

Ultrasonic Interface & Sphere Detectors

Control in Multiproduct Pipelines



MINISONIC® ISD

MINISONIC® PSD

Interface and Sphere Functions Sphere and Pig Detection

- ✓ External clamp-on probe (may be buried)
- ✓ In hazardous area: EEx 'm' protection for probe, standard or explosion proof converter
- ✓ Optional pressure and temperature compensation
- ✓ No moving parts, no wear or maintenance
- ✓ Fast response time
- ✓ High sensitivity and accuracy
- ✓ User friendly

Principle

MINISONIC ISD measures the speed of sound in the product. This value is a precise characteristic of the product which is associated with its density.

For both models PSD and ISD, the ultrasonic path is interrupted by the passage of the sphere (product separator) or pig even when they are travelling at high speed.

Applications

- Early warning of approaching interface of hydrocarbon products in a pipeline of refined or crude petroleum products: analysis of density, concentration and speed of sound.
- Detection of spheres or pigs
- Pipe sizes : 4" to 60"
- Programmable measurement range 500-2000 m/s
- Wide range of fluids with possibility of measurement on gas (insertion probe)



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SPECIALISTS IN FLOW MEASUREMENT

MINISONIC ISD and PSD

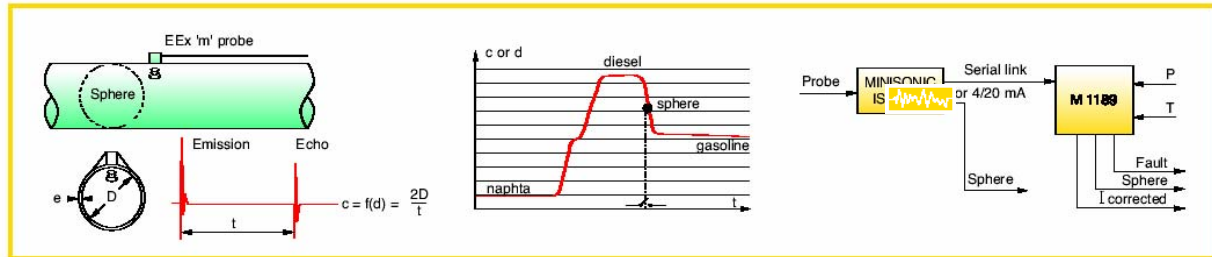
DESCRIPTION

Using advanced acoustic-signal processing, MINISONIC ISD and PSD use the signals of the associated probe to track:

- The change of products in the pipeline : ISD
- The passages of spheres or pigs : PSD & ISD

PERFORMANCE – SPECIFICATION

- Resolution of the sound speed measurement
ISD : +/- 0.1 m/s (equivalent to $< 10^{-4}$ of density)
PSD : +/- 10 m/s
- Response time < 1 s – optimised pulse sampling rate
- Output signals:
 - serial RS 232 & 485 – JBUS/MODBUS Protocol
 - 2 relays: passage of spheres even if they are touching
 - 4-20 mA for speed of sound (ISD only)
- Keyboard and PC software for user friendly calibration – LS_ISD
- Storage of the 20 last records of spheres or pigs detection in a date and time logger available for interrogation by serial link
- Two lines backlit LCD display : sound speed, counting of spheres and event messages



c, t : speed of sound and time of propagation in the product - d : density of the product

ELECTRICAL CHARACTERISTICS

- Power supply :
 - MINISONIC: 9 to 36 VDC (option 48V) or 7 to 25 VDC
 - Extra external transformer 110V or 230 V or internal supply 110V/220V/24V
 - M 1189: 9 to 36 VDC or 7 to 25 VDC
- Output 4-20 mA /1000 Ω - galvanic isolated
- 2 static relays 100V – 100 mA – 10 VA max

Installation and commissioning :

Straight pipe lengths and probe positioning not critical.
Permanent coupling of the probe to the pipe.
Indicate the pipe outside diameter, the wall thickness and measurement scales.

Certifications

MINISONIC EX I CE0081 II 2 g eeX D iic t6
Probes CE0081 II 2 G EEx m II T6
EEx me II T6
EEx md IIC T6
Probes CE0081 II 1 G EEx ia IIB T3 to T6
Ultrasafe barrier : CE0081 II (1) G [EEx ia] IIB

CORRECTOR M 1189

DESCRIPTION

This equipment associated with the MINISONIC ISD allows the compensation of the influence of pressure (P) and temperature (T).

PERFORMANCE - SPECIFICATION

- Correction accuracy : 1% or +/- 3 m/s
- Calibration with PC – specific software
- 2 to 6 analogue inputs (4-20 mA) : P, T & I_e (input current)
- 2 to 6 analogue outputs (4-20 mA) for I_c (corrected current)
- 2 to 6 relays : detection of sphere(s) and faults
- Input – output galvanic isolation

MECHANICAL CHARACTERISTICS

- Protection and temperature classes
 - Probes : IP 86, -25°C to 50°C, EEx'm'
 - MINISONIC : IP 67, -20°C to 50°C
- Dimensions - Weights
- MINISONIC : 237 x 108 x 79 mm (LxHxD) – 1.5kg
- Version EXD : 244 x 130 x 232 (LxHxD) – 6.6kg

