

PE-100 High Bandwidth Encoder System

High Speed Encoder



Output
Analog Sine/Cosine

The PE-100 is a high speed, high signal to noise ratio optical encoder.

The PE-100 is a high performance encoder ideally suited for any motion control application that requires high bandwidth and high signal to noise ratio.

The PE-100's optical design offers long life, non-contact measurement and low maintenance along with easy installation.

Applications

- *Optical timing clock sensor*
- *Air bearing spindles*
- *Linear motor stages*
- *Rotary Stages*

System Specifications

PE-100

Operating Temperature	5 to 70°C
Storage Temperature	-20 to 85°C
Humidity	10-90% RH non-condensing
Shock	300G over 400usec
Vibration	30G @ 20Hz
Supply Voltage	5v +/-0.25V
Nominal Supply Current (no output loads)	70mA
Output Format	Sin/Cos
Nominal Sin/Cos AC Output Voltage	1.6V p-p differential +/-10%*
Nominal Sin/Cos DC Output Voltage	2.5VDC
Nominal Sin/Cos Output Impedance	50 ohms each side
Min. Load Impedance Between S/C Differential Outputs	2K ohms **
Sin/Cos Period	20µm
Nominal Frequency Response (-3db)	900Khz (Nominal)
Nominal S/N Ratio (50KHZ, -1 slope LPF)	12,000/1
Cycle to Cycle Jitter	
(@7.2K RPM- 4096CPR- BW 1.25Mhz)	< 600 ps RMS (typical)
Index to Timing Track Jitter	
(@7.2K RPM- 4096CPR- BW 1.25Mhz)	< 3.0 ns RMS (typical)
Index to Timing Track Jitter Drift	
(23.8°C to 43.3°C – 24 hr observation)	< 150 µrads (typical)
Nominal Index Width	14µm
Index Output Levels	CMOS (0,5v) each output (differential)
Nominal Index Output Impedance	60 ohms each output
Minimum Differential Index Load	120 ohms
(output termination not required-internal series termination)	
Laser Lifetime	>100,000 hours MTTF (70C)

*Maximum amplitude drop as measured on a test setup per ID-00331 using 4096CPR grating at a speed of 300RPM.

**Absolute min 120 ohms with no damage. SNR and signal amplitude will be reduced.

System

Grating Period	20 nm
Signal Period	20 nm

Rotary Resolution

Model	Scale O.D. inches [mm]	Scale I.D. inches [mm]	Fundamental Resolution
	1.5 [38.1]	0.5 [12.7]	4096 CPR

Sensor Size

W:	0.847"	21.51 mm
L:	1.550"	39.37 mm
H:	0.385"	9.78 mm

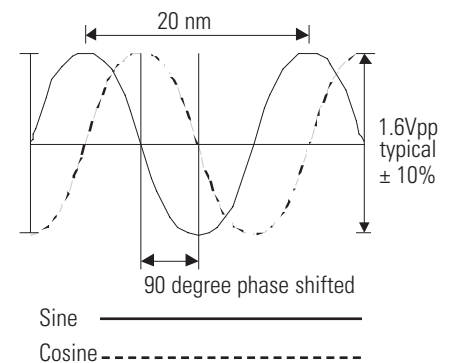
Operating and Electrical Specifications

Power Supply	+5 VDC ± 5% @ 70 mA
Humidity	10 to 90% RH non-condensing
Operating Temp.	5 to 70 °C

Output Signals

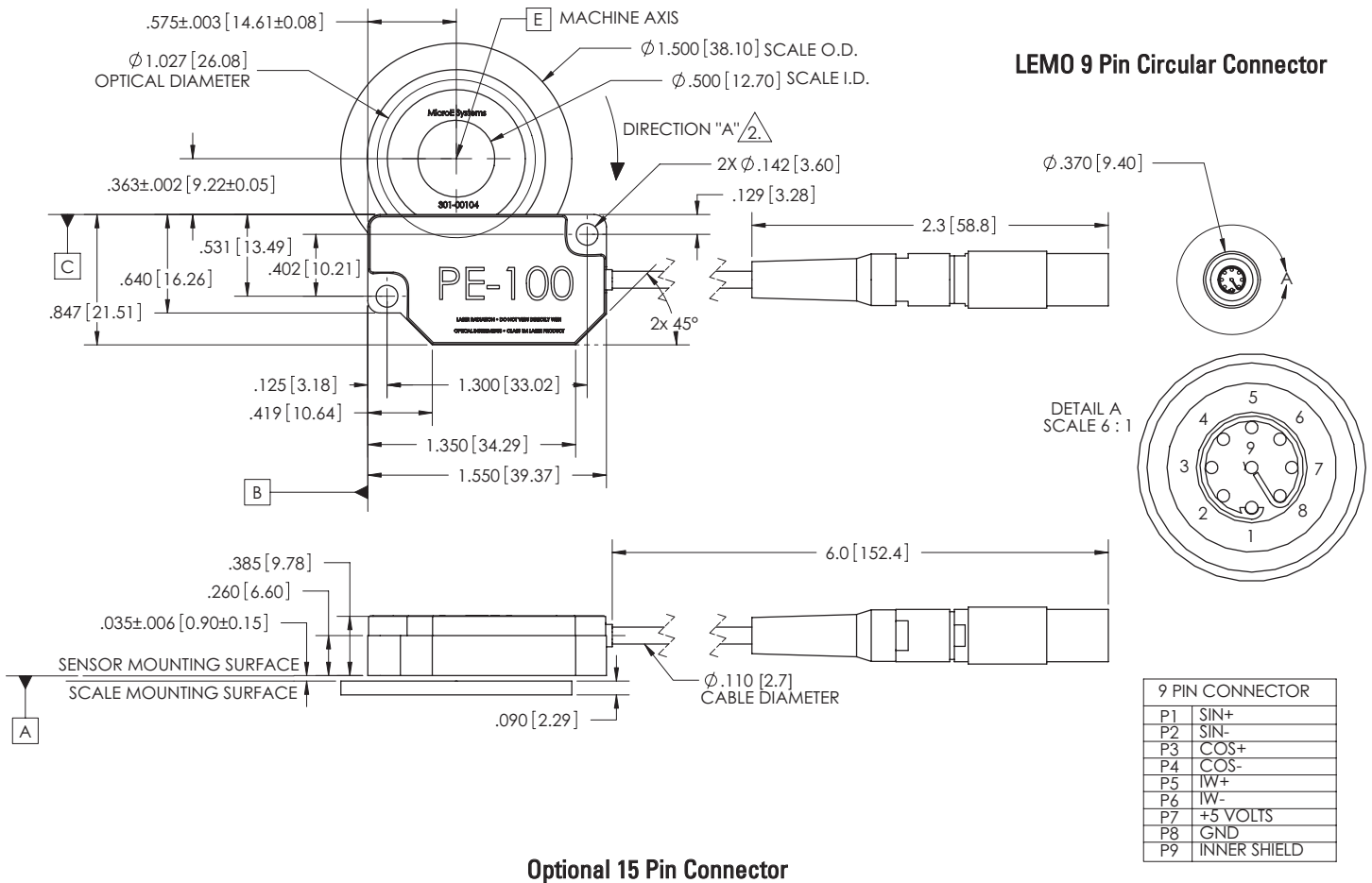
Analog:

Two channels V1 and V2 differential sinusoids [90 degree phase shifted] on 2.5V reference.



System Specifications

PE-100



LEMO 9 Pin Circular Connector

Optional 15 Pin Connector

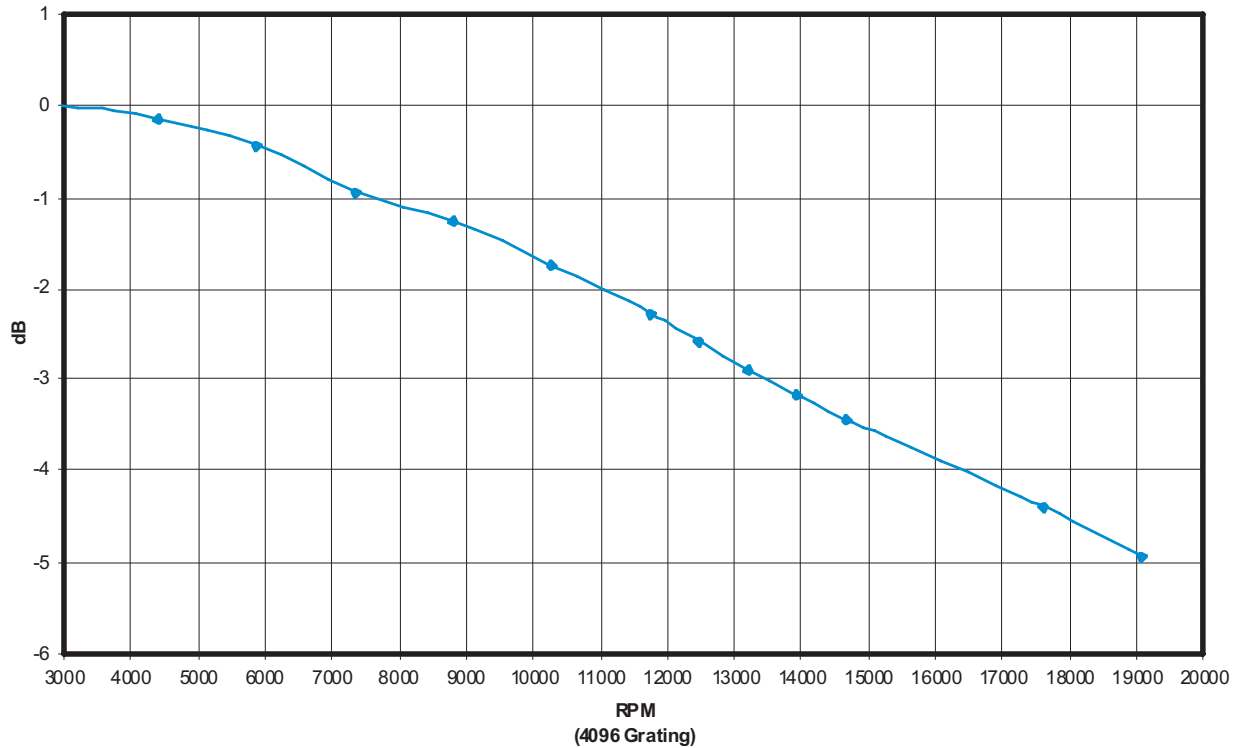
TABLE 1.

15 Pin Interface Plug Pinouts	
Pin	Function
1	IW-
2	IW+
3	N/C
4	N/C
5	N/C
6	N/C
7	COS+
8	SIN+
9	N/C
10	N/C
11	N/C
12	+5V
13	GND
14	COS-
15	SIN-

System Specifications

PE-100

Typical PE-100 Frequency Response



How to Order PE-100 Encoder Systems

To specify your PE-100 encoder with the desired scale, consult MicroE Systems' Rapid Customer Response team for more information [781] 266-5700.