

NPM

Motion Checker

Enhanced Convenience with
Memory and Programming Features



MCH-5

*** RoHS-Compliant Product**

Features

- Equipped with memory feature to retain program settings
- Program operation (repetitive operation of 6 steps/pattern including zero return) enabled
- Inching operation (one-step operation) enabled
- Jog operation (continuous operation only while operating switch) enabled
- Easy-to-use compact and lightweight mobile type with built-in 2-phase stepper motor driving circuit.
- Various settings enabled such as rotation direction, speed control, position control, operation mode, stop time of stepper motor
- Connecting other external driving circuits enabled by pulse output signals
- Connecting and integrating external device enabled with external input/output signals
- All-in-one type for easy operation checking

Specifications

No.	Item	MCH-5U	MCH-5B		
Electrical Specifications	1 Power input (*1)	12VDC (2A) to 24VDC (1A) , 24Watt maximum power supply by AC adapter			
	2 Protective fuse	2A fuse mounted on motor power line			
	3 Output current	Rated: 250mA /phase (400mA max.)	Rated: 400mA / phase (700mA max.)		
		(NP-2671 Drive core chip)	(NP-3775 Drive core chip)		
	4 Driving system	Unipolar constant voltage	Bipolar constant voltage		
	5 Excitation mode	Full step (2-2 phase excitation) / Half step (1-2 phase excitation)			
6 Setting change	100,000 times (EEPROM used)				
Operating environment	7 Operating temperature	0°C to + 40°C			
	8 Operating humidity	0% to 80% RH (No condensation)			
	9 Storage temperature	-10°C to +70°C			
Others	10 External dimensions	122mm (L) x 80mm (W) x 27mm (H)			
	11 Weight	140g or less (main unit)			
	12 Environmental quality	RoHS-compliant parts used			
	13 Cooling method	Air cooling without blower			
Accessories	14 Power supply	AC adapter	Input: 100V to 240VAC / Output: 12VDC 2A		
		J Specification	2-conductor power cable for Japanese domestic specification		
		E Specification	3-conductor power cable for overseas (US) specification		
	15 Sample motor	Part number	PFCU25-24C1G (1/20)-01	PFCU20-40S4GA2 (1/10)-10	
		Step angle	0.75 deg/step (at 2-2 phase excitation)	0.9 deg/step (at 2-2 phase excitation)	
		Coil resistance	120Ω ± 7%	160Ω ± 7%	
		Rated voltage	Terminal voltage: 12.5V (rated 12V)	Terminal voltage: 11.0V (rated 12V)	
	16 Others	Motor leads (L = 250mm) , Screwdriver, Instruction manual			

*1: ● The motion checker supports up to 24V DC; however, the attached AC adapter and motor are for 12V DC power input specification. If you use this unit at a higher voltage, prepare an appropriate AC adapter and motor.

Model

Model name	2-conductor power cable	MCH-5U-J	U: Unipolar constant-voltage specification
		MCH-5B-J	B: Bipolar constant-voltage specification
	3-conductor power cable	MCH-5U-E	U: Unipolar constant-voltage specification
		MCH-5B-E	B: Bipolar constant-voltage specification

Connection

Symbol	Name	Terminal	MCH-5U	MCH5-B	Symbol	Name	Number	MCH-5U/MCH-5B
PJ 1 (*2)	AC adapter connector	Center terminal	Power input (+)	Power input (+)	CN3	External input terminal	1	GND
		Spring terminal	Power input (-)	Power input (-)			2	START/STOP
CN1	Motor connector terminals	1	COM: (+ VM output) (Red)	NC			3	CW/CCW (PAUSE)
		2	COM: (+ VM output) (Red)	NC			4	ENABLE
		3	1Ø: Phase A (Black)	1Ø: Phase A (Brown)			5	ORG-REV
		4	3Ø: Phase A (Brown)	3Ø: Phase A (Orange)			6	+EL
		5	2Ø: Phase B (Orange)	2Ø: Phase B (Red)			7	-EL
		6	4Ø: Phase B (Yellow)	4Ø: Phase B (Yellow)			8	+SD
CN2 (*3)	External output terminal	1	GND	GND			9	-SD
		2	+PO: Pulse	+PO: Pulse			10	ORG (Origin signal)
		3	-PO: Direction	-PO: Direction				
		4	+5V	+5V				
		5	BSY: Busy	BSY: Busy				
		6	ORG: Origin	ORG: Origin				

AC adapter connector equivalent for MJ179P
 *2: (MARUSHIN) used. Use MP-121M or MP-136L when using other adapters.
 *3: External drive circuit can be connected

Parameters: Settings on jog operation, ORG switch, and overall program operation

(1) Setting speed pattern			(4) Selecting operation input		
Setting item	Setting range	Panel indicators	Setting item	Setting detail	Panel indicators
Low speed (LSPD) [PPS]	1 to 999	L 0 0 0 n n n	Panel input	All switches on the panel and CN3 external signals (+EL, -EL, +SD, -SD, and ORG) are effective.	Pn
High speed (HSPD) [PPS]	1 to 7999	H 0 0 n n n n			
Acceleration/Deceleration time (ACC/DEC) [msec]	100 to 1600	t 0 0 n n 0 0			
(2) Selecting speed pattern (PATTERN)			External input	Switches on the panel (MENU, RESET, SHIFT, and SHIFT+START), and all CN3 external signals are effective.	Et1 Et2
Setting item	Setting detail	Panel indicators			
Constant speed (CONS.)	Constant motion at LSPD	SP1			
Acceleration/Deceleration (PROFILE)	Accelerating/decelerating between at LSPD speed and HSPD speed	SP2	(5) Selecting excitation mode (EXCITATION)		
(3) Setting the number of repetition times of program operation (CYCLE)			Setting item	Setting detail	Panel indicators
Setting item	Setting detail	Panel indicators	Full step (FULL)	2-2 phase excitation sequence	2-2
Number of times: C [times] (CYCLE)	1 to 9999 (Infinite when C = 0)	C 0 0 n n n n	Half step (HALF)	1-2 phase excitation sequence	1-2
			(6) Selecting zero return method by ORG switch (ORG)		
			Setting item		Panel indicators
			Default zero return		Or-1
			Origin sensor effective		Or-2

Programming: Setting items on each step (Pr1 - Pr6) required for program operation
 A maximum of six steps (zero return selectable as one step) can be set for a program.

Setting items for each step			Setting	Panel indicators
Item				
Rotation direction	(CW/CCW)		"," comes on for CW.	. Prx
Feed amount	(PULSE)	[PULSE]	0 - 999999	P n n n n n n
Low speed	(LSPD)	[PPS]	1 - 999	L x n n n
High speed	(HSPD)	[PPS]	1 - 7999	H x n n n
Acceleration/Deceleration time	(ACC/DEC)	[msec]	100 - 1600 (every 100ms)	t x n n 0 0
Wait time	(WAIT)	[msec]	100 - 4900 (every 100ms)	E x n n 0 0
Zero return selection	(ORG)		0	Or x n

x : program step number

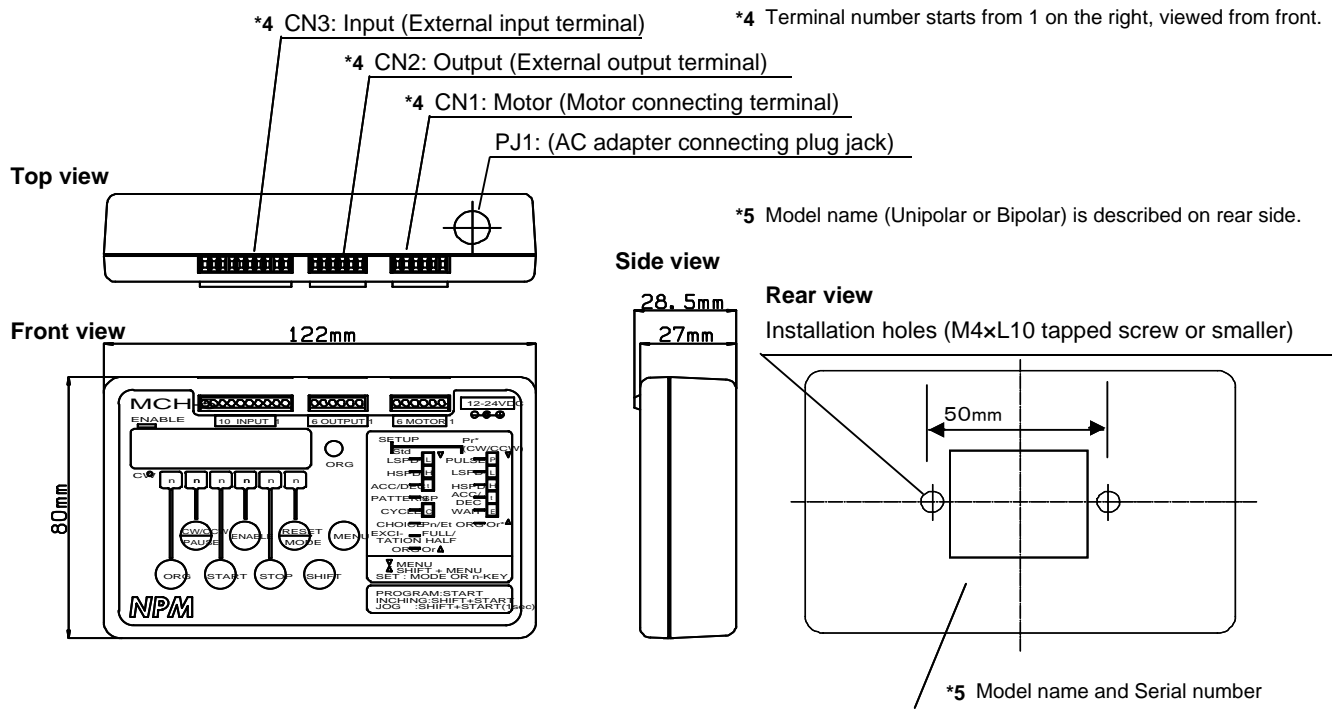
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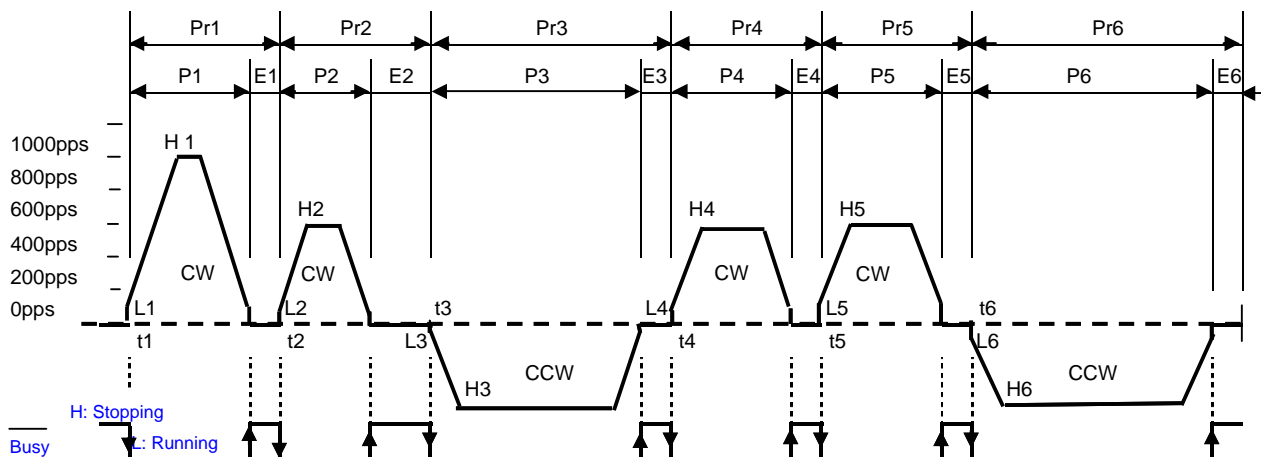
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Outline drawings



Functions

- PAUSE function** : CW/CCW and PAUSE are alternative.
 : When "Stop time" is set in settings and PAUSE is pressed during program operation, the program temporarily stops its operation after terminating the current step.
- SHIFT function** : Switching display "Counter", "Step No.", "Program repetition times
 : Inching and jog operations "SHIFT + START
 : Returning to previous step "SHIFT + MODE
 : Decreasing set value "SHIFT + n key" } Setting mode
- START switch** : Inching operation (1 pulse sending) "SHIFT + START (Pressing shorter time for 1 second or less)
 : Jog operation (Continuous sending) "SHIFT + START (Pressing longer time for second or more)
- Program operation exampl**



Setting items	Panel	Pr 1	Pr 2	Pr 3	Pr 4	Pr 5	Pr 6
Rotation direction	CW/CCW	·	· (CW)	· (CW)	(CCW)	· (CW)	· (CW)
Feed amount	PULSE	P	1000	1000	2000	1000	1000
Low speed	PPS	L	25	50	50	5	100
High speed	PPS	H	1000	600	550	490	600
Acceleration/deceleration time	msec	t	200	100	100	100	100
Wait time	msec	E	1000	2000	1000	1000	1000
Zero return selection	Or	0	0	0	0	0	0

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