

# AX2HPH – NON-INTRUSIVE

## High Temperature Non-Intrusive Monitoring

Rated up to 550°C / 1,022°F



### High temperature wall thickness monitoring solutions

Axess offers high temperature, non-intrusive wall thickness solutions for in-service corrosion and erosion monitoring. The system comprises of high temperature, ultrasonic transducers, permanently mounted to process pipework, vessels and other structures coupled with a range of instrumentation options from spot reading, through to online, real-time wireless monitoring using industry standard WirelessHART protocol.

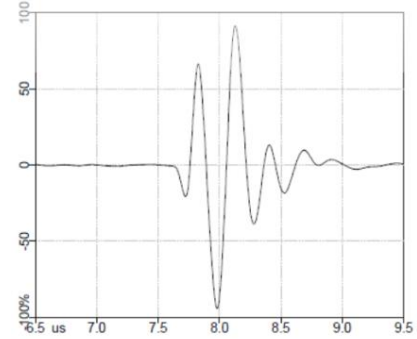
### Transducers

Permanent installation can be completed in minutes, under normal plant operating conditions on pipework up to 550°C / 1,022°F surface temperature using the purpose-built clamping system. Dry coupling can withstand aggressive thermal cycling reducing maintenance requirements and transducers can be calibrated online using the integrated delay line. The transducers have a center frequency of 3.25MHz and are compatible with 2.25MHz and 5MHz flaw detector / UT hardware.

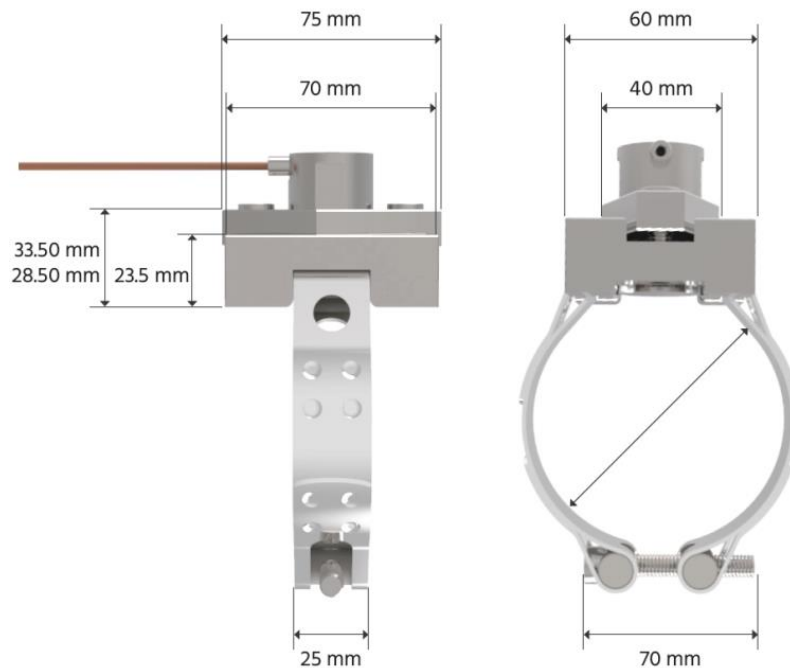
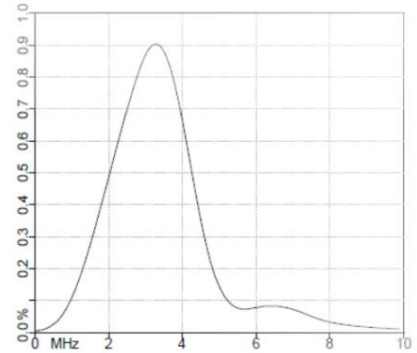




Standard Transducer Specification	
Operating temperature	-55°C to +380°C (550°C on request)
Delay line material	304 SS - passivated
Delay line length	25mm (up to 75mm on request)
Delay line form	Cylindrical, 10mm spot contact
Ruggedization	Certified to IP66 and IP68 Stainless steel construction
Standard cable length	300mm MIMS + 1m RG316
Connector type	00 Lemo receptacle as standard
Active element diameter	10mm
Transducer center frequency	3.25MHz
Instrument compatibility	2.25MHz & 5MHz flaw detectors / UT hardware
-6dB bandwidth	80%
Signal to noise ratio	>20 dB

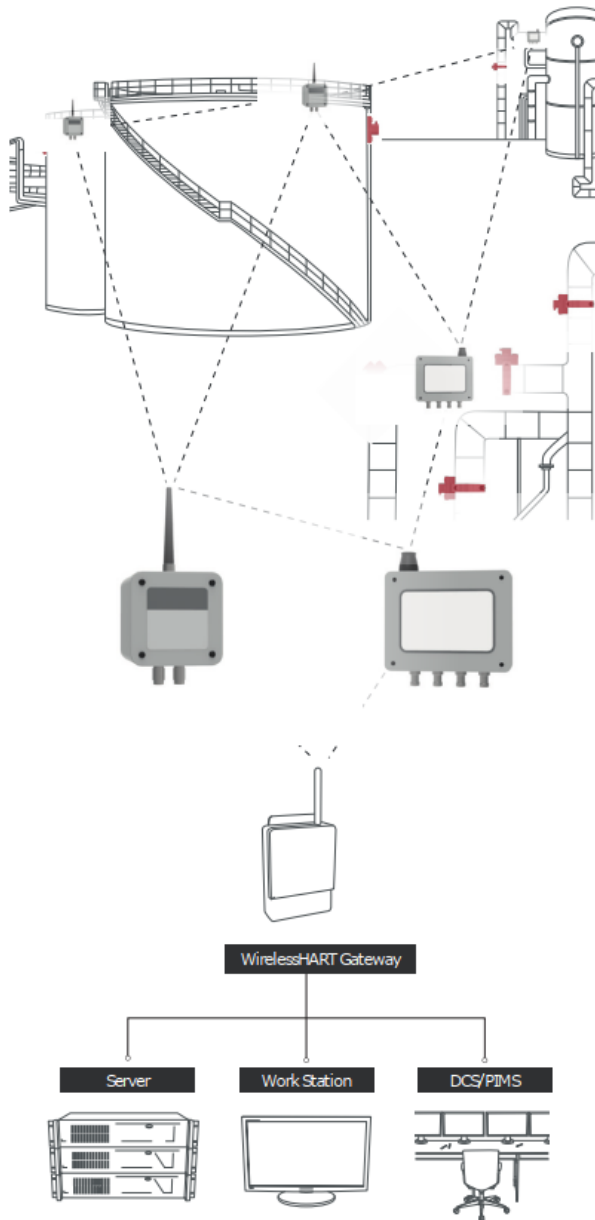


Standard Deployment Specification	
Material mounts/clamps	316SS passivated
Standard pipe clamp sizes	NPS 2" to 16" (other sizes by request)
Standard studs for vessels	M8 x (40-60mm)
Standard stud spacing	52.5 +/- 5mm (other sizes by request)
Stud torque resistance	> 20 Nm
Total mass (transducer and deployment)	1.0 - 1.4kg (dependent on deployment method)





## Online Wireless Non-Intrusive Monitoring



### Flexibility

- **Temp range** of -55°C to +550°F (-67°C to +1,022°F)
- **Reduced Maintenance** - multiple transducers per measurement node
- **Improved Network Stability** – remote instrument node positioning provides easier access for battery change and strongest wireless signal
- **Intrinsically Safe** – use across all plant areas

### Automated

- **Online Automated Data** – wall thickness, temperature, and corrosion rate
- **Security** – Advanced data management software on local server or data direct to site DCS and PIMS means data never leaves customer site
- **Configurable Alarms** – Robust and reliable measurements for determination of wall loss rates and absolute thickness
- **Inhouse Data Access** Make data available to both maintenance and operations teams to better optimise plant productivity
- **Built-in Calibration** – Measurements may be validated using built in transducer calibration block

### Wireless

- WirelessHART certified for easy wireless integration
- Remote measurement configuration and maintenance
- Battery life is transmitted allowing proactive maintenance and data collection



Standard System Specification	
<b>Measurement</b>	
Temperature Range	-55°C to +550°C (-67°F to +1,022°F)
Resolution	0.010mm (0.4mil)* to 0.025mm (1mil)
Thickness Range	See Transducer Table
<b>System</b>	
Channels per node	1*-4
Thermocouples	Integrated into transducer or standalone
Certification	IS/Class I, Division 1, Groups A/B/C/D; Ex ia IIC T4 for -55°C ≤ Ta ≤ +55°C; Ex ib IIC T4 Gb (Ta = -40°C to + 70°C)
Rating	IP65*/IP66
Battery type	Lithium D
Battery life	4-5 years
<b>Wireless</b>	
Communication protocol	WirelessHART (IEC 62591)
Security	128-bit AES encryption
Max units per gateway	100
Max total number to devices	30,000
Data collection frequency	1 hour +
<b>Software</b>	
Data output	Thickness, Wall loss rate (short & long), temperature, battery, A-scan
Export	Whole database or subset (.csv)
Data storage and access	Local server, DCS, PIMS etc.
Protocol	Ethernet/IP, Modbus RTU/TCP, OCP
Diagnostics	Remote diagnostics of transducer, node, network and measurement
Calibration	At install and manual online
Battery remaining life	As a function of usage or voltage

Standard Transducer Specification			
	Single Element	Bonded Single Element*	Dual Element
Frequency	3MHz	3MHz	5MHz
Application	All	Low temperature vessels	Low temperature, thin walled
Thickness range	>2.5mm (>0.1")	>2.5mm (>0.1")	>1mm (>0.04")
Continuous temperature range	-55°C to +380°C 550°C by request	-40°C to +200°C	-55°C to +150°C
Deployment options	Straps, Welded studs	Epoxy	Straps + epoxy
Cable length	0.325m high temp + 2m flexible	1.5m standard (3 or 6m by request)	2m