

# Controller CI76



CI76 is a single-actuator controller with a maximum continuous output current of 10A. It utilizes feedback signals from the actuator's POT or dual Hall effect sensors to calculate the actuator's stroke position information in real time, achieving precise position control through a closed-loop feedback control method.

CI76 accepts various control input sources, allowing users to flexibly adjust parameters and widely supports MOTECK's standard actuators.

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## Features and Options

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- Main application: Industry
- Input voltage: 12~48V DC (same as actuator power output)
- Actuator power output: Same as input voltage
- Max. current: 10A
- Max. number of actuator: 1 channel
- Control method:
  - Analog control: Voltage (0~10V) or small current (4~20mA)
  - Digital control: RC servo
- The CI76 Setup Tool is provided, allowing users to connect to a computer using an UART to USB setup cable (sold separately) and adjust parameters such as speed, stroke limits, position accuracy, and current limits.
- Supports potentiometer or dual Hall effect sensors (NPN type only) in actuators as positioning feedback
- Supports actuators with or without stroke limit switches
- With electronic braking function, which dissipates excess electrical energy through braking resistor when the motor brakes.
- Duty cycle: 25%, max. 2 min. continuous operation in 8 min.
- Operating ambient temperature: -20°C~+55°C
- Storage ambient temperature: -40°C~+70°C
- Optional DIN rail holder (for mounting on DIN NS 32 or NS 35/7.5 rail)

## Compatibility

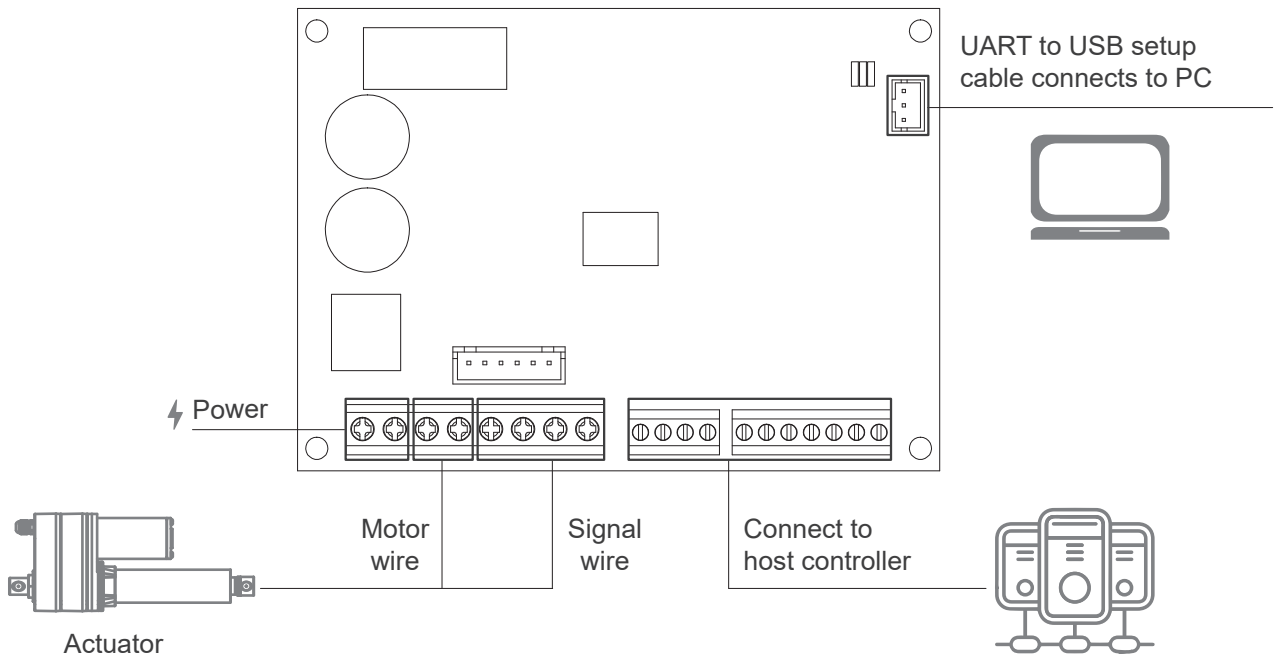
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### Actuator compatibility requirements:

- 12V DC, 24V DC or 48V DC motor, and the speed can be adjusted by input voltage.
- Control the actuator to extend and retract by swapping the DC input polarity.
- Equipped with either a potentiometer or dual Hall effect sensors (NPN type only) for positioning.
- Max. current 10A.
- Bare wire, or VH 3.96mm connector (if maximum current < 3A).

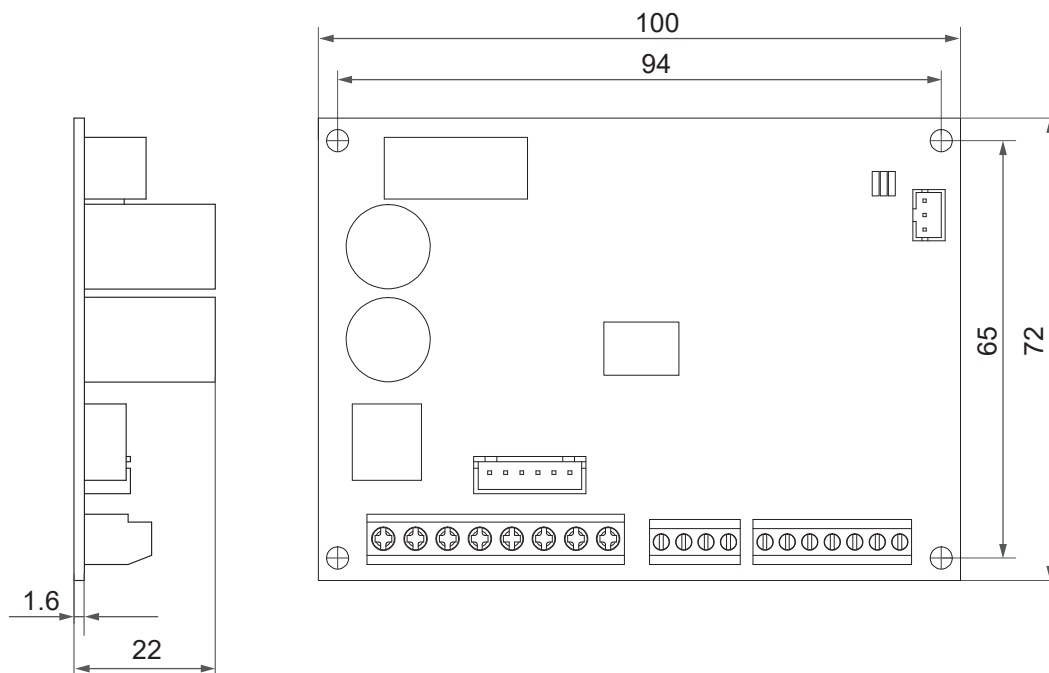


## System Diagram

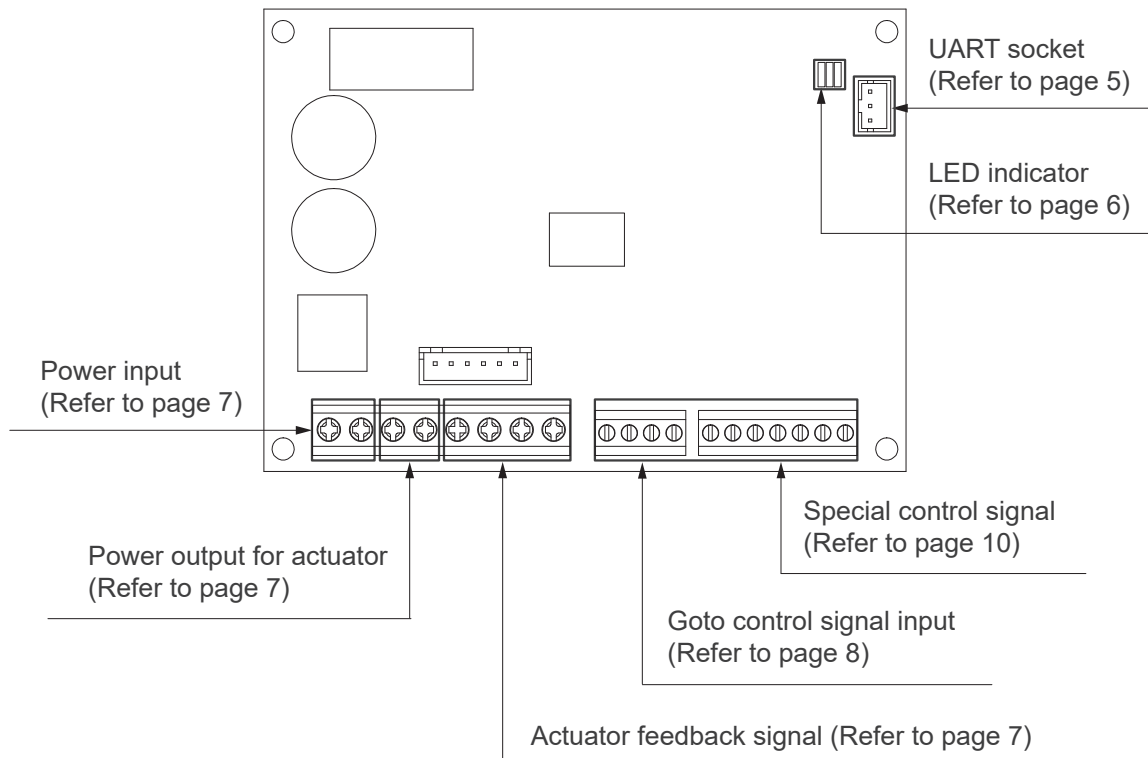


## Dimensions

Unit: mm



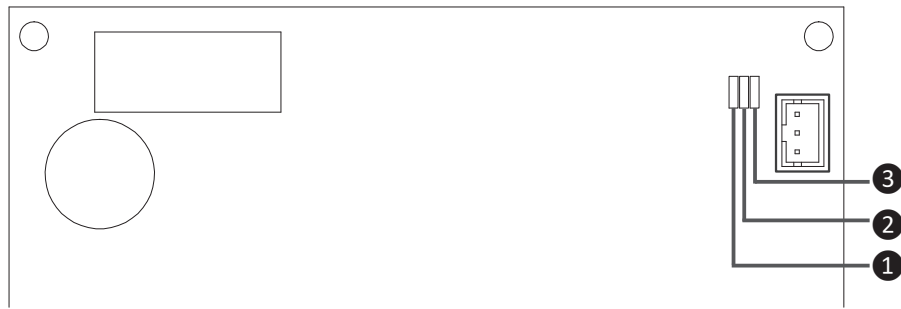
## Hardware I/O



### 1. UART socket

Parts	Name	Description
CN6	UART	When used with the CI76 Setup Tool, an UART to USB setup cable is required, which is included with the product.

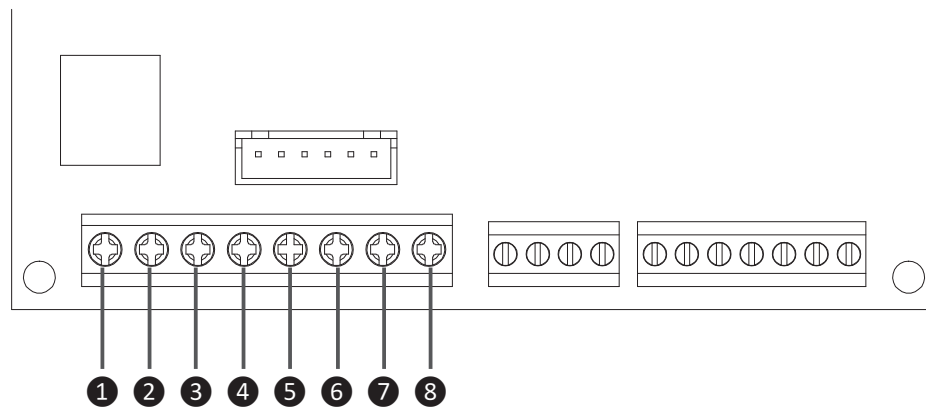




## 2. LED indicator

Pin No.	Function	Indicates behaviors
①	Short circuit protection	Red light stays on ●
	Low voltage protection	Red light flashes once ● ● ○
	High voltage protection	Red light flashes twice ● ● ● ● ○
	Overload current protection	Red light flashes three times ● ● ● ● ● ● ○
	Brake resistor overload	Red light flashes four times ● ● ● ● ● ● ● ● ○
②	Position feedback error	Orange light flashes once ● ● ○
	Learning error	Orange light flashes twice ● ● ● ● ○
	Control mode error	Orange light flashes three times ● ● ● ● ● ● ○
	Analog input mode error	Orange light flashes four times ● ● ● ● ● ● ● ● ○
③	Normal operation (enable)	Green light stays on ●
	Motor in operation	Green light flashes continuously ● ● ● ● ● ● ○





### 3. Power input

Pin No.	Name	Description
1	V+	- Voltage range: 10 - 50V DC. Please input the voltage value that matches the actuator's requirement. - Current range: 0 - 10A
2	V-	- Connect V+ to positive and connect V- to negative - The polarity of the input DC power must be fixed in accordance with the specified connection method, and the polarity cannot be switched at any time. - It is forbidden to attempt to control the speed by inputting voltage in PWM mode.

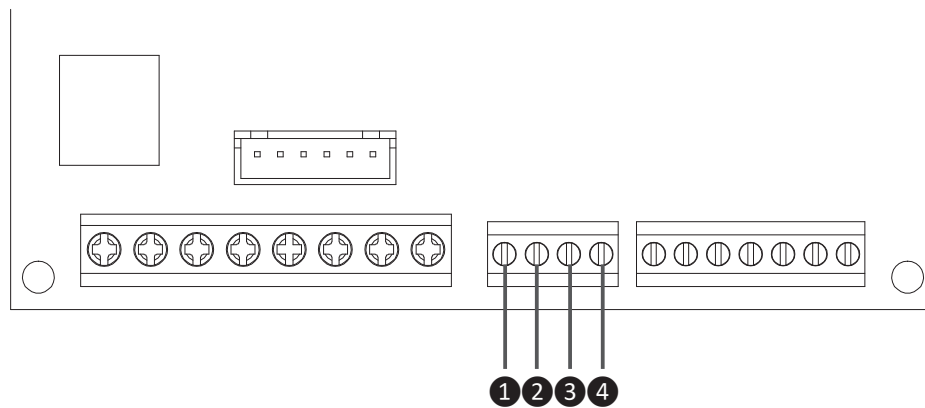
### 4. Power output for actuator

Pin No.	Name	Description
3	M+	- Voltage range: 10 - 50V DC - Current range: 0 - 10A
4	M-	- As Moteck's standard, when the power supply output M+ is positive (V+) and M- is negative (V-), the actuator extends. When the polarity is swapped, the actuator retracts.

### 5. Actuator feedback signal

Pin No.	Name	Description (Configured for Hall sensors)	Description (Configured for potentiometer)
5	HA	Hall A signal input	POT voltage value
6	HB	Hall B signal input	Not used
7	VCC	Vout	Vout(10V)
8	GND	GND	GND





## 6. Goto control signal input

Pin No.	Name	Description	Input range	Notes
①	IC	Current control input	4~20 mA	Refer to para. 6.1
②	VC	Voltage control input	0.5~10.0 V	Refer to para. 6.2
③	RC	PWM control input	1.0~2.0 ms	Refer to para. 6.3
④	GND	-	-	-

### 6.1 Current input mode

- Input range: 4~20mA
- Through inputting different current intensities to give target position of the actuator in linear proportion, as shown in the table below.

Input range	Actuator behaviors
<3mA	No action
3mA ~ 4mA	Retract to the software lower limit (0%)
4mA ~ 20mA	This is the normal control range. Move to the specified position after calculation
20mA ~ 21mA	Extend to the software upper limit (100%)
>21mA	No action



## 6.2 Voltage Input mode

- Input range: 0.5~10V
- Through inputting different voltage value to give target position of the actuator in linear proportion, as shown in the table below.

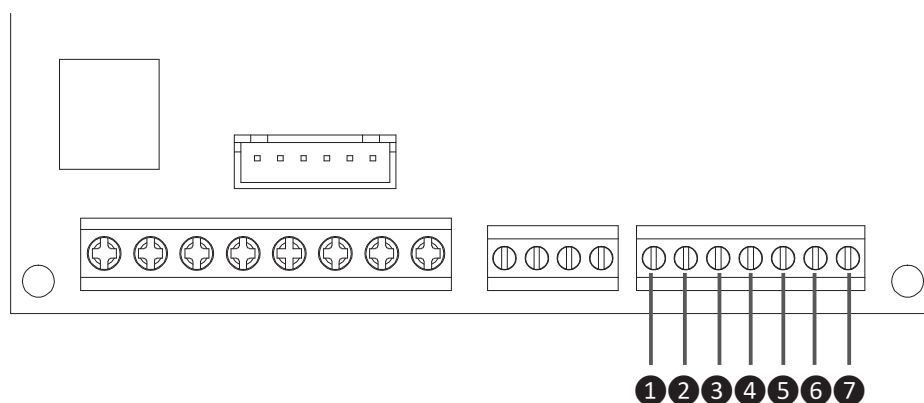
Input range	Actuator behaviors
<0.4V	No action
0.4V ~ 0.5V	Retract to the software lower limit (0%)
0.5V ~ 10.0V	This is the normal control range. Move to the specified position after calculation
10.0V ~ 10.1V	Extend to the software upper limit (100%)
>10.1V	No action

## 6.3 PWM input mode

- Input range: 1.0~2.1 ms
- Through inputting different modulated pulse width to give target position of the actuator in linear proportion, as shown in the table below.

Input range	Actuator behaviors
<0.9 ms	No action
0.9 ms ~ 1.0 ms	Retract to the software lower limit (0%)
1.0 ms ~ 2.0 ms	This is the normal control range. Move to the specified position after calculation
2.0 ms ~ 2.1 ms	Extend to the software upper limit (100%)
>2.1 ms	No action





## 7. Special control signal

Pin No.	Name	Description	I/O	Signal logic
①	POS	Position arrival	Output	Active Low
②	ALM	Alarm signal	Output	Active Low
③	EN	Enable/Disable power output	Input	Active Low
④	CLR	Clear alarm	Input	Active Low
⑤	I1	Actuator extends	Input	Active Low
⑥	I2	Actuator retracts	Input	Active Low
⑦	GND	GND	-	-

**7.1 Position ok(POS):** This indicates that the movement of the actuator has arrived in the target range, meaning the target position has been reached.

**7.2 Alarm(ALM):** When CI76 detects an error or protection is triggered, it outputs an active signal through this pin while it shuts down the power output to stop the actuator movement.

**7.3 Enable(EN):** Enables or disables the output power function for actuator. Upon receiving an Active signal, the controller enables the power output (CN2 pins 'MA' and 'MB'). Upon receiving an Inactive signal, the power output function is disabled, but this does not affect the functions of other terminals.

**7.4 Clear(CLR):** Clear the alarm error flag. The red light will turn off and the system will return to normal operation if the issue has indeed been resolved.

**7.5 Input 1(I1):** The actuator extends when the Active signal is continuously received (i.e. The pin 'MA' of the power output terminal CN2 is connected to DC+, and the pin 'MB' is connected to DC-). The Active signal must be continuously input. If the signal is ceased, the actuator will stop immediately.



**7.6 Input 2(I2):** The actuator retracts when the Active signal is continuously received (i.e. The pin 'MA' of the power output terminal CN2 is connected to DC-, and the pin 'MB' is connected to DC+). The Active signal must be continuously input. If the signal is ceased, the actuator will stop immediately.

**7.7 GND:** I/O signal grounding. It must share a common ground with the controller signal to avoid interference; do not connect it to the power supply ground.

## Ordering Key

**CI76 - 0**

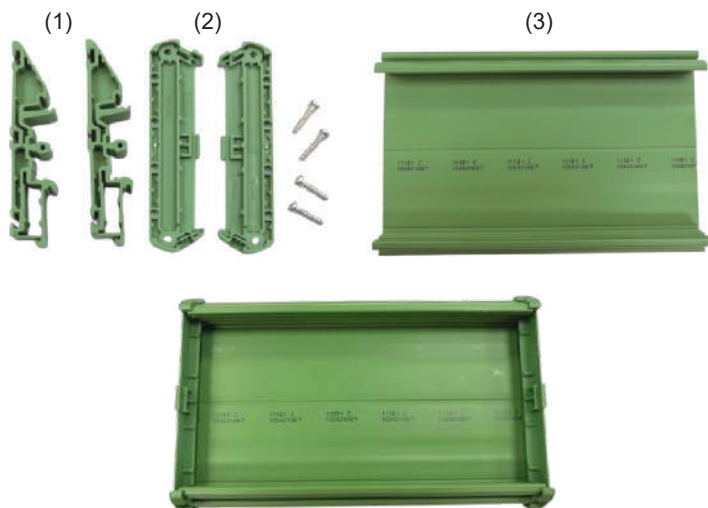
### Mounting

**0:** PCBA only  
**R:** With DIN rail holder\*

### \*Remarks:

Assembled by customer. Parts included:

- (1) Foot element x2
- (2) Side element x2 pcs and screw x4 pcs
- (3) Base x1 pc



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