ClampOn DSP PIG Detector

DIGITAL SIGNAL PROCESSING

ClampOn DSP PIG Detector, Ex i and Ex d version with local indicator lamp

ADVANTAGES
- **Non-intrusive**
- **Easy to install**
- **Real-time detection**
- **Local and remote indication**
- **Acoustic & magnetic detection**

BACKGROUND

Pigging is part of day-to-day operations on many offshore and onshore installations. The operator requires a reliable method of confirming a pig has left the launcher, arrived at the receiver, or passed certain locations anywhere along the pipeline.

The ClampOn DSP PIG Detector, based on ClampOn's patented Ultrasonic Intelligent Sensor technology platform, is a compact and user-friendly instrument. Its fast and simple installation principle is unmatched by any other pig detector available. It provides reliable detection of any type of pig, and is non-intrusive.

OPERATING PRINCIPLE

The ClampOn DSP PIG Detector senses a passing pig using passive acoustic (ultrasonic) technology. The instrument has internal Digital Signal Processing (DSP). As a pig passes the detector's location, the instrument senses and analyses changes in the signal level at multiple frequencies. A pig can be indicated either via an indicator lamp on the instrument, or via a signal output to a control system indicator panel. This signal output can be a "pig passed" signal (i.e. relay contact) or a RAW-signal output for further processing, and can be sent over RS 485 or 4-20 mA interfaces. By using either a dedicated computer running ClampOn software or sending the output to the MCS, the user can see a graphical representation of the signal received from the PIG Detector.
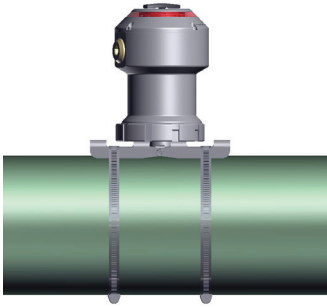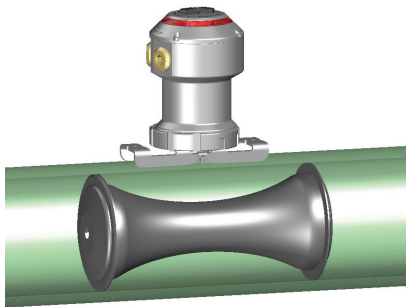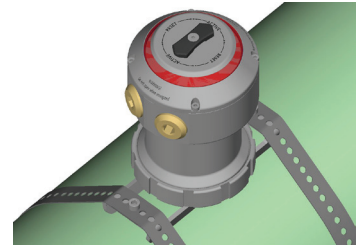
Ex d detector

INSTALLATION

The ClampOn DSP PIG Detector is non-intrusive and clamped on the outside of the pipe, so no parts are in contact with the flow. All instruments are factory calibrated and tested before delivery. The instrument is available in intrinsically safe and flame proof verisons, and can easily be installed on pipes of various dimensions, using the supplied mounting kit. For installation on already operational pipelines, no hot work permit is required. Detectors can be installed just downstream of a pig launcher, upstream of a receiver, or at any location along the pipe where the operator wants notification that a pig has passed. The instrument filters and adjust for fluctuations in background noise, so changes in flow velocity that can occur over time will have minimal effect on the measured results. If only the local indicator lamp is used, the instrument requires just a 1-pair cable for power. If a signal output is also required, a minimum of a 2-pair cable is required.

Illustrations of sensor installed on pipe

Illustration of pig in pipeline passing pig detector

KEY SPECIFICATIONS

•	Method of operation	Ultrasonic (acoustic)
		Optional dual detection with magnetic flux gate
•	Processing	Intelligent DSP inside the instrument
•	Method of installation	Non-intrusive, clamped to pipe surface
•	Detection mode	Defult: Acoustic
		Optional: Magnetic
•	Ambient temperature	Ex i: -40 °C ≤ T amb ≤ +60 °C
		Ex d: -50 °C ≤ T amb ≤ +80 °C
•	Pipe temperature	-40 °C to 150 °C (-40 °F to 300 °F)
•	Power consumption	Ex i: 1.9W (2.2W alarm mode)
		Ex d: 1.2W (1.5W alarm mode)
•	Communication	Relay, 4-20 mA, RS-485 (Modbus RTU, ClampOn DSP protocol)
•	Alarm indication	Local indicator, remote indicator (via instrument relay), digitally via computer/controller with ClampOn software or in DCS/MCS, or 4-20 mA
•	Weight (sensor only)	Ex i: 2.1 kg (4.6 lb), Ex d: 3.3 kg (7.3 lb)
•	Dimensions (ø x h)	Ex i: 100 mm x 135 mm
		Ex d: 114 mm x 185 mm
•	Sensor material	SS 316L
•	Mounting bracket material	SS 316L, carbon steel or duplex

All specifications are subject to change without notice