

Smart Integral Linearizer

Fully Integrated Sensing System

Description

The SIL (Smart Integral Linearizer), paired with a Flow Technology turbine flowmeter, is a fully integrated, microprocessor-based flow sensing system that provides a linearized output over the repeatable range of the flowmeter.

The SIL was designed to incorporate a temperature sensing unit into the electronic enclosure. This enables corrections for viscosity and density changes due to temperature variations without the need for external temperature sensors, signal conditioners or linearizers.

Offering exceptional rangeability and compact size/weight, an SIL-equipped turbine flowmeter provides previously unattainable accuracy and versatility. Unlike flow computers or similar electronic hardware, the SIL is mounted integrally to a turbine flowmeter, making it a convenient, cost-effective solution for aerospace engine testing or on-board flight applications that demand miniaturized packaging, high accuracy and extended range; or industrial batching and blending where fast response times and ruggedized construction are required.

Because the SIL is paired directly with a turbine flowmeter, it eliminates the possibility of mismatching remote electronic components within a flow measurement system. The system provides a 5 VDC logic pulse output which can be transmitted, for example, to either an on-board aircraft computer for fuel consumption metering, or to a distributed control system or PLC for indication and monitoring of process flow variables. With its microprocessor-based technology, the SIL can also be reprogrammed to accommodate flowmeter recalibration. In addition, it is able to withstand harsh environmental conditions and operate in temperatures from -40° F to +185° F (-40° C to +85° C).



Smart Integral Linearizer

Fully Integrated, Microprocessor-based Flow Sensing System

Features

- Provides user-selectable K-factor outputs for ease of replacement
- Linearizes output to $\pm 0.1\%$ of reading over maximum repeatable range of flowmeter
- Provides mass or volumetric flow output for liquids
- Fast response time (50 mS typical)
- Performs temperature compensation internally
- Mounts integrally to a turbine flowmeter
- Eliminates need for external temperature sensors, signal conditioners and linearizers
- Operates in harsh environments from -40° F to +185° F (-40° C to +85° C)
- Programmable to accommodate recalibration
- Remote version available

Specifications

Standard Inputs

Frequency Range 2.5 kHz maximum

Standard Outputs

Flow, Frequency Linearized, pulse train 2000 Hz Std.
TTL levels (0–5 VDC)
pass through @ 4.75 K ohm resistor capable of driving instrument grade AWG 22 up to 100 ft. (30 m)

Linearization

Flow 20-point cubic spline or linear interpolation
Temperature 20-point linear interpolation (factory-calibrated internal thermistor)
Density 2-point linear interpolation
Viscosity 10-point linear interpolation

Corrects for changes in fluid density and viscosity using UVC techniques.

Accuracy

Linearity ±0.1% of reading or better over flowmeter's repeatable range
Step Response 50 milliseconds typical

Physical/Environmental

Standard Power 22–32 VDC (50 mA max.)
24 VDC nominal
Temperature Range
Operating: -40° F to +185° F
(-40° C to +85° C)
Storage: -58° F to +212° F
(-50° C to +100° C)

Model Numbering System

Example: FT4-8AENW-LEA L 1

Pickoff Designator when specified with Turbine Flowmeter

Input Power
3 = 24 VDC

Input Options
A = Magnetic
C = RF

Pulse Output
M = Mass
V = Volume

Terminations
1 = 6-Pin MS

L1 L3 L5 L7

X	X	X	X	
X	X		X	X
X		X		X
X	X	X	X	

SIL MODEL NUMBER

SIL-3-A-M-1
SIL-3-A-V-1
SIL-3-C-M-1
SIL-3-C-V-1

Accessories

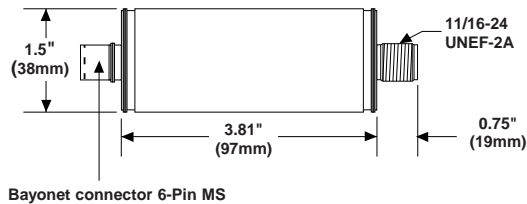
Mating Connector
Interface Box – Standard
Software
Hand-Held Terminal
Cable – Spare
Cable – Serial 9-Pin
Cable – Serial 25-Pin

Part No.

15-92656-01
01-89509-101
01-88295-101
01-88306-101
19-91979-01
19-91981-XY*
19-91980-XY*

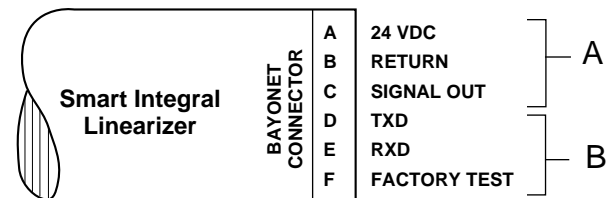
*XY = length in feet

Mechanical Dimensions



Bayonet connector 6-Pin MS

Wiring Diagram



A = Field Wiring B = Calibration/Program

Specifications are for reference only and are subject to change without notice.

Local Representative:



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