

thiNcoder® EZI 2.0

Specifically designed for the white goods market the EZI 2.0 can function as a 5-bit encoder, 2-bit repeating gray code or selector switch.

LOW COST

- Low component costs
- Integration on flex circuit eliminates secondary rotor assembly processes
- No soldering required

DESIGN CUSTOMIZATION

- The use of a 5-bit encoder allows the definitions of zones for functions in the graphics with simple software coding
- Detent and stops can be customized

FLAT PANEL INTEGRATION ON FLEX CIRCUIT

- Easily integrated with other switch products including PushGate® as well as dome and membrane switches into one thin panel utilizing a single flex circuit and connector

SAVES POWER

- No parasitic power required as with optical encoders

RELIABILITY/DURABILITY

- Life of 100,000 rotations
- Robust mechanical design

ENVIRONMENTALLY SEALED CIRCUIT

- Eliminates through-holes

BENEFITS OF 5-BIT DESIGN

- Absolute 5-bit, 32 detent, encoding provides a distinct electrical output at each detent position using only 6 connections. A conventional selector switch would require 33 connections.
- Multiple 5-bit encoders can be tied together in a bus network with the addition of only one common line per additional switch.
- The use of a 5-bit encoder allows the definitions of zones for functions in the graphics with simple software coding. For example a panel with 5 functions could be changed to 7 functions by simply defining an additional 2 sets of input codes that correspond to the new functions. This avoids changing anything except graphics and software.
- Common mechanical components and circuit artwork can be used to provide anywhere from 2 to 32 functions. This keeps retooling costs down.
- Absolute encoding provides a known knob position in the event power is lost to a device. This is not true for quadrature encoding (unless nonvolatile memory is used).
- For example, if the encoder was being used as a speed control, the device could be turned unplugged and then plugged in and still start back up at the same speed.



For Additional Information Contact:

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the ultimate impression



U.S. PAT. Nos. 5,523,730; 5,666,096; 5,867,082; 5,990,772; 6,023,213; 6,069,545; 6,069,552; 6,130,593;
6,137,387; 6,262,646; 6,305,071; 6,369,692; 6,466,118 CANADA PAT. No. 2177540 CHINA PAT. No. ZL96110385.X
TAIWAN PAT. Nos. NI 090979; NI 132946 AUSTRALIA PAT. No. 727962

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Mechanical

Outside Dimension	2.0" x 2.0" / 51 x 51mm
Cover Height above Overlay	0.030" / 0.8mm
Bushing Height	0.250" / 6.3mm
Shaft Diameter	0.250" / 6.3mm
Shaft Type	Round with Flat
Shaft Length	0.250" / 6.3mm
Length of Flat	0.250" / 6.3mm
Dimension from Shaft Back to Flat	0.195" / 5.0mm
Depth Below Circuit Layer	0.120" / 3.0mm
Rotational Life Carbon Ink Blend Cooper on Flex	>100,000 cycles >500,000 cycles
Contacts	Ball Armature
Shear Force of Shaft	12lbs. / 50Nm

Detent

Number of Detents	32(11.25°)
Detent	Molded Spring
Rotational Torque	10.0 in. oz. / 68mNm Nominal

Material

Rotor / Shaft / Cover	Engineering Thermoplastic
Magnet Material	Rare Earth
Circuit	Polyester Flex
Ball Armature	Gold Plated Stainless Steel

Electrical (Switch Type and Codes)

Absolute Position 5 Bit Gray Code)	32 Discrete Codes
Quadrature (Repeating 2 Bit Gray Code)	16 (32 Detent) Pulses / 360°
Voltage	3 to 30 VDC
Current	10mA
Power	100mW Maximum
Electrical Life	>100,000 Cycles
Maximum Contact Resistance	<500 ohms at End of Life
Open Circuit and Insulation Resistance	>20 Meg ohms (Between Mutually Insulated Parts)
Voltage Breakdown	250 VAC (Peak to Peak, Between Mutually Insulated Parts)

Environment

Storage	-40°C to 85°C
Operating Temperature	-40°C to 85°C
Thermal Shock	-40°C to 85°C
Humidity Resistance	95% RH
Salt Fog, 5% Solution	24 Hours
Shock	100g
Drop	8 Feet

Circuit: Selector

Attributes: Used to select one of multiple functions

Example: Water temperature selection on a washing machine

Circuit: 5-Bit Absolute position encoder

Attributes: Used to select one of up to 32 positions using only 6 connections

Example: Wash cycle selection on a washing machine

Circuit: Quadrature Encoder (repeating 2-bit Gray code)

Attributes: Used as an increment/decrement control

Example: Volume control, menu scrolling, power level

