EC4-MP1U

EtherCAT Slim Pulse Output Module

Features

- On the fly processing: EtherCAT
- Maximum pulse frequency up to 4 MHz
- Differential encoder interface (A, B, Z)
- Maximum counting rate: 4 MHz
- Three DI channels: hardware limit input, home switch input
- Optically isolated I/O
- LED indicators for I/O, EtherCAT and motion status
- Internal memory for storing configuration data
- EtherCAT:
  - ☐ EtherCAT conformance test tool verified
  - ☐ Supports Free-Run and Distributed Clock (DC) operation modes
  - ☐ Supports CoE and FoE
  - ☐ Supports Control modes: CPS,CSV,Hm and PP,PV
  - ☐ Support minimum communication cycle 0.5ms
- Suitable for controlling a variety of servo drivers and stepper drivers

Introduction

The EC4-MP1U is a slim pulse output module, which is designed to operate a pulse-type drive with pulse output. Configuration has to be done by the EtherCAT MDevice and the application program.

The EC4-MP1U has an integrated incremental encoder interface, 32 bit high frequency encoder counter counts the input signal of external incremental encoders. The encoder can for example be used for homing purposes and for consistency checks.

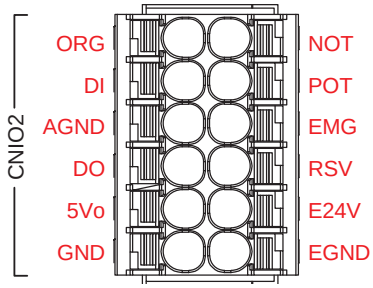
Three digital input channels are provided: A Left and right hardware limit switch and a home switch. The hardware limit switch which automatically stops the motor when activated, and all three digital inputs can be used for home position search.

The 26-pin HD D-Sub connector can be used to easily connect with various servo drivers and stepper drivers. ICP DAS also provides a variety of cables suitable for a range of brands of servo drivers, which further reduces the amount of wiring required between the drivers and the controller, making this an ideal solution for highly integrated machine automation applications.

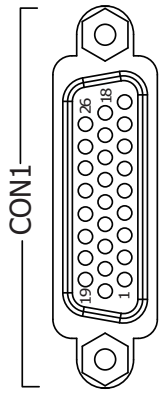
Specifications

EMS Protection	
EFT (IEC 61000-4-4)	Signal: 1 KV Class B; Power: 1 KV Class B
ESD (IEC 61000-4-2)	±4 KV Contact for each channel
Axis I/O	
Servo Interface Output	SVON, ERC, ALM_RST
Mechanical Switch Input	NOT, POT, ORG, EMG
Servo Interface Input	ALM, RDY, INP
Encoder inputs	
Mode	Pulse/Dir, CW/CCW, A/B phase
Maximum encoder pulse frequency	1 MHz
Pulse output	
Mode	Pulse /DIR, CW/CCW, A/B phase
Maximum pulse frequency	4 MHz
LED Indicators	
Diagnostic LED	Power, EtherCAT status, Digital IO
EtherCAT	
Cycle Time	0.5 ms
Distributed Clocks	Yes
Power	
Input voltage range	+24 V_{DC}
Power consumption	Maximum 4.5W
Mechanism	
Casing	Plastic
Dimensions (mm)	25 × 108 × 90 (W × L × D)
Installation	DIN-Rail or Wall Mounting
Environment	
Operating temperature	-25°C ~ +75°C
Storage temperature	-30°C ~ +80°C
Relative humidity	10 ~ 90% RH, No condensation

Connection Interfaces

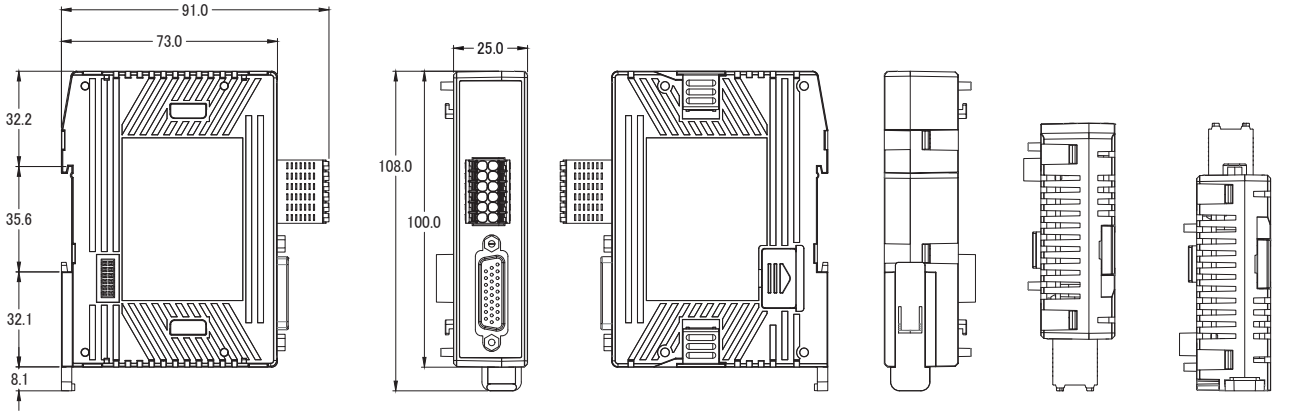


No.	Name	Description	I/O Define	Name	Description	I/O Define
	CON2 (the upper one, left side)			CON2 (the upper one, right side)		
1	ORG	Home position	Input	NOT	Negative end limit	Input
2	DI	Digital input	Input	POT	Positive end limit	Input
3	AGND	Optional analog ground, no internal connection	Connect to CON1	EMG	Emergency stop	Input
4	DO	Digital output	Output	RSV	Reserved signal (no internal connection)	Connect to CON1
5	5Vo	Internal 5V power +derived from 24V supply	Output	E24V	External power 24V	Input
6	GND	Internal ground	Output	EGND	External ground	Input



No.	Name	Description	I/O Define
	CON2 (the lower one)		
1	SRV_ON	Servo On	Output
2	INP	In Position	Input
3	ERC	Error Counter Clear	Output
4	RDY	Servo Ready	Input
5	P-	Forward rotation pulse train (differential)	Output
6	P+		Output
7	A-	Encoder A-phase pulse	Output
8	A+		Output
9	N.C.	No internal connection	N.C.
10	RESET	Alarm Reset	Output
11	ALARM	Servo Alarm	Input
12	E24V	External power 24V	Input
13	EGND	External ground	Input
14	N.C.	No internal connection	N.C.
15	AGND	Optional analog ground, no internal connection	Connect to CON2
16	B-	Encoder B-phase pulse	Input
17	B+		Input
18	N.C.	No internal connection	N.C.
19	EMG	Emergency stop	Input
20	RSV	Reserved signal, no internal connection	Connect to CON2
21	EGND	External ground	Input
22	EGND	External ground	Input
23	N-	Backward rotation pulse train (differential)	Output
24	N+		Output
25	Z-	Encoder Z-phase pulse	Input
26	Z+		Input

Dimensions (Units: mm)



Left Side View | Front View | Right Side View | Rear View | Top View | Bottom View

Ordering Information

EC4-MP1U CR	**EtherCAT Slim Pulse Output Module (RoHS)**

Applications

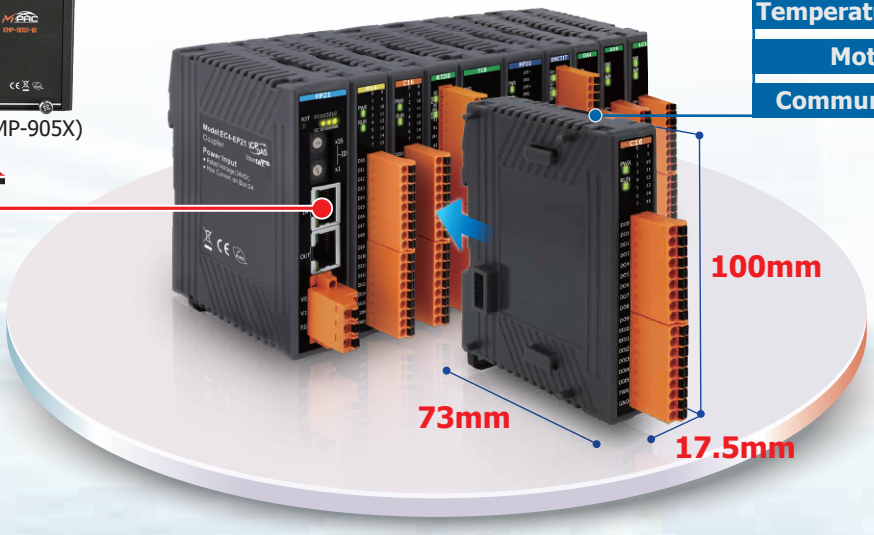
Create your own I/O module

Maximize your I/O system and applications in limited space

- Digital I/O
- Analog I/O
- Strain measurement
- Temperature measurement
- Motion Control
- Communication coupler

▲**PAC/PLC** (EMP-905X)

EtherCAT

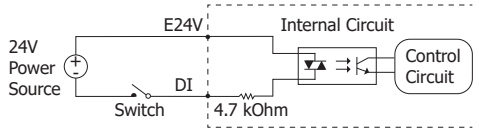


Wire Connections

- **Digital Input Wiring**

The digital input signals including INP, RDY, ALARM on CON1 and NOT, POT, ORG, EMG, DI on CON2. These signals are low speed 24V NPN photo-coupler input. Please refer to figure below for detailed connection information.

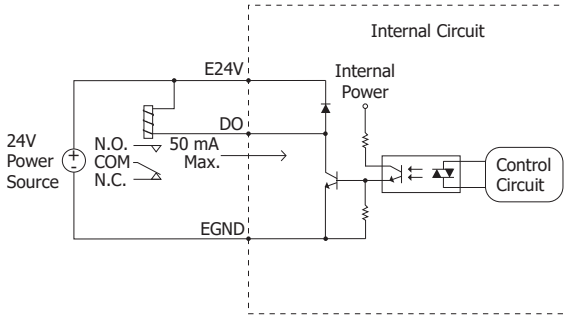
NPN Connection



- **Digital Output Wiring**

The digital output signals including SRV_ON, RESET, ERC on CON1 and DO on CON2. These signals are open collector output of low speed photo-coupler with internal flywheel diode and the maximum output current of each is 50mA. Please refer to figure below for detailed connection information.

NPN Connection



Accessories

 CA-PC26M CR	26-pin HD D-Sub solder cup Male connector with plastic cover (RoHS)
HD DB26 Male Cable, 1.5/3/5 M	
 CA-26-MJ3-15/30/50(B)	For Mitsubishi servo amplifier (MELSERVO-J3/J4 series)
 CA-26-YSV-15/30/50(B)	For Yaskawa servo amplifier (Sigma II/III/V series)
 CA-26-PA4-15/30/50(B)	For Panasonic servo amplifier (MINAS A4/A5 series)
 CA-26-DAA2-15/30/50(B)	For Delta A2 servo amplifier (ASDA-A2 series)
 CA-26-DAB2-15/30/50(B)	For Delta B2 servo amplifier (ASDA-B2 series)
 CA-26-FFW-15/30/50	For Fuji servo amplifier (FALDIC-W and ALPHA5 Smart series)
 CA-26-TTA-15/30/50	For Teco servo amplifier (TSTA-A/A+ series)
HD DB26 Male to Male Cable, 1.5 M	
 CA-2615M CR	For I/O connector board DN-26 (RoHS)
 DN-26 CR	15-pin and 26-pin DIN-Rail mounting I/O connector board (RoHS)