

Encoder Input Module

For fast and simple connection of incremental encoders to the Orbit® Digital Network

Datasheet
502647
Issue 2.1



Features

- ▶ 1.2 MHz max Input Rate
- ▶ 24-bit Counter
- ▶ Quadrature, Pulse/Direction and Up/Down Counting
- ▶ Programmable Interpolation Rate at X1, X2, X4
- ▶ Differential or Single-Ended Input Signal
- ▶ Load Preset Value to Counter by Encoder Reference Pulse Trigger or Software Trigger
- ▶ Digital Output Compatible with Solartron Orbit Protocol

Description

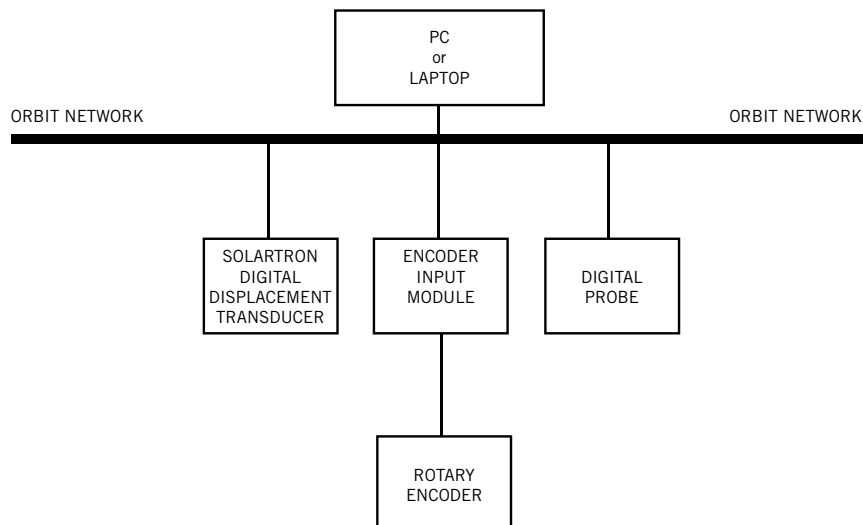
The Encoder Input Module (EIM) is Solartron's solution for interfacing a variety of incremental rotary and linear encoders with square wave outputs to the Orbit® Digital Network.

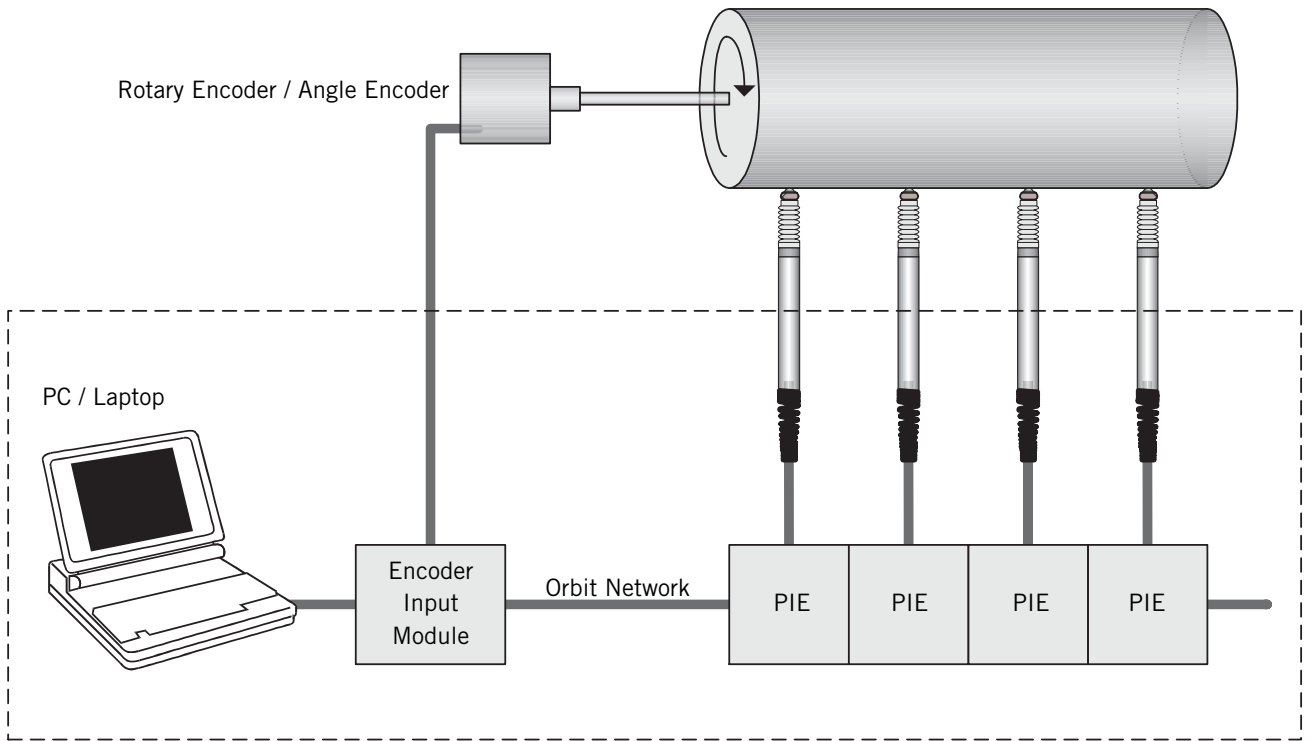
This module supports both single ended and differential encoder types with outputs of up to 30 volts, it also offers interpolation capability to increase the encoder resolution by X1, X2 or X4.

The EIM can also be used for monitoring single axis linear motion in systems using an incremental scale, for example optical, magnetic or capacitive technology. In addition, multi-axis systems can be interfaced using an appropriate number of EIMs. Furthermore the module can act as a trigger source in a dynamic or buffered system and is available with a range of connector options to suit individual customer requirements.

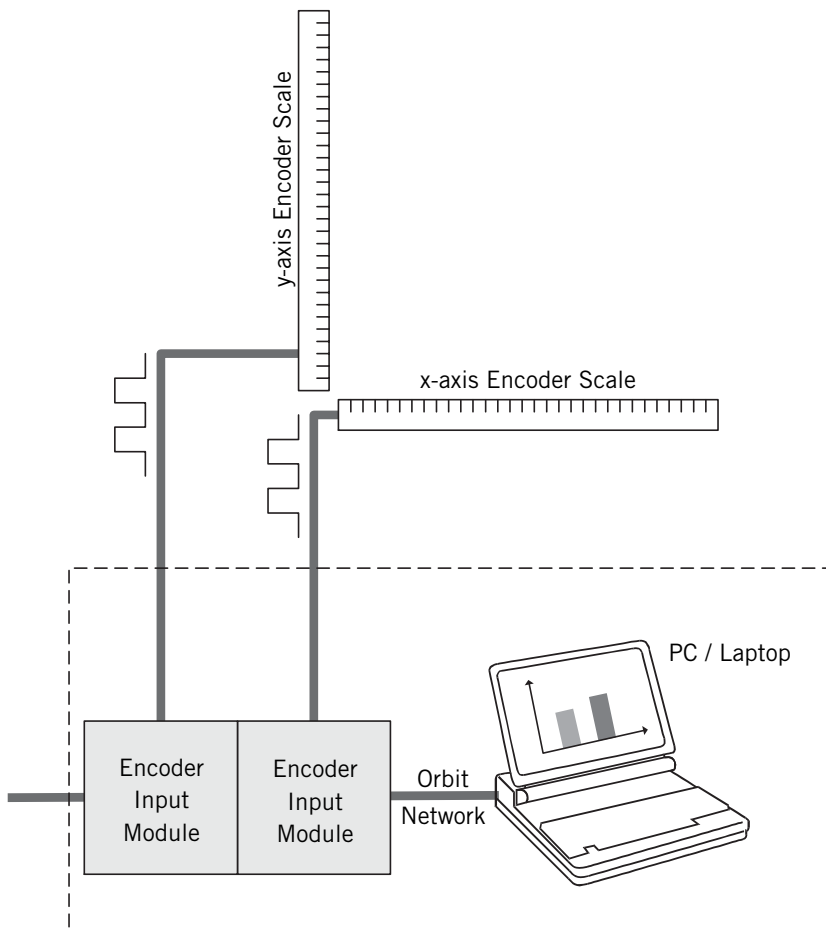
Applications include Industrial automation, Servo encoder and Linear Scale, Frequency counter, and position and event counting.

Example Configuration





Example of EIM used in conjunction with digital probes to monitor dimensional features of a part at specific angular locations



Application in a two-axis linear encoder system where two EIMs are used in this case

Technical Specification

Inputs

Input Signal Type	Single ended (A,B,Z) or differential (A, Aneg, B, Bneg, Z, Zneg) square wave (suitable for encoders with TTL, HTL, RS422, open collector or push-pull outputs)
Input Channels	In-phase (A), Quadrature (B), Reference (REF) & Error (ERROR+)*
Voltage Range	0 V to +30 V**
Switching Level	
Input Type set to Differential	High when VID >0.2 V Low when VID <-0.2 V (VID is the V+ input to V- input differential voltage)
Input Type set to Single Ended	High when V+ input >2.4 V Low when V+ input <1 V
Frequency	1.2 MHz max

* Error input is single ended

** Voltages above +30 V continuous on any input may damage the EIM

Outputs

Digital Output	The EIM provides a digital output representing the internal counter contents. The count value represents the number of pulses received from the externally connected encoder. The digital output is compatible with the Solartron Orbit protocol
Reading Speed	Up to 3906 readings/second (Dynamic Measurement Mode)

Counter

Counter Size	24 bit (maximun count ± 16 million)
Counter Modes	Quadrature, up/down, pulse/direction (programmable)
Interpolation Rate	X1, X2, X4 (programmable)

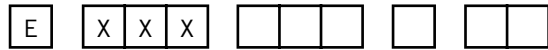
Environmental

Storage Temperature	-20°C to +85°C
Operating Temperature	0°C to +60°C

Electrical Interface

Energising Voltage	5 V ± 0.25 VDC (powered from Orbit Network)
Energising Current	40 mA (excluding sensor excitation requirement)
Interface	Orbit Network

Ordering Guide for the Encoder Input Module



ID Number

X	X	X
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Cable Length

0	3	0
1	0	0
2	0	0
3	0	0

0.30 m

1.00 m

2.00 m

3.00 m

Cable Type

1
3

PUR - Green

PVC - Black

Connection Type

0	0
0	3
0	4

Wire Ended

D-type 15-way Socket (Heidenhain compatible)

M23 12-way Socket (Heidenhain compatible)



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