

LSEC241X-XX

ENCODER CARD - HIGH STABILITY AND ACCURACY

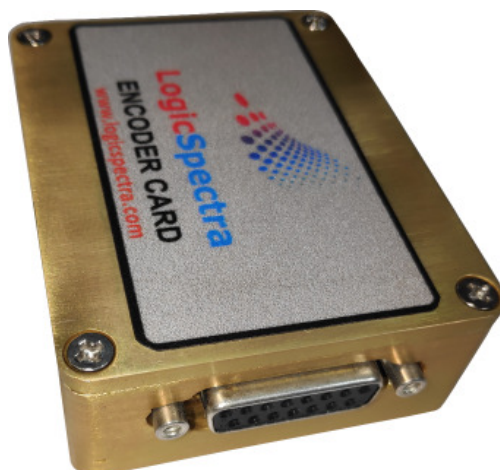


Features

- Fast response
- Industry standard RS-485/422 Interface
- Robust design/case for harsh environments
- Supports high resolution encoders
- Dual encoder angle measurement support
- Standard DB15 connector
- Input supply 24V DC

Application

- Angle Measurement
- Robotics
- Motion measurement



General Description

Encoder Interface Card (EIC) meets the demand of various antenna control system designs where typically servos are used. EIC can be interfaced with different servo controllers, which use SSI encoders for angle feedback and correction measurements for position accuracy. EIC is interfaced with servo controller to tap the clock and data signals of encoder and process them as per the custom requirements. It converts the gray code data of encoder to binary format. Output data is framed and formatted and transmitted industry standard RS-422 for higher baud rates and long distances.

Encoder Interface Card(EIC) can also be customized to directly read angle measurements from encoders without the use of servo controllers. It can be customized for different output data formats.

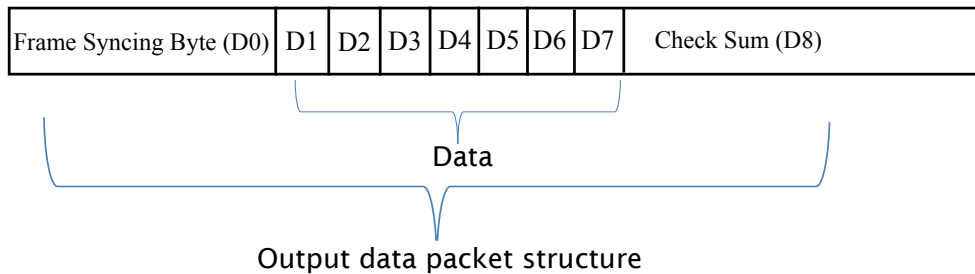
Specification

Parameter	Type	Units
Encoder Clock (Frequency)	250K	Hz
Encoder	SSI Gray code	Type
Encoder Clock Pulses	25	Pulse
Encoder Resolution	18	bit
Operating Voltage	24V DC	voltage
Power Consumption	150mW @ 24V	watts
Operating Temperature	0 - 60	C
Start-up time	> 6	seconds

Output Data Format

UART: **230400** baud rate, 8 bits of data, No parity, 1 stop bit;

Output data transmitted from the EIC is available a 9-byte packets. Each packet consists of frame syncing byte followed by 7 bytes of present encoder readings as unsigned integers and terminated by a checksum byte. Refer the below sections for the details of packet structure and data byte format.



Packet structure:

Byte0:

D7	D6	D5	D4	D3	D2	D1	D0
1	0	0	0	0	0	0	0

Byte1:

D7	D6	D5	D4	D3	D2	D1	D0
0	S4	S3	S2	S1	S0	AZ24	EL24

Byte2:

D7	D6	D5	D4	D3	D2	D1	D0
AZ23	AZ22	AZ21	AZ20	AZ19	AZ18	AZ17	AZ16

Byte3:

D7	D6	D5	D4	D3	D2	D1	D0
AZ15	AZ14	AZ13	AZ12	AZ11	AZ10	AZ9	AZ8

Byte4:

D7	D6	D5	D4	D3	D2	D1	D0
AZ7	AZ6	AZ5	AZ4	AZ3	AZ2	AZ1	AZ0

Byte5:

D7	D6	D5	D4	D3	D2	D1	D0
EL23	EL22	EL21	EL20	EL19	EL18	EL17	EL16

Byte6:

D7	D6	D5	D4	D3	D2	D1	D0
EL15	EL14	EL13	EL12	EL11	EL10	EL9	EL8

Byte7:

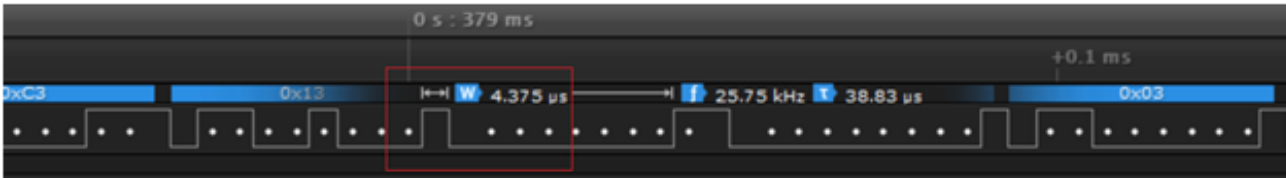
D7	D6	D5	D4	D3	D2	D1	D0
EL7	EL6	EL5	EL4	EL3	EL2	EL1	EL0

Timing diagrams for ECI (18 Bit Encoders)

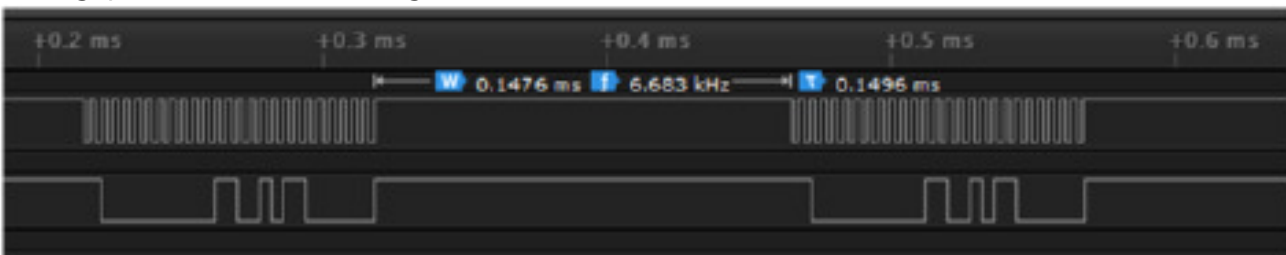
CLOCK: 250KHz, Clock pulses: 25, W: 2us, t: 4 us



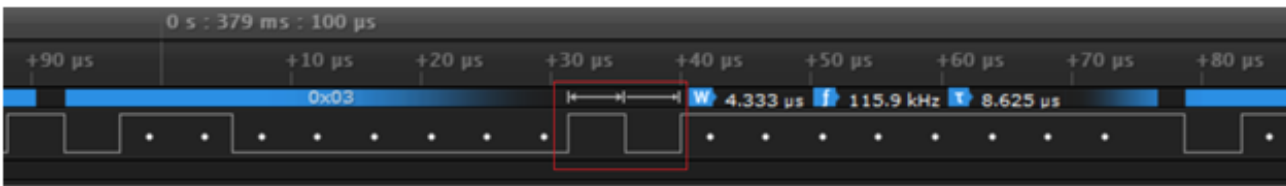
Time gap between each packet: W:4.375us



Time gap between each reading: W: 0.1476ms, f: 6.683kHz, t: 0.1496ms



Time gap between each byte: W: 4.333us, f: 115.9kHz, t: 8.625us

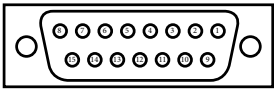


RS-485 timing diagram (sample data output):



0x80 0x00 0x03 0xFF 0xB9 0x01 0x14 0xC5 0x15

Connection Details (DB15 Pin)



1	ENCODER CLOCK
2	ENCODER CLOCK
3	ENCODER DATA
4	ENCODER DATA
5	Only AZ CARD - DATA TRASMIT (RS485 -) to EL CARD (Pin 7)
6	Only AZ CARD - DATA TRASMIT (RS485 +) to EL CARD (Pin 8)
7	Only EL CARD - DATA RECEIVE (RS485 -)
8	Only EL CARD - DATA RECEIVE (RS485 +)
9	Only EL CARD - DATA TRASMIT (RS485 -) To Host Controller System
10	Only EL CARD - DATA TRASMIT (RS485 +) To Host Controller System
11	RESERVED
12	RESERVED
13	NA
14	+24V DC
15	GND

Connection between AZ <> EL CARDS (DB15 Pin)

1	AZ ENCODER CLOCK (-)
2	AZ ENCODER CLOCK (+)
3	AZ ENCODER DATA (-)
4	AZ ENCODER DATA (+)
5	AZ CARD - DATA TRASMIT (RS485 -) to EL CARD (Pin 7)
6	AZ CARD - DATA TRASMIT (RS485 +) to EL CARD (Pin 8)
7	RESERVED
8	RESERVED
9	RESERVED
10	RESERVED
11	RESERVED
12	RESERVED
13	NA
14	+24V DC
15	GND

1	EL ENCODER CLOCK (-)
2	EL ENCODER CLOCK (+)
3	EL ENCODER DATA (-)
4	EL ENCODER DATA (+)
5	RESERVED
6	RESERVED
7	From AZ CARD - DATA RECEIVE (RS485 -)
8	From AZ CARD - DATA RECEIVE (RS485 +)
9	EL CARD - DATA TRASMIT (RS485 -) To Host Controller System
10	EL CARD - DATA TRASMIT (RS485 +) To Host Controller System
11	RESERVED
12	RESERVED
13	NA
14	+24V DC
15	GND

Mechanical Dimensions

