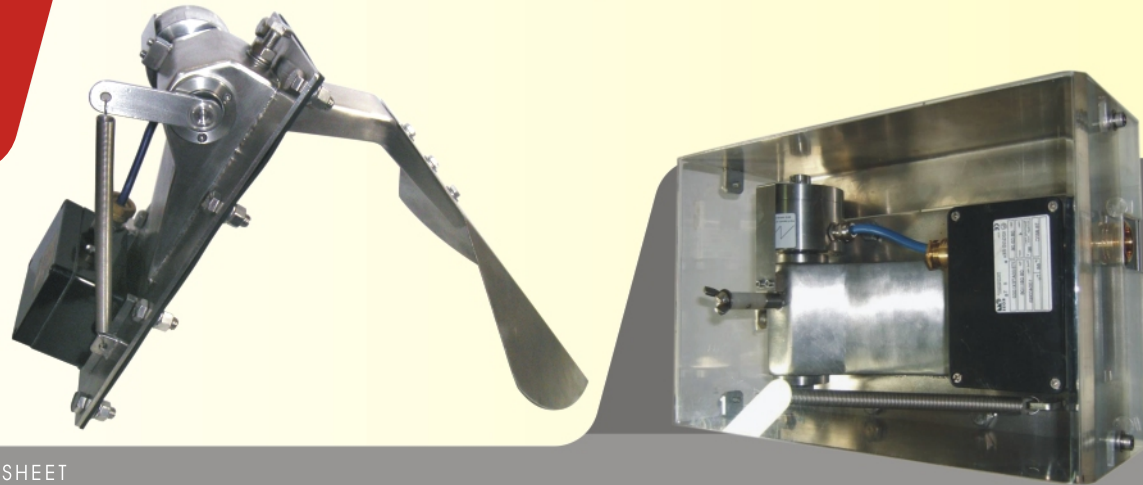




Flow Level Encoder

FLE 1000®



INFORMATION SHEET

Description

The FLE-1000 is the world's first flow line sensor that uses Encoder technology. The sensitivity and accuracy achieved (1/12th of a degree) are unprecedented.

To maintain compatibility and exchangeability with conventional flow line sensors, an analog to digital converter and intrinsically-safe circuitry are built into the sensor so that it becomes a loop-powered (2-wire) 4-20 mA sensor.

Specifications

Models

SP08-004/AM1

Application

Indirect indication of flow rate by accurate measurement of angular displacement of the paddle due to pipe or trough fluid level

Implementation

High resolution absolute encoder (Phase A and B).
Built-in decoding circuit and analog to digital converter

Precision

10-bits over 90 degrees
LSB = 0.087890625 degree
11.4 increments / degree
0.1778 mA / degree

Repeatability

2x LSB = 0.176 degrees

Power Requirement

18-32V, loop-powered I.S.

Outputs

4-20 mA

Operating Temperature

-20 to 60°C (-4 to 140°F)

Permissible Humidity

Up to 98%

Shock Resistance

10 g (6m sec)

Vibration Absorption

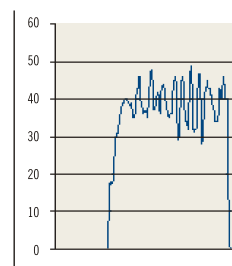
5 g (500 Hz)

Approvals / Certification

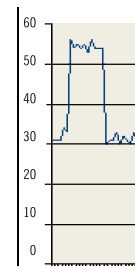
IP 67 M
II 1G EEx ia IIB T4
I M1 EEx ia I
SIRA 01 ATEX 2189

Features

- Fully stainless steel construction for the entire system, including the encoder, shaft, bearings, and main body.
- Digital detection makes repeatability unmatched by any analog resistive sensor. It makes the FLE-1000 suitable for well kick detection.
- At least 6 times more precise than the best potentiometer-based flow level sensor¹



Potentiometer- 19% jitter (swing)



Encoder - 3% jitter (swing)

- Encoder outputs (Phase A, B, Index O) available as option²
- Flowline Sensor is certified intrinsically safe³
- Full stainless steel or mixed SS and clear plastic splash guard available as option.
- EEx (extended safety) polycarbonate junction box, the most durable enclosure type for I.S. connection available as option.

NOTES: 1 readings taken from actual field test in a jack-up rig with openflowline trough; the turbulent flow of drilling fluid, together with persistent background vibration of the entire pipe cause unwanted jittering - the encoder-based flowline with non-contact optical (digital) sensing is less affected compared to the analog swiping potentiometer-type sensor;
2 - on the potentiometer-type encoder this will make the sensor either 6-wire or 8-wire but will maintain I.S. certification.
3 - requires an isolation barrier (also available from APS).