



SENSOR[®]
NETWORKS, INC

Inspection, Testing & Asset-Integrity Solutions



smart
PIMS[®]

Modbus
transmitter

non-intrusive ultrasonic sensors for corrosion/erosion monitoring

Sensor Networks' smartPIMS[®] Modbus non-intrusive ultrasonic corrosion/erosion monitoring system connects directly to a PC or laptop to take isolated measurements, or integrates with your SCADA/DCS system for polling at any user-defined time interval. Data can be readily transmitted to webPIMS[™], a cloud based back-end for analysis and trending, or simply exported to XML or CSV as necessary for reporting purposes. Use smartPIMS[®] Modbus for:

- Infrequent data collection (mid-stream applications).
- Hardwiring to a plant's control system (downstream or offshore).
- Service companies collecting data (refineries).
- Manual data collection (power generation).

monitor corrosion rate

resolution to 0.001" (0.025mm) • high-risk areas • historically problematic locations

monitor "low spots"

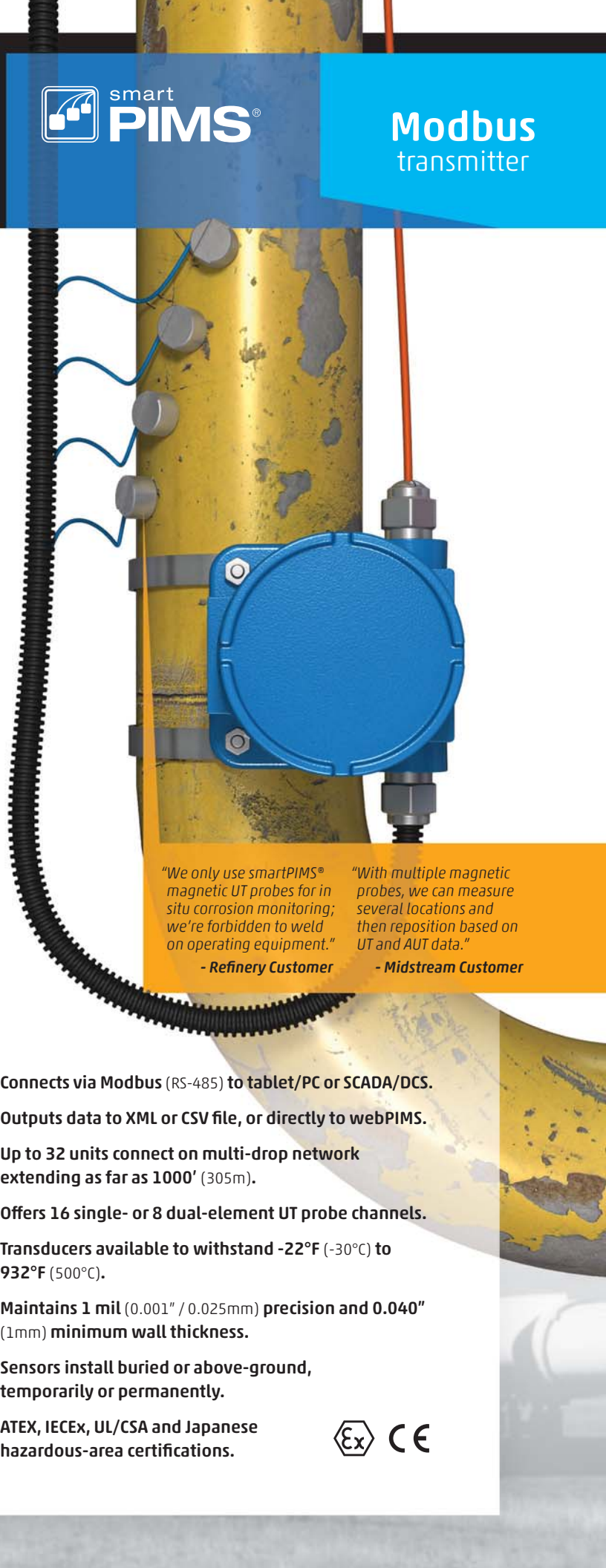
post-NDE screening of pits to monitor remaining thickness • measures down to 0.040" (1.02mm)

replace/augment intrusive methods

validation of coupons, ER probes, etc.

reduce costs

reduce scaffolding and insulation removal/refitting for internal corrosion monitoring • more accurate/reliable data improving operations



"We only use smartPIMS[®] magnetic UT probes for in situ corrosion monitoring; we're forbidden to weld on operating equipment."

- Refinery Customer

"With multiple magnetic probes, we can measure several locations and then reposition based on UT and AUT data."

- Midstream Customer

Connects via Modbus (RS-485) to tablet/PC or SCADA/DCS.

Outputs data to XML or CSV file, or directly to webPIMS.

Up to 32 units connect on multi-drop network extending as far as 1000' (305m).

Offers 16 single- or 8 dual-element UT probe channels.

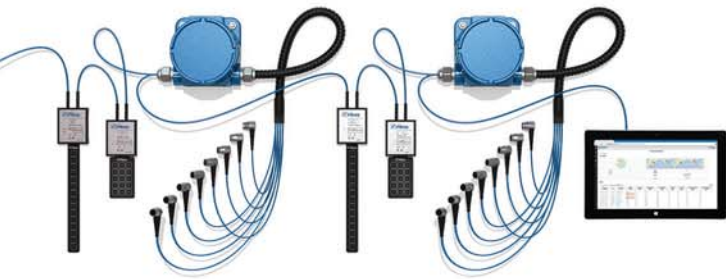
Transducers available to withstand -22°F (-30°C) to 932°F (500°C).

Maintains 1 mil (0.001" / 0.025mm) precision and 0.040" (1mm) minimum wall thickness.

Sensors install buried or above-ground, temporarily or permanently.

ATEX, IECEx, UL/CSA and Japanese hazardous-area certifications.





Multi-drop systems with up to 32 smartPIMS® DSI and/or matPIMS™ connect to control room or directly to laptop/PC.



Buried probes attached to pipe and connected to a smartPIMS® Modbus DSI in an above-ground enclosure.



Multiple smartPIMS® Modbus DSI networked for monitoring dozens of TMLs.

specifications

digital sensor interface

transmitter

model no.	smartPIMS® Modbus
protocol/communication	Modbus / RS-485, 2-wire, max. 1000' (305m)
power	10-24 VDC
UT system	channels 16 ultrasonic, 1 temperature
	pulser voltage ±5V bipolar square wave
	analog frequency 1-10 MHz (-3dB)
	gain -10dB to +70dB
	digitizer frequency 40 Msps
certification	Class I, Div. 2, Groups A-D, T4, Class 1, Zone 2, IIC, T4 <small>Ex</small> II 3G, Ex ec IIC T4 Gc, T _{amb} -20°C to +60°C
enclosure	type instrumentation housing
	material / rating cast aluminum / NEMA 4X, IP66
	temperature range -4°F to +140°F (-20°C to +60°C)
	dimensions 5.44" × 5.63" × 5.13" (138.1 × 142.9 × 130.2mm)
	weight 5.2 lbs. (2.36 kg)
performance	processor . . . Intel i5-4200U 1.6GHz w/ 3MB L3 cache (dual-core)
	memory / storage 8 GB RAM / M2-SATA SSD, 64 GB
	operating system Windows 10
connections	network power, data via RS-485-to-USB adapter
physical	drop/shock resistance MIL-STD-810G
	environmental IP65, 14-131°F (-10 to +55 °C)
	dimensions/weight 11.4" × 7.48" × 0.78" / 2.73 lbs.

tablet datalogger

transducer cable

type	coaxial, 1/4" dia.
maximum length to transducer	standard 10' (3.0m) and 25' (7.6m), custom to 50' (15.2m)

transducers

	single-element contact	dual-element contact	delay-line contact
<i>model</i>	XD-101	XD-301	XD-201
<i>application</i>	general purpose	severe pitting	ultra-high-temp
<i>frequency</i>	5 MHz	5 MHz	7 MHz
<i>active area (dia.)</i>	0.25"/6.35mm	0.375"/10mm	0.375"/10mm
<i>overall (dia. x h)</i>	1.0 × 1.0" 25.4 × 25.4 mm	0.75 × 0.75" 19 × 19 mm	0.8 × 2.25" 20.3 × 57.2 mm
<i># of transducers</i>	1-16	1-8	1-16
<i>resolution</i>	0.001"/0.025mm	0.001"/0.025mm	0.001"/0.025mm
<i>thickness range†</i>	0.200-6.0" 5.1-150.0mm	0.040-6.0" 1.0-150.0mm	0.125-1.0" 3.0-25.0mm
<i>temp range</i>	-22 to +150°F -30 to +65°C	-22 to +300°F -30 to +150°C	-22 to +932°F -30 to +500°C
<i>attachment</i>	magnet/adhesive	magnet/adhesive	mechanical clamp/ gold foil

†minimum resolutions stated as typical values, but will vary with pipe condition

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