

**10 Bit Absolute Analogue Encoder
Model: NCP-711-SSIE (Serial Synchronous Encoder)**

Absolute Analogue Servo Encoder is operating on Hall's effect principle. There is no metallic moving wiper contacting to element and hence no wear and tear or sliding electrical noise. Shaft is rotating endlessly in double ball bearings giving very smooth movement. It has excellent mechanical response with no hysteresis in the output. The Sensor and electronic circuits are enclosed in anodized aluminum housing with IP-65 protection, It is ideal for harsh environment applications.

Features

- ◆ 50 mm Diameter Black Aluminum Anodised housing
- ◆ Double Ball Bearings
- ◆ 8 mm Stainless Steel 'D' cut Shaft
- ◆ Servo Mounting or three M3 Screws at 32mm PCD
- ◆ Low operating torque
- ◆ Connector with cable

Specifications

Angle of Rotation	0~360° Clockwise rotation (Endless), can be factory programmed for 45°,90°, 180° and Counter Clockwise Rotation (CCW)
Auxiliary Supply (Vss)	9VDC to 30VDC±10%, 25mA max
Output	SSI and 5VDC
Total Independent linearity	≤0.7° (with respect to best line fit and over full temperature range) for V & mA output
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	Small 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	3000RPM. 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	2MΩ min. @ 500VDC
H.V. Test	No damage for 1 min at 250VAC
Rotational life	100 million
Protection Class	IP-65

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Wiring Colour Code

Red	Vs - 24VDC Supply
Black	Gnd - Circuit Ground
White	V - 0 to 10VDC, O/P corresponds to 0° to 360° for V & S
Blue	Io - 4 to 20mA, O/P corresponds to 0° to 360° for V & S
Brown	CS - Chip Select, Normally High, Active Low, Schmitt Trigger Input with Pull-Up Resistor of ~50KΩ
Grey	CLK – Clock, Normally High, clock input of SSI, Schmitt Trigger input, Frequency: >0 to 1MHz
Green	DO – Data Output of SSI

Functional Description

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

e.g. RPM = 60, then $n = 60 / (60 \times 384 \times 10^{-6}) = 2604$ 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).

Daisy Chain: It allows connection of several encoder in series, while still keeping one input for data transfer in μP (Optional).

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Applications

- ◆ Automation
- ◆ Test and Measuring Instruments
- ◆ Crane, Angle Measurement
- ◆ Robotics & many more.

Options

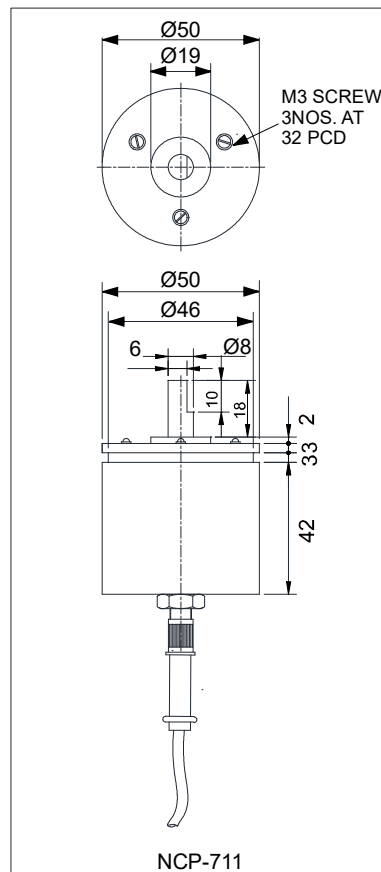
NC711-SSI (Serial Synchronous Interface)

- SSI/45°, CW or CCW
- SSI/90°, CW or CCW
- SSI/180°, CW or CCW
- SSI/360°, CW or CCW - (Standard SSI)

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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