



PRODUCTION | PIPELINE | STORAGE | REFINERY | TRUCK | MARINE | AVIATION | LABORATORY



Kam®

Simple Precision™

M E A S U R E M E N T & A N A L Y S I S





Kam® OWD®

Water Cut Meter

The patented multi-antenna design on the KAM® OWD® provides continuous accuracy 0-100%.



PTB 08 ATEX 1028

APPLICATIONS

- Automatic well test and test separators
- Real-time production management
- Well and field monitoring

OUTPUTS

- 4-20 mA (2)
- Alarm or relay
- RS232 for calibration and diagnostics
- RS485 Modbus
- HART protocol (optional)

KEY FEATURES

- 0–100%, 0-40%, 0-30%, 0-20% water in oil
- ±1% full scale accuracy
- Automatically detects transitions between oil-continuous and water-continuous modes with optimized measurement for each mode
- No salinity offset required
- Automatic temperature correction
- All requisite electronics housed within unit
- KAM® manufactures all requisite static and power mixing options for homogenous flow
- Models up to ANSI 1500

AVAILABLE MODEL AND MOUNTING OPTIONS

- Insertable model with 2″, 3″, or 4″ flanged seal housing or 2″MNPT seal housing (shown above)
- Flow through model with ½″, ¾″ FNPT
- Flow through spool model on 2″ seamless pipe with weld-neck flanges; Integrated KAM® SMS™ Static Mixing Spool; ½″ sample valve with ½″ pitot probe
- Local display available (optional)

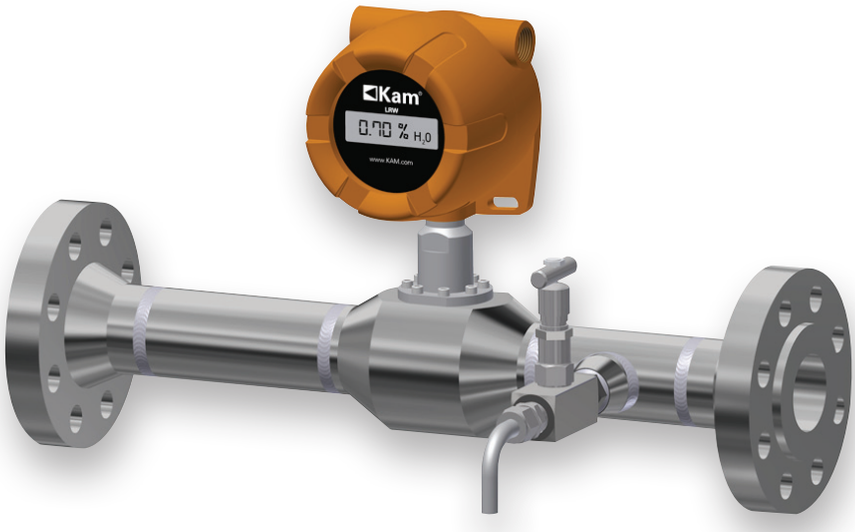
Kam® LRW™

Low Range Watercut

Kam® Simple Precision™

AnyDensity™ technology allows the patented KAM® LRW™ to automatically compensate* for changes in density across the entire range of API gravities.

*requires density input



APPLICATIONS

- Truck, marine, and rail loading and unloading
- Custody transfer
- Refinery: incoming crude stream, feedstock

OUTPUTS

- 4-20 mA (2)
- Alarm or relay
- RS232 (for calibration)
- RS485 Modbus

KEY FEATURES

- Patented microwave resonance technology
- AnyDensity™ density compensation for full API gravity range
- Automatic temperature correction
- ±1% full scale accuracy
- Spool and insertable models available
- 2″ probe provides maximum install flexibility
- Local display
- Up to ANSI 900

AVAILABLE MODELS AND MOUNTING OPTIONS

- **Available Ranges:** 0-3%, 0-5% and 0-10% water in oil (±0.03%, ±0.05% and ±0.1% accuracy)
- **Flow through spool model:** 2″ or 3″ flanged flow through spool with static mixer and draw-off valve (shown above)
  Standard spool length is 32″ (812 mm); minimum spool length is 21″ (533 mm)
- **Fixed insertion model:** 2″, 3″, or 4″ flange;
  Standard shaft lengths are 7″ and 12″ (177 mm and 304 mm)
- **Insertable/retractable model:** 2″ MNPT;
  2″, 3″, or 4″ flanged seal housing;
  Shaft length from 12″ to 36″ (305 mm to 914.4 mm)
  Custom configurations available

Kam® ATD™

Automatic Tank Dewatering

The ATD™ is a water cut meter designed specifically to combat maintenance issues in the tank environment.



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APPLICATIONS

- Automatic tank dewatering
- Desalter optimization

OUTPUTS

- 4-20 mA (2)
- Alarm or relay
- RS232 for calibration/ diagnostics
- RS485 Modbus
- HART protocol (optional)

KEY FEATURES

- Solid antenna will not clog with debris
- Automatic temperature correction
- Visual and auditory alarms
- Complete system includes controller
- Installs without having to drain the tank
- Minimizes normal maintenance associated with tank probes

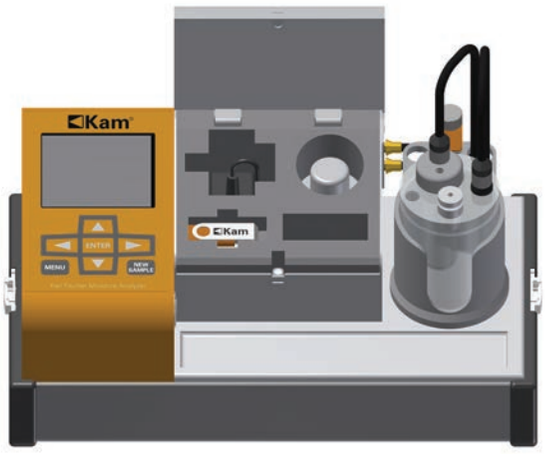
AVAILABLE MODEL AND MOUNTING OPTIONS

- Probes insert into tanks either through a 2″, 3″, or 4″ flanged seal housing or a 2″MNPT seal housing (shown)
- Complete automatic dewatering system available, including controller

Kam® KF

Karl Fischer Moisture Analyzer

Kam® Simple Precision™



PER API MPMS 10.9, EI 386, ASTM D4928, and ISO 12937



KAM® REAGENTS



KAM® HOMOGENIZER

At 0.1% water, Karl Fischer is 10 times more accurate than centrifuge and 5 times more accurate than distillation, and analysis takes less than 5 minutes.

APPLICATIONS

- Crude oil samples (field and laboratory)
- Water concentration in refined fuels, including aviation
- Water concentration in machine oils
- Water concentration in transformer oils
- Water concentration in hydrofluoric acid

AVAILABLE MODEL AND MOUNTING OPTIONS

- Portable and laboratory models available
- Homogenizer available with multiple mixing blades
- Premeasured reagents include generator solutions A and C plus check solution

KAM Reagents are packaged by volume for immediate replacement and usage.

KEY FEATURES

- Fully automatic operation
- Data storage for up to 100 samples
- USB port
- Fully portable with 10-hour battery life
- Reagent life and expiration notification
- Consumables storage
- Bluetooth®
- Windows based software
- Spanish / English menu options
- Optional printer

Kam® Mixers

SMP™, SMS™ and ML

Kam® SMP™

Static Mixing Plate



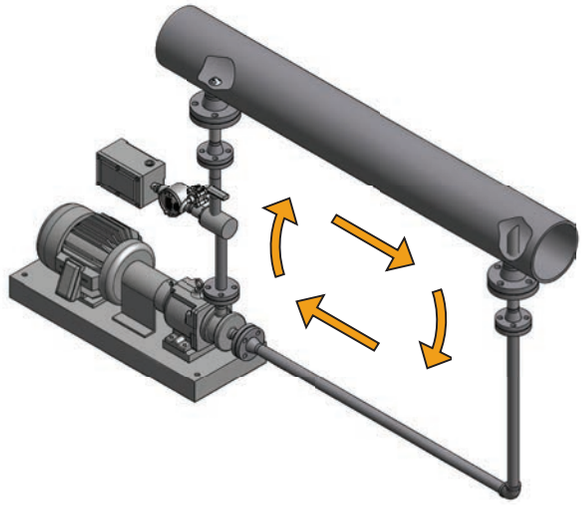
Kam® SMS™

Static Mixing Spool



Kam® ML™

Measurement Loop



The unique patented design of the SMP™ easily inserts between two flanges saving valuable space and greatly simplifying installation.

APPLICATIONS

- LACT units
- Sampling systems
- Custody transfer
- Water and wastewater
- Pulp and paper
- Gas

SMP™ KEY FEATURES

- Minimal pressure drop
- Simple, lightweight, and rugged with no moving parts
- Optional scoop for mixing highly stratified fluids
- Fits in 2″ to 48″ pipelines
- Up to ANSI 900

SMS™ KEY FEATURES

- High efficiency enables shorter spool with low pressure drop
- No moving parts or outside energy source required
- Fits in 1″ to 96″ pipelines
- Up to ANSI 900

ML™ KEY FEATURES

- Patented design provides the optimal solution for heavy oil and low or inconsistent velocities
- Creates consistent velocity, droplet-size ratio, and accuracy
- Systems optimized for individual applications
- Suction and Injection nozzles connect to main line via hot tap
- Injector creates counter-rotating vortices for added mixing
- Constant high velocity keeps instrumentation clean
- Ideal for sampling and watercut applications

Kam® CSS™
Complete Sampling System

Kam® Simple Precision™

Meets API 8.2, ASTM D4177 and ISO 3171

FLOW METER
Communicates flow data with Sampler Controller



KAM® SC™
SAMPLER CONTROLLER
Paces Sampler based on flow and volume data



KAM® CSM™
CIRCULATING SAMPLE MIXER
Mixes sample in Sampler Receiver for laboratory measurement



KAM® METERIZER
or **KAM®** WEIGHT SCALE
Confirms sampling volume







KAM® SR™
SAMPLE RECEIVERS
3, 5, or 10 gallon

KAM® IAS™
ISOKINETIC AUTOMATIC SAMPLER
Takes samples and deposits them in the Sample Receiver
(0.5 – 5 ml per bite)

The KAM® IAS™ Isokinetic Automatic Sampler employs the simplest design in the industry and is designed to minimize down time and maintenance with convenient features such as fully insertable probes and standard seals and O-rings.

Include KAM® mixing elements for API compliance, and the KAM® OWD® Water Cut Meter for real-time data.

KAM® SR™ Sample Receivers prevent sample contamination with a custom lip seal and incorporate internal spray bars for fast mixing in the lab.

Kam® OID™

Optical Interface Detector

Detects interface when densitometers cannot, such as between specialty fuels like LSD and ULSD or multiple grades of gasoline



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APPLICATIONS

- Petroleum products and chemical interface detection
- Product transmix and downgrade management
- Automatic batch detection and cutting
- Quality control

OUTPUT

- 4-20 mA output provides qualitative measurement that can be calibrated to specific pipeline mix
- RS232
- RS485 (MODBUS)

KEY FEATURES

- Monitors interface and transmix
- Fiber optics within the patented optical probe respond to the absorption, fluorescence, and refractive properties of the fluid
- Lens cleans in place
- Fully automatic measurement
- Data is turned into an analog signal or optical signature which can be sent to the SCADA, PLC's, or to a Central Control Room

AVAILABLE MODEL AND MOUNTING OPTIONS

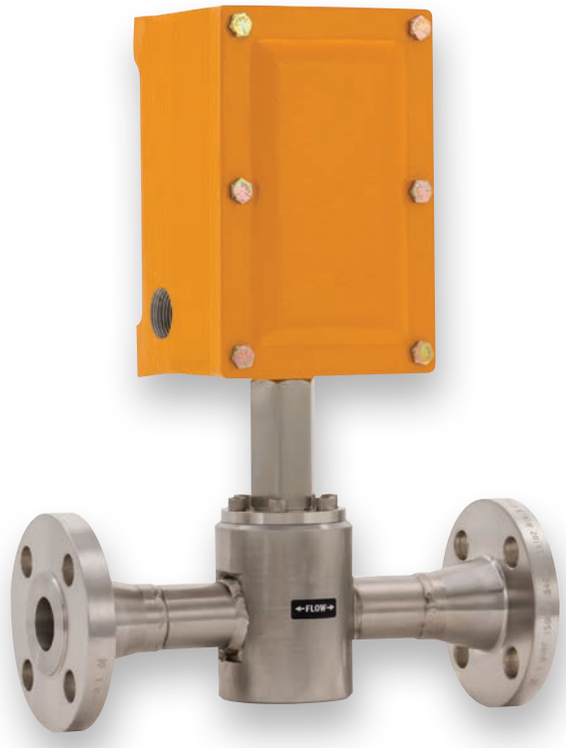
- Insertable model with 2", 3", or 4" flanged seal housing or 2" MNPT seal housing (shown above)
- FT Flow Through or Analyzer Loop model with ¾" or 1"MNPT (shown below)
- "SHOWN" after 1" MNPT



Kam® CHA™

Colorimeter / Haze Analyzer

Kam® Simple Precision™



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Interface detection, including dyed fuels, plus refined fuels quality control with the industry's most compact colorimeter/haze analyzer

OUTPUT

- 4-20 mA for Haze
- Selectable 4-20 mA for ASTM, Saybolt, or Platinum Cobalt color scales
- RS485

APPLICATIONS

- Interface detection, including dyed fuels
- Refined fuels quality control
- Turbidity/haze detection
- Jet fuel quality control

AVAILABLE MODEL AND MOUNTING OPTIONS

- Insertable model with 2″, 3″, or 4″ flanged seal housing or 2″ MNPT seal housing
- FT Flow Through model with 1″ or 2″ flanges (shown above)



KEY FEATURES

- Measures color + haze in refined products with an accuracy of ± 1% for color
- Only colorimeter unit on the market with fully incorporated electronics
- Offers greater accuracy over other, 3-LED models
- Long-term performance with minimal power and maintenance requirements
- Automatically adjusts for electronic noise, LED fluctuations, and varying absorption rates
- Measures full spectrum of visible color (CIE 1931)

Kam® OOD™

Optical Oil Detector



PPM-level oil-in-water detector with the same simplicity and ease of installation as other KAM® products

OUTPUTS

- 4-20 mA
- RS232
- RS485 (MODBUS)
- HART protocol
- Alarm (2)

APPLICATIONS

- Wastewater
- Bilge water
- Storm water
- Produced water
- 3-phase separator

AVAILABLE MODEL AND MOUNTING OPTIONS

- Insertable model with 2″, 3″, or 4″ flanged seal housing or 2″ MNPT seal housing (shown above)
- 3/4″ or 1″ MNPT Flow Through for analyzer loop



KEY FEATURES

- Minimum range 0-100 ppm, maximum range 0-5000 ppm*
- Accuracy 1% of range*
- Minimum detection 5 ppm
- Optic design minimizes effects of temperature, density, and salinity
- LEDs for long-term performance and minimal power and maintenance requirements
- Mounts perpendicular to flow for self cleaning of lens

* Available ranges and accuracies are hydrocarbon dependent. Please consult factory for your application.

Kam®

Simple Precision™

For 30 years KAM CONTROLS has served the petroleum industry with innovative measurement solutions for a wide variety of applications.

The company's Simple Precision™ philosophy creates an environment focused on the absolute highest standards for quality, accuracy, and ease of use, saving KAM customers time, money, and invaluable man-hours.

KAM® has pioneered a multitude of technologies and applications, including: the first ever insertable ultrasonic flow meter, being the first to apply coulometric Karl Fischer titration to water measurement in crude oil, the patented KAM®SMP™ Static Mixing Plate, and pioneering the use of optics for fluorescence and interface detection in the pipeline.

Today, KAM CONTROLS remains at the forefront of industry technology with the patented, multi-antenna KAM® OWD® Water Cut Meter, the KAM® ATD™ Automatic Tank Dewatering probe, and the KAM®THA™ Turbidity Haze Analyzer for in-line turbidity monitoring.

All KAM CONTROLS products are developed and manufactured at company headquarters in Houston, Texas by a dedicated team of engineers and technicians.



KAM CONTROLS IS AN ISO 9001 CERTIFIED COMPANY

FOR MORE INFORMATION ON KAM PRODUCTS

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Proud member of API, ASTM, EI and IASH

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KAM CONTROLS reserves the right to make changes to this document without notice. KAMCAT1016

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