

## Position Sensors

### 2-WIRE POSITION TRANSMITTER

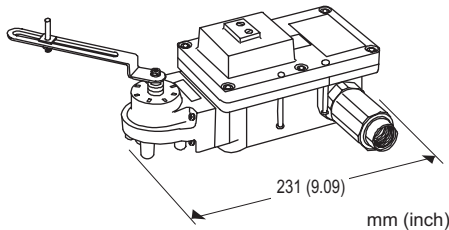
(flameproof, rotary motion type)

#### Functions & Features

- Differential transformer incorporated
- Light weight and compact design
- High resolution
- Zero & Span adjustable without opening the cover
- Direct or reverse action selectable

#### Typical Applications

- Detecting rotating angle of a valve actuator or moving positions of other rotating machines and transmits standard 4 to 20 mA DC proportional to the position



### MODEL: VOS-ER-[1][2][3][4][5]

#### ORDERING INFORMATION

- Code number: VOS-ER-[1][2][3][4][5]
- Specify a code from below for each of [1] through [5].  
(e.g. VOS-ER-1321/LC/R1)

#### [1] ACTION

- 1: Direct  
(output increases with counterclockwise lever operation)
- 2: Reverse  
(output decreases with counterclockwise lever operation)
- Note: Counterclockwise if seen from the upper (cover) side.

#### [2] WIRING CONDUIT

- 3: G 1/2 (located at the right side)
- 4: G 1/2 (located at the left side)
- 5: 1/2 NPT fitting (located at the right side)
- 6: 1/2 NPT fitting (located at the left side)

#### [3] LEVER

- 1: Effective radius 15 - 40 mm (0.59" - 1.57")
- 2: Effective radius 40 - 130 mm (1.57" - 5.12")
- 3: Effective radius 35 - 80 mm (1.38" - 3.15")

#### [4] LEVER POSITION

- 1: Upper side
- 2: Lower side

#### [5] OPTIONS (multiple selections)

##### Link Set

- blank: Without
- /LA: Type A
- /LB: Type B
- /LB1: Type B-1
- /LC: Type C

##### Applicable cable dia.

- blank:  $6 < \text{dia.} \leq 8$
- /R1:  $8 < \text{dia.} \leq 10$
- /R2:  $10 < \text{dia.} \leq 12$

#### GENERAL SPECIFICATIONS

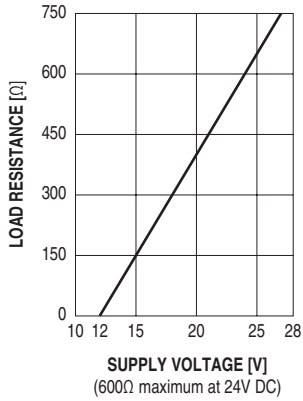
- Degree of protection:** IP55
- Action:** Direct or reverse; field selectable by change of the jumper pins' positions
- Wiring conduit:** G 1/2 or 1/2 NPT female
- Cable gland:** Flameproof packing (direct lead)
- Connection:** M3.5 screw terminals (torque 0.8 N·m)
- Material**
- Housing: Cast aluminium
  - Position sensor: PBT (30 % fiber glass)
- Painting color:** Silver
- Isolation:** Output to metal housing
- Zero adjustment:** -5 - +5 % of effective rotating angle
- Span adjustment:** 60 - 105 % of effective rotating angle

#### INPUT SPECIFICATIONS

- Input:** Mechanical rotating angle
- Linearity assured range:** -45 - +45° (90°)

#### OUTPUT SPECIFICATIONS

- Output:** 4 - 20 mA DC
- Output impedance:** 1 MΩ min.
- Load resistance v.s. supply voltage:**
- Load Resistance (Ω) = (Supply Voltage (V) - 12 (V)) ÷ 0.02 (A)
- (including leadwire resistance; refer to the graph)
- Output characteristics:** Proportional to the input angle



## INSTALLATION

**Supply voltage:** 15 - 28 V DC

**Operating temperature:** -5 to +50°C (23 to 122°F);

-5 to +40°C (23 to 104°F) for use in an explosive atmosphere

**Vibration:** ≤ 2 G (19.6 m/s<sup>2</sup>)

**Mounting position:** All directions

**Weight:** Approx. 2.5 kg (5.51 lb)

## PERFORMANCE in percentage of angle ±45 degrees

**Linearity:** 1.5 % within the linearity assured range

**Hysteresis:** 0.3 %

**Temp. coefficient:** ±0.03 %/°C (±0.02 %/°F)

**Dielectric strength:** 500 V AC @ 1 minute  
(output to metal housing)

## STANDARDS & APPROVALS

**Safety approval:**

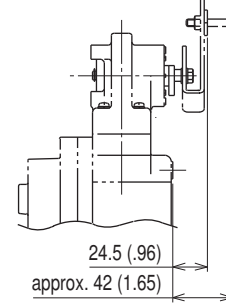
TIIS: Flameproof

Ex d IIB T5

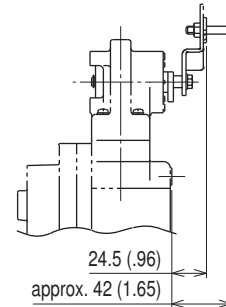
## EXTERNAL DIMENSIONS unit: mm (inch)

### ■ Lever Attached to the Lower Side

•Effective radius 15 – 40 mm



•Effective radius 40 – 130 mm or 35 – 80 mm

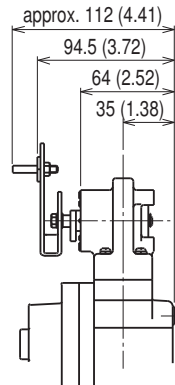


LEVER SIZE mm (inch)

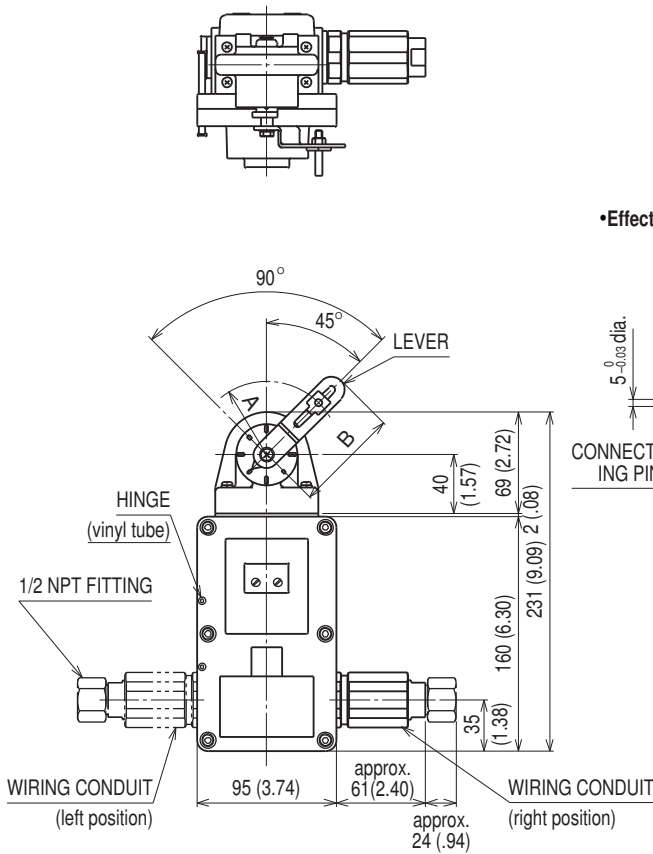
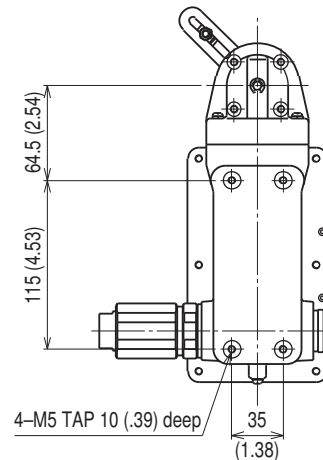
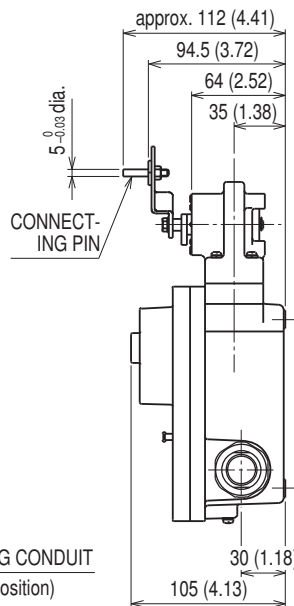
LEVER TYPE	A	B
Effective Radius 15 – 40 mm (.59" – 1.57")	R12 – R45	54 (2.13)
Effective Radius 40 – 130 mm (1.57" – 5.12")	R38 – R132	141 (5.55)
Effective Radius 35 – 80 mm (1.38" – 3.15")	R30 – R82.5	91.5 (3.60)

### ■ Lever Attached to the Upper Side

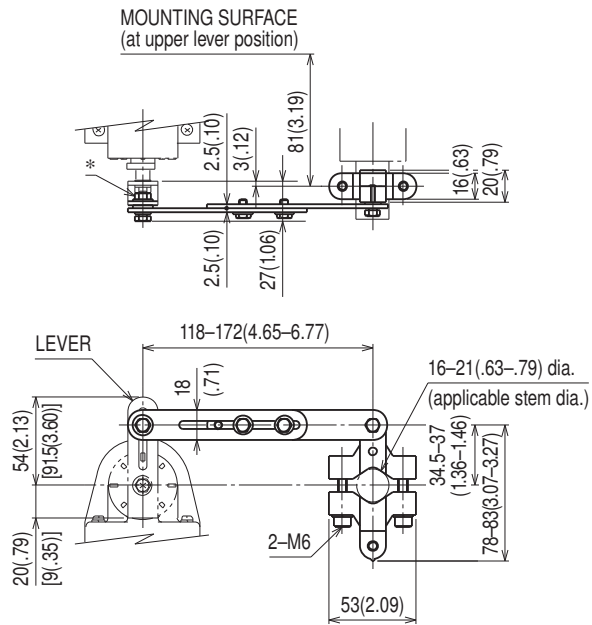
•Effective radius 15 – 40 mm



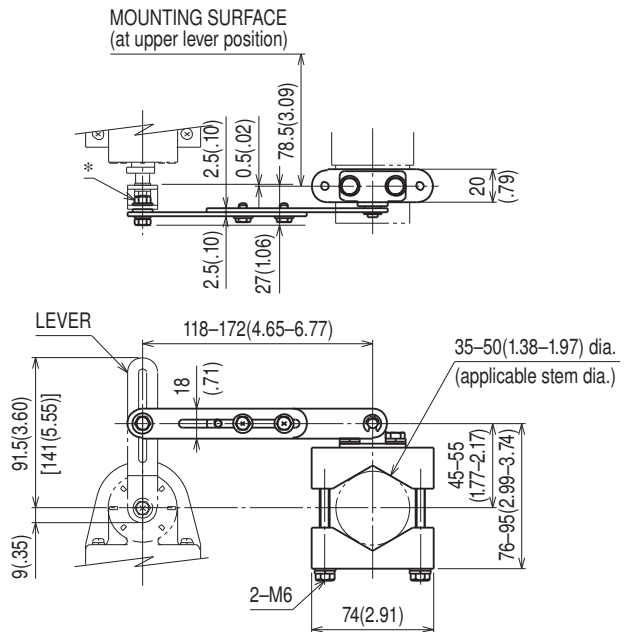
•Effective radius 40 – 130 mm or 35 – 80 mm



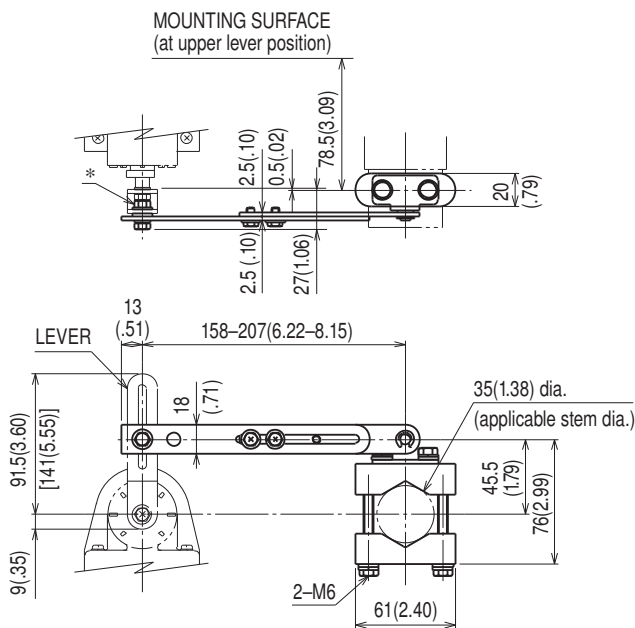
LINK TYPE A



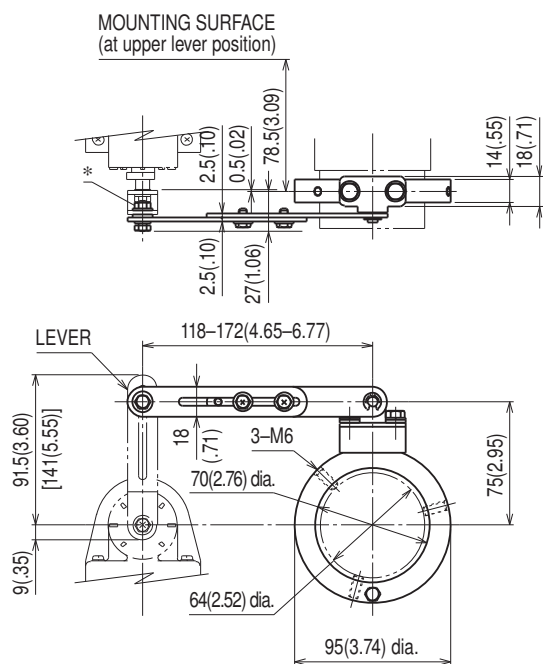
LINK TYPE B



LINK TYPE B-1



LINK TYPE C



\*Remove the joint pin and secure the lever with the nuts provided with the unit.

Note: Lever Selection

•Link Type A

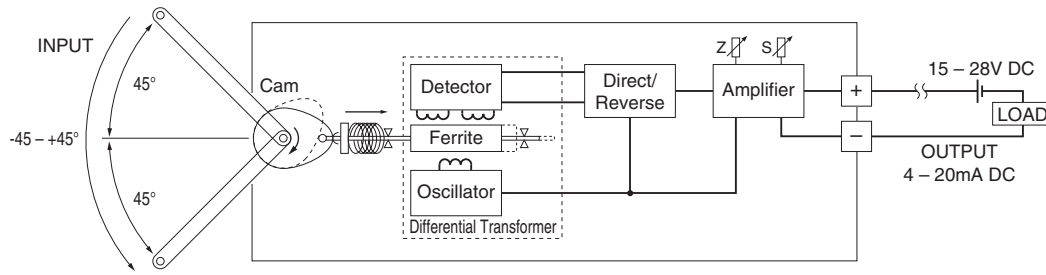
Use a lever of effective radius 15 – 40 mm (.59" – 1.57") or 35 – 80 mm (1.38" – 3.15").  
 Sizes in the bracket [ ] is used with the type 35 – 80 mm.

•Link Type B, B-1 and C

Use a lever of effective radius 35 – 80 mm (1.38" – 3.15") or 40 – 130 mm (1.57" – 5.12").  
 Sizes in the bracket [ ] is used with the type 40 – 130 mm.

LINK TYPE	APPLICABLE STEM DIA.
A	16 – 20 mm (.62" – .79")
B	35 – 50 mm (1.38" – 1.97")
B-1	35 mm (1.38")
C	64 mm (2.52")

**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



Specifications are subject to change without notice.