ESP Asset Integrity

SUBSEA

DSES-UW

SUBSEA PIG DETECTOR

The **DSES-UW detector** is designed to detect and record the passing of Pipeline Inspection Gauge (hereinafter referred to as the PIG). The **DSES-UW** detects PIG passages by processing signals from 3 different sensor channels and transmitting data to the automatic process control system. According to the principle of operation, **DSES-UW** is a contact device and intended for installation directly on the surface of the oil and gas pipeline. The detector is non-intrusively mounted on a straight pipe section with a mounting clamp.

The detector has 3 measuring channels:

Acoustic channel output from a piezoelectric sensor. Acoustic noise in the frequency range of 100-250 kHz created by a moving PIG is captured using a metal hub pressed against the surface of the pipe and a piezoelectric sensor rigidly mounted on the inner side of the hub.

22 Hz electromagnetic channel based on an oscillatory circuit; The electromagnetic signal of a low-frequency transmitter, optionally mounted on PIGs, with a frequency of 22 Hz is received by an antenna built into the detector.

Magnetic channel based on a Hall sensor or inductor. Fluctuations of a constant magnetic field caused by the movement of permanent magnets, also optionally mounted on PIGs, are detected by the same built-in antenna as a signal with frequencies from fractions to units of Hz.

A PIG passage indication occurs when thresholds are exceeded by at least two channels - acoustic (permanent) and electromagnetic OR magnetic. The device can also be configured to activate PIG passage when one channel threshold is exceeded. The levels of threshold values are set by setting a number of parameters for each channel separately using factory configuration software.

Features and Benefits

ENHANCED ACOUSTIC SENSITIVITY

combination of superb sensing elements, digital signal processing algorithm with advanced filtering techniques allow device to detect the variety of PIG types, including Intelligent ultrasonic inspection PIGs, foam PIGs, solid body PIGs, scrapper PIGs, gauging/caliper PIGs, magnetic PIGs.

MAXIMUM RELIABILITY

Rigorous self diagnostics, data averaging and use of filtering techniques provide fail to safe reliable operation.

LOW MAINTENANCE COST

Echo requires minimum maintenance on site, which makes it an easy choice for operator.

LONG SERVICE LIFE

The life expectancy for DSES-UW is 30 years with warranty of 2 years

NON-INTRUSIVE MOUNTING

the installation is very simple and easy, no need in cutting or welding and shutting down a process. Connect DSES-UW by supplied clamp to pipe or for subsea installation, place it in a funnel and you are ready to go.

ROV DEPLOYABLE/RETRIEVABLE

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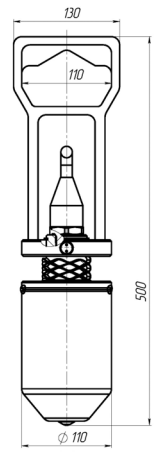
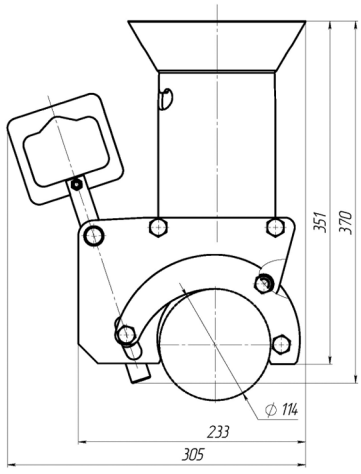
ELECTRICAL CHARACTERISTICS

Input Voltage	+24VDC (Nominal) +18 to 32 VDC)
Power Consumption	≤ 2 W
Electronics Configuration	Single
Communication Interfaces	CANopen CiA 443 (SIIS level 2) Digital RS-485 Modbus RTU
Communication Bid Rate	**Modbus** 1200-19200 bps **Canbus** 50 or 125 kbps

DIMENSIONS IN MILLIMETERS (MM)



Echo-UW Dimensions



Funnel dimensions

OPERATIONAL CHARACTERISTICS

Principle of Operation	Passive acoustic, electromagnetic, magnetic
Flow Regime	Oil, gas, water, multiphase
Pipe Thickness	2-25 mm
Pipe Diameter	300 - 2500 mm
Pipe Material	All types of steel alloys
PIG detection velocity range	0.1 - 10 m/s
PIG Detection Direction	Bidirectional
Depth	4,500 m (14,760 ft)
Operating Temperature	-20C to +80C (-76F to 185F)
Pipe Surface Temperature -	-100C to +290C (-148F to 554F)
Storage Temperature	-50C to +50C (-58F to 122F)
Design Life	30 years

MECHANICAL CHARASTERISTICS

Dimensions		20" x Ø 5" (500 mm x Ø 130 mm)
Enclosure Material		Titanium Grade 2/ UNS S31803/2205 Duplex SS
Weight		13 lbs (6 kg) - Titanium 22 lbs (10 kg) - UNS S31803/2205 Duplex SS
Immersed Weight		11 lbs (5 kg) - Titanium 18 lbs (8 kg) - UNS S31803/2205 Duplex SS
ROV Handle Type		DHandle as standard (T-handle, Fishtail handle, O-handle available by request)
Coating		Xylan 1070, F4210 yellow (detector), Xylan 1070, F1677 orange (ROV handle)
Hose Interface	*Hose Type*	Siemens MKII M25
	Connector Type	Siemens Aquatron 50 or per specification
Sealing Type		EB welding and O-rings

APPROVALS AND STANDARDS

ISO 13628-6
ISO 15156 / NACE MR 0175
Material Certificate 3.1 according to EN 10204
NORSOK M-501, M630, M650
ISO 3506-1 / 3506-2
API 17-F

FUNNEL ASSEMBLY

Funnel Dimensions	15" x Ø 9" (370 mm x Ø 233 mm)
Enclosure Material	UNS S31803/2205 Duplex SS
Weight in Air	44 lbs (20 kg)
Weight in Water	40 lbs (18 kg)
Coating	Xylan 1424 F4210 yellow
Pipe Diameter	> 3 "