

Ultrasonic interface & spheres detectors

Control in multiproduct pipelines



MINISONIC[®] ISD MINISONIC[®] PSD

Interface & Sphere functions Spheres & 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 & 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 & ISD, the ultrasonic path is interrupted by the passage of the sphere (product separator) or pig even when they are travelling at high speed.

Typical 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)

Represented by :

Ultraflux

Ultrasonic Measurements



MINISONIC ISD & PSD

DESCRIPTION

Using advanced acoustic-signal processing, MINISONIC ISD & 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 <math>< 1</math> s - optimized 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 & time logger available for interrogation by serial link
- Two lines backlight LCD display : sound speed, counting of spheres and event messages

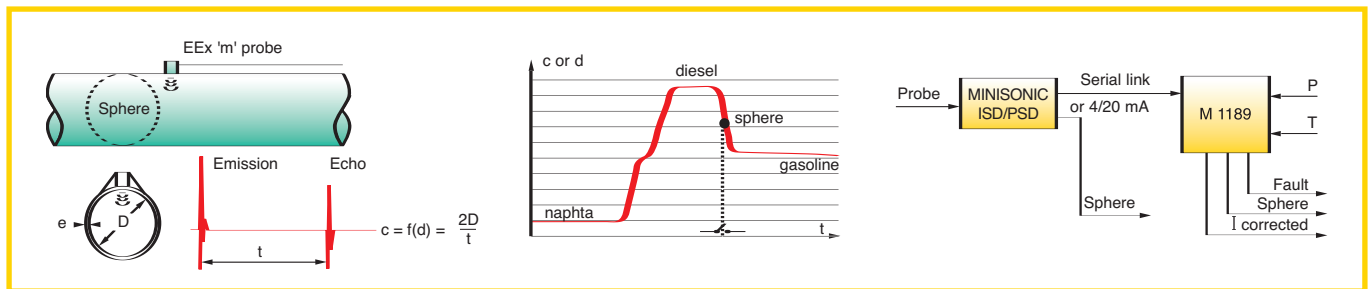
CORRECTOR M 1189

DESCRIPTION

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

PERFORMANCE – SPECIFICATION

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



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 V_{DC} (option: 48 V) or 7 to 25 V_{AC}
- Extra: external transformer 110 V or 230 V or internal supply 110V/220V/24V
 - M 1189: 9 to 36 V_{DC} or 7 to 25 V_{AC}
- Output 4-20 mA / 1000 Ω - galvanic isolated
- 2 static relays - 100 V / 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 the measurement scales.

Certifications :

MINISONIC EXD : CE 0081 ⚡ II 2G EEx d IIC T6
Probes CE 0081 ⚡ II 2G EEx m II T6 - EEx me II T6 - EEx md IIC T6
Probes CE 0081 ⚡ II 1G EEx ia IIB T3 to T6
(Ultrasafe barrier : CE 0081 ⚡ II (1)G [EEx ia] IIB

MECHANICAL CHARACTERISTICS

- Protection and temperature classes
 - Probes : IP 68, - 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, 5 Kg
 - Version EXD: 244 x 130 x 232 (LxHxD) - 6,6 Kg

