

## Final Control Elements

### MINI-TOP ELECTRONIC ACTUATOR

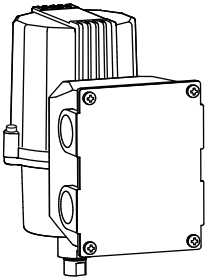
(linear type; CC-Link)

#### Functions & Features

- Small-size control valve actuator
- Direct connection to CC-Link capable PLC and other devices on the same network
- Easy wired
- Uploading device information via CC-Link for maintenance purpose
- 1/1000 high resolution
- Easy adjustment: electronic limiter at the valve open & closed positions
- Overload protection
- Seal-spring incorporated for pressing direction

#### Typical Applications

- For CP control valve in paper manufacturing
- Fuel mixing control for combustion control system
- Air conditioning for buildings and factories



### MODEL: MSP4C2-[1][2][3]-0R

#### ORDERING INFORMATION

- Code number: MSP4C2-[1][2][3]-0R
- Specify a code from below for each of [1] through [3].  
(e.g. MSP4C2-271-0R)

#### [1] STROKE

- 1: 5 to 10 mm (.20" to .39")  
2: 8 to 15 mm (.31" to .59")

#### [2] OPERATION TIME, THRUST

- 3: 5 sec. / 10 mm, 150 N  
4: 9 sec. / 10 mm, 300 N  
7: 18 sec. / 10 mm, 700 N

#### [3] OUTPUT STEM TYPE

- 6: M6 female thread, 0.75 pitch  
8: M8 female thread, 1.0 pitch  
1: M10 female thread, 1.25 pitch  
D: M6 female thread, 1.0 pitch  
E: M8 female thread, 1.25 pitch  
F: M10 female thread, 1.5 pitch

#### CE MARKING

0: Without

#### POWER INPUT

##### DC Power

R: 24 V DC

(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

#### PACKAGE INCLUDES...

- Terminating resistor (110 Ω, 0.5 W)

#### GENERAL SPECIFICATIONS

**Degree of protection:** IP66

**Operation at a communication error:** Extend, retract or stop

**Electrical connection:** M3 screw terminals (torque 0.8 N·m)

**Screw terminal:** Nickel-plated steel

**Transmission cable:** Conforms to CC-Link Ver 1.10

**Housing material:** Diecast aluminum

(Cast aluminum for the terminal box; steel for the cover)

**Drive:** Stepping motor

**Insulation class:** E

**Position detection:** Potentiometer

**Deadband:** 0.1 - 1.9 % adjustable (factory set to 1.5 %)

**Restarting timer:** 0 - 10 sec. adjustable

(factory set to 1.5 sec.)

**Isolation:** Housing or FE1 to communication to power

**Zero adjustment:** 0 - 25 %

**Span adjustment:** 50 - 100 %

**Protective functions:** Overload protection

**Status indicator LED:** Red light blinks in 2 sec. intervals in normal operations; blinks in 0.5 sec. intervals when a foreign object is detected mechanically caught inside.

**Manual operating handle:** Not available

#### CC-Link COMMUNICATION

**Protocol:** CC-Link V1.10

**Device type:** Remote device station

**Station No. setting:** Rotary switch; 1 - 64

**Required node:** 1

**Baud rate setting:** Rotary switch

**L RUN indicator:** Red LED

**L ERR. indicator:** Red LED

## INSTALLATION

### Current consumption

•DC: Approx. 0.5 A

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 30 to 85 %RH (non-condensing)

**Vibration:** 0.5 G (4.9 m/s<sup>2</sup>) max.

**Mounting position:** All directions

Do not mount the actuator with its output stem or wiring conduit on the upside if the actuator is to be exposed to dripping water.

**Weight:** 1.8 kg (4.0 lb)

## PERFORMANCE

**Resolution:** 1/1000 or 0.015 mm, whichever is greater, with 0.1 % deadband setting

**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 100 V DC

**Dielectric strength:** 100 V AC @ 1 minute  
(housing or FE1 to communication to power)

## COMMUNICATIONS

### ■ MASTER to SLAVE

DATA TYPE	ADDRESS	FUNCTION	DETAIL
Bit	RY0	Forced Closed Position Input *1	0 : Disable 1 : Position = 0%
	RY1	Forced Open Position Input *1	0 : Disable 1 : Position = 100%
	RY2		
	RY3		
	RY4		
	RY5		
	RY6		
	RY7		
	RY8	Enable Target Position Input	0 : Disable 1 : Enable
	RY9		
	RYA	Reset Motor Deadlock Alarm	Motor deadlock alarm is cancelled when '1' is set.
	RYB	Clear Motor Starting Counter	Motor starting counter is reset to 0 when '1' is set.
	RYC	Clear Motor Reversing Counter	Motor reversing counter is reset to 0 when '1' is set.
	RYD	Clear Accumulated Running Distance	Accumulated running distance is reset to 0 when '1' is set.
	RYE		
RYF			
Word	RWw0	Target Position Input	Signed, 0.01% increments (e.g. 100 = 1.00%) Valid only when Enable Target Position Input is enabled.
	RWw1		
	RWw2		
	RWw3		

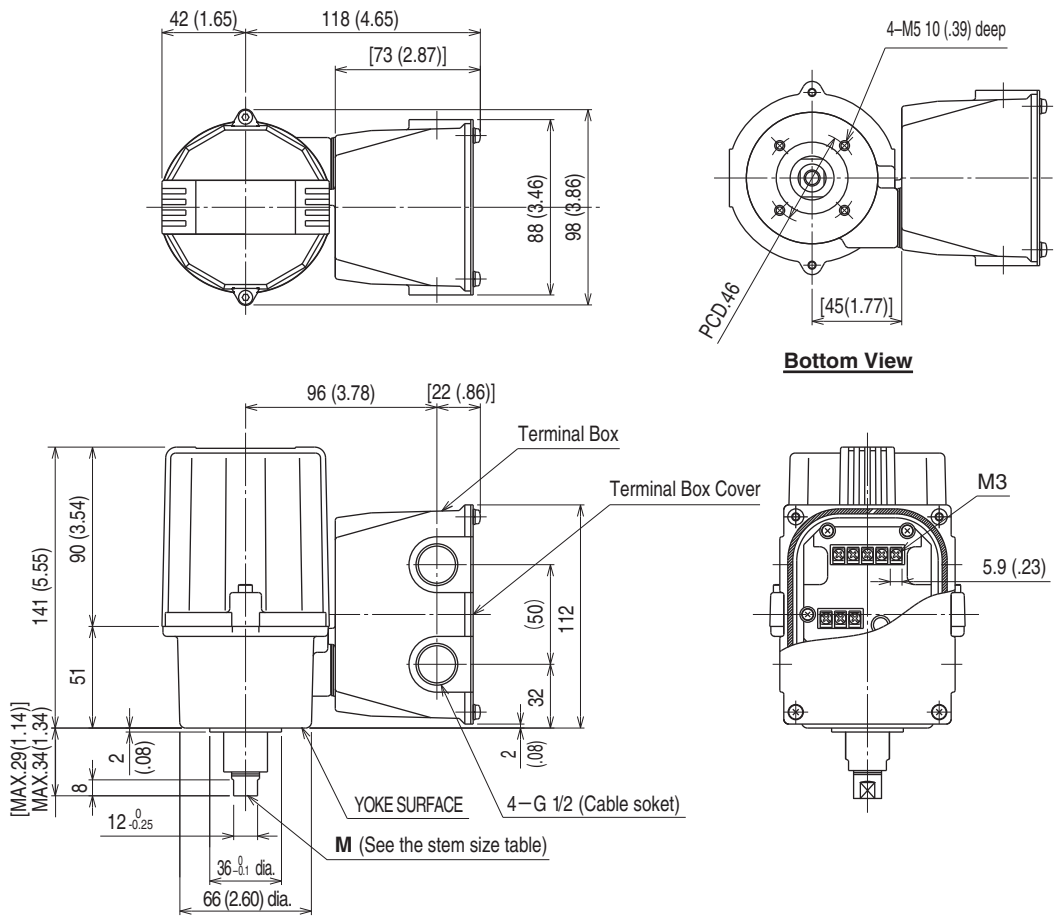
\*1. Valid regardless of the RY8 (Enable Target Position Input) status. Stopped when '1' is set both at RY0 and RY1.

### ■ SLAVE to MASTER

DATA TYPE	ADDRESS	FUNCTION	DETAIL
Bit	RX0		
	RX1		
	RX2		
	RX3		
	RX4		
	RX5		
	RX6		
	RX7		
	RX8	Motor Deadlock Alarm	0 : Normal 1 : Overload or other deadlock alarm
	RX9	Target Position Input Error	0 : Normal 1 : Out of range from -0.5 to +100.5%
	RXA	System Error	0 : Normal 1 : Memory or other system error
	RXB	Control Status	0 : Remote (CC-Link) 1 : Manual
	RXC		
	RXD		
	RXE		
RXF			
Word	RWr0	Position Output	Signed, 0.01% increments (e.g. 100 = 1.00%)
	RWr1	Motor Starting Counter *2	1 count per every 100 starting actions
	RWr2	Motor Reversing Counter *2	1 count per every 100 reversing actions
	RWr3	Accumulated Running Distance (%) *2	1 count per running 100% distance every time

\*2. When the count reaches 65535, the value is held until it is reset.

**EXTERNAL DIMENSIONS unit: mm (inch)**

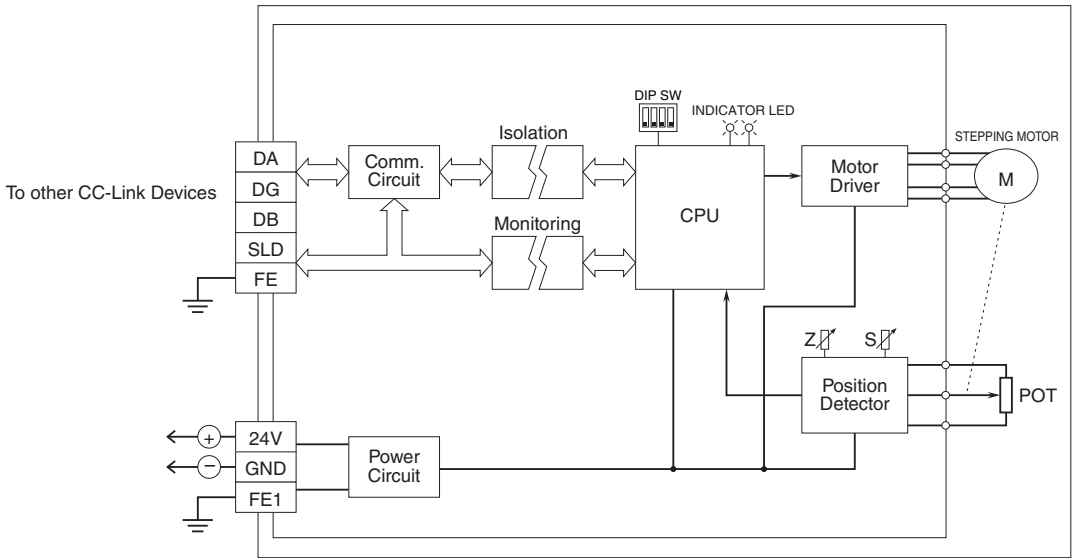


\*Max. 29 (1.14) for the stroke 5 – 10 m

**OUTPUT STEM HOLE SIZE M**

CODE	DIA.	PITCH	DEPTH
6	M 6	0.75	15
8	M 8	1.0	
1	M10	1.25	
D	M 6	1.0	
E	M 8	1.25	
F	M10	1.5	

**SCHEMATIC CIRCUITRY**



Specifications are subject to change without notice.