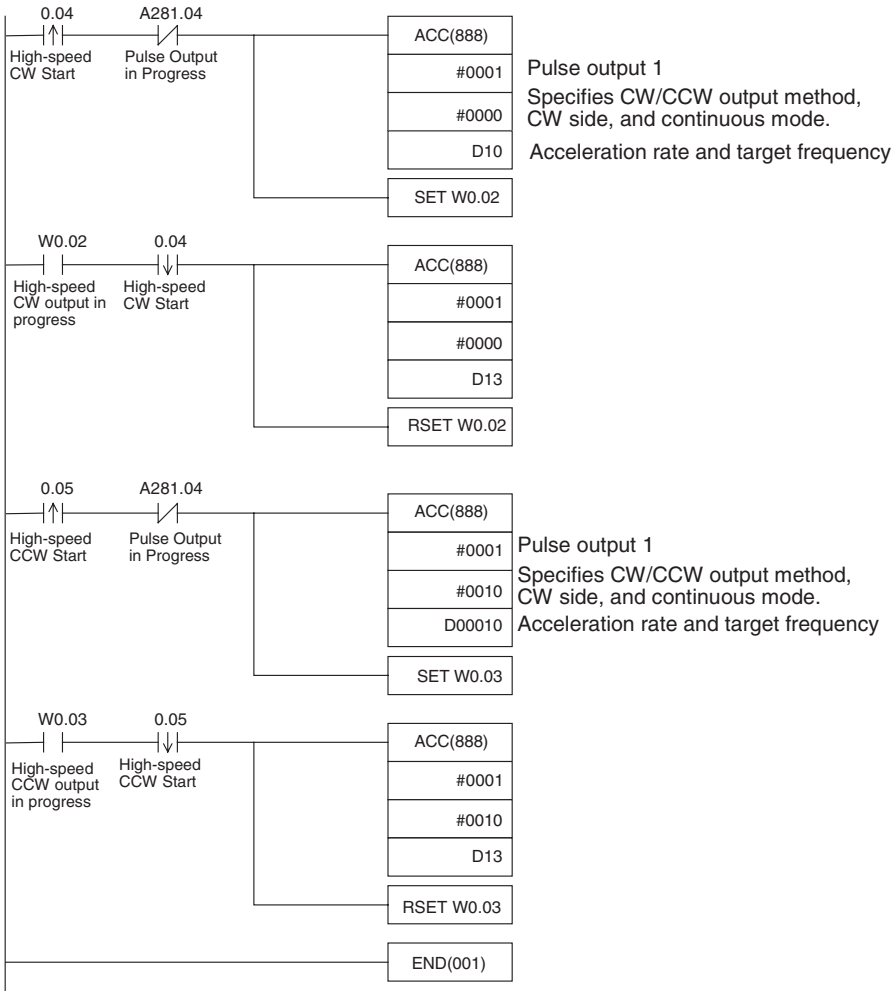


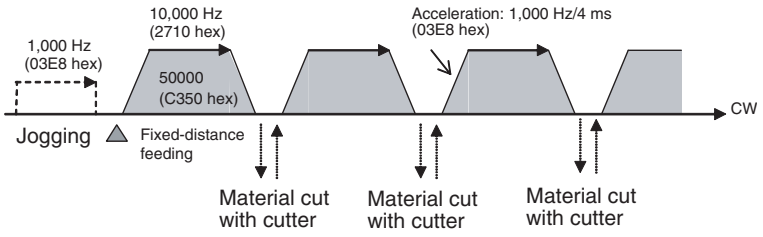
Remarks PLS2(887) can be used to set a starting frequency or unequal acceleration and deceleration rates, but there are limitations on the operating range because the end point must be specified in PLS2(887).

Cutting Long Material Using Fixed Feeding

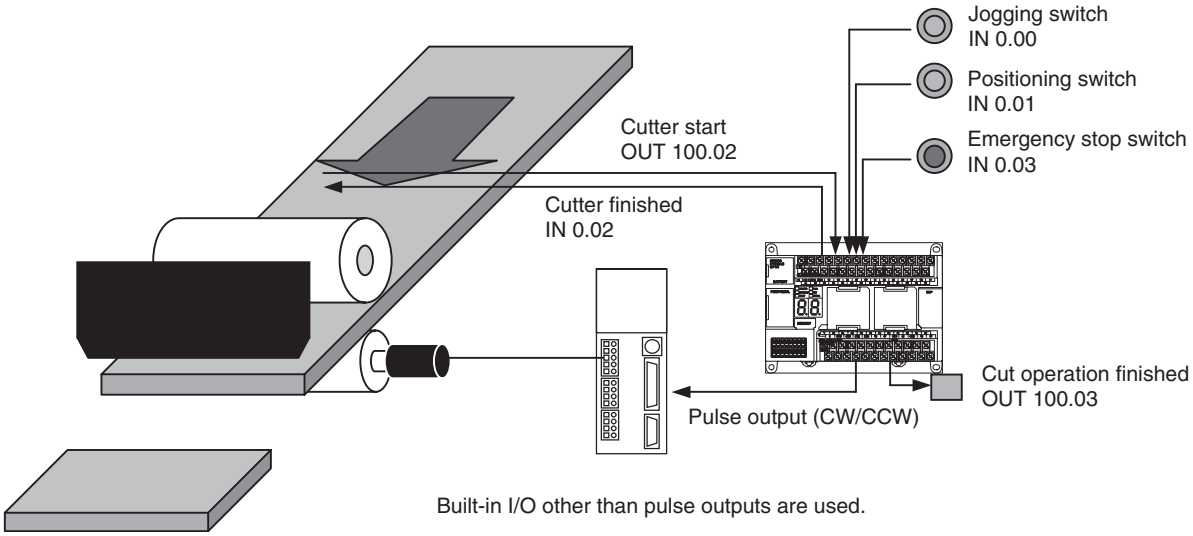
Specifications and Operation

■ **Outline**

In this example, first jogging is used to position the material and then fixed-distance positioning is used to feed the material.



■ **System Configuration**



Built-in I/O other than pulse outputs are used.

■ **Operation**

1,2,3...

1. The workpiece is set at the starting position using the Jogging Switch Input (IN 0.00).
2. The workpiece is feed the specified distance (relative) using the Positioning Switch Input (IN 0.01).
3. When feeding has been completed, the cutter is activated using the Cutter Start Output (OUT 100.02).
4. Feeding is started again when the Cutter Finished Input (IN 0.02) turns ON.
5. The feeding/cutting operation is repeated for the number of times specified for the counter (C0, 100 times).
6. When the operation has been completed, the Cutting Operation Finished Output (OUT 100.03). is turned ON.

The feeding operation can be canceled and operation stopped at any point using the Emergency Switch Input (IN 0.03).

Instructions Used

SPED(885)

PLS2(887)

Preparation

■ **PLC Setup**

There are no settings that need to be made in the PLC Setup.

■ **DM Area Settings**

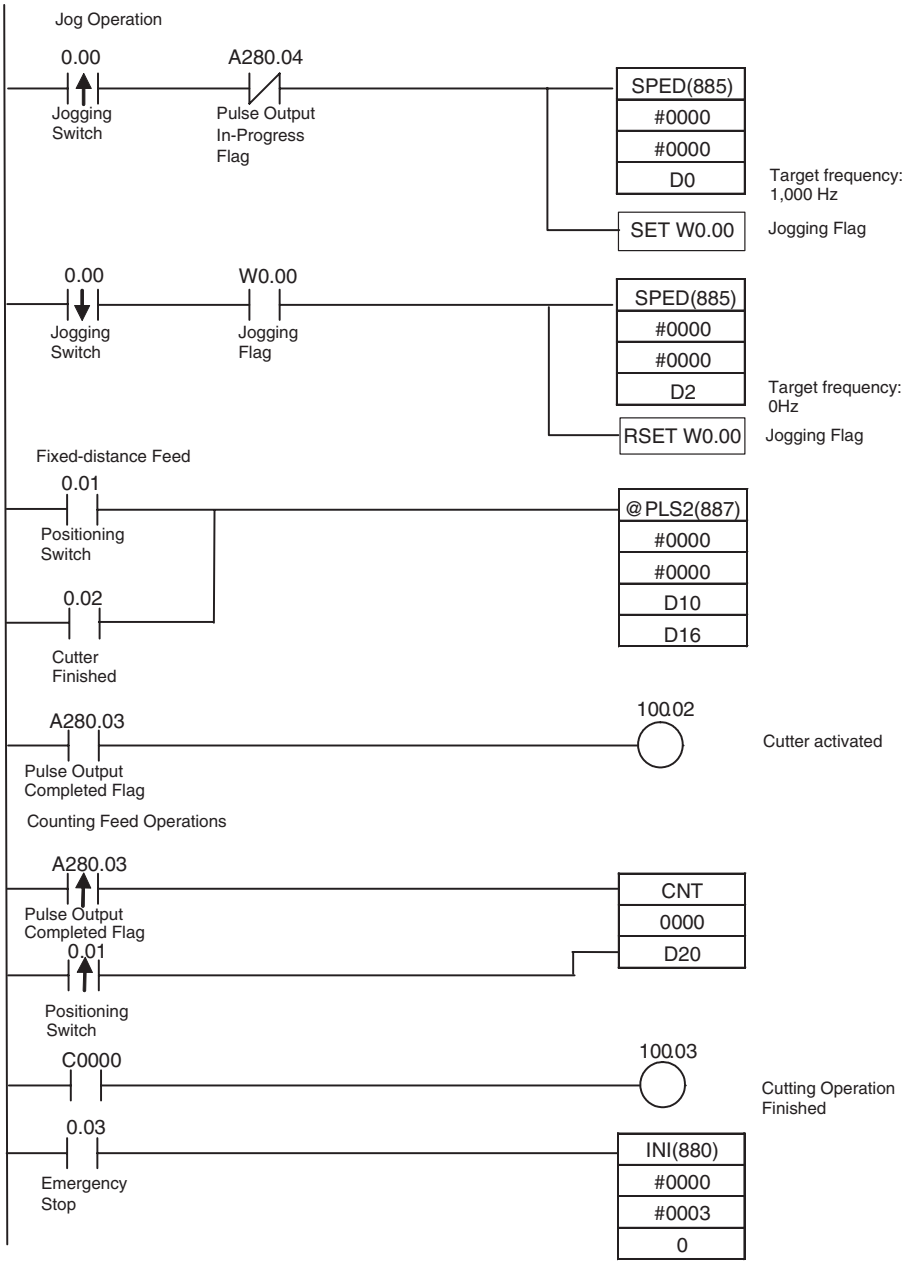
Speed Settings for Jogging (D0 to D3)

Setting details	Address	Data
Target frequency: 1,000 Hz	D0	03E8
	D1	0000
Target frequency: 0 Hz	D2	0000
	D3	0000

Settings for PLS2(887) for Fixed-distance Feeding (D10 to D20)

Setting details	Address	Data
Acceleration rate: 1,000 Hz/4 ms	D10	03E8
Deceleration rate: 1,000 Hz/4 ms	D11	03E8
Target frequency: 10,000 Hz	D12	2710
	D13	0000
Number of output pulses: 50,000 pulses	D14	C350
	D15	0000
Starting frequency: 0000 Hz	D16	0000
	D17	0000
Counter setting: 100 times	D20	0100

Ladder Program



Remarks

1,2,3... 1. PLS22(887) used a relative pulse setting. This enables operation even if the origin is not defined. The present position in A276 (lower 4 digits) and A277 (upper 4 digits) is set to 0 before pulse output and then contains the specified number of pulses.

2. ACC(888) can be used instead of SPED(885) for the jog operation. If ACC(888) is used, acceleration/deceleration can be included in the jog operation.

Vertically Conveying PCBs (Multiple Progressive Positioning)

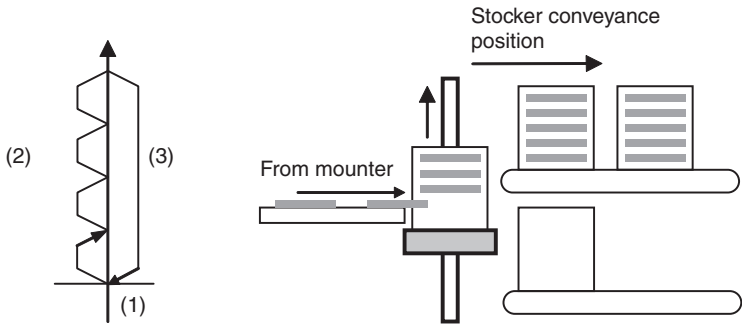
Specifications and Operation

■ Outline

1,2,3... 1. PCBs with components mounted are stored in a stocker.

2. When a stocker becomes full, it is moved to the conveyance point.

Positioning Operation for Vertical Conveyor

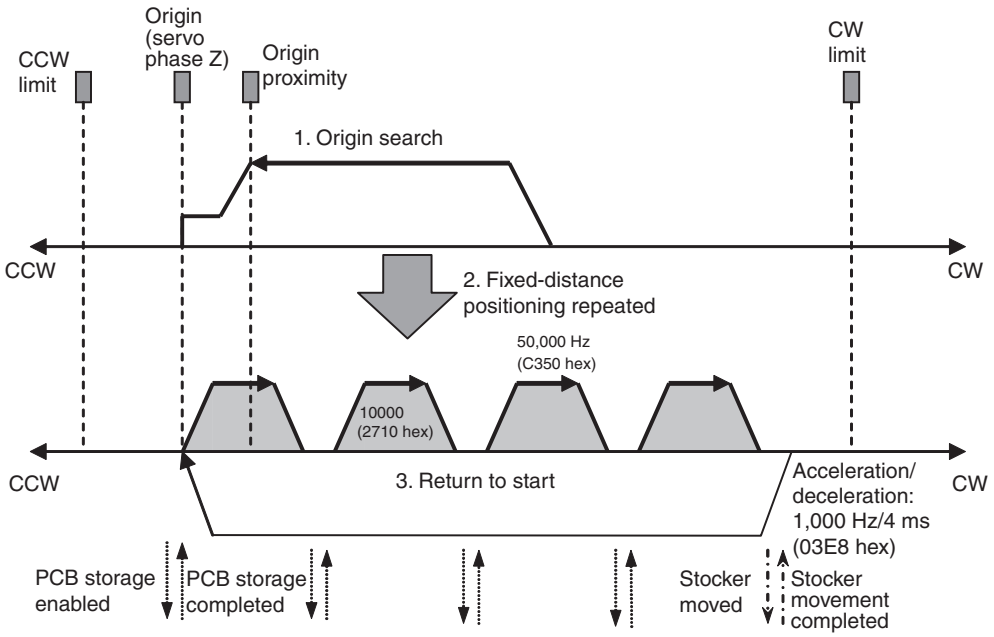


■ Operation Pattern

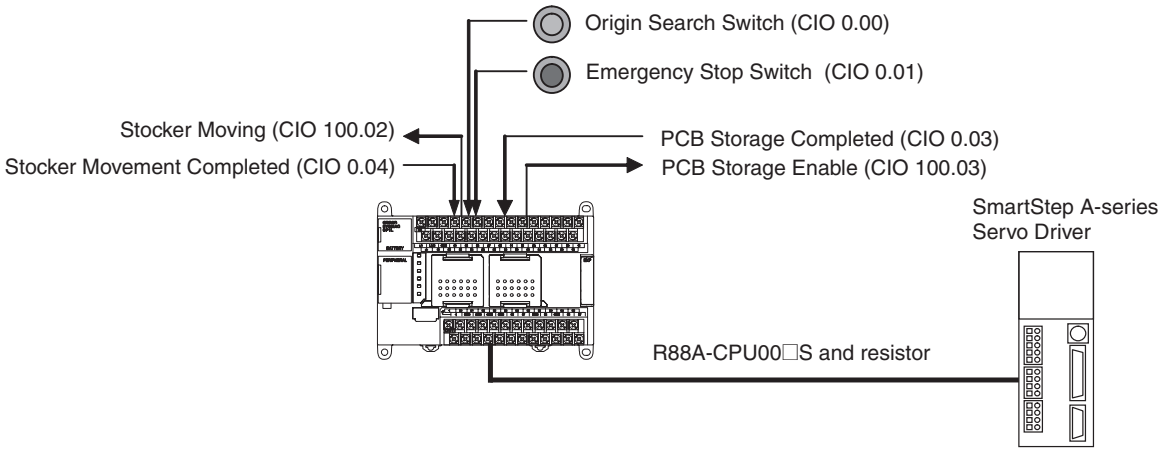
1,2,3... 1. An origin search is performed.

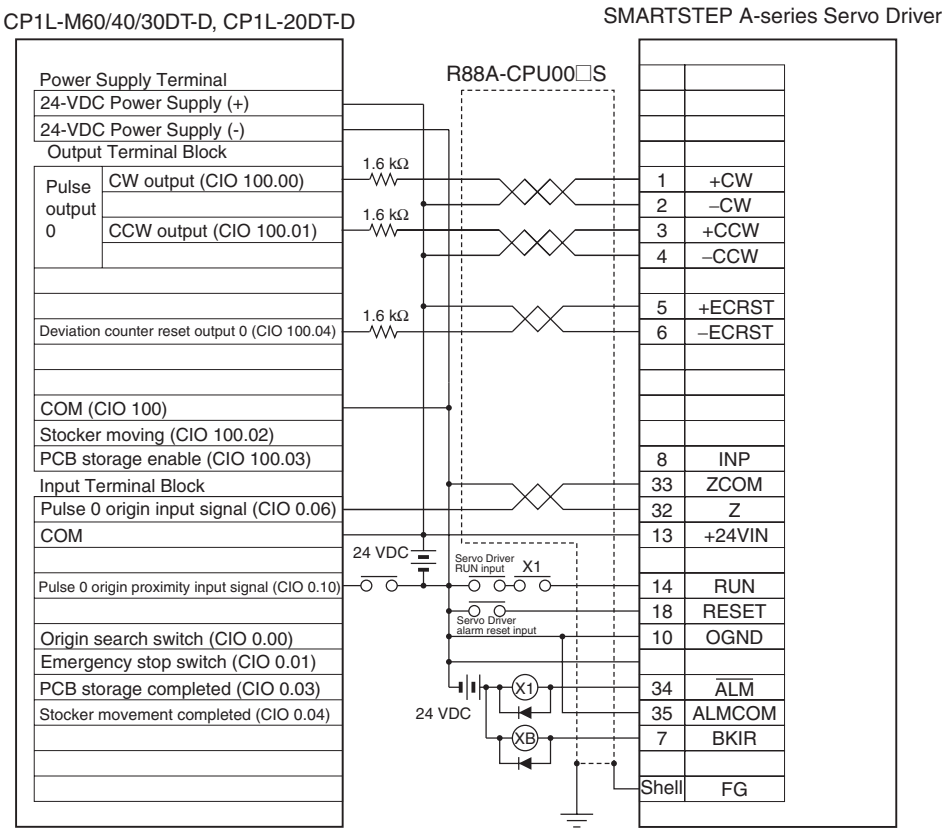
2. Fixed-distance positioning is repeated.

3. The system is returned to the original position.



Wiring Example Using SmartStep A-series Servo Driver





Operation

1,2,3...

1. An origin search is performed using the Origin Search Switch (CIO 0.00).
2. When the origin search is finished, the PCB Storage Enabled Output (CIO 100.03) is turned ON.
3. When a PCB has been stored, the stocker is raised (relative positioning) using the PCB Storage Completed Input (CIO 0.03).
4. Storing PCBs is repeated until the stocker is full.
5. The number of PCBs in the stocker is counted with counter C0 by counting the number of times the stocker is raised.

6. When the stocker is full, it is moved (CIO 100.02) and only the conveyor is lowered (absolute positioning) when stoker movement is completed (CIO 0.04).

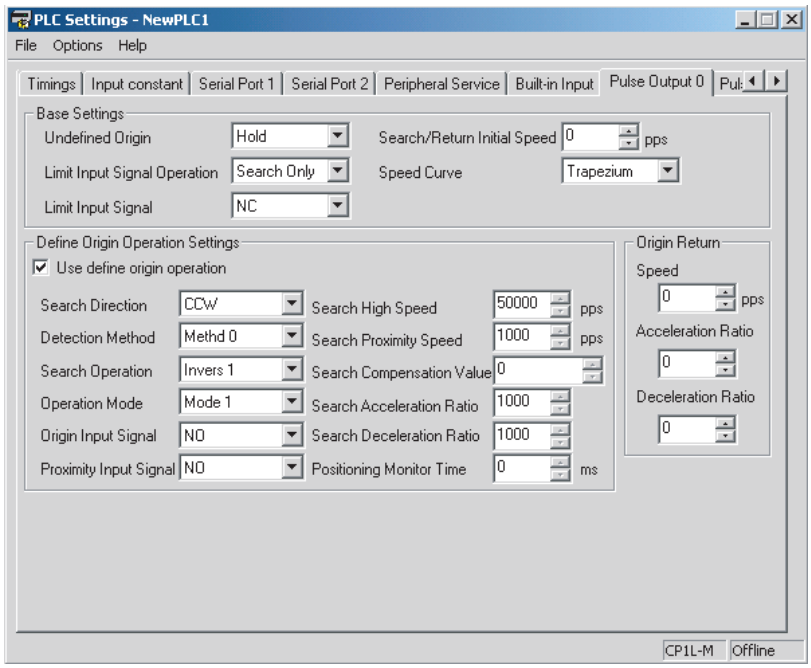
The operation can be canceled and pulse output stopped at any point using the Emergency Switch Input (CIO 0.01).

Preparation

■ PLC Setup

Setting details
Enable origin search function for pulse output 0.

Note The origin search enable setting is read when the power supply is turned ON.



DM Area Settings

Settings for PLS2(887) for Fixed-distance Positioning (D0 to D7)

Setting details	Address	Data
Acceleration rate: 1,000 Hz/4 ms	D0	03E8
Deceleration rate: 1,000 Hz/4 ms	D1	03E8
Target frequency: 50,000 Hz	D2	C350
	D3	0000
Number of output pulses: 10,000 pulses	D4	2710
	D5	0000
Starting frequency: 0 Hz	D6	0000
	D7	0000

Settings for PLS2(887) to Return to Start (D10 to D17)

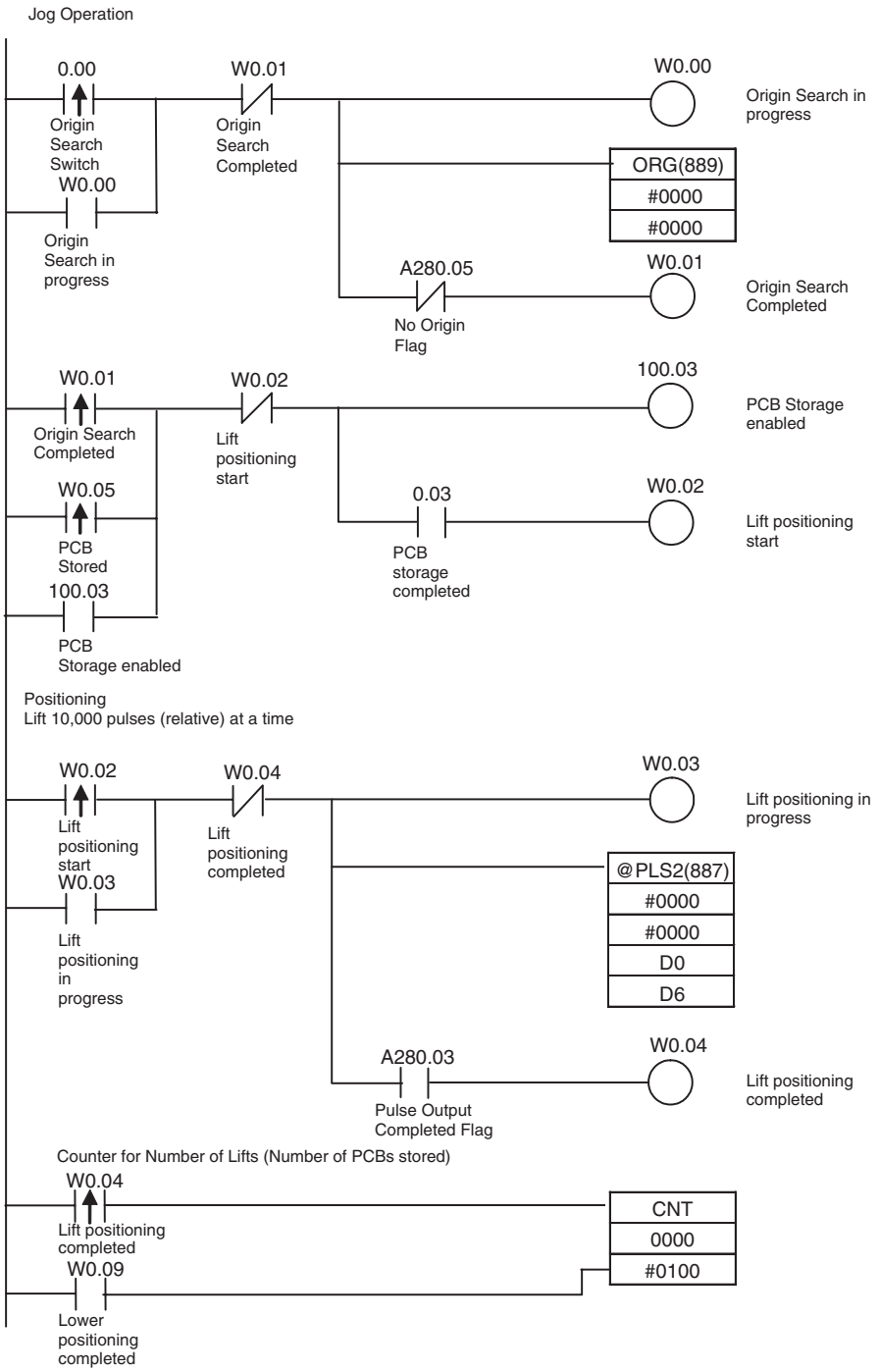
Setting details	Address	Data
Acceleration rate: 300 Hz/4 ms	D10	012C
Deceleration rate: 200 Hz/4 ms	D11	00C8
Target frequency: 50,000 Hz	D12	C350
	D13	0000

Setting details	Address	Data
Number of output pulses: 10,000 × 15 pulses	D14	49F0
	D15	0002
Starting frequency: 100 Hz	D16	0000
	D17	0000

Number of Repeats of Fixed-distance Positioning Operation (D20)

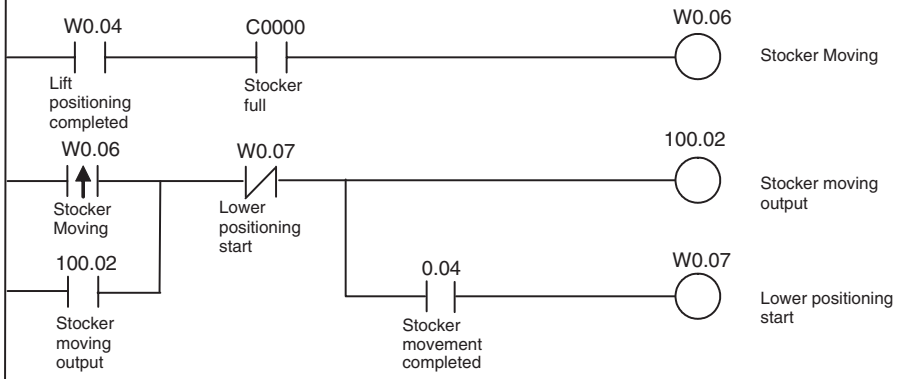
Setting details	Address	Data
Number of repeats of fixed-distance positioning operation (number of PCBs in stocker)	D20	0015

Ladder Program

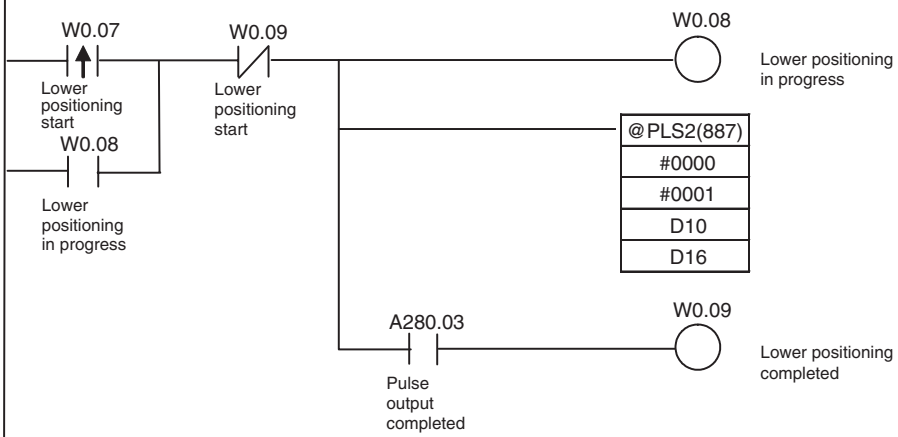


When the stocker is not full (C0=OFF), store PCB,
and repeat lift positioning after PCB storage is completed.

When the stocker is full (C0=ON), move the stocker,
and start lower positioning after stocker movement is completed.



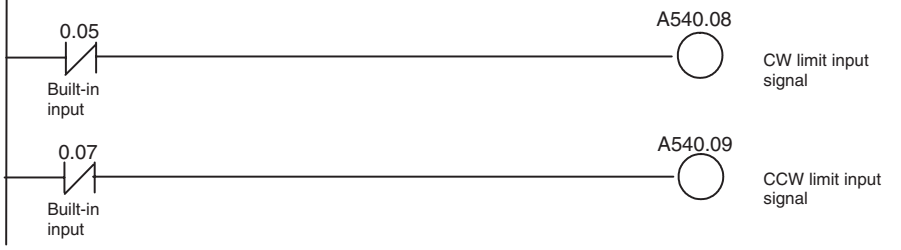
Positioning
Lower to "0" position (absolute pulses)



Emergency Stop (Pulse Output Stopped)

Repeat Limit Input Settings

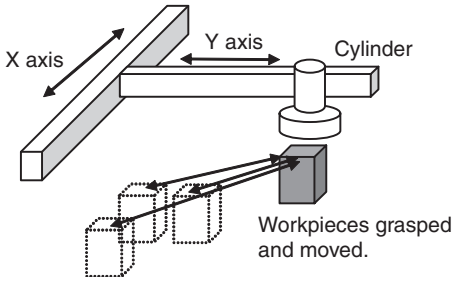
Limit inputs are allocated to external sensors using the following programming.



Palletize: Two-axis Multipoint Positioning

Specifications and Operation

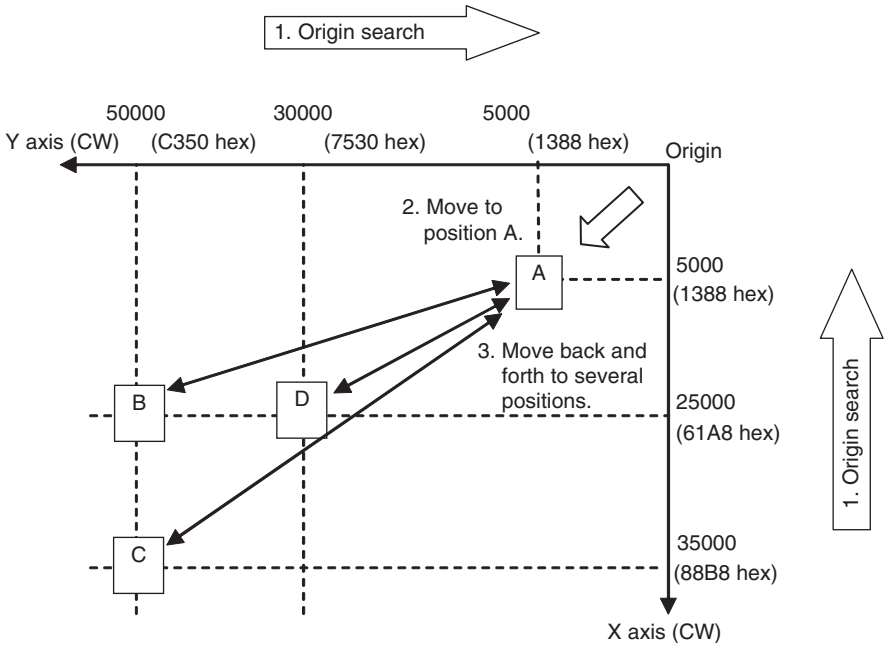
■ **Outline**



■ **Operation Pattern**

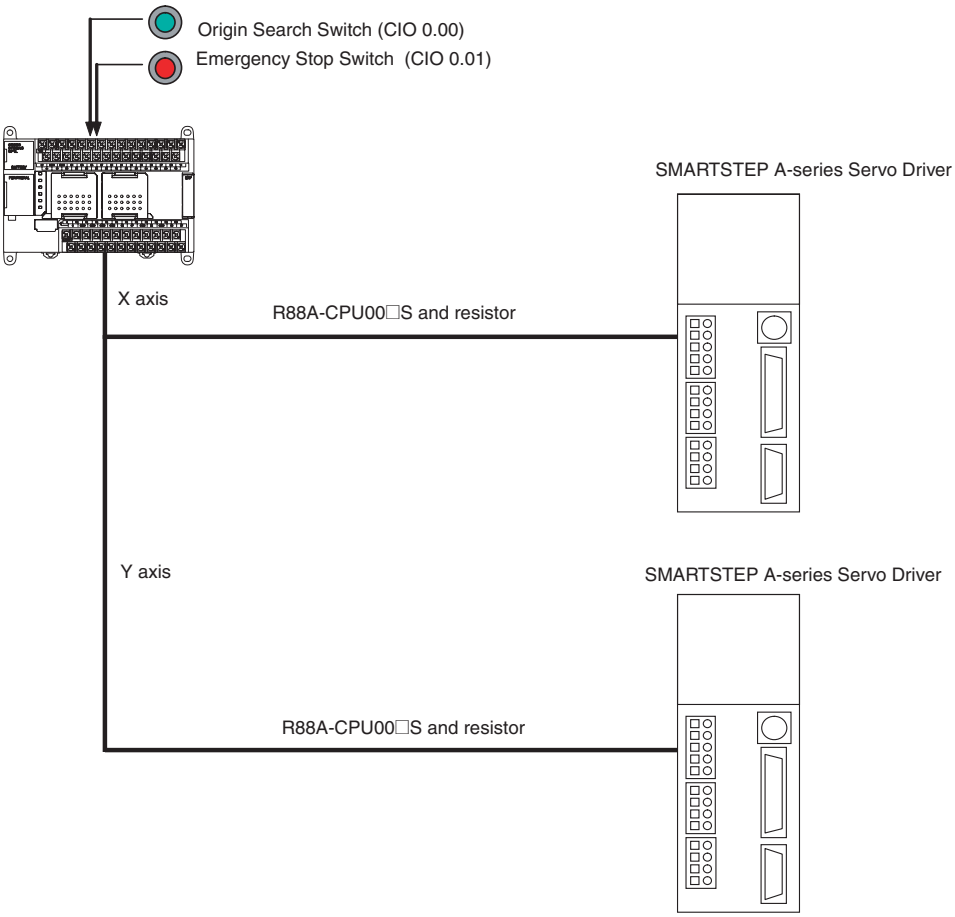
1,2,3...

1. An origin search is performed.
2. A workpiece is grasped and moved to position A.
3. The workpiece is grasped at one position and moved back and forth to several assembly positions.

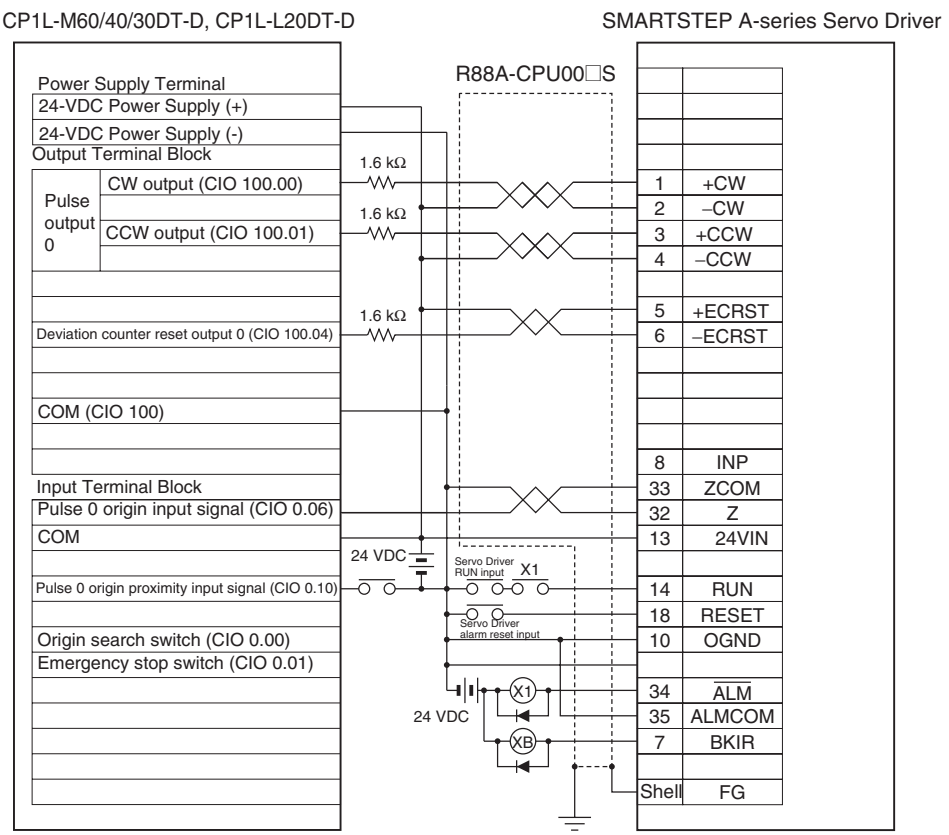


Note The X and Y axes are moved independently, i.e., interpolation is not performed.

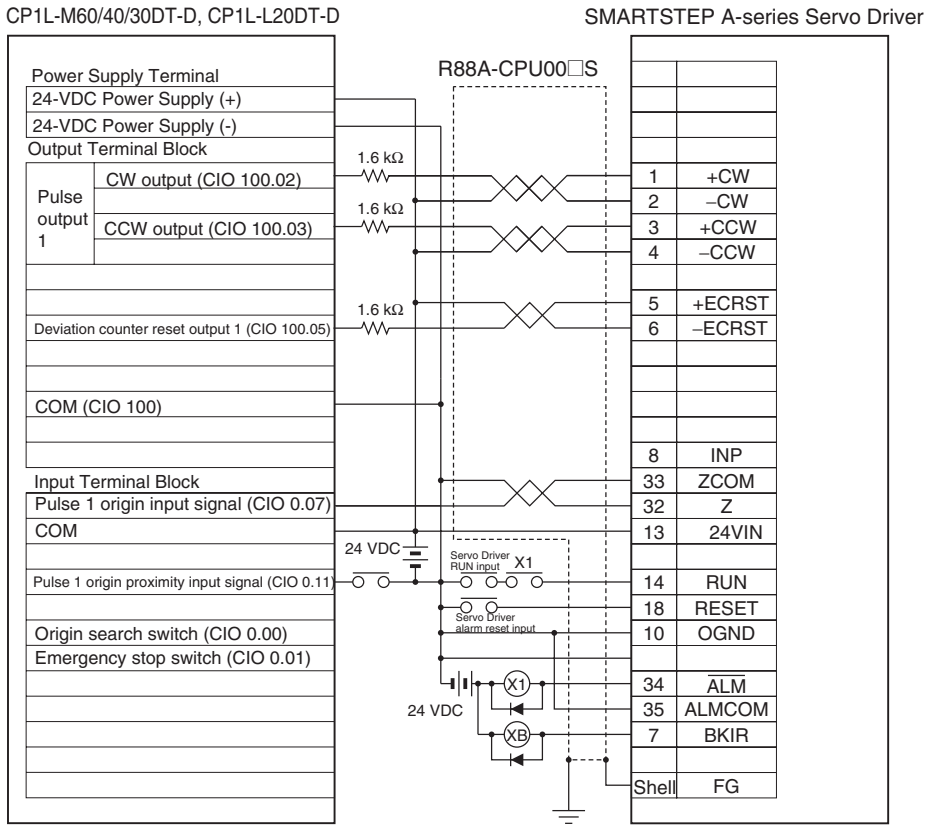
Wiring Example Using SmartStep A-series Servo Driver



X Axis



Y Axis



Operation

1,2,3...

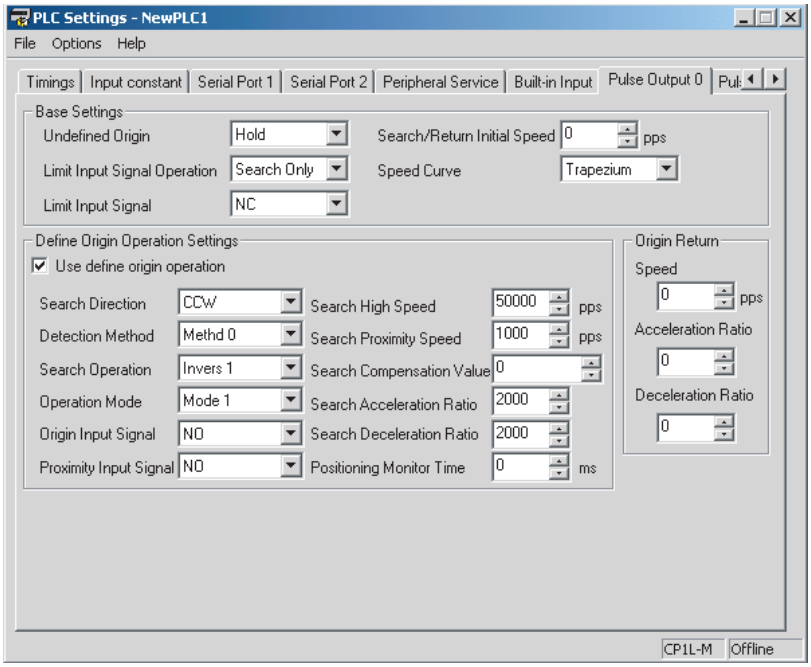
1. An origin search is performed using the Origin Search Switch (CIO 0.00).
2. When the origin search is finished, the following operations are performed continuously.
   Move to A.
   Move to B and return to A.
   Move to C and return to A.
   Move to D and return to A.
3. An emergency stop can be performed using the Emergency Stop Input (CIO 0.01)

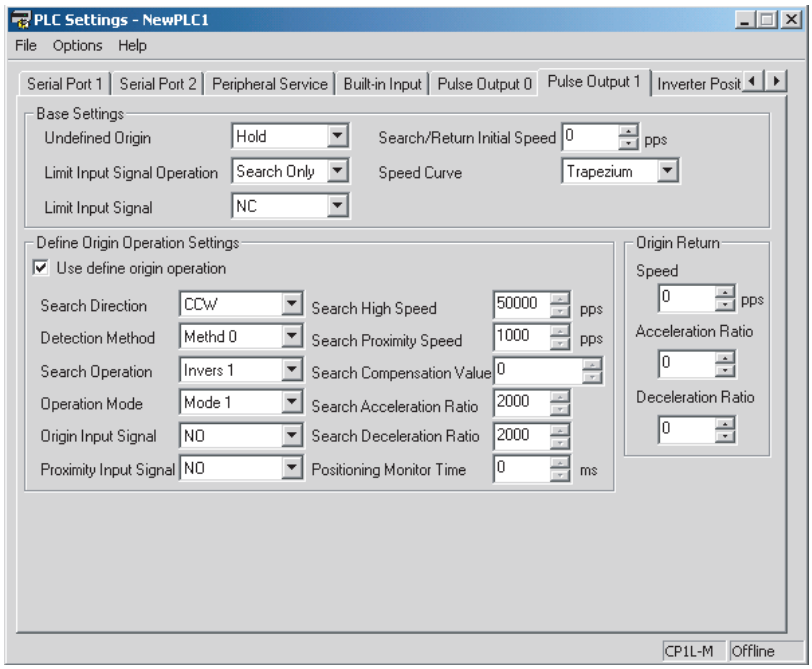
Preparation

■ **PLC Setup**

Setting details
Enable origin search function for pulse output 0 and 1.

Note The origin search enable setting is read when the power supply is turned ON.





■ DM Area Settings

Starting Frequency

Setting details	Address	Data
X-axis starting frequency	D0	0000
Y-axis starting frequency	D2	0000

PLS2(887) Settings to Move from Origin to Position A

Setting details		Address	Data
X axis	Acceleration rate: 2,000 Hz/4 ms	D10	07D0
	Deceleration rate: 2,000 Hz/4 ms	D11	07D0
	Target frequency: 100,000 Hz	D12	86A0
		D13	0001
	Number of output pulses: 5,000 pulses	D14	1388
		D15	0000
Y axis	Acceleration rate: 2,000 Hz/4 ms	D20	07D0
	Deceleration rate: 2,000 Hz/4 ms	D21	07D0
	Target frequency: 100,000 Hz	D22	86A0
		D23	0001
	Number of output pulses: 5,000 pulses	D24	1388
		D25	0000

PLS2(887) Settings to Move from Position A to Position B

Setting details		Address	Data
X axis	Acceleration rate: 2,000 Hz/4 ms	D30	07D0
	Deceleration rate: 2,000 Hz/4 ms	D31	07D0
	Target frequency: 100,000 Hz	D32	86A0
		D33	0001
	Number of output pulses: 25,000 pulses	D34	61A8
		D35	0000

Setting details		Address	Data
Y axis	Acceleration rate: 2,000 Hz/4 ms	D40	07D0
	Deceleration rate: 2,000 Hz/4 ms	D41	07D0
	Target frequency: 100,000 Hz	D42	86A0
		D43	0001
	Number of output pulses: 50,000 pulses	D44	C350
		D45	0000

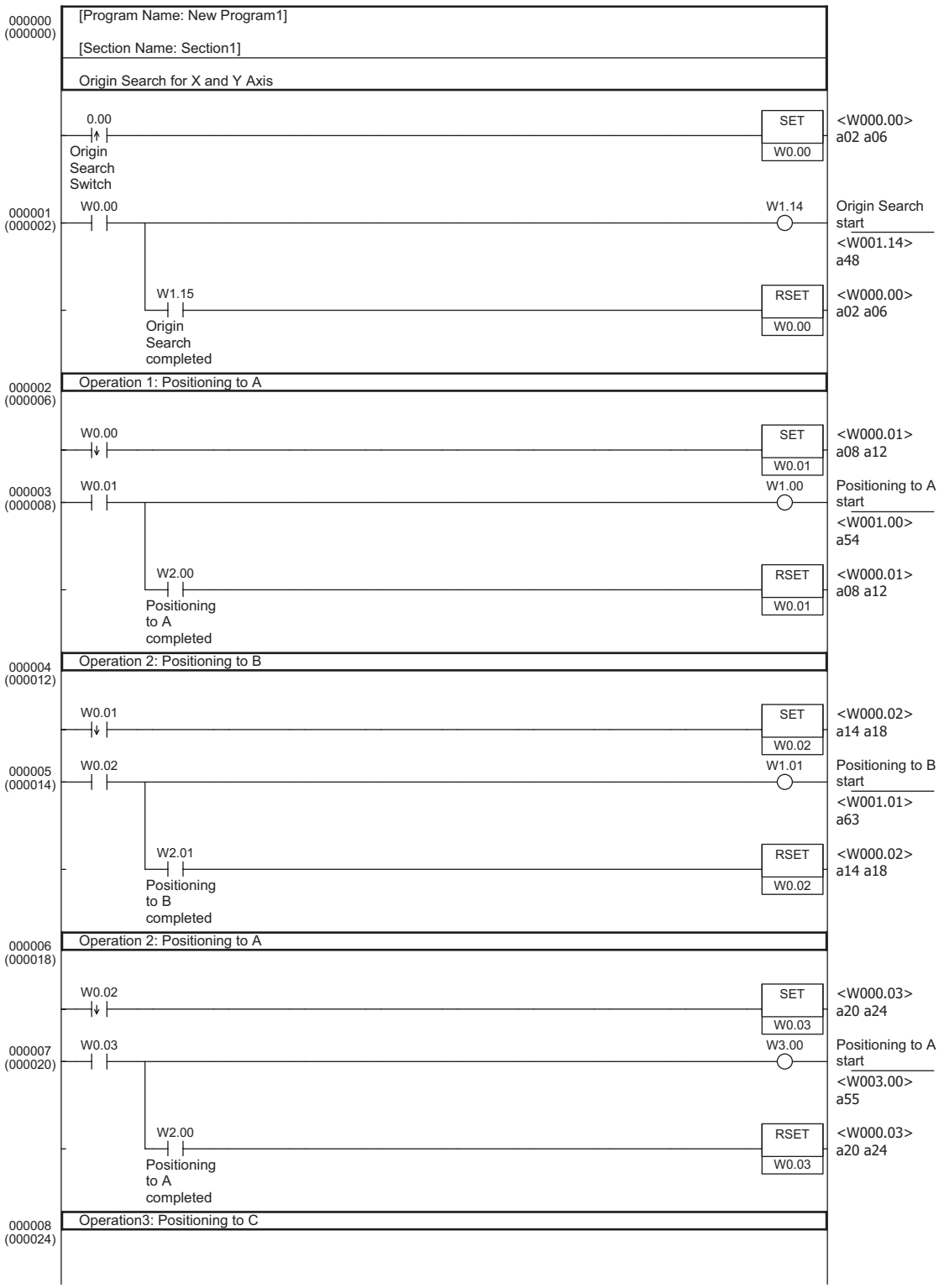
PLS2(887) Settings to Move from Position A to Position C

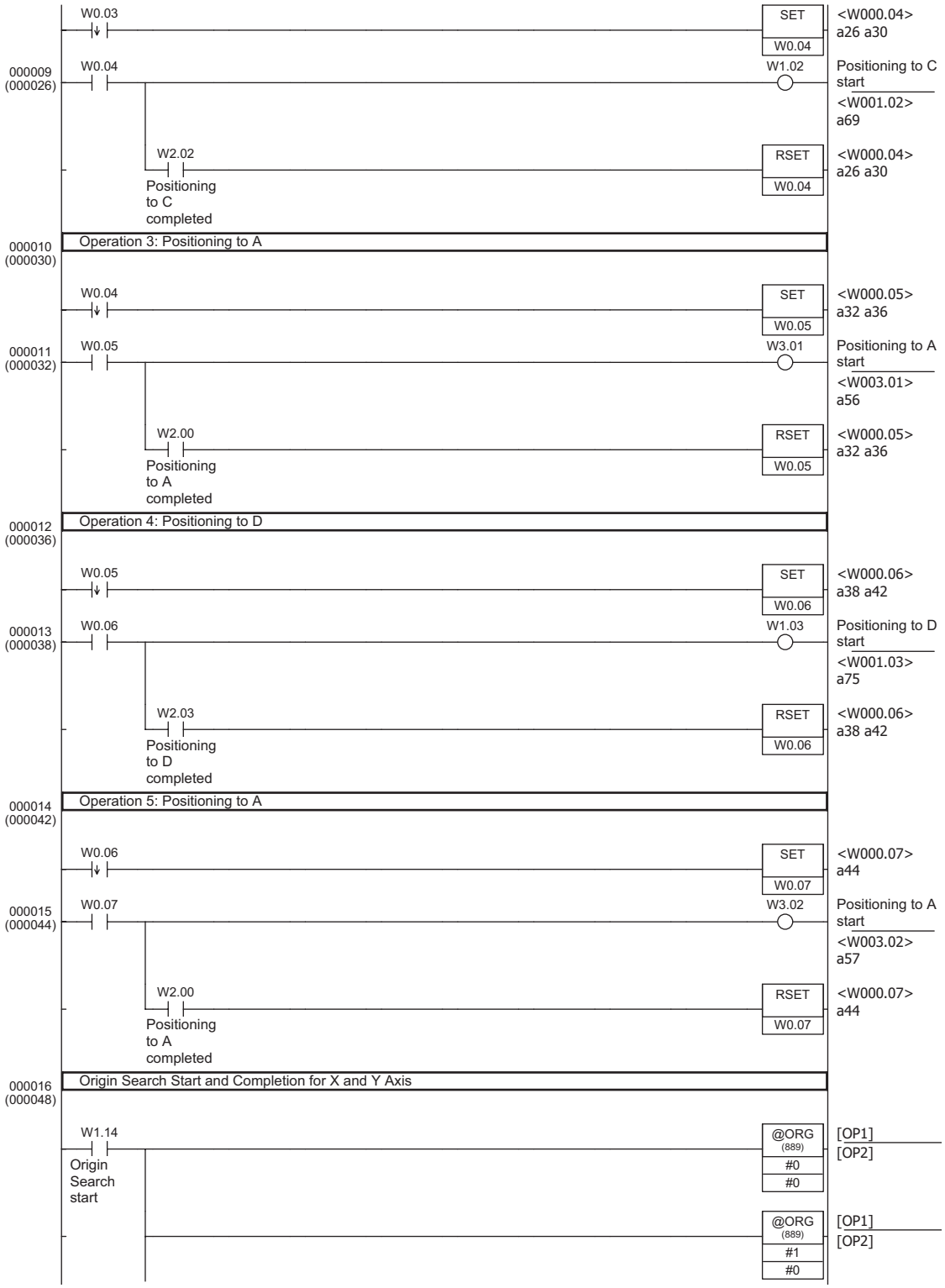
Setting details		Address	Data
X axis	Acceleration rate: 2,000 Hz/4 ms	D50	07D0
	Deceleration rate: 2,000 Hz/4 ms	D51	07D0
	Target frequency: 100,000 Hz	D52	86A0
		D53	0001
	Number of output pulses: 35,000 pulses	D54	88B8
		D55	0000
Y axis	Acceleration rate: 2,000 Hz/4 ms	D60	07D0
	Deceleration rate: 2,000 Hz/4 ms	D61	07D0
	Target frequency: 100,000 Hz	D62	86A0
		D63	0001
	Number of output pulses: 50,000 pulses	D64	C350
		D65	0000

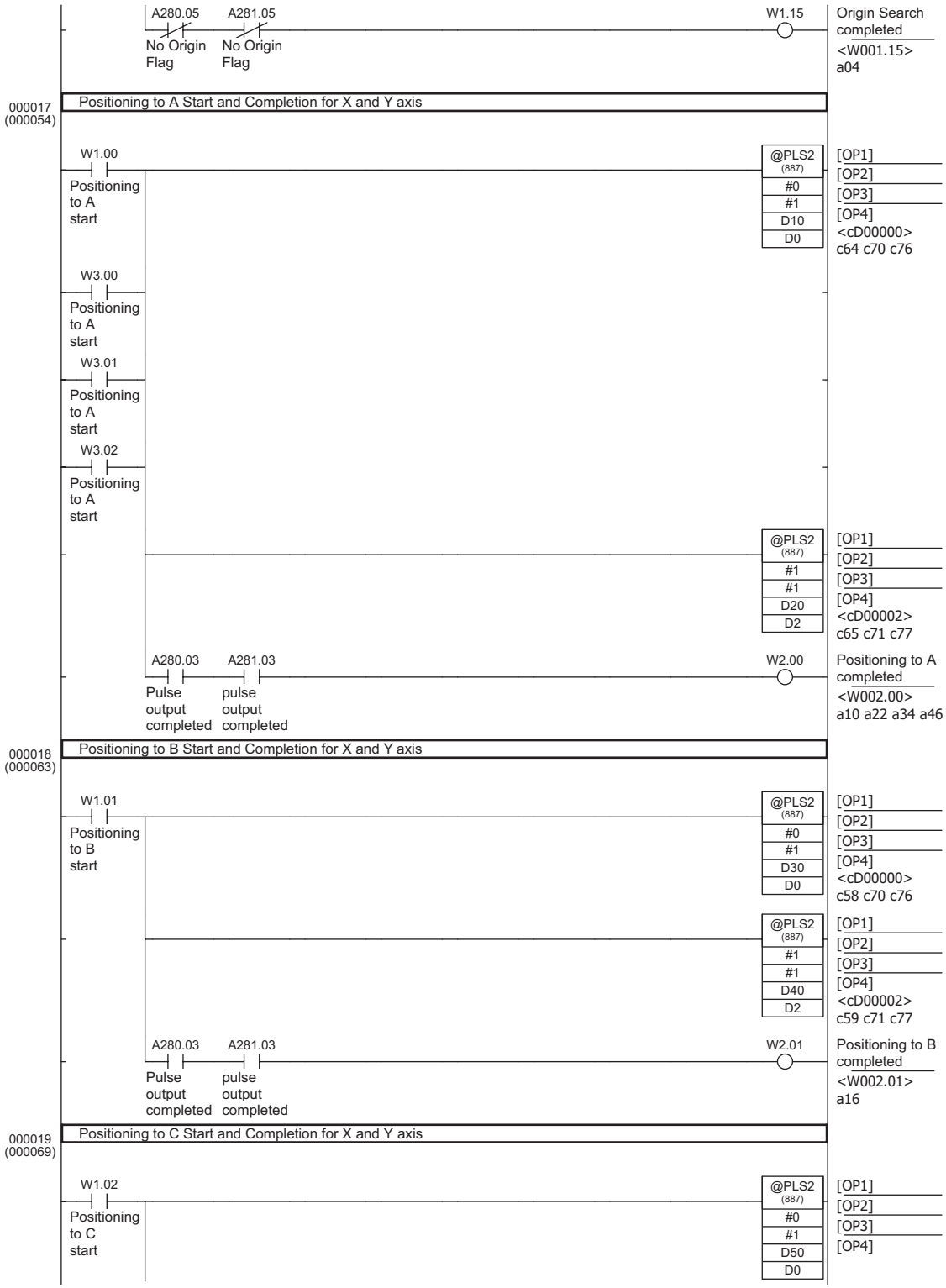
PLS2(887) Settings to Move from Position A to Position D

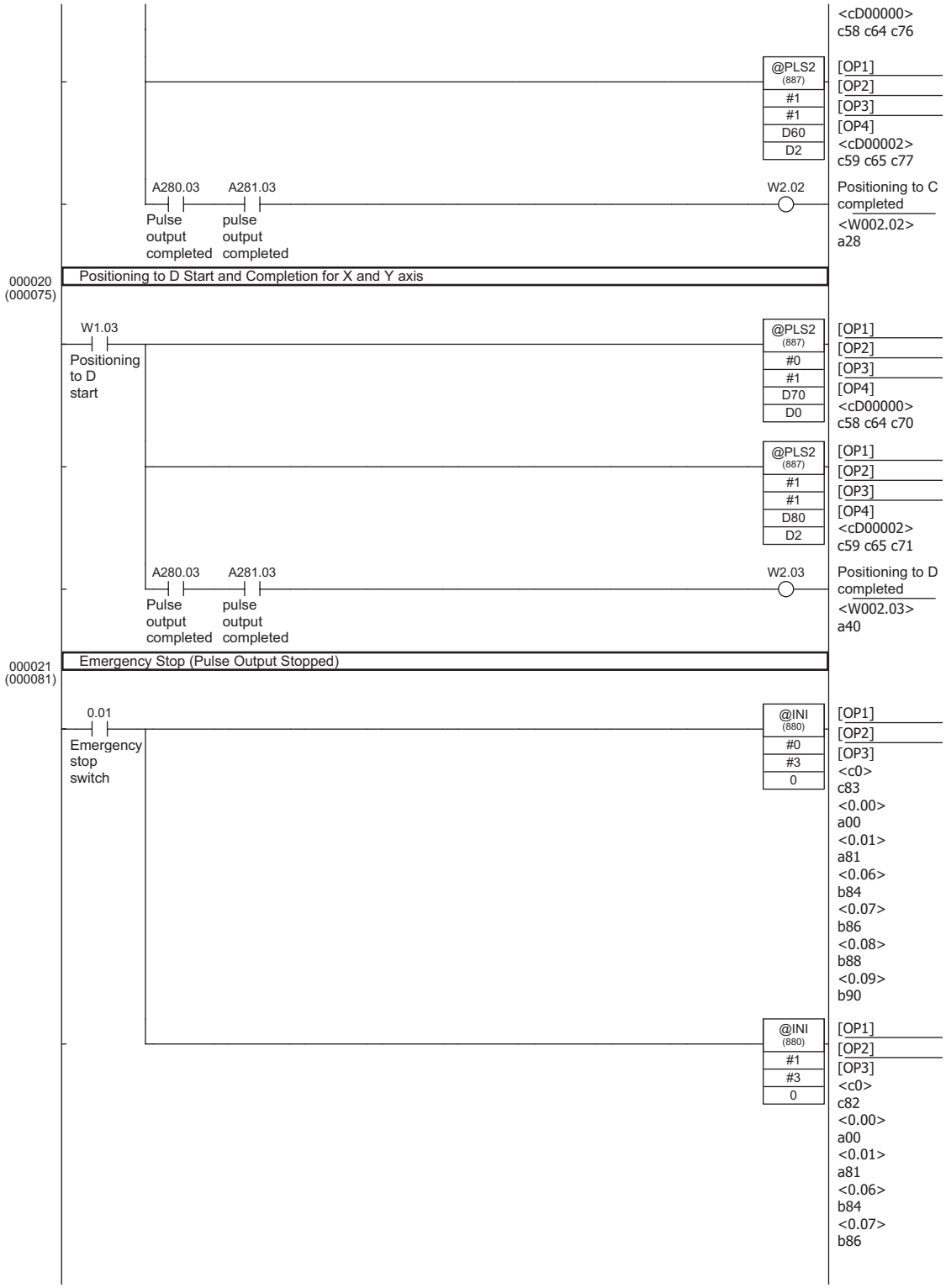
Setting details		Address	Data
X axis	Acceleration rate: 2,000 Hz/4 ms	D70	07D0
	Deceleration rate: 2,000 Hz/4 ms	D71	07D0
	Target frequency: 100,000 Hz	D72	86A0
		D73	0001
	Number of output pulses: 25,000 pulses	D74	61A8
		D75	0000
Y axis	Acceleration rate: 2,000 Hz/4 ms	D80	07D0
	Deceleration rate: 2,000 Hz/4 ms	D81	07D0
	Target frequency: 100,000 Hz	D82	86A0
		D83	0001
	Number of output pulses: 30,000 pulses	D84	7530
		D85	0000

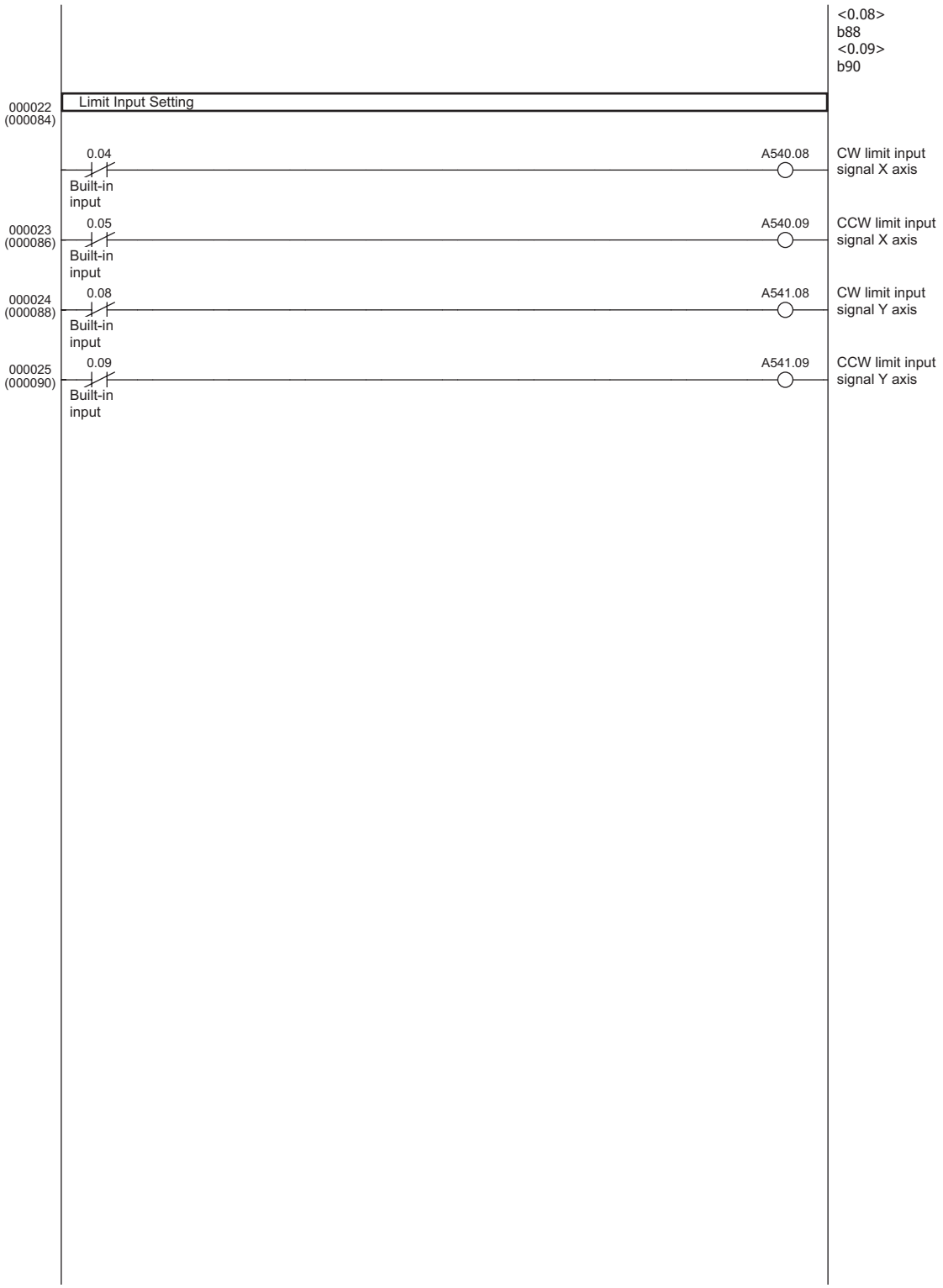
Ladder Program







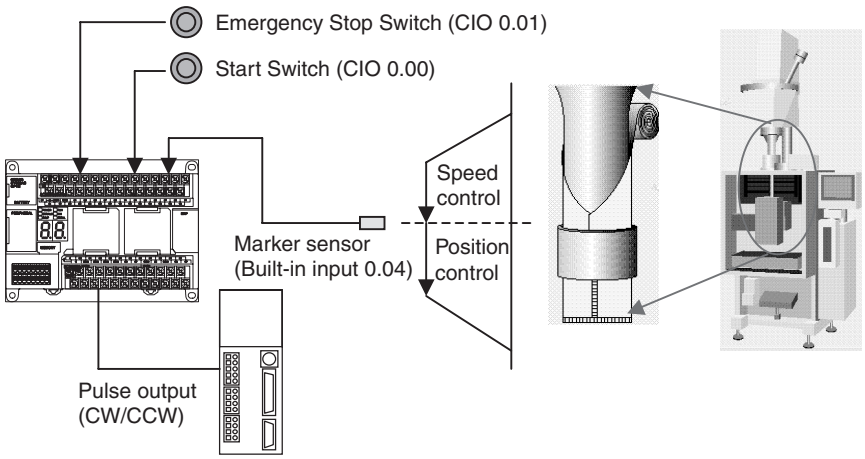




Feeding Wrapping Material: Interrupt Feeding

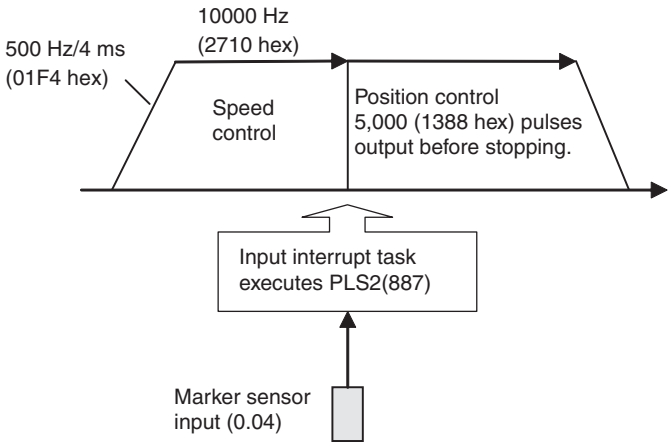
Specifications and Operation

Feeding Wrapping Material in a Vertical Pillow Wrapper



■ Operation Pattern

Speed control is used to feed wrapping material to the initial position. When the marker sensor input is received, fixed-distance positioning is performed before stopping.



■ Operation

1,2,3...

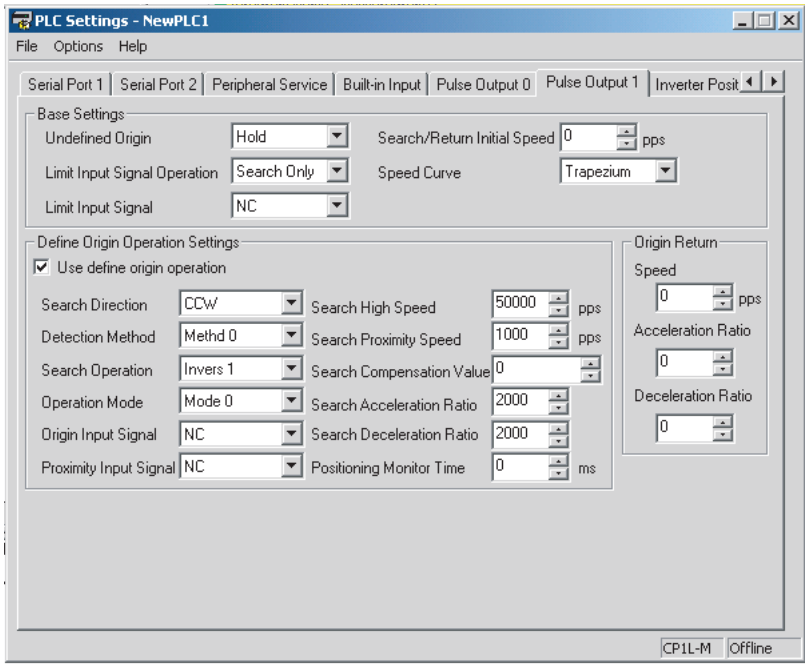
1. Speed control is used to feed wrapping material to the initial position when the Start Switch (CIO 0.00) is activated.
2. When the Marker Sensor Input (0.04) is received, PLS2(887) is executed in interrupt task 140.
3. Fixed-distance positioning is executed with PLS2(887) before stopping.
4. An emergency stop is executed to stop pulse output with the Emergency Stop input (0.01).

Preparation

■ PLC Setup

Setting details
Enable using built-in input IN0 as an interrupt input.

Note The interrupt input setting is read when the power supply is turned ON.



■ DM Area Settings

Speed Control Settings to Feed Wrapping Material to Initial Position

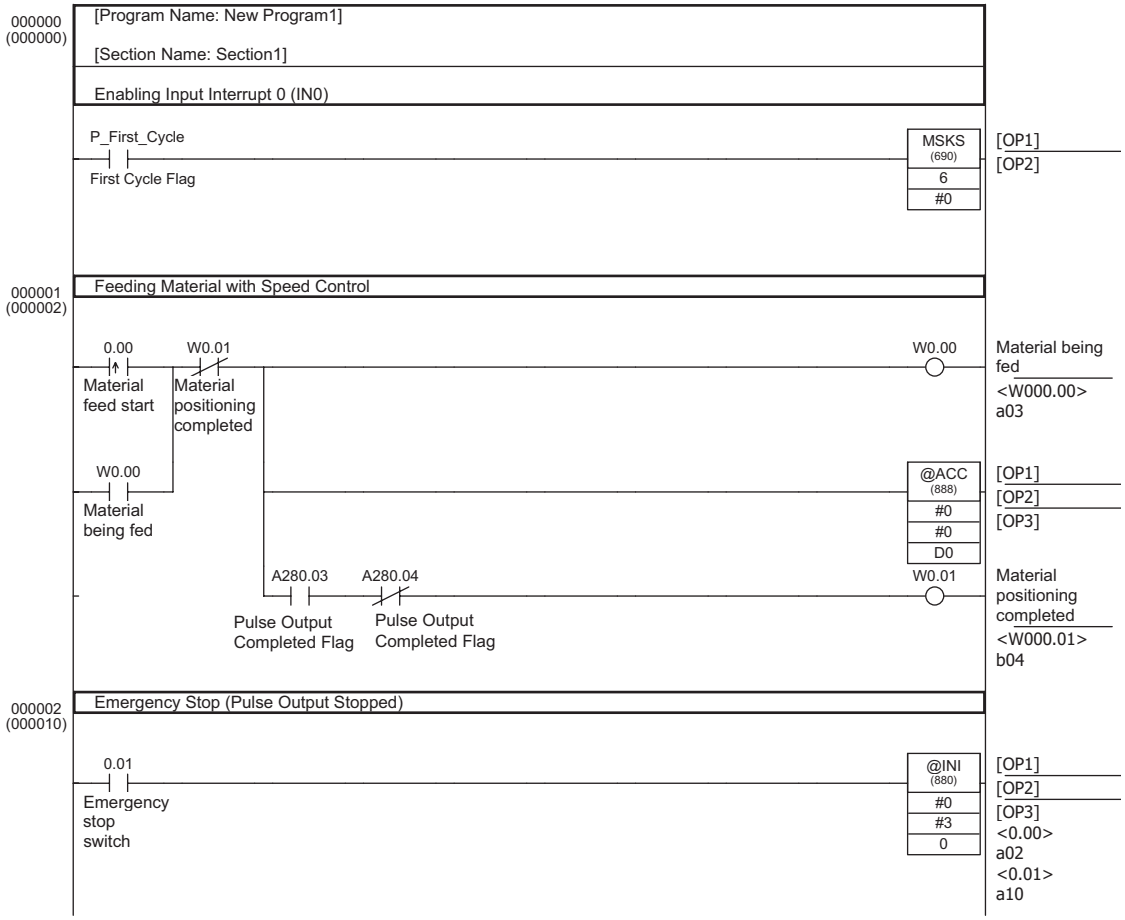
Setting details	Address	Data
Acceleration rate: 1,000 Hz/4 ms	D0	03E8
Target frequency: 10,000 Hz	D1	2710
	D2	0000

Positioning Control Settings for Wrapping Material

Setting details	Address	Data
Acceleration rate: 500 Hz/4 ms	D10	01F4
Deceleration rate: 500 Hz/4 ms	D11	01F4
Target frequency: 10,000 Hz	D12	2710
	D13	0000
Number of output pulses: 5,000 pulses	D14	1388
	D15	0000
Starting frequency: 0 Hz	D16	0000
	D17	0000

Ladder Program

Cyclic Task Program (Executed at Startup)



Program for Interrupt Task 140