



KROHNE

▶ measure the facts

KROHNE, Inc. Process Measurement Solutions
Product Overview

ETA Process Instrumentation

www.etapii.com

sales@etapii.com

tel: 978.532.1330

New England

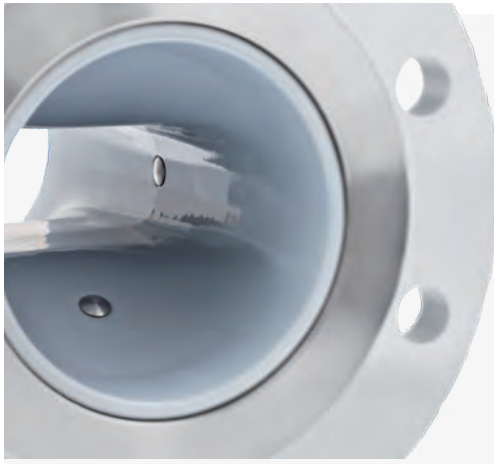
Martech Controls

www.martechcontrols.com

sales@martechcontrols.com

tel: 315.876.9120

Upstate New York



Unique solutions:

- 2-wire, hybrid design
- Low noise electrodes
- Pulsating flow
- Field calibration
- SIL
- Partially filled pipes
- Virtual reference
- Special liners
- Battery powered, remote water flow monitoring
- OD/OD, low velocities



▶ Electromagnetic flow meters

For all applications with conductive liquids

From basic applications to demanding flow and custody transfer (CT) measurements

- Designs and liner materials for various applications - from potable water to extremely adhesive, abrasive or aggressive fluids
- Nominal sizes starting at 1/10" up to 120", with a wide range of liner and electrode choices



Products



OPTIFLUX 1000

Economical sensor for OEM applications for liquids with solid content $\leq 70\%$ and fluid temperatures -13 to $+248^\circ\text{F}$ (-25 to $+120^\circ\text{C}$)
Wafer-style design: 3/8" to 6" to ASME 300#



OPTIFLUX (ENVIROMAG) 2000

Popular sensor for all standard water and wastewater applications
Compact converter version suitable to IP69, remote version IP68
Flanged 1" to 120" to ASME 300#, suitable for OD/OD installation in combination with IFC300 converter



OPTIFLUX 4000

The choice for tough applications including low conductivity ($>1 \mu\text{S}/\text{cm}$) or high solids content with chemically resistant liners and many optional features
Compact converter version suitable to IP69, remote version IP68
Flanged 1/10" to 120" to ASME 300#



OPTIFLUX 5000

Sensor for advanced process, custody transfer or master meter applications
High accuracy with ceramic tube for aggressive and abrasive liquids with solid contents $\leq 70\%$ and temperatures to $+180^\circ\text{C}$ / $+356^\circ\text{F}$. Available with 1/2" to 12" flanges up to ASME 300#



OPTIFLUX 6000

The sensor for advanced hygienic applications featuring a PFA liner reinforced with embedded stainless steel grid for vacuum resistance. High accuracy for exact dosing or filling in the food sector available from 1/10" to 6" with many 3A or EHEDG certified hygienic fitting tions



IFC 300 / IFC400

Powerful, highest accuracy flow converter for any sensor with wide choice of analog and pulse/frequency outputs and digital communication protocols. Rated to Class 1 Div 1 in XP or IS. Compact, or remote Wall or Field mount housings (shown). IFC 400 is SIL rated.



IFC 050

Converter for water, wastewater or general use with 1000, 2000, 3000, 4000 & 6000 series sensors. Choice of analog, pulse/frequency outputs or digital protocols (HART or Modbus). Housing, Blind or without display, for compact or wall mount configurations.



IFC 100

Mid-tier converter for most process applications with 1000, 2000, 3000, 4000, 5000 & 6000 series sensors. Choice of analog, pulse/frequency outputs or digital protocols (HART or Modbus). Housing features a touchpad display for compact or wall mount configurations.



IFC 070

The converter for custody transfer water metering with the WATERFLUX 3000 sensor. Built in battery is ideal for autonomous installation with absolute encoder and telemetry options. Compact or remote mount IP68 housing is suitable for permanent submergence



WATERFLUX 3000

Rilsan® lined flow sensor with temperature & pressure sensor for district leak monitoring. Adapts to OD/OD installations in 1" to 24" to ASME 150#. Option for direct burial (shown with SS junction box, soldered cable).





▶ OPTIMASS

Coriolis mass flow meters

- Multi-variable instrument features: mass and volume flow, density and temperature
- Liquid or gas measurement, 0 to 100% entrained gas available on all sensors
- Straight or bent tube designs with low pressure and widest selection of sizes and materials
- High pressure secondary containment standard
- Solutions for cryogenic & high temperature versions
- Custody transfer NTEP/MC, SIL and Bluetooth® capability

Products



OPTIMASS 1400

Twin straight-tube sensor with excellent performance on general process applications. Available in ½" to 4" diameters with flanges rated to ASME 600# or with choice of hygienic fittings.

Available with compact (shown) or remote converter



OPTIMASS 6400

Twin bent-tube sensor for extended temperature or pressure applications. Available in sizes from ½" to 12", suitable for fluid temperatures ranging from -328° to 752°F and pressure ratings to ASME 1500#. Available with compact (shown) or remote converter



OPTIMASS 3400

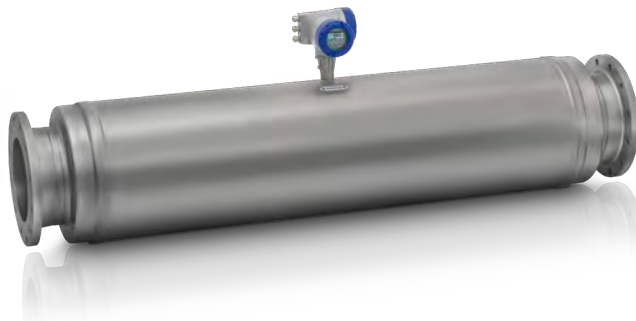
Single bent tube surface mounted sensor for extremely low gas or liquid mass flow rates (<0.01 lb/min) and pressure ratings to 4352 PSIG with ½" flanges, threaded or clamp connections.

Available with compact (shown) or remote converter



OPTIMASS 7400

High performance single straight measuring tube sensor available with titanium, stainless steel, Hastelloy® or tantalum wetted material choices for challenging applications in tube sizes from ½" to 4" with pressure rating to ASME 600#. Available with compact (shown) or remote converter



OPTIMASS 2400

This largest capacity mass flow sensor can handle up to 169,000 lb/minute mass flow rate with twin straight tube construction. Available in 4" to 16" diameters with flanges rated to ASME 1500# it is fully compliant with North American CT requirements. Available with compact (shown) or remote converter



MFC 400 Converter

Coriolis mass flow converter for combination with all OPTIMASS mass flow sensors in compact or remote field housing (shown)

With extensive diagnostics (NE107) and Entrained Gas Management (EGM™) for advanced requirements. 4-wire, 3 x 4...20 mA, HART®7, Modbus, FF, Profibus-PA/DP, PROFINET, EtherNet/IP™, Bluetooth®. Secure wireless access via Bluetooth® or remotely via HART® even in safety-related applications

▶ OPTISONIC

Ultrasonic flow meters for bi-directional measurement of liquid, gas, or steam

- 100% wet calibration
- In-line liquid or gas measurement- cryogenic & high temperature versions
- Clamp-on UFM available in 3 size ranges for liquids
- High accuracy independent of viscosity, temperature and conductivity
- Very low pressure loss, no flow obstructions
- No maintenance requirements for recalibration
- Wide measuring range, excellent low flow sensitivity
- Speciality designs for challenging gas, liquid or steam flow measurement



Products



**OPTISONIC 6300/
6300 P**
Fixed or Portable Clamp-on liquid
flowmeter



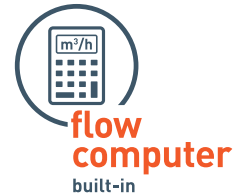
OPTISONIC 3400
Universal 3-beam device for in-line
measurement of liquid and flow of
liquids



OPTISONIC 7300
Universal 2-beam device for in-
line measurement of process or
biogases



OPTISONIC 8300
Ultrasonic flowmeter for high
temperature gas or superheated
steam



▶ ALTOSONIC

Custody Transfer Ultrasonic Flowmeters for Liquids and Gases



ALTOSONIC 5
5-beam device for custody transfer
measurement of crude oil and
crude oil products



ALTOSONIC V12
12-beam device for custody transfer
measurement of gas

▶ OPTISWIRL

Vortex flow meters

For steam, gas, free air delivery or liquid applications

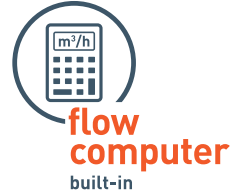
- High turndown, loop powered
 - Simple maintenance with no recalibration needed
 - Unique valve option for pressure sensor isolation
 - Available in flanged or wafer styles for sizes 1/2" through 12"
 - Built-in line size reducer
 - Reliable referenced sensor construction provides immunity to process vibration
- Integrated temperature and/or pressure measurement for true compensated flow



OPTISWIRL 4200

Universal device with integrated temperature and pressure compensation for saturated steam with built in flow computer

- Flanged 1/2 to 12"
- 2-wire, 4...20 mA, HART®, FF, Profibus-P
- For liquids, (wet) gases, saturated and superheated steam (+240°C / +464°F)



OPTISWIRL 2100

Vortex flowmeter for basic utility applications

- For liquids, (wet) gases, saturated and superheated steam (+240°C / +464°F)
- Available with integrated nominal diameter reduction for a large measurement span also in pipelines with large diameters
- Flange: 1/2 to 12"; wafer version to 4"



OPTISWIRL 5080

Vortex flowmeter for high temperature applications

- For liquids, gases and steam up to +427°C / +800°F
- Adaptive filtering and signal conditioning
- Flange: 3/4 to 12"
- Pressure rated to ASME 1500 lb
- Sandwich version: max. 8"
- 2-wire, 4...20 mA, HART®

▶ Proven technology with new impulses

Variable area flow meters

For simple and cost-effective flow measurement of gases or liquids without auxiliary power

- Glass and metal tube purgemeters for low-flow application <DN15 / 1/2"
- Glass and metal tube process meters up to DN150 / 6"
- Optional electronics: limit switches, analogue outputs, digital communication



Products



H250 M40

- For explosion proof, intrinsically safe or general purpose areas.
- Features unique modular "cassette" design including upgradable features such as mechanical indicator to 4...20 mA/HART®7, FF, Profibus-PA and/or totalizer
- Suitable for any installation position: vertical, or optionally adaptable to horizontal or down flow installations
- Flanged sizes from 1/2" to 6" or threaded with NPT or G. Also, most popular hygienic connections.
- Temperature range from -196 to +400°C / -320 to +752°F
- Pressures to 1000 barg / 14500 psig



DK32, 34

- Metal tube meter for low flows in high pressures or rugged conditions
- Compact mechanical indicator, optional 4...20 mA/HART®7, MIN/MAX switches and needle valve
- Sturdy metal design: stainless steel or alloy
- Thread: G1/4, 1/4 NPT, etc.
- Temperatures range from -40 to +200°C / +392°F, max.
- Pressures to 220 barg / 3190 psig



Glass meters

Small and compact meters, sturdy devices with low pressure loss, for maximum safety requirements

- Suitable for gas or liquid sample flow monitoring
- Available with a variety of process connection options
- Wide variety of available scale lengths for optimal resolution
- -20 to +100°C / -4...+212°F
- Pressures to 10 barg / 145 psi





▶ OPTITEMP

Temperature transmitters and sensor assemblies designed to meet a variety of industrial temperature measurement applications

- Transmitters for a wide variety of requirements
- Easy configuration, installation, and maintenance with ConSoft, HART, NFC (Near Field Communication), Bluetooth
- Complete temperature assemblies
- Robust design with sensor backup function reduces the influence of external disturbances



▶ OPTIBAR

Pressure instrumentation

- High accuracy and measurement stability under all process conditions
- Modular converter platform for all applications
- Process temperatures up to 150°C / 302° F diaphragm seal
- Wear-free measuring cell guarantees minimum service or maintenance
- Extensive diagnostic and setup via display module or free DTM
- Ranges from absolute vacuum to high pressure protection
- Overload resistant and overpressure



Products



OPTIBAR 5060/7060 C
Bluetooth programmable pressure or differential pressure transmitters for flow, level, differential pressure, density and interface.



OPTIBAR P2010 C
Hygienic pressure transmitter with flush welded diaphragm



OPTIBAR P 1010 C
Universal pressure transmitter for general applications

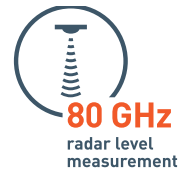


OPTIBAR P 3050 C
Compact pressure transmitter with internal diaphragm



▶ OPTIWAVE, OPTISOUND, OPTISWITCH and OPTIFLEX Level Measurement solutions for solids or liquids applications

- Loop powered FMCW radar, TDR and ultrasonic devices
- Advanced diagnostics, configuration, visualization and trending software
- Choice of metal or plastic horns and drop antenna for radar
- Choice of single, dial or coaxial TDR probes
- Choice of high performance converters - including remote electronics to 328 feet
- Liquids interface TDR, level switches available for liquids and solids
- Mechanical level indicators



OPTIFLEX: Time Domain Reflectometry
2-wire TDR guided radar for solids and liquids

OPTIWAVE FMCW Radar

OPTIWAVE 5400
General purpose 2 wire 24 GHz FMCW Radar with available drop antenna

OPTIWAVE 1400
2-wire 24 GHz FMCW radar for WWW applications



OPTIWAVE 7400
High Performance 2-wire 24 GHz FMCW radar for liquids available with horn antenna



OPTISOUND VU31
Dual sensor ultrasonic level transmitter for open channel liquid flow includes weir and flume computations. Also suited for liquid or solid level applications

OPTISOUND VU30
Ultrasonic level transmitter for open channel liquid flow includes weir and flume computations. Also suited for liquid or solid level applications.



OPTIWAVE 7500
High Performance 80 GHz 2-wire FMCW radar for liquids



OPTISWITCH
Vibration and conductive level switches for solids or liquids

OPTIWAVE 6500
2-wire 80 GHz FMCW radar for solids



PACTware with KROHNE DTMs included at no charge with every instrument

▶ TECHNICAL SUPPORT SERVICES

Technical Application Support Center

Trained, experienced technicians available by phone or email for product application, installation, operation or troubleshooting questions at no cost - and without a service contract

FIELD APPLICATION ENGINEERS
FIELD SERVICE
PRODUCT REPAIR
CALIBRATION SERVICE

▶ KROHNE Solutions

Instruments and Systems for Oil & Gas and Other Industries

- Liquid and Gas Custody Metering Systems
 - Highest degree of accuracy and repeatability, independent of media properties such as viscosity, temperature, density, and electrical conductivity
- Supervisory and Flow Computing
 - Touch screen operation, scroll, and click menu navigation, web access of current and historical data
- Pipeline Leak Detection and Management Systems
 - Liquids, gases, LPG, multiproduct applications

▶ World class process measuring technology now produced in Beverly, Massachusetts

- KROHNE is a global, family-run industrial process instrumentation leader since 1921 with more than 4,000 employees worldwide with 15 production sites in 10 countries
- The North American production and headquarters facility opened in 2018 in Beverly and features state of the art production lines for coriolis mass, mag and vortex flowmeters
- An extensive network of sales, technical support and field service covers the entire region



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