

Introduction

ULIS-A is a non-intrusive ultrasonic pig passage indicator designed for reliable detection of all kinds of pigs used for pigging of filled pipelines. It also provides indication and estimation of accumulated debris in front of the pig as well as the effectiveness of the pigging procedure. The device is certified as intrinsically safe for use in hazardous areas. The active nature of the ultrasonic device guarantees reliable pig detection eliminating false alarms due to external interferences



Ultrasonic non-intrusive PIG Detector ULIS-A

The pig detector comprises an ultrasonic non-intrusive sensor clamped to the outside of the pipe and a remotely installed electronic unit. The clamp-on design of the sensor allows the device to be used for all pipe sizes. The electronic unit provides visual indication of pig passage as well a dry relay output signal for integration into existing control systems. Besides, the electronic unit provides archiving of up to 120 events of pig detection and automatic reset functions. With the help of specialized software provided, graphical visualization of the approach of the debris plug as well as pig/sphere passage and change in density of the fluid is possible.

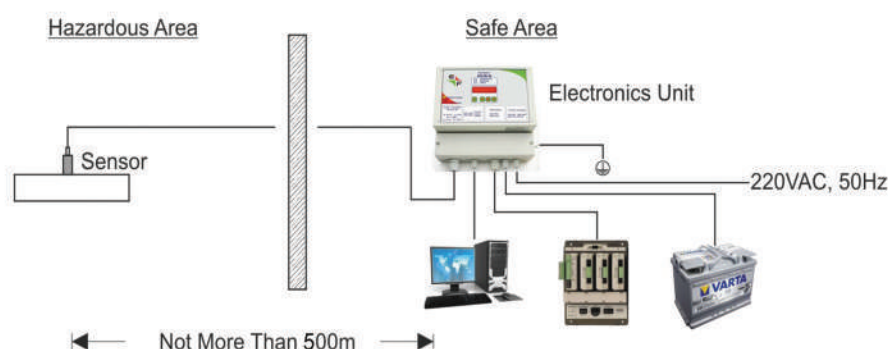
The major advantages of the ULIS-A pig detector are:

- Non-intrusive design provides zero pressure drop and no obstruction to the flow or the pig and allows for all kinds of applications - high pressure, sour service etc;
- Any type of pig, sphere etc. can be detected in both directions;
- There are no mechanical moving parts - so no wear or tear, minimum servicing;
- The active nature of the ultrasonic device guarantees reliable pig detection eliminating false alarms due to outside interference.

An ultrasonic signal is generated and transmitted by a clamped-on, non-intrusive sensor across the pipeline and then recorded after being reflected from the opposite side of the pipe wall. The sensor also determines the level of background noise in the pipeline and differentiates it from the signal. The frequency and form of the signal have been chosen to provide stable propagation through the medium and reliable identification over the noise in the pipeline. A passing pig obstructs the passage of signal which is recorded by the device.

EASY INSTALLATION

1. Transducers of the detector should be installed on the pipelines to detect large-size objects (including pigs, separating balls, gauges, diagnostics devices etc.), propelled by the liquid flow in the pipelines under pressure for determination of the moment when the object is crossing the pipeline section under control. A corresponding warning signal is emitted to the data collection system or to the Advanced Communications System (ACS).
2. Detector also provides the detection of the so-called «paraffin plugs» (referred as plugs) in the oil pipelines.
3. Detector is designed for the pipelines with passage diameter DN from 150 up to 500 mm and from 350 up to 1200 mm, and wall thickness up to 60 mm.
 - a. Detector consists of a electronic unit (EU) and an electroacoustic transducer (EAT) attached to the pipeline surface by a mounting tool. EAT is connected to the EU by a 4-wire cable.
 - b. EAT transmits and receives an ultrasonic signal.
 - c. ULIS-A SU is intended for installation both indoors and outdoors of the explosion hazardous zones.



Parameters of the indicator	Value
Diameter of the pipeline, mm	150 – 1200
Pig velocity, km/h	1 – 8
Pig length, m	1 – 2
Environment temperature	- 40 ... +60 °C
Voltage	230 V, 50 Hz
Power consumption, W, no more	6
1. "Dry contact" "Event"	30V, 200mA
2. "Dry contact" "Fuse"	30V, 200mA
3. Current output	4 – 20 mA
4. Serial interface	RS-232/RS485
Distance from the gauge up to the electronic unit, m, max	150
Certification	Sensor: II 2G Ex ib IIB T4 Electronics block : II (2)G [Ex ib] IIB

EAT is designed in explosion safe enclosure and can be installed indoors and outdoors in the explosion hazardous zones according to rules, regulating electrical equipment application in the explosion hazardous zones.