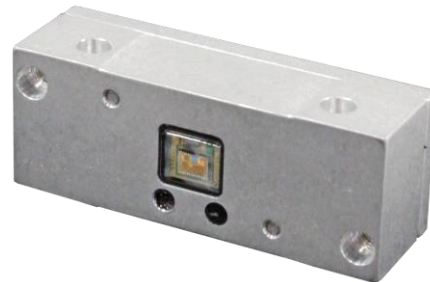


SLE-35 Series

Enclosed, Diffractive High Resolution Linear Encoders



Description

The SMAC SLE-35, High Resolution linear encoder is similar in mounting to other industry standard enclosed linear encoders. This model is a miniature non-contacting high-resolution incremental linear encoder, which delivers two count channels in quadrature (called A and B) as output signals. The two output waveforms are 90 degrees out of phase and indicate both the position and the movement direction: when Channel A leads Channel B, for example, then the movement is from left to right of the scale when viewing the pattern side of the scale. Otherwise, if B leads A, then the displacement is in the opposite direction. This encoder is available in 0.1 and 0.05 micron resolution.

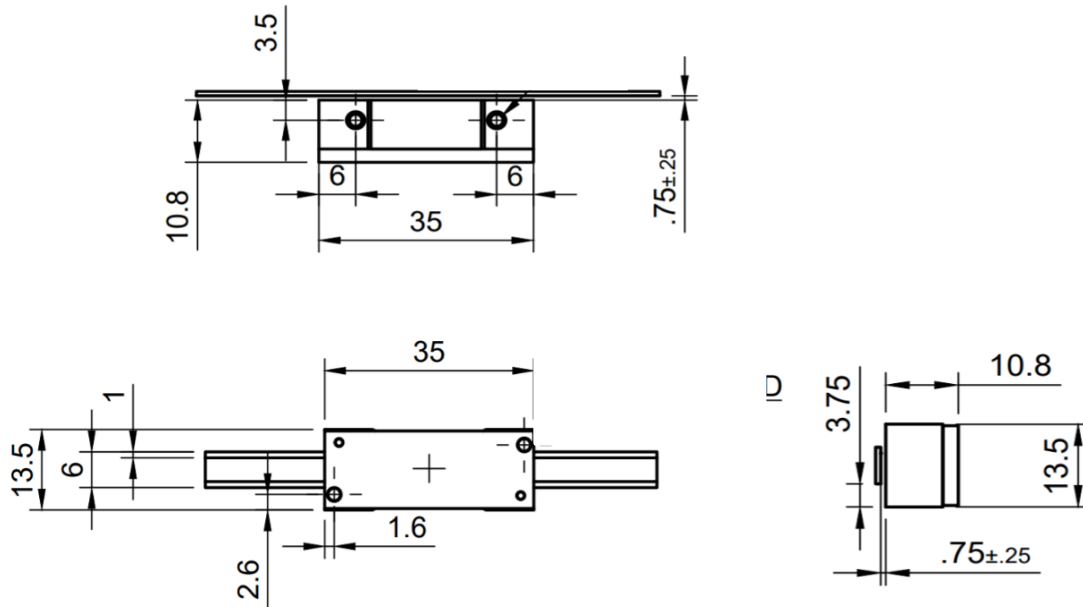
Features

- Light Source: Light Emitting Diode;
- Light Sensor: AEDR Optical Asic;
- Resolution after quadrature: 0.1um or 0.05um
- Output Format: Differential RS422 line driver output. Two count channels A and B in quadrature with an optional ZR output;
- Quadrature spec.: $90^\circ \pm 45^\circ$ at maximum conditions;
- Rise and Fall Time: 1µs max. into 1000 pF load;

Sample Applications

- Data Storage Applications
- Motion Control
- Assembly Applications
- Electronics

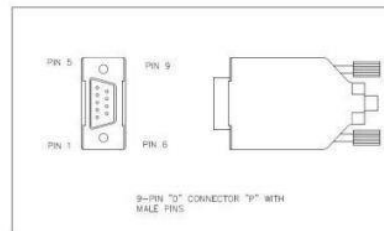
Package Dimensions



(2) M3 X.5 MOUNTING HOLES FOR MOUNTING ON SURFACE -A- OR -B- OR USE (2) M2.5 CAP SCREWS TO GO THRU THE M4 HOLES TO ATTACH TO THE USER'S MOUNTING SURFACE

18" CABLE WITH 9-PIN "D" CONNECTOR "P" WITH MALE PINS

FUNCTION	PIN
+5 VDC	1
Z-	2
Z+	3
B-	4
B+	5
A-	6
A+	7
GND	8
SHIELD	9



Ordering Code:

SLE-35-YY-ZZ-M

Resolution:

10 = 0.1 micron
25 = 0.05 micron

Cable Termination:

00 = Flying Lead
09 = 9 pin D-sub
15 = 15 pin D-sub

Cable Jacket Material(optional)

0 = PVC (Standard)
1 = mPPE (Low Off-Gassing)

Absolute Maximum Ratings

Storage Temperature Range	-25 °C to 85 °C
Operating Temperature Range	0 °C to 85 °C
Supply Voltage	+ 5V DC \pm .25V
Output Current per channel	50 mA
Frequency Response	1.34 Meters/Second (0.1 micron) 0.6 Meters/Second (0.05 micron)

Note: Absolute Maximum Ratings represent the limits that must not be overcome in order to guarantee a safe operation of the device. This does not mean that the device should be operated with such values.

Recommended Operating Conditions

Parameter	Min.	Typical	Max.	Units
Supply Voltage	+4.75 Vdc	+5 Vdc	+ 5.25	Vdc
Temperature	- 25		+85	°C
Output Frequency		0.1 micron 0.05 micron	1.34 MHz 1.20 MHz	

Mechanical Characteristics

Parameter	Dimension/Details
Housing Material	Aluminum
Mounting Screw Size	M3
Connector on encoder	9 pin Dsub standard

Mechanical and Environmental Tests

Parameter	Reference	Conditions
Shock	IEC 68-2-27	10 G at 11 ms
Humidity	IEC 68-2-3	98 % RH (non-condensing)

Theory of Operation

The SMAC SLE-35 is a Diffractive, reflective linear encoder, which transforms the linear motion of a code pattern on the linear scale into a digital output signal. The main components of the SMAC SLE-35 series are: a Light Emitting Diode (LED), a high-precision linear scale, an IC photo-detector with a set of uniquely configured photodiode Interlaced Phased Array, an IC interpolator, and an IC line driver.

The light source is emitted by the LED, diffracted off the code pattern of the scale and reflected back to the photodetectors to produce a set of analog signals, by means of the modulation from the optical ASIC detector producing proper compensation and interpolation factors, the analog signals are used to produce the interpolated digital A and B signals. Therefore, these digital signals feed the IC line driver in order to obtain the differential outputs for channels A, B and I and their complements.

Pin Assignment

Pin	Signal	Description
Pin 1	+5	Input Voltage
Pin 2	Z-	ZR Output
Pin 3	Z+	ZR Output
Pin 4	B-	Digital Output
Pin 5	B+	Digital Output
Pin 6	A-	Digital Output
Pin 7	A+	Digital Output
Pin 8	ND	Ground

Standard Scale Order Code Key:

SLS-**WWW**-**XXXX**-**Y**-**Z**

W		Material Details
	1WW	Glass
		160 0.75±0.01mm Thick, 6mm width
		162 3.0mm Thick, 6mm width
	2WW	Mylar
		260 0.3mm Thick, 6mm width

Scale can be cut to a desired length.

X		Scale Length in mm
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Y		Scale Pitch
	A	80mm Pitch
	B	20mm Pitch

Z		Backing
	A	No Adhesive Backing
	B	Peel and Stick Adhesive Backing

		Encoder Models						
Scale Part Number SLS- WWW - XXXX - Y - Z	Scale Length [mm]	SLE-LI-01	SLE-LI-10	SLE-LI-15	SLE-LL-01	SLE-LL-05	SLE-35-10	SLE-35-25
SLS-160-0164-A	164	X	X	X	X	X	X	
SLS-160-0128-B	128							X
SLS-162-0314-B	314							X
SLS-260-0600-A	600	X			X	X		

Consult factory for lengths not listed.