTPLS_REV_ENA

Label	Value	Describe
DISABLE_FEATURE	0	Disable the specified function(default).
ENABLE_FEATURE	1	Enable the specified function.

CfgItem = SD_PROC

Label	Value	Describe
SLOWDOWN	0	Decelerate to start speed (default).
SLOWDOWN_STOP	1	Decelerate to start speed and then stop motion.












CfgItem = SD_LOGIC / ORG_LOGIC / ALM_LOGIC / ERC_LOGIC / INP_LOGIC /
ENC_Z_LOGIC

Label	Value	Describe
LOGIC_ACTIVE_LOW	0	Set logic active low (default).
LOGIC_ACTIVE_HIGH	1	Set logic active high.

CfgItem = ERC_LEN

Label	Value	Describe
ERC_LEN_12us	0	ERC signal pulse width is 12μs.
ERC_LEN_93us	1	ERC signal pulse width is 93μs.
ERC_LEN_371us	2	ERC signal pulse width is 371μs.
ERC_LEN_1500us	3	ERC signal pulse width is 1.5ms.
ERC_LEN_12ms	4	ERC signal pulse width is 12ms.
ERC_LEN_48ms	5	ERC signal pulse width is 48ms.
ERC_LEN_95ms	6	ERC signal pulse width is 95ms.
ERC_LEN_LEVEL_OUTPUT	7	ERC signal is level output.

CfgItem= ENC_MODE

Label	Value	Describe
ENCODER_MODE_AB	0	<div> A  B  X1  </div>
ENCODER_MODE_AB_MULT_2	1	<div> A  B  X2  </div>
ENCODER_MODE_AB_MULT_4	2	<div> A  B  X4  </div>
ENCODER_MODE_CW_CCW	3	<div> <div>+direction -direction</div> <div> A  B  </div> </div>

CfgItem = CNT3_MODE

Label	Value	Describe
	0	Output pulse value
	1	Encoder input value.
	2	Manual pulse generator input value.
	3	Timer(1/4096 division clock of 40MHz.).
	4	The difference value between output pulse and encoder input.
	5	The difference value between output pulse and manual pulse generator input.
	6	The difference value between encoder input and manual pulse generator input.

CfgItem = ALL_DATA

The data type of parameter dwData is DWORD, and all items can be set by 32 Bits at same time.

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ERC LOGIC	ERC LEN			ERC ORG	ERC ERR	ALM LOGIC	ALM PROC	ORG LOGIC	SD LOGIC	SDLTC ENA	SD PROC	EL PROC	PLS MODE		
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
SD ENA	CNT3 MODE			PLS REV	Z LOGIC	ENC REV	ENC MODE		RESET CNT3	RESET ENC	RESET PLS	INP LOGIC	INP ENA	MANUAL TR ENA	MANUAL SD ENA

Bits	Bit name	Description
------	----------	-------------

0 to 2	PLS MODE	Set the output pulse mode. The valid range is 0 - 7 (000 - 111).
--------	----------	--

3	EL PROC	Specify the process to occur when the EL input is turned ON : 0/1
---	---------	---

4	SD PROC	Specify the process to occur when the SD input is turned ON : 0/1
---	---------	---

5	SDLTC ENA	Enable/Disable the latch function of SD : 0/1
---	-----------	---

6	SD LOGIC	Specify the SD signal input logic : 0/1
---	----------	---

7	ORG LOGIC	Specify the ORG signal input logic : 0/1
---	-----------	--

8	ALM PROC	Specify the process to occur when the ALM input is turned ON : 0/1
---	----------	--

9	ALM LOGIC	Specify the ALM signal input logic : 0/1
---	-----------	--

10	ERC ERR	When an error occurs, enable / disable ERC signal output : 0/1
----	---------	--

11	ERC ORG	When origin signal was triggered, enable / disable ERC signal output : 0/1
----	---------	--

12 to 14	ERC LEN	Set length of ERC output signal : 0~7(000~111)
----------	---------	--

15	ERC LOGIC	Specify the ERC signal input logic : 0/1
----	-----------	--

16	MANUAL SD ENA	Enable/Disable the function of manual deceleration point : 0/1
----	---------------	--

17	MANUAL TR ENA	Enable/Disable the function of manual triangle prevention driving : 0/1
----	---------------	---

18	INP ENA	Enable/Disable the function of INP signal input : 0/1
----	---------	---

19	INP LOGIC	Specify the INP signal input logic : 0/1
----	-----------	--

20	RESET PLS	Enable/Disable the function that reset pulse counter after Original point signal was triggered : 0/1
----	-----------	--

21	RESET ENC	Enable/Disable the function that reset encoder counter after Original point signal was triggered : 0/1
----	-----------	--

22	RESET CNT3	Enable/Disable the function that reset counter 3 after Original point signal was triggered : 0/1
23 to 24	ENC MODE	Set encoder input mode : 0~3(00~11)
25	ENC REV	Enable/Disable reverse encoder input value : 0/1
26	Z LOGIC	Specify the EZ signal input logic : 0/1
27	PLS REV	Enable/Disable reverse pulse output value : 0/1
28 to 30	CNT3 MODE	Set counter 3 mode : 0~6(000~110)
31	SD ENA	Enable/Disable the function of SD : 0/1

Return

Code:

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	ERROR_COMM_DISCONNECT: The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_INVALID_CONFIG_ITEM :	The MotionConfig enumeration value specified for the CfgItem parameter is not valid.

2.2.2 mn_get_motion_cfg

VC6 / BCB6

short mn_get_motion_cfg(BYTE bLineNo, BYTE bDevNo, MotionConfig CfgItem, DWORD
pData)

C#

Int16 mn_get_motion_cfg(Byte bLineNo, Byte bDevNo, MotionConfig CfgItem, ref UInt32
pData)

Description:

This function is used to read the configuration of an MN-SERVO series device.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- CfgItem : The MotionConfig enumerated type is used to select parameter setting. The same as the form of parameter CfgItem listed in section 2.2.1.
- pData : The corresponding data to CfgItem parameter in Section 2.2.1 mn_set_motion_cfg

Return Code:

- | | |
|-----------------------------|--|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | ERROR_COMM_DISCONNECT: The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |
| ERROR_INVALID_CONFIG_ITEM : | The MotionConfig enumeration value specified for the CfgItem parameter is not valid. |

2.3 Hardware Configuration (optional)

The functions described in this chapter can be used to enable/disable additional hardware signals, including servo excitation, ALARM signal rest and ERC signal output. The signal-filtering feature includes a built-in Motion-Control ASIC, which can be configured using the `mn_set_filter` function. MN-SERVO series modules also provide a software-limit feature that can be enabled and configured using the `mn_set_softlimit` function. The `mn_load_ezgo_cfg` function is also helpful and can be used to configure all motion modules using a pre-defined configuration file, `MN_Config.ini`, which can be edited using the PCEzGo utility.

2.3.1 `mn_set_filter`

VC6 / BCB6

```
short mn_set_filter( BYTE bLineNo, BYTE bDevNo, BYTE bFilterSelection, BYTE  
bFilterEnable )
```

C#

```
Int16 mn_get_motion_cfg( Byte bLineNo, Byte bDevNo, Byte bFilterSelection, Byte  
bFilterEnable )
```

Description:

This function is used to enable/disable the signal filter for an MN-SERVO series device and configure the signal sources. The filtering feature is set to "enabled" by default.

Parameters:

- | | |
|---------------------------------|---|
| <code>bLineNo</code> : | The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch. |
| <code>bDevNo</code> : | The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line. |
| <code>bFilterSelection</code> : | Used to select the type of filter to be configured and can be one of the following signal sources: <ul style="list-style-type: none">1. <code>FILTER_DATA_ENCODER</code> (Filter encoder Z signal, Delay time: 150ns)2. <code>FILTER_DATA_EMG_EL_SD_ORG_ALM_INP</code> (Filter EMG, EL, SD, ORG, ALARM and INP signals, Delay time: 4µs) |
| <code>bFilterEnable</code> : | Used to enable or disable the filter and is configured using either the <code>ENABLE_FEATURE</code> or <code>DISABLE_FEATURE</code> attributes. |

Return Code:

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	ERROR_COMM_DISCONNECT: The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_INVALID_FILTER_ITEM :	The value of the bFilterSelection parameter refers to neither FILTER_DATA_ENCODER nor FILTER_DATA_EMG_EL_SD_ORG_ALM_INP.
ERROR_SET_DATA :	The value of the bFilterEnable parameter refers to neither ENABLE_FEATURE nor DISABLE_FEATURE.

2.3.2 mn_set_softlimit

VC6 / BCB6

short mn_set_softlimit(BYTE bLineNo, BYTE bDevNo, BYTE bSWLimitEnable, BYTE bCmpSource, BYTE bStopMode, long LimitPositive, long LimitNegative)

C#

Int16 mn_set_softlimit(Byte bLineNo, Byte bDevNo, Byte bSWLimitEnable, Byte bCmpSource, Byte bStopMode, Int32 LimitPositive, Int32 LimitNegative)

Description:

This function is used to continue monitoring either the input pulse counter or the encoder input counter. If the counter value exceeds a specified value, the motor control chip will immediately invoke the SLOWDOWN_STOP attribute. This feature will remain active until the mn_set_softlimit() function is called and the DISABLE_FEATURE attribute is set for the bSWLimitEnable parameter.

Parameters:

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bSWLimitEnable :	Used to enable or disable the filter and is configured using either the ENABLE_FEATURE or DISABLE_FEATURE attributes.
bCmpSource :	Used to configure the source of XXXX using either the PULSE_COMMAND or ENCODER_POSITION attributes.
bStopMode :	Used to specify the Software Limit Stop mode that the servo is to use based on either the SLOWDOWN_STOP (deceleration stop) or SUDDEN_STOP (immediate stop) attributes.
LimitPositive :	The pre-defined value for the comparator in forward direction
LimitNegative :	The pre-defined value for the comparator in reverse direction

Return Code:

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_INVALID_FILTER_ITEM :	The value of the <code>bFilterSelection</code> parameter refers to neither <code>FILTER_DATA_ENCODER</code> nor <code>FILTER_DATA_EMG_EL_SD_ORG_ALM_INP</code> .
ERROR_SET_DATA :	The value of the <code>bSWLimitEnable</code> parameter refers to neither <code>ENABLE_FEATURE</code> nor <code>DISABLE_FEATURE</code> .
ERROR_INVALID_SOFTWARE_LIMIT_SOURCE :	The value of the <code>bCmpSource</code> parameter is neither <code>PULSE_COMMAND</code> nor <code>ENCODER_POSITION</code> .
ERROR_INVALID_STOP_MODE :	The value of the <code>bStopMode</code> parameter is neither <code>SLOWDOWN_STOP</code> nor <code>SUDDEN_STOP</code> .
ERROR_CONFLICT_WITH_VRING :	The internal comparator ASIC is currently configured to use the variable ring counter, and cannot be used for software limiting. Call the <code>mn_set_vring()</code> function to disable the variable ring counter.

2.3.3 mn_servo_on

VC6 / BCB6

short mn_servo_on(BYTE bLineNo, BYTE bDevNo, BYTE bServoOn)

C#

Int16 mn_servo_on(Byte bLineNo, Byte bDevNo, Byte bServoOn)

Description:

This function is used to turn the servo on or off.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bServoON: Turns the servo on or off using the TURN_ON or TURN_OFF attributes.

Return Code:

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |
| ERROR_SET_DATA : | The value of the bServoON parameter is neither TURN_ON nor TURN_OFF. |

2.3.4 mn_set_erc

VC6 / BCB6

short mn_set_erc(BYTE bLineNo, BYTE bDevNo, BYTE bErcOn)

C#

Int16 mn_set_erc(Byte bLineNo, Byte bDevNo, Byte bErcOn)

Description:

This function is used to configure the ERC signal, which clears the deviation counter of the servomotor driver. The relevant configuration parameters, such as pulse width, polarity and ERC output, automatically refer to the mn_set_motion_cfg () function attributes described in Section 2.2.1.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bErcON: Turns the ERC signal on or off using the TURN_ON or TURN_OFF attributes.

Return Code:

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |
| ERROR_SET_DATA : | The value of the bErcON parameter is neither TURN_ON nor TURN_OFF. |

2.3.5 mn_alarm_reset

VC6 / BCB6

short mn_alarm_reset(BYTE bLineNo, BYTE bDevNo, BYTE bAlmRstOn)

C#

Int16 mn_alarm_reset(Byte bLineNo, Byte bDevNo, Byte bAlmRstOn)

Description:

This function is used to turn the reset ALARM signal function for the servomotor on or off.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bAlmRstOn : Turns the reset ALARM signal on or off using the TURN_ON or TURN_OFF attributes.

Return Code:

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |
| ERROR_SET_DATA : | The value of the bAlmRstON parameter is neither TURN_ON nor TURN_OFF. |

2.3.6 mn_load_ezgo_cfg

VC6 / BCB6

short mn_load_ezgo_cfg(BYTE bLineNo, char* FileName)

C#

Int16 mn_load_ezgo_cfg(Byte bLineNo, string FileName)

Description:

This function is used to load the pre-defined configuration file which automatically configures all active MN-SERVO devices. The mn_open_all() and mn_start_line() functions must be called before calling this function. It is strongly recommended that any changes to the configuration file are made using the PCEzGO utility. DO NOT modify the configuration file manually.

The following functions are used to configure the motion module settings:

mn_set_motion_cfg(), mn_set_filter(), and mn_set_softlimit().

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- FileName : A pointer to the memory address where the pathname for the configuration file is stored. If the pathname is not assigned, the default configuration file, \$windir/system32/MN_Config.ini, will be loaded. This parameter is optional, and NULL is assigned by default.

Return Code:

- | | |
|---------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_CONFIG_FILE_LOAD : | The configuration file cannot be found. |
| ERROR_CONFIG_FILE_MATCH : | The settings recorded in the configuration file for the motion module do not match the real conditions (i.e., the number of modules or the module ID) of the communication line specified by the bLineNo parameter. |

Automatic Home Search

This chapter describes the auto-homing feature provided by the Motion Control ASIC that will automatically search for the Home (ORG) position using the external slowdown point (SD), the origin (ORG) and encoder Z phase (EZ) sensors.

3.1 mn_home_start

VC6 / BCB6

```
short mn_home_start( BYTE bLineNo, BYTE bDevNo, SPEED_PAR SpeedPar, BYTE  
bDirection, BYTE bHomeMode, BYTE bEZcount )
```

C#

```
Int16 mn_home_start( Byte bLineNo, Byte bDevNo, SPEED_PAR SpeedPar, Byte bDirection,  
Byte bHomeMode, Byte bEZcount )
```

Description:

This function is used to start the Automatic-Home-Search based on the SPEED_PAR data structure, the direction and the homing mode.

Parameters:

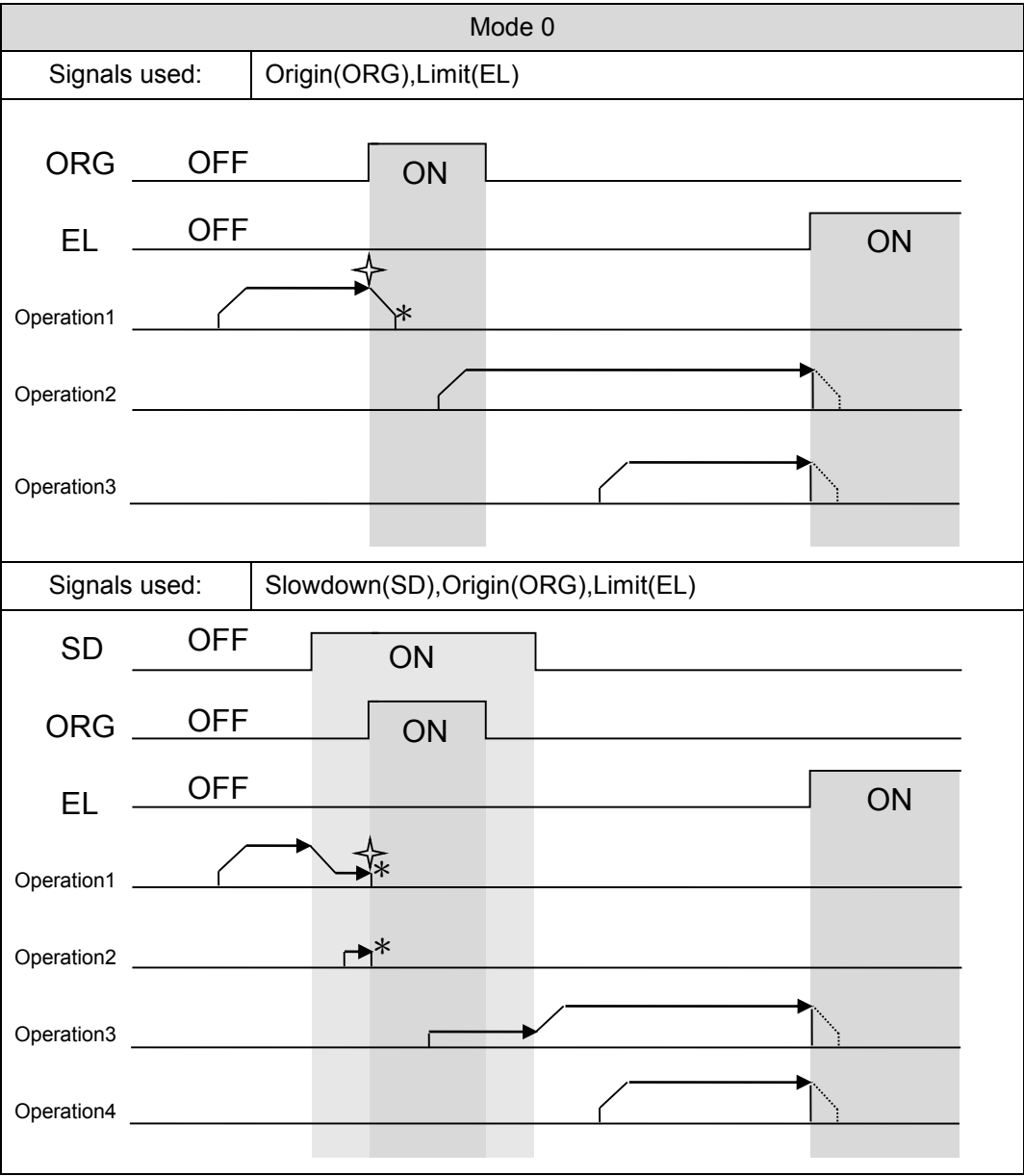
- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.

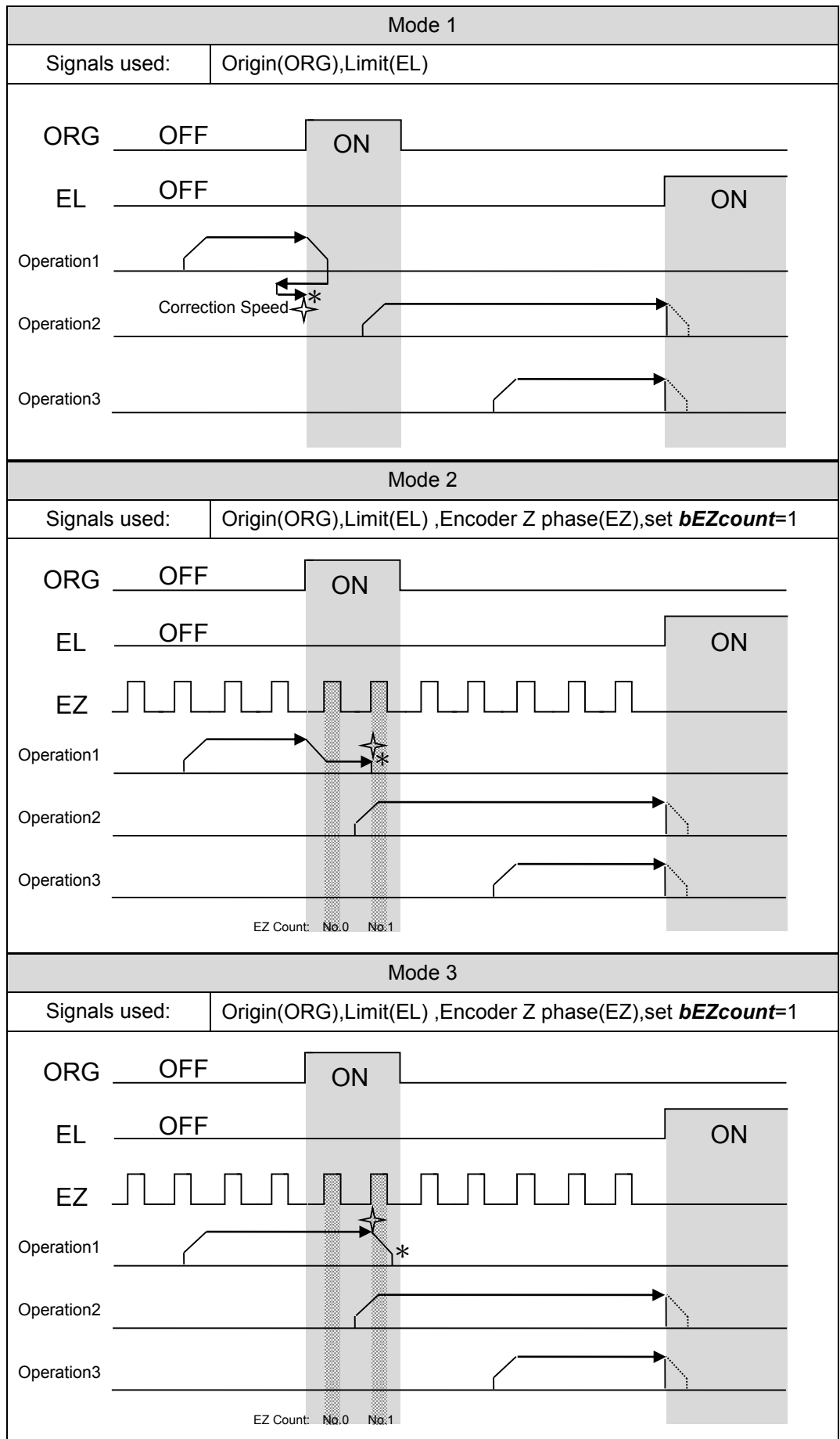
SpeedPar : This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

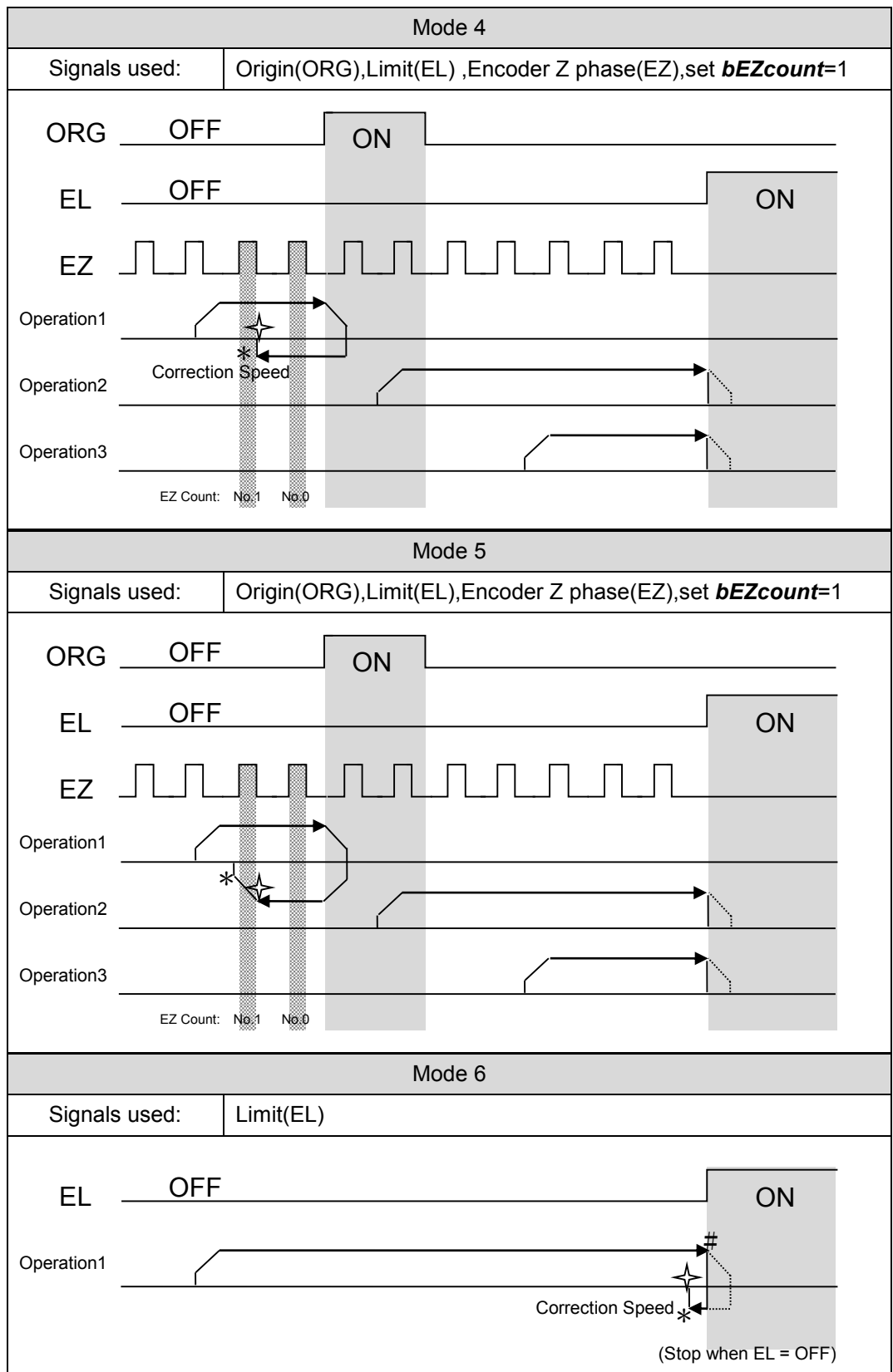
Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution. (0~10)

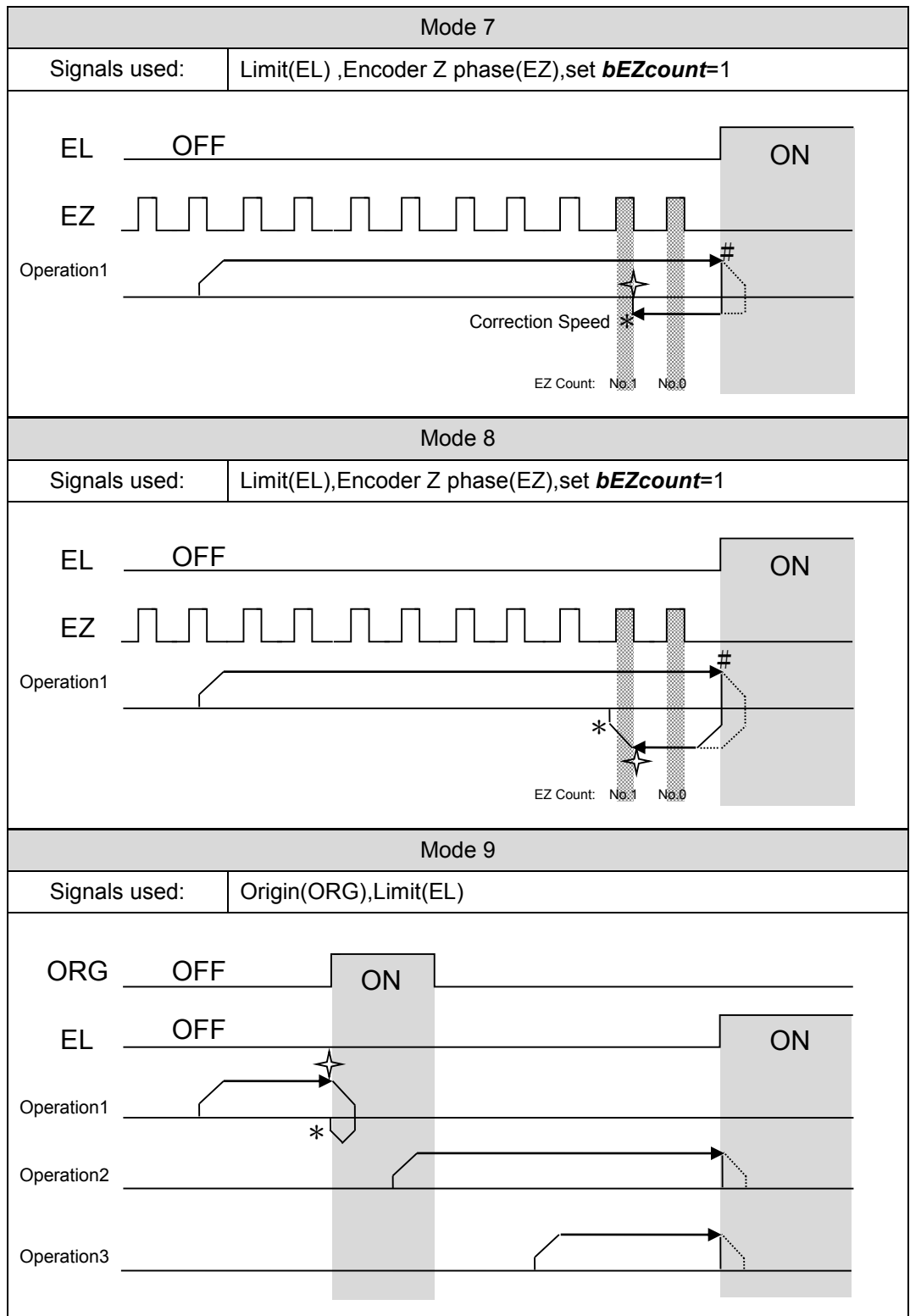
bDirection : Used to set the direction in which the servo is to move based on the MOVE_DIRECTION_FORWARD or MOVE_DIRECTION_REVERSE attributes.

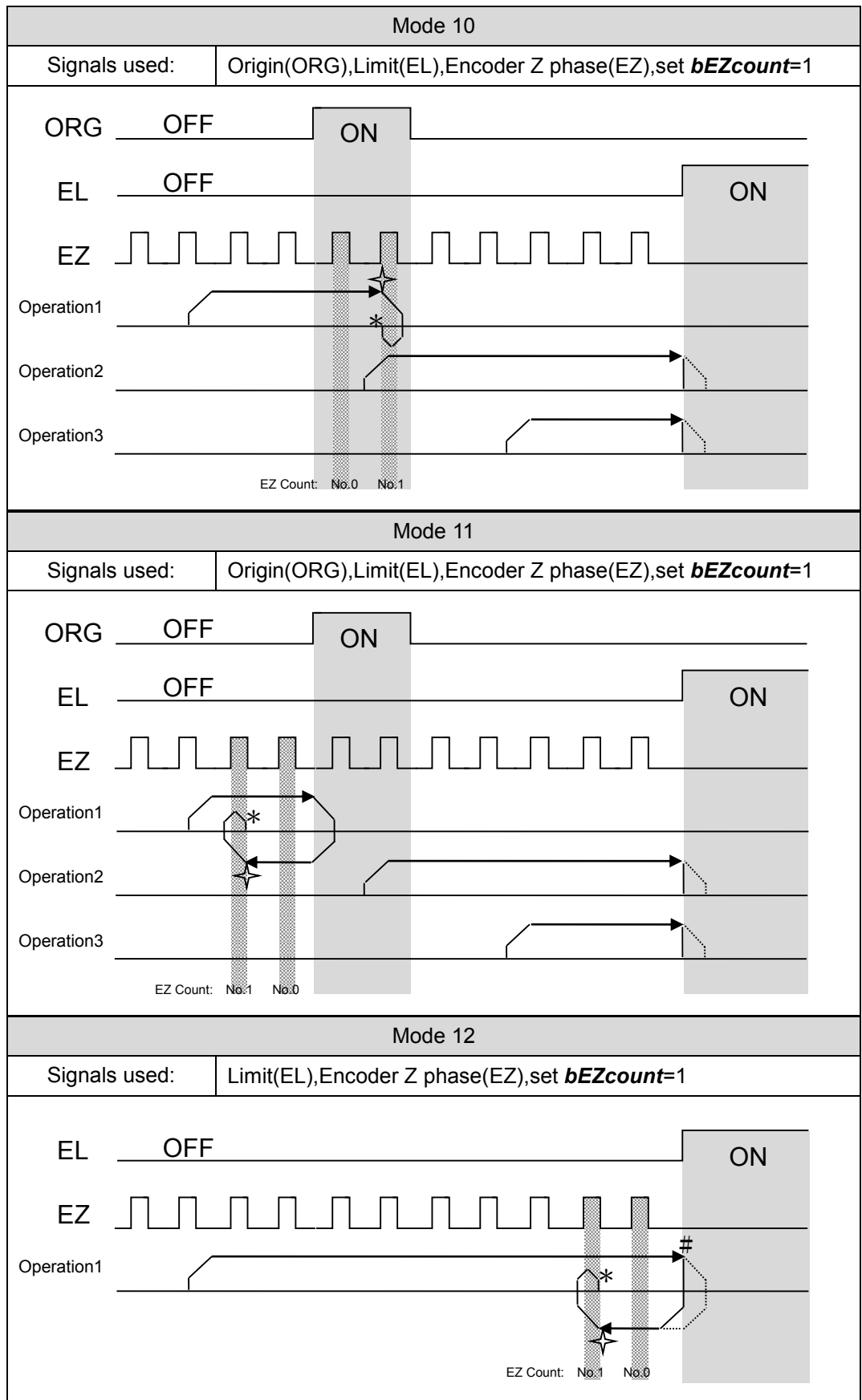
bHomeMode : Used to configure the homing mode. The valid range is 0 to 12. Each mode is illustrated below.












[Note]

The position marked “@” denotes the timing for the automatic ERC signal output. This feature can be enabled or disabled by setting ERC_ORG_ENA attribute of the mn_set_motion_cfg() function.

The position marked  denotes the timing for the automatic counter reset. This feature can be enabled or disabled by setting the RESET_OUTPLS_AFTER_ORG_ENA or RESET_ENC_AFTER_ORG_ENA attributes of the mn_set_motion_cfg() function.

When the EL_PROC attribute of the mn_set_motion_cfg() function is set to SUDDEN_STOP, the position marked “#” denotes the timing for the automatic ERC signal output. This feature can be enabled or disabled by setting ERC_ERR_ENA attribute of the mn_set_motion_cfg() function.

bEZcount : Specify the value for the encoder Z counter that will indicate that a return to the origin has been completed (default: 0). When the value for **bHomeMode** is set to 2, 3, 4, 5, 7, 8, 10, 11, or 12, this parameter must be set to a value in the range of 0 to 15 (No. 0 to No. 15).

Return Code:

SUCCESS :	The function was executed successfully.
ERROR_INVALID_MOVE_DIRECTION :	The value of the bDirection parameter is invalid as it refers to neither MOVE_DIRECTION_FORWARD nor MOVE_DIRECTION_REVERSE.
ERROR_INVALID_HOME_MODE :	The value specified for the bHomeMode parameter is not within the valid range (0 - 12).
ERROR_INVALID_EZ_COUNT :	The value specified for the bEZcount parameter is not within the valid range (0 - 15).
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).

ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.
ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED_DRIVE_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_SELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPEED_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.

ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_RANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_RANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

3.2 mn_leave_home

VC6 / BCB6

```
short mn_leave_home( BYTE bLineNo, BYTE bDevNo, SPEED_PAR SpeedPar, BYTE  
bDirection, BYTE bHomeMode, BYTE bEZcount )
```

C#

```
Int16 mn_leave_home( Byte bLineNo, Byte bDevNo, SPEED_PAR SpeedPar, Byte bDirection,  
Byte bHomeMode, Byte bEZcount )
```

Description:

This function is used to leave the origin(ORG) based on the SPEED_PAR data structure, the direction and the homing mode, and only takes effect when the position on origin. The motion will stop after leaving origin. This function does not take Correction Speed parameter.

Parameters:

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- SpeedPar :** This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)

SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution. (0~10)

- bDirection : Used to set the direction in which the servo is to move based on the MOVE_DIRECTION_FORWARD or MOVE_DIRECTION_REVERSE attributes.
- bHomeMode : Used to configure the homing mode. The valid range is 0 to 12. Each mode is illustrated below.
- bEZcount : Specify the value for the encoder Z counter that will indicate that a return to the origin has been completed (default: 0). When the value for **bHomeMode** is set to 2, 3, 4, 5, 7, 8, 10, 11, or 12, this parameter must be set to a value in the range of 0 to 15 (No. 0 to No. 15).

Return Code:

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_MOVE_DIRECTION : The value of the **bDirection** parameter is invalid as it refers to neither MOVE_DIRECTION_FORWARD nor MOVE_DIRECTION_REVERSE.
- ERROR_INVALID_HOME_MODE : The value specified for the **bHomeMode** parameter is not within the valid range (0 - 12).
- ERROR_INVALID_EZ_COUNT : The value specified for the **bEZcount** parameter is not within the valid range (0 - 15).
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_LINE_NO : The specified line number is invalid.

ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.
ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED_DRIVE_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_SELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVE_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.

ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPD_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_RANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_RANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

3.3 mn_home_search

VC6 / BCB6

```
short mn_home_search( BYTE bLineNo, BYTE bDevNo, SPEED_PAR SpeedPar, BYTE  
bDirection, long OrgWidth, BYTE bHomeMode, BYTE bEZcount )
```

C#

```
Int16 mn_home_search( Byte bLineNo, Byte bDevNo, SPEED_PAR SpeedPar, Byte bDirection,  
Int32 OrgWidth, Byte bHomeMode, Byte bEZcount )
```

Description:

This function is similar to the function “mn_home_start”. The most difference is the action after reaching limit switch. The action of function “mn_home_start” will stop after touching limit switch, but function “mn_home_search” keeps motion in opposite direction until finds origin. Then do leave home motion based on the parameter of OrgWidth. If the position leaves beyond origin and reaches the length of OrgWidth, it will return home again.

Parameters:

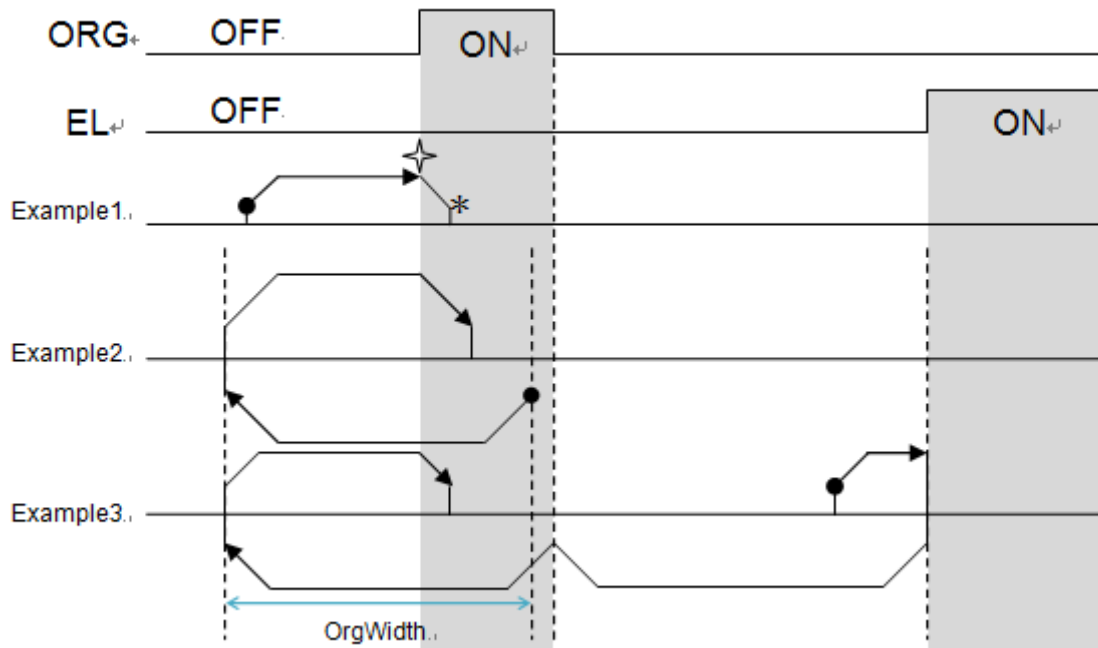
- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- SpeedPar : This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)

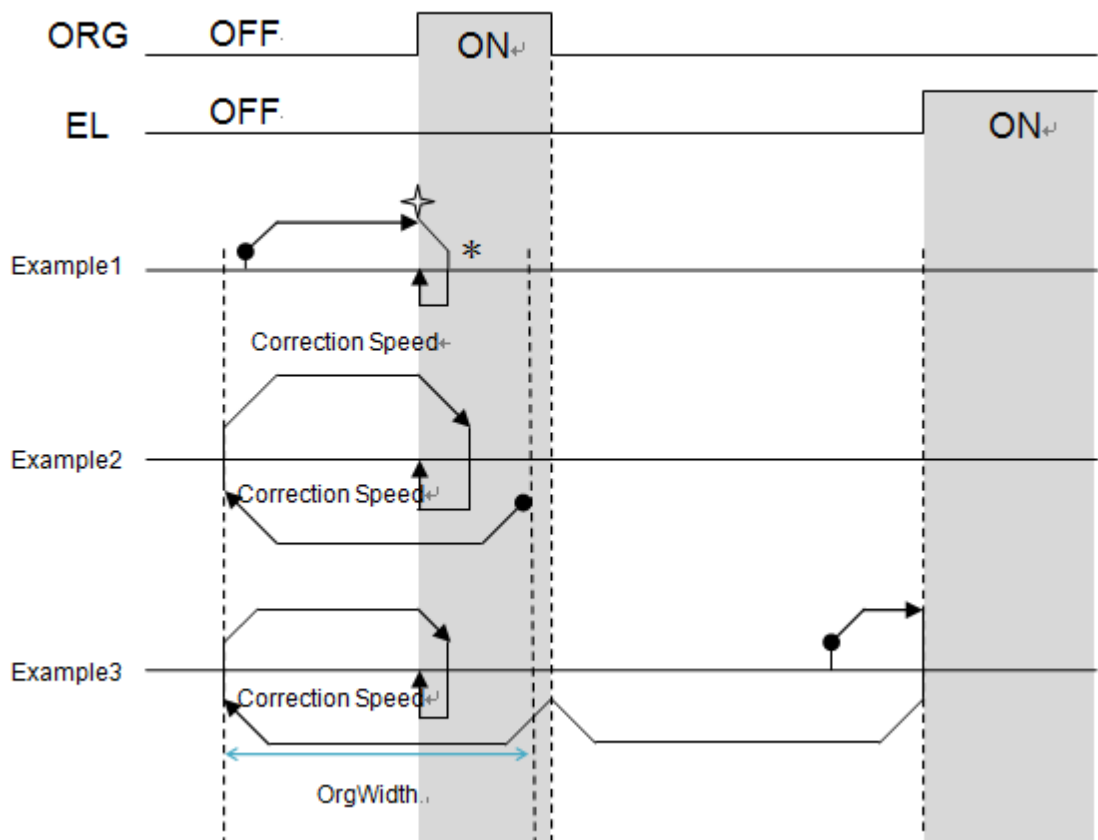
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution. (0~10)

- bDirection : Used to set the direction in which the servo is to move based on the
MOVE_DIRECTION_FORWARD or MOVE_DIRECTION_REVERSE attributes.
- OrgWidth : Pulse amount of leaving home
- bHomeMode : Used to configure the homing mode. The valid range is 0 to 13. The example 1st
modes from 0 to 12 are the same as the function "mn_home_start". 2nd and 3rd
Examples are different from function "mn_home_start". Mode 13 is a unique mode
for this function

Mode0



Mode13



bEZcount : Specify the value for the encoder Z counter that will indicate that a return to the origin has been completed (default: 0). When the value for **bHomeMode** is set to 2, 3, 4, 5, 7, 8, 10, 11, or 12, this parameter must be set to a value in the range of 0 to 15 (No. 0 to No. 15).

Return Code:

SUCCESS :	The function was executed successfully.
ERROR_INVALID_MOVE_DIRECTION :	The value of the bDirection parameter is invalid as it refers to neither MOVE_DIRECTION_FORWARD nor MOVE_DIRECTION_REVERSE.
ERROR_INVALID_HOME_MODE :	The value specified for the bHomeMode parameter is not within the valid range (0 - 12).
ERROR_INVALID_EZ_COUNT :	The value specified for the bEZcount parameter is not within the valid range (0 - 15).
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the <code>mn_group_start_move()</code> function to activate the suspended devices before executing the <code>mn_home_start()</code> function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified

	device.
ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED _DRIVING_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_S ELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPEED_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_RANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_RANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

Independent Moving Functions

The functions described in this chapter are used to start independent motion, including velocity motion and fixed pulse acceleration and deceleration motion (fixed move).

4.1 mn_velocity_move

VC6 / BCB6

```
short mn_velocity_move( BYTE bLineNo, BYTE bDevNo, SPEED_PAR SpeedPar, BYTE  
bDirection )
```

C#

```
Int16 mn_velocity_move( Byte bLineNo, Byte bDevNo, SPEED_PAR SpeedPar, Byte  
bDirection )
```

Description :

This function is used to start velocity motion based on the SPEED_PAR structure and the direction. Pulses will be continuously output until the mn_stop_move() function is called.

Parameters:

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.

SpeedPar : This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to ((Drive_Speed - Start_Speed) / 2): 0 and ((Drive_Speed - Start_Speed) / 2): The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to ((Drive_Speed - Start_Speed) / 2): 0 and ((Drive_Speed - Start_Speed) / 2): The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution. (0~10)

bDirection : Used to set the direction in which the servo is to move based on the MOVE_DIRECTION_FORWARD or MOVE_DIRECTION_REVERSE attributes.

Return Code:

SUCCESS : The function was executed successfully.

ERROR_INVALID_MOVE_DIRECTION :	The value of the bDirection parameter is invalid as it refers to neither MOVE_DIRECTION_FORWARD nor MOVE_DIRECTION_REVERSE.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.
ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED_DRIVE_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_SELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.

ERROR_SET_DRIVING_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPEED_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_RANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_RANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

4.2 mn_fix_move

VC6 / BCB6

```
short mn_fix_move( BYTE bLineNo, BYTE bDevNo, SPEED_PAR SpeedPar, long Position,  
BYTE bMoveType )
```

C#

```
Int16 mn_fix_move( Byte bLineNo, Byte bDevNo, SPEED_PAR SpeedPar, Int32 Position, Byte  
bMoveType )
```

Description :

This function is used to start the fixed-pulse motion based on the SPEED_PAR structure.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- SpeedPar : This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)

SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution. (0~10)

Position : The output pulse movement of motion. This parameter is a 32-bit long integer (long). A value of less than zero represents a movement in the negative direction.

bMoveType : The fixed pulse output motion mode, which can be selected as either relative or absolute pulse output.

Label	Value	Describe
FIX_MOVE_MODE_REL	0x41	Relative motion (default)
FIX_MOVE_MODE_ABS_BY_OUTPLS	0x42	Absolute motion for the output pulse counter
FIX_MOVE_MODE_ABS_BY_ENC	0x43	Absolute motion for the encoder input counter
FIX_MOVE_MODE_ZERO_R_ETURN_BY_OUTPLS	0x44	Zero return for the pulse output counter (note that the Position parameter is ignored)
FIX_MOVE_MODE_ZERO_R_ETURN_BY_ENC	0x45	Zero return for the encoder input counter (note that the Position parameter is ignored)

Return code :

SUCCESS : The function was executed successfully.

ERROR_INVALID_POSITION : The parameter **Position** is not from -134217728 to 134217727.

ERROR_NO_CARD_FOUND : No active cards were found in the system.

ERROR_INVALID_LINE_NO : The specified line number is invalid.

ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.

ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.

ERROR_COMM_DISCONNECT : The connection with the Motionnet device has been lost.

ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).

ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.
ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED_DRIVE_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_SELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPEED_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.

ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_RANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_RANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

4.3 mn_stop_move

VC6 / BCB6

short mn_stop_move(BYTE bLineNo, BYTE bDevNo, BYTE bStopMode)

C#

Int16 mn_stop_move(Byte bLineNo, Byte bDevNo, Byte bStopMode)

Description :

This function is used to stop the current motion based on either slowdown or sudden stop mode.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bStopMode : Used to specify the type of stop that the servo is to perform based on either the SLOWDOWN_STOP (deceleration stop) or SUDDEN_STOP (immediate stop) attributes.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_STOP_MODE : The value of the **bStopMove** parameter is invalid as it refers to neither SLOWDOWN_STOP nor SUDDEN_STOP.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.
- ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.
- ERROR_COMM_DISCONNECT : The connection with the Motionnet device has been lost.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_SET_IO_DEV : The specified device number refers to a serial I/O module, not a motion device.

Interpolation Moving Functions

The functions described in this chapter are used for 2D/3D and multi-axis linear interpolation motion and 2D circular interpolation motion. In order to ensure Motionnet serial communication control for multi-axis synchronization, the `mn_set_group` function is used to assign all axes to the same group number so as to synchronize the start of the interpolation motion.

5.1 `mn_set_group`

VC6 / BCB6

```
short mn_set_group( BYTE bLineNo, BYTE bGrpNo, BYTE bNumDev, BYTE bDevNo[ ] )
```

C#

```
Int16 mn_set_group( Byte bLineNo, Byte bGrpNo, Byte bNumDev, Byte[ ] bDevNo )
```

Description :

This function is used to assign multiple motion control modules to a single group that can be identified using a unique number to ensure the synchronization of interpolation motion.

Parameters :

- `bLineNo` : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- `bGrpNo` : The Group number, where the valid range is from 1 to 7. Setting the value to 0 will disable the group.
- `bNumDev` : Used to set the number of motion control modules to be allocated to the Group.
- `bDevNo[]` : A pointer to the BYTE Array that contains the number of motion devices, where the size of the array is equal to the value set for the ***bNumDev*** parameter.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_GROUPNO :	The value of the bGrpNo parameter is not within the valid range of 0 to 7.
ERROR_INVALID_NUM_DEV :	The value set for the bNumDev parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.

5.2 mn_get_group

VC6 / BCB6

short mn_get_group(BYTE bLineNo, BYTE bGrpNo, BYTE* pNumDev, BYTE bDevNo[])

C#

Int16 mn_get_group(Byte bLineNo, Byte bGrpNo, ref Byte pNumDev, Byte[] bDevNo)

Description :

This function is used to read the total number of modules included in the specified group, and also to read the index number of each module in the group.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bGrpNo :** The Group number, where the valid range is from 1 to 7. Setting the value to 0 will disable the group.
- bNumDev :** Used to set the number of motion control modules to be allocated to the Group.
- bDevNo[] :** A pointer to the memory address where the index number for the module is stored. The size of the array should be set to 64 to prevent any potential buffer overflow.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_INVALID_GROUPNO : | The value of the bGrpNo parameter is not within the valid range of 0 to 7. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

5.3 mn_line2_move

VC6 / BCB6

short mn_line2_move (BYTE bLineNo, BYTE bDev1No, BYTE bDev2No, SPEED_PAR SpeedPar, long Dev1Pos, long Dev2Pos, BYTE bCnstSpdEnable)

C#

Int16 mn_line2_move(Byte bLineNo, Byte bDev1No, Byte bDev2No, SPEED_PAR SpeedPar, Int32 Dev1Pos, Int32 Dev2Pos, Byte bCnstSpdEnable)

Description :

This function is used to initiate 2-dimensional linear interpolation motion based on the SPEED_PAR structure and the specified position.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDev1No : The device number for the first device that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bDev2No : The device number for the second device that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- SpeedPar : This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)

Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10).
Dev1Pos :	Represents the position of bDev1No and is the relative offset to the current position. A negative value indicates that the direction is reversed.
Dev2Pos :	Represents the position of bDev2No and is the relative offset to the current position. A negative value indicates that the direction is reversed.
bCnstSpdEnable :	This parameter is used to ensure that the synthesized speed in 2-dimensional linear interpolation remains constant, and can be set to either ENABLE_FEATURE or DISABLE_FEATURE.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_SET_DATA :	The value specified for the bCnstSpdEnable parameter
ERROR_INVALID_POSITION :	ERROR_INVALID_POSITION: The value specified for either the Dev1Pos or the Dev2Pos parameter is not within the valid range, -134217728 to 134217727.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the <code>mn_group_start_move()</code> function to activate the suspended devices before executing the <code>mn_home_start()</code> function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.
ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED_DRIVING_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.

ERROR_INVALID_MAX_SPEED_SELECTION :	The Max_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPEED_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_RANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_RANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

5.4 mn_arc2_move

VC6 / BCB6

```
short mn_arc2_move( BYTE bLineNo, BYTE bDev1No, BYTE bDev2No, SPEED_PAR  
SpeedPar, BYTE bDirection, long Dev1CenterPos, long Dev2CenterPos, long Dev1FinishPos,  
long Dev2FinishPos, DWORD Low32BitDummyDevNo, DWORD High32BitDummyDevNo,  
BYTE bCnstSpdEnable )
```

C#

```
Int16 mn_arc2_move( Byte bLineNo, Byte bDev1No, Byte bDev2No, SPEED_PAR SpeedPar,  
Byte bDirection, Int32 Dev1CenterPos, Int32 Dev2CenterPos, Int32 Dev1FinishPos, Int32  
Dev2FinishPos, UInt32 Low32BitDummyDevNo, UInt32 High32BitDummyDevNo, Byte  
bCnstSpdEnable )
```

Description :

This function is used to initiate the 2-dimensional circular interpolation motion, where the starting point is the origin of the circular interpolation motion. The **Dev1CenterPos** and **Dev2CenterPos** parameters are the center coordinates in relation to the Origin; the **Dev1FinishPos** and **Dev2FinishPos** parameters are the finishing coordinates in relation to the Origin.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDev1No :	The device number for the first device that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bDev2No :	The device number for the second device that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
SpeedPar :	This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves

	(PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10).

bDirection :

Used to set the direction in which the servo is to move, which can be either clockwise (MOVE_DIRECTION_CW) or counterclockwise

	(MOVE_DIRECTION_CCW).
Dev1CenterPos :	Represents the center position of bDev1No and is the relative offset to the current position. A negative value indicates that the direction of the center position is reversed.
Dev2CenterPos :	Represents the center position of bDev2No and is the relative offset to the current position. A negative value indicates that the direction of the center position is reversed.
Dev1FinishPos :	Represents the finish position of bDev1No and is the relative offset to the current position. A negative value indicates that the direction of the finish position is reversed.
Dev2FinishPos :	Represents the finish position of bDev2No and is the relative offset to the current position. A negative value indicates that the direction of the finish position is reversed.
Low32BitDummyDevNo :	The dummy operation device number that is used to mask the output pulses and instruct the counters to ignore the pulses in continuous interpolation motion. The device number (0 to 31) is specified by setting the corresponding bit in the 32-bit address to 1. The default value is zero.
High32BitDummyDevNo :	The dummy operation device number that is used to mask the output pulses and instruct the counters to ignore the pulses in continuous interpolation motion. The device number (32 to 63) is specified by setting the corresponding bit in the 32-bit address to 1. The default value is zero.
bCnstSpdEnable :	This parameter is used to ensure that the synthesized speed in 2-dimensional linear interpolation remains constant, and can be set to either ENABLE_FEATURE or DISABLE_FEATURE.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_SET_ARC_FINISH_POS :	The coordinates that were specified for the Dev1FinishPos and Dev2FinishPos parameters are not on the circular path.
ERROR_SET_DATA :	The value specified for the bCnstSpdEnable parameter
ERROR_SET_BIT_DUMMY_DEV :	The dummy operation device number is specified in either the Low32BitDummyDevNo or the High32BitDummyDevNo parameters includes the device number specified for either the bDev1No or bDev2No parameters.
ERROR_INVALID_POSITION :	The value specified for one or more of the Dev1CenterPos, Dev2CenterPos, Dev1FinishPos or Dev2FinishPos parameters is not within the valid range, -134217728 to 134217727.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.

ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED _DRIVING_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_S ELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OU T_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_O UT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENAB LE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPD _OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_R ANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_R ANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

5.5 mn_line3_move

VC6 / BCB6

short mn_line3_move (BYTE bLineNo, BYTE bDev1No, BYTE bDev2No, BYTE bDev3No, SPEED_PAR SpeedPar, long Dev1Pos, long Dev2Pos, long Dev3Pos)

C#

Int16 mn_line3_move(Byte bLineNo, Byte bDev1No, Byte bDev2No, Byte bDev3No, SPEED_PAR SpeedPar, Int32 Dev1Pos, Int32 Dev2Pos, Int32 Dev3Pos)

Description :

This function starts 3-dimension linear interpolation motion with SPEED_PAR structure and specified position.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDev1No :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bDev2No :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bDev3No :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
SpeedPar :	This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.

Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve deceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10).

Dev1Pos : Represents the position of bDev1No and is the relative offset to the current position. A negative value indicates that the direction is

	reversed.
Dev2Pos :	Represents the position of bDev2No and is the relative offset to the current position. A negative value indicates that the direction is reversed.
Dev3Pos :	Represents the position of bDev3No and is the relative offset to the current position. A negative value indicates that the direction is reversed.
Return code :	
SUCCESS :	The function was executed successfully.
ERROR_INVALID_POSITION :	The value specified for any of the Dev1Pos, Dev2Pos or Dev3Pos parameters is not within the valid range, -134217728 to 134217727.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.

ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED _DRIVING_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_S ELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OU T_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_O UT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENAB LE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPD _OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_R ANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_R ANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

5.6 mn_linen_move

VC6 / BCB6

```
short mn_linen_move( BYTE bLineNo, BYTE bDevNo[ ], SPEED_PAR SpeedPar, long  
DevPos[ ], BYTE bNumDev )
```

C#

```
Int16 mn_linen_move( Byte bLineNo, Byte bDevNo[ ], SPEED_PAR SpeedPar, Int32 DevPos[ ],  
Byte bNumDev )
```

Description :

This function is used to initiate multi-dimensional linear interpolation motion based on the SPEED_PAR structure and the specified position.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo[] :	A pointer to the memory address for the byte array where the device numbers to be executed are stored. The array size should be equal to the value specified for the bNumDev parameter. The specific device number is configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
SpeedPar :	This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Describe
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.

AccDec_Mode	<p>Acc and Dec input units:</p> <p>ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec)</p> <p>ADC_MODE_TIME (acceleration and deceleration time : Sec)</p> <p>ADC_MODE_RATE_NOACC(deceleration without acceleration rate : PPS / Sec)</p> <p>ADC_MODE_RATE_NODEC(Acceleration without deceleration rate : PPS / Sec)</p> <p>ADC_MODE_TIME_NOACC(deceleration without acceleration time : Sec)</p> <p>ADC_MODE_TIME_NODEC(Acceleration without deceleration time : Sec)</p>
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	<p>Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$:</p> <p>0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$:</p> <p>The operation will be performed using S-curve acceleration without any linear component.</p>
SCurveDec_Sect	<p>Specify the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$:</p> <p>0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$:</p> <p>The operation will be performed using S-curve deceleration without any linear component.</p>
Max_Speed	An enumerated type that is used to select the maximum speed and the

	corresponding resolution(0~10).
DevPos[] :	A pointer to the memory address for the long array where the output pulses for each device is stored. A negative value indicates that the direction is reversed. The array size should be equal to the value specified for the bNumDev parameter.
bNumDev :	Used to specify the number of motion control devices involved in the multi-axis linear interpolation motion.
Return code :	
SUCCESS :	The function was executed successfully.
ERROR_INVALID_POSITION :	The value specified for one or more of the elements in the bDevPos[] array is not within the valid range, -134217728 to 134217727.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOVE_HOLD :	Indicate that motion status for the device has been switched into waiting simultaneous command mode. Call the mn_group_start_move() function to activate the suspended devices before executing the mn_home_start() function.
ERROR_WAIT_ERC :	Indicate that the device is waiting for the completion of an ERC timer event.
ERROR_WAIT_BACKLASH_CORRECT :	Indicate that the device is waiting for the completion of a backlash compensation event.
ERROR_WAIT_INP :	Indicate that the device is waiting for the INP signal to be received.
ERROR_EMG_SIGNAL_ON :	An EMG signal has been triggered on the specified device.
ERROR_ALM_SIGNAL_ON :	An ALARM signal has been triggered on the specified device.
ERROR_MEL_SIGNAL_ON :	A negative limit signal has been triggered on the specified device.

ERROR_PEL_SIGNAL_ON :	A positive limit signal has been triggered on the specified device.
ERROR_REGISTER_FULL :	The continuous motion registers on the specified device have been filled.
ERROR_START_SPEED_EXCEED _DRIVING_SPEED :	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_INVALID_MAX_SPEED_S ELECTION :	The Max_Speed value specified in the SpeedPar structure
ERROR_SET_START_SPEED_OU T_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_O UT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENAB LE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPD _OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_ACC_SECT_OUT_R ANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_R ANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

5.7 mn_conti_interp_next_ready

VC6 / BCB6

short mn_conti_interp_next_ready(BYTE bLineNo, BYTE bDevNo, BYTE *pReady)

C#

Int16 mn_conti_interp_next_ready(Byte bLineNo, Byte bDevNo, ref Byte pReady)

Description :

This function is used to check whether the next interpolation segment is ready to be set.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pReady : A pointer to the memory address where the "ready" status of the next interpolation segment is stored.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

Group Motion Functions

The functions described in this chapter are used to make synchronous motion on multiple axes in interpolation, and also take effect on axes which are assigned into specific group number by `mn_set_group()` function. To do synchronous interpolation, there are several steps as follows:

1. Make motion axes into group at the first place.
2. Execute `mn_group_hold_move` function to have pulse transmission do not start immediately and wait for simutanous start input.
3. Set target position by interpolation functions such like `mn_linen_move`.
4. Do simutanous start input by `mn_group_start_move` function to activate motion and release waiting status.
5. The purpose of steps from 2 to 4 is to make sure pulse transmission in synchronous so that next interpolation only check positions of axes in motion whether can be written by `mn_conti_next_ready` function.
6. Set next target position by interpolation functions, and make continuous motion by repeating step 5 to 6 until receive stop command or timeout.

6.1 `mn_group_stop_move`

VC6 / BCB6

```
short mn_group_stop_move( BYTE bLineNo, BYTE bGrpNo, BYTE bStopMode )
```

C#

```
Int16 mn_group_stop_move( Byte bLineNo, Byte bGrpNo, Byte bStopMode )
```

Description :

This function is used to stop the motion of all devices allocated to the specified group. When the value of the `bGrpNo` parameter is set to 0, all devices in the communication line will stop.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bGrpNo : The Group number, where the valid range is from 1 to 7. Setting the value to 0 will disable the group. The group number can be set using the mn_set_group () function.
- bStopMode : Used to specify the type of stop that the servo is to perform based on either the SLOWDOWN_STOP (deceleration stop) or SUDDEN_STOP (immediate stop) attributes.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_GROUPNO : The value of the bGrpNo parameter is not within the valid range of 0 to 7.
- ERROR_INVALID_STOP_MODE : The value of the bStopMove parameter is invalid as it refers to neither SLOWDOWN_STOP nor SUDDEN_STOP.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.
- ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.
- ERROR_COMM_DISCONNECT : The connection with the Motionnet device has been lost.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_SET_IO_DEV : The specified device number refers to a serial I/O module, not a motion device.

6.2 mn_group_hold_move

VC6 / BCB6

short mn_group_hold_move(BYTE bLineNo, BYTE bGrpNo)

C#

Int16 mn_group_hold_move(Byte bLineNo, Byte bGrpNo)

Description :

This function is used to have pulse transmission do not start immediately and wait for simultaneous start input for all devices allocated to the specified group until mn_group_start_move function is called, and pulse output for all devices allocated to the specified group will begin simultaneously. When the value of the bGrpNo parameter is set to 0, all devices in the communication line will be suspended.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bGrpNo : The Group number, where the valid range is from 1 to 7. Setting the value to 0 will disable the group. The group number can be set using the mn_set_group () function.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_INVALID_GROUPNO : | The value of the bGrpNo parameter is not within the valid range of 0 to 7. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

ERROR_GROUP_ALREADY_HOLD :	The output pulse for the group that was assigned using the bGrpNo parameter has been suspended. Use the mn_group_start_move() function to activate the group.
ERROR_INVALID_DEV_HOLD :	The group that was assigned using the bGrpNo parameter does not contain any motion control modules, so the pulse output cannot be suspended.

6.3 mn_group_start_move

VC6 / BCB6

short mn_group_start_move(BYTE bLineNo, BYTE bGrpNo)

C#

Int16 mn_group_start_move(Byte bLineNo, Byte bGrpNo)

Description :

This function starts multiple devices simultaneously that are suspended by mn_group_hold_move(). When **bGrpNo** parameter is zero, all devices suspended in the communication line will start.

Parameters :

bLineNo : The specific line number is allocated by the card ID order which is configured with the on-board Dip-Switch.

bGrpNo : Group number can be set from 0 to 7. The setting value 0 will start all devices suspended in the communication line. The group number can be set with mn_set_group () function.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_GROUPNO :	The value of the bGrpNo parameter is not within the valid range of 0 to 7.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_GROUP_NOT_HOLD :	The group is set by bGrpNo number hasn't been suspended output pulse yet, please use mn_group_hold_move() to suspend the group.

Advanced Motion Configuration

The PISO-MN200 provides several advanced features, including a variable-ring counter and a compare-and-trigger feature, which will be introduced in this chapter.

7.1 mn_set_vring

VC6 / BCB6

```
short mn_set_vring( BYTE bLineNo, BYTE bDevNo, BYTE bVRingEnable, BYTE  
bVRingSource, DWORD dwVRingValue )
```

C#

```
Int16 mn_set_vring( Byte bLineNo, Byte bDevNo, Byte bVRINGEnable, Byte bVRingSource,  
UInt32 dwVRingValue )
```

Description :

This function is used to enable and configure the variable-ring feature for logic-command or encoder-position counters.

Parameters :

- | | |
|----------------|---|
| bLineNo : | The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch. |
| bDevNo : | The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line. |
| bVRingEnable : | Used to enable or disable the variable-ring feature and is configured using either the ENABLE_FEATURE or DISABLE_FEATURE attributes. |
| bVRingSource : | Used to determine the variable-ring source and is configured using either the PULSE_COMMAND or ENCODER_POSITION attributes. |

dwVRingValue : The maximum value that the counter can count. For instance, if a value of 10,000 is assigned to the dwRingValue parameter, it indicates that the operation of the ring-counter will be:

increasing in forward direction... → 9998 → 9999 → 0
→ 1 → ...

decreasing in reserve direction... → 1 → 0 → 9999 → 9998 → ...

Return code :

SUCCESS : The function was executed successfully.

ERROR_SET_DATA : The value specified for the bVRingEnable is invalid as it is neither ENABLE_FEATURE nor DISABLE_FEATURE.

ERROR_INVALID_VRING_SOURCE : The value specified for the bVRingSource parameter is invalid as it is neither PULSE_COMMAND nor ENCODER_POSITION.

ERROR_INVALID_VRING_VALUE : The value specified for the dwVRingValue parameter exceeds 134217727.

ERROR_NO_CARD_FOUND : No active cards were found in the system.

ERROR_INVALID_LINE_NO : The specified line number is invalid.

ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.

ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.

ERROR_COMM_DISCONNECT : The connection with the Motionnet device has been lost.

ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).

ERROR_SET_IO_DEV : The specified device number refers to a serial I/O module, not a motion device.

ERROR_GROUP_NOT_HOLD : The output pulses for the group that was specified by the bGrpNo parameter have not yet been suspended. Use the mn_group_hold_move() function to suspend the group before calling the mn_group_start_move() function.

7.2 mn_cnst_cmptrig_config

VC6 / BCB6

short mn_cnst_cmptrig_config(BYTE bLineNo, BYTE bDevNo, BYTE bCmpTrigEnable, BYTE bCmpSource, BYTE bDirection, WORD wCnstPitch)

C#

Int16 mn_cnst_cmptrig_config(Byte bLineNo, Byte bDevNo, Byte bCmpTrigEnable, Byte bCmpSource, Byte bDirection, UInt16 wCnstPitch)

Description :

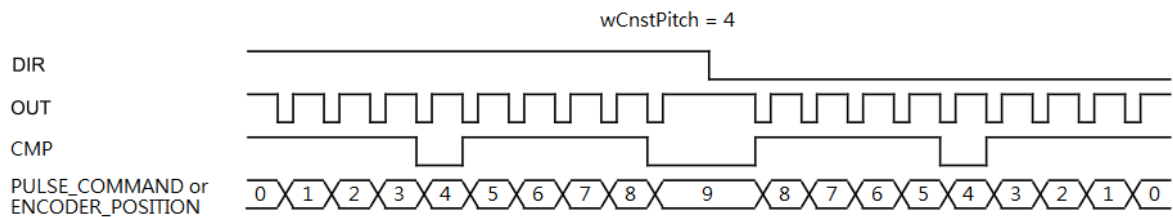
This function is used to enable and configure the compare-and-trigger feature that performs a high-speed position(FH) comparison and triggers the CMP output.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bVCmpTrigEnable :	Used to enable or disable the compare-and-trigger feature and is configured using either the ENABLE_FEATURE or DISABLE_FEATURE attributes.
bCmpSource :	Used to determine the comparison source and is configured using either the PULSE_COMMAND or ENCODER_POSITION attributes.
bDirection :	Used to set the direction of the comparing direction, and can be configured as follows:

Label	Value	Description
CMPTRIG_DIRECTION_BOTH	8	Performs a comparison regardless of the count direction
CMPTRIG_DIRECTION_FORWARD	9	Performs a comparison while counting up
CMPTRIG_DIRECTION_REVERSE	10	Performs a comparison while counting down

wCnstPitch :	Specifies the constant pitch, where $1 \leq wCnstPitch \leq 32,767$ pulses. The pitch does not contain the trigger pulse as following schematic diagram below.
--------------	--



Return code :

SUCCESS :	The function was executed successfully.
ERROR_SET_DATA :	The value specified for the bVCmpTrigEnable is invalid as it is neither ENABLE_FEATURE nor DISABLE_FEATURE.
ERROR_INVALID_CMPTRIG_SOURCE :	The value specified for the bCmpSource parameter is invalid as it is neither PULSE_COMMAND nor ENCODER_POSITION.
ERROR_INVALID_CMPTRIG_DIRECTION :	The value specified for the bDirection parameter is invalid as it is not one of CMPTRIG_DIRECTION_BOTH, CMPTRIG_DIRECTION_FORWARD or CMPTRIG_DIRECTION_REVERSE.
ERROR_INVALID_CMPTRIG_PITCH :	The value specified for the wCnstPitch parameter exceeds 32,767.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_GROUP_NOT_HOLD :	The output pulses for the group that was specified by the bGrpNo parameter have not yet been suspended. Use the mn_group_hold_move() function to suspend the group before calling the mn_group_start_move() function.

7.3 mn_set_customization

VC6 / BCB6

short mn_set_customization(BYTE bLineNo, BYTE bDevNo, WORD wCustParam, WORD wValue)

C#

Int16 mn_set_customization(Byte bLineNo, Byte bDevNo, UInt16 wCustParam, UInt16 wValue)

Description :

This function is used to set customized parameters on Motion modules.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
wCustParam :	There are customized parameters as it follows: CUST_REPLACE_SPEED_PAR : When the value specified in the SpeedPar goes over the limit, the motion API will return error code or make limit as current value.
wValue :	TRUE and FALSE represent input parameter as follows:

CUST_REPLACE_SPEED_PAR	
TRUE	When the value specified in the SpeedPar goes over the limit, the motion API will make limit as current value.
FALSE	When the value specified in the SpeedPar goes over the limit, the motion API will return error code(default).

Return code :

SUCCESS :	The function was executed successfully.
ERROR_SET_DATA :	The value specified for the bVCmpTrigEnable is invalid as it is neither ENABLE_FEATURE nor DISABLE_FEATURE.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.

ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_SET_AI_DEV	The specified device is analog input module
ERROR_INVALID_CONFIG_ITEM	The config value specified for the wCustParam parameter is not valid.

Miscellaneous Functions

This chapter provides a description of a number of other miscellaneous functions, including setting the logic-command counter and encoder-position counter, changing the driving speed while a trapezoidal motion profile is in effect, and updating the total number of output pulses.

8.1 mn_change_v

VC6 / BCB6

```
short mn_change_v( BYTE bLineNo, BYTE bDevNo, SPEED_PAR SpeedPar, BYTE  
bWaitCmpEnable )
```

C#

```
Int16 mn_change_v( Byte bLineNo, Byte bDevNo, SPEED_PAR SpeedPar, Byte  
bWaitCmpEnable )
```

Description :

This function is used to change the Drive Speed during motion operations.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
SpeedPar	This parameter is based on the SPEED_PAR structure, and is used to define the motion speed profile for the MN_SERVO device. The structure attributes are as follows:

Member	Description
Start_Speed	The initial servo velocity (PPS), and is also used to instruct the servo to stop.
Drive_Speed	The speed at which the servo moves (PPS).
Correction_Speed	The leaving speed after dog signal occurred (PPS) in automatic home search modes 1, 4, 6, and 7.
AccDec_Mode	Acc and Dec input units: ADC_MODE_RATE (acceleration and deceleration rate : PPS / Sec) or ADC_MODE_TIME (acceleration and deceleration time : Sec)
Acc	Acceleration rate (PPS / S) or acceleration time (Sec)
Dec	Deceleration rate (PPS / S) or deceleration time (Sec)
SCurve_Enable	ENABLE_FEATURE (S curve speed profile) or DISABLE_FEATURE (trapezoidal curve speed profile)
SCurveAcc_Sect	Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0: The ASIC will operate based on a nearly linear acceleration $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
SCurveDec_Sect	Specifies the S-curve range in the S-curve deceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: 0: The ASIC will operate based on a nearly linear acceleration $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component.
Max_Speed	An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10).

bWaitCmpEnable : This parameter is reserved for the feature of comparator trigger changing velocity, and the default value is set as DISABLE_FEATURE.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_POSITION :	The value specified for the bWaitCmpEnable parameter is neither ENABLE_FEATURE
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_MOTION_IS_COMPLETE D :	The specified motion was completed.
ERROR_SET_START_SPEED_OUT_RANGE :	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVING_SPEED_OUT_RANGE :	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_SCURVE_ENABLE :	The SCurve_Enable value specified in the SpeedPar structure is invalid because it is neither DISABLE_FEATURE nor ENABLE_FEATURE.
ERROR_SET_CORRECTION_SPEED_OUT_RANGE :	The Correction_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_INVALID_ACC_DATA :	The value for Acc specified in the SpeedPar structure is 0.
ERROR_INVALID_ADC_MODE :	The AccDec_Mode specified in the SpeedPar structure is invalid because it is neither ADC_MODE_RATE nor ADC_MODE_TIME.
ERROR_SET_ACC_DOUBLE_DEC :	The acceleration speed specified in the SpeedPar structure is double the speed of the deceleration.
ERROR_SET_ACC_OUT_RANGE :	The acceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DEC_OUT_RANGE :	The deceleration value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.

ERROR_SET_ACC_SECT_OUT_R ANGE :	The SCurveAcc_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.
ERROR_SET_DEC_SECT_OUT_R ANGE :	The SCurveDec_Sect value specified in the SpeedPar structure is not within the valid range and must be between 0 and $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$.

8.2 mn_change_p

VC6 / BCB6

short mn_change_p(BYTE bLineNo, BYTE bDevNo, long Position)

C#

Int16 mn_change_p(Byte bLineNo, Byte bDevNo, Int32 Position)

Description :

This function is used to change the total number of output pulses during motion operations.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
Position :	The total number of output pulses.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_POSITION :	The parameter Position is not from -134217728 to 134217727.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 -

63).

ERROR_SET_IO_DEV : The specified device number refers to a serial I/O module, not a motion device.

ERROR_MOTION_IS_COMPLETE D : The specified motion was completed.

8.3 mn_set_cmdcounter

VC6 / BCB6

short mn_set_cmdcounter(BYTE bLineNo, BYTE bDevNo, long Data)

C#

Int16 mn_set_cmdcounter(Byte bLineNo, Byte bDevNo, Int32 Data)

Description :

This function is used to configure the logic-command counter.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- Data : Used to configure the logic-command counter.

Return code :

- | | |
|--------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_INVALID_POSITION : | The parameter Position is not from -134217728 to134217727. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

8.4 mn_set_enccounter

VC6 / BCB6

short mn_set_enccounter(BYTE bLineNo, BYTE bDevNo, long Data)

C#

Int16 mn_set_enccounter(Byte bLineNo, Byte bDevNo, Int32 Data)

Description :

This function is used to configure the encoder-counter.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- Data : The value is set to the encoder input counter

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_POSITION : The parameter **Position** is not from -134217728 to 134217727.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.
- ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.
- ERROR_COMM_DISCONNECT : The connection with the Motionnet device has been lost.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_SET_IO_DEV : The specified device number refers to a serial I/O module, not a motion device.

Status

This chapter contains details of functions that can be used to access the device type information for a module, as well as functions that can be used to read the status of the MN-SERVO motion control module.

9.1 mn_get_dev_info

VC6 / BCB6

```
short mn_get_dev_info( BYTE bLineNo, BYTE bDevNo, BYTE* pData )
```

C#

```
Int16 mn_get_dev_info( Byte bLineNo, Byte bDevNo, ref Byte pData )
```

Description :

This function is used to read the type of device for the specified device number in the communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the device type information will be stored. The addresses are as follows:

Label	Value	Description
DEV_INF_NO_DEV	0x00	There is no device with the specified device number.
DEV_INF_MOTION_DEV	0x8b	This device is a MN-SERVO series Motion Control Module.
DEV_INF_IO_32OUT_DEV	0x80	This device is a MN-3257 digital/analog output control module.
DEV_INF_IO_16IN_16OUT_DEV	0x82	This device is a MN-3254 digital input/output control module.
DEV_INF_IO_32IN_DEV	0x87	This device is a MN-3253 digital input control module.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).

9.2 mn_motion_done

VC6 / BCB6

short mn_motion_done(BYTE bLineNo, BYTE bDevNo, BYTE pDone)

C#

Int16 mn_motion_done(Byte bLineNo, Byte bDevNo, ref Byte pDone)

Description :

This function is used to check whether or not a motion instruction has been completed.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pDone : A pointer to the memory address where the motion status information is stored, which will be:
MOTION_DONE: The motion for the specified device has been completed and the device is stopped.
MOTION_NOT_DONE: The motion for the specified device is still being performed.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

9.3 mn_get_cmdcounter

VC6 / BCB6

short mn_get_cmdcounter (BYTE bLineNo, BYTE bDevNo, long* pData)

C#

Int16 mn_get_cmdcounter(Byte bLineNo, Byte bDevNo, ref Int32 pData)

Description :

This function is used to read the value of the logic command counter.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the value of the logic command counter is stored.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

9.4 mn_get_enccounter

VC6 / BCB6

short mn_get_enccounter (BYTE bLineNo, BYTE bDevNo, long* pData)

C#

Int16 mn_get_enccounter(Byte bLineNo, Byte bDevNo, ref Int32 pData)

Description :

This function is used to read the value of the encoder-position counter.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the value of the encoder-position counter is stored.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

9.5 mn_get_speed

VC6 / BCB6

short mn_get_speed (BYTE bLineNo, BYTE bDevNo, double* pData)

C#

Int16 mn_get_speed(Byte bLineNo, Byte bDevNo, ref double pData)

Description :

This function is used to read the speed for the current motion.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the speed for the current motion is stored.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

9.6 mn_get_mdio_status

VC6 / BCB6

short mn_get_mdio_status (BYTE bLineNo, BYTE bDevNo, MOTION_IO* MotionIO)

C#

Int16 mn_get_mdio_status(Byte bLineNo, Byte bDevNo, ref MOTION_DEV_IO pMotionIO)

Description :

This function is used to check the status of the motion-related Digital Input and Output signals.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- MotionIO : A pointer to the memory address where the information related to the servo driver and machine-related digital input and output signals is stored based on a MOTION_IO structure. The structure attributes are as follows:

Member	Value	Description
SVON	0 / 1	Output Signal: On / Off servo driver excitation
RESET_ALM	0 / 1	Output Signal: On / Off reset servo driver ALARM
RDY	0 / 1	Output Signal: On / Off servo driver RDY
ALM	0 / 1	Output Signal: On / Off servo driver ALARM
PEL	0 / 1	Input Signal: Machine positive Limit
MEL	0 / 1	Input Signal: Machine minus Limit
ORG	0 / 1	Input Signal: Machine Orgin
SDLTC	0 / 1	Input Signal: Machine slowdown point latch
SDIN	0 / 1	Input Signal: Machine slowdown point

INP	0 / 1	Input Signal: servo driver INP
EMG	0 / 1	Input Signal: Machine EMG
EZ	0 / 1	Input Signal: servo driver EZ
ERC	0 / 1	Output Signal: On / Off servo driver ERC

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.

9.7 mn_get_error_status

VC6 / BCB6

short mn_get_error_status(BYTE bLineNo, BYTE bDevNo, DWORD* pData)

C#

Int16 mn_get_error_status(Byte bLineNo, Byte bDevNo, ref UInt32 pData)

Description :

This function is used to read the error status of a specified device.

.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the error status is stored. The addresses for specific errors are as follows:

Label	Value	Description
ERR_STATUS_SW_PEL_STOP	0x0001	Software positive limit is triggered.
ERR_STATUS_SW_MEL_STOP	0x0002	Software minus limit is triggered.
ERR_STATUS_PEL_STOP	0x0008	Hardware positive limit is triggered.
ERR_STATUS_MEL_STOP	0x0010	Hardware minus limit is triggered.
ERR_STATUS_ALM_STOP	0x0020	ALARM signal is triggered.
ERR_STATUS_EMG_STOP	0x0080	EMG signal is triggered.
ERR_STATUS_SD_STOP	0x0100	Slowdown point stop is triggered.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.

9.8 mn_get_latch_cmdcounter

VC6 / BCB6

short mn_get_latch_cmdcounter (BYTE bLineNo, BYTE bDevNo, long* pData)

C#

Int16 mn_get_latch_cmdcounter(Byte bLineNo, Byte bDevNo, ref Int32 pData)

Description :

This function is used to read the value of the latched command counter.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the value of the latched command counter is stored.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

9.9 mn_get_latch_enccounter

VC6 / BCB6

short mn_get_latch_enccounter (BYTE bLineNo, BYTE bDevNo, long* pData)

C#

Int16 mn_get_latch_enccounter(Byte bLineNo, Byte bDevNo, ref Int32 pData)

Description :

This function is used to read the value of the latched encoder-position counter.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- pData : A pointer to the memory address where the value of the latched encoder-position counter is stored.

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_NO_DEV_FOUND : | None of the active devices on the communication line are accessible. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_COMM_DISCONNECT : | The connection with the Motionnet device has been lost. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_IO_DEV : | The specified device number refers to a serial I/O module, not a motion device. |

9.10 mn_get_speed_range

VC6 / BCB6

```
short mn_get_speed_range ( BYTE bLineNo, BYTE bDevNo, MaxSpeed Max_Speed,  
    AXIS_RANGE_SETTINGS* pAxisRange )
```

C#

```
Int16 mn_get_speed_range ( Byte bLineNo, Byte bDevNo, ref MaxSpeed Max_Speed, ref  
    AXIS_RANGE_SETTINGS pAxisRange )
```

Description :

This function is used to read these limit values including speed, acceleration time, and acceleration rate by argument of MaxSpeed.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- Max_Speed :** An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10).
- pAxisRange :** This parameter is based on the AXIS_RANGE_SETTINGS structure, and is used to define the speed limit profile for the MN_SERVO service. The structure attributes are as follows:

Member	Describe
MinSpeed	The minimum servo velocity (PPS)
MaxSpeed	The maximum servo velocity (PPS)
MinAccTime	The fastest servo acceleration (Sec.)
MaxAccTime	The slowest servo acceleration (Sec.)
MinAccRates	The minimum servo acceleration (PPS/Sec.)
MaxAccRates	The maximum servo acceleration (PPS/Sec.)

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_SET_AI_DEV	The specified device is analog input module
ERROR_INVALID_MAX_SPEED_S ELECTION	The Max_Speed value specified in the SpeedPar structure

9.11 mn_get_tcurve_acc_range

VC6 / BCB6

short mn_get_tcurve_acc_range (BYTE bLineNo, BYTE bDevNo, MaxSpeed Max_Speed,
double dStartSpeed, double dDriveSpeed, AXIS_RANGE_SETTINGS* pAxisRange)

C#

Int16 mn_get_tcurve_acc_range (Byte bLineNo, Byte bDevNo, ref MaxSpeed Max_Speed,
double dStartSpeed, double dDriveSpeed, ref AXIS_RANGE_SETTINGS pAxisRange)

Description :

This function is used to read these T-curve acceleration limit values including speed, acceleration time, and acceleration rate by argument of MaxSpeed, StartSpeed and DriveSpeed. MaxSpeed has an effect on the limit of acceleration rate and speed; StartSpeed and DriveSpeed have effect on the limit of acceleration time.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- Max_Speed : An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10).
- dStartSpeed The initial servo velocity (PPS), and is also used to instruct the servo to stop.
- dDriveSpeed The speed at which the servo moves (PPS).
- pAxisRange : This parameter is based on the AXIS_RANGE_SETTINGS structure, and is used to define the speed limit profile for the MN_SERVO service. The structure attributes are as follows:

Member	Describe
MinSpeed	The minimum servo velocity (PPS)
MaxSpeed	The maximum servo velocity (PPS)
MinAccTime	The fastest servo acceleration (Sec.)
MaxAccTime	The slowest servo acceleration (Sec.)
MinAccRates	The minimum servo acceleration (PPS/Sec.)
MaxAccRates	The maximum servo acceleration (PPS/Sec.)

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_SET_AI_DEV	The specified device is analog input module
ERROR_INVALID_MAX_SPEED_SELECTION	The Max_Speed value specified in the SpeedPar structure
ERROR_START_SPEED_EXCEED_DRIVE_SPEED	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_SET_START_SPEED_OUT_RANGE	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVE_SPEED_OUT_RANGE	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.

9.12 mn_get_scurve_acc_range

VC6 / BCB6

```
short mn_get_tcurve_acc_range ( BYTE bLineNo, BYTE bDevNo, MaxSpeed Max_Speed,  
double dStartSpeed, double dDriveSpeed, double dScurveSect , AXIS_RANGE_SETTINGS*  
pAxisRange )
```

C#

```
Int16 mn_get_tcurve_acc_range ( Byte bLineNo, Byte bDevNo, ref MaxSpeed pMaxSpeed,  
double dStartSpeed, double dDriveSpeed, double dScurveSect , ref AXIS_RANGE_SETTINGS  
pAxisRange )
```

Description :

This function is used to read these S-curve acceleration limit values including speed, acceleration time, and acceleration rate by argument of MaxSpeed, StartSpeed, DriveSpeed and ScurveSection. MaxSpeed has an effect on the limit of acceration rate and speed; StartSpeed, and DriveSpeed have effect on the limit of acceration time; ScurveSection has an effect on the limit of acceration time when S-curve acceleration is necessary.

Parameters :

- | | |
|-------------|---|
| bLineNo : | The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch. |
| bDevNo : | The specific device number that was configured via the DIP Switch on the MN-SERVO series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line. |
| Max_Speed : | An enumerated type that is used to select the maximum speed and the corresponding resolution(0~10). |
| dStartSpeed | The initial servo velocity (PPS), and is also used to instruct the servo to stop. |
| dDriveSpeed | The speed at which the servo moves (PPS). |
| dScurveSect | Specify the S-curve range in the S-curve acceleration range, where the range is from 0 to $((\text{Drive_Speed} - \text{Start_Speed}) / 2)$:
0: The ASIC will operate based on a nearly linear acceleration
$((\text{Drive_Speed} - \text{Start_Speed}) / 2)$: The operation will be performed using S-curve acceleration without any linear component. |

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT :	The connection with the Motionnet device has been lost.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_SET_IO_DEV :	The specified device number refers to a serial I/O module, not a motion device.
ERROR_SET_AI_DEV	The specified device is analog input module
ERROR_INVALID_MAX_SPEED_SELECTION	The Max_Speed value specified in the SpeedPar structure
ERROR_START_SPEED_EXCEED_DRIVE_SPEED	The value for the Start_Speed specified in the SpeedPar structure is greater than the Drive_Speed value.
ERROR_SET_START_SPEED_OUT_RANGE	The Start_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.
ERROR_SET_DRIVE_SPEED_OUT_RANGE	The Drive_Speed value specified in the SpeedPar structure is greater than the range specified for MaxSpeed.

pAxisRange : This parameter is based on the AXIS_RANGE_SETTINGS structure, and is used to define the speed limit profile for the MN_SERVO service. The structure attributes are as follows:

Member	Describe
MinSpeed	The minimum servo velocity (PPS)
MaxSpeed	The maximum servo velocity (PPS)
MinAccTime	The fastest servo acceleration (Sec.)
MaxAccTime	The slowest servo acceleration (Sec.)
MinAccRates	The minimum servo acceleration (PPS/Sec.)
MaxAccRates	The maximum servo acceleration (PPS/Sec.)

CHAPTER 10

I/O extension

This chapter describes the I/O-related functions of the PISO-MN200 board, which provides 8 Digital Input and 4 Digital Output channels. In addition, extension IO modules, including the MN-3253 (32-point Digital Input), the MN-3254 (16-point Digital Input and Digital Output), and the MN-3257 (32-point Digital Output), can be connected via the Motionnet communication line to provide time-determined information updates.

10.1 mn200_get_di

VC6 / BCB6

short mn200_get_di(BYTE bCardID, BYTE* pData)

C#

Int16 mn200_get_di(Byte bCardID, ref Byte pData)

Description :

This function is used to read the Digital Inputs of the PISO-MN200 board.

Parameters :

bCardID : The Card ID that was configured via the DIP Switch on the Motionnet board.

pData : A pointer to the memory address where the data for the 8 Digital Input points is stored. Each bit represents the corresponding Digital Input signal, as shown in the table below.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_7	DI_6	DI_5	DI_4	DI_3	DI_2	DI_1	DI_0

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.

10.2 mn200_set_do

VC6 / BCB6

short mn200_set_do(BYTE bCardID, BYTE bData)

C#

Int16 mn200_set_do(Byte bCardID, Byte bData)

Description :

This function sets the digital output points of PISO-MN200 board.

Parameters :

bCardID : The Card ID that was configured via the DIP Switch on the Motionnet board.

bData : Used to set the 4 Digital Output points. Each bit represents the corresponding Digital Output signal, as shown in the table below.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
				DO_3	DO_2	DO_1	DO_0

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_INVALID_OUTPUT_DATA :	The value of the bData parameter exceeds 0x0F.

10.3 mn200_get_do

VC6 / BCB6

```
short mn200_get_do( BYTE bCardID, BYTE* pData )
```

C#

```
Int16 mn200_get_do( Byte bCardID, ref Byte pData )
```

Description :

This function is used to read the Digital Output points of the PISO-MN200 board.

Parameters :

bCardID : The Card ID that was configured via the DIP Switch on the Motionnet board.

pData : A pointer to the memory address where the data for the 4 Digital Output points is stored. Each bit represents the corresponding Digital Output signal, as shown in the table below.

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
				DO_3	DO_2	DO_1	DO_0

Return code :

SUCCESS : The function was executed successfully.

ERROR_NO_CARD_FOUND : No active cards were found in the system.

ERROR_INVALID_LINE_NO : The specified line number is invalid.

10.4 mn_get_di_bit

VC6 / BCB6

short mn_get_di_bit(BYTE bLineNo, BYTE bDevNo, BYTE bBitNo, BYTE* pData)

C#

Int16 mn_get_di_bit(Byte bLineNo, Byte bDevNo, Byte bBitNo, ref Byte pData)

Description :

This function is used to read a one bit value from the Digital Input points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bBitNo : The number of the Digital Input bit that is to be read:
When connecting to an MN-3253 expansion board, select from points 0 to 31.
When connecting to an MN-3254 expansion board, select from points 0 to 15.
- pData : A pointer to the memory address where the data for the Digital Input point specified by the bBitNo parameter is stored. The value of this parameter can be either 0 or 1.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_BITNO : The value specified for the bBitNo parameter is not within the valid range.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.

ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3257 expansion board.
ERROR_SET_BITNO :	The value specified for the bitNo parameter is not within the valid range for an MN3254 expansion board.

10.5 mn_set_do_bit

VC6 / BCB6

short mn_set_do_bit(BYTE bLineNo, BYTE bDevNo, BYTE bBitNo, BYTE bData)

C#

Int16 mn_set_do_bit(Byte bLineNo, Byte bDevNo, Byte bBitNo, Byte bData)

Description :

This function is used to set a one bit value on the Digital Output points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bBitNo : The number of the Digital Input bit that is to be read:
When connecting to an MN-3254 expansion board, select from points 0 to 15.
When connecting to an MN-3257 expansion board, select from points 0 to 31.
- bData : Used to set the Digital Output point specified by the bBitNo parameter. The value for this parameter can be either 0 or 1.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_BITNO : The value specified for the bBitNo parameter is not within the valid range.
- ERROR_INVALID_OUTPUT_DATA : The value of the bData parameter can only be 0 or 1.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.

ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3253 expansion board.
ERROR_SET_BITNO :	The value specified for the bitNo parameter is not within the valid range for an MN3254 expansion board.

10.6 mn_get_do_bit

VC6 / BCB6

short mn_get_do_bit(BYTE bLineNo, BYTE bDevNo, BYTE bBitNo, BYTE* pData)

C#

Int16 mn_get_do_bit(Byte bLineNo, Byte bDevNo, Byte bBitNo, ref Byte pData)

Description :

This function is used to read a one bit value from the Digital Output points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bBitNo : The number of the Digital Input bit that is to be read:
When connecting to an MN-3254 expansion board, select from points 0 to 15.
When connecting to an MN-3257 expansion board, select from points 0 to 31.
- pData : A pointer to the memory address where the data for the Digital Input point specified by the bBitNo parameter is stored. The value of this parameter can be either 0 or 1.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_INVALID_BITNO : The value specified for the bBitNo parameter is not within the valid range.
- ERROR_INVALID_OUTPUT_DATA : The value of the bData parameter can only be 0 or 1.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.

ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3253 expansion board.
ERROR_SET_BITNO :	The value specified for the bitNo parameter is not within the valid range for an MN3254 expansion board.

10.7 mn_get_di_byte

VC6 / BCB6

short mn_get_di_byte(BYTE bLineNo, BYTE bDevNo, BYTE bByteNo, BYTE* pData)

C#

Int16 mn_get_di_byte(Byte bLineNo, Byte bDevNo, Byte bByteNo, ref Byte pData)

Description :

This function is used to read a one byte value from the Digital Input points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bByteNo : The number of the Digital Input byte that is to be read:
When connecting to an MN-3253 expansion board, select from points 0 to 3.
When connecting to an MN-3254 expansion board, select from points 0 to 1.
- pData : A pointer to the memory address where the data for the 8 Digital Input points specified by the bByteNo parameter is stored. Each bit represents the corresponding Digital Input signal, as shown in the tables below.

bByteNo = 0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_7	DI_6	DI_5	DI_4	DI_3	DI_2	DI_1	DI_0

bByteNo = 1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_15	DI_14	DI_13	DI_12	DI_11	DI_10	DI_9	DI_8

bByteNo = 2

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_23	DI_22	DI_21	DI_20	DI_19	DI_18	DI_17	DI_16

bByteNo = 3

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_31	DI_30	DI_29	DI_28	DI_27	DI_26	DI_25	DI_24

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_BYTEN0 :	The value specified for the bByteNo parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3257 expansion board.
ERROR_SET_BYTEN0 :	The value specified for the bByteNo parameter is not within the valid range for an MN3254 expansion board.

10.8 mn_set_do_byte

VC6 / BCB6

short mn_set_do_byte(BYTE bLineNo, BYTE bDevNo, BYTE bByteNo, BYTE bData)

C#

Int16 mn_set_do_byte(Byte bLineNo, Byte bDevNo, Byte bByteNo, Byte bData)

Description :

This function sets one byte value of digital output points of the IO module on Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bByteNo :** The number of the Digital Input bit that is to be read:
When connecting to an MN-3254 expansion board, select from points 0 to 1.
When connecting to an MN-3257 expansion board, select from points 0 to 3.
- bData :** Used to set the 8 Digital Output points specified by the bByteNo parameter. Each bit represents the corresponding Digital Output signal, as shown in the tables below.

bByteNo = 0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_7	DO_6	DO_5	DO_4	DO_3	DO_2	DO_1	DO_0

bByteNo = 1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_15	DO_14	DO_13	DO_12	DO_11	DO_10	DO_9	DO_8

bByteNo = 2

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_23	DO_22	DO_21	DO_20	DO_19	DO_18	DO_17	DO_16

bByteNo = 3

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_31	DO_30	DO_29	DO_28	DO_27	DO_26	DO_25	DO_24

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_BYTEN0 :	The value specified for the bByteNo parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3253expansion board.
ERROR_SET_BYTEN0 :	The value specified for the bByteNo parameter is not within the valid range for an MN3254 expansion board.

10.9 mn_get_do_byte

VC6 / BCB6

short mn_get_do_byte(BYTE bLineNo, BYTE bDevNo, BYTE bByteNo, BYTE* pData)

C#

Int16 mn_get_do_byte(Byte bLineNo, Byte bDevNo, Byte bByteNo, ref Byte pData)

Description :

This function is used to read a one byte value from the Digital Output points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bByteNo :** The number of the Digital Input bit that is to be read:
When connecting to an MN-3254 expansion board, select from points 0 to 1.
When connecting to an MN-3257 expansion board, select from points 0 to 3.
- pData :** A pointer to the memory address where the data for the 8 Digital Output points specified by the bByteNo parameter is stored. Each bit represents the corresponding Digital Output signal, as shown in the table below.

bByteNo = 0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_7	DO_6	DO_5	DO_4	DO_3	DO_2	DO_1	DO_0

bByteNo = 1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_15	DO_14	DO_13	DO_12	DO_11	DO_0	DO_9	DO_8

bByteNo = 2

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_23	DO_22	DO_21	DO_20	DO_19	DO_18	DO_17	DO_16

bByteNo = 3

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DO_31	DO_30	DO_29	DO_28	DO_27	DO_26	DO_25	DO_24

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_BYTEN0 :	The value specified for the bByteNo parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3253expansion board.
ERROR_SET_BYTEN0 :	The value specified for the bByteNo parameter is not within the valid range for an MN3254 expansion board.

10.10 mn_get_di_word

VC6 / BCB6

short mn_get_di_word(BYTE bLineNo, BYTE bDevNo, BYTE bWordNo, WORD* pData)

C#

Int16 mn_get_di_word(Byte bLineNo, Byte bDevNo, Byte bWordNo, ref UInt16 pData)

Description :

This function is used to read a one WORD value from the Digital Input points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bWordNo :** The number of the Digital Input WORD that is to be read:
When connecting to an MN-3253 expansion board, select from points 0 to 1.
When connecting to an MN-3254 expansion board, only 0 can be selected.
- pData :** A pointer to the memory address where the data for the 16 Digital Input points specified by the bWordNo parameter is stored. Each bit represents the corresponding Digital Input signal, as shown in the table below.

bWordNo = 0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_7	DI_6	DI_5	DI_4	DI_3	DI_2	DI_1	DI_0
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
DI_15	DI_14	DI_13	DI_12	DI_11	DI_10	DI_9	DI_8

bWordNo = 1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_23	DI_22	DI_21	DI_20	DI_19	DI_18	DI_17	DI_16
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
DI_31	DI_30	DI_29	DI_28	DI_27	DI_26	DI_25	DI_24

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_WORDNO :	The value specified for the bWordNo parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3257expansion board.
ERROR_SET_WORDNO :	The value specified for the bWordNo parameter is not within the valid range for an MN3254 expansion board.

10.11 mn_set_do_word

VC6 / BCB6

short mn_set_do_word(BYTE bLineNo, BYTE bDevNo, BYTE bWordNo, WORD wData)

C#

Int16 mn_set_do_word(Byte bLineNo, Byte bDevNo, Byte bWordNo, UInt16 wData)

Description :

This function is used to set a one WORD value for the Digital Output points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bWordNo :** The number of the Digital Output WORD that is to be set:
When connecting to an MN-3254 expansion board, only 0 can be selected.
When connecting to an MN-3257 expansion board, select from points 0 to 1.
- wData :** Used to set the 16 Digital Output points specified by the bWordNo parameter. Each bit represents the corresponding Digital Output signal, as shown in the table below.

bWordNo = 0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_7	DI_6	DI_5	DI_4	DI_3	DI_2	DI_1	DI_0
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
DI_15	DI_14	DI_13	DI_12	DI_11	DI_10	DI_9	DI_8

bWordNo = 1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_23	DI_22	DI_21	DI_20	DI_19	DI_18	DI_17	DI_16
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
DI_31	DI_30	DI_29	DI_28	DI_27	DI_26	DI_25	DI_24

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_WORDNO :	The value specified for the bWordNo parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3257expansion board.
ERROR_SET_WORDNO :	The value specified for the bWordNo parameter is not within the valid range for an MN3254 expansion board.

10.12 mn_get_do_word

VC6 / BCB6

short mn_get_do_word(BYTE bLineNo, BYTE bDevNo, BYTE bWordNo, WORD* pData)

C#

Int16 mn_get_do_word(Byte bLineNo, Byte bDevNo, Byte bByteNo, ref UInt16 pData)

Description :

This function is used to read a one WORD value from the Digital Output points of the IO module on a Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bWordNo :** The number of the Digital Output WORD that is to be set:
When connecting to an MN-3254 expansion board, only 0 can be selected.
When connecting to an MN-3257 expansion board, select from points 0 to 1.
- pData :** A pointer to the memory address where the data for the 16 Digital Output points specified by the bWordNo parameter is stored. Each bit represents the corresponding Digital Output signal, as shown in the table below.

bWordNo = 0

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_7	DI_6	DI_5	DI_4	DI_3	DI_2	DI_1	DI_0
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
DI_15	DI_14	DI_13	DI_12	DI_11	DI_10	DI_9	DI_8

bWordNo = 1

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DI_23	DI_22	DI_21	DI_20	DI_19	DI_18	DI_17	DI_16
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
DI_31	DI_30	DI_29	DI_28	DI_27	DI_26	DI_25	DI_24

Return code :

SUCCESS :	The function was executed successfully.
ERROR_INVALID_WORDNO :	The value specified for the bWordNo parameter is not within the valid range.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_NO_DEV_FOUND :	None of the active devices on the communication line are accessible.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not a serial I/O module.
ERROR_SET_IO_DEV :	The device specified by the bDevNo parameter refers to an MN-3257expansion board.
ERROR_SET_WORDNO :	The value specified for the bWordNo parameter is not within the valid range for an MN3254 expansion board.

Advanced I/O Functions

The Motionnet IO functions described in Chapter 9 each contain a parameter that can be used to check the communication status of the device. If a communication error occurs, an error code will automatically be returned, and the error flag for the device will be cleared to ensure that the correct information is returned should there be another communication error.

However, these checks will affect the performance of the device. To eliminate any degradation in performance, and to ensure the device meets high-efficiency requirements and the needs of experienced users, ICP DAS provides a variety of advanced functions, including `mn_get_port_bit()`, `mn_set_port_bit()`, `mn_get_port_byte()`, `mn_set_port_byte()`, each of which are described below. These functions not only provide an interface for a range of parameters, but also remove the need to check the communication status, as well as eliminating other protection steps, thereby shortening the operating time required by the function.

A disadvantage of these functions, however, is that in order to check the communication status and to clear the communication error flag for the device, the `mn_get_line_status()`, `mn_get_slave_error_table()` and `mn_clear_slave_error_flag()` functions will need to be called manually.

11.1 mn_get_port_bit

VC6 / BCB6

```
short mn_get_port_bit(BYTE bLineNo, BYTE bDevNo, BYTE bPortNo, BYTE bBitNo, BYTE*  
pData)
```

C#

```
Int16 mn_get_port_bit(Byte bLineNo, Byte bDevNo, Byte bPortNo, BYTE bBitNo, ref UInt8  
pData)
```

Description :

This function is used to read the bit value for the Digital Input/Output points on the specified port of the IO module on the Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bPortNo :** The number of the Port that is to be read, which can be from 0 to 3.
- bBitNo :** The value of the bit that is to be read, within the range of 0 to 7.
- pData :** A pointer to the memory address where the data for the Digital Output point specified by the bPortNo and bBitNo parameters is stored. The value can be either 0 or 1.

Return code :

- | | |
|--------------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_CARD_ID : | The value specified for the bCardID parameter doesn't correspond to the Motionnet board that was found by the operating system. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |
| ERROR_SET_BYTEN0 : | The value specified for the bPortNo parameter is not within the valid range (0 to 3). |
| ERROR_INVALID_BITNO : | The value specified for the bBitNo parameter is not within the valid range (0 to 7). |

11.2 mn_set_port_bit

VC6 / BCB6

```
short mn_set_port_bit( BYTE bLineNo, BYTE bDevNo, BYTE bPortNo, BYTE bBitNo, BYTE  
bData )
```

C#

```
Int16 mn_set_port_bit( Byte bLineNo, Byte bDevNo, Byte bPortNo, Byte bBitNo, Byte bData )
```

Description :

This function is used to set the bit value of the Digital Output points of the specified port of the IO module on Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bPortNo :** The number of the Port that is to be set:
When connecting to a 32-point Digital Output device, select from Ports 0 to 3.
When connecting to 16-point Digital Input and 16-point Digital Output device, select from Ports 2 or 3.
- bBitNo :** The value of the bit that is to be set, within the range of 0 to 7.
- bData :** The value of the Digital Output point to be set as specified by the bBitNo parameter. The value can be either 0 or 1.

Return code :

- SUCCESS :** The function was executed successfully.
- ERROR_NO_CARD_FOUND :** No active cards were found in the system.
- ERROR_INVALID_CARD_ID :** The value specified for the bCardID parameter doesn't correspond to the Motionnet board that was found by the operating system.
- ERROR_INVALID_DEV_NO :** The specified device number is not within the valid range (0 - 63).
- ERROR_SET_BYTEN0 :** The value specified for the bPortNo parameter is not within the valid range (0 to 3).
- ERROR_INVALID_BITNO :** The value specified for the bBitNo parameter is not within the valid range (0 to 7).

11.3 mn_get_port_byte

VC6 / BCB6

short mn_get_port_byte(BYTE bLineNo, BYTE bDevNo, BYTE bPortNo, BYTE* pData)

C#

Int16 mn_get_port_byte(Byte bLineNo, Byte bDevNo, Byte bPortNo, ref UInt8 pData)

Description :

This function is used to read the byte value of the Digital Input/Output points on the specified port of the IO module on the Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bPortNo : The number of the Port that is to be read, which can be from 0 to 3.
- pData : A pointer to the memory address where the data for the 8 Digital Output points specified by the bPortNo parameter is stored. The value can be either 0 or 1.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_CARD_ID : The value specified for the bCardID parameter doesn't correspond to the Motionnet board that was found by the operating system.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_INVALID_BYTEN0 : The value specified for the bPortNo parameter is not within the valid range (0 to 3).

11.4 mn_set_port_byte

VC6 / BCB6

short mn_set_port_byte(BYTE bLineNo, BYTE bDevNo, BYTE bportNo, BYTE bData)

C#

Int16 mn_set_port_byte(Byte bLineNo, Byte bDevNo, Byte bportNo, Byte bData)

Description :

This function is used to set the byte value for the Digital Input/Output points on the specified port of the IO module on the Motionnet communication line.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo :** The specific device number that was configured via the DIP Switch on the I/O device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bPortNo :** The number of the Port that is to be set:
When connecting to a 32-point Digital Output device, select from Ports 0 to 3.
When connecting to 16-point Digital Input and 16-point Digital Output device, select from Ports 2 or 3.
- bData :** The value for the 8 Digital Output points to be set as specified by the bPortNo parameter. The value can be either 0 or 1.

Return code :

- SUCCESS :** The function was executed successfully.
- ERROR_NO_CARD_FOUND :** No active cards were found in the system.
- ERROR_INVALID_CARD_ID :** The value specified for the bCardID parameter doesn't correspond to the Motionnet board that was found by the operating system.
- ERROR_INVALID_DEV_NO :** The specified device number is not within the valid range (0 - 63).
- ERROR_INVALID_BYTEN0 :** The value specified for the bPortNo parameter is not within the valid range (0 to 3 for a 32-point Digital Output device, and 2 to 3 for a 16-point Digital Input/16-point Digital Output device).

11.5 mn_get_line_status

VC6 / BCB6

short mn_get_line_status(BYTE bLineNo, WORD * pData)

C#

Int16 mn_get_line_status(Byte bLineNo, ref UInt16 pData)

Description :

This function reads the status of the specified Motionnet communication line. Note that Bit 3 (EIOE) will switch to 1 if an IO communication error occurs.

Parameters :

bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.

pData : A pointer to the memory address where the communication status specified by the bLineNo parameter is stored. The information contained in each of the 16 bits is as follows:

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Reserved	CAER	ERAE	EDTE	EIOE	IOPC	BRKF	CEND
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
Reserved	DBSY	RBSY	SBSY	Reserved	RDBB	TDBB	REF
Symbol	Value	Description					
CEND	0 / 1	1: The motion control register communication has been completed and the next set of data can be sent.					
BRKF	0 / 1	1: A Slave device has received a connection request.					
IOPC	0 / 1	1: The status has been changed for any input port where the "input change interrupt setting" is enabled.					
EIOE	0 / 1	1: IO device communication error occurred					
EDTE	0 / 1	1: Motion control device communication error occurred					
ERAE	0 / 1	1: IO device reception processing error occurred					
CAER	0 / 1	1: A CPU access error occurred					
REF	0 / 1	1: IO device output port data has not been sent yet					
TDBB	0 / 1	1: Motion control register data is sending					
RDBB	0 / 1	1: Motion control register data is receiving					
SBSY	0 / 1	1: IO communication is starting					
RBSY	0 / 1	1: Reset is starting					
DBSY	0 / 1	1: Motion control register data is communicating					

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.

11.6 mn_get_slave_error_table

VC6 / BCB6

short mn_get_slave_error_table (BYTE bLineNo, DWORD[] ErrorTable)

C#

Int16 mn_get_slave_error_table (Byte bLineNo, ref UInt32 ErrorTable)

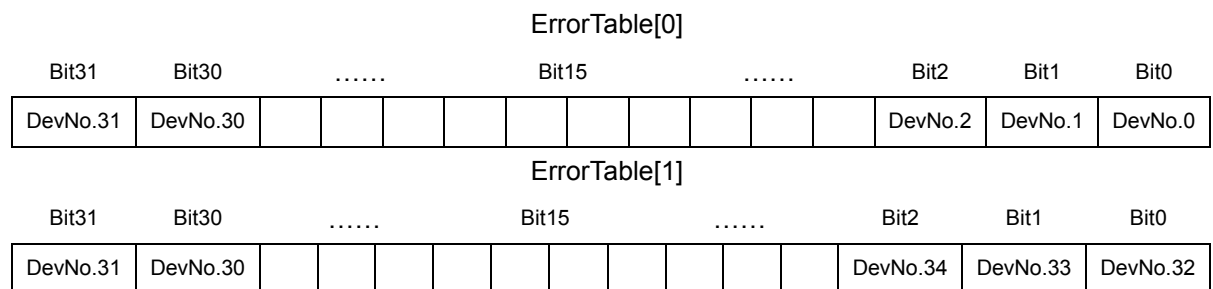
Description :

This function is used to read the flags for the devices on the specified Motionnet communication line where a communication error has occurred.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- ErrorTable :** A pointer to the memory address for the DWORD ErrorTable array that stores the number of the IO device where a communication error has occurred together with the corresponding Bit number. ErrorTable[0] represents devices 0 to 31, and ErrorTable[1] represents devices 32 to 63.

If an IO communication error occurs, the value of the corresponding Bit will be set to 1 until the mn_clear_slave_error_flag() function is called to clear it.



Return code :

- SUCCESS :** The function was executed successfully.
- ERROR_NO_CARD_FOUND :** No active cards were found in the system.
- ERROR_INVALID_LINE_NO :** The specified line number is invalid.

11.7 mn_clear_slave_error_flag

VC6 / BCB6

short mn_clear_slave_error_flag(BYTE bLineNo, DWORD[] ErrorTable)

C#

Int16 mn_clear_slave_error_flag(Byte bLineNo, ref UInt32 ErrorTable)

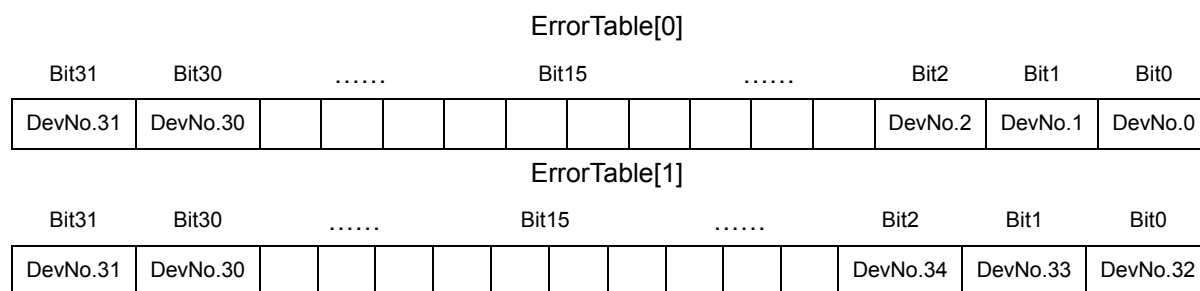
Description :

This function is used to clear the flags for any devices stored in the register that have a communication error.

Parameters :

- bLineNo :** The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- ErrorTable :** A pointer to the memory address for the DWORD ErrorTable array that stores the number of the IO device where a communication error has occurred together with the corresponding Bit number. ErrorTable[0] represents devices 0 to 31, and ErrorTable[1] represents devices 32 to 63.

If an IO communication error occurs, the value of the corresponding Bit will be set to 1 until the mn_clear_slave_error_flag() function is called to clear it.



Return code :

- SUCCESS :** The function was executed successfully.
- ERROR_NO_CARD_FOUND :** No active cards were found in the system.
- ERROR_INVALID_LINE_NO :** The specified line number is invalid.

Analog I/O extension

This chapter describes the Analog I/O-related functions of the PISO-MN200 board, which provides 8 Analog Input and 2 Analog Output channels. In addition, extension IO modules, including the MN-DA2 (2-channel Analog Output), and the MN-AD8 (8-channel Analog Input), can be connected via the Motionnet communication line to provide time-determined information updates.

12.1 mn_set_ao

VC6 / BCB6

short mn_set_ao (BYTE bLineNo, BYTE bDevNo, BYTE bChannelNo, float fData)

C#

Int16 mn_set_ao (Byte bLineNo, Byte bDevNo, Byte bChannelNo, float fData)

Description :

This function sets analog voltage output of the MN-DA2 IO module on Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-DA2 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bChannelNo : The number of the Analog Output Channel that is to be set:
0: AO0 Analog Channel
1: AO1 Analog Channel
- fData : The float value of voltage for the Analog Output. The range if value is from -10 to 10

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CHANNELNO :	The specified channel number of bChannelNo parameter is not a valid value, 0 and 1.
ERROR_SET_AO_VALUE_OUT_RANGE :	The specified voltage number of fData parameter is not within the valid range (-10 - 10)

12.2 mn_set_ao_offset

VC6 / BCB6

short mn_set_ao_offset (BYTE bLineNo, BYTE bDevNo, BYTE bChannelNo, short OffsetLSB)

C#

Int16 mn_set_ao_offset (Byte bLineNo, Byte bDevNo, Byte bChannelNo, Int16 OffsetLSB)

Description :

This function sets linear offset of analog voltage output of the MN-DA2 IO module on Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-DA2 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bChannelNo : The number of the Analog Output Channel that is to be set:
0: AO0 Analog Channel
1: AO1 Analog Channel
- OffsetLSB : The value of linear offset for the Analog Output. The default value is zero. The range of value is from -32768 to 32767

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |

ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CHANNELNO :	The specified channel number of bChannelNo parameter is not a valid value, 0 and 1.

12.3 mn_set_ao_gain

VC6 / BCB6

short mn_set_ao_gain(BYTE bLineNo, BYTE bDevNo, BYTE bChannelNo, float fGainValue)

C#

Int16 mn_set_ao_gain(Byte bLineNo, Byte bDevNo, Byte bChannelNo, float fGainValue)

Description :

This function sets linear gain of analog voltage output of the MN-DA2 IO module on Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-DA2 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bChannelNo : The number of the Analog Output Channel that is to be set:
0: AO0 Analog Channel
1: AO1 Analog Channel
- fGainValue : The value of linear gain for the Analog Output. The default value is one. The range if value is from 0.5 to 2

Return code :

- | | |
|-------------------------|---|
| SUCCESS : | The function was executed successfully. |
| ERROR_NO_CARD_FOUND : | No active cards were found in the system. |
| ERROR_INVALID_LINE_NO : | The specified line number is invalid. |
| ERROR_COMM_NOT_START : | Motionnet I/O communication has not been started. |
| ERROR_INVALID_DEV_NO : | The specified device number is not within the valid range (0 - 63). |

ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CHANNELNO :	The specified channel number of bChannelNo parameter is not a valid value, 0 and 1.

12.4 mn_get_ai

VC6 / BCB6

short mn_get_ai (BYTE bLineNo, BYTE bDevNo, BYTE bChannelNo, float* pData)

C#

Int16 mn_get_ai (Byte bLineNo, Byte bDevNo, Byte bChannelNo, ref Int16 pData)

Description :

This function gets single channel analog voltage input of the MN-AD8 IO module on Motionnet communication line.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-AD8 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bChannelNo :	The number of the Analog Output Channel that is to be set in MN-AD8. The valid range is from 0 to 8, and the 8 th channel is specified as calibration
pData	A pointer to the memory address where the analog voltage information will be stored.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CHANNELN O :	The specified channel number of bChannelNo parameter is not in a valid range from 0 to 8.

12.5 mn_get_ai_all

VC6 / BCB6

short mn_get_ai (BYTE bLineNo, BYTE bDevNo, float pData[])

C#

Int16 mn_get_ai (Byte bLineNo, Byte bDevNo, Int16[] fData)

Description :

This function gets whole channels analog voltage input of the MN-AD8 IO module on Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-AD8 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- fData[] : An array to the memory address where whole analog voltage informations will be stored. The length of array should be 8 columns at least for MN-AD8 I/O module.

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).
- ERROR_NO_DEV_FOUND : None of the active devices on the communication line are accessible.
- ERROR_SET_MOTION_DEV : The specified device number refers to a motion control module, not an analog I/O module.
- ERROR_COMM_DISCONNECT : The I/O communication with the Motionnet device has been lost.
- ERROR_SET_IO_DEV : The specified device number refers to a series I/O module, not an analog I/O module.

12.6 mn_set_cal_src

VC6 / BCB6

short mn_set_cal_src (BYTE bLineNo, BYTE bDevNo, BYTE bltem)

C#

Int16 mn_set_cal_src (Byte bLineNo, Byte bDevNo, Byte bltem)

Description :

This function sets circuit source of analog voltage input calibration channel(8th Channel) in the MN-AD8 IO module on Motionnet communication line.

Parameters :

- bLineNo : The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
- bDevNo : The specific device number that was configured via the DIP Switch on the MN-AD8 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
- bltem A particular value to assign calibration items about analog voltage input source of MN-AD8 I/O module

Label	Value	Description
CAL_SRC_NONE	0	Disable the port of channel 8 th .
CAL_SRC_AGND	1	Switch channel 8 th to connect 0V circuit source for offset calibration
CAL_SRC_REF_5V	2	Switch channel 8 th to connect 5V circuit source for gain calibration

Return code :

- SUCCESS : The function was executed successfully.
- ERROR_NO_CARD_FOUND : No active cards were found in the system.
- ERROR_INVALID_LINE_NO : The specified line number is invalid.
- ERROR_COMM_NOT_START : Motionnet I/O communication has not been started.
- ERROR_INVALID_DEV_NO : The specified device number is not within the valid range (0 - 63).

ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CALIBRATION_SOURCE :	The specified value of bltem parameter is not within the valid source range (0, 1, 2)

12.7 mn_set_cal

VC6 / BCB6

short mn_set_cal (BYTE bLineNo, BYTE bDevNo, BYTE bltem, BYTE bValue)

C#

Int16 mn_set_cal (Byte bLineNo, Byte bDevNo, Byte bltem, Byte bValue)

Description :

This function sets calibration value of the MN-AD8 IO module on Motionnet communication line.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-AD8 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bltem	A particular value to assign calibration items about analog voltage input of MN-AD8 I/O module

Label	Value	Description
CAL_ITEM_REF_5V	0	Adjust voltage reference from MN-AD8 I/O module into regular 5V
CAL_ITEM_OFFSET	1	Calibration item for offset adjustment
CAL_ITEM_GAIN	2	Calibration item for gain adjustment

Note

1. Please execute mn_set_cal_src(bLineNo, bDevNo, CAL_SRC_AGND) if the calibration choice is CAL_ITEM_OFFSET
2. Please execute mn_set_cal_src(bLineNo, bDevNo, CAL_SRC_REF_5V) if the calibration choice is CAL_ITEM_GAIN

bValue	A calibration value associated with bltem parameter with a valid range from 0 to 255
--------	--

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CALIBRATION_ITEM	The specified value of bltem parameter is not within the valid item range (0, 1, 2)

12.8 mn_save_cal

VC6 / BCB6

short mn_save_cal (BYTE bLineNo, BYTE bDevNo, BYTE bltem)

C#

Int16 mn_save_cal (Byte bLineNo, Byte bDevNo, Byte bltem)

Description :

This function is used to save the specified calibration value in EEPROM(Electrically-Erasable Programmable Read-Only Memory) of the MN-AD8 IO module on Motionnet communication line.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-AD8 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bltem	A particular value to assign the storage of calibration items about analog voltage input of MN-AD8 I/O module

Label	Value	Description
CAL_ITEM_REF_5V	0	Adjust voltage reference from MN-AD8 I/O module into regular 5V
CAL_ITEM_OFFSET	1	Calibration item for offset adjustment
CAL_ITEM_GAIN	2	Calibration item for gain adjustment
CAL_ITEM_ALL	3	Save all above calibration values

Note

The calibration has been qualified before shipping. To do recalibration is based on the situation what the voltage is too much deviation from the default offset and gain value.

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.

ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.
ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CALIBRATION_ITEM	The specified value of bltem parameter is not within the valid item range (0, 1, 2, 3)

12.9 mn_load_cal

VC6 / BCB6

short mn_load_cal (BYTE bLineNo, BYTE bDevNo, BYTE bltem)

C#

Int16 mn_save_cal (Byte bLineNo, Byte bDevNo, Byte bltem)

Description :

This function is used to load the specified calibration value in EEPROM(Electrically-Erasable Programmable Read-Only Memory) of the MN-AD8 IO module on Motionnet communication line.

Parameters :

bLineNo :	The specific line number allocated based on the Card ID that was configured via the onboard DIP Switch.
bDevNo :	The specific device number that was configured via the DIP Switch on the MN-AD8 series device. The valid range for this value is 0 to 63, and duplicate numbers are not permitted on the same communication line.
bltem	A particular value to assign the storage of calibration items about analog voltage input of MN-AD8 I/O module

Label	Value	Description
CAL_ITEM_REF_5V	0	Adjust voltage reference from MN-AD8 I/O module into regular 5V
CAL_ITEM_OFFSET	1	Calibration item for offset adjustment
CAL_ITEM_GAIN	2	Calibration item for gain adjustment
CAL_ITEM_ALL	3	Save all above calibration values

Return code :

SUCCESS :	The function was executed successfully.
ERROR_NO_CARD_FOUND :	No active cards were found in the system.
ERROR_INVALID_LINE_NO :	The specified line number is invalid.
ERROR_COMM_NOT_START :	Motionnet I/O communication has not been started.
ERROR_INVALID_DEV_NO :	The specified device number is not within the valid range (0 - 63).
ERROR_NO_DEV_FOUND	None of the active devices on the communication line are accessible.
ERROR_SET_MOTION_DEV :	The specified device number refers to a motion control module, not an analog I/O module.

ERROR_COMM_DISCONNECT	The I/O communication with the Motionnet device has been lost.
ERROR_SET_IO_DEV :	The specified device number refers to a series I/O module, not an analog I/O module.
ERROR_INVALID_CALIBRATION_ITEM	The specified value of bltem parameter is not within the valid item range (0, 1, 2, 3)

APPENDIX A

Error Code

Label	Value
SUCCESS	0
ERROR_NO_CARD_FOUND	-100
ERROR_IOCTL_FAILED	-101
ERROR_INVALID_LINE_NO	-102
ERROR_COMM_NOT_START	-103
ERROR_INVALID_DEV_NO	-104
ERROR_NO_DEV_FOUND	-105
ERROR_SET_IO_DEV	-106
ERROR_SET_MOTION_DEV	-107
ERROR_START_SPEED_EXCEED_DRIVING_SPEED	-108
ERROR_INVALID_MAX_SPEED_SELECTION	-109
ERROR_SET_START_SPEED_OUT_RANGE	-110
ERROR_SET_DRIVING_SPEED_OUT_RANGE	-111
ERROR_INVALID_SCURVE_ENABLE	-112
ERROR_INVALID_ADC_MODE	-113
ERROR_INVALID_ACC_DATA	-114
ERROR_SET_ACC_DOUBLE_DEC	-115
ERROR_SET_ACC_OUT_RANGE	-116
ERROR_SET_DEC_OUT_RANGE	-117
ERROR_SET_ACC_SECT_OUT_RANGE	-118
ERROR_SET_DEC_SECT_OUT_RANGE	-119
ERROR_SET_CORRECTION_SPD_OUT_RANGE	-120
ERROR_SET_SCAN_INDEX_OUT_RANGE	-121
ERROR_INVALID_COMM_SPEED	-122
ERROR_COMM_NOT_STOP	-123
ERROR_SET_DATA	-124

ERROR_INVALID_CONFIG_ITEM	-125
ERROR_INVALID_FILTER_ITEM	-126
ERROR_INVALID_SOFTWARE_LIMIT_SOURCE	-127
ERROR_INVALID_STOP_MODE	-128
ERROR_CONFLICT_WITH_VRING	-129
ERROR_INVALID_MOVE_DIRECTION	-130
ERROR_INVALID_HOME_MODE	-131
ERROR_INVALID_EZ_COUNT	-132
ERROR_MOVE_HOLD	-133
ERROR_EMG_SIGNAL_ON	-134
ERROR_ALM_SIGNAL_ON	-135
ERROR_MEL_SIGNAL_ON	-136
ERROR_PEL_SIGNAL_ON	-137
ERROR_WAIT_INP	-138
ERROR_WAIT_ERC	-139
ERROR_WAIT_BACKLASH_CORRECT	-140
ERROR_WAIT_PULSE_IN	-141
ERROR_MOTION_NOT_COMPLETE	-142
ERROR_INVALID_FIX_MOVE_MODE	-143
ERROR_REGISTER_FULL	-144
ERROR_INVALID_POSITION	-145
ERROR_INVALID_GROUPNO	-146
ERROR_INVALID_NUM_DEV	-147
ERROR_GROUP_ALREADY_HOLD	-148
ERROR_SET_ARC_FINISH_POS	-149
ERROR_SET_BIT_DUMMY_DEV	-150
ERROR_INVALID_DEV_HOLD	-151
ERROR_GROUP_NOT_HOLD	-152
ERROR_INVALID_VRING_SOURCE	-153
ERROR_INVALID_VRING_VALUE	-154
ERROR_INVALID_CMPTRIG_SOURCE	-155
ERROR_INVALID_CMPTRIG_DIRECTION	-156
ERROR_INVALID_CMPTRIG_PITCH	-157
ERROR_MOTION_IS_COMPLETED	-158
ERROR_INVALID_CARD_ID	-159
ERROR_INVALID_OUTPUT_DATA	-160
ERROR_INVALID_BITNO	-161
ERROR_SET_BITNO	-162

ERROR_INVALID_BYTEN0	-163
ERROR_SET_BYTEN0	-164
ERROR_CARD_ID_DUPLICATED	-165
ERROR_CONFIG_FILE_LOAD	-166
ERROR_CONFIG_FILE_MATCH	-167
ERROR_COMM_DISCONNECT	-168
ERROR_INVALID_WORDNO	-169
ERROR_SET_WORDNO	-170
ERROR_STEP_HOME_FAILED	-171
ERROR_CONFLICT_WITH_CMPTRIG	-172
ERROR_SET_CPU_EMU_DEV	-173
ERROR_INVALID_CPU_EMU_START_ADDRESS	-174
ERROR_MATCH_CPU_EMU_CMD	-175
ERROR_SET_CPU_EMU_ADDRESS_REFRESH	-176
ERROR_SET_CPU_EMU_COMM_WAIT	-177
ERROR_SET_CPU_EMU_PROCESS_MODE	-178
ERROR_INVALID_CHANNELNO	-179
ERROR_SET_AO_VALUE_OUT_RANGE	-180
ERROR_SET_AI_DEV	-181
ERROR_SET_AO_OFFSET_OUT_RANGE	-182
ERROR_SET_AO_GAIN_OUT_RANGE	-183
ERROR_INVALID_CALIBRATION_ITEM	-184
ERROR_INVALID_CALIBRATION_SOURCE	-185
ERROR_INVALID_AXIS_NO	-186
ERROR_INVALID_INTERP_TYPE	-187
ERROR_INVALID_DECELERATE_POINT	-188
ERROR_INVALID_TERMINATE_THREAD_OPT	-189
ERROR_INVALID_ENC_MODE_OPT	-190
ERROR_NO_DO_BACKUP_FILE_FOUND	-191
ERROR_NO_DLL_VERSION_FOUND	-192
ERROR_DUPLICATE_DLL_LOAD	-193
ERROR_LINE_EDTE_FAULT	-194
ERROR_LINE ERAE_FAULT	-195
ERROR_LINE_CAER_FAULT	-196