eCODE 2048 Series

Series Specifications

- **Semi-absolute Multiturn Encoder**
- **High Resolution and Accuracy**
- **Programmable Functions**
- **Encoder Diagnostics**
- **Communication via RS485 Interface**
- **Field Bus and Point-to-Point Communication**
- **Fast Response for Real-time Applications**
- **Available in several housing and shaft / hollow shaft options**

Description

The Scancon ***eCODE*** encoders are a series of optical absolute multiturn encoders.

The ***eCODE*** series are communicating encoders that communicate over a standard RS485 serial interface and therefore do not need any specialized hardware. Only four wires are needed for power and communication.

The ***eCODE*** series is based on incremental encoders which will need to be calibrated after each power-up, thus the term semi-absolute. After an encoder is calibrated all functionality is identical to a "true" absolute encoder. The ***eCODE*** encoders have internal functions to assist in the calibration procedure.

Encoders in this series use a precision interpolating optical system which provides high resolution and accuracy. All data from the interpolating system are processed by a powerful microprocessor insuring that all position data is accurate and recent within a few microseconds.

The ***eCODE*** series implements several programmable functions including resolution, direction of rotation and preset/reset functions. It also implements diagnostic functions with warning and error status.

Encoders in this series utilize the ***eCODE*** and the Modbus protocols. The ***eCODE*** protocol consists of three sub-protocols:

- ***eCODE*-P2P** is a fast point-to-point protocol for real-time applications and is suitable, due to its low latency, for closed-loop motor control.
- ***eCODE*-FB** is a fast field-bus protocol with the ability to address 247 devices.
- ***eCODE*-ASCII** is a somewhat slower, but also more detailed, field-bus protocol with the ability to address 247 devices.

For a description of the Modbus protocol, please visit www.modbus.org.

The ***eCODE*** series can be delivered in a broad range of encoder housings with both shaft and hollow shaft options of various dimensions.

Scancon's ***eCODE*** encoders are an ideal solution for applications in industries such as Assembly, Machine Tools, Elevators, Material Handling, Oil & Gas, Wind Energy, Mining, Motors and Drive Systems.

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SCANCON Industrial Encoders

eCODE 2048 Series

General Specifications

Encoder Type:	Optical semi-absolute multiturn
Resolution:	32 bit total 13 bit (8,192) revolutions 19 bit (524,288) per revolution
Accuracy:	±0.01° mechanical (36 arc sec.)
Repeatability:	±0.005° mechanical (18 arc sec.)
Operating Speed:	4,500 rpm max.
Programmable Functions:	Positions per revolution Direction of rotation Min. and max limits Position preset and reset Calibration position Calibration assistance Communication protocol Device address Baud rate Termination resistor on/off
Diagnostic Functions:	Error and warning status Encoder temperature Supply voltage Light intensity of internal LED Operational time counter

Electrical Specifications

Supply Voltage:	5 VDC ±10% 9 - 30 VDC as option
Current Consumption:	< 80 mA @ 5 V (no load) < 60 mA @ 9 - 30 V (no load)
Electrical Protection:	Reverse polarity, overvoltage (voltage clamp) Short circuit protection on outputs (bus driver)
Immunity and Emission:	EN61000-6-2, EN61000-6-4
Maximum Cable Length:	Dependent on baud rate: - 200 meter for low baud rates - 30 meter for highest baud rate If the encoder is powered through the cable, voltage drop over the cable length must be taken into consideration

Communication Specifications

Interface:	EIA-RS485
Protocols:	***eCODE***-P2P (point-to-point) ***eCODE***-FB (field-bus) ***eCODE***-ASCII (field-bus) Modbus RTU (field-bus)
Communication Parameters:	8 databit, no parity, 1 stop bit 8 databit, even parity, 1 stop bit selectable for Modbus protocol
Baud Rates:	All common baud rates from 19,200 to 3.68 Mbaud
Data Format:	Binary (***eCODE***-P2P, ***eCODE***-FB, and Modbus RTU) ASCII (***eCODE***-ASCII)
Address Range:	1 to 247 for all bus protocols
Request Cycle Time:	40 µsec. min. (***eCODE***-P2P protocol @ 3,68 Mbaud)

Enviromental Specifications

Operating Temperature:	-40° to +85° C
Storage Temperature:	-40° to +85° C
Shock:	100 G @ 11 ms
Vibration:	10 - 2000 Hz @ 10 G
Bump:	10 G @ 16 ms (1000 x 3 axis)
Humidity:	98% RH non-condensing

Connection Options

Connector:	5-pin M12 male (specify 1 or 2 connectors)

Mechanical Specifications

Housing:	Available in several Scancon housings from ø50 mm to ø115 mm
Shaft/Hollow Shaft:	Available in both shaft and hollow shaft versions

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