



SENSOR[®]
NETWORKS, INC

Inspection, Testing & Asset-Integrity Solutions

micro
PIMS[®]

wireless
sensors

non-intrusive ultrasonic sensors for corrosion/erosion monitoring

microPIMS[®] is a fully wireless, non-intrusive, ultrasonic corrosion/erosion monitoring system. Powered by battery, it operates using long range (900 MHz) wireless connectivity. Each microPIMS sensor is programmed to take readings at any user-defined time interval and send data to webPIMS™, a cloud-based back-end web portal for analysis, trending and more. Use microPIMS[®] for:

- Applications where frequent data is required to resolve corrosion/erosion rate issues.
- When short- or long-term corrosion rate data is needed for crude-slate changes or to map operational excursions.
- When quick and easy installations are required.
- Easy repositioning—no welding required.
- Areas not conducive to manual data collection.
- Covering many discrete points with simple attachment.

monitor corrosion rate

accurate 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

5-year battery life at 1 reading/week (Energizer/Duracell CR123 battery).

Operates using LoRa-based 900 MHz band digital radio frequency.

Two models: dual-element (up to 300°F/150°C) and **high-temp single-element** (up to 932°F/500°C).

Built-in thermocouple for surface temperature readings and temperature compensation.

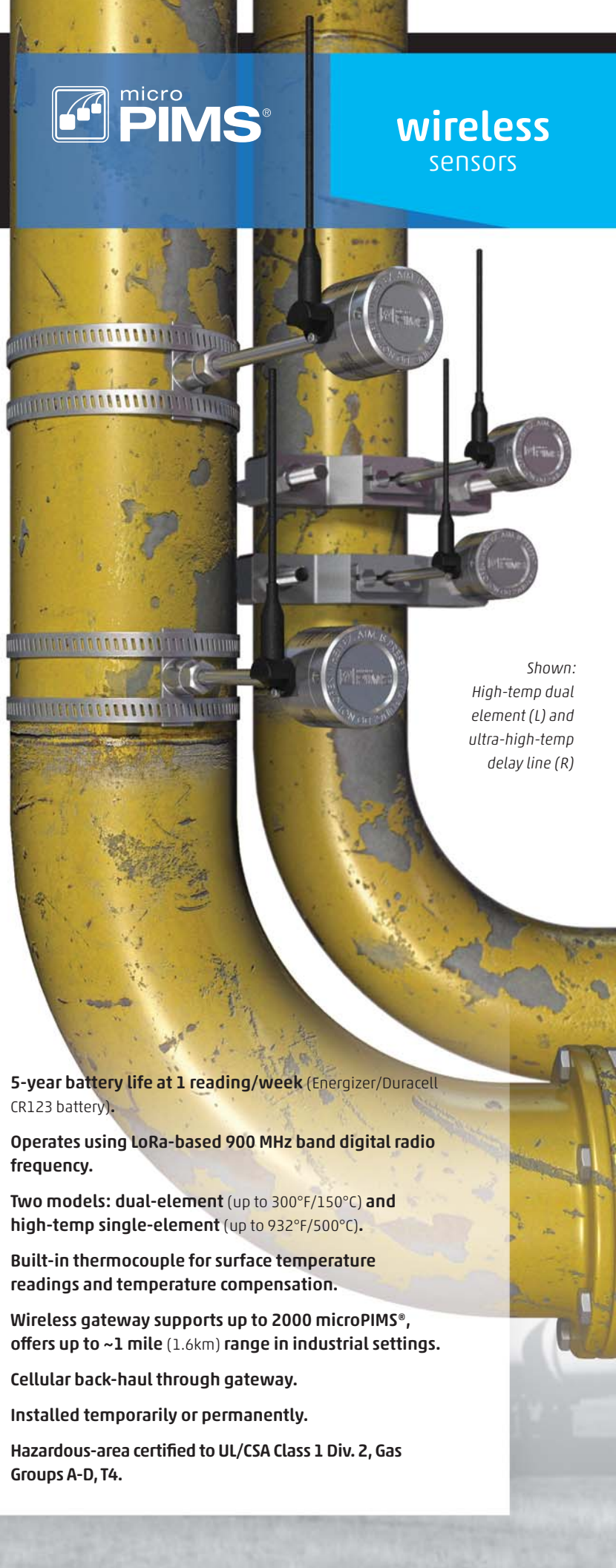
Wireless gateway supports up to 2000 microPIMS[®], offers up to ~1 mile (1.6km) range in industrial settings.

Cellular back-haul through gateway.

Installed temporarily or permanently.

Hazardous-area certified to UL/CSA Class 1 Div. 2, Gas Groups A-D, T4.

Shown:
High-temp dual
element (L) and
ultra-high-temp
delay line (R)



measure it
manage it



High-temp dual-element unit installed under insulation.



High-temp dual-element unit installed using bands.



Ultra-high-temp unit installed using pipe clamp.



webPIMS™ cloud-based data portal offers all available information including corrosion rate and temperature-corrected thickness data.



microPIMS® complete kit—including sensors, gateway and software—is only available with a subscription-based cellular/cloud solution.



Cross-sectional view of high-temp dual-element microPIMS® sensor.

specifications

| | high-temp | ultra-high-temp |
|------------------------------|--|----------------------|
| elements | dual | single (delay line) |
| frequency | 5 MHz | 7 MHz |
| measurement range | 0.040-6" (1-150mm) | 0.125-1" (3-25mm) |
| temperature | up to 300°F (150°C) | up to 932°F (500°C) |
| weight | 12.2 oz. (345g) | 17.6 oz. (490g) |
| size (height × housing dia.) | 13½×2.0" (343×50.4mm) | 22×2.0" (560×50.4mm) |
| hazardous location rating | Class I, Div 2, gas groups A-D, T4; IP65 rated | |
| element diameter | 0.375" (10mm) | |
| resolution | 0.001" (0.025mm) | |
| battery life (typical) | 5 yr. @ 1 reading/week; 3.5 yr. @ 1 reading/day at 68°F (20°C) | |
| construction | 303 stainless steel | |
| mounting | mechanical strap; clamp for ultra-high-temp | |
| data | digital thickness, RF waveform, temperature, time/date stamp | |
| data access | cloud-based via webPIMS™ portal | |
| local network | LoRa-based wireless STAR network (node to gateway) | |
| connectivity | gateway to cloud: cellular | |
| node count | thousands of microPIMS units per gateway | |
| gateway* | outdoor; cast alum.; 11×8×4.5" (280×204×115mm); 6.0lb (2.7kg) | |

* without antennas

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