

High Precision Stroke Reading Cylinder

Non-rotating Piston Type

Series CEP1

ø12, ø20



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How to Order

CEP1 **B** **12** **50** **F9BW**

Mounting style

B	Direct mounting rod side tapped
L	Foot style
F	Rod side flange style

Bore size

12	12 mm equivalent
20	20 mm equivalent

Standard cylinder stroke (mm)
Refer to "Standard Stroke" on page 10-12-9.

Number of auto switches

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

Auto switch

Nil	Without auto switch
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Sensor cable length

Nil	0.5 m
L	3 m

Connector

Nil	With connector
Z	Without connector

Applicable counter
Series CEU5

<Made-to-order>
Fluoro rubber seals: -XC22
(Example) CEP1B12-100-M9N-XC22

<Option>
Extension cable CE1-R **05**

Cable length		Suffix	
05	5 m	Nil	Extension cable
10	10 m	C	Extension cable & connector
15	15 m		
20	20 m		

Mounting Bracket Part No.

Cylinder part no.	Foot	Rod side flange
CEP1□12	CEP1-L12	CEP1-F12
CEP1□20	CEP1-L20	CEP1-F20

Applicable Auto Switch/Refer to page 10-20-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length (m)			Pre-wire connector	Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)			
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	●	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V	A93V	A93	●	●	—	—	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V		M9NV	M9N	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)		12 V		M9PV	M9P	●	●	○	○	—	
				2-wire	24 V	5 V, 12 V		M9BV	M9B	●	●	○	○	—	
				3-wire (NPN)		5 V, 12 V		F9NWV	F9NW	●	●	○	○	IC circuit	
	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (PNP)	24 V	5 V, 12 V		F9PWV	F9PW	●	●	○	○	—	
				2-wire		12 V		F9BWV	F9BW	●	●	○	○	—	
	Water resistant (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V		F9NWV	F9NW	●	●	○	○	IC circuit	
				2-wire		12 V		F9BWV	F9BW	●	●	○	○	—	

* Lead wire length symbols: 0.5 m Nil (Example) M9N
3 m L (Example) M9NL
5 m Z (Example) M9NZ

* Solid state switches marked with "○" are produced upon receipt of order.

- Refer to page 10-12-16 for details on other applicable auto switches than listed above.
- For details about auto switches with pre-wire connector, refer to page 10-20-66.

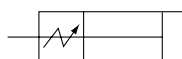
High Precision Stroke Reading Cylinder Non-rotating Piston Type **Series CEP1**



Cylinder Specifications

Action	Double acting, Single rod (Non-rotating piston)	
Fluid	Air	
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	ø12	ø20
	0.15 MPa	0.1 MPa
Piston speed	50 to 300 mm/s	
Ambient and fluid temperature	0 to 60°C (No freezing)	
Lubrication	Non-lube	
Stroke length tolerance range	0 to 1.0 mm	
Cushion	Without	
Rod non-rotating accuracy	ø12	ø20
	±2°	±3°
Mounting	Direct mounting rod side tapped (Standard), Foot style, Rod side flange style	
Thread tolerance	JIS Class 2	

JIS Symbol



Sensor Specifications

Cable	ø7, 6 core twisted pair shielded wire (Oil, Heat & Flame resistant)
Maximum transmission distance	23 m (when using SMC cable and counter)
Position detection method	Magnetic scale rod, sensor head <Incremental type>
Magnetic field resistance	14.5 mT
Power supply	10.8 to 26.4 VDC (Power supply ripple: 1% or less)
Current consumption	50 mA
Resolution	0.01 mm (With 4 times multiplication)
Accuracy	±0.02 mm ⁽¹⁾ (at 20°C)
Output type	Open collector (24 VDC, 40 mA)
Output signal	A/B phase difference output
Insulation resistance	500 VDC, 50 MΩ or more (between case and 12E)
Vibration resistance	33.3 Hz 6.8 G 2 hrs. each in X, Y directions 4 hrs. in Z direction based upon JIS D 1601
Impact resistance	30 G 3 times each in X, Y, Z directions
Enclosure	IP-67 (IEC Standard) ⁽²⁾
Extension Cable (Option)	CE1-R* 5 m, 10 m, 15 m, 20 m

Note 1) This includes the digital display error of the counter (CEU5).

Moreover, the overall accuracy after mounting on equipment will vary depending on mounting conditions and the environment. Therefore, the customer should calibrate the equipment as a whole.

Note 2) Except for the connector, the cylinder section is the equivalent of an SMC water resistant cylinder.

Cylinder Stroke

Model	Standard stroke (mm)				Manufacturable stroke range
	25	50	75	100	
CEP1B12	●	●	●	●	0 to 150
CEP1B20	●	●	●	●	0 to 300

But, as for stroke over 100 mm, its accuracy will be ±0.05 mm. (at 20°C)



Made to Order Specifications
(For details, refer to page 10-21-1.)

Symbol	Specifications
-XC22	Fluoro rubber seals

RE^A_B

REC

C□X

C□Y

MQ^Q_M

RHC

MK(2)

RS^Q_G

RS^H_A

RZQ

MI^W_S

CEP1

CE1

CE2

ML2B

C_G5-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data