DSP Leak Monitor
Instrument Datasheet

GENERAL
1.0 Manufacturer ClampOn AS
1.1 Model description DSP leak monitor, Ex de
1.2 Part number 930-22xx4-xxx

INSTRUMENT DATA
NOTE

CLIENT DATA
2.0 Customer
2.1 Project title
2.2 Field / installation
2.3 P.O. number
2.4 Part number
2.5 Tag number
2.6 Document number / rev.

PHYSICAL
3.0 Dimensions (ø x h) 101 mm x 211 mm [4 in x 8.3 in]
3.1 Material AISI 316 Stainless Steel
3.2 Weight (approximate) 7 kg [15.4 lb]
3.3 Ingress protection IP68
3.4 Operating temperature -40 °C to 150 °C [-40 °F to 302 °F]
3.5 Ambient temperature -20 °C to 60 °C [-4 °F to 140 °F]
3.6 Protective coating None
3.7 Mounting Clamp on to pipe surface
3.8 Cable entry 3 off M25 x 1.5 ISO Metric
3.9 Cable gland 3 off M25 stopping plug
3.10 Cable None

HARDWARE AND CERTIFICATION
4.0 Supply voltage 12 VDC to 28 VDC
4.1 Power consumption Typical / max: 1.3 W / 2.1 W
4.2 Hazardous area Zone 1, 2
4.3 Certification code EEx de IIC T5
4.4 Equipment code II 2 G
4.5 Ex certificate number Nemko 02ATEX382
4.6 Signal output RS-485 and / or 4-20 mA
4.7 Protocol See note 9
4.8 Baud rate See note 9
4.9 Microprocessor 66 MIPS
4.10 Memory 4 Mb onboard flash
4.11 Diagnostic features Self-testing

OPERATION
5.0 Manner of operation Real-time measurement
5.1 Technology Passive ultrasonic
5.2 Processing DSP in sensor unit
5.3 Calibration Factory calibrated
5.4 Uncertainty ±5 %
5.5 Repeatability 1 %
5.6 Flow conditions Oil / water / gas / multiphase
5.7 Minimum detectable leakage: Liquid: dP >3 bar [44 psi]
Gas: dP >1 bar [15 psi]
5.8 MTBF >30 years

INSTRUMENT LAYOUT

NOTES

1. X notation subject to change according to signal output, cable type/length, and coating.
2. Weight including mounting accessories.
3. ATEX-certified for pipe surface temperature up to 100 °C [212 °F]. Temperature class depends on pipe surface temperature. See certificate for details.
5. Delivered with mounting skid and clamping bands. Clamping band length 2 m [6.6 ft], covering pipe OD <800 mm DN [24 inch NPS]. Extension clamping band for larger pipe OD, ask supplier for details.

For installation of the sensor there must be a minimum of 50 cm [20 in] free space above the pipe. Sensor front must have metal to metal contact with the pipe surface. See installation instructions for further details.

6. Terminals inside termination enclosure suitable for multi stranded wires with maximum cross-section 4 mm² [AWG 12]. Using single stranded wires maximum cross-section is 6 mm² [AWG 10].

7. Complete assembly according to Nemko 02ATEX382.

8. Additional certification available, GOST-R or Inmetro;
   • GOST-R Certification code: 2ExdellIC5 Ex certificate no.: POCC NO.FE05.B02469 See certificate for details.
   • Inmetro Certification code: BR-Ex de IIC T5 IP68 Ex certificate no.: MC, AEX-6764 Revisão 01 See certificate for details.

9. Proprietary DSP protocol (1 200 bps to 57 600 bps) 4-20 mA, passive (4-wire) or active (3-wire) RS-485 with proprietary DSP protocol (19 200 bps) baud rate and passive 4-20 mA (0 to 500 000 range) is ClampOn standard setup.

10. Internal self-testing of analogue filters, amplifiers and flash memory.

11. All sensors are calibrated to a master sensor at factory, enabling use of standard algorithm.

12. Minimum leakage rate is 0.1 L/min [0.026 gal./min], depending on delta pressure (dP) over the leakage point.

SYSTEM DESIGN
ClampOn DSP Leak Monitor, Ex de version (also available in Ex ia version), is designed to detect leakage or flow-through on pipes and valves. The sensor is non-intrusive and clamped on the pipe surface; hence no parts are in contact with the flow. All ClampOn sensors have two-way communication via RS-485, can be upgraded / customized by software download, contain no moving parts and are easy to relocate. A computer running ClampOn software must be used to handle data storage and communication to client control system.

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