



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"

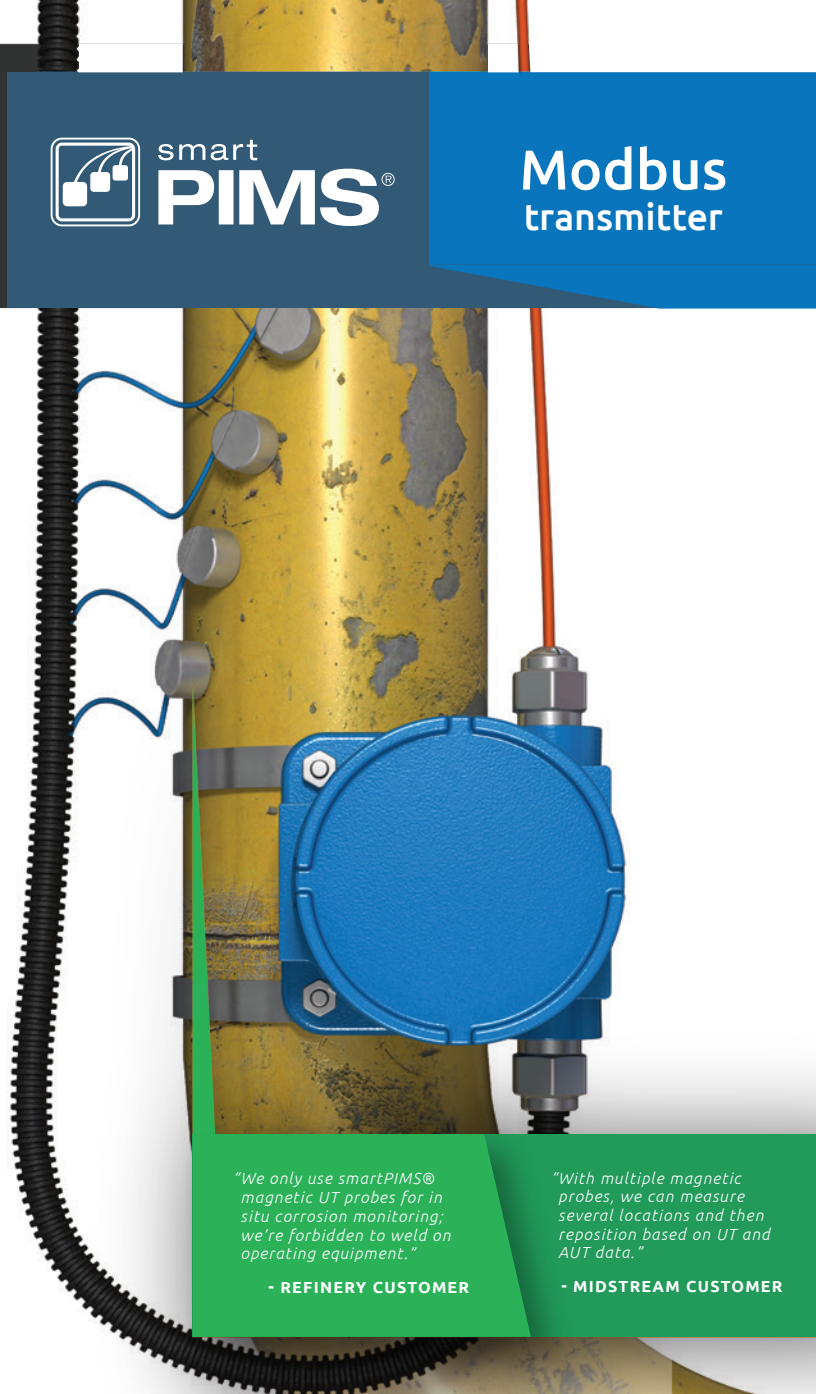
post-NDE screening of pits to monitor remaining thickness • measures down to 0.040" (1.02mm)

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® DSIs 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 DSIs 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 pulsar 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 Ex 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" x 5.63" x 5.13" (138.1 x 142.9 x 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" x 7.48" x 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
model	XD-101	XD-301	XD-201
application	general purpose	severe pitting	ultra-high-temp
frequency	5 MHz	5 MHz	7 MHz
active area (dia.)	0.25"/6.35mm	0.375"/10mm	0.375"/10mm
overall (dia. x h)	1.0 x 1.0" 25.4 x 25.4 mm	0.75 x 0.75" 19 x 19 mm	0.8 x 2.25" 20.3 x 57.2 mm
# of transducers	1–16	1–8	1–16
resolution	0.001"/0.025mm	0.001"/0.025mm	0.001"/0.025mm
thickness range[†]	0.200–6.0" 5.1–150.0mm	0.040–6.0" 1.0–150.0mm	0.125–1.0" 3.0–25.0mm
temp range	-22 to +150°F -30 to +65°C	-22 to +275°F -30 to +132°C	-22 to +932°F -30 to +500°C
attachment	magnet/adhesive	magnet/adhesive	mechanical clamp/ gold foil

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

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0.31" (7.9mm) diameter mounting holes

