

PCU-X11 WirelessHART Inclinometer

Description

Syscor's PCU-X11 WirelessHART Inclinometer was developed and qualified, in close cooperation with the petroleum industry, to detect and measure inclination and acceleration changes using a high reliability, MEMS sensor. The Intrinsically Safe PCU-X11 can also provide power and communication to optional sensor probes.



Applications

The solution targets tank floating roofs, ladders, and other stability applications. Deck hydrocarbon detection (butane and heavier) and water level measurement are provided by optional sensor probes.

Power

The Inclinometer is powered by Syscor's 902 Battery Pack that contains high energy density lithium thionyl chloride (Li-SOCl₂) cells. Low self-discharge provides 10+ years of reliable and predictable power, depending on the update rate.

Installation

The Inclinometer can attach directly to equipment or structures with Syscor's Universal or Floating Roof Mounting Brackets. No hot work is required. Optional bracket magnets can be used on flat steel surfaces, such as steel floating roofs.

WirelessHART Communication

The Inclinometer utilizes the industry standard WirelessHART protocol, which accounts for roughly 30% of the industrial wireless sensing market.* Data is transmitted from the WirelessHART Gateway to the facility's DCS/SCADA using standard industrial interfaces and protocols. WirelessHART (IEC 62591) is a secure, full mesh technology capable of self-forming, healing, and scaling.

* <https://www.controlglobal.com/articles/2019/arc-report-details-growth-of-fspan-stylefont-size-x-smallfoundationspan-fieldbus-hart-and-emwirelessemhart/>

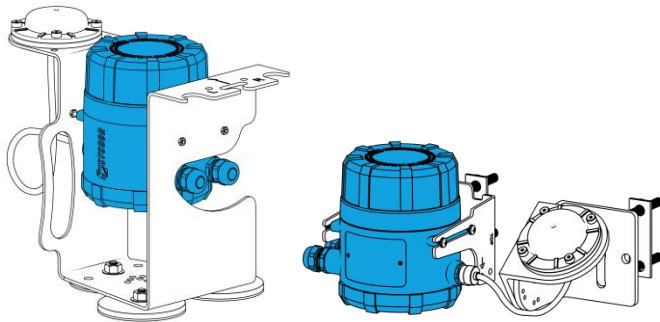


Figure 1. Inclinometer using a floating roof mounting bracket with magnetic feet

Figure 2. Inclinometer using 2" pole U-bolt

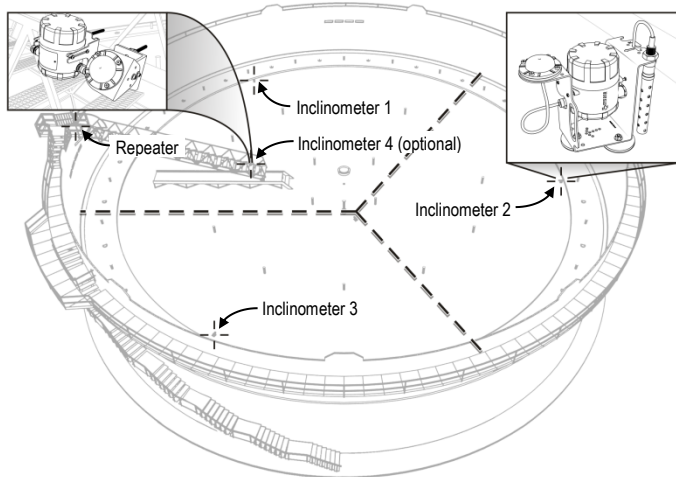
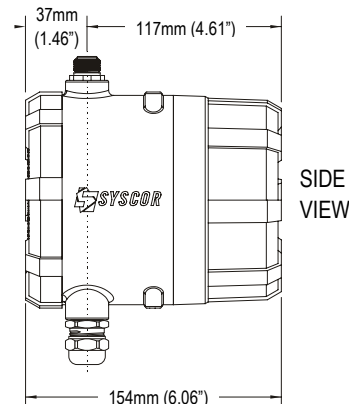
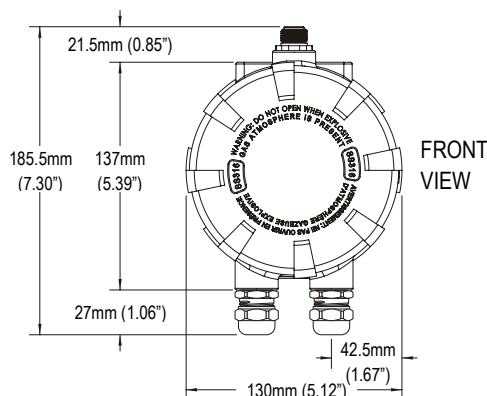


Figure 3. Typical Inclinometer setup for monitoring storage tank floating roofs



Specifications

Functional Specifications

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|-----------------------------|--|
| Internal Sensors | Inclinometer, vibration/accelerometer, electronics temperature |
| External Sensors | Syscor's HCD and HCDW Probes connect directly to the PCU-X11 Inclinometer via 1/2in. NPT ports or can be mounted remotely with cable. If two sensor probes are used, total combined cable length for Intrinsically Safe operation cannot exceed 10m (33ft.). |
| Wireless. | WirelessHART IEC 62591 2.4 GHz DSSS |
| Wireless Data Update Rate | User-selectable; 5 seconds to 1 hour |
| Power Supply (Battery Pack) | Model 902 Battery Pack: 4-cell, 7.2V 38.0Ah 273.6Wh Battery pack is Li-SOCl ₂ , field replaceable, Intrinsically Safe, and has 10+ years of battery life depending on application and update rate. |
| Communication | Maintenance Port for communication with HART field communicator |

Physical Specifications

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| Enclosure | Stainless steel SS316. IP67, Type 4X Optional sensor probes are IP68, Type 4X |
| Antenna Port | N-Type female |
| Sensor Probe Ports | 1/2in. NPT |
| Sensor Wiring Connections | Screw terminals |
| Weight | 3.75kg [8.3lbs.] |
| Mounting Options | <ul style="list-style-type: none"> - Floating Roof Mounting Bracket with magnets (see Fig. 1) - Universal Mounting Bracket with 2" or 5" U-bolt (see Fig. 2) |

Performance Specifications

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|----------------------------|--|
| Inclination | Dual-axis, horizontal operation, $\pm 90^\circ$ High accuracy, 0.1° Digital inclination data, 0.025° resolution |
| Vibration and Acceleration | Ultra-low-power, high performance, three-axis linear accelerometer; Dynamically selectable range from 0g to 16g; Acceleration and velocity detection |
| Electronics Temperature | Integrated circuit sensing elements embedded inside, provide up to $\pm 1^\circ\text{C}$ [1.8°F] |
| Operating Temp. | -40°C to +60°C [-40°F to +140°F] |

Certifications

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| USA | FCC: 2AAZE-000697 Intrinsic Safety: CSA 19CA70174889X Class I, Division 1, Groups C and D, T4 Class I, Zone 0 AEx ia IIB T4 Ga |
| Canada | IC: 11413A-000697 Intrinsic Safety: CSA 19CA70174889X Class I, Division 1, Groups C and D, T4 Ex ia IIB T4 Ga |
| Europe | Intrinsic Safety: SIRA 18ATEX2249X Ex ia IIB T4 Ga CE ₂₈₁₃ |
| IECEx | Intrinsic Safety: IECEx CSA 18.0031X Ex ia IIB T4 Ga |

Learn More

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|--|---|
| HCD Hydrocarbon Detector Probe | syscor.com/downloads/syscor_spec-sheet_hcd-probe_en_80169.pdf |
| HCDW Hydrocarbon Detector Probe with Water Level | syscor.com/downloads/syscor_spec-sheet_hcdw-probe_en_80171.pdf |
| Field Transmitter Battery Packs | syscor.com/downloads/syscor_spec-sheet_field-transmitter-battery-packs_en_80155.pdf |
| Floating Roof Bracket | syscor.com/products/antennas |
| Universal Mounting Bracket | syscor.com/technology/pas |
| Antennas | syscor.com/products/antennas |

