EAT·N

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5011641701-MC01

ELC-MC01

Motion Control Unit
Instruction Sheet

1 ⚠ WARNING

- This Instruction Sheet only provides descriptions for installation, wiring and trial run. For further infromation, please refer to special module of ELC Application Manual.
- Do NOT touch terminals when power on. Please must power OFF before wiring.
- This is an OPEN TYPE ELC. The ELC should be kept in an enclosure away from airborne dust, humidity, electric shock risk and vibration. Also, it is equipped with protective methods such as some special tools or keys to open the enclosure in order to prevent hazard to users or damage the ELC.
- Do NOT connect the AC input power to any of the input/output terminals, or it may damage the ELC. Check all the wiring prior to power up.
- Warning – Do not disconnect while circuit is live unless area is known to be non-hazardous.
- Power, input and output (I/O) wiring must be in accordance with Class 1, Div. 2 wiring methods - Article 501-10(B)(1) of the National Electrical Code.
- Suitable for use in Class 1, Division 2, Groups A, B, C, D or Non-Hazardous locations only.
- Warning – Explosion hazard - Substitution of components may impair suitability for Class 1, Division 2.
- Warning – Explosion hazard - Do not disconnect equipment unless power has been switched off or the area is known to be Non-Hazardous.
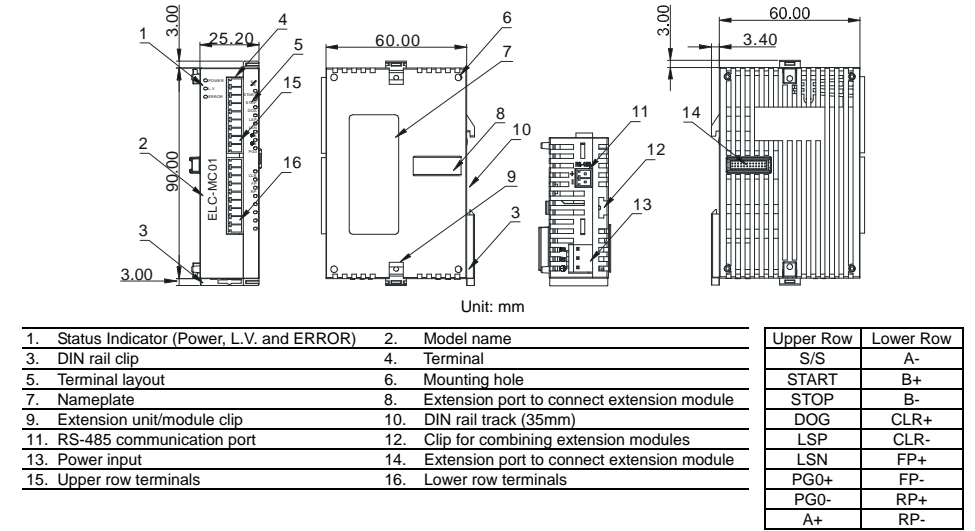
2 INTRODUCTION

2.1 Model Description and Peripherals

MC01 (positioning unit) is mainly applied to the speed/position control of step/servo driven system. The maximum output pulse can be up to 200 KPPS, and built-in various route control modes. The EATON ELC PB/PC/PH/PA series can read/write MC01 via FROM/TO instrucitons. There are 49 CRs (Control Register) with 16-bit for each register in MC01. The 32-bits data is composed of 2 continuous CR number.

### 2.2 Product Profile and Outline (LED Indicator and Terminal Block)

Unit: mm

		Upper Row	Lower Row
1. Status Indicator (Power, L.V. and ERROR)	2. Model name	S/S	A-
3. DIN rail clip	4. Terminal	START	B+
5. Terminal layout	6. Mounting hole	STOP	B-
7. Nameplate	8. Extension port to connect extension module	DOG	CLR+
9. Extension unit/module clip	10. DIN rail track (35mm)	LSP	CLR-
11. RS-485 communication port	12. Clip for combining extension modules	LSN	FP+
13. Power input	14. Extension port to connect extension module	PG0+	FP-
15. Upper row terminals	16. Lower row terminals	PG0-	RP+
		A+	RP-

2.3 LED Display

POWER	: Power indicator, +5V internal power	START	: Start input
LV	: Low voltage indicator	STOP	: Stop input
	lit when external input power is lower than 19.5V	DOG	: DOG (near point signal) input
ERROR	: Error indicator (ON/OFF blinking).	FP	: CW pulse output
	It will blink when CR#39 is not 0.	RP	: CCW pulse output
LSP	: Right limit input indicator	ΦA	: A-phase input of manual pulse generator
LSN	: Left limit input indicator	ΦB	: B-phase input of manual pulse generator
PG0	: Zero signal input indicator	CLR	: Output clear signal

2.4 Input/Output Terminal

Description	Terminal name	Content	Response
Power supply	+24V, 0V	Power input/DC24V (-15~+20%) Current consumption 70±10mA; Startup peak current 1.3 A	-
Input	START	Start input terminal	4ms/12ms
	STOP	Stop input terminal	4ms
	LSP / LSN	Limit Stroke of right/left limit	1ms

ΦA+, ΦA-	A-phase terminal (+, -) of manual pulse generator input (line driver input)		200KHz
ΦB+, ΦB-	B-phase terminal (+, -) of manual pulse generator input (line driver input)		200KHz
PG0+, PG0-	Zero signal input terminal +, - (line driver input)		4ms
Input	DOG	Offers two different functions depending on operation mode. (1) It is near-point signal in zero return mode. (2) It is start signal on interrupt 1st or interrupt 2nd speed mode.	1ms
	S/S	Signal common terminal of these Inputs (START, STOP, DOG, LSP, LSN)	-
	CLR+, CLR-	Clear signal (clear signal of internal error counter for Servo drive)	4ms
Output	FP+, FP-	FP/RP mode: CW pulse output I/O mode: Output pulse AB-phase mode: A-phase output	200KHz
	RP+, RP-	FP/RP mode: CCW pulse output I/O mode: direction output AB-phase mode: B-phase output	200KHz

■ **Input/Output Circuit**
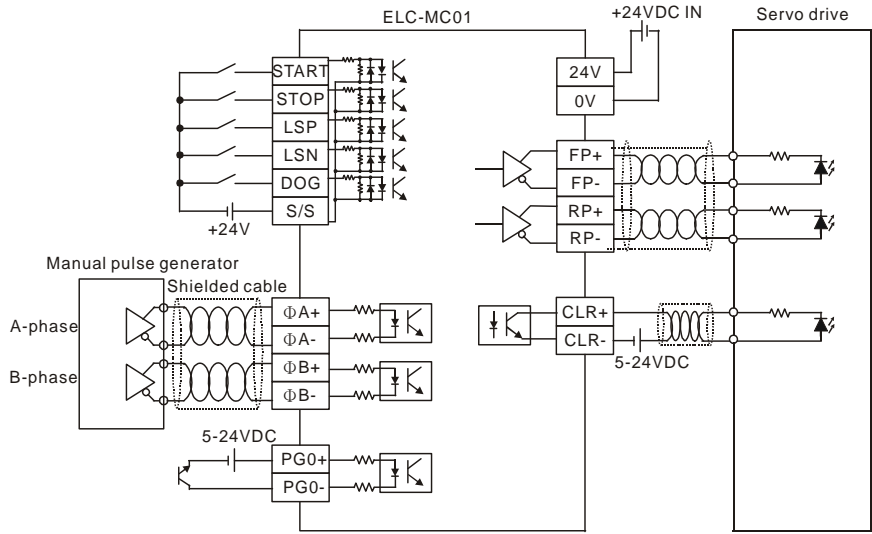
Note:
1. Do NOT arrange the wiring of I/O signal wires or power supply in the same wiring duct.
2. Make sure the terminals ⊕ of power module and ELC-MC01 are properly grounded or connects to machine cover.
3. Do NOT wire to null terminal ●.

3 SPECIFICATIONS

3.1 Function Specifications

Item	Content
Power supply	DC24V(-15% ~ +20%) Current consumption 70±10mA; Startup peak current 1.3 A
Max. number of connected axes	8 units; (PB/PC/PA/PH series MPU can connect up to 8 extension modules without occupying any I/O.)
Distance instruction	Distance value is set by CR. 1. Setting range: -2, 147,483,648~+2,147,483,647; 2. Selectable unit: um, mdeg, 10⁻⁴ inch, Pulse 3. Selectable rate: 10⁰, 10¹, 10², 10³; 4. Selectable position: absolute and relative position instruction
Speed instruction	Speed value is set by CR. 1. Setting range: -2,147,483,648~+2,147,483,647 (conversion value of 10~200KPPS pulse) 2. Selectable unit: pulse/s, cm/min, 10deg/min, inch/min
External output	Photo coupler is for insulation and there are LED indications for all output/input signals. Outputs: FP and RP (line driver output 5V) Output: CLR is the type of NPN open collector transistor output (5~24VDC, less than 20mA)
External input	Photo coupler is for insulation and there are LED indications for all output/input signals. Input point: START, STOP, LSP, LSN, DOG(contact or open collector transistor, 24VDC±10%, 5±1mA) Inputs:ΦA, ΦB(line driver or open collector transistor, 5~24VDC, 6~15mA) Input: PG0 (line driver or open collector transistor, 5~24VDC, 6~15mA)
Pulse output format	Three selectable modes: Pulse/Dir, FP (CW)/RP (CCW), A/B (all modes are line driver output)
Position program & data transmission	CR data can be read/write via FROM/TO intruction of ELC MPU. The 32-bit data is composed of 2 continuous CR number. The range of 16-bit CR is CR#0 ~ CR#48.
Connect to EATON ELC series	Modules are numbered from 0~7 with 0 closet and 7 farthest to the MPU. Up to 8 modules can be connected without occupying any digital I/O.

3.2 Other Specification

Environmental specifications	
Operation/Storage	1. Operation: 0℃~55℃ (Temperature), 50~95%(Humidity), pollution degree 2 2. Storage: -25℃~70℃ (Temperature), 5~95%（Humidity）
Noise Immunity	ESD(IEC 61131-2, IEC 61000-4-2): 8KV Air Discharge EFT(IEC 61131-2, IEC 61000-4-4): Power Line: 2KV, Digital I/O: 1KV, Analog & Communication I/O: 1KV RS(IEC 61131-2, IEC 61000-4-3): 26MHz~1GHz, 10V/m
Grounding	The diameter of the grounding wire cannot be smaller than that of terminals 24V and 0V (if numerous ELCs are used at the same time, make sure that each ELC is grounded respectively to the ground poles)
Agency Approvals	UL508 UL1604, Class1,Div2 Operating temperature code: T5 European community EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC
Vibration/Shock immunity	Standard: IEC61131-2, IEC 68-2-6 (TEST Fc)/ IEC61131-2 & IEC 68-2-27 (TEST Ea)

4 CR (Control Register)

ELC-MC01 Motion control Unit							
CR No.					Content	Setting Range	
HW	LW	Address	Latched	Attribute			
	#0	H'4190	O	R	Model No.	System setting, Read-only (The model number of ELC-MC01 is H'0110.)	
#2	#1	H'4191	O	R/W	Pulse rate (A)	Range: 1 ~ +2,147,483,647 PPS/REV, factory setting: 2,000 Pulse/Revolution (PLS/REV)	
#4	#3	H'4193	O	R/W	Feed rate (B)	Range: 1 ~ +2,147,483,647 unit*1/REV, Factory setting: 1,000 (unit*1/REV)	
	#5	H'4195	O	R/W	Parameter setting Factory setting: H'0000	(b15...b0 bit field: STOP input polarity, START input polarity, START response time, Acceleration curve options, DOG polarity, DOG trigger time, Pulse direction, Zero return direction, LSN input polarity, LSP input polarity, Pulse output format, Position rate setting, Unit setting)	

b1	b0	Unit		Motor unit	Combined unit	Machine unit		b3	b2	Position rate setting		b5	b4	Pulse output format
0	0	Motor	Position	pulse	um			0	0	10⁰		0	0	FP + RP
0	1	Machine		pulse	m deg			0	1	10¹		0	1	Pulse + direction
1	0	Combined		pulse	10⁻⁴inch			1	0	10²		1	0	A/B Phase pulse
1	1			pulse/s	cm/min			1	1	10³		1	1	
			Speed	pulse/sec	10deg/min									
				pulse/sec	inch/min									

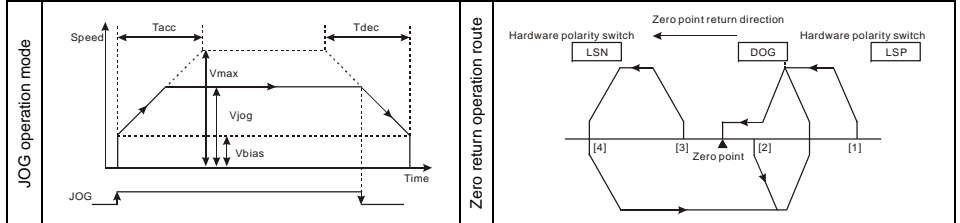| bit #	Content
6	When b[6]=0: positive logic. LSP input signal is ON and LPS signal is given. When b[6]=1: negative logic. LSP input signal is OFF and LPS signal is given.
7	When b[7]=0: positive logic. LSN input signal is ON and LSN signal is given. When b[7]=1: negative logic. LSN input signal is OFF and LSN signal is given.
8	When b[8]=0: zero return is executed to the direction of CP's decreasing value. When b[8]=1, zero return is executed to the direction of CP's increasing value.
9	When CW running is executed, b[9]=0 is for increasing CP value, but [9]=1 for decreasing.
10	When b[10]=0: DOG rising-edge is triggered. When b[10]=1,DOG falling-edge is triggered. (available for Interrupt 1st and interrupt 2nd speed position modes)
11	When b[11]=0: positive logic. When DOG input signal is ON, DOG near point signal is given. When b[11]=1: negative logic. When DOG input signal is OFF, DOG near point signal is given.
12	When b[12]=0: trapezoid acceleration line is chosen. When b[12]=1, S acceleration line is chosen.
13	When b[13]=0: 4ms; when b[13]=1: 12ms(for noise filter).
14	When b[14]=0: positive logic. When START input signal is ON, START input. When b[14]=1: negative logic. When START input signal is OFF, START input.
15	When b[15]=0: positive logic. When STOP input signal is ON, STOP input. When b[15]=1: negative logic. When STOP input signal is OFF, STOP input.

#7	#6	H'4196	O	R/W	Maximum speed V_max	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS) *2 Factory setting: 200,000 unit*1	
#9	#8	H'4198	O	R/W	Bias speed V_bias	Range: 0 ~ +2,147,483,647 unit*1 (0 ~ 200K PPS pulse transfer value) *2 Factory setting: 0 unit*1	
#11	#10	H'419A	O	R/W	JOG speed V_JOG	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2 Factory setting: 5,000 unit*1	
#13	#12	H'419C	O	R/W	Zero return speed V_RT	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2 Factory setting: 50,000 unit*1	
#15	#14	H'419E	O	R/W	Zero return deceleration speed V_CR	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2 Factory setting: 1,000 unit*1	
	#16	H'41A0	O	R/W	The number of PG0 in zero return mode N	Range: 0~+32,767 PLS Factory setting: 0 PLS	
	#17	H'41A1	O	R/W	The number of pulse in zero return mode P	Range: -32,768 ~+32,767 PLS Factory setting: 0 PLS	
	#18	H'41A2	O	R/W	Zero return mode H Mode	b0: Zero return mode, b1: detect DOG falling-edge in zero return mode	

bit #	Content
0	b[0]=0: normal mode, b[0]=1: override mode
1	b[1]=1: DOG falling-edge detecting is on in zero return mode. b[1]=1: DOG falling-edge detecting is off in zero return mode.

#20	#19	H'41A3	O	R/W	Zero point setting (HP)	Range: 0 ~ ±999,999 unit*1; factory setting: 0 unit*1	
	#21	H'41A5	O	R/W	Acceleration time T_acc	Range: 10 ~ +32,767 ms; factory setting: 100 ms	
	#22	H'41A6	O	R/W	Deceleration time T_dec	Range: 10 ~+32,767 ms; factory setting: 100 ms	
#24	#23	H'41A7	X	R/W	Target position (I) P(I)	Range: -2,147,483,648 ~ +2,147,483,647 unit*1 (-2,147,483,648 ~ +2,147,483,647 pulse transfer value) *2; factory setting: 0 unit*1	
#26	#25	H'41A9	X	R/W	Running speed (I) V(I)	Range: -2,147,483,648 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2; factory setting: 1,000 unit*1	
#28	#27	H'41AB	X	R/W	Target position (II)P(II)	Range: -2,147,483,648 ~ +2,147,483,647 unit*1 (-2,147,483,648 ~ +2,147,483,647 pulse transfer value) *2; factory setting: 0 unit*1	
#30	#29	H'41AD	X	R/W	Running speed (II) V(II)	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2, factory setting: 2,000 unit*1	

						b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
#31	H'41AF	X	R/W	Running instruction factory setting: H'0000					CLR output (On/Off)	CLR signal output mode		Current position = 0		Software START	ABS/REL Coordinate	Zero return start	JOG-	JOG+	CCW pulse STOP	CW pulse STOP	Software STOP	Error reset

| bit #	Content	Action
0	When b[0]=1, Error reset. Error indicator is off and FLAG in CR (CR#38.b[5]) is cleared to 0.	0→1
1	When b[1]=1 ,this is the same function as external input signal that forces to stop. When external input signal that forces to stop is inputted or when b[1]=0→1, PU will decelerate to stop.	0→1
2	When b[2]=1, CW running is forbidden. If CW running instruction is given, error will come up.	1
3	When b[3]=1, CCW running is forbidden. If CCW running instruction is given, error will come up.	1
4	When b[4]=0→1, CW pulse is generated in JOG+ mode.	0→1
5	When b[5]= 0→1, CCW pulse is generated in JOG- mode.	0→1
6	When b[6]=0→1, zero return is performed. Zero return execution will differ based on current position (CP). There are four situation as follows: Position (1): Start position (as the right picture below [1]) is at the right of zero point and DOG(near point signal), DOG=Off. Position (2): Start position (as the right picture below [2]) is at the right of zero point, DOG=On. Position (3): Start position (as the right picture below [3]) is at the left of zero point and DOG(near point signal), DOG=Off and LSN (hardware limit switch) signal=Off. Position (4): Start position (as the left picture below [4]) is at the left of zero point and DOG(near point signal), DOG=Off and LSN (hardware limit switch) signal=On:	0→1

JOG operation mode / Zero return operation route

bit #	Content	Action
7	When b[7]=0, it is absolute position. When b[7]=1, it is relative position.	0/1
8	When b[8]=0→1, start running by the work mode of CR#32.	0→1
10	When b[10]=0→1, current position (CP) is cleared to 0.	0→1
12	When b[12]=0, CLR outputs 130ms to Servo when zero return is completed. It is the clear signal for servo internal error counter. When b[12]=1, CLR is common output point and the status(On/Off) is controlled by b[13].	0/1
13	When b[13]=0, CLR output is Off. When b[13]=1, CLR output is On.	0/1

						b15	b14	b13	b12	b11~b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
#32	H'41B0	×	R/W	Work mode Factory setting: H'0001				Current position: CR34, 33; current speed: CR36, 35; display unit: 0 → pulse, 1 → unit	Return to factory setting	MASK setting	LSP/LSN stop mode	Manual pulse generator range limitation	STOP mode	Manual pulse generator input operation	Variable speed operation mode start	Interrupt 2nd-speed position mode start	2nd-speed position mode start	Interrupt 1st-speed position mode start	1st-speed position mode start

bit #	Content
0	When b[0] is triggered and START ON, it starts to execute 1st-speed position program. Step number and speed are decided by P(I)& V(I).
1	When b[1] is triggered, START ON, and DOG external near point signal is performed, it starts to reload the value of the target position (I) P(I) as relative position.

1st-speed position operation mode / Interrupt 1st-speed position operation mode

2	When b[2] is triggered and START ON, it starts to execute 1st-speed position operation and then the 2nd-speed position operation will be started immediately after 1st-speed operation is completed.
3	When b[3] is triggered and START ON, if the DOG external near point signal is executed during 1st-speed position operation, the 2nd-speed position operation will be started immediately.

2nd-speed position operation mode / Interrupt 2nd-speed position operation mode
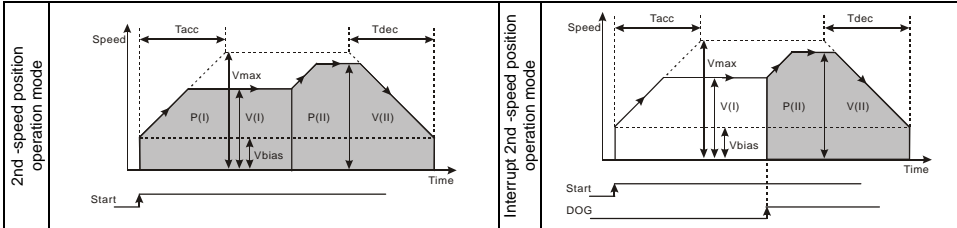
4	When b[4] is triggered, it starts to execute variable speed operation and MC01 starts to send pulse as well. The pulse direction is decided by the sign bit of V(I) value.

Variable speed operation mode / Zero return operation mode

Description Chart: (1) DOG rising-edge is triggered in normal mode. (2) DOG falling-edge detecting is On in zero return mode (CR#18_b1, 0=00). (3) the number of PG0 in zero return mode N(CR#16). (4) the number of pulse in zero return mode P(CR#17).

5	When b[5]= 0→1, manual pulse generator input is started. Please refer to the setting of CR#40~#46.
6	b[6]=0: When STOP is input, motor will decelerate to stop under running mode. When rerun instruction is received, motor will neglect the uncompleted distance and directly go executing the next position instruction. b[6]=1: When STOP is input, motor will decelerate to stop under running mode. When rerun instruction is received, motor will keep executing the uncompleted distance of previous instruction and then execute next position instruction.
7	b[7]=0: The output pulse of manual pulse generator is unlimited. b[7]=1: The output pulse of manual pulse generator is limited between P(I) and P(II). When the output pulse is out of the range, it will decelerate and then stop outputting.
8	b[8]=0: When motor is running, it will decelerate to stop if LSP/LSN signal is received. b[8]=1: When motor is running, it will stop immediately if LSP/LSN signal is received.
9~11	MASK setting (1st-speed operation, 2nd-speed operation, interrupt 1st-speed operation, interrupt 2nd-speed operation) b[11~9]=K0(000) or other value: NO MASK function. b[11~9]=K1(001) : the rising-edge of input terminal ΦA± will trigger MASK. b[11~9]=K2(010) : the falling-edge of input terminal ΦA± will trigger MASK. b[11~9]=K3(011) : the rising-edge of input terminal ΦB± will trigger MASK. b[11~9]=K4(100) : the falling-edge of input terminal ΦB± will trigger MASK.
12	b[12]=1: All parameters return to factory setting.
13	b[13]=0: current position (CR34, 33) and current speed (CR36, 35). Display unit: pulse. b[13]=1: current position (CR34, 33) and current speed (CR36, 35). Display unit: unit.

#34	#33	H'41B1	X	R/W	Current position CP (PLS)	Range display: -2,147,483,648~+2,147,483,647 PLS Factory setting: 0 PLS
#36	#35	H'41B3	X	R/W	Current speed CS (PPS)	Range display: 0 ~ +2,147,483,647 PPS Factory setting: 0 PPS
	#37	H'41B5	X	R/W	Communication address and Baud rate setting	RS-485 communication address setting: setting range 01~225; factory setting K1. Baud rate setting: 4800, 9600,19200, 38400, 57600, and 115200 bps. ASCII mode data format is 7Bit, even bit and 1 stop bit (7 E 1). RTU mode data format is 8Bit, even bit and 1 stop bit (8, E, 1) b0: 4800 bps(bit/sec.), b1: 9600 bps(bit/sec.) (factory setting) b2: 19200 bps(bit/sec.), b3: 38400 bps(bit/sec.) b 4: 57600 bps(bit/sec.), b 5: 115200 bps(bit/sec.) b6: reserved, b7: 0 for RTU, 1 for ASCII mode, b8~b15: communication address

						b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
	#38	H'41B6	O	R/W	Execution status factory setting: H'XXXX							MPG input downward	MPG input upward		Route paused indication	Position completed indication	Error occurred flag	CP value overflow	Zero return is done	CCW pulse is outputting	CW pulse is outputting	Status indication

bit #	Content
0	When b[0]=0, system is ready. When b[0]=1, MC01 is executing position control mode (Pulse is outputting).
1	When b[1]=1, CW pulse is outputting.
2	When b[2]=1, CCW pulse is outputting.
3	When b[3]=1, zero return is completed and b[3] will be cleared by user-defined program. When MC01 is power on again, b[3] will be cleared to 0 automatically.
4	When b[4]=1, "Current position CP(PLS)"(CR#34, #33) of 32 bit will overflow. When MC01 is power on again or complete zero return, b[4] will be cleared to 0 automatically.
5	When b[5]=1, MC01 error occurred. Error code is stored in CR#39.
6	When MC01 starts executing zero return or error reset (only when error occurred), it will clear b[6] to 0. When zero return or position control is completed, it will set b[6] to 1.
7	When MC01 is running and STOP status is on, MC01 will stop output and b[7] will be set to 1. It means that MC01 is paused and it will execute the uncompleted route and b[7] will be cleared to 0 after STOP status is off.
9	When b[9]=1, it means manual pulse generator inputs with counting upward.
10	When b[10]=1, it means manual pulse generator inputs with counting downward.

#39	H'41B7	X	R	Error code	Please refer to "Error Code & Troubleshooting" for detail. Factory setting: H'0000
#40	H'41B8	X	R/W	Electronic gearing numerator of MPG input	Please refer to the following explanation Factory setting: H'1
#41	H'41B9	X	R/W	Electronic gearing denominator of MPG input	Please refer to the following explanation Factory setting: H'1

- MPG (manual pulse generator) mode:
  1. Manual pulse generator input mode is ON when b5 of CR#32 is set to 1.
  2. 2-phase(A phase/B phase) can be input from the manual pulse generator to ΦA and ΦB. FP/RP I/O pulse is as follows:

  $\text{Input pulse} \times \dfrac{CR\#40}{CR\#41} = \text{output pulse}$

  3. When LSP/LSN is activated during running, output will stop immediately. When LSP is ON, CCW is allowed. When LSN is ON, CW is allowed. Positioning completed flag should be ON in this mode.
  4. Positioning completed indication (CR#38, b6=Off). When positioning control is completed, CR#38_b6 will be ON.
  5. The output speed is proportional to pulse frequency of manual pulse generator and the electronic gearing (CR#40, CR#41).

#43	#42	H'41BA	X	R/W	Input frequency of manual pulse generator	The input frequency of manual pulse generator Factory setting: 0
#45	#44	H'41BC	X	R/W	Accumulated pulse input no. of manual pulse generator	The count value of CW manual pulse input is " +" symbol, on the contrary, the CCW manual pulse input is "-"symbol. And the count value is nothing to do with the ratio setting of manual electronic gearing (CR#40, #41). Factory setting: 0

#46	H'41BE	X	R/W	Response speed of manual pulse generator

Value	Response speed	
≥5	4ms (factory setting)	When response speed setting is faster, the instructions of pulse output and manual pulse generator input will be more synchronous. When response speed setting is slower, the instruction of pulse output is slower than the instruction of manual pulse generator input. Factory setting: 5
4	32ms	
3	108ms	
2	256ms	
1or 0	500ms	

#47	H'41BF	X	R	Terminal status

bit #	Status	Description
b0	START input	When START input is On, b0 is On.
b1	STOP input	When STOP input is On, b1is On.
b2	DOG input	When DOG input is On, b2 is On.
b3	PG0 input	When PG0 input is On, b3 is On.
b4	LSP input	When LSP input is On, b4is On.
b5	LSN input	When LSN input is On, b5 is On.
b6	A phase input	When A phase input is On, b6 is On.
b7	B phase input	When B phase input is On, b7 is On.
b8	CLR output	When CLR output is On, b8 is On.

#48	H'41C0	O	R	System version	System version is in hexadecimal. e.g. software V1.00 is for H'0100.

*1: Unit setting varies based on b0 and b1 setting of CR#5.

*2: Use max. pulse output if upper limit is exceeded. Use min. pulse output if lower limit is exceeded.

- CR#0~CR#48: user can use the corresponding addresses H4190~41C0 to read/write data via RS-485 communication.
  1. Baud rate supportive: 4,800, 9,600, 38,400, 57,600, and 115,200 bps.
  2. Modbus ASCII/RTU: ASCII mode is 7Bit, even bit and 1 stop bit (7,E,1). RTU mode is 8Bit, even bit and 1 stop bit (8, E, 1).
  3. Function code: 03H for read data from CR; 06H for write one WORD in CR; 10H for write many WORDs in CR.

5   INSTALLATION & WIRING

1. Installation of the DIN rail

The ELC can be secured to a cabinet by using the DIN rail that is 35mm high with a depth of 7.5mm. When mounting the ELC on the DIN rail, be sure to use the end bracket to stop any side-to-side motion of the ELC, thus to reduce the chance of the wires being pulled loose. At the bottom of the ELC is a small retaining clip. To secure the ELC to the DIN rail, place it onto the rail and gently push up the clip.

To remove it, pull down the retaining clip and gently pull the ELC away from the DIN rail.   As shown on the right:

When installing the ELC, make sure that it is installed in an enclosure with sufficient space (as shown on the right) to its surroundings so as to allow heat dissipation.
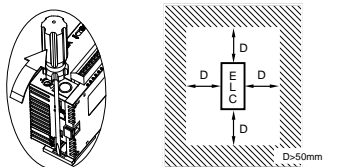
2. Wiring

Notes:

1. Please use 22-16AWG (1.5mm) wiring (either single or multiple core) for I/O wiring terminals. The specification for the terminals is as shown on the left. ELC terminal screws should be tightened to 1.95 kg-cm (1.7 lb-in). Use Copper Conductor Only, 60/75 °C.

2. I/O signal wires or power supply should not run through the same multi-wire cable or conduit.