Honeywell
THE POWER OF CONNECTED | Connected Industrial

HONEYWELL: ULTRASONIC METERING SOLUTIONS

Made to Measure

A portfolio of natural gas metering systems and services tailored to the demanding needs of the midstream.

Saving Your Operation

- ***Up to $1 million a year*** *by eliminating a 0.5% undetected error in gas measurement*[1]
- ***$112,320 a year*** *with reduced uncertainty of 0.08 with Honeywell's market-leading USMs*[2]
- ***$50,000*** *by extending recalibration intervals from one to two years*
- ***75% lower Opex per meter*** *from fewer failures, unplanned shutdowns and field servicing*
- ***45% Capex savings*** *from installation costs, smaller footprints and single-body verification*

Honeywell ultrasonic metering solutions minimize uncertainty, maximize reliability and boost efficiency to meet the challenges of a tough business environment. We provide the accuracy and insight you need to deal with low prices, volatility, a broad hydrocarbon mix, and increasing numbers of pipelines, some with contaminated natural gas.

With better solutions for custody transfer and verification, we help gas transmission companies, underground gas storage businesses and the LNG industry run more profitable operations:

- Eliminating the costs of undetected measurement errors
- Reducing downtime
- Lowering maintenance costs

With the world's best ultrasonic meters (USMs) and software you can reduce product that's lost and unaccounted for, reduce recalibrations, implement condition-based maintenance, and diagnose problems sooner to avoid costly repairs.

A Versatile Portfolio

Honeywell ultrasonic meters offer market-leading solutions for every measurement need. Helping you achieve the perfect balance of performance and efficiency, our range of options and supporting technology give you the certainty your operation requires.

Q.Sonic^{max}: The new benchmark in accuracy for custody transfer

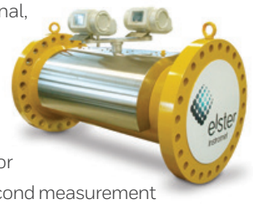
The world's first eight-path meter combining both reflective and direct measurements delivers the lowest possible uncertainty in the most demanding operations. Where accuracy is vital, Q.Sonic^{max} delivers industry-leading performance.

Q.Sonic^{plus}: The multipath custody transfer standard

A patented path configuration enables measurement of both swirl and asymmetry to deliver excellent profile recognition and diagnostic possibilities. Users can choose to include internal pressure and temperature measurement, too.

TwinSonic^{plus}: Two independent measurements in a single device

One meter body houses a meter for custody transfer with an additional, totally independent measurement to check the primary reading. It's a smaller, more efficient answer for applications where a second measurement is vital for on-going monitoring and verification.



Meascon™ Software for measurement control

Providing 24/7 condition-based monitoring of the measurement systems, Meascon delivers a diagnostic dashboard for real-time visibility and control of all your gas metering stations.

Superior Technology for Unrivaled Accuracy

Designed in the lab to perform in the realities of the field, our meters use patented six- or eight-path configurations for detailed flow profile recognition, superb noise immunity, and unrivaled pressure and gas velocity abilities.

Manifolds, elbows, reducers, short inlets and other elements all have a significant effect on the profile of the gas flow. Our unique path layouts accurately detect swirl and asymmetry and ensure you get the certainty you need with the pipework you have.

Fiscal measurements are fully compliant with ISO17089-1, AGA9 and OIML R137-, with accuracy class 0.5 for the flagship Q.Sonic^{max} even in conditions of severe disturbance.

Reliability to Count On

Reflective paths and advanced diagnostics help detect liquid formation or build-up on the pipe walls quicker.

Only possible with reflective paths, pipe wall condition monitoring prevents inaccurate readings. Reducing uncertainty by as much as 0.05% against other ultrasonic meters, our meters could save you more than $70,000 a year.[2]

A Connected Portfolio

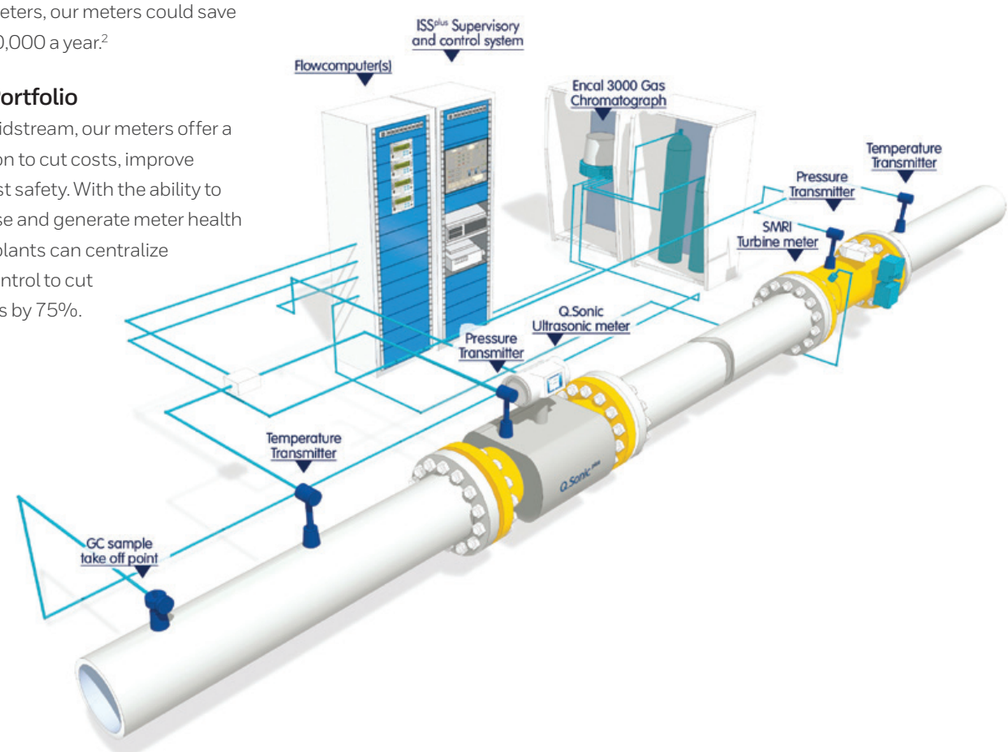
Connecting the midstream, our meters offer a network connection to cut costs, improve reliability and boost safety. With the ability to configure, diagnose and generate meter health reports remotely, plants can centralize monitoring and control to cut maintenance costs by 75%.

Connect you meters to our Meascon software, meanwhile, and you can benefit from continuous 24/7 monitoring, extending periods between calibrations and eliminating unnecessary maintenance.

Built to Last

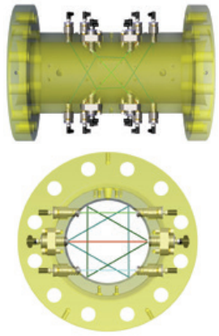
Honeywell meters offer enhanced corrosion resistance using high-grade, fully encapsulated, intrinsically safe titanium transducers. When it's needed, though, you can quickly clean or replace them without shutting down or depressurizing the system.

No moving parts to wear out or require lubrication and no pressure drop to add to compressors' loads, Honeywell ultrasonic meters offer years of trouble-free, cost-effective operation.



The Best of Both Worlds: The Q.Sonic^{max}

With a unique configuration combining reflective and direct paths, Honeywell's flagship meter delivers unbeatable performance in ultrasonic measurement.



Path Configuration
Three pairs of direct cross X paths in the same plane and two swirl (double reflection) paths result in sophisticated acoustic imaging and interrogation of the gas stream.

The Q.Sonic^{max} is uncompromising on uncertainty. Eight paths provide OIML accuracy class 0.5 even in cases of severe disturbance for the highest possible certainty in every situation.

The meter uses two swirls paths (double refection) for linearity and stability, together with six direct paths for enhanced robustness. With the best flow profile recognition available, it has superb noise immunity and insensitivity to installation effects. A 5D inlet also means a reduced footprint. It's the best answer for custody transfer in high CO_2 applications, where there is high valve noise or other challenging applications where accuracy is vital.

As well as providing excellent swirl and asymmetry measurement, the meter's reflective paths enable pipe wall condition monitoring for improved reliability. It also offers internal pressure and temperature sensors for more accurate Reynolds number calculations and dynamic body correction, giving you additional measurement confidence.

Repeatable, accurate and reliable even when process conditions vary from calibrated conditions, the Q.Sonic^{max} is field-proven and globally certified.

Simple, Powerful, Connected

Easy to maintain and offering intuitive operation, the Q.Sonic^{max} features extended diagnostics and a simulator for training. Easy connectivity with a range of traditional and modern communications options, meanwhile, lets users easily transmit and share data across the business. A VDSL range extender option provides high-speed communication (TCP/IP) over a distance of 4km.

For peace of mind, data is encrypted under a real-time operating system (RTOS) philosophy pioneered by Green Hills Software to provide one of the most reliable operating platforms in the world and the highest possible security level.

Features

The Q.Sonic^{max} offers unmatched performance:

- 8-path, reflective and direct technology
- Flow profile detection with swirl and asymmetry measurement
- Internal temperature sensor
- All-metal-encapsulated intrinsically safe transducers
- No moving parts
- No pressure drop
- Bi-directional measurement
- OIML R137-1 2012 accuracy class 0.5
- ISO 17089-1:2010
- MID approved
- AGA 9 compliant

SonicExplorer

With the SonicExplorer PC-based software, users can configure, diagnose and monitor meters locally or remotely. With health monitoring from office, you can reduce field service trips and visits to hazardous areas, boosting efficiency and safety.

The intuitive software enables users to analyze real-time and historical meter health and performance data, as well as conduct off-line data analysis. With SonicExplorer you can also quickly capture and share a complete log of all diagnostic, configuration and spectral noise analysis data.

A Custody Transfer Standard: The Q.Sonic^{plus}

A robust, reliable multi-path favorite in ultrasonic metering.

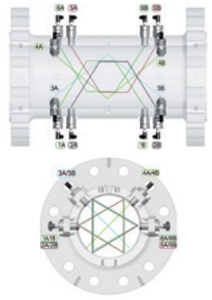
With many of the features of our flagship, the Q.Sonic^{plus} features six reflective paths in a patented configuration to deliver practical performance in the field. Measuring swirl and asymmetry, it delivers excellent profile recognition and diagnostic possibilities, as well as an option to include internal pressure and temperature measurements.

Providing cost-effective fiscal metering, the Q.Sonic^{plus} eliminates the need for extensive commissioning, installation and health checks, with intelligent health diagnostics. Using reflective paths, it also facilitates fast detection of liquids and dirt in the pipeline.

Like the Q.Sonic^{max} all electronics are located in a flame-proof housing with a separate connection compartment for field wiring. A modular hardware design with a free slot means the device is also ready to tackle your future requirements.

Features

- 6-path reflective technology
- Flow profile detection with swirl and asymmetry measurement
- Internal temperature sensor
- All-metal-encapsulated intrinsically safe transducers
- No moving parts
- No pressure drop
- Bi-directional measurement
- SonicExplorer PC software for configuration, diagnostics and health monitoring
- OIML R137-1
- AGA 9 compliant
- MID approved.



Path Configuration
Two pairs of double and two single refection paths provide a symmetrically weighted measurement. The subtraction of the paired paths provides an indication of asymmetric flow along the mirror plane of the paths as an additional diagnostic feature.

The First Choice for a Second Opinion: The TwinSonic^{plus}

Two independent measurements; a single solution.

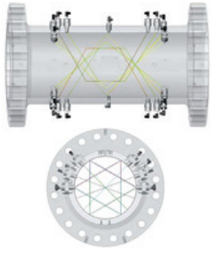
The TwinSonic^{plus} is a two-in-one redundant multi-path ultrasonic gas meter for custody transfer measurement. It brings all the benefits of the Q.Sonic^{plus} together with an independent measurement for verification and monitoring in the same meter housing.

Providing automatic verification and redundancy for the primary measurement without installing two separate meters, it delivers trusted performance while slashing capex and opex cost. Completely independent, each measurement has its own series 6 signal processing unit with color graphic touch-screen display.

Even more than the sum of its parts, the TwinSonic^{plus} delivers unmatched process visibility, accuracy and reliability for custody transfer applications.

Features

- Two totally independent flow meters in one meter body providing fiscal measurement with verification.
- Flow profile detection with swirl and asymmetry measurement
- Internal temperature sensor
- All-metal-encapsulated intrinsically safe transducers
- No moving parts
- No pressure drop
- Bi-directional measurement
- SonicExplorer PC software for conguration, diagnostics and health monitoring
- OIML R137-1
- AGA 9 compliant
- MID approved.



Path Configuration
The primary measurement uses the same two pairs of double and two single reflection paths of the Q.Sonic^{plus} Two separate single reflection paths, meanwhile, provide the verification measurement.

Meascon: Measurement Under Control

Continuous monitoring for your ultrasonic meters.

Meascon helps you implement condition-based monitoring with real-time, round-the-clock visibility of your ultrasonic meters. Eliminating unnecessary maintenance and increasing periods between calibrations, it cuts costs without compromising confidence in meter readings.

A diagnostic dashboard gives users an at-a-glance overview of all gas metering stations, with warning levels and alarms powered by advanced diagnostics. Eliminating the inefficiency of calendar or risk-based maintenance programs, it lets plants schedule maintenance as and when required. Detailed data analysis informs better decisions. Comprehensive data tracking supports third-party audits and metrological approvals.

Easy to use and capturing detailed data, Meascon cuts costs even as it increases reliability to reduce lost and unaccounted for gas from faulty measurements. Powerful condition-based monitoring rapidly detects any significant changes in either the flow meter itself or the process and environment.

Connecting Your Meter Data for Sharing and Support

A connected solution, users can easily and securely share data with others across the enterprise or outside. Meascon can also seamlessly integrate with preventative maintenance schedules to accelerate diagnosis of issues and reduce service engineer site visits.

As Honeywell's condition-based monitoring system, Meascon fully integrates with not just ultrasonic meters but other high-pressure products, too, including flow computers and gas chromatographs. It helps you take full control of your measurements and drive performance to the next level.

Users of Meascon choose from a range of service levels, including Total Care, with cloud connectivity to outsource the entire meter monitoring operation to Honeywell.

Features:

- Real-time, 24/7 condition-based monitoring
- Extends periods between calibration
- Detects and diagnose meter or process issues quicker
- Fewer service engineer site visits
- Meter audit trails for third parties and metrology approvals
- Total Care service for remote round-the-clock meter monitoring and reports.

A Broader Portfolio

A one-stop shop for all your measurement and metering needs.

As well as our ultrasonic meters, Honeywell offers industry-leading solutions for the entire metering system. Our flow computers, gas chromatographs, pressure and temperature transmitters give you advanced features and reliable performance to build the metering operation you need.

enCore FC1:
A high performance flow computer

For gas or liquid measurement, the enCore FC1 offers multi-stream functionality, a modular design and advanced logging properties with a wide range of security and communication features. Calculations are done according to AGA, ISO, API, and GPA.

A modular software system consists of independent application function blocks that turns the FC1 into a reliable, secure and high performance flow computer; modular hardware means the widest range of possible applications. Two different housing sizes accommodate I/O boards with no space wasted, while Ex-barriers integrated into input boards mean even small stations can benefit from a high-end flow computer.

Elster EnCal 3000:
High performance analysis as you need it

The state-of-the-art Honeywell Elster EnCal 3000 gas chromatograph is specially designed for natural gas energy measurements. Offering highly repeatable (< 0.005 %) and accurate analysis, it works fast, with C6+ results within 3 minutes; C9+ within 5 minutes.

Suitable for the outdoors close to the sample point with no need for a temperature-controlled environment, the EnCal is efficient to run. A modular design simplifies servicing and reduces downtime. Configuration can be carried out using the RGC 3000 software package, with no need for a separate control unit to operate it or change parameters.

SmartLine® Transmitters:
Highly accurate pressure and temperature transmitters for high end custody transfer applications.

With MID approvals and a host of features such as advanced diagnostics, tamper alerts, linear and predictable stability, SmartLine transmitters make sure you get reliable, accurate measurements every time.

Easy to use and easy to maintain, SmartLine comes with an intuitive interface, smart messaging and a modular design to reduce downtime and eliminate errors. Market-leading stability and response times, meanwhile, help you tighten control and improve performance.

ISS^{plus}:
A complete solution for gas and liquid metering

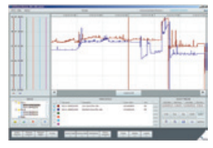
For stations with a single stream or up to 100 streams, high-pressure calibration facilities and remote metering applications, Honeywell's ISS^{plus} software provides secure automated control and monitoring.

Users benefit from redundant system configurations, an intuitive HMI and flexible reporting and billing functions. ISS^{plus} also fully integrates with Honeywell's Meascon to incorporate industry-leading condition-based monitoring.

enCore FC1

Elster EnCal 3000

SmartLine Transmitters



ISS^{plus} Supervisory Software

Getting the Most from Your Investments with Honeywell Services

With over 160 service engineers and 30 service centers across the world, Honeywell has global expertise in every location.

Our Total Care Field Services give you peace of mind by addressing the key threats to your facility's safety, reliability and efficiency. We'll help you reduce the risk of failures, cut recovery times, and eliminate skills and knowledge gaps to ensure a reliable, profitable operation.

We ensure you get the best return on your investments in metering through a range of high quality services:

- Site surveys before projects begin, including an inventory of existing equipment, recommended instrumentation, and an evaluation of internal obstructions
- Configuration, programming and calibration support to help set up your Honeywell equipment quickly and accurately
- Product and system integration to ensure your solutions work seamlessly with your other products and systems
- Commissioning to give you peace of mind that the installation is done correctly, with a final inspectional to mitigate the risk of any potential problems.

Why Honeywell?

With Honeywell ultrasonic metering you're choosing technology that's field proven in demanding fiscal applications since 1985. You're also partnering with a Fortune 77 company, bringing a global reach and a local network of support across the world.

Through Elster and our other business lines, Honeywell has one of the most extensive installed revenue measurement bases in the world, with more than 200 million metering devices deployed in more than 130 countries.

We combine leading technology with practical, high quality services, including access to local inventory and spare parts, quick lead times, and fast, expert support.

[1]All savings assume based on a daily throughput of 100 MMSCFD at $3.90 MCF

[2]Based on a daily throughput of 100 MMSCFD at $3.90 MCF

For more information

To learn more about Honeywell's Ultrasonic Metering Solutions visit www.honeywellprocess.com or contact your Honeywell account manager.

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