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## 10 Bit MINI Absolute Analogue Encoder Model: MINI SSI Encoder

The new product in PANKAJ Basket, Model SSIE-360 to provide Solid State Analogue output on panel mounting manually actuation, using contactless Hall's effect technology. Burg pin connector's makes termination connection easy.

The product is also available, pre programmed with effective rotational angle of 45°, 90°, 180° and 360° in CW and CCW.

### Features

- ♦ 25 mm Ø, 12 mm height Moulded housing
- ♦ 3/8" x 32 TPI, 10mm long Brass Nickle Plated Bush
- ♦ 6.35 mm Ø, 15 mm long Brass Nickel plated Shaft

### Specifications

Angle of Rotation	0~360° Clockwise rotation (Endless), can be factory programmed for 180°, 90°, 45° and Counter Clockwise rotation
Auxiliary Supply (Vss)	5 VDC±10%, 25 mA max
Output	SSI
Total Independent linearity	±0.35° (with respect to best line fit and over full temperature range)
Resolution	10 bit (0.35°) over 360° for 360° range, 11 bit (0.176°) over 180° for 180° range, 12 bit (0.088°) over 90° for 90° range, 12 bit (0.088°) over 45° for 45° range
External Magnetic Field Effect	Negligible effect due to Differential Measuring technique & sensor conditioning circuitry. (It is desirable to mount encoder away from strong magnetic field, at least 100mm)
Maximum Angular Shaft Speed	100 RPM. Number of samples per revolution decreases as the speed of rotation increases. Accuracy of output is not affected by Speed
Operating Temperature Range	0°~70°C
Temperature Compensation	No external compensation required
Insulation Resistance	2000 MΩ min. @ 500 VDC
H.V. Test	No damage for 1 min at 250 VAC
Protection with 100mA fast blow fuse in series with supply	a. Reverse polarity protection, b. Maximum auxiliary supply up to 35 VDC, c. voltage output short circuit protected to ground rail
Rotational life	1 million
Protection Class	IP-40
Fixing Method	3/8" x 32 TPI ME bush
Size	Refer Drawing
Casing Material	Reinforced Polyamide
Shaft Material	Nickel Plated Brass
Weight	25 gm

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### **Functional Description**

Contact less measurement technique gives output in SSI-Synchronous Serial Interface form. Outputs are taken out through berge pin connection as marked on housing or wires can be directly soldered on gold plated output PCB terminals.

When CS is at logic low (active), DO will change to High from High Impedance state. After 500ns (CLKFE) time data is latched into shift register with first falling edge of CLK. With subsequent rising edge of CLK pulse, one data bit shifts out at DO. Word contains 16 bit. First 10 bits, D9 to D0 are angle information. D9 is MSB and D0 is LSB of angle information.

### **Subsequent 6 bits are for system information viz.:**

1. OCF – Offset Compensation Finished; OC algorithm has finished and data is valid if logic High,
2. COF – Cordic OverFlow; Logic High indicates an out of range error in the cordic part, data D9 to D0 is invalid. (Send the encoder to manufacturer).
3. LIN – LINearity Alarm; Field generates a critical output linearity when logic High, data D9 to D0 may still be used but may contain invalid data. (Send the encoder to manufacturer).
4. MagInc – Magnitude Increase, field intensity is increasing, check the external magnetic disturbance
5. MagDec – Magnitude Decrease, field intensity is decreasing, check the external magnetic disturbance.

Both above (4. & 5.) at logic High indicates magnetic field strength is below or above the required limit. Check for external magnetic influence. If not i.e. field strength is out of range, send the encoder to factory.  
Even Parity – bit for transmission error detection of bits 1 to 15 (D9...D0, OCF, COF, LIN, MagInc, DecMag).

### **Other Functionality:**

Sampling Rate:  $n = 60 / (\text{RPM} \times 384\mu\text{s})$ .

Sampling Rate e.g. RPM = 60, then  $n = 60 / (100 \times 384 \times 10^{-6}) = 1562$  samples/second.

MagRngn – Magnet Field Magnitude Range Warning (Optional), it is combination of MagInc and MagDec.

Active Low via open drain output, requires an external pull-up resistor. If the magnetic field is in range, this output is turned off (logic High).



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**Applications**

- ♦ Automation,
- ♦ Test and Measuring Instruments,
- ♦ Robotics,
- ♦ Crane, Angle Measurement.

**Ordering Information**

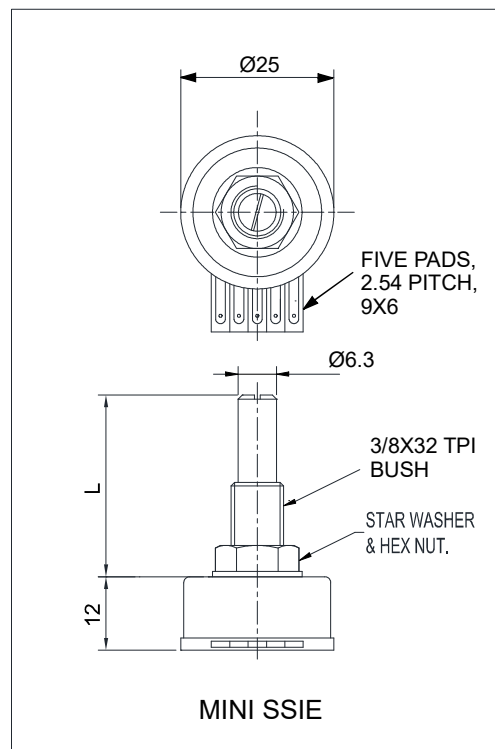
**Example: SSIE-90**

Model No.	Angle of Rotation
SSIE	0°/360°, 45°, 90°, 180°

**Product Image**



**Dimensional Diagram**



Note: We reserve the right to make any kind of design, specifications or functional modification at any moment without prior notice

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