Mindman

CONTROLLER



CM20 series

User Manual

External Pulse Control Edition

Ver. 2604

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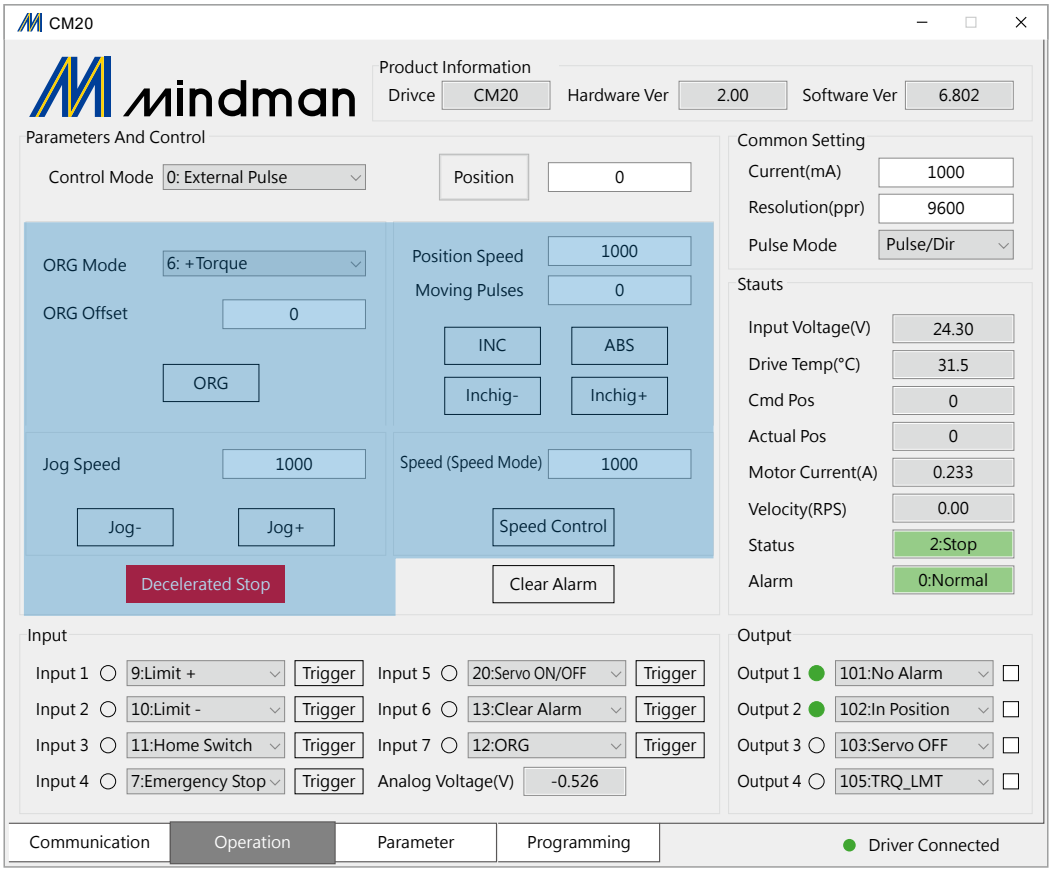
1. External Pulse Control Mode

1.1 Function Description

The CM20 controller supports external pulse control, and supports single/double pulse mode (PULSE+DIR / CW+CCW), users can perform pulse positioning control through the PLC or pulse motion control module.

When the CM20 controller is set to external pulse control mode, the following functions or parameters may have invalid actions or invalid settings:

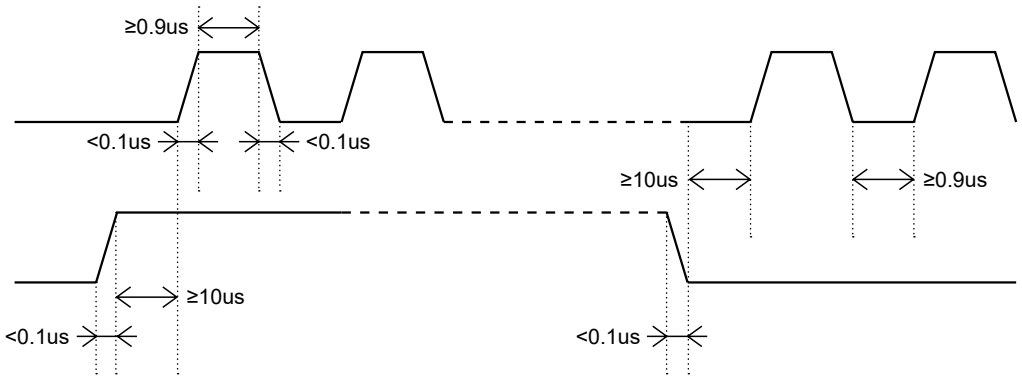
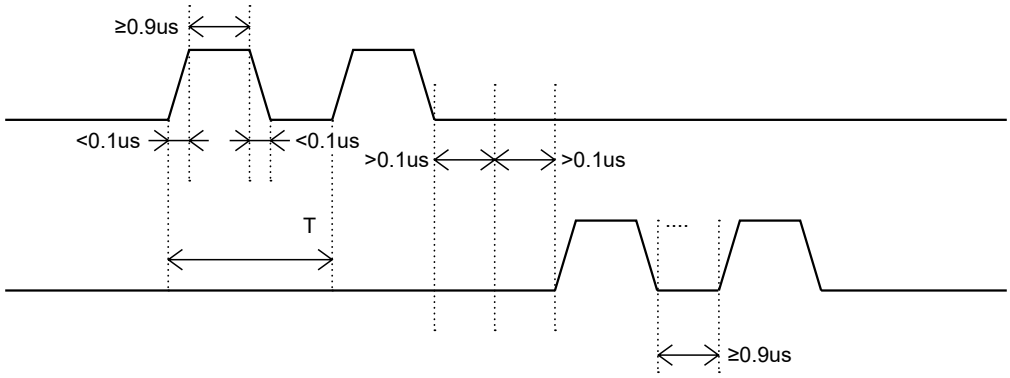
- Software-Operation page, the drop-down lists, buttons and numerical input in the **Parameters and Control** area.
- Software-Parameter page, each parameter address in class **04: Control**.
- Software-Parameter page, the parameter setting range of 1~12, 14~19, 21~29 in class **05: Input**.



In external pulse mode, this area functions ard invalid.

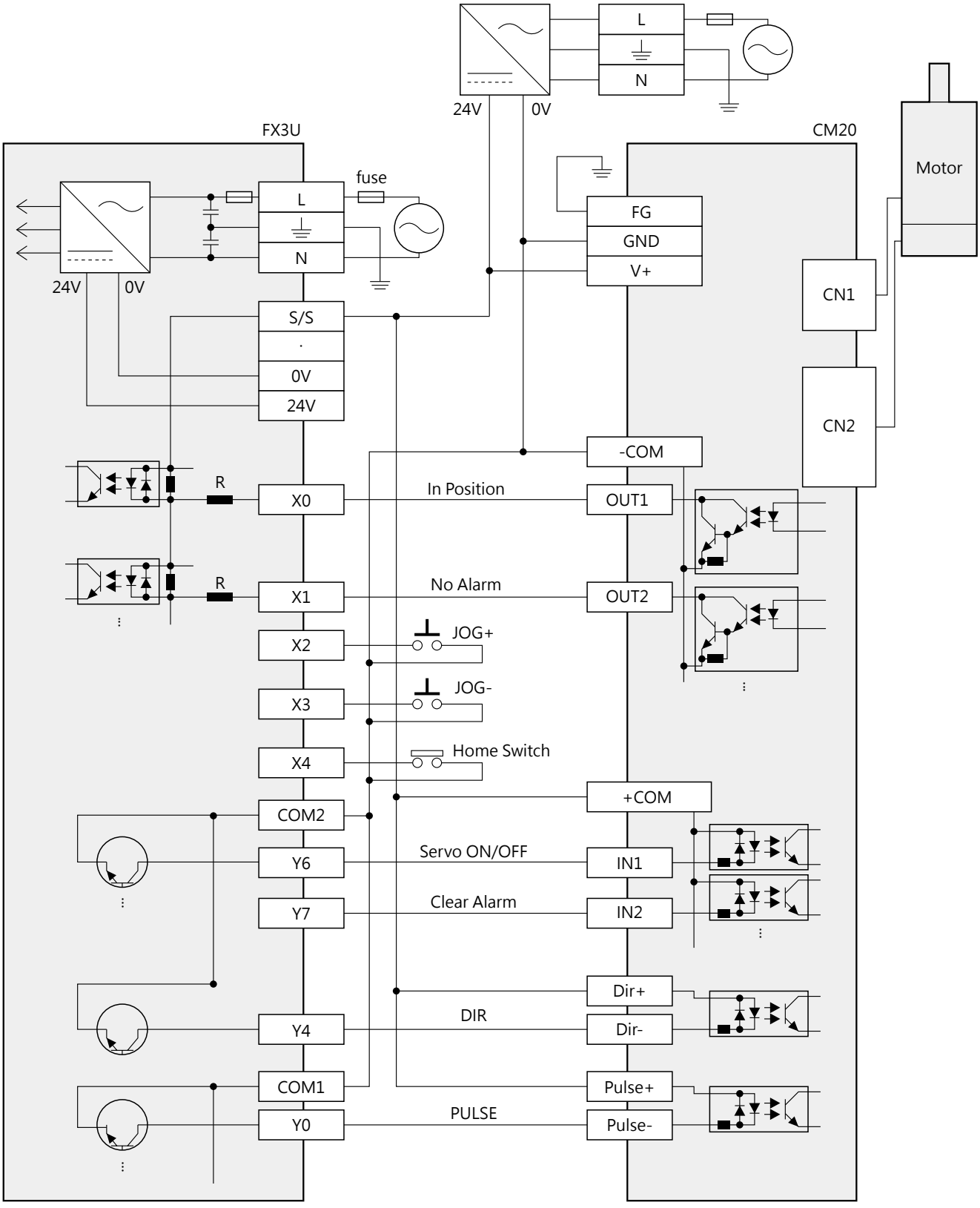
1.2 Single/Double Pulse Waveform and Timing

The single/double pulse mode must cooperate with the pulse signal input of the PLC or pulse motion control module for positioning control. Please first confirm the functional specifications, support pins and settings of the PLC or pulse motion control module used.

	Waveform and Timing (single pulse mode, PULSE+DIR)
Input 7 Input 6 (Low level forward, high level reverse)	
	Waveform and Timing (double pulse mode, CW+CCW)
Input 7 (Pulse input forward) Input 6 (Pulse input reverse)	

2. Wiring (Using single pulse mode with FX3U as an example)

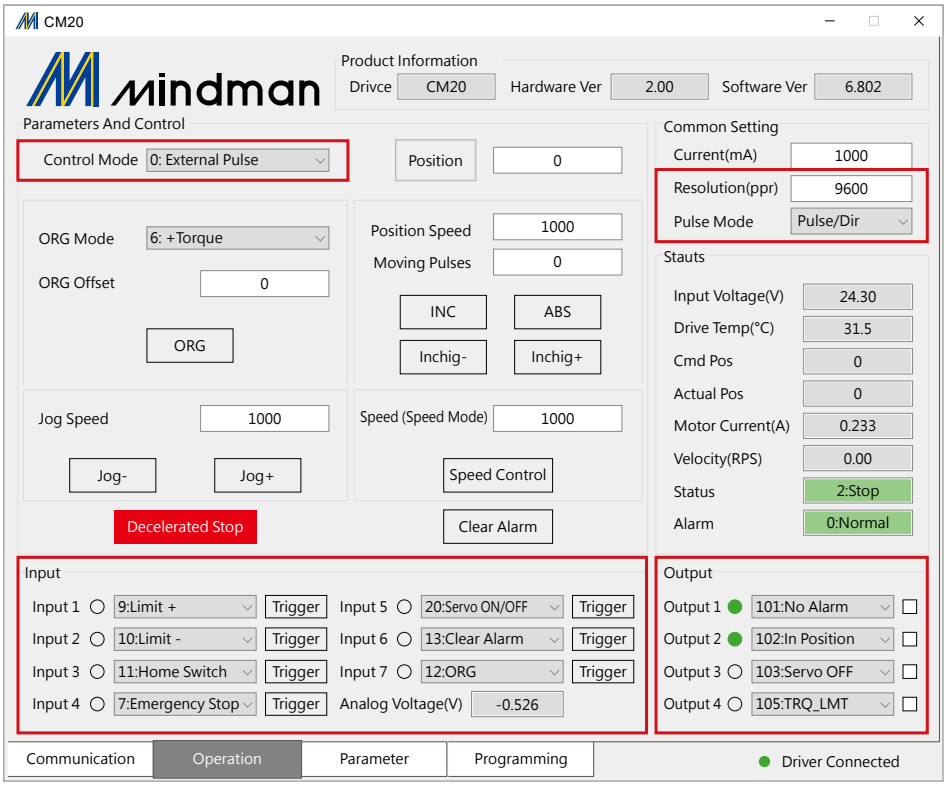
This manual provides a simple example of using the FX3U transistor (sink) output type with the CM20's single pulse mode. The PLC input is configured as a sinking input. The relevant wiring is shown below (for reference only). Users may adjust the pins as needed.
However, ensure the CM20 controller's PULSE pin (IN 7) is connected to the FX3U pin supporting pulse output. For detailed CM20 pin numbers and input/output circuit diagrams, see Chapters 2 and 3 of the main manual.



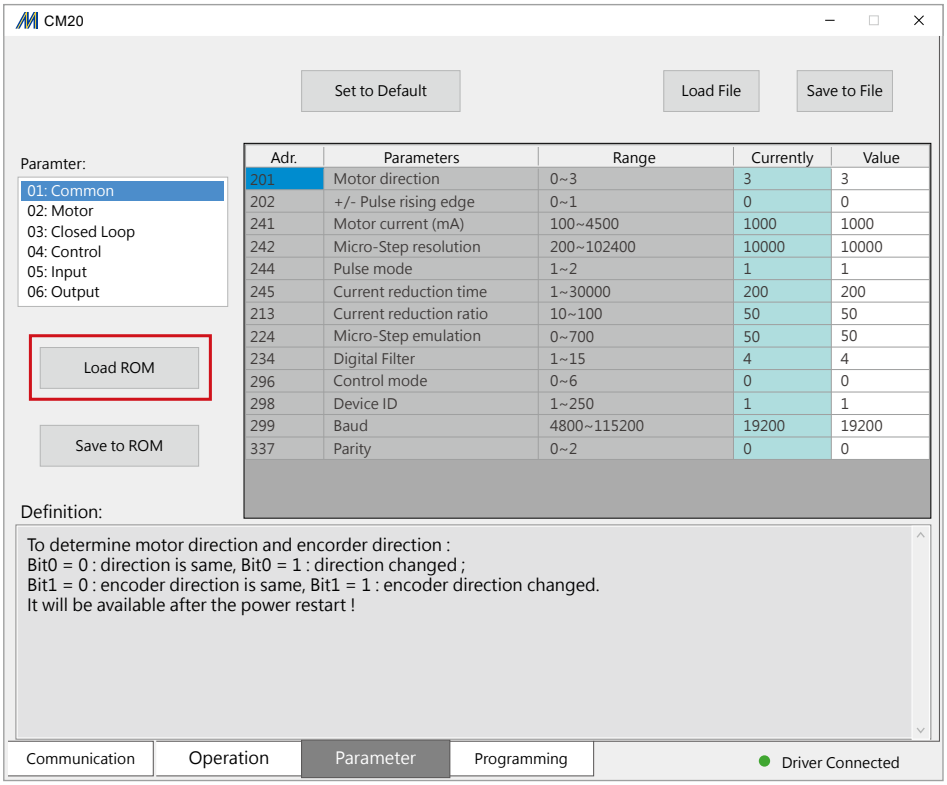
3. Software Configuration (Using single pulse mode with FX3U as an example)

Before using the external pulse mode, ensure the CM20 controller is connected via the communication cable. Adjust the relevant parameters on the software's **Parameter** page.

Some parameters may also be configured on the **Operation** page.



After changing the parameters, go to the **Parameter** page and click the "Save to ROM" button (as shown in the figure below) to ensure the parameters are saved in the controller.



3.1 Class 01: Common

In this class, the main parameters need to be set are:

- Micro-Step resolution : Set the number of pulses that the motor needs to be provided per revolution as needed.
- Pulse mode : Set to 1, indicating the single pulse mode.
- Control mode : Set to 0, indicating the external pulse mode.

Adress	Parameter	Range	Value	Description
202	+/- Pulse rising edge	0~1	0	Negative edge trigger
242	Micro-Step resolution	200~102400	10000	10000 pulses/rev
244	Pulse mode	1~2	1	PULSE+DIR mode
234	Digital filter	1~15	4	
296	Control mode	0~4	0	External pulse mode

3.2 Class 05: Input

In this class, the main parameters need to be set are:

- IN1 : Set to 20, indicating the **Servo ON/OFF** function.
- IN2 : Set to 13, indicating the **Clear alarm** function.

Adress	Parameter	Range	Value	Description
400	IN1	0~29	20	Servo ON/OFF ● Servo ON when signal is on. ● Servo OFF when signal is off
401	IN2	0~29	13	Clear alarm
402	IN3	0~29	0	Null
403	IN4	0~29	0	Null
404	IN5	0~29	0	Null
405	IN6	0~29	X	In external pulse mode, It is forced as DIR (CCW) pin.
406	IN7	0~29	X	In external pulse mode, It is forced as PULSE (CW) pin.

3.3 Class 06: Output

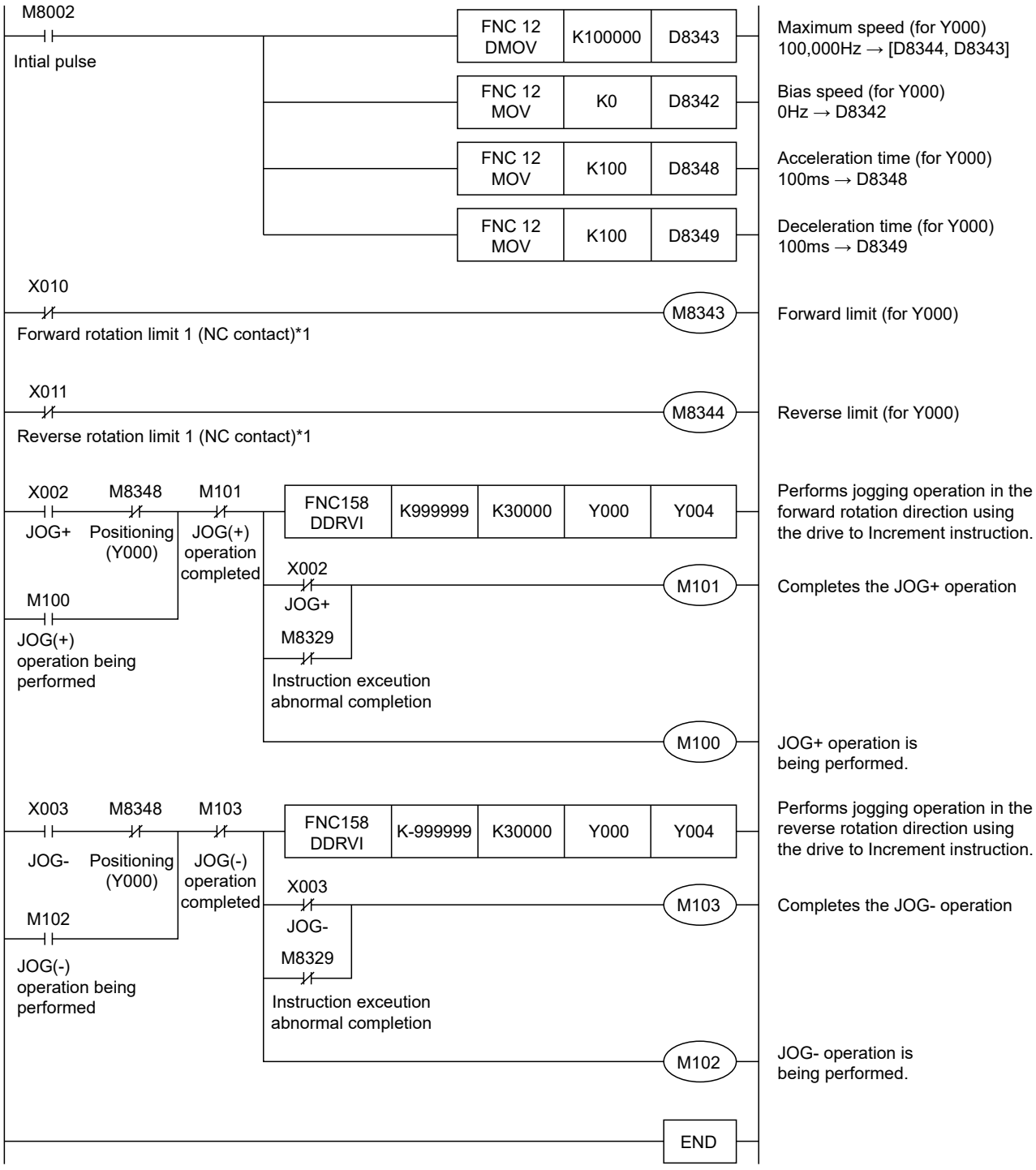
In this class, the main parameters need to be set are:

- OUT1 : Set to 102, indicating the **In Position** function.
- OUT2 : Set to 102, indicating the **No Alarm** function.

Adress	Parameter	Range	Value	Description
420	OUT1	100~104	102	**In position** ● Output if motor position deviation is less than controller setting value. ● No output if motor running.
421	OUT2	100~104	101	**Alarm** ● Output if no alarm occurs. ● No output if alarm occurs.
422	OUT3	100~104	100	General Output
423	OUT4	100~104	100	General Output

4. Operation Test (JOG)

This chapter refers to Chapter B5 (Operation Test) of the FX3U User's Manual (Positioning Control Edition). Please adjust the forward and reverse limit settings according to your requirements.



*1. Change contacts in the program to NO contacts when using NO contact type limit switches.