Ezi-MotionGate

PLC Program Example(DeviceNet)

FASTECH

Fast, Accurate, Smooth Motion Control

Manual Version ; [ver 1.01.02]

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※ Before Using ※

- Thank you for purchasing FASTECH Ezi-MOTIONGATE
- Ezi-MOTIONGATE is a Fieldbus to FASTECH protocol Gateway Unit mounted with a 32-bit high performance ARM processor.
- This User's Manual contains instructions on how to handle Ezi-MOTIONGATE, safety instructions, error diagnosis and suggestions, specifications, etc.
- Please read and understand this User's Manual thoroughly to use of Ezi-MOTIONGATE safely
- After reading this User's Manual, please store it for those who use this product so that they can reference this manual at anytime.

1. Safety Instructions

◆ General Information

- The User's Manual shall be subject to change in accordance with improvement in the product, specification change, or to make the User's Manual easier to understand.
- When you order a new User's Manual due to the damage or loss, contact the agent you purchased your product at or contact us.
- If the user modifies the products arbitrarily, it shall not be covered under our warranty and we will not be held responsible.

◆ Safety Instructions

- Before installation, operation, inspection, repair, etc, be sure to read the User's Manual thoroughly. In addition, be aware of the safety precaution notices for the machine sufficiently before using the product.
- The User's Manual classifies the level of safety instructions into **Caution** or **Warning**.

⚠CAUTION :	If handled incorrectly, dangerous situations that may lead to serious injuries or property damage may occur
⚠WARNING :	If handled incorrectly, dangerous situations such as electric shock may occur and there may be a risk of death or severe injury.

- Even if the contents are related to the caution, there may be a possibility to make critical result according to the situation. Be sure to observe it. Be sure to follow these precautionary notices as failure to do so may cause critical results, depending on the situation.

◆ Product Status

CAUTION	Check if the product is damaged or if parts are missing. If defective products are installed or operated, there may be damage to the machine or a risk of injury.

◆ Installation

CAUTION	Pay sufficient attention during operation. If dropped, the product may be broken or if dropped on the foot, there may be a risk of injury. Keep away from flammable materials when handling the product as there is a risk of fire. When installing several Ezi-MOTIONGATE in one closed space, be sure to install a cooling device, etc so that the ambient temperature is less than 50℃. Overheating may cause fire and other accidents.
WARNING	The installation, connection, operation, modification, inspection and diagnosis of malfunction shall be carried out by qualified personnel. If not, there is a risk of fire, injury, device breakage, etc.

◆ Wiring

CAUTION	For the drive's power input voltage, be sure to comply with the rated range. Failure to comply may cause fire and power and/or mechanical failure. The connection should be carried out according to the wiring diagram. Failure to do so may cause fire or malfunction.
WARNING	Check if input power is OFF before operating as there is a risk of electric shock or fire. As this Ezi-MOTIONGATE case is insulated with GND of internal circuit by the condenser, be sure to ground the device as there is a risk of electric shock, fire, or product malfunction.

◆ Operation and Setting Change

⚠CAUTION	If the protective function of the drive runs, locate and fix the problem, then release the protective function. If the operation continues without fixing the problem, the motor or drive will malfunction, causing injury or device breakage. When supplying power to the drive, the control input of the drive should be OFF. If not, the motor will run, causing injury or damage to the device. All values of this Ezi-MOTIONGATE were set correctly at the time of its release. Before adjusting settings, read the User's Manual thoroughly. Improper usage may break or damage the machine.

◆ Maintenance & checking

⚠WARNING	For this Ezi-MOTIONGATE, the maintenance or inspection should be carried out after shutting down the main circuit and some time has elapsed. As power may still remain in the condenser, there may be a risk of electric shock. While supplying electricity, do not change the wiring as there may be a risk of electric shock, product damage, or breakage of machinery. Never modify the product. Modification of the product will invalidate the warranty and make it not possible to receive after-sales service form us. There may also be a risk of electric shock, product damage, or machine breakage.

Notices for Installation.

1) The products should be used indoors and the ambient temperature must be 0°~55°C.

2) If the ambient temperature is over 50°C, the heat should be discharged outside.

3) Avoid direct light, magnetic objects, and radiative objects when installing.

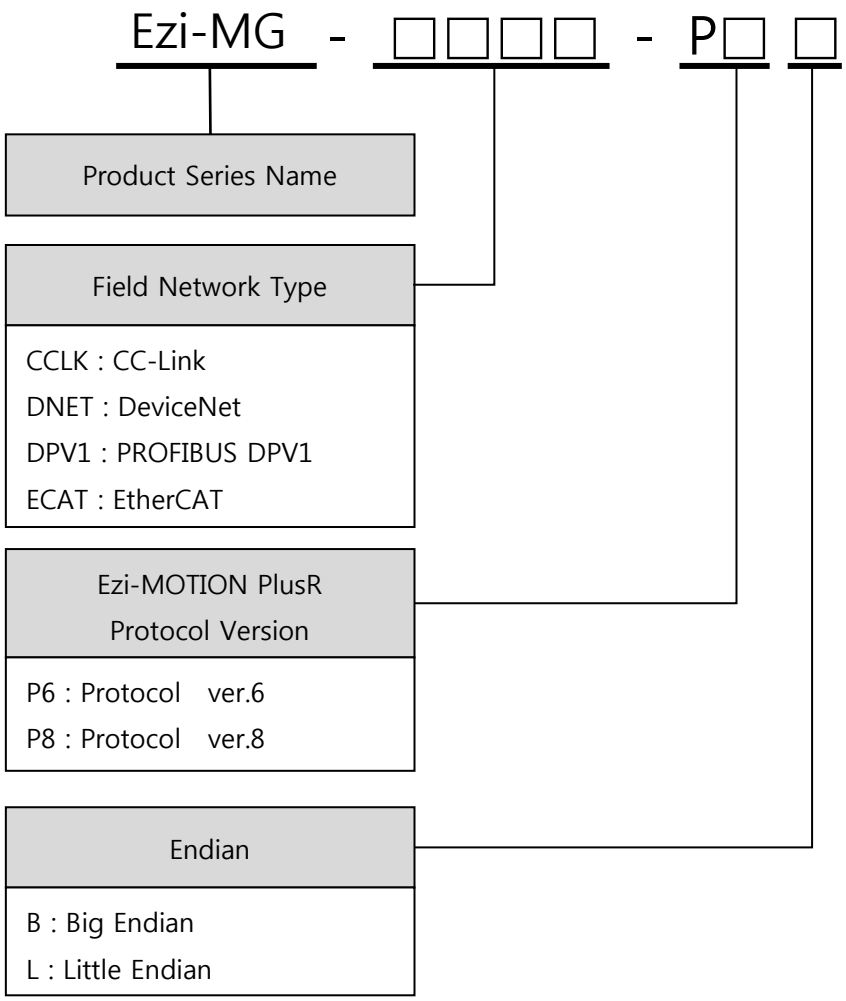
4) When installing more than two drives, leave a distance greater than 20mm vertically and greater than 50mm horizontally.

2. Specification & Dimension

2.1 Overview

- Ezi-MotionGate (hereinafter referred to as 'MOTIONGATE') is the motion Gateway device that controls the motion drive composed of FASTECH RS485 and the master, connected by the slave in the industrial network.
- Max. Quantity available for use by connecting MOTIONGATE to the slave is the quantity supported by the industrial network in use
- The motor drive (Axis) available to be connected at MOTIONGATE can give max. 15 motor IDs for every industrial network used

2.2 Product Name



2.3 Product Characteristic Table per Network

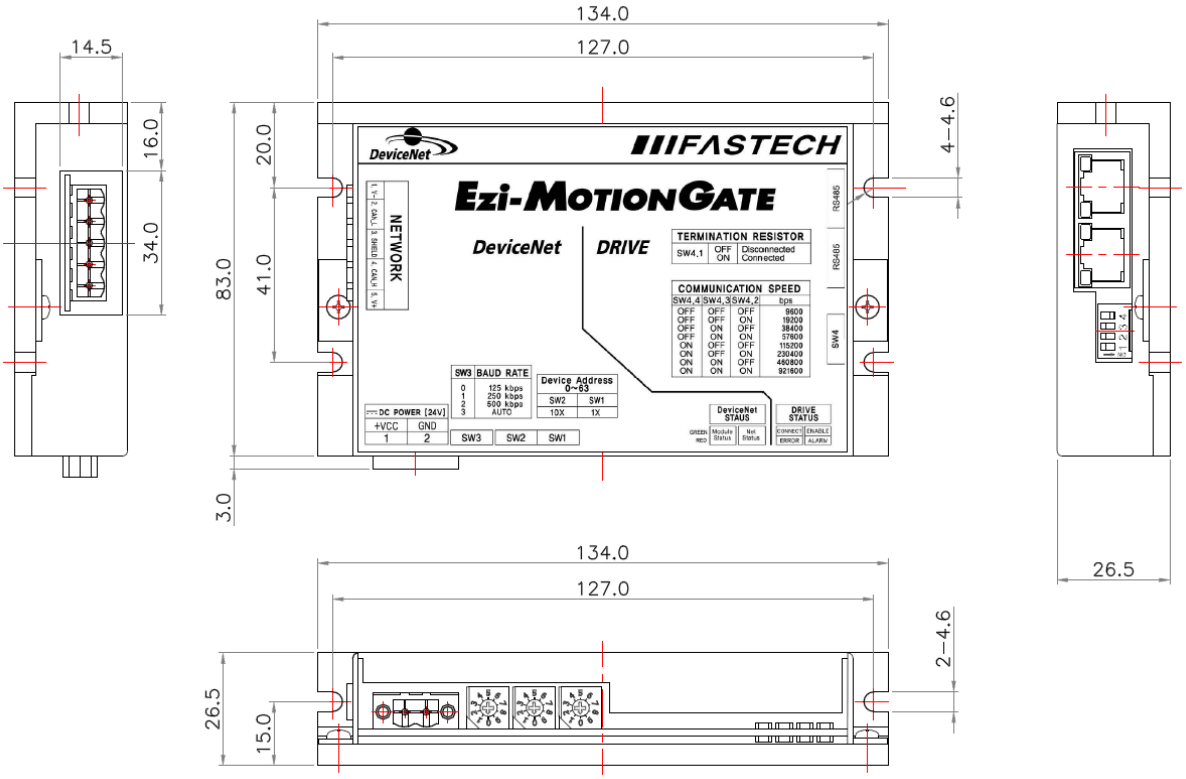
<table>
<tr><td colspan="2" rowspan="2">Network</td><td>Fieldbus</td></tr>
<tr><td>DeviceNET</td></tr>
<tr><td colspan="2">Input voltage</td><td>24VDC ±10%</td></tr>
<tr><td colspan="2">Control method</td><td>Motion gateway can control multiple axis by using the I/O data of the industrial network</td></tr>
<tr><td colspan="2">Multiple axis control</td><td>1 Station - 16 Axis</td></tr>
<tr><td colspan="2">Consumption current</td><td>Max. 500mA</td></tr>
<tr><td rowspan="3">Environ.</td><td>Temp.</td><td>Use : 0~55℃
Storage : -27~70℃</td></tr>
<tr><td>Humidity</td><td>Use : 35~85℃ (no dewing)
Storage : -10~90℃(no dewing)</td></tr>
<tr><td>Vib.resi.</td><td>0.5G</td></tr>
<tr><td rowspan="2">Function</td><td>Switch select</td><td>Network Station No. setting, network Baud-Rate setting</td></tr>
<tr><td>LED display</td><td>Network error, master connection error, the drive Servo On, the drive alarm status</td></tr>
<tr><td rowspan="3">Special function</td><td>JOG control</td><td>4-Speed Step, Speed Ratio</td></tr>
<tr><td>Step Move control</td><td>4-Step Distance</td></tr>
<tr><td>Communication function</td><td>Ezi-STEP Plus-R, Ezi-SERVO Plus-R series</td></tr>
<tr><td colspan="2">FASTECH RS485</td><td>
<table>
<tr><td>Baud-Rate (bps)</td><td>9600</td><td>19200</td><td>38400</td><td>57600</td><td>115200</td><td>230400</td><td>460800</td><td>92160</td></tr>
<tr><td>Cable length (m)</td><td>1200</td><td>1150</td><td>1100</td><td>1000</td><td>1000</td><td>880</td><td>550</td><td>300</td></tr>
<tr><td>RJ-45 connector LED</td><td colspan="8">YELLOW : RS485 sending status (TX from MOTIONGATE)
GREEN : RS485 receiving status (RX to MOTIONGATE)</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Industrial network</td><td>Communication speed and cable length according to the applicable network specification</td></tr>
</table>

NOTE 1: The cable length is equivalent to the max. connection distance when the network status is optimal.

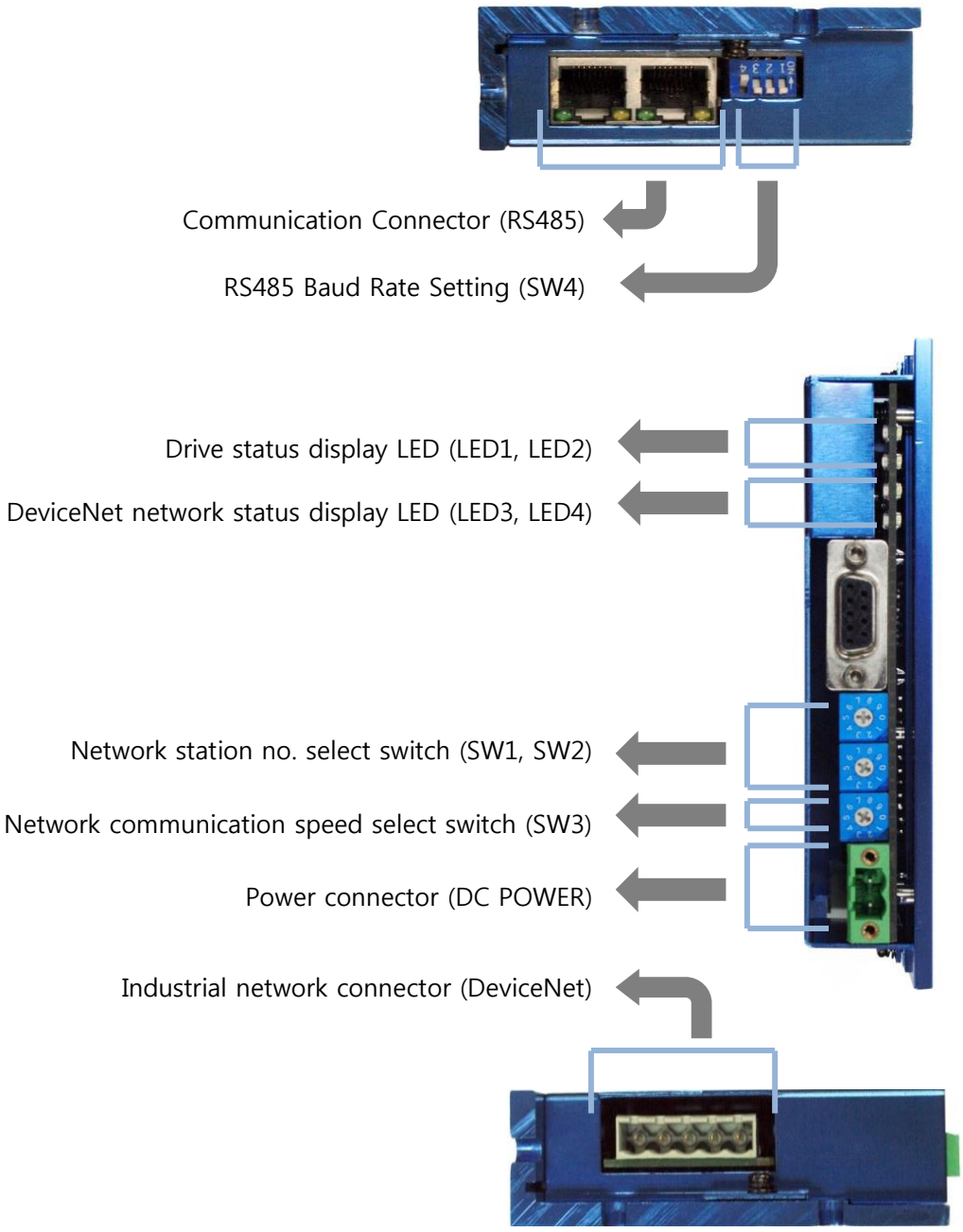
NOTE 2: This complies with the communication protocol of the industrial network.

2.4 Appearance

2.4.1 Dimension

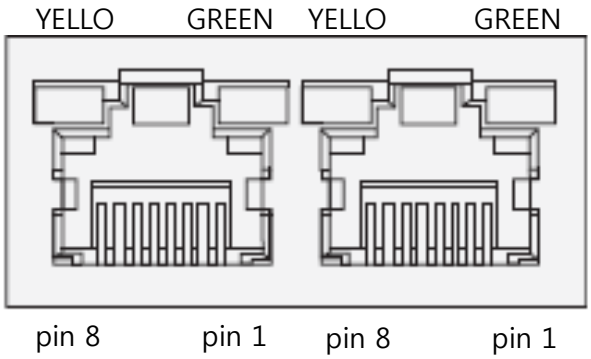


2.4.2 The Names of Each Part



2.4.3 FASTECH RS485 Communication Connection Connector

Communication connector shall be connected by RJ-45.



Pin map of communication connector (RS485)

Pin No.	Function
1, 2, 4, 5, 7, 8	GND
3	DATA +
6	DATA -
CASE	Frame GND

LED of Communication Connector

Display	Color	Light type
RS485 TX	Green	Flickers when sending RS485 data
RS485 RX	Yellow	Flickers when receiving RS485 data

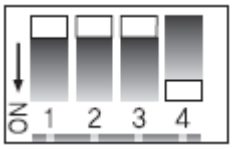
2.4.4 RS485 Baud Rate setting and Terminating resistance select switch (SW4)

SW4 is the switch to set the Baud-Rate (communication speed) of the RS-485 communication network which is connected to the motor drive. If MOTIONGATE is connected to the end of the network segment, it can determine whether to use the terminating resistance.

SW4.1 will determine the use of terminating resistance and SW4.2~SW4.4 are used to set the communication speed.

SW4.1	SW4.2	SW4.3	SW4.4	Speed baud[bps]
X	OFF	OFF	OFF	9600
X	ON	OFF	OFF	19200
X	OFF	ON	OFF	38400
X	ON	ON	OFF	57600
X	OFF	OFF	ON	115200 *1
X	ON	OFF	ON	230400
X	OFF	ON	ON	460800
X	ON	ON	ON	921600

*1 : initial setting value



SW4.1 OFF : The terminating resistance is OFF

SW4.1 ON : The terminating resistance is ON.

⚠CAUTION	All of the communication speed setting values of the drive module connected to one RS485 network should be set at the same value.

2.4.5 Status Display LED (LED1..LED4)

The Status display LED shall operate LED1~LED4 at the same time according to the situation or operate independently to display the status.

LED Operation Display (LED1~LED4)

LED No.	Operation Status	Explanation
LED1 LED2 LED3 LED4	Light-out	Power OFF, time-out state, network non connection
	Green and red simultaneous light-in	Booted state by power supply at the MotionGate Re-booted state by changing station number designating switch or DeviceNet baud rate selecting switch. * With simultaneous light-out of green and red, LED color appears orange.
	Green simultaneous blinking	MotionGate's self-diagnosis state ✓ Connector non-connection ✓ Wrong network baud rate set-up ✓ Wrong network station number designation
LED3 LED4	Green and red simultaneous light-in	Recognition disable state of MotionGate's network device * Contact the head office or retail shop for measures.

Drive Status Display LED (DRIVE STATUS)

LED No.	LED State Information	LED Name	Operation State	Explanation
LED1	Drive's connection state	ENABLE (Green)	Light-in	Activated motor among connected drives.
			Blinking	Disenabled motors of more than a drive among connected drives.
	Drive alarm	ALARM (Red)	Blinking	Alarm state of more than a drive
LED2	Motor Drive Connection State	CONNECT (Green)	Light-in	Running connection command, the motor drive communicates with MotionGate normally.
		ERROR (Red)	Light-out	
	Drive Connection State Error	CONNECT (Green)	Light-out	No motor drive running connection command among RS-485 network connected motor drives. No communication state of motor drive and MotionGate.
		ERROR (Red)	Light-in	No communication with drive Communication disconnection of RS485 network Baud rate set-up error
	Communication Error	CONNECT (Green)	Light-in	Communication error with motor drive(CRC error occurrence)
		ERROR (Red)	Random Blinking	
	Multiaxial connection state's communication error	CONNECT (Green)	Light-in	No response to connection command at more than a motor drive connected to RS485 ✓ Network disconnection ✓ Abnormality in the topology composition ✓ Run connection command at IP-Map area of not existing motor drive.
		ERROR (Red)	Light-in	

⚠Attention	Drive status display LED should check motor activation state after inspecting communication state of MotionGate and drive.

DeviceNet Network Status Display LED (DeviceNet STATUS)

No.	LED information	Operation status	Description	Action
LED 3	NS (Network Status)	OFF	DeviceNET power not supplied	24V power was not applied to the DeviceNet network. Check the network cable status.
		GREEN	Network normal connection	The communication status between MOTIONGATE and the top controller is normal.
		GREEN FLASH (1Hz)	Network setting error	Check the setting of the parameter of DeviceNet.
		RED	Communication failure	Check the connection of the DeviceNet network cable and the connector.
		RED FLASH (1Hz)	Time out	DeviceNet connector is connected but fails to communicate with the master. Check the status of the top controller.
		G/R Cross FLASH	Self-diagnosis	DeviceNet network is under diagnosis.
LED 4	MS (Module Status)	OFF	Power not supplied	Check the power of MOTIONGATE
		GREEN	Normal operation	MOTIONGATE is normal.
		GREEN FLASH	Standby status	MOTIONGATE is waiting for the communication speed check and approval of the connection to the top controller
		RED	unrecoverable error	Likely to indicate the failure of MOTIONGATE. Contact our head office or agent for repair
		RED FLASH	Recoverable error	Check the topology of the network and the parameter of top controller.
		G/R cross FLASH	Self diagnosis	MOTIONGATE is under diagnosis

⚠ Attention	Network Status LED shall operate as the designated expression according to the network status according to the protocol of the industrial network.

2.4.6 Network Station No. Setting (SW1, SW2)

This is the rotary switch to set DeviceNet Station No. and can be set to the station no. that network wants. The range of station numbers supported by DeviceNet is 0~63.

Switch value (SW1)	ID No. X10 (10 digit)	Switch value (SW2)	ID No. X1 (1 digit)	
0	00	0	0	
1	10	1	1	
2	20	2	2	
3	30	3	3	
4	40	4	4	
5	50	5	5	
6	60	6	6	
7	N.C	7	7	
8	N.C	8	8	
9	N.C	9	9	

2.4.7 Network Communication Speed Setting (SW3)

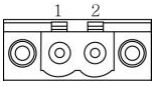
This is the switch to set the baud rate of the network being used. It should be set to at the same value as the network setting value of the top controller.

Network Communication Speed setting (DeviceNet)

Switch value (SW3)	BAUD RATE	
0	125 kbps	
1	250 kbps	
2	500 kbps	
3	Auto Baud-rate	
4..9	N.C	

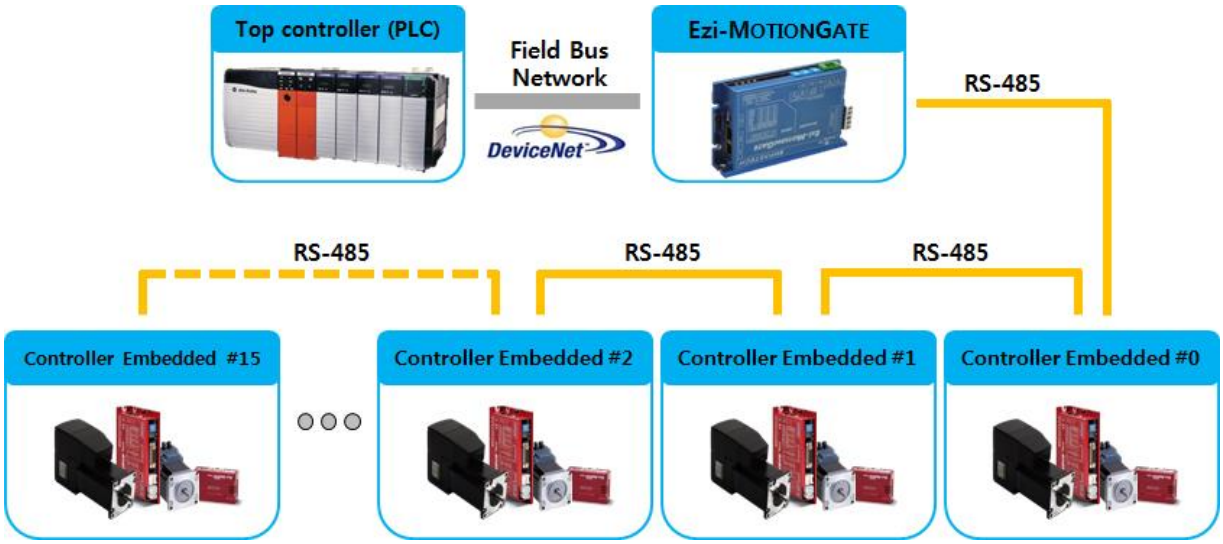
2.4.8 Power connector (DC POWER)

This is the connector to supply power.

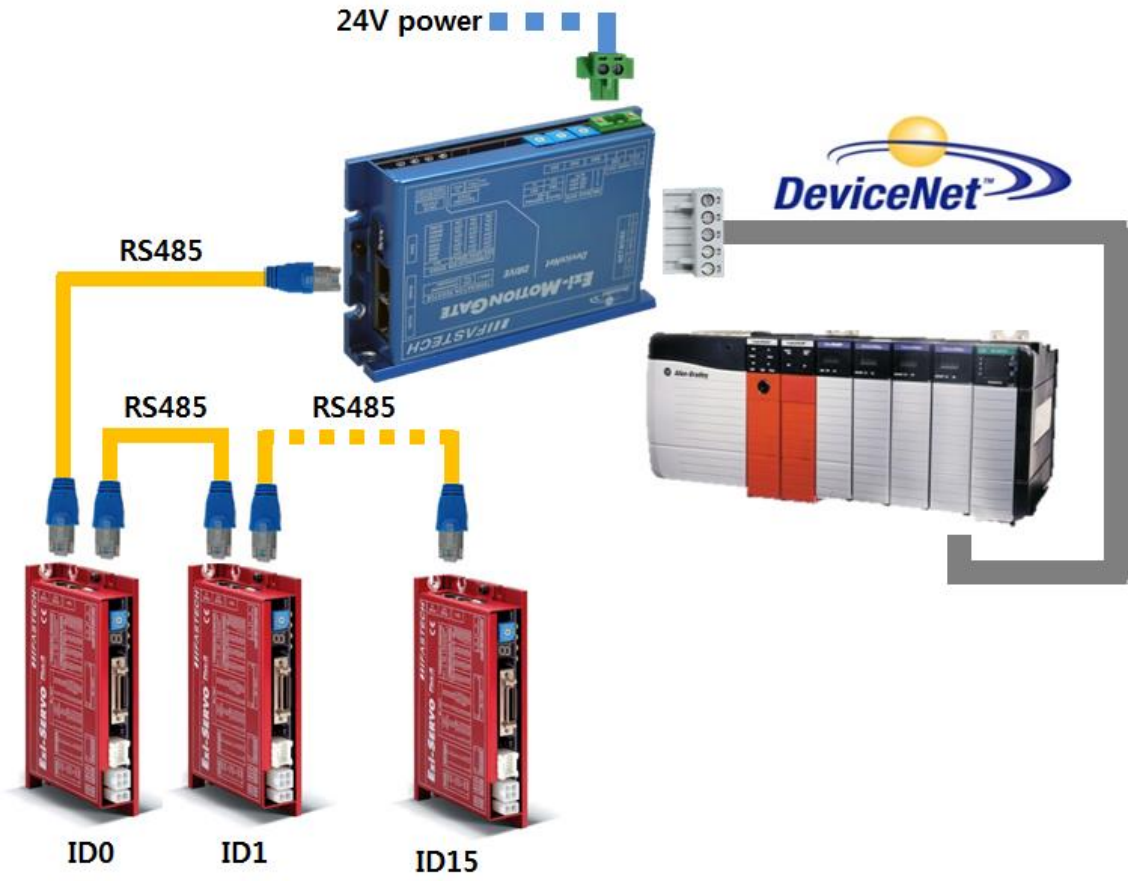
No.	Function	Pin layout
1	Input power : 24VDC ± 10%	
2	Input power : GND	

3. Installation & Connection Method

3.1 System Diagram



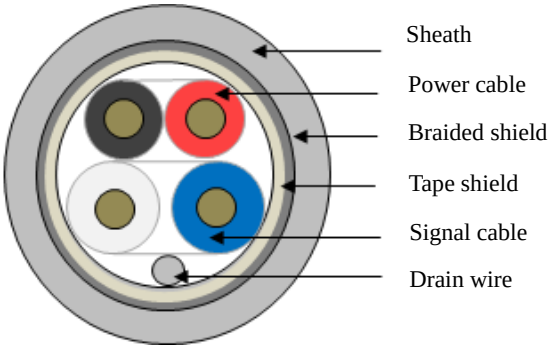
Wiring diagram of MOTIONGATE



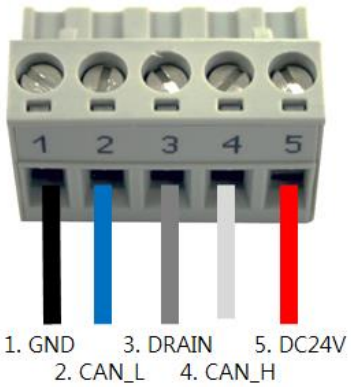
3.2 DeviceNet Network Connection

DeviceNet Network Cable Structure

DeviceNet Network Cable	Pin Map of DeviceNet Connector



Core wire	Data name
BLACK	GND
RED	24V
WHITE	CAN_H
BLUE	CAN_L
Drain wire or braided shield	DRAIN



⚠ **CAUTION**	The power of MOTIONGATE shall be used independently of the bus power of the DeviceNet cable. If the power of only the DeviceNet connector is supplied, the power of MOTIONGATE will not be ON. In addition, if the DeviceNet bus power is not supplied to the network connector of MOTIONGATE, it shall not operate.

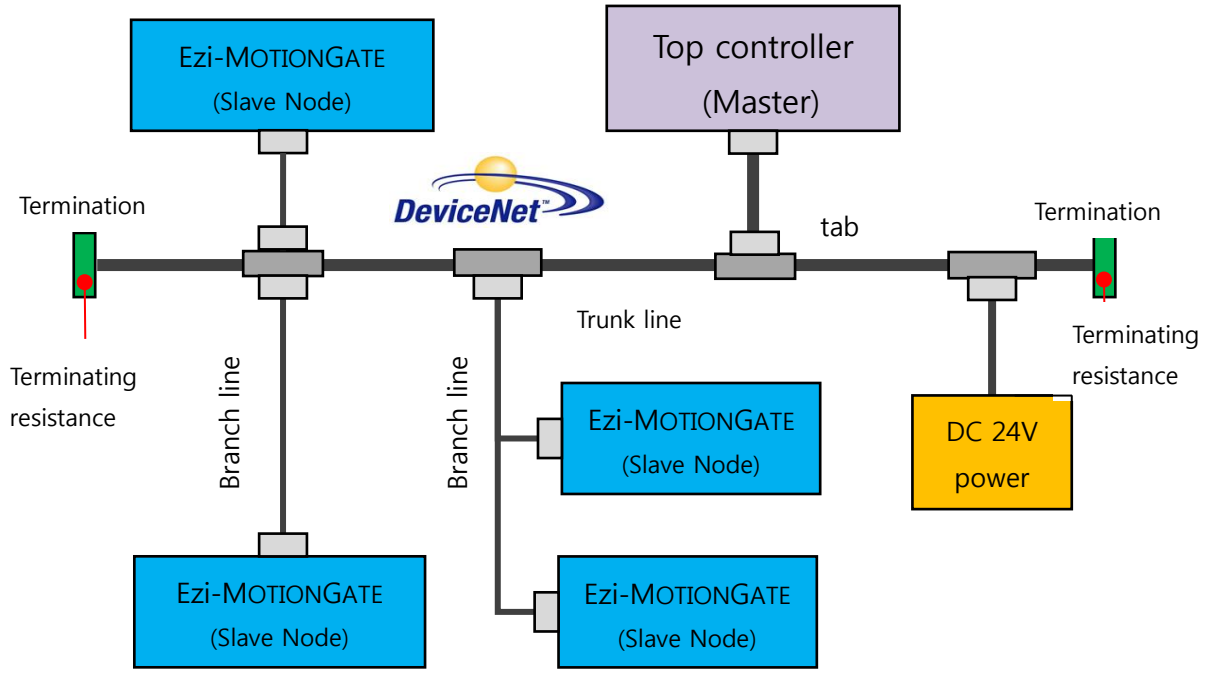
4. Operation Principle

4.1 MOTIONGATE system Overview of DeviceNet Network

4.1.1 DeviceNet Overview

DeviceNet was developed by Allen Bradley and is an open network standard that does not require the purchase of H/W and S/W licenses to connect the device to the system if the specifications and protocols are open in the network.

The network device of DeviceNet contains network topology that allows for a connection between the data link of the CAN structure and the 4 wire-DeviceNet cable used for power. In addition, the network of DeviceNet has 3 baud rates (125kbps, 250kbps, 500kbps) and supports 64 nodes.



The physical structure of one DeviceNet can configure the topology of the bus type connecting the network tab to the trunk line, the star type which connects by point-to-point, and the net type. These features enable the rapid connection of field information to the upper line, which allows the improvement of productivity. In addition, due to the simplified network topology, it is easy to install and maintain.

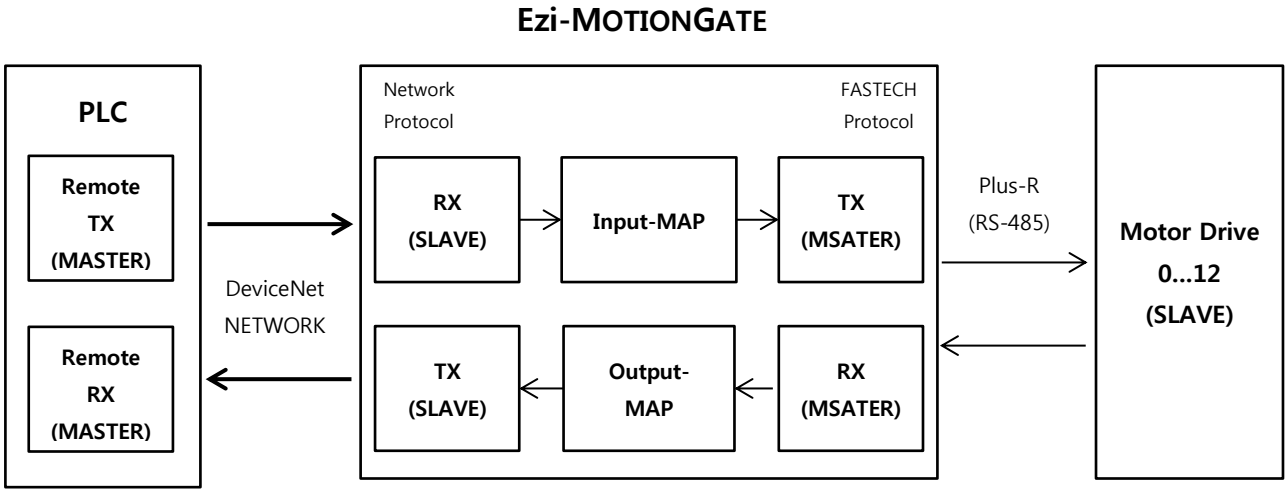
MOTIONGATE DeviceNet communication Specification

<table>
<tr><th>Items</th><th>Specification</th></tr>
<tr><td>Remote sending device</td><td>128 byte (64 WORD)</td></tr>
<tr><td>Remote receiving device</td><td>128 byte (64 WORD)</td></tr>
<tr><td>Communication mode</td><td>Poll</td></tr>
<tr><td>Allowable range of station no.</td><td>0 ~ 63 stations
(Except for master station no.)</td></tr>
<tr><td>Cable extention distance according to the communication speed</td><td>
<table>
<tr><th rowspan="2">Cable type</th><th colspan="3">Data speed</th></tr>
<tr><th>125 kbps</th><th>250 kbps</th><th>500 kbps</th></tr>
<tr><td>Round thick trunk cable</td><td>500m</td><td>250m</td><td>100m</td></tr>
<tr><td>Round thin trunk cable</td><td>100m</td><td>100m</td><td>100m</td></tr>
<tr><td>Plain trunk cable</td><td>380m</td><td>200m</td><td>75m</td></tr>
<tr><td>Max. drop length</td><td>6m</td><td>6m</td><td>6m</td></tr>
<tr><td>Max. accumulated drop length</td><td>156m</td><td>78m</td><td>39m</td></tr>
</table>
</td></tr>
</table>

4.1.2 MOTIONGATE Overview and Network Configuration

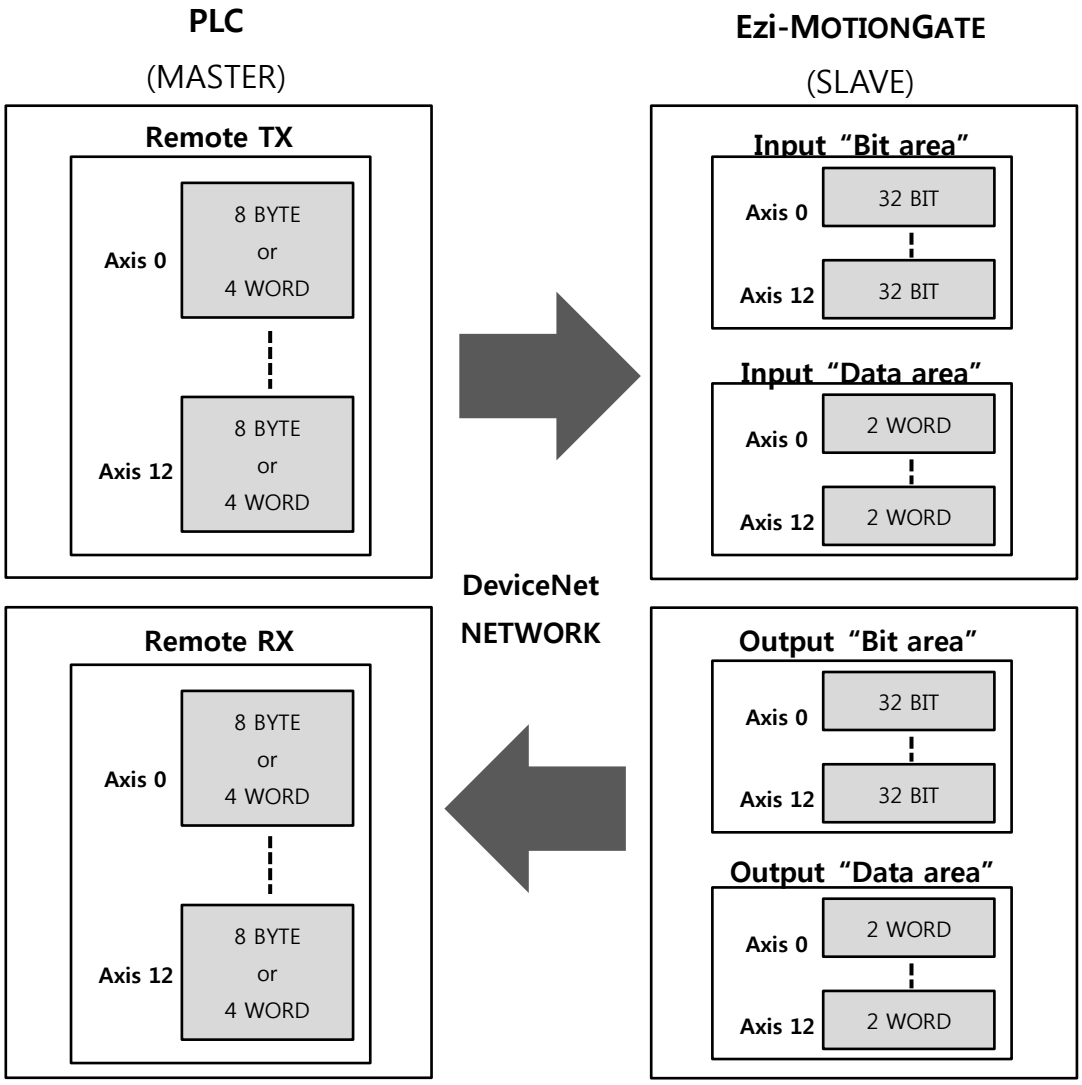
MOTIONGATE used for the DeviceNet network supports (Axis 0~12). (This varies depending on the MOTIONGATE supporting each network. The quantity available for each network can be checked in *2.2 Product Characteristic Table per Network.)

The top controller (PLC) should be the master system that can access the memory address of the sending/receiving section connected with MOTIONGATE. The MOTIONGATE receives remote data from the DeviceNet top controller from the DeviceNet network and controls the axis which corresponds to the Input-Map of the received data. The response information of each axis shall be configured by the Output-Map and send the remote data by the DeviceNet network.



The command for each motor drive connected to the MOTIONGATE at DeviceNet network requests the command and information by using the data configured by IO-Map. Here, the address area of IO-Map is the area to verify the control command and response information for each axis. The data configuration of IO-Map is dividied into Bit area, which is configured by 32 bit for one axis, and Data area, which is configured by 2 WORD (4 Byte).

The top controller (PLC) is the data address area of IO-Map and can verify the control and response data.

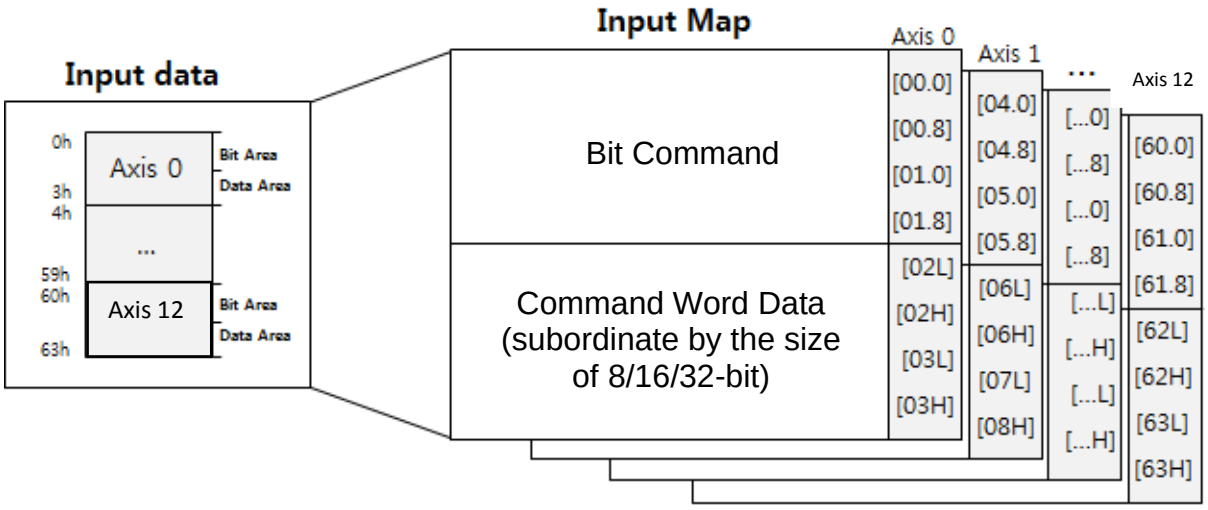


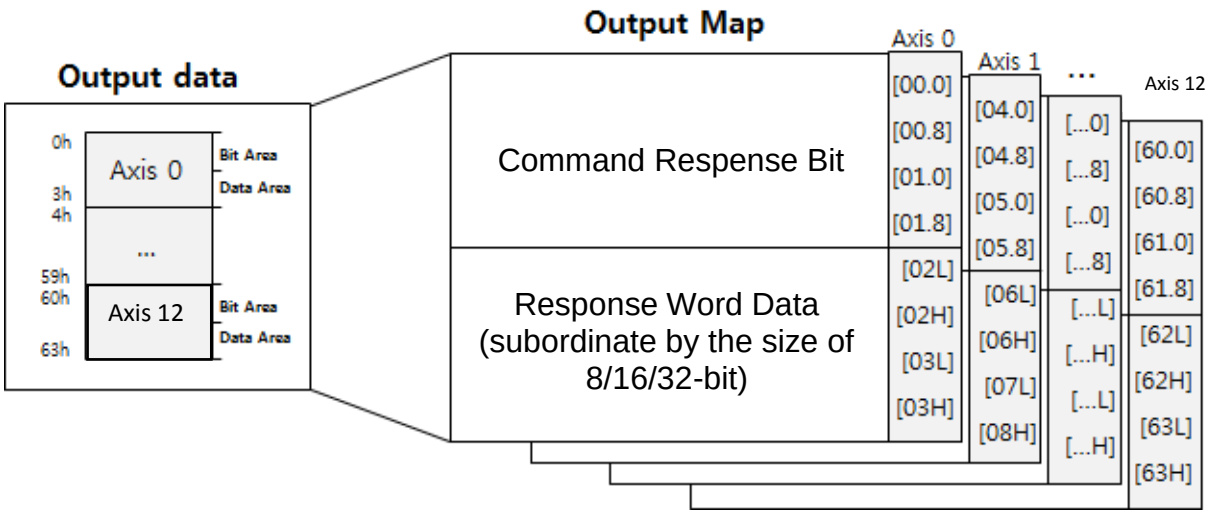
The IO-Map data address area of MOTIONGATE occupies 128 bytes when assigning the remote sending/receiving device of the top controller by the relay contact point while 64 words when assigning with the remote sending/receiving data register device. (Occupies 8 Byte or 4 WORD for one axis.)

IO-Map is divided into Bit Area [0-3] and Data Area [4-7].

The Bit Area of the Input-Map is used as the section for Bit command of the motor axis and the Data Area is used as the section to enter the data information which corresponds with Bit Command. The Bit area of the Output-Map is used as a response bit for the status flag or control command of the corresponding axis and the Word area is the section where data requested by the command of Input-Map is designated.

In the structure of IO-Map, the byte area from the first address to the 4th address is IO-Map for the No.0 axis which is connected to the No.1 axis IO-Map in the back and connected to the No.15 axis sending section by 8-byte interval.





NOTE 1: 1WORD of the device memory of the Top Controller has a size of 2 bytes composed of 16Bit Data. Thus, Area 00.0~00.7 of device memory address 0h occupies the 0 byte area of IO-Map and 00.8~00.15 occupies the 1Byte Area.

NOTE 2: The device occupied memory that the data area uses is 2WORD. Thus, it can use the DWORD address for the start address of Data Area.

4.2 Control Command Bit Area (Input Map) and Status Information Bit Area (Output Map)

Bit Configuration of Input-Map

Input-Map is the area which commands control of the motor drive. The combination of bit for command enables the selection of motion control of the motor drive, setting of the response information type and set the value of parameter or PT Information, etc.

Bit Area of Input-Map (Top 4 Byte Area)

BYTE offset	BIT	Bit name	level	Description
0	0	CONNECT	Rising Edge	The use of corresponding axis will be determined by setting up this bit. If this bit is set as '1', communication between the corresponding axis will be attempted and if the communication to the corresponding axis is not required, this number should be set as '0'. If it is set as '0', the communication with the corresponding axis is excepted and no command will be executed. If many commands to multiple axes are generated simultaneously, the processing sequence will be started from the low to high number of motor drive. If one event for one axis is completed, the process for the next ID axis will be started. If there is no command or event from corresponding axis, MotionGate will receive the data for the status information and response request from corresponding axis. - Status information of corresponding axis (flags FLAG-define) - Command position (signed long 32-bit) - Actual position (signed long 32-bit) - Position error (signed long 32-bit) - Current driving speed (signed long 32-bit) - Current driving PT number **NOTE 1:** MotionGare executes the Fas_GetAllStatus() function command frequently. **NOTE 2:** Motor control delaying time will be twice more than the number of connected axes in case the motor has the same delaying time.

BYTE offset	BIT	Bit name	level	Description
	1	ENABLE / IGNORED	Rising Edge	SERVO Drive: The status of corresponding axis will be converted to the motion available status. 0 : ServoOFF 1 : ServoON STEP Drive: This bit command will be ignored.
	2	nESTOP	Falling Edge	Stop of execution of motion or all commands. (Emergency stop) * 0: Execute the E-Stop Command, 1: Standby of the E-Stop Command
	3	ALARM_RESET / MOTOR_FREE	Rising / Falling Edge	SERVO Drive: This will be used when releasing the generated alarm (positive edge operation) * Motor free status of step drive will be maintained when MOTOR_FREE bit is maintained as '1' and the step motor alarm reset command will be executed in negative edge when it is changed to '0'.
	4	CMD_START	Rising Edge	Executing 'Speed Override' command when ordering 'Jog Run' command. Use when moving the position or execute the PT drive or executing the original point move command.
	5	-	-	-
	6	-	-	-
	7	MOTION /SETTTING	H/L	A bit that selects the MotionGate Map as motion or set-up. 0: Motion control mode 1: Set-up mode
1	0	CMD_CODE0	H/L	**During Motion control mode** 0000(0): General move (Jog, Step, Zero point move) 0001(1): Relative value move [Incremental Move], Absolute value move [Absolute Move] 0100(4): PT Drive (PT Drive, Single PT Drive) 0111(7): Original point move (Origin) **During set-up mode** 0000(0): No command 0101(5): Verifying the version information 1000(8): Parameter request 1001(9): Parameter write 1010(10): Position informaiton change 1100(12): Alarm log request 1101(13): Alarn log delete 1110(14): Parameter save
	1	CMD_CODE1		
	2	CMD_CODE2		
	3	CMD_CODE3		

BYTE offset	BIT	Bit name	level	Description
	4	RESPONSE_TYPE0	H/L	Define the response format of desired response data from RX section of the corresponding axis. 0000(0): Do not request the response data. 0001(1): Command position 0010(2): Actual position 0011(3): Position error 0100(4): Present speed 0101(5): Driving PT number 1000(8): Currently generated alarm number *** Do not use in set-up mode**
	5	RESPONSE_TYPE1		
	6	RESPONSE_TYPE2		
	7	RESPONSE_TYPE3		
2	0	CANCEL	Rising Edge	General stop of motion
	1	HOLD	Falling Edge	Hold during motion
	2	-	-	-
	3	GO_ZERO_POS	Falling Edge	Move to the designated Zero position from corresponding axis driving (position value: 0)
	4	-JOG_MOV	Falling Edge	Reverse direction JOG drive Input value of data area: speed rate, speed value, speed step number.
	5	+JOG_MOV	Falling Edge	Forward direction JOG drive Input value of data area: speed rate, speed value, speed step number.
	6	-STEP_MOV	Falling Edge	Positive/negative move using inside parameter value (such as position and speed) of MotionGate. Input value of data area: Number of position value (0~3) * This can be redefined by user.
	7	+STEP_MOV	Falling Edge	Increase/decrease of move using inside parameter value (such as position and speed) of MotionGate Input value of word area: Number of position value (0~3) * This can be redefined by user.

BYTE offset	BIT	Bit name	level	Description
3	0	INC/ABS	H/L	A bit that selects either relative value move or absolute value move when the controlling method is position move (CMD_CODE:0001). 0: relative value move 1: absolute value move
	1	-	'	-
	2	SPD_MODE	H/L	Use for the Jog move when controlling method is general motion (CMD_CODE: 0000). 0: Jog drive using input ratio or speed step number 1: Jog drive using input speed
	3	-	'	-
	4	SINGLE_PT	H/L	A bit that selects either general PT drive or single PT drive when controlling method is PT drive (CMD_CODE:0100). 0: general PT drive 1: Single PT drive
	5	-	'	-
	6	-	'	-
	7	-	'	-

NOTE 1: Input-Map is the area where MOTIONGATE inputs the command with Top Controller.

NOTE 2: The above Input-Map is the Control Command Area and the information for the upper 4 byte.

NOTE 3: The lower 4 byte of Input-Map is DWORD Data input section for Control Command.

Bit Configuration of Output-Map

For the section of Output-Map, the loop-back bit for data flag and Bit Command exists. The Loop-back bit is the bit which responds the same way as the command event of the corresponding bit and enables verification of the bit input of Input-Map. The status flag shall be displayed based on the data received by communicating with the corresponding Motor Drive.

Bit Area of Output-Map (Upper 4 Byte Area)

BYTE offset	BIT	Bit name	level	Description	BYTE offset
0	0	CONNECTED	H	status bit	Set this bit a '1' when connected to the Plus-R of corresponding axis
	1	ENABLED MOTOR_FREE (STEP)	H	status bit	Set as '1' when Servo ON of corresponding axis or Step motor is in Normal status. * This will be the response bit for Motor Free command when in STEP Drive status.
	2	ESTOP_RESP	H	Loopback	Set as '1' if the emergency stop command is executed by Loopback bit of nESTOP bit of Input-Map.
	3	ALARM_ERROR	H	status bit	It will be set as '1' automatically when alarm is generated from the motor drive of the corresponding axis. It will be cleared to '0' when alarm is released.
	4	CMD_RESP	H	Loopback	Loopback bit of CMD_START bit of Input-Map.
	5	OUT_RANGE	H	status bit	Set as '1' if the data area value of Input-Map does not match to the corresponding command value.
	6	READY	H	status bit	It will be set as '1' if the command for the current corresponding axis is in operable status. No command is operable if this bit is '0'. **NOTE 1:** If READY bit is set as '1' from the setting mode, other axes are controllable.
	7	SET_MOV_RESP	H/L	Loopback	It will be set as '1' if the data of current Output-Map is in setting mode, and will be cleared to '0' in motion mode.

BYTE offset	BIT	Bit name	level	Description	BYTE offset
	0	CMD_CODE_RESP0	H/L	Loopback	Respond to the types of move command 0000(0): General move (Jog, Step, Zero position move) 0001(1): Relative value move [Incremental Move], Absolute value move [Absolute Move] 0100(2): PT Drive (PT Drive, Single PT Drive) 0111(3): Original point move (Origin)
	1	CMD_CODE_RESP 1	H/L		
	2	CMD_CODE_RESP 2	H/L		
	3	CMD_CODE_RESP 3	H/L		
	4	RESPONSE_TYPE_RESP0	H/L	Loopback	Respond to the response data allocated in Word area. 0000(0): Do not request the response data. 0001(1): Command position 0010(2): Actual position 0011(3): Position error 0100(4): Present speed 0101(5): Driving PT number 1000(8): Currently generated alarm number
	5	RESPONSE_TYPE_RESP1	H/L		
	6	RESPONSE_TYPE_RESP2	H/L		
	7	RESPONSE_TYPE_RESP3	H/L		
2	0	MOTIONNING	H/L	status bit	Set as '1' when corresponding axis is in motion status.
	1	HOLD_RESP	H/L	status bit	Set as '1' when in hold status by the command of HOLD bit during operation.
	2	-			
	3	GO_ORIGIN_RESP	H	status bit	Set as '1' when executing the return to parameter original point of Plus-R of corresponding axis.
	4	-	-		-
	5	JOG_RESP	H	status bit	When corresponding axis is in Jog drive.
	6	-	-		-
	7	STEP_RESP	H	status bit	When corresponding axis is in Step drive.

BYTE offset	BIT	Bit name	level	Description	BYTE offset
	0	PT_RUNNING	L/H	status bit	When corresponding axis is in position move.
	1	MOV DIR	L/H	status bit	Displays the rotation direction of motor. 0 : CW(+) 1 : CCW(-) * If FLAG_IN_MOTION bit is set as '1', updated value should be verified. logical operation (FLAG_IN_MOTION &FLAG_nDIR)
	2	INP	L/H	status bit	It will be set as '1' when 'In position' of motor is completed. * This bit is not operable when motor is in STEP status.
	3	ORIGIN_SENSOR	H	status bit	It will be set as '1' when original point sensor is turned ON.
	4	SW_LIMIT_N	H	status bit	It will be set as '1' when '-' direction program limit is exceeded.
	5	SW_LIMIT_P	H	status bit	It will be set as '1' when '+' direction program limit is exceeded.
	6	HW_LIMIT_N	H	status bit	It will be set as '1' when '-' direction limit sensor is turned ON.
	7	HW_LIMIT_P	H	status bit	It will be set as '1' when '+' direction limit sensor is turned ON.

NOTE 1: Output-Map is the area where MOTIONGATE outputs the response information to the top Controller.

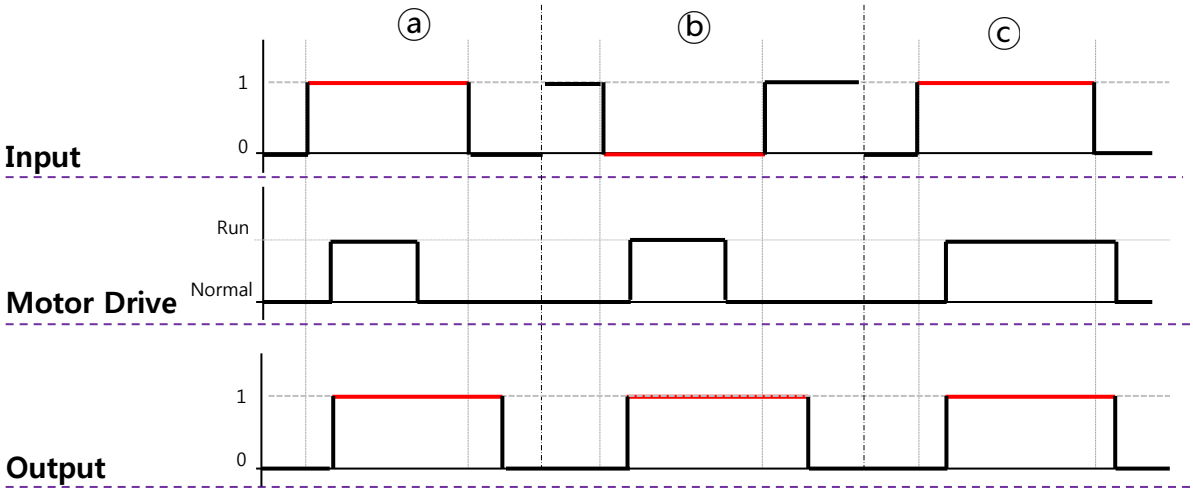
NOTE 2: The above Output-Map is the Status Response Bit Area and the information for the upper 4 byte.

NOTE 3: The lower 4 byte of Output-Map is the section which receives DWORD Data for the response data.

4.3 Operation Procedure & Condition of IO Map

4.3.1 IO-Map Bit Command Method

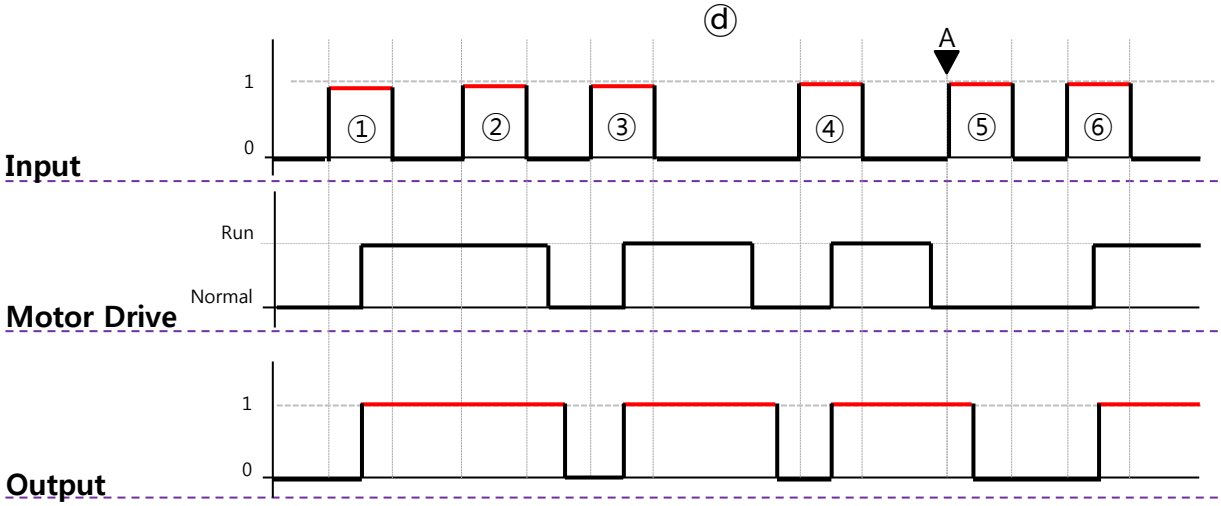
Bit Command shall be divided into Up edge and Down edge Commands.



The starting point of the Up edge command of Input is the point where '0' Status is changed into '1' as shown in section ⓐ. The MOTIONGATE which receives this command delivers the command to the corresponding axis and when that command is running, it will respond to the command with Output.

The starting point of the Down edge command is the point where the input command is changed from status '1' to '0' as shown in section ⓑ. This event allows MOTIONGATE to deliver the command to the corresponding axis and when that command is running, it shall respond to the command with Output.

The Bit Command shown in sectionⓒ is a command that continues until the Down edge issues another command. By the Up edge command of Input, the MOTIONGATE issues a RUN command to the corresponding axis. The sequence of this command is that the corresponding axis runs with the Up edge of input, it responds to the RUN command with Output. And if the operation of the corresponding axis stops, it responds to the Stop of operations with Output.



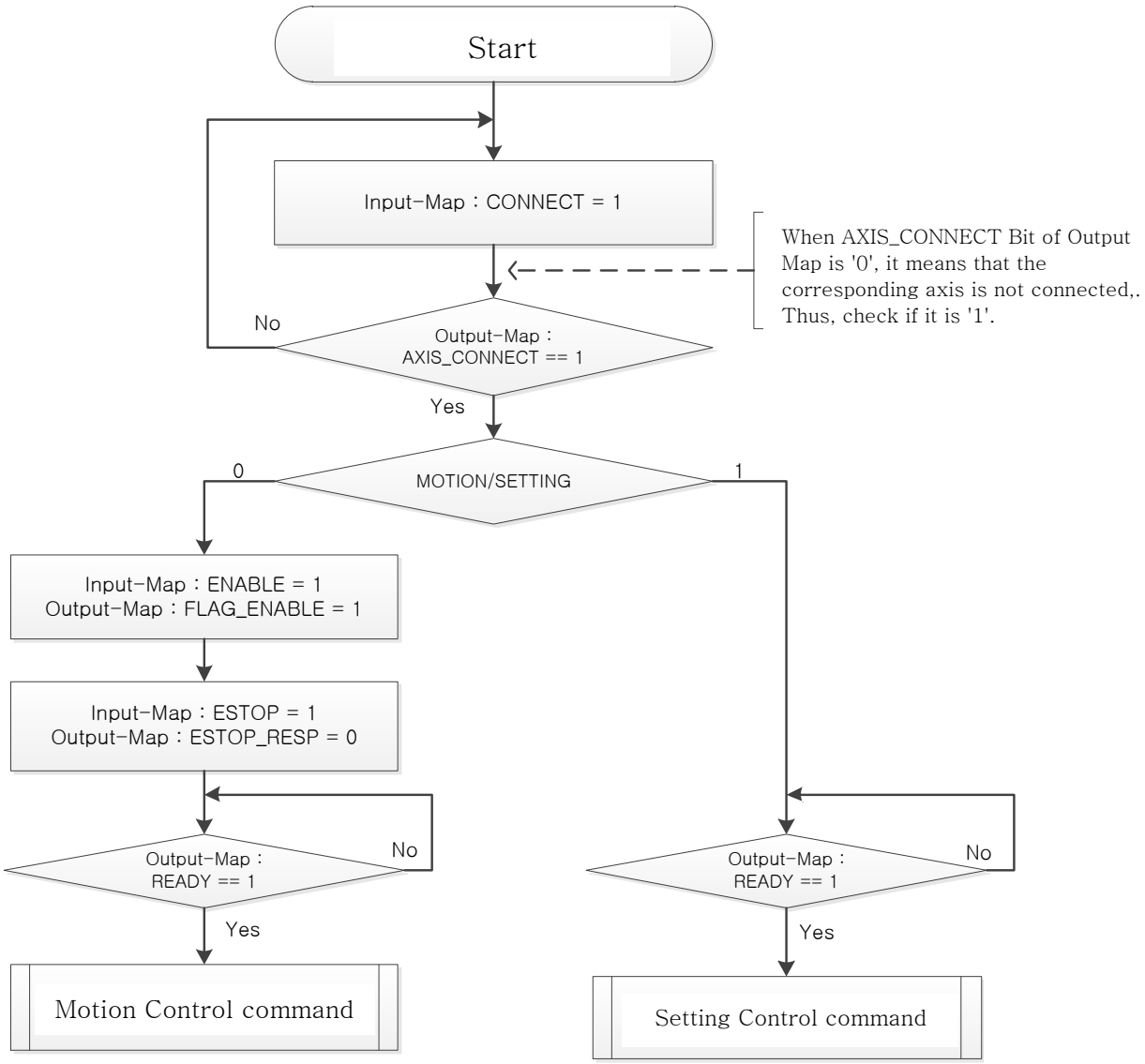
Section ⓓ shows when Input Command operates continuously. In the case with Command of ①, the command starts the same way as section ⓐ. When MOTIONGATE is operating, the entered Command ② does not operate, but can operate with Command ③ entered after the operation of MOTIONGATE operated by Command ① has completed.

If the command of ⑤ is entered at point A, before Output responds to the conclusions of the actions commanded by ④, the command of ⑤ is ignored. However, the command of ⑥, which is entered after the response of Output, will be executed. In other words, the actions of the motiongate are executed according to the command of Input; and the command of Input is valid if it is made after the actions of Output have finished.

4.3.2 IO-Map Control Command Ready Sequence

MOTIONGATE needs the process of the following sequence when executing the Command.

Flow Chart 1. Activation condition of Motion and Setting Control Command



※ Command of MOTIONGATE

① Execute the command by setting CONNECT Bit of Input-Map as '1' <Refer to *5.2.1>

- As CONNECT Bit is the Bit which selects the use of the corresponding axis, it should be set to '1'
- Verify that Response Status of AXIS_CONNECT Bit of Output-Map is'1'

② Select MOTION/SETTING Bit of Input-Map <Refer to *5.1>

- Select Motion Control with '0', and Setting Control with '1'.

③ Motion Control shall set ENABLE Bit and ESTOP Bit of Input-Map as '1' <Refer to *5.2.1>

- Verify that the response Bit of Input-Map, FLAG_ENABLE Bit is '1'
- Verify that ESTOP_RESP Bit is '0'

④ When executing the Command, verify the status of READY Bit of Output-Map <Refer to *5.6>

- When another Command is running, READY Bit shall be maintained as '0' Status.
- When no Motion Command, READY Bit shall be maintained as '1' Status.
- When executing Setting Command, it shall be maintained as '0' Status until the corresponding command is completed

⑤ The Motion Control of the Drive shall be executed by the Bit combination of IO-Map for Motion Command.

<Refer to *5.2.2, *5.2.3>

- Set MOTION/SETTING Bit of Input-Map as '0'
- When executing the command of Motion Control, be sure to set "CONNECT= 1, ENABLE=1, nESTOP=1"

⑥ The verification and modification of the setting value of Drive and MOTIONGATE shall be performed by the Bit combination of IO-Map for Setting Control <Refer to *7, *8>

- Set the MOTION/SETTING Bit of Input-Map as '1'
- When executing the Command of Setting Control, be sure to set "CONNECT= 1"

5. IO-Map Use Example (for DeviceNet)

5.1. KGL for Windows Project Setting

- Main items when setting the Network parameter

  - Remote Receiving : The area to receive the information for the status and response of MOTIONGATE, where the information of Output-Map is matched.

  - Remote Sending : The section to send the commands for Bit combination to MOTIONGATE, where the information of Input-Map is matched

※ The Example of this manual was manufactured based on the following PLCs:

- PLC series : MASTER K
- PLC type : K200S
- DeviceNet module : G6L-DUEA
- PLC download program : KGL for Windows

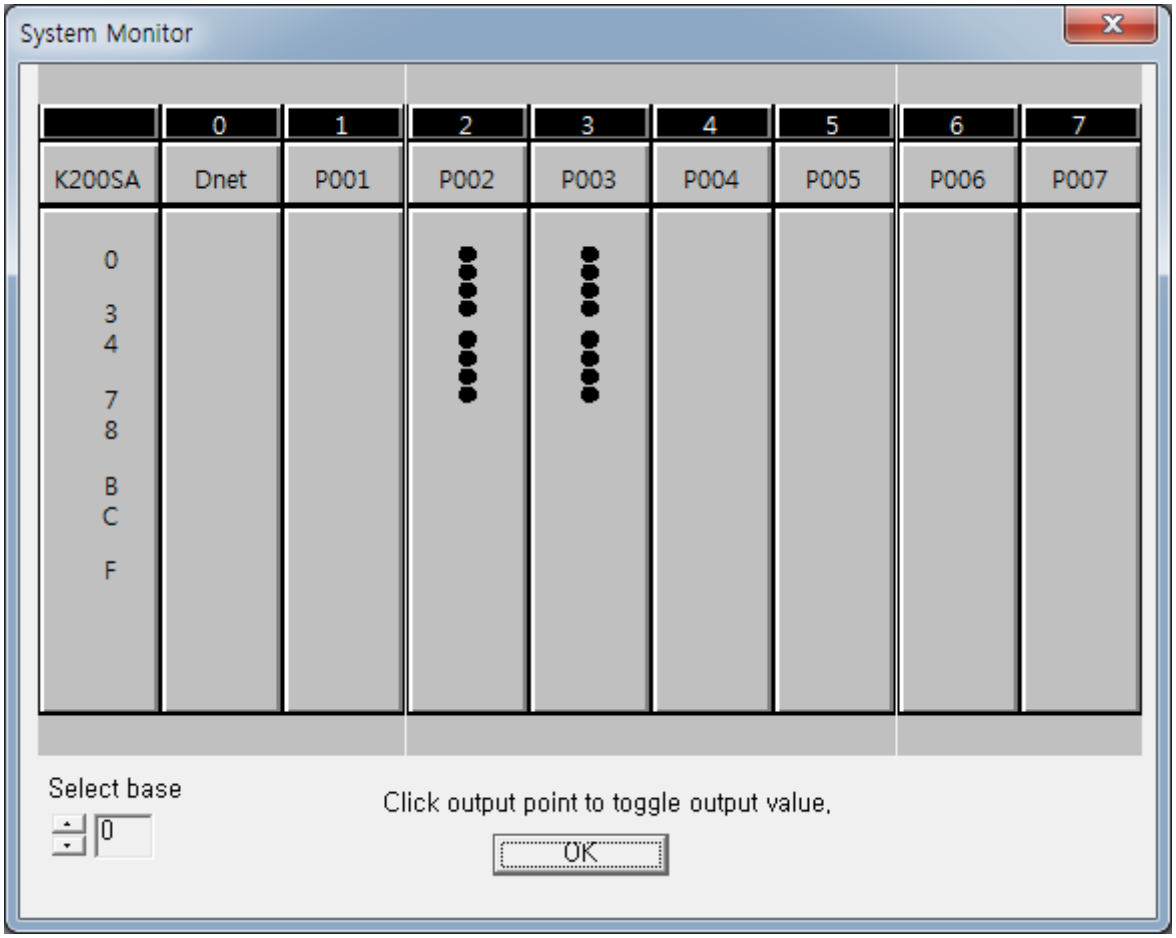


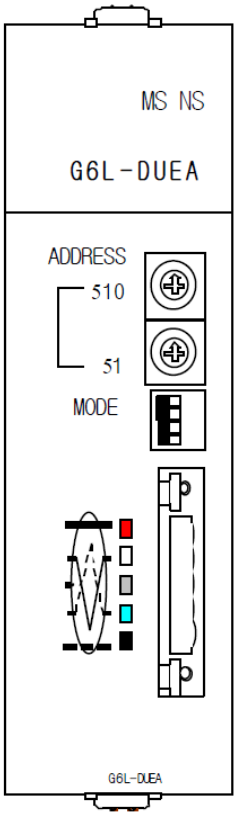
Fig. 5.1 PLC System used as an example

■ DeviceNet module setting

- Change G6L-DUEA MODE switch No. 1 and No. 2 and set to master.
- Set the DeviceNet Network speed by MODE switch No.3 & No.4.

  (When setting Ezi-MotionGate DeviceNet switch (SW.2) as '3', the communication speed of DeviceNet shall be set automatically.)
- Set the DeviceNet station no. (0~63) with ADDRESS rotary switch.

  (For this example, Master station no. was set to '0', and MOTIONGATE station no. as '1'.)



Master or Slave Mode setting

MODE. 1	MODE. 2	Operation status
OFF	OFF	Master Mode
ON	OFF	Slave Mode

Network Communication Speed setting

MODE. 3	MODE. 4	Operation status
OFF	OFF	125kbps
ON	OFF	250kbps
OFF	ON	500kbps
ON	ON	

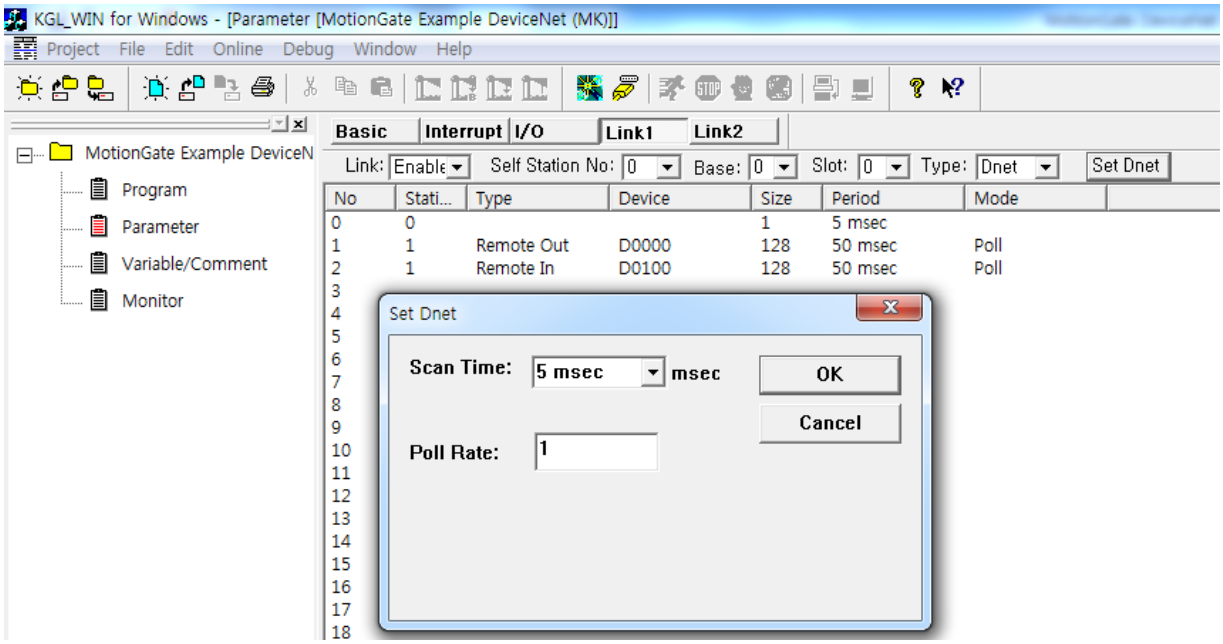
■ PLC Dnet parameter setting

- In PLC program KGL for Windows project, set PLC parameter by matching with the base mounted with DeviceNet module and the slot no.. (For this example, DeviceNet(Dnet) was set to station no.'0' and mounted to the slot no.0 of the base no.'0'.)

- Set the scan time which is the delay time after data scanning of all slave equipment.

-Set the poll rate which is the frequency of sending according to the program. When executing the program scan as much as the setting value here, the data sending shall be done once.

Fig. 11.2 PLC parameter setting value



■ PLC Remote sending/receiving parameter setting

- Select MOTIONGATE station no. (No. set to SW3).

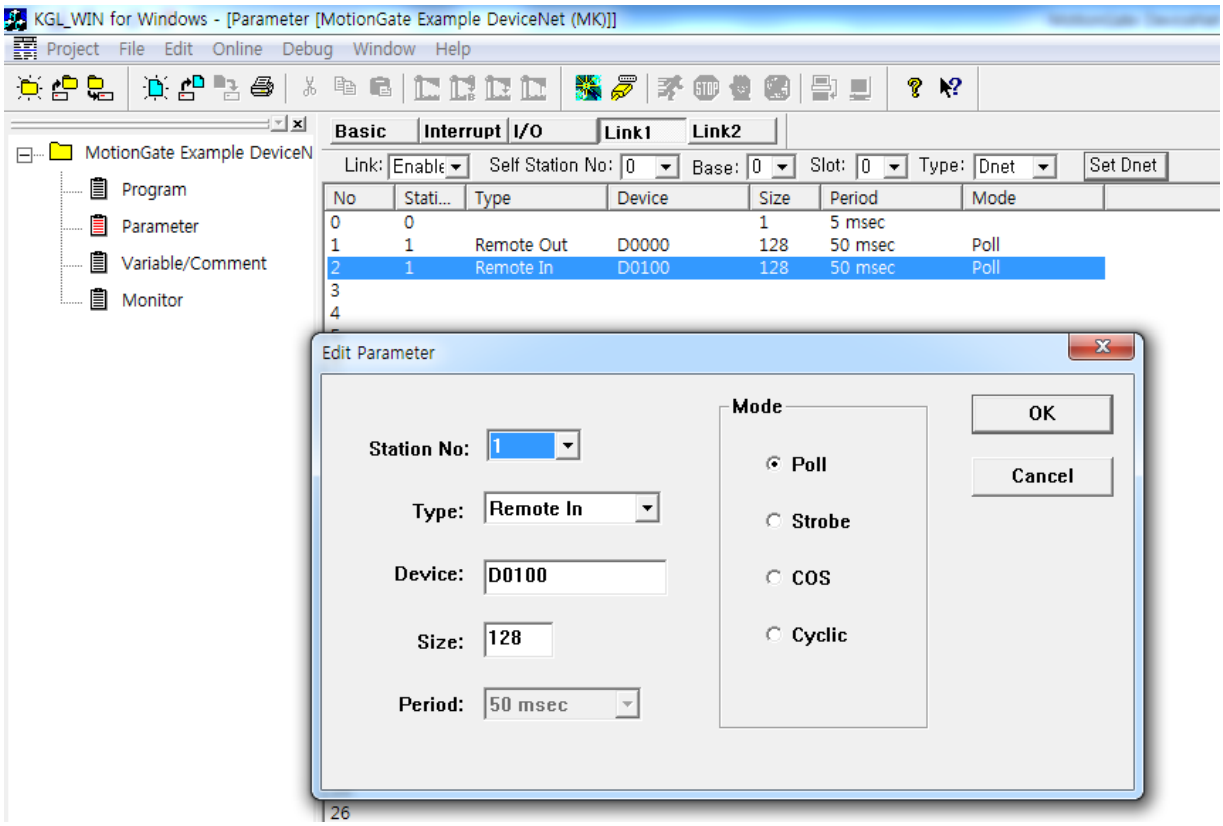
- Set the start address of Remote sending/receiving device. (This example uses the sending device as D000, and the receiving device as D100.)

- Set the range of Remote sending/receiving device as the data range used for MOTIONGATE (128 byte). (Refer to 4.1.2)

  ◆ sending device area : D000 ~ D063

  ◆ receiving device area : D100 ~ D163

- As MOTIONGATE DeviceNet communication mode is Poll mode, the setting value of communication period is meaningless.



5.2. PLC LADDER Programming Example

- Bit Area and Data Area

Fig. 11. 7 Address Range of Remote sending/receiving device

MotionGate [Output Map] -> PLC [Remote Receive]		PLC [Remote Transmit] -> MotionGate [Input Map]	
000h 03Fh	Axis - 0	100h 103Fh	Axis - 0
040h 07Fh	Axis - 1	1040h 107Fh	Axis - 1
080h 11Fh	Axis - 2	1080h 111Fh	Axis - 2
120h 15Fh	Axis - 3	1120h 115Fh	Axis - 3
160h 19Fh	Axis - 4	1160h 119Fh	Axis - 4
200h 23Fh	Axis - 5	1200h 123Fh	Axis - 5
240h 27Fh	Axis - 6	1240h 127Fh	Axis - 6
280h 31Fh	Axis - 7	1280h 131Fh	Axis - 7
320h 35Fh	Axis - 8	1320h 135Fh	Axis - 8
360h 39Fh	Axis - 9	1360h 139Fh	Axis - 9
400h 43Fh	Axis - 10	1400h 143Fh	Axis - 10
440h 47Fh	Axis - 11	1440h 147Fh	Axis - 11
480h 51Fh	Axis - 12	1480h 151Fh	Axis - 12
520h 55Fh	Axis – 13	1520h 155Fh	Axis – 13
560h 59Fh	Axis – 14	1560h 159Fh	Axis – 14
600h 63Fh	Axis - 15	1600h 163Fh	Axis - 15

NOTE: The Bit address of each axis is the offset value of sending/receiving device address when setting the DeviceNet Network

■ CONNECT

CONNECT command is used when determing the use of the corresponding axis. Example 1 is the example of CONNECT command for Axis-0 and Axis-1

Example 1. Check the activation command and response bit of each axis

✓ **Address of control bit map**

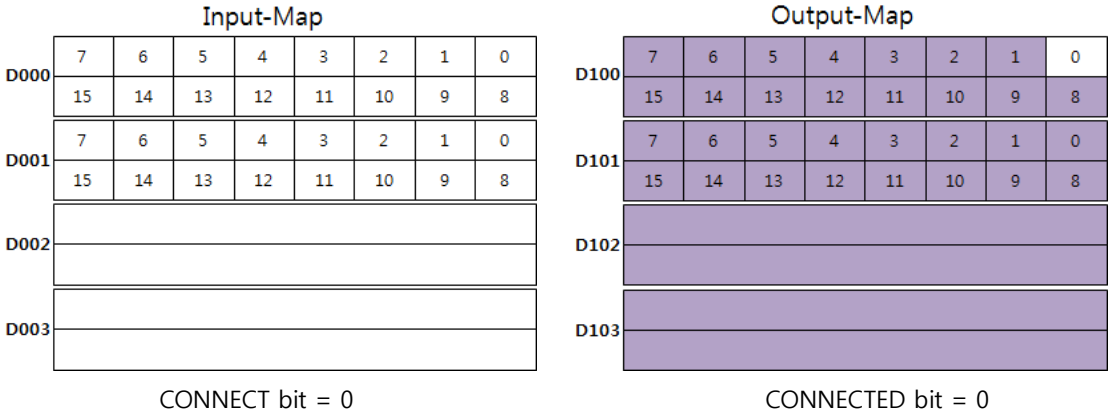
- **Input-Map**
  CONNECT – D000.0
- **Output-Map**
  CONNECTED – D100.0

✓ **IO information**

- **Input signal**
  CONNECT
- **Output signal**
  CONNECT RESP

✓ **IO-Map command and response type**

- **Before executing CONNECT command**



CONNECT bit = 0 CONNECTED bit = 0

- **After executing CONNECT command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

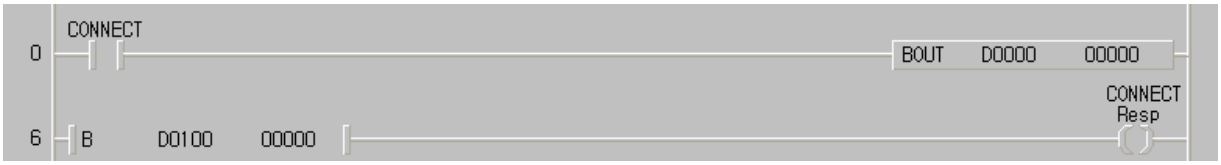
CONNECT bit = 1

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

CONNECTED bit = 1

✓ **LADDER**



NOTE: Example 1 is the basic example included in the example after Axis-0 and the later example can be executed in the state where this command was executed.

✓ Command sequence

① Set the bit=0 of CONNECT Bit (D000) with CONNECT ON signal.

② When Axis-0 connection is normal, the response data shall be output.

③ The response for CONNECT command of Axis-0 shall be verified by the change of bit=0 of D100.

④ If not connected, the bit of the data register of all of the 4WORD, except for bit=0 of D000 is set to '1'.

⑤ The bit status of connection response signal CONNECTED shall be verified by CONNECT Resp coil.

■ ENABLE Command and E-STOP Command

ENABLE and E-STOP commands operate in the inactivated state. Example 2 is the example for Motor ENABLE command and E-STOP command of Axis-0.

Example 2. Motor ENABLE command and E-STOP command

✓ **Address of Control Bit Map**

- **Input-Map**

  ENABLE – D000.1

  E-STOP – D000.2

- **Output-Map**

  ENABLED – D100.1

  E-STOP_RESP – D100.2

✓ **IO information**

- **Input signal**

  ENABLE

  E-STOP

- **Output signal**

  ENABLE RESP

  E-STOP LoopBack

✓ **IO-Map command and response type**

- **Execute ENABLE command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

ENABLE bit = 1

E-STOP bit = 1

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

ENABLED bit = 1

E-STOP RESP bit = 0

- **Execute E-STOP command**

Input-Map

D000	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

D100	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

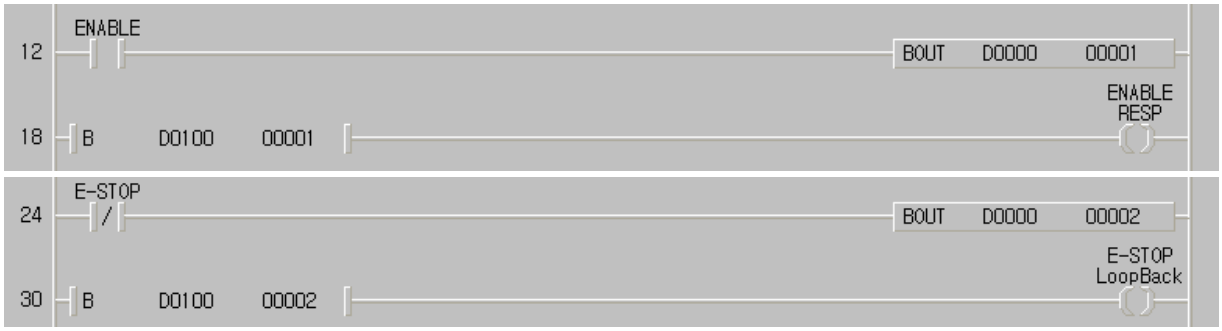
ENABLE bit = 1

E-STOP bit = 0

ENABLED bit = 0

E-STOP RESP bit = 1

✓ **LADDER**



NOTE: Example 2 is the example for ENABLE command and E-STOP command of Axis-0. The CONNECT command was omitted.

✓ Command sequence

① As Motor ENABLE command of Axis-0 is executed in the state that E-STOP command is not executed, maintain E-STOP bit as '1'.

② E-STOP command is configured by B contact command so that E-STOP bit can be '0' when Input signal is blocked.

③ When E-STOP command is executed, MOTIONGATE ENABLE command shall be cancelled automatically.

④ The bit status of ENABLED and E-STOPED shall be verified by ENABLE RESP and E-STOP Loop-Back coil.

■ ALARM Status Verification

Alarm status can be verified by ALM/ERR bit. Example 3 is the example for alarm status verification method and alarm reset of Axis-0

Example 3. Alarm Status verification and Alarm Reset command

✓ **Address of Control Bit Map**

- **Input-Map**

  ENABLE – D000.1

  E-STOP – D000.2

  ALARM_RESET – D000.3

- **Output-Map**

  ENABLED – D100.1

  E-STOP_RESP – D100.2

  ALARM_ERROR – D100.3

✓ **IO information**

- **Input signal**

  ALM_RST

- **Output signal**

  ALM_STAT

✓ **IO-Map Command and Response Type**

- **When alarm occurs**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

ALARM RESET bit = 0

ENABLE bit = 1

E-STOP bit = 1

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

ALARM bit = 1

ENABLED bit = 0

E-STOP RESP bit = 0

- **Execute Alarm Reset command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

ALARM RESET bit = 1

ENABLE bit = 1

E-STOP bit = 1

ALARM bit = 0

ENABLED bit = 0

E-STOP RESP bit = 0

✓ **LADDER**

NOTE: The ladder of Example 3 is the added command to Example 2. CONNECT, ENABLE, and E-STOP command were omitted.

✓ Command sequence

① Alarm status shall be responded as ALARM/ERROR bit.

② The occurred alarm can be reset by entering Close of ALM_RST.

③ If alarm occurrs, the motor shall be inactivated and ENABLED bit shall be changed to '0' status.

■ CANCEL Command

CANCEL command is used to stop the motion, HOLD command, and PT Run command. Example 4 is the example for CANCEL command of Axis-0.

Example 4. CANCEL command

✓ **Address of Control Bit map**

- **Input-Map**
  MOTION/SETTING – D000.7
  CANCEL – D001.0
- **Output-Map**
  MOTION/SETTING_RESP – D100.7
  MOTIONING – D101.0

✓ **IO information**

- **Input signal**
  CANCEL
- **Output signal**
  MOTIONING

✓ **IO-Map Command and Response type**

- **Execute CANCEL command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

CANCEL bit = 1

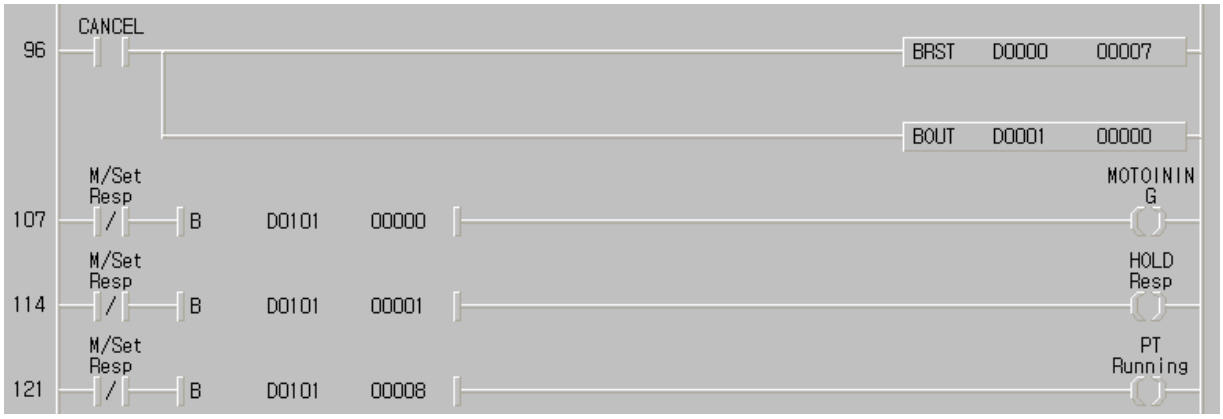
Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

MOTIONING bit = 0

✓ **LADDER**



NOTE: The ladder of Example 4 is the added command to Example 3. The contents of the previous example were omitted.

✓ Command Sequence

① Set MOTION/SETTING bit as '0' by entering Close of CANCEL and change the IO-Map to Motion mode status.

② If CANCEL Bit of Input-Map is set to '1', the CANCEL command shall be executed.

③ If CANCEL command is executed while the corresponding axis is running the MOTION command or HOLD command, the MOTIONING bit, HOLD RESP, and PT RUNNING bit shall be OFF.

※ How to verify MOTION/SETTING mode

MOTION and SETTING modes shall command IO-Map MOTION/SETTING bit and verify the response with MOTION/SETTING_RESP bit.

The command for MOTION mode shall verify the response for the MOTION mode as [0.7] bit of Output-Map is loop-backed as '0' when setting this bit as '0'.

The command for SETTING mode shall verify the response for SETTING command as [0.7] bit of Output-Map is loop-backed as '1' when setting this bit as '1'.

✓ **LADDER**

NOTE 1: This ladder is PLC circuit to prevent the increase of contacts and PLC steps.

NOTE 2: M/Set Resp used for the ladder of all examples is MOTION/SETTING_RESP bit.

■ HOLD command

HOLD command is the command to stop the MOTION command temporarily and restart. Example 5 is the example for HOLD command of Axis – 0.

Example 5. HOLD command of Axis - 0

✓ **Address of Control Bit map**

- **Input-Map**

  MOTION/SETTING – D000.7

  HOLD – D001.1

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  MOTIONING – D101.0

  HOLD_RESP – D101.1

✓ **IO information**

- **Input signal**

  HOLD

- **Output signal**

  MOTIONING

  HOLD Resp

✓ **IO-Map command and response type**

- **Execute HOLD command to stop the motion temporarily**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

HOLD bit = 1

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

HOLD_RESP bit = 1

MOTIONING bit = 0

- **Reset HOLD command to restart the motion**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

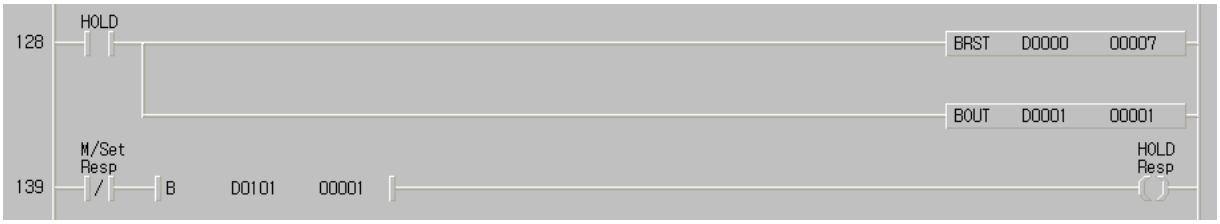
HOLD bit = 0

MOTION/SETTING_RESP bit = 0

HOLD_RESP bit = 0

MOTIONING bit = 1

✓ **LADDER**



NOTE: The ladder of Example 5 is the added command to Example 4 and the contents of the previous example were omitted.

✓ Command sequence

① Set MOTION/SETTING bit as '0' by Close signal of HOLD input to change the IO-Map into the motion mode state.

② HOLD command shall be applied regardless of the value of CMD_CODE, when HOLD bit of Input-Map is '1'.

③ If HOLD input is open when MOTIONGATE HOLD command is executed, HOLD bit of Input-Map shall be changed to OFF to restart the halted motion.

④ If MOTIONGATE HOLD command is executed, HOLD_RESP bit of Output-Map shall be '1' only in the MOTION mode. Thus, verify the bit of two Output-Map bits by using AND circuit.

■ RESPONSE TYPE setting

RESPONSE TYPE (response data setting) setting can be verified in the motion mode (MOTIONING). Example 6 is the example for RESPONSE TYPE setting method for Axis-0.

Example 6. Response data setting

✓ **Address of Control Bit map**

- **Input-Map**

  MOTION/SETTING – D000.7

  RESPONSE_TYPE 0~3 – D000.12~D000.15

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  RESPONSE_TYPE_RESP 0~3 – D100.12~D100.15

  RESPONSE_DATA – D102~D103 (D102 [1 DWORD])

✓ **IO information**

- **Input signal**

  Response Type 0~3

- **Output data(DWORD)**

  Command Position

  Actual Position

  Position Error

  Actual Velocity

  Current PT No

  Current Alarm No

✓ **IO-Map command and response type**

- **Not request the response data**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0000b

RESPONSE_TYPE 0~3 = 0000b

RESPONSE_DATA = 0

- **Request the Command Position**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

RESPONSE_TYPE 0~3 = 0001b

MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0001b

RESPONSE_DATA = Command Position

- **Request the Actual Position**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

RESPONSE_TYPE 0~3 = 0010b

MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0010b

RESPONSE_DATA = Actual Position

- **Request the Position Error**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

RESPONSE_TYPE 0~3 = 0011b

MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0011b

RESPONSE_DATA = Position Error

- **Request the Actual Velocity**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

RESPONSE_TYPE 0~3 = 0101b

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0101b

RESPONSE_DATA = Actual Velocity

- **Request the Current PT No.**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

RESPONSE_TYPE 0~3 = 0101b

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0101b

RESPONSE_DATA = Current PT No.

- **Request the Current Alarm Info.**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

RESPONSE_TYPE 0~3 = 0100b

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

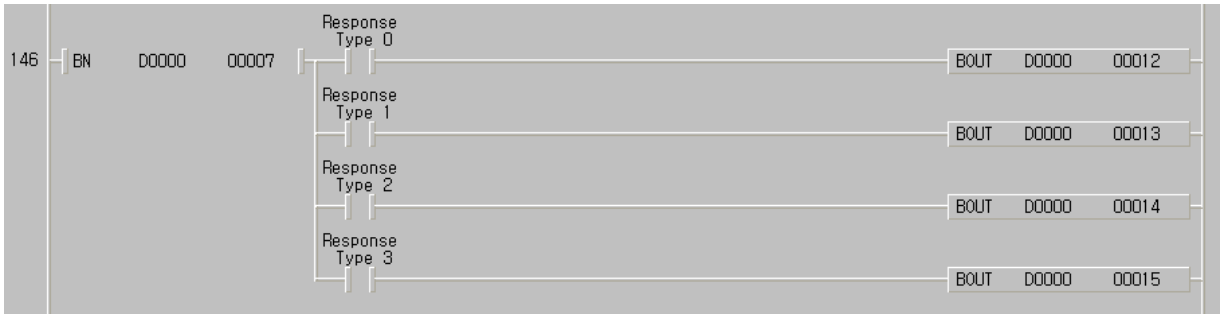
MOTION/SETTING_RESP bit = 0

RESPONSE_TYPE 0~3 = 0100b

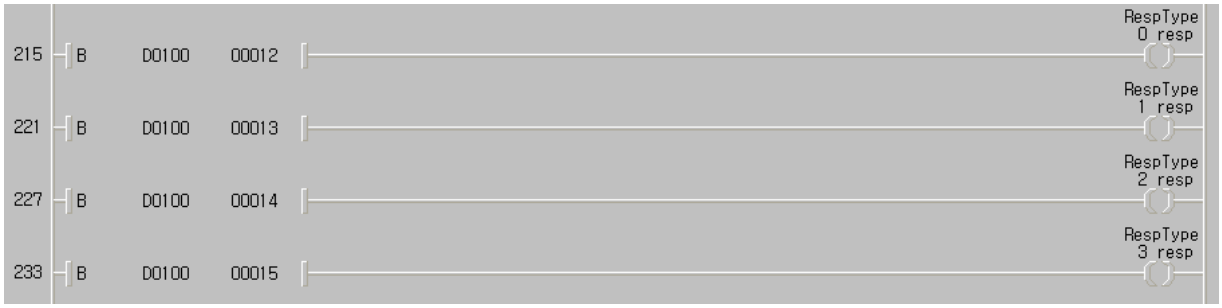
RESPONSE_DATA = Current Alarm Info.

✓ **LADDER**

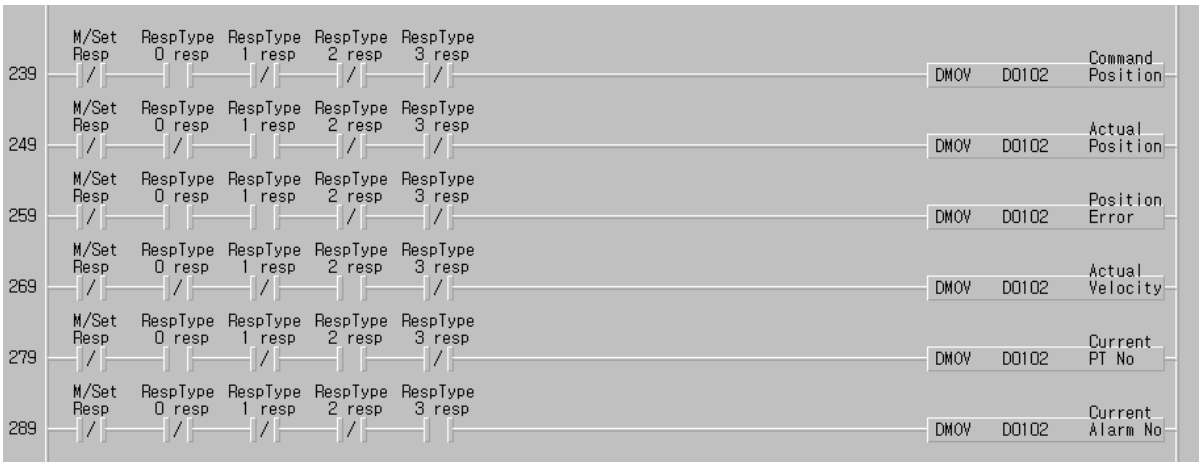
➢ Enter the response data type into Response Type area



➢ Simplify the response bit information of Response Type



➢ Receive the simplified bit information and classify the response data.



NOTE: The ladder of Example 6 is the added command to Example 5. The contents of the previous example were omitted.

✓ Command sequence

① As response data setting is available only in MOTION mode, the command shall be executed by recognizing that MOTION/SETING Bit is '0'.

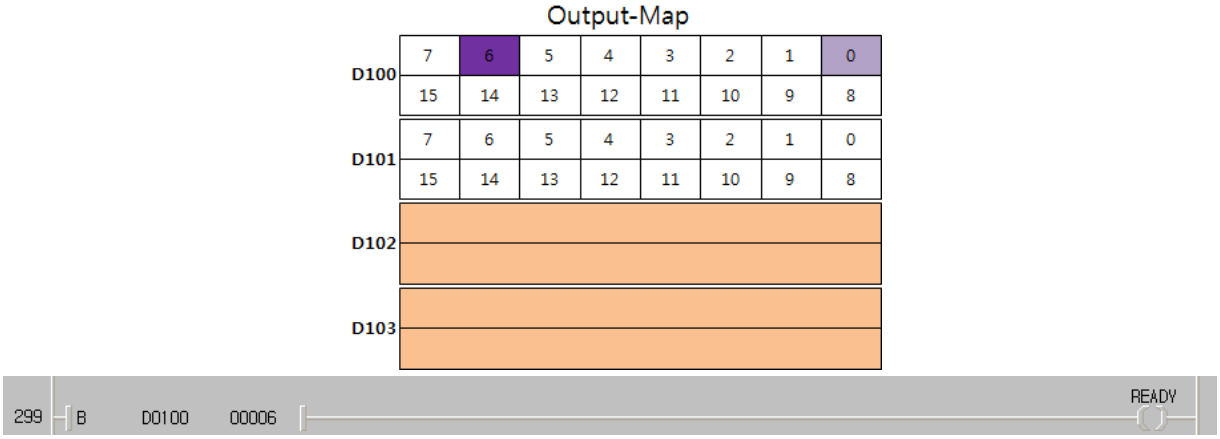
② The classification of data received in the data area of Output-Map shall be verified by the combination of response Bit. Here, when the response Bit is valid only for the received Bit information when MOTION/SETTING_RESP Bit is '0'.

■ Status Information Verification

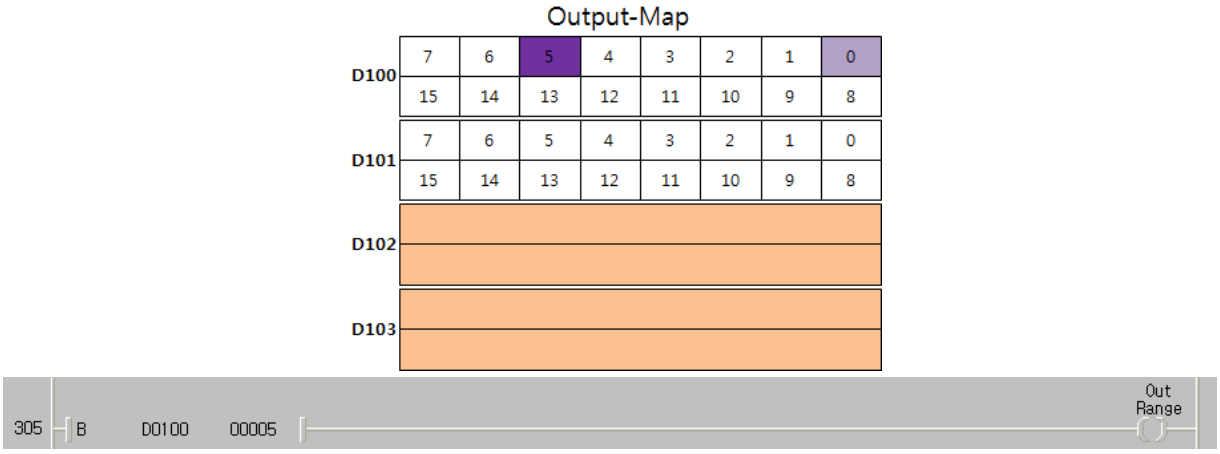
The status information Bit except for READY Bit, Out RANGE Bit can be verified in the motion mode (MOTIONING) status. Example 7 is the example for status information verification method of Axis-0.

Example 7. Response data setting

✓ READY Bit [D100.06]: ON when IO-Map command is available.

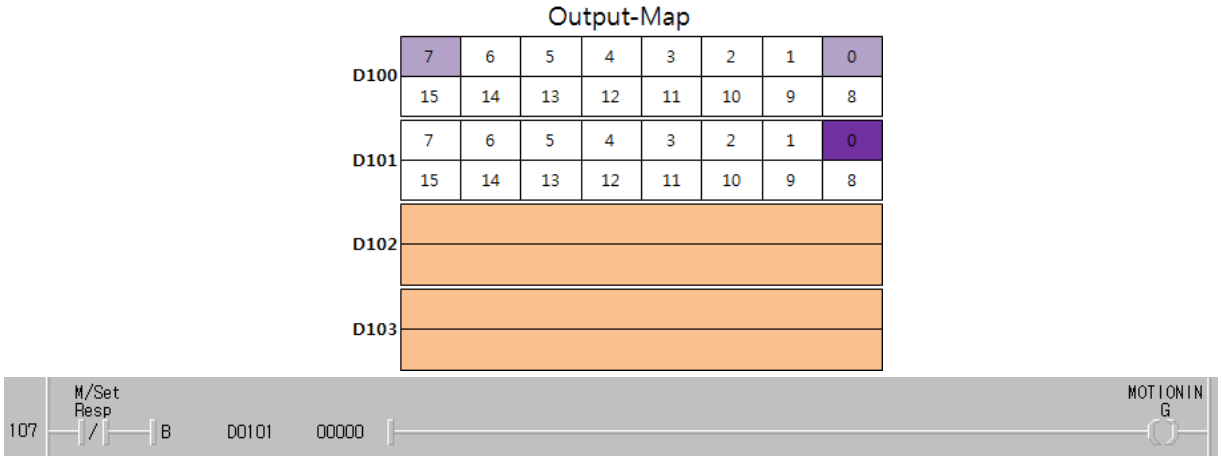


✓ Out. Range Bit [D100.05]: ON when IO-Map command exceeds the data range.

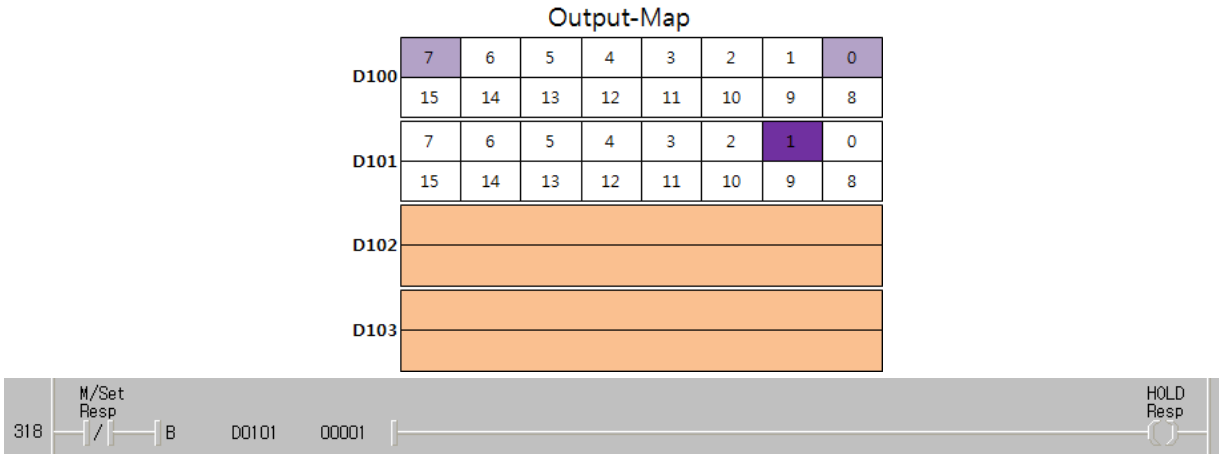


NOTE: READY Bit and Out of Range Bit operate in the MOTION/SETTING mode under the same condition.

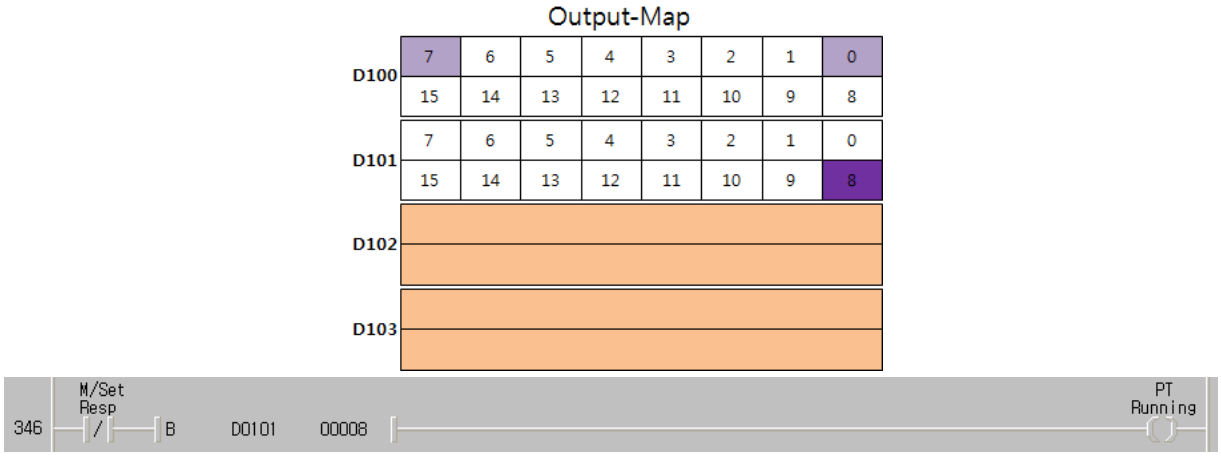
✓ MOTIONING Bit [D101.00]: ON when the motor is driving.



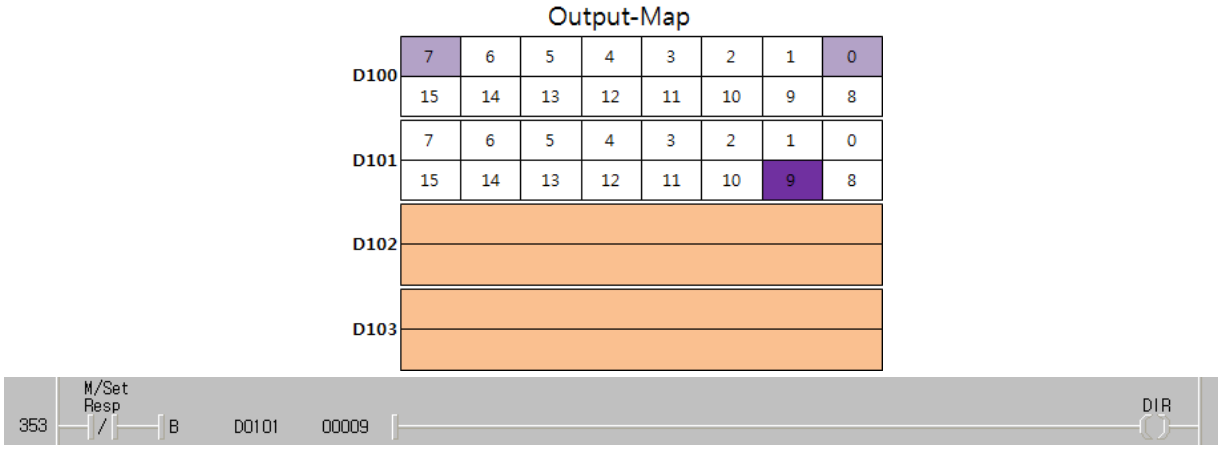
✓ HOLD RESP. Bit [D101.01]: ON when changed to HOLD status during operation.



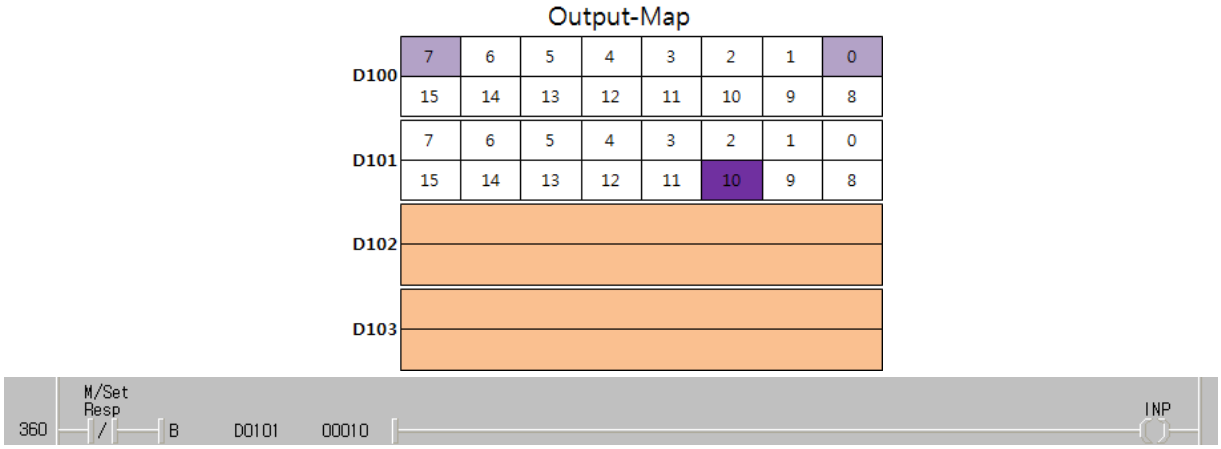
✓ PT RUNNING Bit [D101.08] : ON when PT is running.



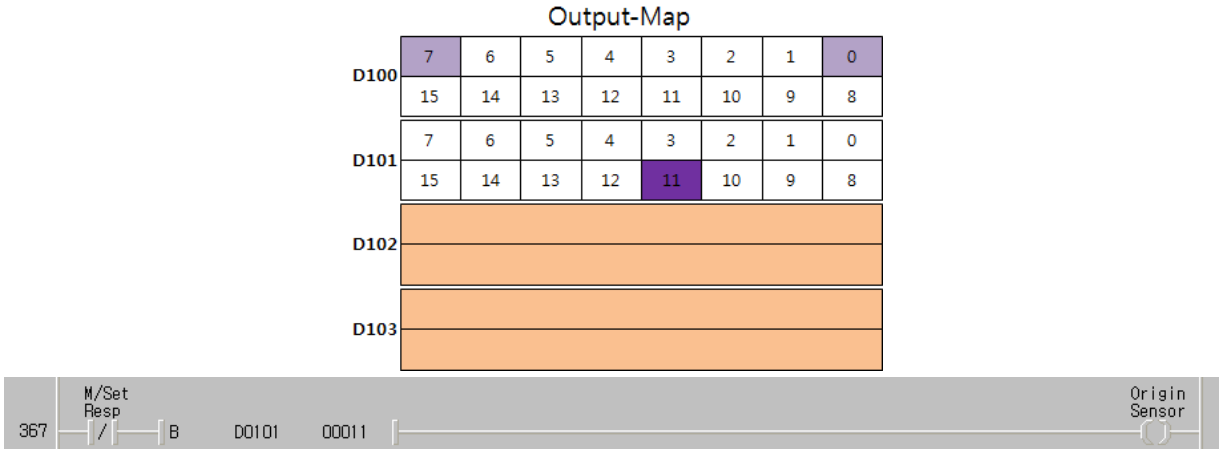
✓ DIR Bit [D101.09]: ON when the rotation direction of motor is normal (CW).



✓ INP Bit [D101.10]: ON when In position is completed

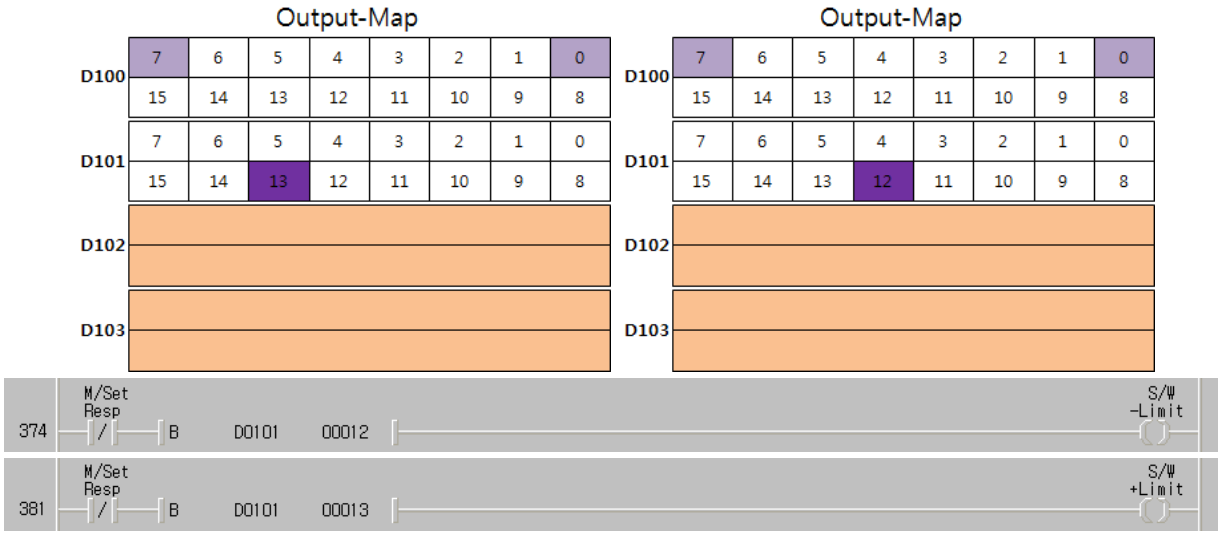


✓ OGRIGIN_SENSOR Bit [D101.11]: ON when the Origin Sensor is ON.



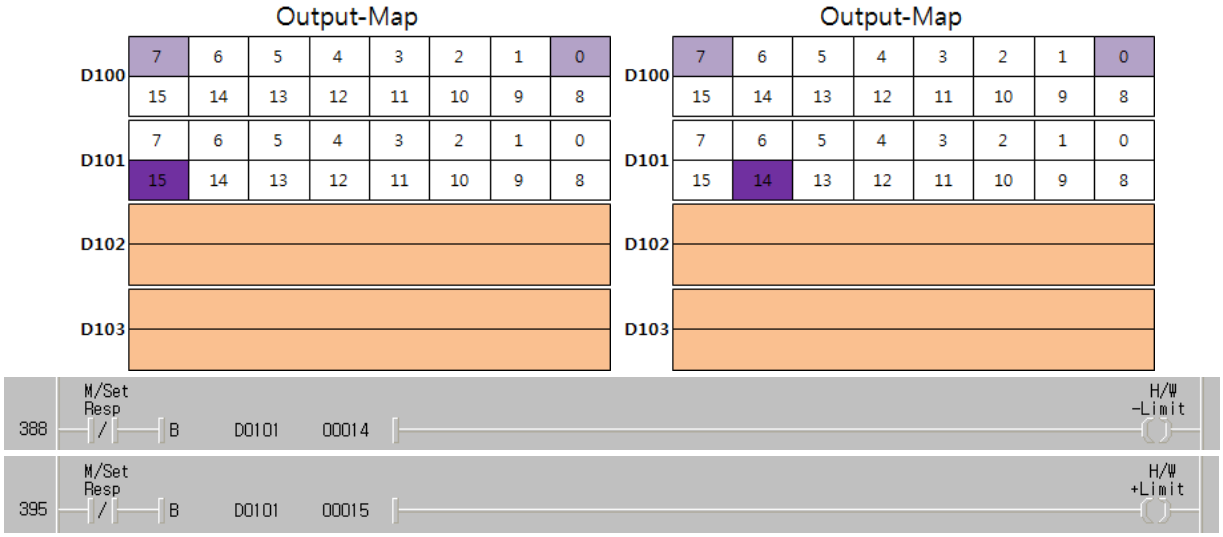
✓ S/W -LIMIT Bit [D101.12]: ON when exceeding – direction program limit

✓ S/W +LIMIT Bit [D101.13]: ON when exceeding + direction program limit



✓ H/W +LIMIT Bit[D101.14]: ON when + direction limit sensor is ON

✓ H/W -LIMIT Bit[D101.15]: ON when – direction limit sensor is ON



NOTE: Status information verification is available when IO-Map is in MOTION mode.

■ CMD START command

CMD START command is used by executing the command in the MOTION mode of IO-Map (MOTION/SETTING = 0) such as Position Move, PT Run, Origin Search, etc and the SETTING mode (MOTION/SETTING = 1). This command is used by forming the ladder the same way as that in Example 8.

Example 8. How to run CMD START command of Motion mode

✓ **IO-Map command and response type**

- **Command and response in MOTION mode**

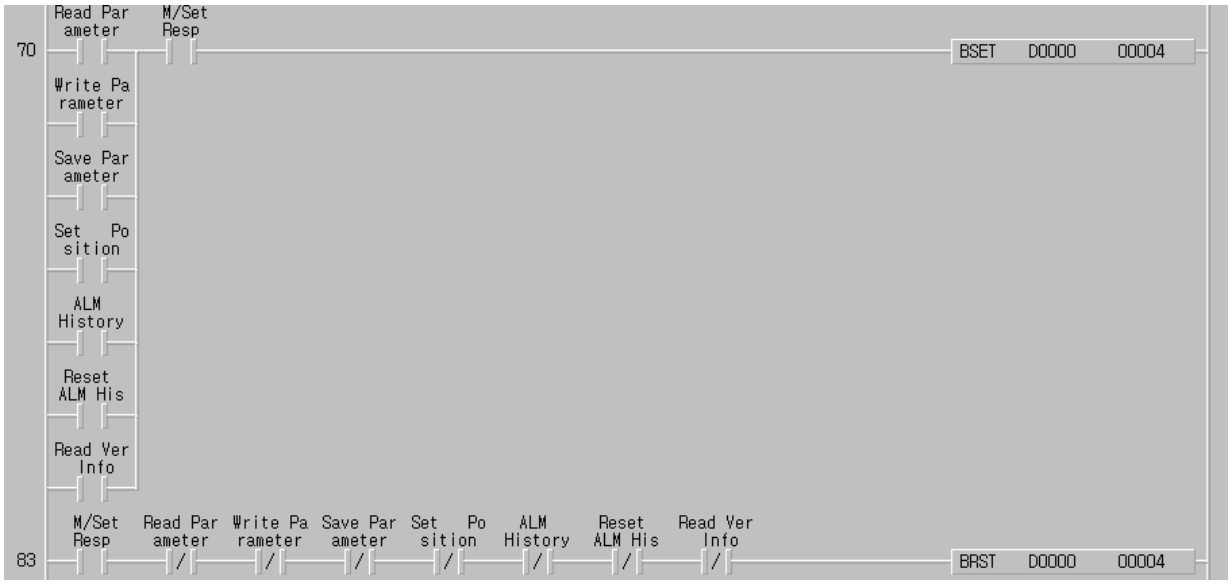
Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

✓ **LADDER**



NOTE : Example 8 is the added example to Example 15, 16, 18, 19, 21 to execute the corresponding commands.

✓ **Command sequence**

① Configure the Input signal of the control that requires the CMD_START Bit by OR

② Configure the Input signal and the N.C. signal of MOTION/SETTING_RESP and set the CMD_START Bit as '1'

③ When there is no Input signal of control, reset CMD_START Bit as '0'.

Example 9. How to run CMD START command of SETTING mode

✓ **IO-Map command and response type**

- **Command and response in the MOTION mode**

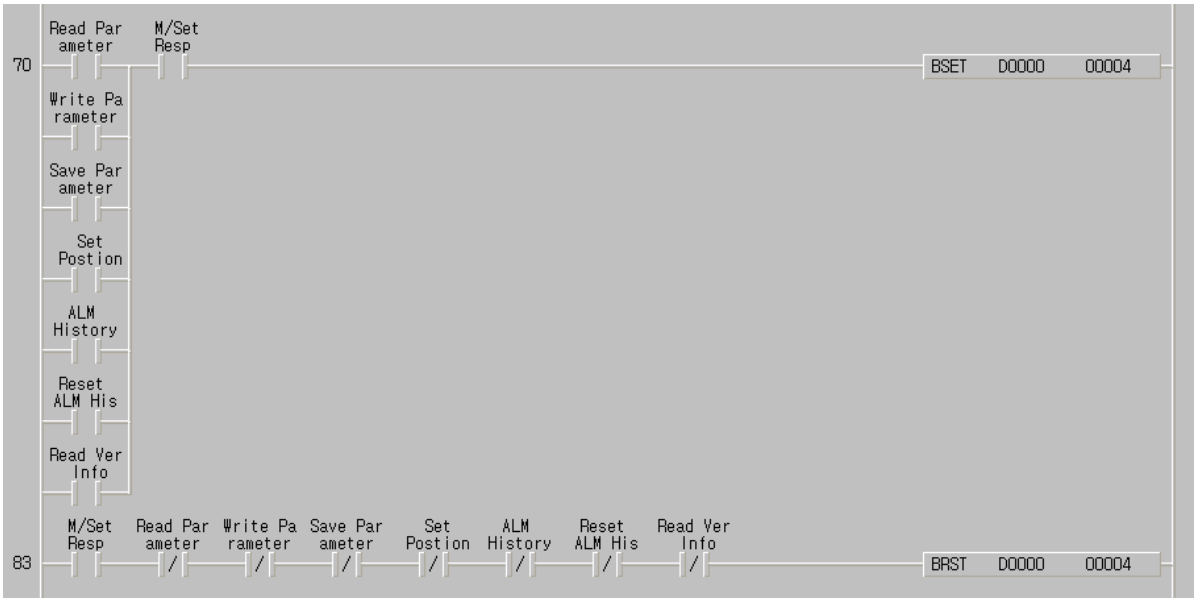
Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

✓ **LADDER**



NOTE : Example 9 is the added example to Example 15, 16, 18, 19, 21 to use the corresponding example in order to execute the corresponding commands.

✓ Command sequence

① Configure the Input signal of the control that requires the CMD_START Bit by OR.

② Configure the Input signal and the N.O. signal of MOTION/SETTING_RESP by AND and set the CMD_START Bit as '1'.

③ When no Input signal of control, reset CMD_START Bit as '0'.

5.2.1 JOG Move Command

JOG MOVE operates in the command code (CMD_CODE) '0' in the MOTION mode (MOTIONING). JOG MOVE command response for Speed Step Move or Speed Ratio Move and Speed Value, shall be verified by JOG_Resp. Bit

■ JOG Move – Speed Step Move or Speed Ratio Move

Speed Step Move and Speed Ratio Move of JOG Move has the same operation command method. This operation method shall be selected by setting the value of parameter PN#104 『Use Jog Speed Ratio』. (*Refer to 6.1)

Speed Step Move of JOG MOVE is the motion of JOG MOVE with the saved speed level of 0~3.

Speed Ratio Move of JOG MOVE operates with the ratio of saved parameter PN#105 『Move Speed for Jog Move: Ratio』.

Example 10. JOG MOVE command of Speed Step Move , Speed Ratio Move

✓ **Address of Control Bit map**

- **Input-Map**

  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  SPD.MODE – D001.10
  -JOG – D001.4
  +JOG – D001.5
  Command Data Area – D002~D003 (D002 [1 DWORD])

- **Output-Map**

  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  JOG_RESP – D101.5

✓ **IO information**

- **Input information**

  JOG-
  JOG+
  JOG Speed Step No. (input range : 0~3 [DWORD])
  JOG Speed Ratio Value (input range : 1~255 [DWORD])

- **Output information**

  MOTIONING
  JOG Resp

✓ IO-Map command and response type

- Run -JOG command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b , SPD_MODE bit = 0;

+JOG bit = 0, -JOG bit = 1

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

JOG_RESP bit = 1, MOTIONING bit = 1

- Run +JOG command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b , SPD_MODE bit = 0;

+JOG bit = 1, -JOG bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

JOG_RESP bit = 1, MOTIONING bit = 1

- When -JOG and +JOG Bit is '0'

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b , SPD_MODE bit = 0;

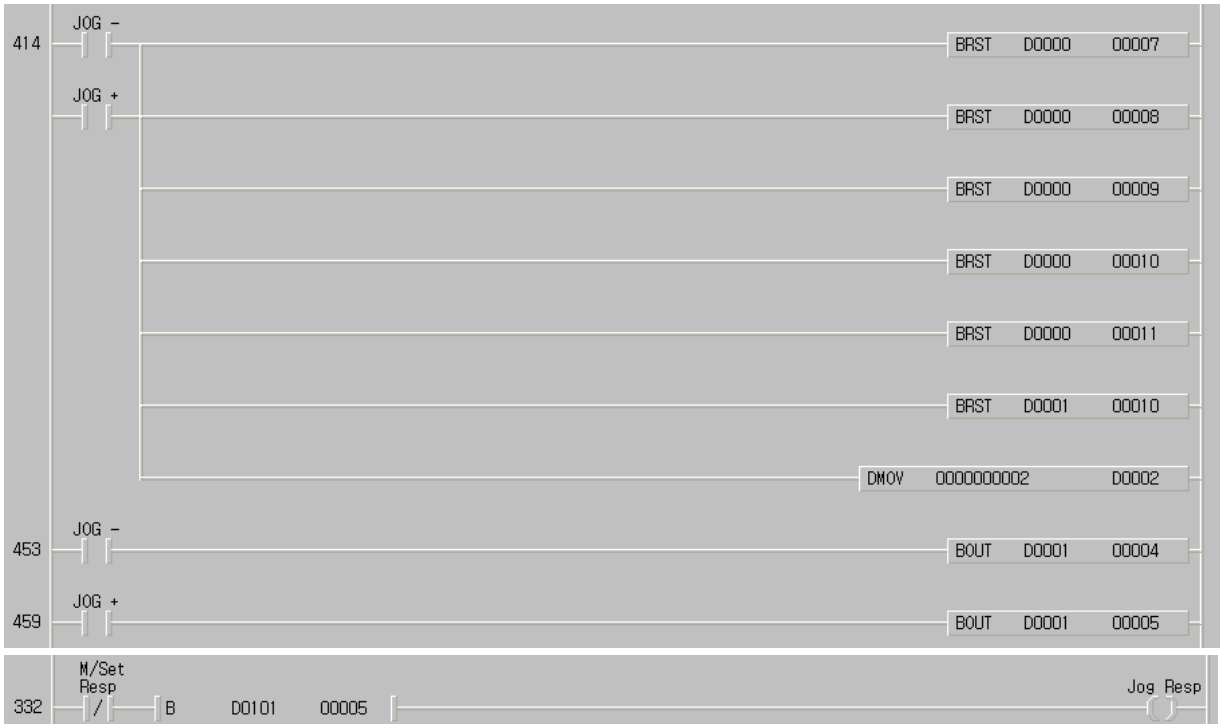
+JOG bit = 0, -JOG bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

JOG_RESP bit = 0, MOTIONING bit = 0

✓ **LADDER**



NOTE 1: The ladder of Example 10 is the added command to the previous example

NOTE 2: When parameter Pn#104 『Use Jog Speed Ratio』 value is '1', and the ladder of Example 10 is executed in Speed Ratio Move mode, it shall move at a speed of 2% of Pn#105 『Move Speed for Jog Move: Ratio』

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of JOG- or JOG+ input and change the IO-Map into motion mode status.

② Set the value of CMD_CODE as 0000b to set to general motion mode.

③ Set SPD_MODE Bit as '0'

④ When parameter Pn#104 『Use Jog Speed Ratio』 is '0', it means Speed Step Move mode. Enter the value of Speed Step No.0~3 into the Command Data area by DMOV command.

⑤ When parameter Pn#104 『Use Jog Speed Ratio』 is '1', it means it is in Speed Ratio Move mode. Enter the range of speed ratio 1~255 into the Command Data area by DMOV command

⑥ Set Input-Map -JOG or +JOG Bit as '1'.

⑦ If –JOG or +JOG Bit is set to '0', JOG Move will stop and MOTIONING Bit will be '0'

⑧ The command response of JOG MOVE shall be verified by AND combination of Output-Map MOTION/SETTING_RESP Bit and JOG_RESP Bit.

■ JOG Move – Speed Value Move

Speed Value Move of JOG MOVE is the motion for JOG MOVE by applying the input value to actual speed. Example 11 is the example for Speed Value Move of JOG MOVE of Axis-0.

Example 11. JOG MOVE command of Speed Value Move type

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  SPD.MODE – D001.10

  -JOG – D001.4

  +JOG – D001.5

  Command Data Area – D002~D003 (D002 [1 DWORD])

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  MOTIONING – D101.1

  JOG_RESP – D101.5

✓ **IO information**

- **Input information**

  JOG-

  JOG+

  JOG Speed Value (Input range : 1~500,000 pps [DWORD])

- **Output information**

  MOTIONING

  JOG Resp

✓ IO-Map command and response type

- Run -JOG command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b , SPD_MODE bit = 1;

+JOG bit = 0, -JOG bit = 1

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

JOG_RESP bit = 1, MOTIONING bit = 1

- Run +JOG command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b , SPD_MODE bit = 1;

+JOG bit = 1, -JOG bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

JOG_RESP bit = 1, MOTIONING bit = 1

- When –JOG and +JOG Bit is '0'

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

CMD_CODE = 0000b , SPD_MODE bit = 1;

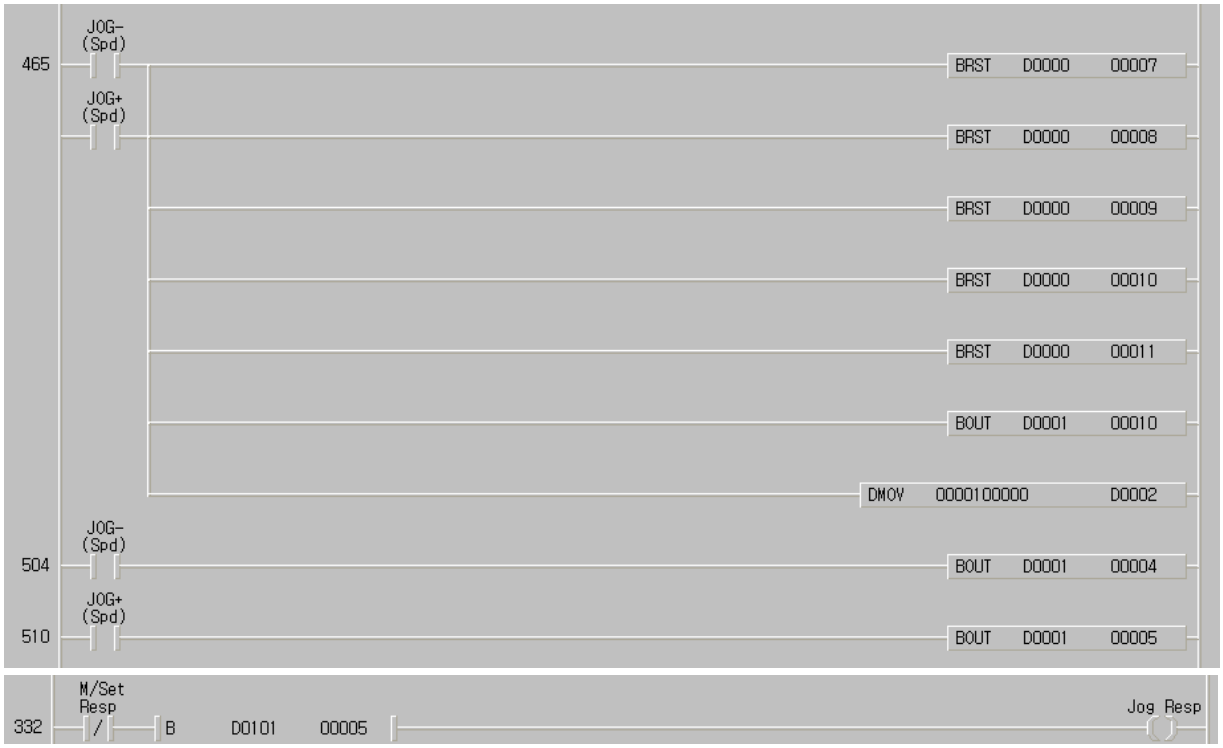
+JOG bit = 0, -JOG bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

JOG_RESP bit = 0, MOTIONING bit = 0

✓ **LADDER**



NOTE 1: The ladder of Example 11 is the added command to the previous example.

NOTE 2: This example is configured for JOG MOVE with 10,000pps to the direction according to the input

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of JOG- or JOG+ input and change the IO-Map into motion mode status.

② Set the value of CMD_CODE as 0000b to set to general motion mode.

③ Set the SPD_MODE Bit as '1'.

④ Enter the actual speed value of JOG MOVE into the Command Data area by DMOV command

⑤ Set Input-Map -JOG or +JOG Bit as '1'.

⑥ If -JOG or +JOG Bit is set to '0', JOG MOVE will stop and MOTIONING Bit shall be '0'.

⑦ The command response of JOG MOVE shall be verified by AND combination of MOTION/SETTING_RESP Bit and JOG_RESP Bit of Output-Map.

5.2.2 Step Move Command

Step MOVE operates in Command code (CMD_CODE) '0' which is in the MOTION mode status (MOTIONING) and moves by setting the value of step move distance no. 0~3. Example 12 is the example for Step Move of Axis-0

Example 12. Step MOVE Command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  -STEP – D001.6

  +STEP – D001.7

  Command Data Area – D002~D003 (D002 [1 DWORD])

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  MOTIONING – D101.1

  STEP_RESP – D101.5

✓ **IO information**

- **Input information**

  STEP-

  STEP+

  STEP Step Distance No. (Input range : 0~3 [DWORD])

- **Output information**

  MOTIONING

  Step Resp

✓ IO-Map command and response type

- Run -STEP Move command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b

+STEP bit = 0, -STEP bit = 1

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

STEP_RESP bit = 1, MOTIONING bit = 1

- Run + STEP Move command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b

+STEP bit = 1, -STEP bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

STEP_RESP bit = 1, MOTIONING bit = 1

- When –STEP and +STEP Bit is ‘0’

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b

+STEP bit = 0, -STEP bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

STEP_RESP bit = 0, MOTIONING bit = 0

✓ **LADDER**

NOTE 1: The ladder of Example 12 is the added command to the previous Example.

NOTE 2: This example is configured for JOG MOVE with 10,000pps to the direction according to the input.

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of STEP- or STEP+ input and change the IO-Map into motion mode status.

② Set the value of CMD_CODE as 0000b to set to general motion mode.

③ Enter the save no. of one step MOVE distance (STEP Distance No.) into the Command Data area by DMOV command

④ Set -STEP or +STEP Bit of Input Map as '1'.

⑤ After moving as much as the distance of one step move, MOTIONING Bit shall be '0'.

⑥ The command response of Step MOVE can be verified by AND combination of MOTION/SETTING_RESP Bit and STEP_RESP Bit of Output-Map.

5.2.3 Zero Position MOVE command

Zero Position MOVE operates at command code (CMD_CODE) '0' which is in the MOTION mode status (MOTIONING) and moves, and the value of entered data (D0) shall be disregrded. Example 13 is the example for Zero position MOVE of Axis-0

Example 13. Zero Position MOVE command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  GO_ZERO_POS – D001.3

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  MOTIONING – D101.1

  GO_ZERO_POS_RESP – D101.3

✓ **IO information**

- **Input information**

  Go Zero Position

- **Output information**

  MOTIONING

  Go Zero POS Resp

✓ **IO-Map command and response type**

- **Run Zero Position MOVE command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

CMD_CODE = 0000b

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

GO_ZERO_POS bit = 1

GO_ZERO_POS_RESP bit = 1,

MOTIONING bit = 1

- **Even if GO_ZERO_POS Bit is released during Zero Position Move, the zero position MOVE status shall be maintained.**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b

0GO_ZERO_POS bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

GO_ZERO_POS_RESP bit = 1,

MOTIONING bit = 1

- **When setting GO_ZERO_POS bit at the zero position**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102	Response Data = 0							
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0000b

RESPONSE_TYPE = 0002b

GO_ZERO_POS bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0000b

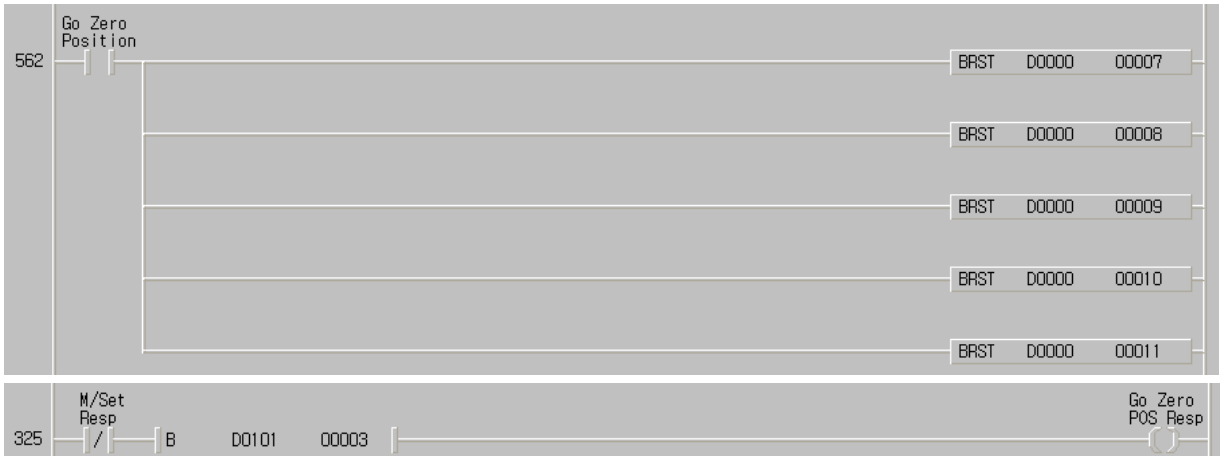
RESPONSE_TYPE_RESP = 0002b

GO_ZERO_POS_RESP bit = 1,

MOTIONING bit = 1

RESPONSE_DATA = Actual Position (0)

✓ **LADDER**



NOTE: The ladder of Example 13 is the added command to the previous example.

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of Go Zero Position input and change the IO-Map into motion mode status.

② Set the value of CMD_CODE as 0000b and set to general motion mode.

③ Set GO_ZERO_POS Bit of Input-Map as '1'.

④ MOTIONING Bit becomes '1' when Zero Position Move starts and if it reaches Zero position, it shall be cleared as '0'.

⑤ The command response of Zero Position MOVE can be verified by AND combination of MOTION/SETTING_RESP Bit and GO_ZERO_POS_RESP Bit of Output-Map.

5.2.4 Position MOVE Command

Incremental position MOVE operates at the command code (CMD_CODE) '1' which is in the MOTION mode status (MOTIONING/SETTING = 0) and moves the position value as incremental MOVE or absolute MOVE into the input data (D0).

■ Incremental MOVE

Incremental MOVE is the command to run the incremental move with the entered position value. Example 14 is the example for incremental MOVE of Axis-0

Example 14. Incremental MOVE command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  INC/ABS – D001.8
  CMD_START – D000.4
  Command Data Area – D002~D003 (D002 [1 DWORD])

- **Output-Map**

  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  MOTIONING – D101.1
  CMD_ RESP – D100.4

✓ **IO information**

- **Input information**

  INC Move
  Incremental Position (Input range : -2,147,483,648 ~ −2,147,483,647 [DWORD])

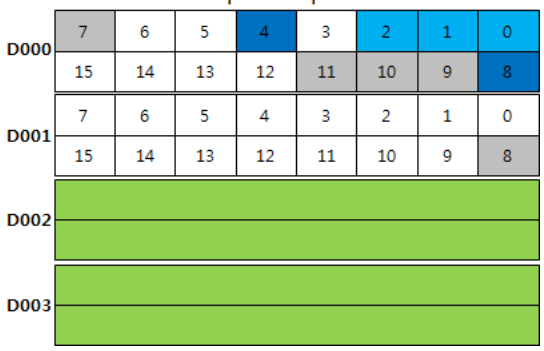
- **Output information**

  MOTIONING
  POS MOV Resp

✓ IO-Map command and response type

- Run INC Move command

Input-Map



MOTION/SETTING bit = 0

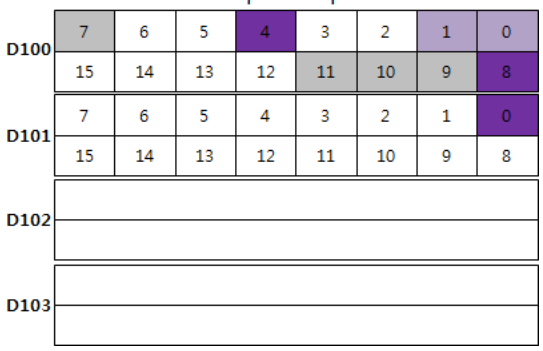
CMD_CODE = 0001b

INC/ABS bit = 0

Command Data = incremental position value

CMD_START bit = 1

Output-Map



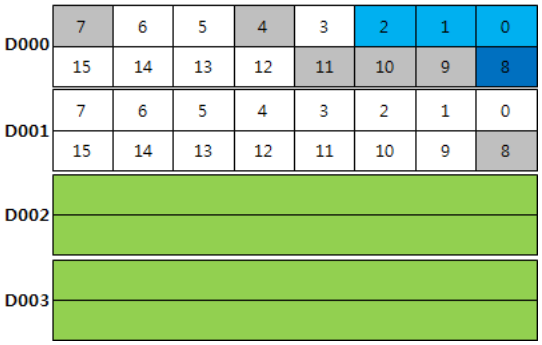
MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0001b

CMD_RESP bit = 1, MOTIONING bit = 1

- Reset CMD_START Bit after INC Move

Input-Map



MOTION/SETTING bit = 0

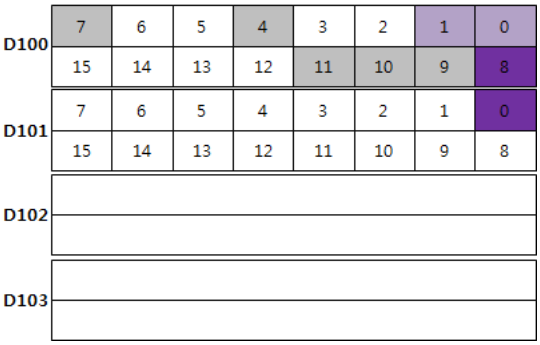
CMD_CODE = 0001b

INC/ABS bit = 0

Command Data = incremental position value

CMD_START bit = 0

Output-Map

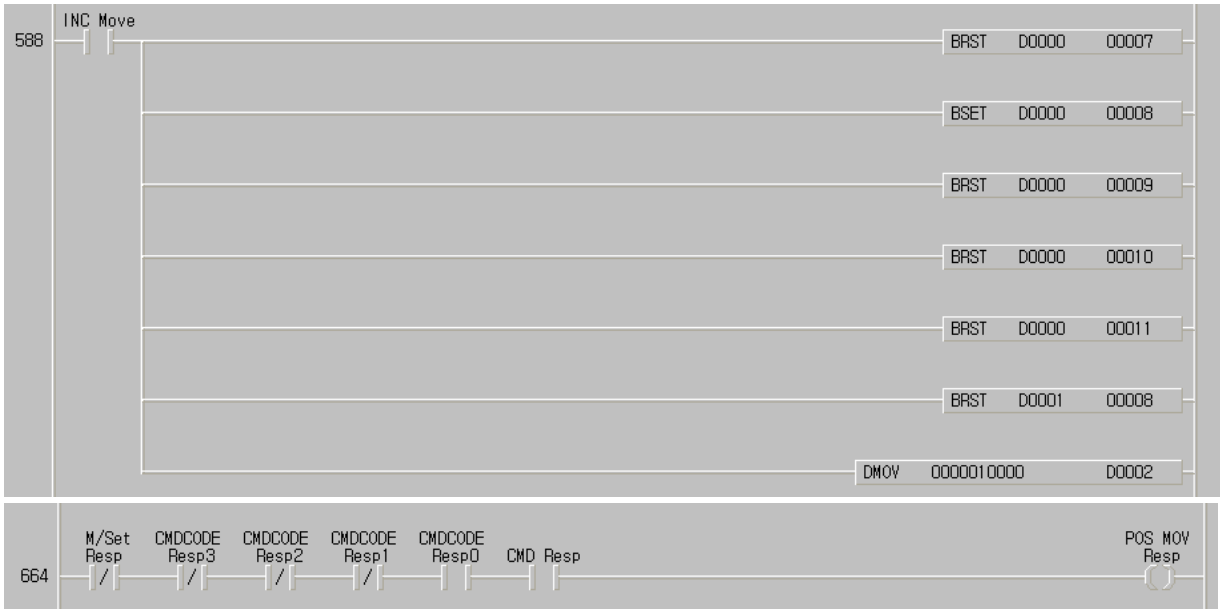


MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0001b

CMD_RESP bit = 0, MOTIONING bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 14 is the added command to the previous example

NOTE 2: This example was configured to move to the incremental position with 10,000[pulse]

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of INC Move input and change the IO-Map to motion mode status.

② Set the value of CMD_CODE as 0001b and set to Position Move mode

③ Set INC/ABS Bit as '0'

④ Enter the Incremental Position into Command Data area by DMOV command.

⑤ Set the CMD_START Bit of input-map as '1'.

⑥ After moving to the incremental move position, MOTIONING Bit shall be '0'

⑦ The command response of the Incremental Move can be verified by AND combination of MOTION/SETTING_RESP Bit and CMD_RESP, CMD_CODE_RESP Bit of Output-Map.

■ Absolute MOVE

Absolute MOVE is the command to run the absolute move with the entered position value (D002). Example 15 is the example for absolute MOVE of Axis-0

Example 15. Absolute MOVE command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  INC/ABS – D001.8

  CMD_START – D000.4

  Command Data Area – D002~D003 (D002 [1 DWORD])

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  CMD_CODE_RESP – D100.8~D100.11

  MOTIONING – D101.1

  CMD_ RESP – D100.4

✓ **IO information**

- **Input information**

  ABS Move

  Absolute Position (Input range : -2,147,483,648 ~ −2,147,483,647 [DWORD])

- **Output information**

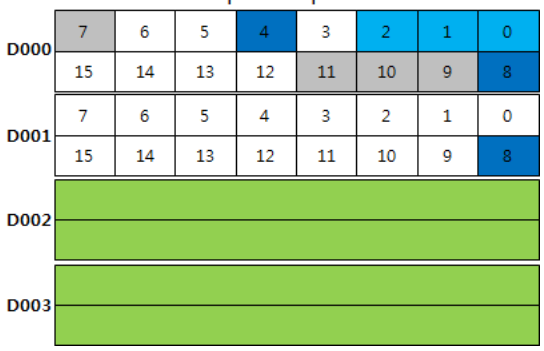
  MOTIONING

  POS MOV Resp

✓ IO-Map command and response type

- Run ABS Move command

Input-Map



MOTION/SETTING bit = 0

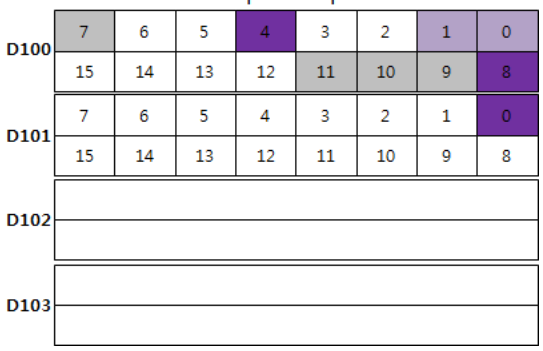
CMD_CODE = 0001b

INC/ABS bit = 1

Command Data = absolute position value

CMD_START bit = 1

Output-Map



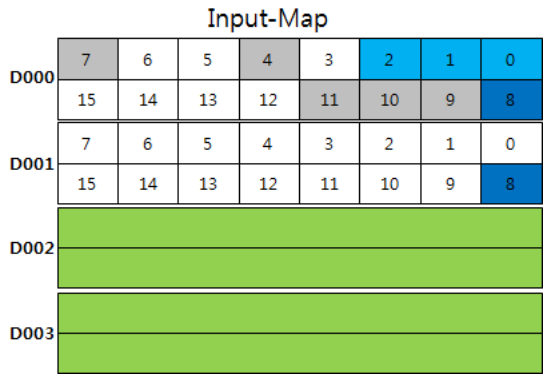
MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0001b

CMD_RESP bit = 1, MOTIONING bit = 1

- After ABS Move command, reset CMD_START Bit

Input-Map



MOTION/SETTING bit = 0

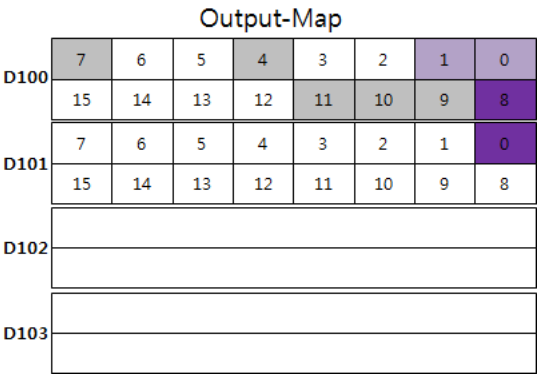
CMD_CODE = 0001b

INC/ABS bit = 1

Command Data = Absolute position value

CMD_START bit = 0

Output-Map

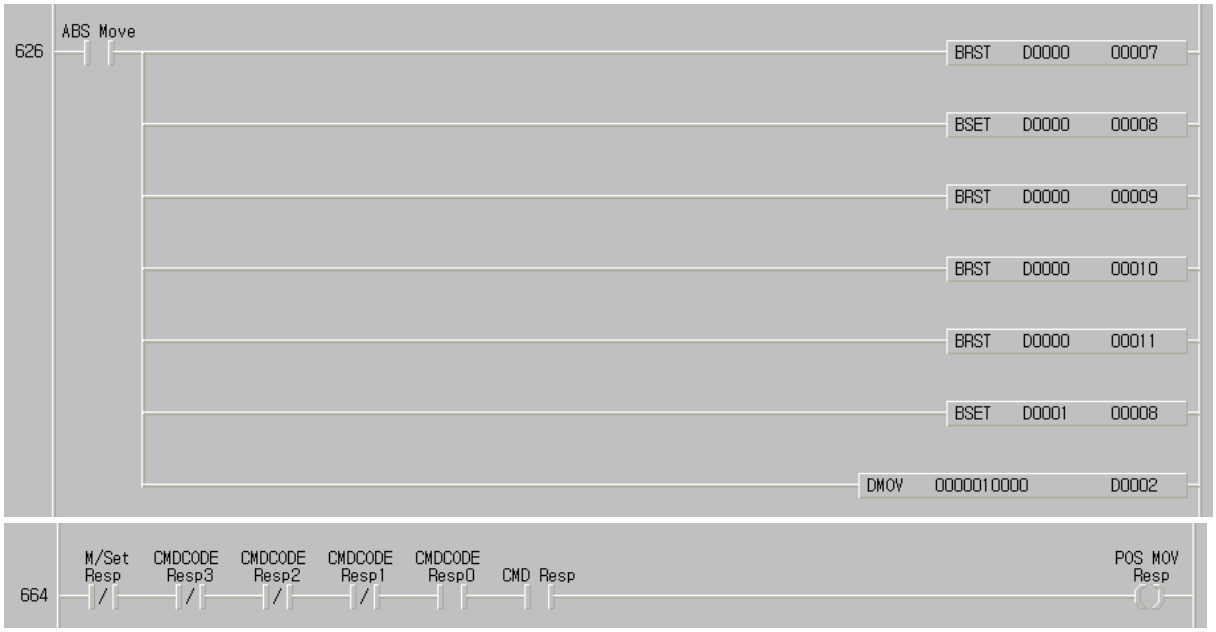


MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0001b

CMD_RESP bit = 0, MOTIONING bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 15 is the added command to the previous example

NOTE 2: This example was configured to move to the absolute position 10,000[pulse]

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of ABS Move input and change the IO-Map to MOTION mode status.

② Set the value of CMD_CODE as 0001b and set to Position MOVE mode

③ Set INC/ABS Bit as '1'

④ Enter the Absolute Position into the Command Data area by DMOV command.

⑤ Set the CMD_START Bit of Input-Map as '1'

⑥ After moving to the absolute position, MOTIONING Bit shall be '0'

⑦ The command response of Absolute MOVE can be verified by AND combination of MOTION/SETTING_RESP Bit and CMD_RESP, CMD_CODE_RESPBit of Output-Map

■ **Response verification for Position MOVE command**

The response Bit for Incremental Move and Absolute Move shall not be loop-backed to the IO-Map like JOG Move or Step Move or Zero Position Move. Thus, this command can be verified by the combination of the bit set in the Input-Map

5.2.5 PT Run Command

PT Run operates at the command code (CMD_CODE) '4' of the MOTION mode (MOTIONING/SETTING = 0) status and runs the operation by entering the No. of PT items into the Input data (D0)

■ General PT Run

General PT run starts PT Run from the input value (D002[DWORD]). Example 16 is the example for PT Run Command of Axis-0

Example 16. PT Run Command

✓ **Control Bit map information**

- **Input-Map**
  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  SINGLE_PT – D001.12
  CMD_START – D000.4
  Command Data Area – D002~D003 (D002 [1 DWORD])
- **Output-Map**
  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  MOTIONING – D101.1
  CMD_ RESP – D100.4
  PT_RUNUNG – D101.8

✓ **IO information**

- **Input information**
  PT Run
  PT No. (the No. that PT item is saved [DWORD])
- **Output information**
  MOTIONING
  PT CMD Resp
  PT Running

✓ IO-Map command and response type

- Run PT RUN Command

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0100b

SINGLE_PT bit = 0

Command Data = PT No.

CMD_START bit = 1

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0100b

CMD_RESP bit = 1, PT_RUNNING bit = 1

- After PT RUN command, reset CMD_START Bit

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D001	15	14	13	12	11	10	9	8
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
	7	6	5	4	3	2	1	0
D101	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 0

CMD_CODE = 0100b

SINGLE_PT bit = 0

Command Data = PT No.

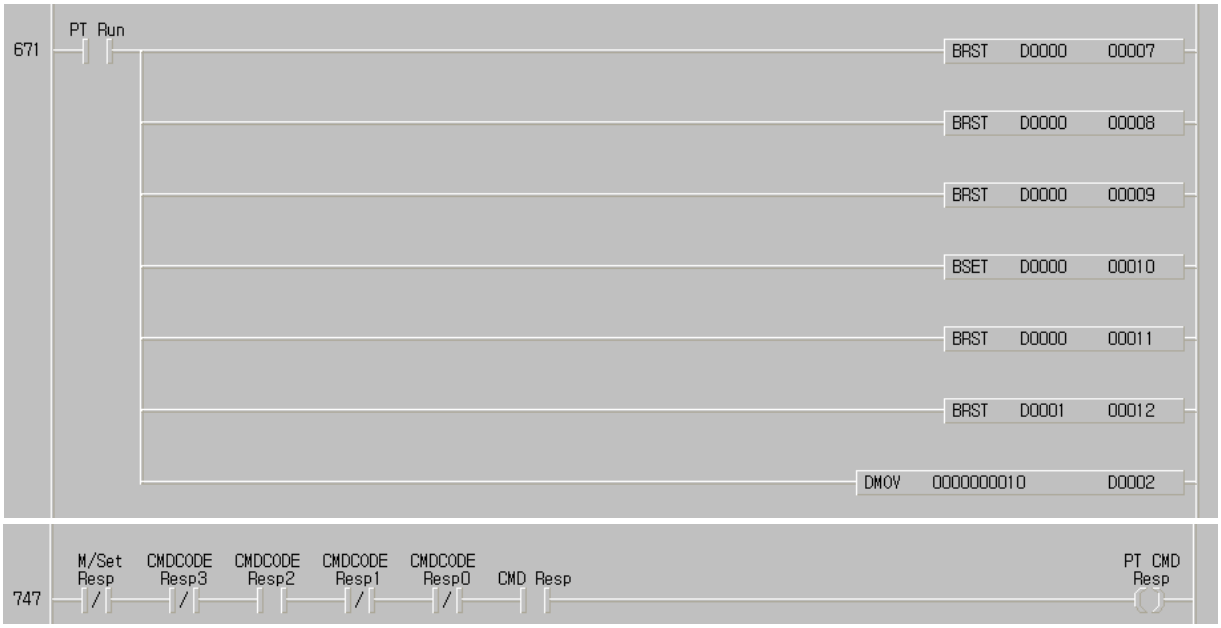
CMD_START bit = 0

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0100b

CMD_RESP bit = 0, PT_RUNNING bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 16 is the added command to the previous example

NOTE 2: This example was configured to start PT RUN from PT No. 10.

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of RUN input and change the IO-Mp to MOTION mode status.

② Set the value of CMD_CODE as 0100b and set to PT Run (Position Table Run) mode

③ Set the SINGLE_PT Bit as '0'

④ Enter the PT No. to start the operation into the Command Data area by DMOV command.

⑤ Set the CMD_START Bit of Input-Map as '1'.

⑥ When PT RUN starts, PT_RUNNING Bit shall be '1'.

⑦ To stop PT RUN, run the CANCEL command shown in Example 4

■ Single PT RUN

Single PT RUN operates for one PT item from the input value (D002). Example 17 is the example for Single PT RUN of Axis-0

Example 17. Single PT RUN command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  SINGLE_PT – D001.12

  CMD_START – D000.4

  Command Data Area – D002~D003 (D002 [1 DWORD])

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  CMD_CODE_RESP – D100.8~D100.11

  MOTIONING – D101.1

  CMD_ RESP – D100.4

  PT_RUNUNG – D101.8

✓ **IO information**

- **Input information**

  Single PT Run

  PT No. (The No. that PT item is saved [DWORD])

- **Output information**

  MOTIONING

  PT CMD Resp

  PT Running

✓ **IO-Map command and response type**

- **Run Single PT RUN command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

CMD_CODE = 0100b

SINGLE_PT bit = 1

Command Data = PT No.

CMD_START bit = 1

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0100b

CMD_RESP bit = 1, PT_RUNNING bit = 1

- **After single PT RUN command, reset CMD_START Bit**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

CMD_CODE = 0100b

SINGLE_PT bit = 1

Command Data = PT No.

CMD_START bit = 0

Output-Map

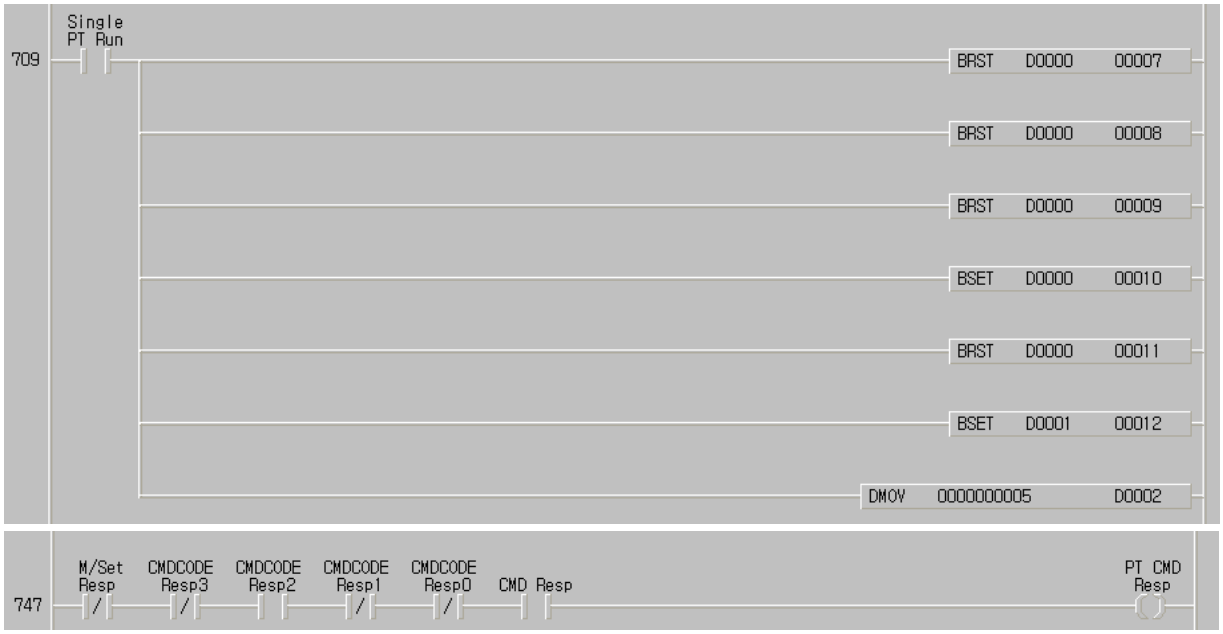
	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0100b

CMD_RESP bit = 0, PT_RUNNING bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 17 is the added command to the previous example.

NOTE 2: This example was configured to start the PT RUN from the PT No. 5.

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of Single PT RUN input and change the IO-Map to MOTION mode status.

② Set the value of CMD_CODE as 0100b and set to PT Run (Position Table Run) mode.

③ Set SINGLE_PT Bit as '1'

④ Enter the PT No. to run one PT RUN into the Command Data area by DMOV command

⑤ Set CMD_START Bit of Input-Map as '1'

⑥ When PT RUN starts, PT_RUNNING Bit shall be '1'

■ **Respons verification for PT RUN command**

The response verification of PT RUN command shall not be loop-backed to the IO-Map like Position MOVE command. Thus, it can be verified by the combination of response Bit of Output-Map for the bit set in the Input-Map

5.2.6 Origin Search Command

Origin Search Command operates at the command code (CMD_CODE) '7' of the MOTION mode (MOTIONING/SETTING = 0) status regardless of the entered value in the input data (D0). Example 18 is the example for Origin Search Command of Axis-0

Example 18. Origin Search Command

✓ **Control Bit map information**

- **Input-Map**
  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  CMD_START – D000.4
- **Output-Map**
  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  MOTIONING – D101.1
  CMD_ RESP – D100.4
  PT_RUNUNG – D101.8

✓ **IO information**

- **Input information**
  ORIGIN Search
- **Output information**
  MOTIONING
  Origin Mov Resp

✓ **IO-Map command and response type**

- **Run Origin Search**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D002								
D003								

MOTION/SETTING bit = 0

CMD_CODE = 0111b

CMD_START bit = 1

Output-Map

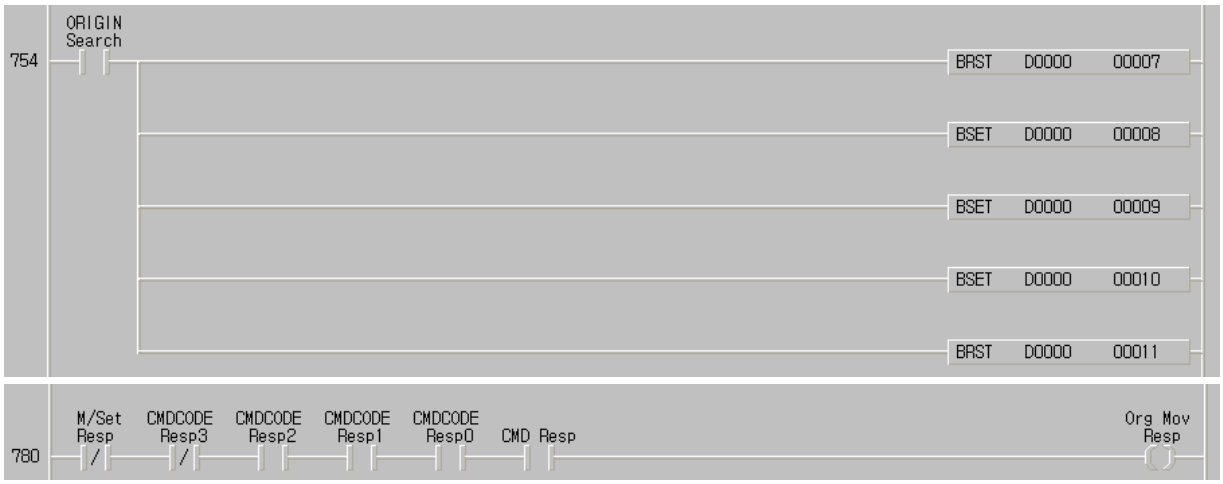
	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING_RESP bit = 0

CMD_CODE_RESP = 0111b

CMD_RESP bit = 1, PT_RUNNING bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 18 is the added command to the previous example

✓ Command sequence

① Set MOTION/SETTING Bit as '0' with Close signal of ORIGIN Search Input and change the IO-Map to MOTION mode status

② Set the value of CMD_CODE as 0111b and set to ORIGIN Search command mode

③ Set CMD_START Bit of Input-Map as '1'

④ When ORIGIN Search starts, MOTIONING Bit shall be '1'

⑤ ORIGIN Search operates by the method designated in the parameter of the driver.

5.2.7 Parameter setting

Parameter setting allows for reading, setting, and saving the parameter and PT information of the motor drive in the corresponding axis.

■ Read Parameter command

READ Parameter operates at the command code (CMD_CODE) '8' which is in the setting mode (MOTIONING/SETTING=1) status and is the command which requests the parameter value entered in the Index Area (K4Y10). At this time, this command operates regardless of the value entered in the Input data (D0). Example 19 is the example for READ parameter of Axis-0

Example 19. READ parameter command

✓ **Control Bit map information**

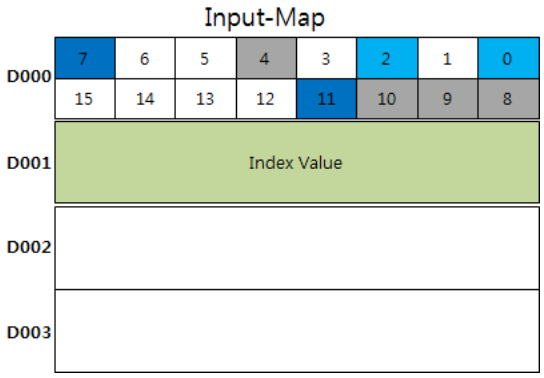
- **Input-Map**
  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  INDEX_VALUE– D001 (1WORD)
  CMD_START – D000.4
- **Output-Map**
  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  INDEX_VALUE_RESP – D101 (1WORD)
  CMD_ RESP – D100.4

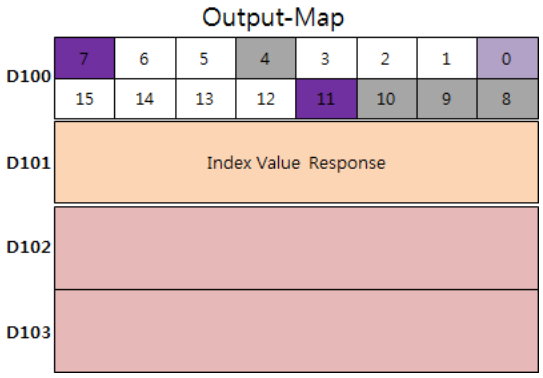
✓ **IO information**

- **Input information**
  Read Parameter
- **Output information**
  Read Parameter Value

✓ **IO-Map command and response type**

- **Run ORIGIN Search**





MOTION/SETTING bit = 1

CMD_CODE = 1000b

INDEX_VALUE = Index Value (Parameter No)

CMD_START bit = 1

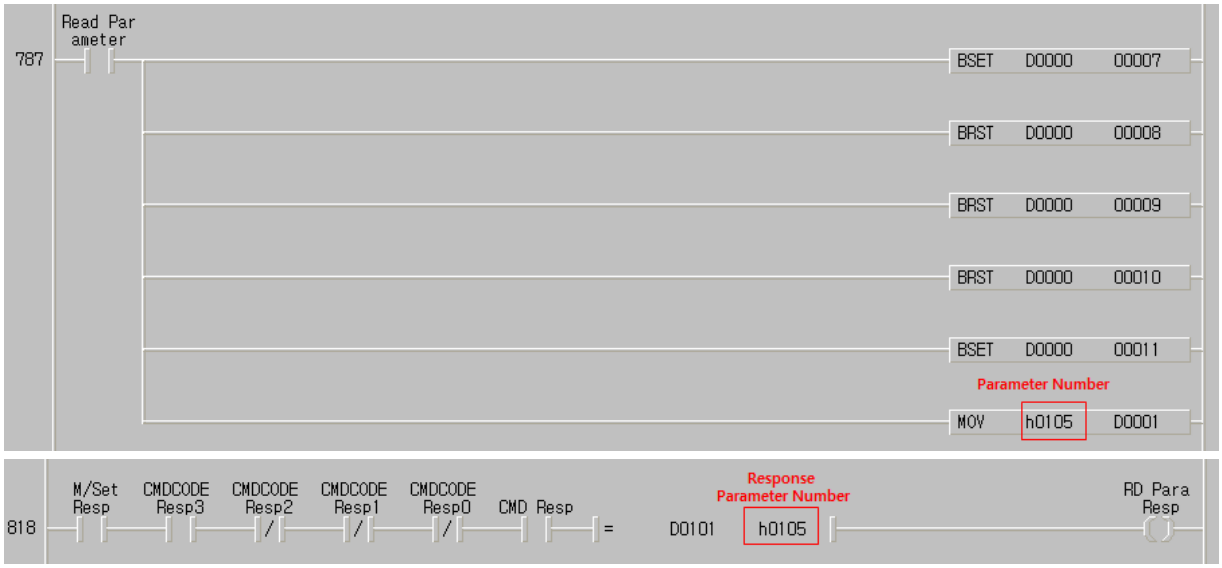
MOTION/SETTING_RESP bit = 1

CMD_CODE_RESP = 1000b

INDEX_VALUE_RESP = Index Value (Parameter No)

CMD_RESP bit = 1

✓ **LADDER**



NOTE 1: The ladder of example 19 is the added command to the previous example

NOTE 2: This example is the ladder that requested the value of 0x0105, the index no. of parameter PN#105『Move Speed for Step Move 』

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of READ parameter input and change the IO-Map into the SETTING mode status.

② Set the value of CMD_CODE as 1000b and set to parameter request command mode

③ Enter the parameter to request to INDEX_VALUE or the index value of PT item

④ Set CMD_START Bit of Input-Map as '1' and request the parameter value.

⑤ Response data can be verified by AND combination of the result after comparing the index value entered into MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP and Input-Map and the responded index value

■ Parameter Change Command

Parameter change operates at the command code (CMD_CODE) '9' of the SETTING mode (MOTIONING/SETTING=1) status and is the command that changes the parameter no. prepared in the index area (K4Y10) with the value set in the input data area (D0). Example 20 depicts parameter change command of Axis-0.

Example 20. Parameter change command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  INDEX_VALUE – D001 [1 WORD]
  COMMAND_WORD_DATA – D001~D002 [1 DWORD]
  CMD_START – D000.4

- **Output-Map**

  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  INDEX_VALUE_RESP – D101 (1WORD)
  CMD_ RESP – D100.4
  RESPONSE_DATA – D102~D103 (D102 [1 DWORD])

✓ **IO information**

- **Input information**

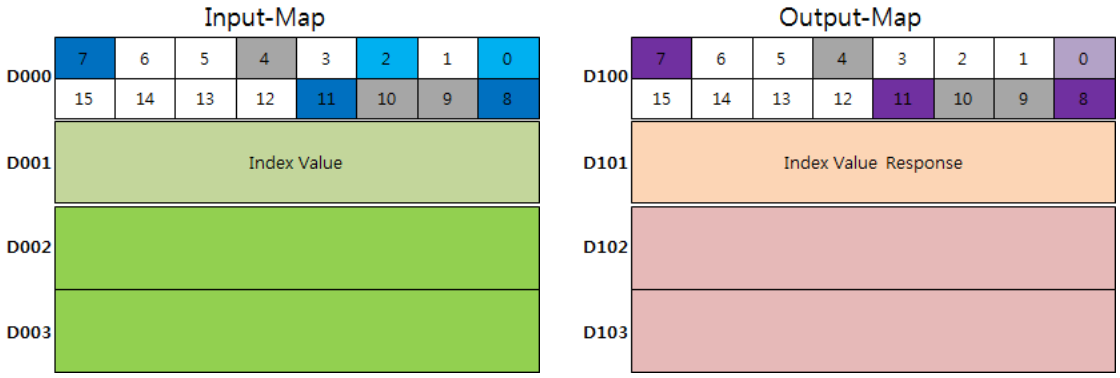
  Write Parameter

- **Output information**

  Write Parameter Value

✓ **IO-Map command and response type**

- **Run Parameter value change**



MOTION/SETTING bit = 1

CMD_CODE = 1001b

INDEX_VALUE = Index Value (Parameter No)

COMMAND_WORD_DATA = Parameter Value

CMD_START bit = 1

MOTION/SETTING_RESP bit = 1

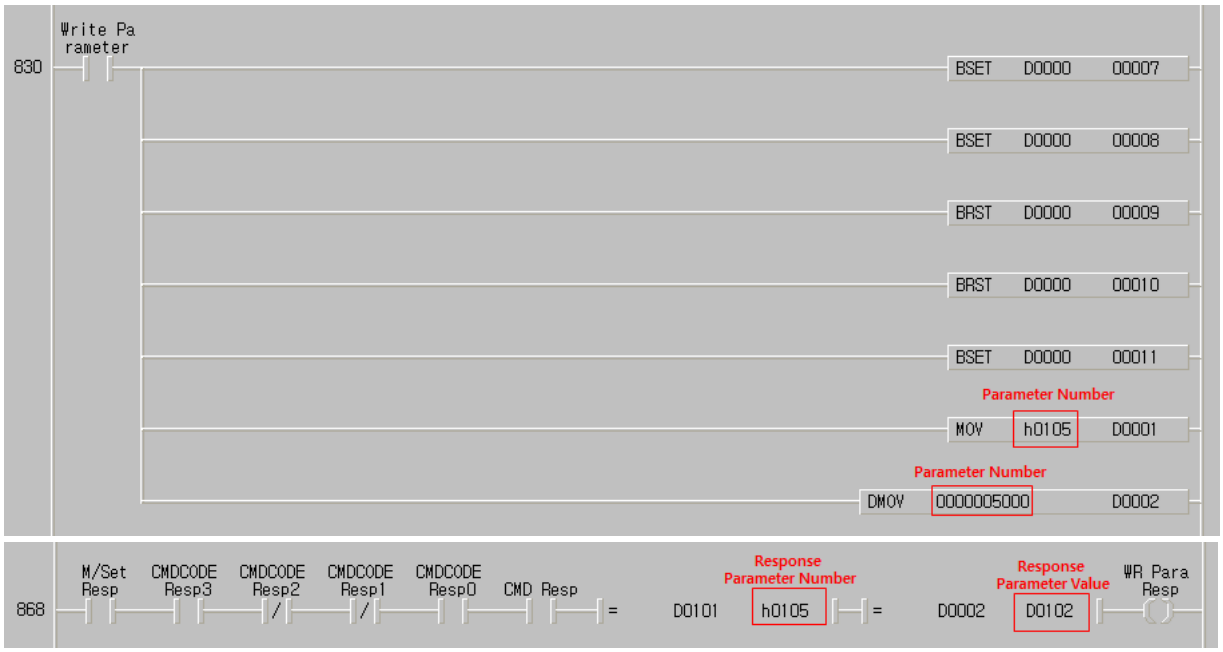
CMD_CODE_RESP = 1001b

INDEX_VALUE_RESP = Index Value (Parameter No)

RESPONSE_DATA = Parameter Value

CMD_RESP bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 20 is the added command to the previous example

NOTE 2: This example is the ladder which changes the value of 0x0105, the index no. of parameter PN#105 『Move Speed for Step Move 』 with 5000pps

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of Write Parameter input and change the IO-Map into the SETTING mode status

② Set the value of CMD_CODE as 1001b and set to Write parameter command mode

③ Enter the parameter to write in INDEX_VALUE or the index value of PT item.

④ Enter the value of prameter to write in COMMAND_WORD_DATA

⑤ Set CMD_START Bit of Input-Map as '1' and request the parameter value

⑥ The response data can be verified by AND combination of the result after comparing the index value entered into MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP and Input-Map and the responded index value

⑦ If Write Parameter command is executed, the value of the parameter changed into RESPONSE_DATA area shall respond.

■ Parameter Save

Parameter Save operates at the command code (CMD_CODE) '14' of the setting mode (MOTIONING/SETTING=1) status and saves the parameter value in the ROM area. Example 21 is the example for parameter Save command of Axis-0.

Example 21. Parameter Save command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  INDEX_VALUE – D001 [1 WORD]

  CMD_START – D000.4

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  CMD_CODE_RESP – D100.8~D100.11

  INDEX_VALUE_RESP – D101 (1WORD)

  CMD_ RESP – D100.4

✓ **IO information**

- **Input information**

  Save Parameter

- **Output information**

  Save Parameter Resp

✓ **IO-Map command and response type**

- **Parameter Save command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	0							
D002								
D003								

MOTION/SETTING bit = 1

CMD_CODE = 1110b

CMD_START bit = 1

Output-Map

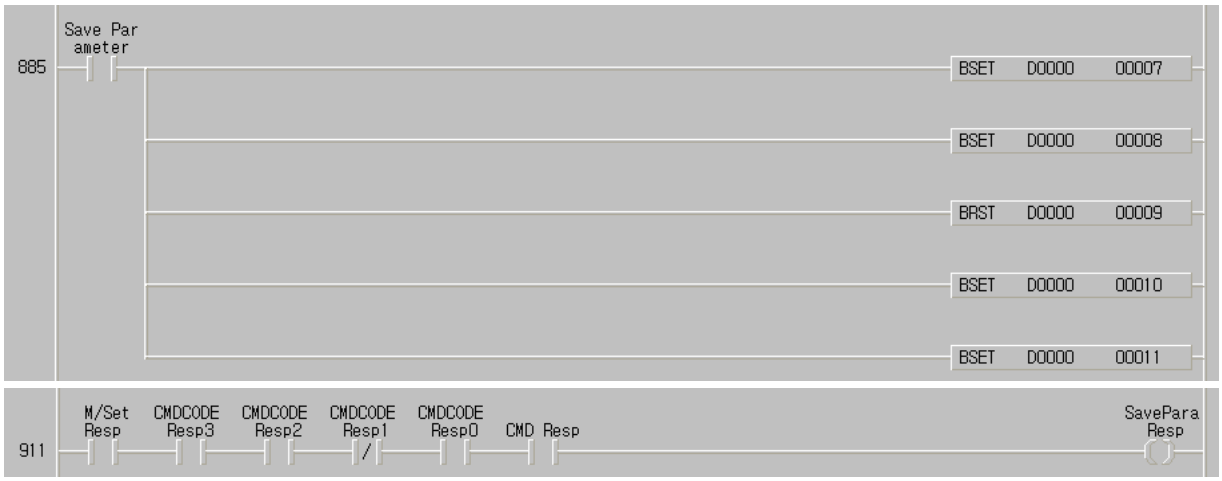
	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	0							
D102								
D103								

MOTION/SETTING_RESP bit = 1

CMD_CODE_RESP = 1110b

CMD_RESP bit = 1

✓ **LADDER**



NOTE : The ladder of Example 21 is the added command to the previous example

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of Save parameter input and change the IO-Map to SETTING mode status.

② Set the value of CMD_CODE as 1110b and set to parameter Save command mode

③ Set CMD_START Bit of Input-Map as '1' and request the parameter value

④ The response data can be verified by AND combination of MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP

5.2.8 Set Position

Set Position command operates at the command code (CMD_CODE) '10' of the setting mode (MOTIONING/SETTING=1) status and changes the tracking position value (Command Position). Example 22 is the example for Position Value Change command of Axis-0

Example 22. Position Value Change command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  COMMAND_WORD_DATA – D001~D002 [1 DWORD]

  CMD_START – D000.4

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  CMD_CODE_RESP – D100.8~D100.11

  CMD_ RESP – D100.4

  RESPONSE_DATA – D102~D103 (D102 [1 DWORD])

✓ **IO information**

- **Input information**

  Set Position

  Set Current Position Data

- **Output information**

  Response Current Position

✓ **IO-Map command and response type**

- **Set current position command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	0							
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	0							
D102								
D103								

MOTION/SETTING bit = 1

CMD_CODE = 1010b

COMMAND_WORD_DATA = Set Current Position

CMD_START bit = 1

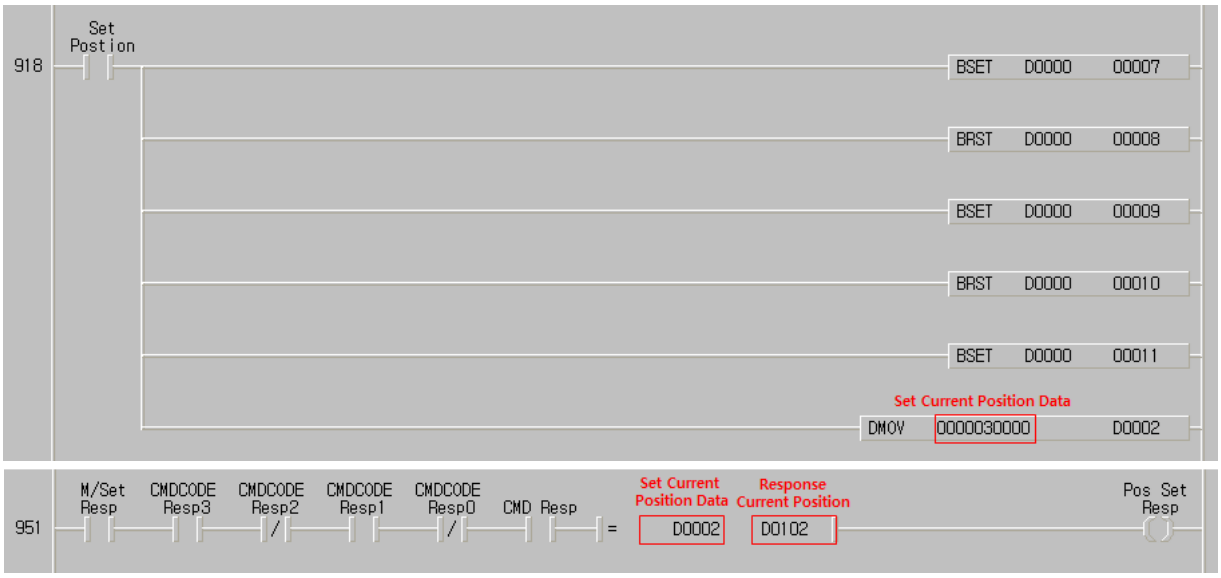
MOTION/SETTING_RESP bit = 1

CMD_CODE_RESP = 1010b

RESPONSE_DATA = Response Current Position

CMD_RESP bit = 1

✓ **LADDER**



NOTE 1: The ladder of Example 22 is the added command to the previous example

NOTE 2: This example is the command to set the current position with 30,000[pulse]

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of Set Position input and change the IO-Map to SETTING mode status.

② Set the value of CMD_CODE as 1010b and set to Write Parameter command

③ Enter the position value to change into COMMAND_WORD_DATA.

④ Set CMD_START Bit of Input-Map as '1' and run the Set Position.

⑤ The response data can be verified by AND combination of the result after comparing the Set Position value entered into MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP and Input-Map and the responded current position value

⑥ If the Set Current Position command is executed, the setting value is saved in the drive and will respond by reading the current position again. When running this command, the rotation axis of motor should not operate

5.2.9 Alarm History Verification and Initialization

MOTIONGATE can control the alarm history for 4 alarms from the alarm occurred recently

- Alarm History Verification

Alarm History operates at the command code (CMD_CODE) '12' of the setting mode (MOTIONING/SETTING=1) status and verifies the alarm history occurred in the corresponding axis. Example 23 is the example for Alarm History verification of Axis-0

Example 23. Alarm History Verification

✓ **Control Bit map information**

- **Input-Map**
  MOTION/SETTING – D000.7
  CMD_CODE – D000.8~D000.11
  CMD_START – D000.4
- **Output-Map**
  MOTION/SETTING_RESP – D100.7
  CMD_CODE_RESP – D100.8~D100.11
  CMD_ RESP – D100.4
  RESPONSE_DATA – D102~D103 (D102 [1 DWORD])

✓ **IO information**

- **Input information**
  ALM History
- **Output information**
  ALM His Resp

✓ **IO-Map command and response type**

- **Run Alarm History command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	0							
D002								
D003								

MOTION/SETTING bit = 1

CMD_CODE = 1100b

CMD_START bit = 1

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102	Last Alarm Code							
	2nd Last Alarm Code							
D103	3rd Last Alarm Code							
	4th Last Alarm Code							

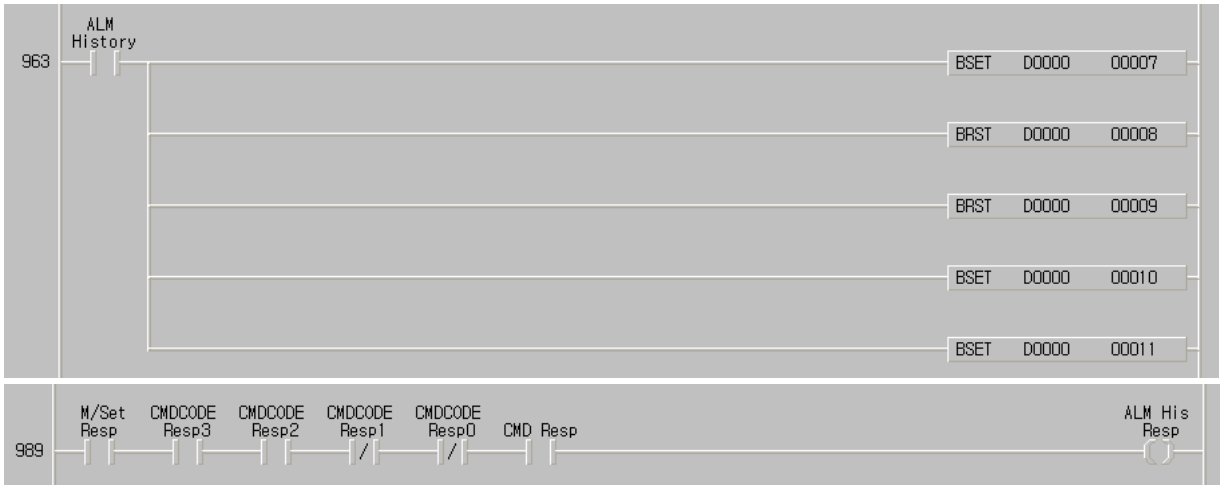
MOTION/SETTING_RESP bit = 1

CMD_CODE_RESP = 1100b

CMD_RESP bit = 1

RESPONSE_DATA = Alarm History

✓ **LADDER**



NOTE: The ladder of Example 23 is the added command to the previous example

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of ALM History Input and change the IO-Map to SETTING mode status.

② Set the value of CMD_CODE as 1100b and set to Alarm History request command.

③ Set CMD_START Bit of Input-Map as '1' and run Set Position.

④ The response data can be verified by AND combination of MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP

⑤ Run Alarm History request command and the 4 of Alarm History from the latest Alarm code shall respond.

■ Alarm History Reset

Alarm History Reset operates at the command code (CMD_CODE) '13' of the SETTING mode (MOTIONING/SETTING=1) status and verifies the Alarm History occurred in the corresponding axis. Example 24 is the example for Alarm History Initialization of Axis-0

Example 24. Alarm History reset command

✓ **Control Bit map information**

- **Input-Map**

  MOTION/SETTING – D000.7

  CMD_CODE – D000.8~D000.11

  CMD_START – D000.4

- **Output-Map**

  MOTION/SETTING_RESP – D100.7

  CMD_CODE_RESP – D100.8~D100.11

  CMD_ RESP – D100.4

✓ **IO information**

- **Input information**

  Reset ALM His

- **Output information**

  ALM His CLR Resp

✓ **IO-Map command and response type**

- **Run Alarm History reset command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	0							
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102								
D103								

MOTION/SETTING bit = 1

CMD_CODE = 1110b

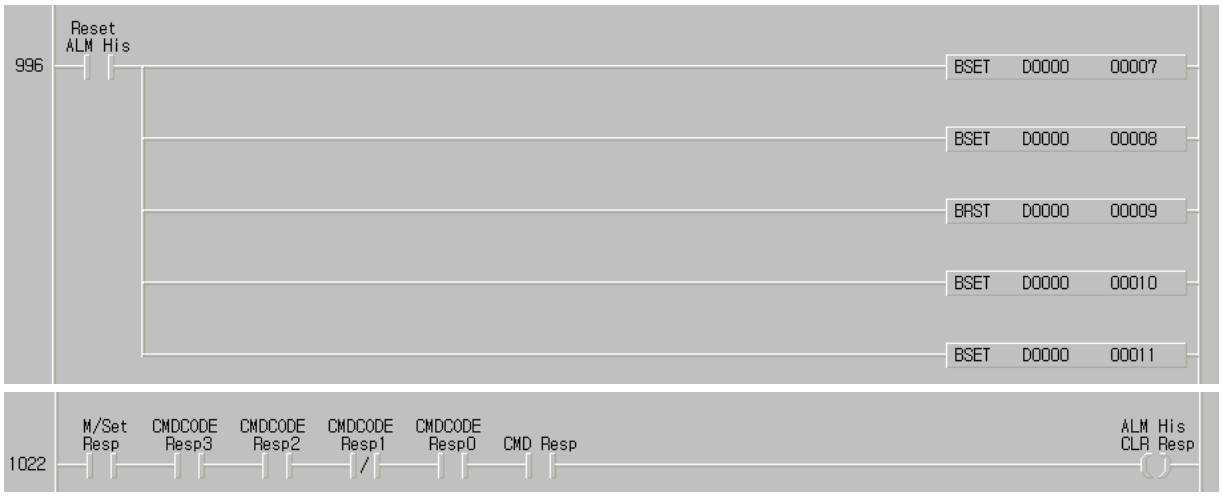
CMD_START bit = 1

MOTION/SETTING_RESP bit = 1

CMD_CODE_RESP = 1110b

CMD_RESP bit = 1

✓ **LADDER**



NOTE : The ladder of Example 24 is the added command to the previous example

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of Reset ALM His input and change the IO-Map to setting mode status

② Set the value of CMD_CODE as 1101b and set to Alarm History Reset command

③ Set CMD_START Bit of Input-Map as '1' and reset Alarm History

④ The response data can be verified by AND combination of MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP

5.2.10 MOTIONGATE Version Verification

MOTIONGATE version verification command can get the version information of MOTIONGATE in any axis. This command operates at the command code (CMD_CODE) '5' of the setting mode (MOTIONING/SETTING=1) status. Example 25 is the example for version information request method of MOTIONGATE.

Example 25. MOTIONGATE version information request command

- ✓ **Control Bit map information**
  - **Input-Map**
    MOTION/SETTING – D000.7
    CMD_CODE – D000.8~D000.11
    CMD_START – D000.4
  - **Output-Map**
    MOTION/SETTING_RESP – D100.7
    CMD_CODE_RESP – D100.8~D100.11
    CMD_ RESP – D100.4

- ✓ **IO information**
  - **Input information**
    Read Ver Info
  - **Output information**
    Read Ver Resp

✓ **IO-Map command and response type**

- **Version information request command**

Input-Map

	7	6	5	4	3	2	1	0
D000	15	14	13	12	11	10	9	8
D001	0							
D002								
D003								

Output-Map

	7	6	5	4	3	2	1	0
D100	15	14	13	12	11	10	9	8
D101	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
D102	Release No.							
	Bug Fix							
D103	Minor Version							
	Major Version							

MOTION/SETTING bit = 1

CMD_CODE = 0101b

CMD_START bit = 1

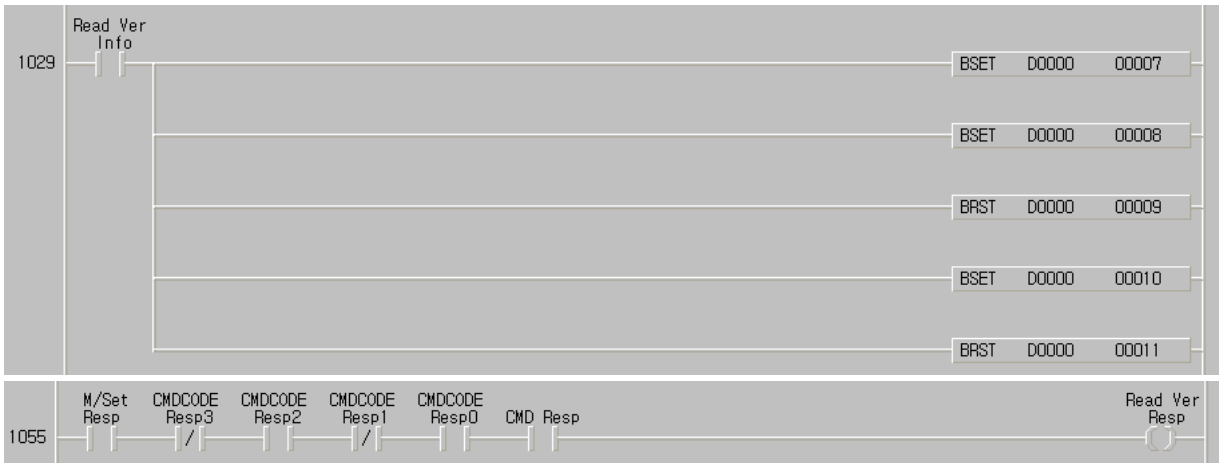
MOTION/SETTING_RESP bit = 1

CMD_CODE_RESP = 0101b

CMD_RESP bit = 1

RESPONSE_DATA = Version Information

✓ **LADDER**



NOTE : The ladder of Example 25 is the added command to the previous example

✓ Command sequence

① Set MOTION/SETTING Bit as '1' with Close signal of Read Ver Info input and change the IO-Map to setting mode status.

② Set the value of CMD_CODE as 0101b and set to Version Information request command mode

③ Set CMD_START Bit of Input-Map as '1' and run Version information request command.

④ The response data can be verified by AND combination of MOTION/SETTING_RESP, CMD_CODE_RESP, CMD_RESP

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