Foxboro® Field Devices for

Food and Beverage Process Measurement

The ultimate in quality, reliability, accuracy, and safety

www.fielddevices.foxboro.com

Life Is On

Foxboro
by Schneider Electric

Reliable, precision process control for the food and beverage industry

Today's food and beverage industry faces demands far more stringent than in previous times. Consumers expect product quality to be absolutely consistent from use to use. Regulators are setting ever more exacting standards for safety, process measurement, and traceability. Competitive pressures ask producers to continually search for ways to keep costs down, while maintaining impeccable quality and developing new products that keep them at the forefront of their category.

From the moment raw materials arrive at a production facility, the job of maintaining ingredient purity and product consistency falls to a series of measurement devices. These devices must precisely monitor and control the process under extreme temperatures and pressures, flowing into and out of supply lines that must be kept absolutely free of any possible contaminants.

Foxboro by Schneider Electric world-class measurement devices for the food and beverage industry are made from materials selected for their robust ability to withstand demanding production extremes. Additionally, they feature interior surfaces and fittings polished to impeccable smoothness to resist the adhesion of microbes and other potential contaminants.

From precision measurement of fiscal metering to flow control through processing pipe lines to monitoring Clean-in-Place (CIP) systems, Foxboro field devices offer unsurpassed accuracy, long-term stability, and field-proven robustness in the toughest applications—including batching, blending, mixing, water treatment, rinsing, washing, cooling, heating, fermenting, etc.

For decades, the Foxboro brand has driven innovation in measurement technologies, including development of the first d/p cell, the dual-phase Digital Coriolis Mass Flowmeter, the DolpHin™ pH Sensor, and the Magnetic Flowmeter.

Our complete line of robust, field-proven instrumentation provides measurement solutions for temperature, pressure, flow rate, process analysis, level, and data acquisition. In addition, our line of valve positioners offers the highest accuracy of any in the industry.

From beginning to end, Foxboro food and beverage instrumentation provides the ultimate in quality, reliability, accuracy, and safety.

Flow Measurement

Foxboro offers an extensive variety of flowmeters with hygienic design for the food and beverage industry. Based on Vortex, Coriolis or Magnetic technology, the Foxboro flowmeters provide the highest accuracy and the ability to meet the needs of a wide range of applications.

4700S Series Sanitary Flowtube

84 Series Sanitary Version 84S

Magnetic Flowmeters

Foxboro flowmeters are available in a variety of configurations to meet application needs. These configurations include the 4700S Series Sanitary Flowtube paired with Model 47 or Model 48 Flow Transmitter. Or the 8000 Series Sanitary Flowtube together with Model IMT25 Flow Transmitter. In either case, you can count on:

- Hygienic designs, 3-A-certified for food and beverage
- Vacuum-resistant, reinforced liners
- PFA liner and ceramic liner for higher temperatures or abrasive fluids
- Platinum or Hastelloy electrodes available to prevent corrosion
- Proven seal design to withstand severe temperature cycling

Vortex Flowmeter

Foxboro's 84 Series Intelligent Vortex Flowmeters are proven to be the best choice for meeting many of the accuracy, dependability, and cost challenges your process can present. Forget about specifying different models for liquid, gas, and steam measurements. With the Foxboro Vortex Flowmeter, a single sensor design handles the majority of your measurement needs.

84 Series Sanitary Version 84S

- 316L stainless-steel, hygienic construction for sanitary applications
- The only 3-A-certified Vortex on the market
- Wide range of pressure and temperature, ideal for Clean-in-Place/Sterilize-in-Place (CIP/SIP) skid application
- Most economical, maintenance-free solution for flow measurement
- Adaptable to any application thanks to a wide variety of sanitary end-connections

CFT51 Flow Transmitter with CFS Series Flowtube

Coriolis Flowmeter

Foxboro brand Coriolis Flowmeters are the most advanced in the industry and come in a variety of configurations to match specific application needs. The CFT51, for example, is the first Coriolis meter capable of maintaining accurate flow measurement until a fluid tank is completely empty, cutting product loss due to shrink by up to 10%.

CFT51 Flow Transmitter with CFS Series Flowtube

The CFT51 is also the only Coriolis to offer multi-phase performance, overcoming problems measuring fluids with entrained air bubbles, empty tube conditions, or flash-prone fluids.

- NTEP-certified for fiscal metering
- Fastest response time, ideal for fast batching and filling
- Dual-phase performance, eliminating loss due to end-of-batch waste or “shrink”
- Start and finish empty tube conditions for tank loading and unloading
- Accurate density measurement with direct output in %Concentration, °Brix or °Baumé
- Guaranteed positive cleaning due to serial path designs and self-draining, orientation-positive cleaning
- Hygienic construction suitable for SIP or CIP, 3-A-certified

Milk Industry Custody Transfer

“We now have reliable, indisputable measurement of product received, which has resulted in substantial savings. The Foxboro system paid for itself within 60 days.”

Beverage Industry Tank Emptying

“The Foxboro system has eliminated the waste and product loss we were experiencing due to ‘shrink’ during tank emptying.”

Fast-Batching in Portable Filling Machines Sector

“It’s easy to adjust target weight. The flow rate has a great turndown, and it can handle very fast fills. This technology has huge potential, and we are looking forward to taking it out to our customers.”

Analytical Instruments

The Foxboro family of analyzers, sensors, and accessories is suitable for online, continuous measurement of pH, ORP, conductivity, resistivity, and dissolved oxygen in a wide variety of industrial processes. Foxboro supplies robust, accurate, high-quality liquid analytical instrumentation to the food and beverage industry.

PH12 Sensors

PH10 Smart pH Sensor

Foxboro Analytical Devices are Renowned for:

- Longest life in harsh industrial processes
- Breadth of sensor technology for most process applications
- Sensor design plus complete mounting accessories for fast, easy installation

PH12 Sensors

The Foxboro brand PH12 Series is a family of rugged, cost-effective pH and ORP sensors in the widely used 12 mm form factor. They provide fast response, long life, high accuracy and stability.

They are biocompatible, 3-A Sanitary Compliant and certified for use in food, beverage, dairy, and biopharmaceutical processes that require strict compliance with applicable standards.

- Durable PEEK body for excellent strength, chemical resistance, longer service life and better resistance to the rigors of maintenance
- Best-performing flat-membrane electrode with high-temperature capability up to 125°C (257°F)
- Rugged construction to extend service life in the harshest of applications
- Nonmetallic wetted parts so sensor is immune to attack from most process fluids, greatly extending the service life

PH10 Smart pH Sensor

The new Foxboro PH10 Smart pH Sensor has internal digital electronics and carries sensor ID, calibration parameters, and diagnostic history in its nonvolatile memory. It is a rugged-process pH sensor with a wide selection of measuring electrodes and a reference design that resists fouling. It contains no metallic wetted parts, is easy to install and remove from a process, and has consistently outlasted competitive pH sensors in a broad range of difficult applications. In addition to lowering overall cost of ownership compared to other smart pH sensors, the PH10 sensor:

- Can be calibrated with a PC using optional USB interface
- Offers easier, faster, and more reliable calibration that can be accomplished in an instrument-shop environment
- Stores parameters such as glass resistance, reference resistance, date of manufacture, serial number, sales order number, and history logs to help manage the deployment and performance of the pH sensor
- Has a Nafion ion barrier to protect reference junction; nonmetallic wetted parts, including conductive Kynar solution ground
- Enables tri-clamp mounting fitting for quick-disconnect installations

871FT Flow-Through Conductivity Sensor

871FT Flow-Through Conductivity Sensor

The Foxboro 871FT Noninvasive Sanitary Flow-Through Sensor is an in-line sensor that measures the conductivity of virtually any conductive liquid. It provides a unique conductivity measurement for numerous food and beverage applications, as well as monitoring and control of beverage products and their associated CIP requirements.

The 871FT can be calibrated in place. The process line does not have to be opened. It precludes revalidation of the process and greatly saves time in checking and calibration. Other benefits of the 871FT include:

- 3-A-compliant per Sanitary Standard 74 and certified by EHEDG
- Patented shirt-pocket calibration tool to aid streamlining the checking/calibration
- Direct, in-line installation with no minimum pipe size requirement often required by insertion-style sensors
- No metal-to-plastic joints as with insertion-style sensors, joints that can become failure points due to different coefficients of thermal expansion

875 Analyzers and 876 Transmitters

875 Analyzers and 876 Transmitters

These instruments are available for pH, ORP, conductivity, and resistivity measurements. They can be configured either locally or with configuration tools such as HART® Device Type Managers (DTMs). Additional features include:

- Easy-to-use human interfaces
- Analog outputs and digital communications
- Logbooks for recording events
- Diagnostics for both sensors and electronics

Pressure and Temperature Measurement

Critical to all food and beverage instrumentation is the ability to quickly decouple measurement devices from the process for cleaning and sanitization. That's why, in addition to world-class accuracy and reliability, Foxboro's extensive line of pressure and temperature measurement devices all include quick-disconnect options.

IGP10 Sanitary Pressure Transmtter

RTT80 Temperature Transmitter

Pressure and Temperature Measurement Applications Include:

- Fermentation vessel pressure
- HTST pasteurization pressure
- CIP source center discharge pressure
- Balance tank level measurement
- Milk silo level measurement

Foxboro can provide tank level measurement in nonpressurized tanks for simple pressure measurements where a crevice-free, 3-A-approved sanitary measurement device is needed. The product can be ordered with many different quick-disconnect options.

For pressurized tanks, use two transmitters and calculate level in the Programmable Logic Controller (PLC) system, or use a DP transmitter.

Fill fluid is FDA-approved Neobee. This transmitter is based on field-proven I/A Series® gauge pressure transmitter design utilizing welded sanitary seal construction. The analog transmitter includes local configuration capability without the need for remote terminal.

Pressure Measurement

Foxboro 3-A-approved, sanitary pressure transmitters can be supplied with a variety of quick-disconnect connections and meet or exceed the SIP and CIP industry standards.

Foxboro pressure transmitters can provide absolute, gauge, and differential pressure measurement, and include features such as:

- Close-coupled and remote seals with tri-clamp options
- Process connections with 1", 6", and 9" extension tank spuds
- Aluminum or 316SS housings
- 316SS or Hastelloy C wetted parts
- 5-year standard warranty

Temperature Measurement

Foxboro temperature measure devices offer a broad selection of RTDs and TC to meet demanding temperature range limits. The line offers transmitter, sensor, and thermowell measurement solutions.

RTT80 Temperature Transmitter

The dual-channel RTT80 contains the most advanced diagnostics on the market. These include sensor backup, sensor corrosion, sensor short, limited power, and advanced math algorithms.

The RTT80 is a proven performer for signal reliability, long-term stability, high precision, and advanced diagnostics (important in critical processes). For the highest level of safety, reliability, and risk reduction, the RTT80 will keep your food and beverage applications running with precision and minimal downtime. Key benefits of the RTT80 include:

- Intelligent "hot sensor backup"
- Sensor corrosion detection
- Sensor drift detection
- Automatic temperature range sensor change
- Quick-disconnect options

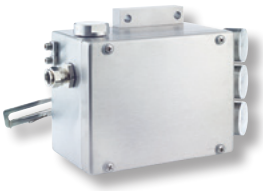
Valve Positioners

Foxboro has been producing control valve positioners of the highest quality since 1961 and offers the widest range of valve positioners to complement virtually any product in the food and beverage industry: sugar, ethanol, dairy, brewery, soft drinks, human and animal nutrition, and more.

Such a wide range of applications is possible thanks to features like our robust aluminum or stainless-steel housings, IP66 ingress protection, and gas and/or dust electrical certification according to ATEX, FM, CSA, INMETRO, and CU TR.

SRD991 Positioner

SRD991 Angle



SRD991 Stainless Steel

SRD991 Positioner

The compact, rugged SRD991 Positioner can be mounted onto any type of valve (linear and rotary) used for utilities and process control. Its modular design enables control of pneumatic cylinders used in food industries for packing and filling applications.

In addition, the SRD991 with the Top Mounting version is designed to control small-angle seat valves and diaphragm valves widely used in large quantities in food and beverage. The Top Mounting solution is state of the art in terms of ease of use, process optimization, and diagnostic capability with an intelligent positioner.

- Suitable for all sanitary and 3-A applications
- High accuracy reduces product losses and improves quality of final product (control down to 50 µm for linear actuators)
- Adaptable for use with virtually any food and beverage processing application for reduced inventory, lower cost, and process optimization
- SRD991 Top Mounting version can be mounted in less than 60 seconds
- 4 configuration steps available on full-text LCD display with local key pad
- More than 50 years' experience manufacturing robust positioners to exceed customer expectations

- Seamless integration into any control system
- PLC communication possible through HART®, Foundation Fieldbus H1, Profibus PA, and best-in-class DTM for easy configuration and diagnostics
- Easily integrated into any FDT frame, fully certified by FDT organization

Level Measurement Devices

Foxboro level measurement devices have been proven effective in a wide variety of applications and industries. All Foxboro buoyancy-level transmitters offer continuous self-diagnostics. By eliminating all moving parts in their design, there is little or no maintenance required, further improving longevity and reliability.

Boiler-Drum Level Measurement

On a 1000-psi, 60-inch boiler drum, the Foxboro IMV31 density-compensated, multi-variable level transmitter improved level measure by +0.3% of span or less than ±0.20 inch, compared to a conventional DP transmitter.

Our LevelWave Radar Series provides one universal radar measurement solution for all liquids, including corrosive, viscous, sticky, and other difficult media such as foam, turbulent surfaces, and solids. Unaffected by changes in temperature, specific gravity, and pressure with no need to recalibrate, the modular design guarantees easy and fast field installation for the requirements of modern industry.

Foxboro level measurement devices have been field proven in a variety of ways:

- Easy remote configuration and supervision with PC or HART® hand-held terminal
- Conventional operation using the local keys
- Proven for use in hazardous areas and SIL applications

Free-Space Radar LR01

Foxboro PP and PVDF Free-Space Radar antennas are perfect for level measurement in aggressive CIP storage environments using hot acid and other caustic solutions. They are 100% corrosion-proof in these very aggressive environments since no metal parts come in contact with the media.

LevelStar 244 LD

Boiler drums work in conditions of constant high temperature and pressure (up to 374°C and 221 bar). Even in such extreme environments, our LevelStar 244LD can operate for 10, 20, or more years with exceptional, long-lasting reliability.

Guided Wave Radar LG01

Foxboro Guided Wave Radar technology is designed to perform continuous-level measurement in a wide range of applications, and is unaffected by changes in density, conductivity, pressure, temperature, or by gas movement above the product. It is ideal for turbulent/rapid-level changes as well as foam up to 50 cm and pastes.

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