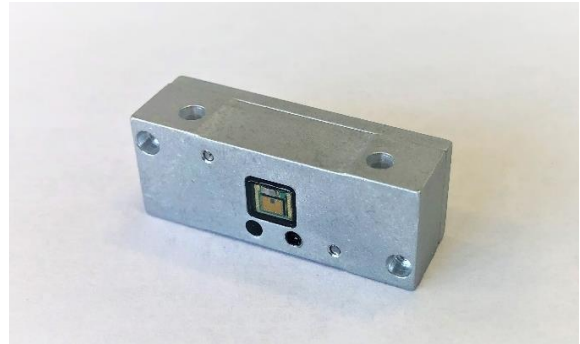


SLE-35 Series

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.

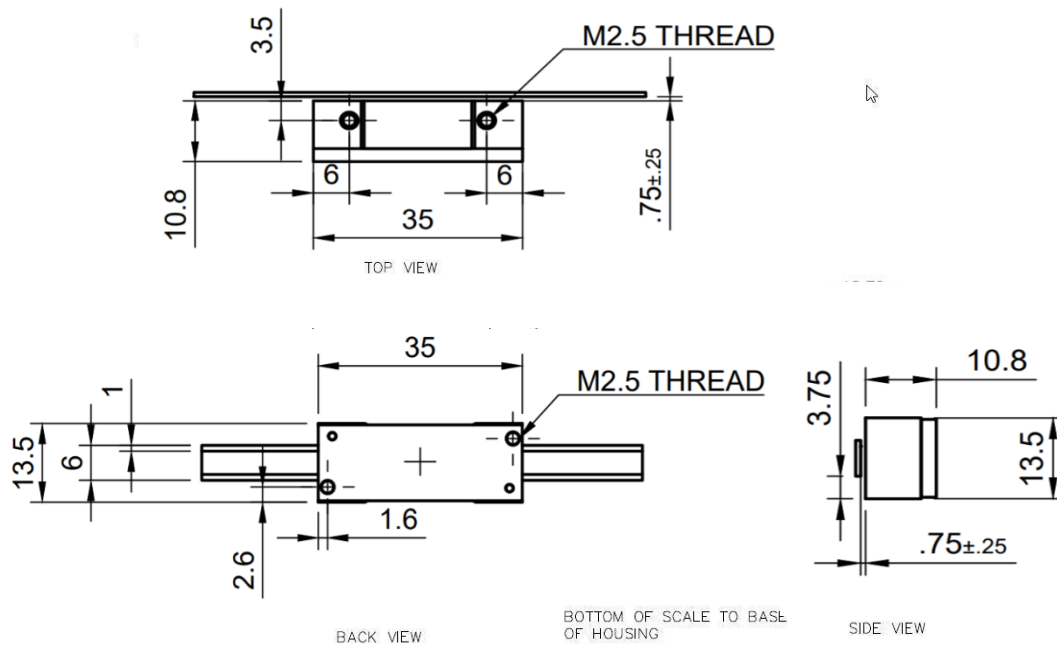
Features

- Light Source: Light Emitting Diode;
- Light Sensor: AEDR Optical Asic;
- Resolution after quadrature: 0.1 μ m or 0.05 μ m
- Output Format: Differential RS422 line driver output. Two count channels A and B in quadrature with an optional ZR output;
- Quadrature spec.: 90° \pm 45° at maximum conditions;
- Rise and Fall Time: 1 μ s max. into 1000 pF load;
- Travel length: up to 150 mm standard. Please contact us for information about longer lengths.

Sample Applications

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

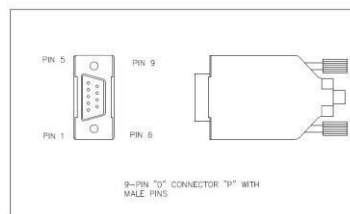
Package Dimensions



(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



MODEL RESOLUTION SPECIAL MOD

SLE - 35 - X - Y

DASH X	RESOLUTION	SPEED	OUTPUT	TERMINATION LOAD
-2	0.1 MICRON	.25 M/S	DIFFERENTIAL LINE DRIVER DIGITAL	120 OHM
-3	0.05 MICRON CYCLE	.25 M/S	DIFFERENTIAL LINE DRIVER DIGITAL	120 OHM

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	.25 Meters per Second

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 Units	Min.	Typical	Max.
Supply Voltage	+4.75 Vdc	+5 Vdc	+ 5.25 Vdc
Temperature	- 25 °C		+85 °C
Output Frequency		10 kHz	

Mechanical characteristics

Parameter Units	Dimension/Details	Tolerance
Housing Material	Aluminum	
Scale Length	150 MM Std. contact for longer lengths	
Mounting Screw Size	M3	
Scale Material	Soda-Lime Glass	
Scale Thickness	0.75/1.5 MM (0.75 standard)	
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: an IR 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 and is 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	GND	Ground